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REVIEW ARTICLE

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Which interventions are acceptable to patients for managing fatigue in long-term conditions?: A qualitative evidence synthesis

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ABSTRACT

Purpose: This qualitative evidence synthesis examined patient experiences of fatigue interventions among adults with diverse long-term conditions, complementing the EIFFEL systematic review and meta-analysis of intervention effectiveness.

Materials and Methods: A comprehensive search across MEDLINE, Embase, CINAHL, PsycINFO, Web of Science, and Scopus identified relevant studies. Data underwent inductive thematic analysis followed by deductive coding using AI-generated thematic summaries (Claude 3.7 Sonnet), which were verified by an experienced reviewer.

Results: The review identified 40 papers (36 papers from the original search plus four from an October 2025 update) covering 35 studies within six transdiagnostic themes: Coherence/Understanding, Process of Change, Personalisation/Applicability, Barriers to Engagement, Social Support, and Delivery Format. These themes applied across both common interventions used for different conditions and condition-specific approaches. Personalisation and tailoring emerged as essential throughout. Notably, within-condition differences proved as significant to patient experience as between-condition comparisons.

Conclusions: This transdiagnostic synthesis reveals shared patient needs across conditions. Acceptable interventions provide coherent explanations, balance structure with flexibility, and address knowledge, expectations, and behaviours without imposing additional burden. Future interventions should integrate transdiagnostic insights and personalisation opportunities to address fatigue complexity.

IMPLICATIONS FOR REHABILITATION

- Transdiagnostic approaches to fatigue management may be beneficial, as the experience of fatigue appears to share commonalities across various long-term conditions regardless of specific diagnoses.
- Personalisation and tailoring of fatigue interventions is essential, as within-condition differences can be as important as between-condition comparisons.
- Rehabilitation programs should address the need for coherence and understanding of fatigue as part of the process of patient engagement and change.
- Social support elements should be incorporated into fatigue management strategies, as this need was identified for both individual and group-based interventions.
- Consideration of delivery format is important for effective implementation of fatigue interventions across different long-term conditions.

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Introduction

Fatigue is a prevalent symptom across numerous diseases and disorders that significantly impacts quality of life and disease prognosis. Persistent fatigue is common in long-term medical conditions, particularly when multiple conditions are present [1]. Alongside tiredness, it includes a sense of needing to rest, or of difficulty in initiating or sustaining voluntary effort [2,3]. A meta-analysis of 214 articles revealed an

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overall prevalence of 49.4% across 88 diseases [4]. Patients with "mental/behavioural diseases" (Authors' classification) showed the highest prevalence (65.9%), while those with circulatory system diseases had the lowest (34.7%). Conditions such as pulmonary hypertension (90.0%), chronic obstructive pulmonary disease (83.2%), and multiple sclerosis (80.0%) demonstrated high levels of moderate to severe fatigue.

With ageing populations, fatigue represents a growing concern for healthcare systems. A meta-analysis of 21 studies involving 17,843 participants found that 42.6% of older adults experience fatigue, with physical fatigability at 58.2% and mental fatigability at 24.0% [5]. Critical illness survivors frequently experience persistent fatigue that significantly impacts recovery and quality of life long after the acute phase [6].

Research increasingly adopts transdiagnostic approaches to fatigue management, suggesting that the experience of fatigue may share commonalities across various long-term conditions [7]. This approach prioritises symptom-dependency over disease-independency [8] and seeks to identify common underlying mechanisms that contribute to fatigue across different conditions [9].

Fatigue in long term conditions affects physical, cognitive, and social functioning, its management is central to comprehensive patient care and it significantly influences health outcomes, functional status, and patient satisfaction. Unmanaged fatigue is consistently identified as one of patients' most distressing symptoms, yet it frequently remains under-recognised and under-treated in clinical practice [2]. Addressing fatigue requires a multidimensional approach that may include treatment of underlying disease processes, management of contributing factors such as sleep disturbance or anaemia, psychological support, and rehabilitation strategies [2]. Current interventions—spanning pharmacological, non-pharmacological, and complementary approaches—often prove difficult to maintain and show inconsistent effectiveness. Understanding common underlying factors could facilitate the development of broadly applicable interventions [7] and potentially enhance treatment efficiency by targeting symptoms prevalent across multiple conditions [9].

The UK National Institute for Health and Care Research (NIHR) has funded the *Effectiveness of Interventions For Fatigue in Long term conditions (EIFFEL) project* to evaluate the effectiveness, cost-effectiveness, and acceptability of non-pharmacological interventions for managing fatigue in people with long-term medical conditions, including a systematic review of qualitative research, known from this point by its Cochrane-approved label of qualitative evidence synthesis (QES) [10].

This qualitative evidence synthesis aimed to synthesise qualitative evidence regarding experiences of and interventions for adults with fatigue associated with one of a pre-identified list of long-term conditions.

Materials and methods

We followed the methods outlined in the Cochrane and Campbell Handbook of QES [11] and reported the review according to the recommendations of the "Enhancing Transparency in Reporting the Synthesis of Qualitative Research" statement (ENTREQ) [12]. A review protocol is registered as *Acceptability of Interventions For Fatigue in Long term conditions (EIFFEL)*. 2023 CRD42023459361.

Inclusion criteria

Inclusion criteria were identified in a two-stage process. The review targeted adults with any long-term condition, using the NHS definition as "an illness that cannot be cured but that can usually be controlled with medicines or other treatments". The commissioning brief specifically excluded fatigue in people with cancer, in relation to or following from infection (HIV, Hepatitis C, Long Covid and Myalgic Encephalomyelitis/Chronic Fatigue Syndrome) or resulting from injuries or developmental disorders. It also excluded conditions in which symptoms, rather than observable pathology, were the defining features (e.g. fibromyalgia or irritable bowel syndrome). Given the focus on qualitative research, identification of "fatigue" was not based on a specific case definition or diagnosis – it required authors of a study to explicitly mention fatigue in the title and/or abstract.

Studies were eligible for inclusion if they 1) had a study sample of adults (≥18 years) diagnosed with a long term condition; 2) were published after 2013, 3) published in English; 4) used a qualitative or mixed methods approach; 5) included findings about patient perspectives on interventions for fatigue; and 6) provided a description of sampling strategy, data collection, and data analyses. Studies of multiple

conditions were included if individual conditions eligible for inclusion were identifiable. .No inclusion restrictions were placed on study setting or context. The date restriction of 2014 onwards accommodates developments at a national (the Health and Social Care Act 2012 (UK); the Affordable Care Act (ACA/ Obamacare) (U.S.) and global level (World Health Organisation's Global Action Plan for the Prevention and Control of Noncommunicable Diseases 2013-2020)

Our initial pool of included studies was further narrowed down to a list of candidate interventions identified as either "significantly effective" or "promising" from systematic reviews and meta-analyses of clinical and cost effectiveness studies conducted by other members of the review team (Box 1; Table 1). The acceptability of interventions demonstrated to be neither effective or promising, while of potential academic interest, was not considered relevant to the overall decision problem.

Box 1 - *Overview of Interventions Identified as Effective or Promising from Network Meta-analysis*

Behavioural (Multiple Conditions)

- Cognitive Behavioural Therapy
- Energy Conservation Programmes
- Fatigue Management
- Mindfulness
- Physical Activity Promotion
- Self Management
- Supervised Exercise

Stimulation (Stroke Only)

- Remote Ischaemic Conditioning

Data sources and search strategy

A comprehensive search of bibliographic databases to identify qualitative research was conducted in February-March 2024. Search strategies combined free-text and thesaurus terms related to specific

Table 1. Interventions identified as effective or promising from network meta-analysis.

Conditions	Interventions (including programme names, where available) (associated references)
Adults on Chronic Dialysis	Fatigue Management (The PEP Program Energy Management Education Program) [13]
Cardiopulmonary disease	Mindfulness (Mindful Steps) [14,15]
Cerebral Palsy	Fatigue Management [16]
Chronic conditions (unspecified)	Physical Activity Promotion (Activity Pacing) [9]; Rehabilitation (including exercise) [17]
End Stage Kidney Disease	Fatigue Management [18]
Endometriosis	Cognitive Behavioural Therapy [19]
Guillain-Barré Syndrome	Supervised Exercise [20]
Haemodialysis	Cognitive Behavioural Therapy [21] (including Cognitive-behavioural therapy (CBT) for renal fatigue (BReF) [18,21–23])
Inflammatory Arthritis	Cognitive Behavioural Therapy [24]; Fatigue Management (Fatigue and Activity Management Education for Work [25–27])
Inflammatory Bowel Disease	Cognitive Behavioural Therapy [28–32]; Self Management (IBD Boost) [29–31,33,34]
Inflammatory rheumatic diseases	Cognitive Behavioural Therapy [35]; Cognitive Behavioural Therapy (and Supervised Exercise) LIFT (Lessening the Impact of Fatigue in inflammatory rheumatic diseases: a randomised Trial) [35–40]; Supervised Exercise [35]
Kidney Disease	Cognitive Behavioural Therapy [41]
Minor Stroke or Transient Ischaemic Attack	Physical Activity Promotion [42]
Multiple Sclerosis	Cognitive Behavioural Therapy and Self Management (MS Energise) [43,44]; Fatigue Management (including Swedish Managing Fatigue Programme [45]); Fatigue Management and Self Management (Multiple Sclerosis: An Interactive Fatigue Management Resource (MS INFoRm) [46–50]; Self Management [51–53]; Supervised Exercise [54]
Parkinson's Disease	Self Management [55] (including Individual Packer Managing Fatigue Program Self Management [56,57]; Supervised Exercise [55,58]
Rheumatoid Arthritis	Self Management [59]
Sjogren's Syndrome	Self Management [60]
Stroke	Cognitive Behavioural Therapy (with Health Education) [61]; Mindfulness for Alleviating Fatigue After Stroke [62]; Self Management [63,64] (including FASE [65]; Stimulation (Remote ischaemic conditioning for fatigue after stroke - RICFAST) [66,67]; Supervised Exercise [42,68]
Systemic Sclerosis	Fatigue Management (Fatigue and Activity Management Education in Systemic Sclerosis - FAME-iSS) [69,70]

long-term conditions and to general terms such as "chronic disease" and "long-term illness". A methodological search filter selected for specificity was used to identify qualitative studies [71]. Given known variations of health and social systems across countries included studies were limited to 2014 onwards, published in English language and conducted in English speaking, Western European and Scandinavian countries. Searches were performed on Ovid MEDLINE, Embase (*via* Ovid), CINAHL (*via* EBSCO), APA Psycinfo (*via* Ovid), Web of Science Core Collection (Science Citation Index and Social Sciences Citation Index) and Scopus. Once candidate interventions were identified systematic CLUSTER searching for sibling, related and associated studies [72] was conducted using study identifiers such as the ICRTN and trial/study name.

Given the original searches were conducted in early 2024 a supplementary search for citations from all previously included studies was conducted on the 16th October 2025. Citation searches identified 360 references corresponding to 326 unique records. Of 91 studies containing qualitative data 43 were published between January 2024-October 2025.

Study selection

Independent screening was conducted by two authors (AB, GR), first on study titles and abstracts and, subsequently, on the full text of selected studies. Duplicate records were identified using Endnote reference management software. Studies were selected based on methodological rigour, relevance to fatigue management, and, in a second filtering phase, for representation across promising or effective interventions used in multiple conditions. Selection of studies for both phases was carried out within Microsoft Excel. Discrepancies were resolved through discussion between the two authors.

Data extraction

Data was extracted into a single Excel spreadsheet. Extraction for each study included author(s), publication year, study design, setting, and objectives, sample size, and participant's sociodemographic characteristics.

Analysing and synthesising findings

Synthesis methodology

We started by analysing the findings inductively using a thematic synthesis approach [73], adapted to analyse distinctive meaning units rather than line-by-line coding [74]. Thematic synthesis is particularly suited to synthesising evidence about intervention acceptability. Findings from the included studies were read, coded, and examined for overlapping analytical themes. Findings included direct verbatim text extracts from participants and author interpretations from the results sections. After a random selection of 10 studies had been analysed in this way a preliminary framework was developed (See Box 2). The remaining studies were then mapped deductively against the coding scheme. Artificial intelligence (Claude 3.7 Sonnet) was used for initial mapping and then (i) coding for individual findings were checked by a reviewer and (ii) the extracted data was checked to ensure that all findings had been processed and coded. After all the findings were coded and verified, the two reviewers generated the final analytical themes and sub-themes and discussed them with the co-authors.

Methodological limitations of the included studies

In the absence of validated risk of bias tools for qualitative studies, reviewers are encouraged to follow Cochrane Qualitative and Implementation Methods Group (CQIMG) guidance when selecting a tool for assessing methodological limitations. The Cochrane Qualitative tool was privileged over the commonly-used Critical Appraisal Skills Programme checklist as it has been specifically designed for QES use. An experienced methodologist used the Cochrane Qualitative tool (e.g. Context, Sampling strategy, Data collection, Data analysis, Findings supported, Researcher reflexivity, Ethical Issues) across all included papers [75].

Results

Study selection

The search in the different databases yielded 4590 references. After checking for duplicates, 1373 references were eliminated (see Figure 1 for PRISMA flow diagram [76]. The remaining 3217 reports were screened against the title and abstract, and 82 reports were screened against the full text eligibility criteria. A further 11 records from the October update search progressed to full-text eligibility screening.

31 included studies were reported in 35 papers [9,13,14,16,18,20,21,24,25,28–31,36,41–43,45–49,51,52,54–56,58–60,62–66,69] published between 2016 and 2024, with a further four from the October 2025 update [17,19,61,68], providing qualitative data on fatigue management interventions (FMIs) across multiple long-term conditions. Two of the eligible studies from the update had previously been identified [9,60] while one study was excluded for including a health professional perspective [77]. Further studies were excluded for reporting perceived, not actual, barriers to intervention use [78] and for studying an atypical pandemic context [79]. An overview of the IBD-BOOST programme [80] and a survey of chronic kidney patients [81] were judged to include insufficient qualitative data. Following the update, therefore, a total of 40 papers were included, reporting 35 studies.

These 35 studies cover diverse conditions including Multiple Sclerosis (9 studies), Stroke (8 studies), Inflammatory Bowel Disease (4 studies), various forms of Arthritis (5 studies), Parkinson's Disease (2 studies), and Kidney Disease/Dialysis (4 studies), as well as less represented conditions such as Sjögren's Syndrome, Cerebral Palsy, Guillain-Barré Syndrome, Systemic Sclerosis, Endometriosis and Cardiopulmonary Disease. Interventions fall within several categories (Box 1): self-management programmes and educational approaches; cognitive-behavioural approaches; digital and technology-based interventions; exercise and physical activity interventions; and coaching and occupational therapy approaches.

Study designs vary considerably, featuring qualitative studies using interviews and focus groups, mixed-methods evaluations, feasibility studies with qualitative components, process evaluations, qualitative extensions of randomised controlled trials, and co-design workshops. Data collection methods include semi-structured interviews, focus groups, participant observation, user experience testing, and self-reported outcomes combined with qualitative feedback. Included studies focus on factors associated with acceptance of FMIs: patient strategies for coping with fatigue in daily life, the importance of tailored

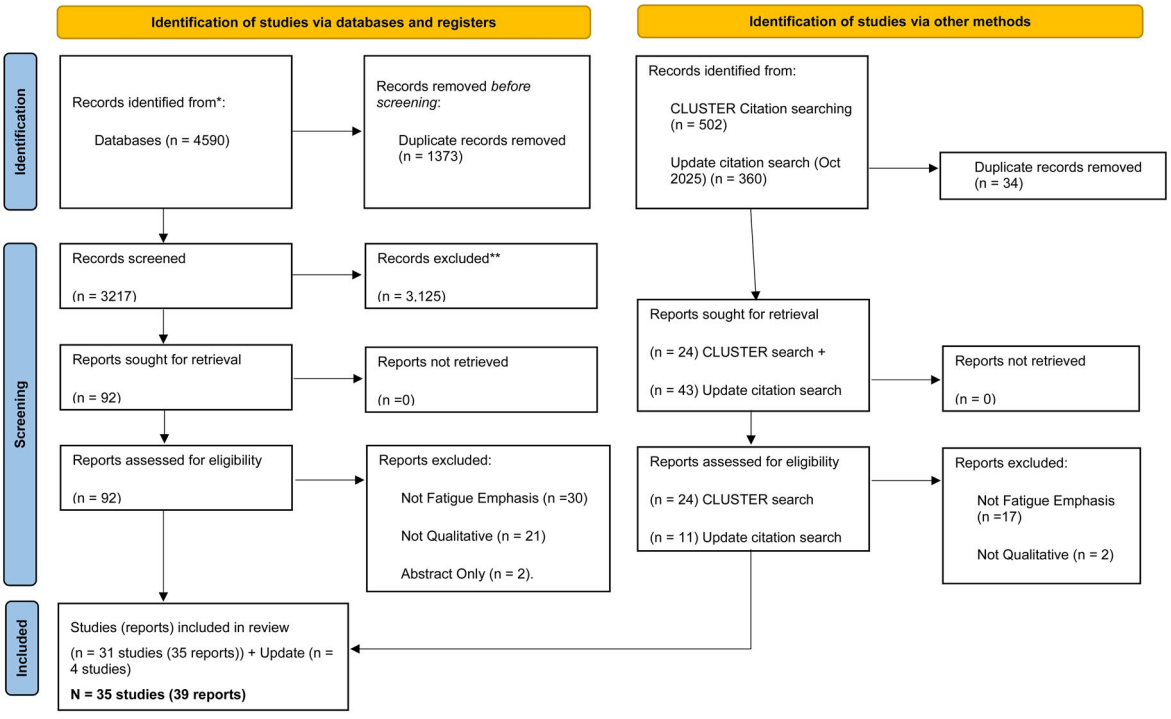

Figure 1. PRISMA flow diagram.

and personalised approaches, accessibility and usability considerations for digital interventions, the value of peer support and shared experiences, integration of fatigue management into routine activities, impact of interventions on confidence and self-efficacy, and barriers and facilitators to intervention uptake. Study characteristics are presented in Tables 2–8.

Methodological limitations of the included reports

A summary table of assessments of methodological limitations is available as Table 9. In line with Cochrane guidance the study reports have been designated as either serious concerns, moderate concerns or minor concerns relating to methodological limitations [82]. A traffic light colour scheme has been included to facilitate assessment. No studies were excluded based on methodological limitations [82]. Each study report was evaluated across seven key domains of methodological rigour: context description, sampling strategy, data collection, data analysis, evidence supporting findings, researcher reflexivity, and ethical considerations. In the absence of double review Claude 3.7 Sonnet assessments were conducted alongside, and then compared with, reviewer generated judgements to check accuracy and completeness.

The majority of reports (25 out of 40) were assessed as having minor methodological limitations, suggesting generally good quality across the evaluated domains. A substantial portion (14 out of 40) were categorised as having moderate limitations, indicating some methodological concerns but likely still providing valuable insights. Only one report [62], a programme evaluation, was assessed as having serious limitations.

Common weaknesses across studies relate to researcher reflexivity and sampling strategies, with a focus on pragmatic recruitment to intervention studies. Many studies were nested within larger studies including randomised controlled trials (RCTs), feasibility studies, or formed part of mixed-methods approaches. On balance, most included studies demonstrate reasonable rigour allowing moderate to high confidence in the evidence base, with stronger weight potentially given to findings from the studies with minor limitations.

Synthesis

A transdiagnostic framework was developed inductively by the team from analysing one-third of included studies. To complement this synthesis study characteristics and findings tables are organised by intervention type. Findings in tables are presented in meta-aggregative form (i.e., top-level themes) (Tables 10–16). Access to extracted data is available on request from the corresponding author.

Reporting

This QES has been written up according to the ENTREQ reporting guidelines [12], the most appropriate reporting guideline ahead of the forthcoming PRISMA-QES guideline which is currently in development.

Thematic analysis

Studies were divided into two groups before being subjected to thematic synthesis. The first group included any interventions that have been evaluated across multiple long-term conditions, thereby offering potential transdiagnostic insights. A preliminary synthesis based on ten randomly picked included studies used inductive analysis to produce a framework organised under six cross-cutting themes. Claude 3.7 Sonnet was used to generate initial suggested themes which were considered alongside themes produced by the review team. Final versions of the themes were subsequently refined taking them further away from the machine-generated pattern recognition.

Remaining studies were coded deductively under the framework. The second group, which only included Stimulation comprised studies of fatigue interventions used only for a single condition (Tables 8 and 16). Again the framework was used to code the data deductively under six cross-cutting transdiagnostic themes.

Box 2 - *Transdiagnostic Themes Identified Across Multiple Interventions.*

1. Importance of Coherence and Understanding
- Participants across studies emphasised how understanding the biopsychosocial nature of fatigue was foundational to managing it effectively
- Developing a clear understanding of fatigue as a legitimate symptom helped participants "reframe" their experience and reduce guilt/self-blame
- When interventions clashed with participants' existing understanding (e.g., biomedical vs. biopsychosocial), engagement was diminished

2. Process of Change
- Successful interventions facilitated shifts in three key areas:
    1. Knowledge (understanding fatigue and its management)
    2. Expectations (about fatigue and oneself)
    3. Behaviours (implementing concrete strategies)
- These shifts led to outcomes like normalisation, increased self-permission to rest, and greater sense of control. Acceptance emerges as a foundational concept underlying many such shifts. As noted in clinical practice, acceptance of one's condition is often prerequisite to effective management, even if initially unpleasant.

3. Personalisation and Applicability

Participants valued content that could be tailored to their individual circumstances
- Goal-setting that focused on personal priorities was particularly valued
- Perceived effectiveness was linked to how relevant the intervention content was to participants' daily lives

4. Barriers to Engagement
- Cognitive burden - many participants found written materials and concentration difficult
- Illness and treatment burden - time constraints from treatments (e.g., dialysis)
- Technical challenges - for digital interventions, technology access and usability problems

5. Social Support Elements
- The "power of community" [69] was consistently highlighted across group interventions
- Participants valued sharing experiences with others facing similar challenges
- Validation from peers was therapeutic, beyond the formal intervention content

6. Delivery Format Considerations
- Mixed preferences for delivery (online vs. in-person, individual vs. group)
- Timing of intervention in disease trajectory matters (newly diagnosed vs. experienced)
- Structure, frequency, and duration require balance (too short doesn't allow for change; too demanding creates burden)

Acceptability of interventions evaluated across multiple long-term conditions

Theme 1: Importance of coherence and understanding in managing fatigue

Across the 31 originally included studies, a strong and consistent finding emerges regarding the foundational importance of patients understanding the biopsychosocial nature of fatigue for effective self-management. This understanding serves as a cognitive framework that helps legitimise symptoms, reduce self-blame, and enable effective management strategies. As a review team we acknowledge that "biopsychosocial" is contested within some chronic fatigue communities. Here, it refers to understanding fatigue through biological, psychological, and social factors without privileging one domain or suggesting purely psychological causation. One study from the update reveals tension between biomedical and biopsychosocial understanding when one registered counsellor noted that participants with clinical insomnia struggled to engage with the fatigue framework because they believed "I just do not sleep and that's why I'm tired" [61].

Legitimising fatigue as a real symptom. Multiple studies emphasise how recognising fatigue as a legitimate symptom rather than a personal failing was transformative for participants. Those with post-stroke fatigue expressed that early education about fatigue would have reduced anxiety and improved coping [63]. As one stroke survivor explained:

> "I would say if I had known about stroke fatigue before I come home…There was nothing that I was aware of and I think that gives you more anxiety because you know you think well what's wrong" [63].

Similarly, patients with inflammatory rheumatic disease described how "not knowing about fatigue could be very worrying and…one of the most distressing elements of their experience" [36]. Participants across conditions reported prior misconceptions about their fatigue, often attributing it to personal failings rather than as a legitimate symptom of their condition [16,29,45].

Table 2. Cognitive behavioural therapy.

Study (Country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Artom et al. [28]	2019	Nested qualitative study conducted after 3-month follow-up quantitative data collection point.	To assess feasibility and acceptability of a CBT intervention for management of fatigue in people with IBD	Sub-set of approximately one third of participants in Group 1 (CBT + therapist support). Face to face or telephone interviews by researcher not involved in delivery of intervention. Two researchers analysed data, one of whom conducted interviews.	Acceptability of intervention to participants assessed *via* semi-structured interviews using interview topic guide. Interviews digitally audio-recorded, anonymised, and transcribed verbatim.	Data analysed using deductive thematic analysis. Pre-existing coding framework developed from study objectives and interview schedules. Researchers analysed transcripts independently. Differences resolved by discussion. Themes refined as key themes and sub themes.	Inflammatory bowel disease (IBD). Participants purposively selected to include if possible both genders, a range of ages, both IBD diagnoses and undertaking telephone sessions with both therapists.
Babbage et al. [43] (New Zealand & United Kingdom)	2019	Field test using in-depth qualitative interview	To develop a comprehensive cognitive behavioural intervention for fatigue through interactive smartphone application (app) to help people with MS to self-manage their fatigue.	Participants recruited through prior contact from national survey or other project work, or through local branch of the MS Society in New Zealand or the UK.	In-depth qualitative interview with each field tester to understand their experience of using app. Interviews (20-40 min) in people's homes or MS clinic (with no one else present)	Interview audio recorded and transcribed. Transcripts analysed using thematic analysis, based on Braun and Clarke (2006). Themes derived in advance (to address usability testing) and derived from the data.	**Multiple Sclerosis (MS):** 6 women and 5 men, most had lived with MS for many years, recruited from New Zealand and United Kingdom. Aged from 41 to 59 years.
Bennett et al. [36] (United Kingdom) LIFT	2022	Nested qualitative study	To evaluate participants' experiences of taking part in the intervention, including ideas about future service delivery.	Participants from six National Health Service hospital sites across Northeast of England and Scotland with either cognitive-behavioural approach ($n = 22$) or personalised exercise programme ($n = 21$) interventions. Maximum variation sampling targeted age, sex and IRD diagnoses	Semi-structured telephone interviews with subgroup of LIFT participants to discuss their views and experiences of interventions.	Inductive thematic analysis from realist, semantic perspective, guided by six-step process from Braun & Clarke	**Rheumatoid Arthritis.** 43 participants (30 women)
Berry et al. [24] (United Kingdom)	2022	Qualitative process evaluation	To explore intervention acceptability and potential refinements with (i) patients who attended sessions and (ii) rheumatology health professionals (RHPs) who deliver intervention.	Six weeks after first session, study coordinator telephoned patients to collect their fatigue score. If patients agreed to take part in optional telephone interview to discuss their views and experiences their contact details were forwarded to research fellow.	Interviews conducted with patients and RHPs from five NHS sites.	Data analysed using inductive thematic analysis	**Rheumatic disease**s. 22 patients and 11 RHPs participated.
Carmichael [61] (Australia)	2025	Qualitative (nested within RCT)	To explore participant experiences of CBT and health education interventions for sleep disturbance and fatigue after acquired brain injury	Trial participants invited post-intervention; purposive sampling to enhance TBI representation	Semi-structured interviews *via* Zoom	Reflexive thematic analysis using NVivo	20 adults with ABI (11 F/9M; 14 stroke, 6 TBI; mean age 54.4; mostly received CBT-SF; 80% *via* telehealth; interviews ~14 months post-treatment)

(*Continued*)

Table 2. Continued.

Study (Country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Geerts et al. [41] (Netherlands)	2023	Longitudinal, qualitative, and multiple stakeholder-perspective usability study	To evaluate CBM training among patients with kidney disease and health care professionals (HCPs) and assess acceptability and applicability in the clinical setting using iterative design process to evaluate expectations and experiences with the training.	Dutch-speaking adult patients with CKD with moderate to severe fatigue with adequate visual capabilities to operate a computer and basic internet skills.	*Prototype:* 21 interviews with 10 professionals and 11 patients (5 in predialysis stage and 6 patients dependent on dialysis). 6/11 (55%) of patients had fatigue symptoms. *Evaluation:* Interviews with 18 patients (8 with CKD stages 4/5, 10 with CKD stage 5D, 3 on peritoneal dialysis).	Interviews transcribed and analysed thematically. Acceptability of training evaluated using Theoretical Framework of Acceptability. Applicability was assessed by evaluating obstacles and solutions for implementation in the kidney care setting.	**Chronic Kidney Disease.** 29 patients and 16 HCPs. **Prototype: phase:** Ages 27- 80 (mean 65, SD 14.8) years. 8 F. **Evaluation phase:** Ages from 45 to 83 (mean 64, SD 9.9) years. 8 F.
Picariello et al. [18] (United Kingdom)	2017	Qualitative exploration adopting a pluralist methodological approach	To explore renal patients' experiences of fatigue, across renal replacement therapy (RRT) modalities.	Patients recruited from renal outpatient unit in England. Participants selected for interview using purposive maximum variation to ensure variability of sample across demographic characteristics, RRT, dialysis vintage, fatigue severity, and exercise.	Semi-structured interviews at participant homes, university, or by phone (17 phone vs. 8 face-to-face), lasting 18-88 min. Haemodialysis patients interviewed between treatments. Open-ended questions explored fatigue experiences and coping strategies, with non-directive follow-up prompts. Interviews recorded and transcribed verbatim.	Transcripts underwent inductive thematic analysis using Braun and Clarke's six-phase approach with a Critical Realist foundation. Analysis progressed from open coding to pattern, focused, and axial coding. Charting and diagramming techniques organised theme clusters. NVivo software used to analyse patients' multiple fatigue-related motivations, experiences, and meanings.	**End Stage Kidney Disease:** Inclusion criteria: (1) adults with a confirmed ESKD diagnosis, (2) receiving any RRT or in pre-dialysis care, and (3) able and willing to provide informed consent.
Spyrelis et al. [19] (South Africa) MEND	2025	Qualitative (nested in feasibility study)	To assess feasibility, acceptability, and exploratory outcomes of a virtual CBT-based group intervention (MEND) for persistent fatigue in endometriosis	Participants recruited from prior qualitative study and screened for moderate–severe fatigue	Semi-structured interviews and patient-reported outcome measures	Mixed-methods including thematic analysis and Reliable Change Index	21 women with endometriosis (mean age 33.1; range 23–43); 57% completed intervention; 28% dropout due to power outages
Waite et al. [21] (United Kingdom) BREF (CBT intervention)	2023	Qualitative interviews nested in randomised-controlled trial (RCT)	To understand acceptability of renal fatigue, facilitators of, and barriers to, engagement, and psychosocial processes of change.	9 interviews with participants from intervention arm ($n = 12$).	Semi-structured interviews immediately followed treatment (3 months post-randomisation).	Data analysed using inductive thematic analysis.	Haemodialysis: Participants from 32 - 80 years old. Includes both male and female (specific breakdown not detailed). All receiving haemodialysis; several with comorbidities (e.g. Parkinson's disease)

Table 3. Fatigue management.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Alizadeh et al. [56] (Canada) Packer Managing Fatigue: The Individual Self-Management Program.	2024	Concurrent mixed-methods approach evaluated experiences of PwPD participating in the Managing Fatigue program. Design allowed comprehensive data collection through focus groups, individual interviews, and feasibility questionnaires.	To explore the experience of people with PD (PwPD) regarding content and delivery of the individual programme.	Participants in pilot RCT independently contacted researchers by email in response to flyers. All provided informed, voluntary consent prior to group allocation. Participants in intervention group composed sample. Data from main study complemented by individual/focus group interviews. Intervention group participants agreeing to follow-up contact were recontacted for interviews.	Individual or group interviews *via* Zoom by experienced researcher uninvolved in intervention. Sessions used semi-structured interview guide developed by research team to explore program perspectives, feasibility, barriers, facilitators, impacts, and suggested modifications.	Transcripts analysed using NVivo for thematic analysis with both inductive and deductive coding. A priori codes were tested for reliability between coders. Categories and connections identified using comparative methods, with disagreements resolved by consensus. Participants reviewed final themes for validity.	**Parkinson Disease**: 12 participants residing in provinces of Ontario or Nova Scotia. ***A***dults with a self-reported diagnosis of PD with score of 4 or higher on Fatigue Severity Scale, able to read and speak English, and with access to internet, an electronic device, and private place for video-conferences.
Askari et al. [47] **(Canada) Multiple Sclerosis: An Interactive Fatigue Management Resource (MS INFoRm)**	2022	Post-study interviews ($n = 11$) after double-blind, parallel-group feasibility study.	To determine feasibility of adding coaching sessions to a website (MS INFoRM) that supports self-directed fatigue management for people with multiple sclerosis (PwMS).	PwMS, who experienced severe fatigue recruited from participants who were ineligible for the main trial testing on MS INFoRM website	Post-study telephone interviews with participants in both groups, asked about their experiences of using MS INFoRm and telephone support, specific aspect(s) that went well and were useful, and how to improve study in future.	Acceptability of study evidenced through qualitative feedback obtained from participants collected post-study *via* interview, low levels of missing data, and good retention of participants through study completion.	**Multiple sclerosis:** 26 PwMS, who experienced severe fatigue (fatigue severity scale > 5.4).
Askari et al. [48] **(Canada) Multiple Sclerosis: An Interactive Fatigue Management Resource (MS INFoRm)**	2023	Qualitative data from coaching interviews from: RCT on effectiveness and efficacy of MS INFoRm, and pilot study testing feasibility of delivering MS INFoRm plus Occupational Performance Coaching (OPC).	To (1) describe focus of goals set by PwMS, (2) determine if goals are different when OPC is offered with a web-based fatigue management resource, (3) explore strategies used to meet their goals, as well as barriers and facilitators influencing goal achievement and (4) examine goals to see if they fulfil SMART criteria.	Detailed information on eligibility criteria and recruitment process for both sources of data found elsewhere [47,50]	Secondary analysis of data from: 1) RCT on effectiveness and efficacy of MS INFoRm and 2) pilot study testing feasibility of delivering MS INFoRm plus OPC. Transcriptions of recorded sessions used to extract data about facilitators and barriers to achieving goals	Goal-related information extracted from transcriptions of the audio recordings from OPC sessions for each participant in MS INFoRm OPC group and website analytics data for participants in MS INFoRm group. Information included each participant's reported goals, strategies, facilitators and obstacles in achieving goals. Extracted data coded using International Classification of Disability and Function (ICF) framework.	**Multiple sclerosis:** People with MS (PwMS), age 18-65, without severe depression or cognitive problem

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Table 3. Continued.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Farragher et al. [13] (Canada)	2020	Five single-case interrupted time-series studies, and follow-up qualitative interviews	To explore whether Energy Management Education Programme is associated with improvements in fatigue and life participation in adults on chronic dialysis.	Recruited *via* haemodialysis and peritoneal dialysis units at an academic hospital in Toronto, Canada	Qualitative follow-up interviews with 5 patients on chronic dialysis therapy	Data analysed using visual analysis and thematic analysis for qualitative interviews.	**Haemodialysis.** Patients purposively selected to represent diversity in age, gender, and modality.
Gillisdottir et al. [45] (Sweden) **Managing Fatigue Programme**	2022	Qualitative descriptive research design	To describe how Swedish MS participants experience the content and structure of the Swedish Managing Fatigue Programme, as well as what they learned from participating in the programme.	Participants recruited among MS clients who completed MF programme, in different groups, during the autumn 2016 or spring 2017 at a University hospital in Sweden.	Qualitative interviews with nine MS participants	Data analysed according to direct content analysis.	**Multiple sclerosis:** 9 participants. Mean age of 49 years (range 33–64 years). Six lived with partner/ family member, three lived alone. Eight worked part time (25 to 75%), and one had disability pension. Participants ranged from no disability to severe disability, including wheelchair participants.
Karkon et al. [25] **(Ireland) Fatigue and Activity Management Education for Work (FAME-W)**	2023	Parallel mixed methods study (qualitative phase guided by qualitative description design.	1. To test the feasibility and acceptability of online delivery of FAME-W. 2. To investigate transferability of content of FAME-W from in-person delivery to online delivery 3. To explore acceptability of online delivery of FAME-W and impact of FAME-W on their work performance	Participants recruited from Rheumatology Department of tertiary care hospital over one-month period. Eligible participants identified through two-stage process. First stage involved screening of medical charts to identify individuals who met age and disease eligibility criteria. Second stage involved establishing employment status of individuals meeting age and disease status criteria when they attended out-patient appointments.	Data *via* focus groups with intervention participants to assess online acceptability, content, delivery, strengths, and limitations. Semi-structured interviews with control group explored experiences with FAME-W handbook. Both methods used structured guides, with focus group questions adapted for online delivery.	Audio-recorded interviews and focus groups transcribed and verified for accuracy. Using content analysis, researchers familiarised themselves with data, generated codes from recurring information, merged similar codes, and grouped them into categories aligned with research aims. Peer briefing enhanced analytical rigour.	**Inflammatory Arthritis:** Eligibility: (1) confirmed diagnosis of IA; (2) age 18–65 years and in paid employment (full or part-time); (3) ability to participate in group-based self-management intervention and (4) access to digital device and reliable Internet service.

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Table 3. Continued.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Mulligan et al. [51] **(New Zealand)**	2016	Qualitative study using semi-structured telephone interviews	To explore the perceived impact of Minimise Fatigue, Maximise Life: Creating Balance with Multiple Sclerosis (MFML), a group-based, 6-week fatigue self-management program for participants who attended the program.	Advertisement of programme *via* information in each of 5 health professional's health service(s), in MS Society newsletters or local general practices, or *via* outreach personnel of MS societies. 26 individuals with MS attended the program, and 23 agreed to be interviewed.	Two researchers conducted 23 initial interviews (20-30 min) and 11 follow-up interviews (10-15 min) using open-ended questions to assess program impact on participants' lives. Follow-ups explored ongoing benefits and strategy changes. All interviews were recorded and transcribed verbatim by the interviewers.	Two researchers developed an initial coding template from the first transcript, identifying program benefits. They independently coded remaining transcripts, adding categories as needed, with data saturation reached at interview 17. The team met for six weeks to synthesise categories into themes using an inductive thematic analysis approach.	**Multiple sclerosis (MS).** Individuals older than 18 years with MS of any type or stage, able to communicate in English, and able to attend program independently. All participants were women (37 to 63 years)
Nilsson et al. [16] **(Sweden)**	2023	Qualitative study using semi-structured interviews	To explore experiences of Swedish version of the Fatigue Management course (FMC) in adults with CP-related fatigue.	Participants selected using convenience sample.	Semi-structured interviews explored participants' experiences with FMC, beginning with "Can you describe your experiences participating in FMC?" Additional questions covered all themes. Eight interviews at 1-2 weeks post-FMC at habilitation centre [7] or home [1], lasting 17-52 min (median 36). Interviews audio-recorded and transcribed.	Researchers conducted qualitative content analysis of transcribed interviews. Two authors independently read interviews multiple times, identifying relevant meaning units through open coding. They compared notes and created codes, organised into subcategories, categories, and ultimately main category. All authors discussed categorisation until consensus reached, ensuring alignment with study aims.	Cerebral Palsy: Eligibility: ≥18 years of age, diagnosis of CP, and having current contact with habilitation centre in Sweden.
Pétrin et al. [49] (Canada) **Multiple Sclerosis: An Interactive Fatigue Management Resource (MS INFoRm)** Related studies: [47,48,50]	2018	Qualitative arm of pilot study of MS INFoRm	To understand participants' experiences with self-guided fatigue management resource, MS INFoRm, and extent to which they found contents relevant and useful.	Purposive sampling of participants from two cities in Canada. Prospective participants identified by local MS Clinic staff, through MS Society advertising, posters and newspapers in local communities. Study information posted on MS Society of Canada Research Portal (http://msresearch.ca/).	Semi-structured interviews 3 weeks and 3 months after receiving MS INFoRm resource.	Analysis informed by interpretive description	**Multiple sclerosis (MS).** 35 persons with MS experiencing mild to moderate fatigue, provided with MS INFoRm fatigue management resource

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Table 3. Continued.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Picariello et al. [18] (United Kingdom)	2017	Qualitative study, adopting pluralist methodological approach	To explore renal patients' experiences of fatigue across full spectrum of ESKD.	Patients recruited from renal outpatient unit in England. Participants selected for interview using purposive maximum variation to ensure variability of sample: in demographic characteristics, RRT, dialysis vintage, fatigue severity, and exercise.	Semi-structured interviews conducted privately in-person ($N=8$) or by phone ($N=17$), lasting 18-88 min. In-centre haemodialysis patients interviewed between treatments. Open-ended questions explored fatigue experiences and coping strategies. All interviews recorded and transcribed.	Transcripts analysed using Braun and Clarke's six-phase inductive thematic analysis with a Critical Realist approach. Process included open coding followed by pattern, focused, and axial coding. Analysis utilised charting and diagramming techniques for theme clustering. Coding manual was collaboratively developed using NVivo software.	**End stage Kidney Disease**: (1) adults with a confirmed ESKD diagnosis, (2) receiving any RRT or in pre-dialysis care, and (3) able and willing to provide informed consent.
Poole et al. (2024) (Poole, Carandang, and Connolly 2024) United States Fatigue and Activity Management Education in Systemic Sclerosis (FAME-iSS	2024	Convergent parallel mixed methods design	To evaluate impact of an adapted virtual intervention, Fatigue and Activity Management Education in Systemic Sclerosis (FAME-iSS), in United States.	After outreach, 55 individuals contacted the Principal Investigator, with 36 screened and 35 meeting inclusion criteria. 32 completed pre-intervention questionnaires, and 18 were placed into three groups. One participant withdrew after briefly attending, and another died before T3. Most participants (83%) completed all sessions.	At final program session, participants completed focus group about strengths of FAME-iSS and recommendations for improvement. Used structured interview guide. Participants wrote comments within evaluation survey. Individual phone interviews with structured interview guide that asked how participants continued to use strategies or lessons from FAME-iSS. Data audio recorded and transcribed.	Participant perceptions of program and use of fatigue management strategies qualitatively analysed using Dedoose for qualitative content analysis. Open coded participants' statements focused on participant perceptions of what was beneficial about program, what fatigue management strategies they most resonated with, and suggestions on how to improve program. Codes grouped into fewer themes and iteratively revised until each theme was a stand-alone concept.	**Systemic sclerosis**. 89% of participants were women with a mean ± SD age of 52.0 ± 11.6 years and mean ± SD disease duration of 13.7 ± 14.5 years. More than 70% had college degree. Degree of fatigue (1 [not at all] to 10 [a great deal]), median (range) 7 (4–10) Fatigue severity, (1 [mild] to 10 [severe]), median (range) 7 (3–9) Fatigue impact (1 [no distress] to 10 [a great deal of distress]), median (range)7 (4–9)

Table 4. Mindfulness.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Johannson & Bjuhr (Johansson and Bjuhr 2016) Mindfulness Based Stress Reduction (MBSR)	2016	Programme evaluation	To qualitatively evaluate Mindfulness Based Stress Reduction (MBSR) program delivered live *via* Internet for participants suffering from mental fatigue after acquired brain injury (stroke/ traumatic brain injury).	Participants recruited from advertisement in a local daily newspaper or from information published on website. MBSR curriculum offered to participants in two Internet groups ($n = 20$) and one face-to-face group ($n = 12$).	Open questions used to evaluate how participants managed to follow the program.	Data from study reported 'holistically'.	**Stroke** Participants suffering from mental fatigue after an acquired brain injury (stroke or traumatic brain injury).
Kraemer et al. (Kraemer et al. 2023) **Mindful Steps**	2023	Qualitative interview study	To characterise participants' experiences with Mindful Steps and understand perceived influence of the intervention on walking and health.	19 participants randomised to intervention group	Semi-structured interviews at 6 and 12 months assessed intervention acceptability using directed and open-ended questions about intervention components and walking impact. Four interviews were in-person, others by phone (10-79 min). Sessions audio-recorded and transcribed.	Deductive and inductive methods used to develop interview protocols and for data analysis. Inductive methods used for unanticipated themes. Two phases; full analysis of 6-and 12-month interviews. Analyses used constant comparative method to identify emergent themes, and to search for similarities and differences across 6-month and 12-month interviews.	**Cardiopulmonary disease**

Table 5. Physical activity promotion.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Barakou et al. [9] (United Kingdom)	2024	Qualitative study with constructivist approach	To explore fatigue and physical activity behaviour experiences and management, with emphasis on activity pacing among adults with chronic conditions.	Participants recruited from NHS clinics (*via* clinicians), community social media groups, and university populations. Interested individuals contacted first author by email, to complete consent forms, and schedule convenient interview times. Participation was voluntary.	Interviews conducted by female PhD candidate with prior interview experience (June-July 2023) *via* Microsoft Teams. Interviewer had minimal pre-interview participant contact, made field notes during/after sessions, and informed participants this was PhD research. Only interviewer and participant present during interviews.	Interviews audio-recorded, automatically transcribed by Microsoft Teams, and verified by first author. Analysis used reflexive thematic analysis with hybrid approach—deductive themes from a multi-dimensional conceptual model and literature, inductive themes generated directly from anonymised data.	**Multiple chronic conditions**: 15 of 52 participants were interviewed (12 females, 80%). Two declined citing "brain fog," while 35 did not respond. All participants experienced fatigue >2years, with 12/15 reporting severe fatigue. Nine received fatigue management advice. Nine reported comorbidities.
Krawcyk et al. [42]	2023	Descriptive qualitative study using semi-structured focus group interviews	To explore possible motivators and barriers for physical activity in patients discharged after minor stroke or transient ischaemic attack (TIA).	Participants with previous structured exercise experience after hospital discharge selected based on convenience sampling and recruited from HITPALS-study. Participants without structured exercise experience after hospital discharge recruited consecutively from stroke unit	Focus groups included participants with and without structured exercise experience, with one researcher interviewing and another observing. All participants were briefed on study purpose re: secondary stroke prevention. Piloted, semi-structured interview guide used and adjusted throughout the process. All sessions audio-recorded for transcription.	Audio files underwent inductive content analysis using Graneheim and Lundman's approach. Researchers familiarised with data, derived codes from meaning units, and created categories through parallel analysis. Findings team-validated, refined, and translated to English. Multiple researchers with diverse backgrounds provided investigator triangulation. NVivo Plus used for data analysis.	**Stroke:** 35 patients (21 men) with minor stroke or TIA (median age; 69years, range 47–90)
Mudge et al. (Mudge, Smith, and Parry 2024) **(New Zealand)**	2024	Mixed methods with single system design to evaluate first aim and qualitative interviews to address second aim	(1) To explore effectiveness of online physical activity focussed programme based on behavioural change principles to decrease fatigue, modify physical activity and improve sense of wellbeing and confidence to exercise. (2) To explore perspectives of participants on acceptability and feasibility of programme and physical and psychological benefits of taking part.	Recruitment through presentations, invitations in the GBS Support Group NZ newsletters and through clinical networks.	One-off structured interviews *via* teleconferencing by study coordinator between final two outcome assessment points in follow up period. Questions explored personal experiences of taking part in programme and any perceived impact to supplement data focussed on physical aspects. Interviews explored participants' perspectives of programme, what aspects they particularly liked, as well as aspects they did not like. Interviews from 30 – 60 min, video recorded in Zoom and transcribed verbatim.	Interview transcripts imported into QSR NVivo. Sentences or phrases coded manually. Preliminary codes examined and grouped into meaningful clusters. Constant comparative methods informed analysis, with coded data checked within and between identified clusters and across participants against new data to test and refine themes. Qualitative data analysis completed prior to single system design analysis.	**Guillain-Barré Syndrome:** 8 people diagnosed with Guillain-Barré Syndrome more than two years previously who still had fatigue limiting daily activity. Eligibility: aged at least 18years, diagnosis of GBS more than two years prior, resident in New Zealand, community-dwelling, Rivermead Mobility Index of greater than 10 and fatigue of ≥4 on the Fatigue Severity Scale.

Table 6. Self management.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Ablewhite et al. [63] (United Kingdom)	2020	Qualitative, descriptive study.	To gain insight into the lived experiences of using day-to-day strategies to manage post-stroke fatigue.	Social media, primarily Twitter, used to ask people to contact team or to signpost others to study. UK Stroke Association, Different Strokes and UK Stroke Assembly promoted study *via* blogs and networks. Also circulated posters advertising study through networks and directly to stroke clubs.	Interviews by experienced qualitative researchers with knowledge of both stroke and of fatigue, and with backgrounds in health research, occupational therapy and psychology. Interviewers told participants of their specific interest in post-stroke fatigue. No prior relationships with participants. Interviews *via* telephone and digitally audio-recorded. Field notes avoided to make interviews conversational.	Data systematically analysed using framework analysis following seven stages of Framework methodology: (i) transcription, (ii) familiarisation with the interview, (iii) coding, (iv) developing working analytical framework, with the coding scheme 4) (v) applying analytical framework to data, (vi) charting data and (vii) data interpretation. Nvivo software used to manage data.	**Stroke:** Purposive sample of 20 stroke survivors with current, or previous, post-stroke fatigue, and 8 caregivers, who provided informal care or support
Ahern et al. [55]	2024	Sequential qualitative interview study	To explore motivation to exercise, support, and self-management needs among people with Parkinson's, their family members, and physiotherapists.	Purposeful and maximum-variation sampling methods (age, sex, geographical setting, and disease severity). PwP and family members recruited through physiotherapy services and local support groups.	Semi-structured interviews and group interviews. Interview guides informed by patient-public input and recent systematic review. Interviews recorded and transcribed,	Analysed using thematic analysis informed by Grounded Theory methodology.	**Parkinson's Disease.** employed. 12 PwP and two group interviews, one with family members ($n=4$) and one with physiotherapists ($n=5$).
Akbar et al. [46] MS-INFoRm (More data in [49]	2018	Single-group, mixed-methods, before-after pilot study	To determine whether MS INFoRm, a self-directed fatigue management resource for individuals with MS, was worth further, rigorous evaluation.	23 from 35 participants provided with MS INFoRm by USB flash drive to use at home for 3 months, on their own volition completed semi-structured interviews	Standardised questionnaires, semi-structured interviews and study process measures.	Thematic analysis.	**Multiple sclerosis**. 23 individuals with MS reporting mild to moderate fatigue
Babbage et al. [43] **New Zealand and United Kingdom)**	2019	Field test using in-depth qualitative interview	To develop a comprehensive cognitive behavioural intervention for fatigue through interactive smartphone application (app) that people with MS could use to self-manage their fatigue.	Participants recruited through prior contact from national survey or other project work, or through local branch of the MS Society in New Zealand or the UK.	In-depth qualitative interviews using interview guide with each field tester to further understand their experience of using the app. Interviews of 20-40 min, took place in people's homes or an MS clinic (with no one else present)	Interview audio recorded and transcribed. Transcripts analysed using thematic analysis, based on Braun and Clarke (2006). Themes derived in advance (to address usability testing) and derived from data.	**Multiple Sclerosis (MS):** 6 F, 5 M, most had lived with MS for many years, recruited from New Zealand and United Kingdom. Aged from 41 to 59 years.

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Table 6. Continued.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Delbridge et al. [64]	2024	Qualitative study using semi-structured interviews	To explore (1) the experience of post-stroke fatigue from the perspective of stroke survivors and their caregivers and (2) fatigue management strategies that are used.	Recruitment *via*: (i) Stroke Research Register (targeted post or email invitations), (ii) Hunter Medical Research Institute (HMRI) (*via* website and social media platforms and *via* direct invitations to previous research participants), and (iii) community support organisations.	Participants completed semi-structured interviews according to their preference *via* videoconferencing or telephone.	Transcripts imported into NVivo12 software. Analysis (by AD and DS) commenced as soon as possible after each interview. Framework analysis: familiarisation, identifying a framework, indexing, charting and mapping, and interpretation Used inductive by line analysis to generate codes.	**Stroke.** 17 stroke survivors, 9 M (53%), most under 65 years ($n = 12$, 76%), and greater than 1-year post-stroke ($n = 16$, 94%, range 10-months to 22-years). One-third of participants self-reported aphasia ($n = 5$, 36%). Eight caregivers, 7 F (88%).
Dibley et al. [29] ***IBD-BOOST*** (United Kingdom)	2021	Exploratory qualitative study	To understand how people with IBD experience and self-manage these symptoms and to inform the future development of an online self-management programme.	Recruited participants from clinic and community settings.	Data collected (2018) *via* patient focus groups delivered in four venues across UK, facilitated and observed by qualitative researchers. Audio recorded and professionally transcribed.	Transcripts anonymised and analysed using framework analysis guided by Common Sense Model of Illness Representations	**Inflammatory Bowel Disease.** 26 participants (15 F; ages 21-60 years; disease duration 2-40 years) with Crohn's disease ($n = 10$), ulcerative colitis ($n = 14$) and IBD-unclassified ($n = 2$) attended one of five focus groups.
Fawson et al. [30] ***IBD-BOOST*** (United Kingdom)	2022	Exploratory qualitative methods using focus group and individual interviews	To understand patients' symptom self-management strategies and preferred design for future online symptom self-management intervention.	Purposive sampling with maximum variation to attract patients from diverse ethnic groups, genders, ages, and IBD sub-types. Recruited from clinics in three hospitals across northern and southern England and online *via* UK national Crohn's and Colitis charity.	(a) secondary analysis of data collected *via* focus groups, convened for a related study that explored the daily experiences and impact of triad of symptoms; (b) individual telephone or face-to-face interviews with new participants to explore issues identified from focus group data.	Focus group data analysed using framework approach. Interview data analysed thematically; initial analysis to review and code transcripts independently, before meeting to agree preliminary themes. Codes reviewed and refined iteratively by experienced qualitative researchers to generate final themes and sub-themes.	**Inflammatory Bowel Disease:** 40 individuals with IBD, *via* either one of five focus groups ($N = 4$, 7, 6, 6 and 3) from previous study or individual interview ($N = 14$; telephone, $N = 3$; face to face, $N = 11$); 22 females (23-60 years) diagnosis: CD ($n = 21$; UC ($n = 17$); IBD-U ($n = 2$); all had experienced symptoms of interest, for many quite, or very troublesome.

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Table 6. Continued.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
McCallum et al. [60] **(United Kingdom)**	2024	Series of 8 co-design workshops and additional 3 interviews with participants unable to attend workshop.	To explore self-management approaches and challenges experienced by people living with SS and produce a corresponding set of design recommendations that inform the design of an engaging, motivating, and evidence-based self-management app for those living with SS.	Workshop participants purposively recruited from a regional UK SS support group (Northeast Sjögren's Syndrome Association). Advertisements were distributed *via* their member mailing list and Facebook page, and the research team presented the project at a support group meeting.	Workshops at Northumbria University, lasted approximately 90 min, and included a 10-minute comfort break. Interviews lasted 30 to 60 min and were conducted *via* telephone or videoconferencing software. Interviews followed schedule of open-ended questions to allow for flexibility	Audio data transcribed verbatim, pseudonymised, and combined for analysis using NVivo. Analysis incorporating inductive and deductive methodologies. Inductive thematic analysis approach used. Two researchers independently coded data, generating initial set of codes. Codes applied and refined through each new transcript with independent coding. Discussions used to group codes into themes. Inductive themes then mapped to 3 SDT constructs	**Sjögren's Syndrome**: 17 participated – 14 attended workshops (13 F, 1 M) and 3 F completed web interviews. Ages ranged 33-76 years (mean 56.5); 82% had primary SS, 18% had secondary SS. Mean time since diagnosis: 7.5 years. Employment status: 47% retired, 35% full-time, 6% part-time, 12% unemployed.
Mulligan et al. [51] **New Zealand Minimise Fatigue, Maximise Life: Creating Balance with Multiple Sclerosis (MFML)**	2016	Qualitative study using semi-structured telephone interviews	To explore the perceived impact of, a group-based, 6-week fatigue self-management program for participants who attended the program.	Advertisement of programme *via* information within 5 health service(s), in MS Society newsletters or local general practices, or *via* outreach personnel of MS societies. 26 individuals with MS attended program. 23 agreed to be interviewed.	Initial interviews ($n = 23$, 20-30 min) used open-ended questions about program impact. Followed by shorter follow-up interviews ($n = 11$, 10-15 min) exploring ongoing benefits and strategy modifications. Interviews audio-recorded and transcribed by interviewers.	Data underwent inductive thematic analysis. Two researchers collaboratively developed an initial coding template from the first transcript, then independently coded remaining transcripts, adding new categories as they emerged. Data saturation occurred at interview 17, though all data was analysed. Team synthesised categories into themes during 6-week process.	**Multiple sclerosis (MS).** Individuals older than 18 years with MS of any type or stage, able to communicate in English, and able to attend program independently. All participants were women (37 to 63 years)
Silverman et al. [52] **Fatigue: Take Control (FTC)**	2024	Cross-sectional survey design.	To use very long-term data from FTC study to understand fatigue management strategies, identify facilitators and barriers to utilising strategies, and explore potential relationships between strategy use and fatigue outcomes.	38/74 participants from 12-month follow-up responded to VLT follow-up survey. One removed from report due to no free responses. Final sample included 37 participants.	Last 2 questions asked participants for recall of RCT interventions and what additional strategies they were currently using for fatigue management. Each question allowed yes and no answers and free responses.	Content analysis combining deductive and inductive coding approaches used to analyse free responses within Microsoft Excel. Initial coding guided by FTC program. Following this, codebook developed iteratively. Themes generated from COM-B model. Finalised by consensus among research team.	**Multiple Sclerosis:** 31 F/6M women. Average age was 55 years (range, 31-73). 13 participants reported less than $30,000 annual income. 15 from FTC group, 22 from MSTC group. 22 participants diagnosed with relapsing-remitting MS and 15 had progressive MS.

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Table 6. Continued.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Sweeney et al. [31] **IBD-BOOST**	2024	Feasibility study with stakeholder interviews	To describe process of developing a supported digital self-management intervention for fatigue, pain, and urgency in IBD using theory and evidence-based approaches and stakeholder input.	See [29,30]	Qualitative interviews conducted in 5 focus groups and in individual interviews with people with IBD to explore experiences of 3 symptoms.	Patient feedback and qualitative interviews refined website content and functionalities, including use of visual aids, email reminders, and graphical tracking of symptoms.	**Inflammatory Bowel Disease.** People with IBD and associated fatigue, pain, and urgency/ incontinence
Tremayne et al. [65] **Fatigue After Stroke Education (FASE)** (United Kingdom)	2022	General qualitative inquiry design	To develop an understanding of stroke survivors' current experiences and perceptions of fatigue and role of Post Stroke Fatigue education in the subacute phase of stroke	Convenience sample from single site in south west England *via* Stroke Association. Purposive sampling for information-rich participants by age, gender, stroke diagnosis and socio-economic backgrounds. Maximum variation selected to reflect diversity of stroke survivors and for insight into variety of experiences and perceptions.	One-to-one, face-to-face semi structured interviews by principal investigator, trained in qualitative interviewing. Individual interviews enabled grading of structure, timing and duration of interviews to suit participants. Interview schedule including pictorial support developed from previous PSF studies, therapist advice and feedback from PPI consultation	Inductive thematic analysis using Braun and Clarke's (2006) six-step process as systematic and flexible method of data analysis.	**Post-stroke:** Stroke survivors recruited 1 - 6 months after diagnosis. (6 F, 4 M). Ratio of ischaemic ($n = 9$) and haemorrhagic ($n = 1$) stroke to reflect diversity of national stroke population. Limited ethnic diversity reflecting local population. Heterogeneity in age (31–83 years, mean 65 years), stroke diagnoses, self-reported post-stroke impairments, occupational backgrounds and social backgrounds
Zuidema et al. [59] (Netherlands)	2019	Qualitative study	To explain the earlier findings of Randomised Controlled Trial (RCT), which showed that rheumatoid arthritis (RA) patients did not benefit from an online self-management program.	Patients randomised to intervention group of explorative RCT. Patients receiving psychiatric or psychological treatment excluded.	Patients interviewed by telephone (2016). Interview guide focused on three phases: 1) before using online program, 2) while using program, 3) after use to determine outcomes of program. Semi-structured interviews of no longer than 30 min.	Interviews audio-recorded, anonymised and transcribed verbatim. Members of research team read interview transcripts. Transcripts independently coded inductively in AtlasTi by two researchers. After comparing coding, differences resolved to reach consensus. Codes brought together in themes. Interviews continued to data saturation.	**Rheumatoid Arthritis:** 21 patients participated in interviews, belonging to four user-groups. All patients diagnosed with RA, aged 18 years or older, able to speak and read Dutch and had access to an internet connection.

Table 7. Supervised exercise.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Ackah et al. [17] United Kingdom	2025	Qualitative	To explore experiences and perceptions of rest among adults with long-term conditions and fatigue, and healthcare professionals	Convenience and snowball sampling *via* patient organisations, support groups, and social media	Semi-structured interviews *via* Microsoft Teams	Inductive thematic analysis using NVivo	23 adults with LTCs (mostly female, aged 30–70, fatigue severity 4–8) and 4 F HCPs (clinical experience 14–30 years)
Ahern et al. [55]	2024	Qualitative study	To explore motivation to exercise, support, and self-management needs among people with Parkinson's (PwP), their family members, and physiotherapists.	Purposeful and maximum-variation sampling methods (age, sex, geographical setting, and disease severity). PwP and family recruited through physiotherapy services and local support groups.	Semi-structured interviews and group interviews. Interview guides informed by patient-public input and recent systematic review. Interviews recorded and transcribed,	Analysed using thematic analysis informed by Grounded Theory methodology.	**Parkinson's Disease.** 12 PwP and two group interviews, one with family members ($n = 4$) and one with physiotherapists ($n = 5$).
Bennett et al. [36] LIFT	2022	Nested qualitative study	To evaluate participants' experiences of taking part in the intervention, including ideas about future service delivery.	Participants from six NHS hospital sites taking part in LIFT study across Northeast England and Scotland with. Maximum variation sampling targeting range of age, sex and IRD diagnoses	Semi-structured telephone interviews with subgroup of LIFT participants to discuss their views and experiences of interventions.	Inductive thematic analysis from realist, semantic perspective, guided by six-step process from Braun & Clarke.	**Rheumatoid Arthritis.** 43 participants (30 F, 13 M) with either cognitive-behavioural approach ($n = 22$) or personalised exercise programme ($n = 21$) interventions
Krawcyk et al. [42]	2023	Qualitative study	To explore possible motivators and barriers for physical activity in patients discharged after minor stroke or transient ischaemic attack (TIA).	Participants with previous structured exercise experience after hospital discharge selected based on convenience sampling and recruited from HITPALS-study. Those without structured exercise experience recruited consecutively from stroke unit	Semi-structured focus group interviews Audio recordings transcribed to text verbatim	Analysed with qualitative content analysis.	**Stroke.** including 35 patients (21 M, 14 F) with minor stroke or TIA (median age; 69 years, range 47-90)
O'Brien et al. [58]	2016	Qualitative study utilising in-depth semi-structured interviews analysed using grounded theory methodology	To explore how the meaning of exercise and other factors interact and influence exercise behaviour of individuals with Parkinson's disease (PD) enrolled in 6-month minimally supervised exercise program to prevent falls.	Sub-set of individuals enrolled in 6-month exercise arm of falls prevention trial [12]. Participants for falls prevention trial recruited through local PD support groups.	Eight in-depth, semi-structured interviews in participant homes within 2 months of conclusion of 6-month enrolment period. Interviewer with no prior knowledge of participants. Interviews recorded and transcribed.	Interviews analysed using grounded theory. Transcripts read and re-read by interviewer before coding. Comparisons made within and between interviews. Other researchers reviewed analysis as triangulation. Points of difference explored in depth. Memos and case studies written to explain emerging codes. Codes grouped in subthemes.	**Parkinson Disease:** Eligibility: diagnosis of idiopathic PD; age 40 years or over; ability to walk independently with or without a walking aid; stable anti Parkinsonian medication for at least 2 weeks; one or more falls in past year or deemed to be at risk of falls based on physical assessment

(*Continued*)

Table 7. Continued.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data collection methods	Analysis	Characteristics of the participants
Svedjebrant et al. [68] (Sweden)	2025	Qualitative, using semi-structured individual interviews	To explore experiences of participating in cardiorespiratory training among people with post-stroke fatigue	Recruited from feasibility study on aerobic training for post-stroke fatigue	Semi-structured interviews	Inductive thematic analysis	11 adults with post-stroke fatigue (6 F, 5 M; aged 47–77); varied training adherence and fatigue severity
Wolf et al. [54] (Germany) Rehabilitation, Fatigue, and Exercise (ReFEx)	2022	Qualitative interview study nested within feasibility RCT, comparing MAT and SET	(1) To explore experiences of fatigued persons with multiple sclerosis (pwMS) with new multimodal agility-based exercise training (MAT) framework and (2) to investigate demands of Rehabilitation, Fatigue, and Exercise (ReFEx) study protocol, which compares high-frequency MAT and 'traditional' strength and endurance training (SET).	Six of 11 participants per group selected for face-to-face interviews. Number of cases based on reported sample sizes for qualitative research in feasibility studies. No-one refused to participate in the interviews.	Individual, face-to-face interviews 1–2 days prior to discharge. All interviews conducted in an office at study site. Interviews scheduled for maximum 30 min. All interviews audio-recorded.	German audio transcripts analysed in MAXQDA2022 using constructivist methodology. Combined deductive coding (interview guides and literature) with inductive coding (from text). After double-coding one interview, analysis focused primarily on MAT group statements. Investigator triangulation established three key categories with subcategories. Quotes translated from German to English.	**Multiple sclerosis:** Six of 11 participants per group selected face-to-face for interviews to maximise diversity for gender, age and Expanded Disability Status Scale (EDSS), relying on purposive sampling strategy, as for previous studies.

Table 8. Single condition interventions – remote ischaemic conditioning.

Study (country)	Year	Design	Objective of the study	Recruitment methods	Data Collection methods	Analysis	Characteristics of participants
Moyle [66]	2022	Nested Qualitative Research within Pilot Randomised Controlled Trial	To investigate individual participant experiences with repeated RIC to treat fatigue after stroke.	Participants in active treatment group sequentially offered opportunity to participate in semi-structured interview with researcher.	Semi-structured qualitative interviews conducted face-to-face or by telephone (per COVID-19 restrictions) following a topic guide. Sessions occurred during final study visits or at arranged times, with participants unaware of treatment allocation. Interviews audio-recorded and transcribed.	Thematic analysis of interview transcripts using Braun and Clarke's six-phase process: familiarisation, coding, theme searching, reviewing, defining, and reporting. Analysis took a theoretical approach. Two researchers validated themes, with recruitment continuing until content saturation.	Stroke: 8 participants in active treatment group (4 M, 4 F). Four participants had received in-hospital RIC and 4 participants had received home-RIC

The validation of fatigue as a real, legitimate experience was particularly important due to its invisible nature. As one participant noted, fatigue is an "almost invisible condition" [9]. The invisible nature of fatigue highlights why validation and legitimisation are so crucial for patients' experiences.

Reducing self-blame through understanding. A critical benefit of developing coherent understanding was the reduction of self-blame and guilt. A critical therapeutic move observed in clinical practice is the shifting of causation from self to disease. Reattribution helps reduce self-blame while providing a framework for management.

Multiple studies reported that participants had previously internalised negative self-perceptions related to their fatigue symptoms. In the MS fatigue management program, participants described how the intervention "had helped them realise the fatigue was a result of their MS, and not because they were lazy. This new way of thinking had changed their view of themselves" [45]. A participant with IBD noted:

> I think [counselling] would be something that would be really, really beneficial, …because before you know it, you're in this mental cycle where you're beating yourself up for things that are beyond your control [30].

Understanding the biopsychosocial nature of fatigue allowed participants to reframe their experiences and develop self-compassion. The Fatigue Management Course (FMC) provided "new knowledge regarding fatigue" that produced "a feeling of recognition and an 'aha moment'" [16].

Enhanced management through coherent framework. Understanding fatigue's mechanisms and manifestations provided participants with a framework for management. Many studies reported that interventions helped participants recognise patterns between behaviours and symptoms [16,36,69]. Pattern recognition was often facilitated through self-monitoring activities:

> I started keeping a fatigue diary and I still do that now; I've kept it going. One of the things that I noticed very, very quickly was a pattern that I hadn't really thought of… [36]

Understanding the multifactorial nature of fatigue was key. Programmes that addressed "primary and secondary sources of fatigue, the importance of monitoring fatigue, goal setting for fatigue management" [48] helped participants develop effective coping strategies. Understanding the interconnectedness of symptoms was particularly important – described by one participant as "a chain reaction" [29]. Participants described gaining a new understanding of how their bodies respond to exercise, fundamentally changing their relationship with fatigue [68]. The informants learned that exercise would not worsen their fatigue as they had feared, and they developed increased body awareness. One participant stated they now know "how it feels in my body if I push myself too much, and that helps me while training on my own. I feel like I have taken control over myself again" [68].

Table 9. Assessment of methodological limitations.

Study ID	Year	Qual Data Type	Was the context described?	Was the sampling strategy appropriate and described?	Was data collection strategy appropriate and described?	Was data analysis appropriate and described?	Were findings supported by evidence?	Is there evidence of researcher reflexivity?	Have ethical issues been taken into consideration?	Overall assessment of methodological limitations
Ablewhite [63]	2022	Descriptive study	☑	☑	☑	☑	☑	♦	☑	Minor
Ackah [17]	2025	Qualitative data from interviews	☑	☑	☑	☑	☑	☑	☑	Minor
Ahern [55]	2024	Sequential qualitative interview study	☑	☑	☑	☑	☑	♦	☑	Minor
Akbar [46]	2018	Single-group, mixed-methods, before-after pilot study	☑	♦	☑	☑	☑	☒	♦	Moderate
Alizadeh [56]	2024	Concurrent mixed-methods approach	☑	☑	☑	☑	☑	♦	☑	Minor
Artom [28]	2019	Nested study	☑	☑	☑	☑	☑	♦	☑	Minor
Askari [47]	2022	Post-study interviews after feasibility study.	☑	☑	☑	☑	☑	♦	☑	Minor
Askari [48]	2023	Data from interviews from RCT and pilot feasibility study	☑	♦	☑	☑	☑	☒	♦	Moderate
Babbage [43]	2019	Field test using in-depth interview	☑	♦	☑	☑	☑	♦	☑	Moderate

Study ID	Year	Qual Data Type	Context described?	Sampling strategy appropriate & described?	Data collection appropriate & described?	Data analysis appropriate & described?	Findings supported by evidence?	Researcher reflexivity?	Ethical Issues considered?	Overall Assessment (Risk to Rigour)
Barakou [9]	2024	Qualitative study with constructivist approach	☑	♦	☑	☑	☑	☑	☑	Minor
Bennett [36]	2022	Nested study	☑	☑	☑	☑	☑	♦	☑	Minor
Berry [24]	2022	Process evaluation	☑	☑	☑	☑	♦	♦	☑	Moderate
Carmichael [61]	2025	Qualitative (nested within RCT)	☑	☑	☑	☑	☑	☑	☑	Minor
Delbridge [64]	2024	Qualitative study using SSIs	☑	☑	☑	☑	☑	♦	☑	Minor
Dibley [29]	2021	Exploratory qualitative study	☑	☑	☑	☑	☑	♦	☑	Minor
Farragher [13]	2020	Interrupted time-series with follow-up interviews	☑	☑	☑	☑	☑	♦	☑	Minor
Fawson [30]	2022	Exploratory using focus group and interviews	☑	☑	☑	♦	☑	☒	☑	Moderate
Geerts [41]	2023	Longitudinal usability study	☑	♦	☑	♦	☑	♦	☑	Moderate
Gillisdottir [45]	2022	Descriptive research design	☑	♦	☑	☑	☑	♦	☑	Moderate

Study ID	Year	Qual data type	Context described?	Sampling strategy appropriate & described?	Data collection appropriate & described?	Data analysis appropriate & described?	Findings supported by evidence?	Researcher reflexivity?	Ethical Issues considered?	Overall Assessment (Risk to Rigour)
Johansson [62]	2016	Programme evaluation	☑	☑	☑	☒	♦	☒	♦	Serious
Karkon [25]	2023	Parallel mixed methods study	☑	☑	☑	☑	☑	♦	☑	Minor
Kraemer [14]	2023	Interview study	☑	☑	☑	☑	☑	♦	☑	Minor
Krawcyk [42]	2023	Descriptive study using SSIs for focus groups	☑	☑	☑	☑	☑	♦	☑	Minor
McCallum [60]	2024	Co-design workshops with additional interviews	☑	☑	☑	☑	☑	♦	☑	Minor

(*Continued*)

Table 9. Continued.

Study ID	Year	Qual Data Type	Was the context described?	Was the sampling strategy appropriate and described?	Was data collection strategy appropriate and described?	Was data analysis appropriate and described?	Were findings supported by evidence?	Is there evidence of researcher reflexivity?	Have ethical issues been taken into consideration?	Overall assessment of methodological limitations
Moyle [66]	2022	Nested interview study within RCT	☑	☑	☑	☑	☑	♦	☑	Minor
Mudge [20]	2025	Mixed methods with interviews	☑	☑	☑	☑	☑	♦	☑	Minor
Mulligan [51]	2016	Qualitative study using SSIs	☑	♦	☑	☑	☑	☒	♦	Moderate
Nilsson [16]	2023	Qualitative study using SSIs	☑	☑	☑	☑	☑	♦	☑	Minor
O'Brien [58]	2016	Qualitative study with in-depth SSIs	☑	☑	☑	☑	☑	♦	☑	Minor
Pétrin [49]	2018	Qualitative arm of pilot study	☑	☑	☑	☑	☑	♦	☑	Minor

Study ID	Year	Qual Data Type	Context described?	Sampling strategy appropriate & described?	Data collection appropriate & described?	Data analysis appropriate & described?	Findings supported by evidence?	Researcher reflexivity?	Ethical Issues considered?	Overall Assessment (Risk to Rigour)
Picariello [18]	2018	'Exploration with pluralist methodological approach'	☑	☑	☑	☑	☑	♦	☑	Minor
Poole [69]	2024	Convergent parallel mixed methods design	☑	☑	☑	☑	☑	☒	♦	Moderate
Silverman [52]	2024	Cross-sectional survey design.	☑	♦	☑	☑	☑	♦	☑	Moderate
Spyrelis [19]	2025	Qualitative (nested in feasibility study)	☑	☑	☑	☑	☑	☒	☑	Moderate
Svedjebrant [68]	2025	Qualitative, using semi-structured individual interviews.	☑	☑	☑	☑	☑	♦	☑	Minor
Sweeney [31]	2022	Feasibility study with stakeholder interviews	☑	☑	☑	♦	☑	☒	☑	Moderate
Tremayne [65]	2021	General qualitative inquiry design	☑	☑	☑	☑	☑	♦	☑	Minor
Waite [21]	2022	Interviews nested in RCT	☑	♦	☑	☑	☑	♦	☑	Moderate
Wolf [54]	2024	Nested interview study within feasibility RCT	☑	♦	☑	♦	☑	♦	☑	Moderate
Zuidema [59]	2019	Qualitative study	☑	☑	☑	☑	☑	♦	☑	Minor

Key: RCT – Randomised Controlled Trial; SSI – Semi-structured Interviews. Fulfilment of individual criteria indicated by.

☒	Serious Limitations	♦	Moderate Limitations	☑	Minor or No Limitations.

Overall assessments indicated as Serious (Red) Moderate (Yellow) or Minor (Orange) Concerns

Table 10. Cognitive behavioural therapy - main themes and findings.

Study (country)	Year	Design	Objective of the study	Themes and findings
Artom et al. [23]	2019	Nested qualitative study (after 3-month follow-up quantitative data collection).	To assess feasibility and acceptability of a CBT intervention for management of fatigue in people with IBD	Four themes: 1. Outcomes of the intervention 2. Views on the intervention manual and the telephone sessions, 3. Format of the intervention 4. Suggestions for improvement.
Bennett et al. [27]	2022	Nested qualitative study	To evaluate participants' experiences of taking part in the intervention, including ideas about future service delivery.	Five themes: In the theme 'not a miracle cure, but a way to better manage fatigue', LIFT could not cure fatigue; however, most felt better able to manage after participating. Participants valued 'building a therapeutic relationship' with same therapist throughout the intervention. In 'structure, self-monitoring and being accountable', participants liked the inclusion of goal-setting techniques and were motivated by reporting back to the therapist.
Berry et al. [28] (United Kingdom)	2022	Qualitative process evaluation	To explore intervention acceptability and potential refinements from perspective of (i) patients who attended sessions and (ii) rheumatology health professionals (RHPs) who delivered the intervention.	Four themes (Themes also obtained from professionals) 1. collaborative, non-judgemental consultations 2. relevant and useful, but not ground-breaking 3. increased self-awareness, acceptance and feelings of control 4. degrees of openness to change
Carmichael [54] (Australia)	2025	Qualitative (nested within RCT)	To explore participant experiences of CBT and health education interventions for sleep disturbance and fatigue after acquired brain injury	The eight overarching themes are: Coming Into Therapy – Desperation for help, open-mindedness, and readiness to engage with treatment. Acceptance – Coming to terms with sleep and fatigue as enduring consequences of ABI, and learning to manage rather than cure them. Taking Control – Reclaiming autonomy through strategy use, motivation for recovery, and shifting from passive to active coping. It's Hard Work – Emphasising the effort, discipline, and long-term commitment required to implement and sustain behavioural changes. Building Knowledge and Skills – Psychoeducation, helpful metaphors (e.g. "body battery"), and practical strategies for managing symptoms. Facilitating Factors – Role of repetition, therapeutic relationship, involvement of significant others, adaptation for cognitive impairments, and telehealth accessibility. Maintaining Improvements – Reflections on post-treatment transition, sustained strategy use, and growing self-reliance. Overall Intervention Outcomes – Positive evaluations, changes in mindset and behaviour, and broader life benefits beyond symptom management.
Geerts et al. [33] (Netherlands)	2023	Longitudinal, qualitative, and multiple stakeholder-perspective usability study	To evaluate CBM training among patients with kidney disease and health care professionals (HCPs) and assess acceptability and applicability in the clinical setting using iterative design process to evaluate expectations and experiences with the training.	Generally, participants were positive about the training and its applicability. Biggest negatives were doubts about effectiveness and annoyance about the repetitive character of CBM. Acceptability was mixed, with negative evaluation of perceived effectiveness; mixed results for burden, intervention coherence, and self-efficacy; and positive results for affective attitude, ethicality, and opportunity costs. Barriers for applicability were patients' varying computer skills, subjectivity of fatigue, and integration with regular treatment (e.g. the role of HCPs). Possible solutions included assigning representatives among nurses, offering training on an app, and assistance *via* a help desk. The iterative design process, including repeated waves of testing user expectations and experiences, yielded complementary data.

(*Continued*)

Table 10. Continued.

Study (country)	Year	Design	Objective of the study	Themes and findings
Picariello et al. [45] (United Kingdom)	2017	Qualitative exploration adopting a pluralist methodological approach	To explore renal patients' experiences of fatigue, across renal replacement therapy (RRT) modalities.	Three dominant fatigue management strategies emerged: 1. Accommodation of activities around fatigue, 2. Increasing activities to counteract fatigue 3. Self compassion. Social support emerged as an important aspect of the fatigue experience, serving as a source of motivation, yet participants were wary of becoming a burden to others.
Spyrelis et al. [55] (South Africa)	2025	Qualitative (nested in feasibility study)	To assess feasibility, acceptability, and exploratory outcomes of a virtual CBT-based group intervention (MEND) for persistent fatigue in endometriosis	Motivations for Participation – Participants were driven by a desire for support, curiosity about the intervention, and hope for symptom relief. Experiences of the Intervention – Reflections on the group format, therapeutic content, and delivery mode (telehealth), including both benefits and challenges. Perceived Impacts – Reported changes in fatigue, mood, self-awareness, and coping strategies, with variation in outcomes across participants. Suggestions for Improvement – Feedback on session structure, accessibility, and tailoring to individual needs, including the impact of external factors like power outages.
Waite et al. [50] (United Kingdom)	2023	Qualitative interviews nested in randomised-controlled trial (RCT)	To understand the acceptability of renal fatigue, the facilitators of, and barriers to, engagement, and psychosocial processes of change.	Five main themes formulated. Overarching theme was sense of coherence (whether illness, symptoms and treatment made sense to individuals), which appeared central to acceptability and engagement. Two themes captured key barriers and facilitators to engagement, cognitive and illness/treatment burdens and collaboration with the therapist. Participants described changes related to their activity, thoughts and social identity/ interactions, which shaped perceptions of change in fatigue. Lastly, participants discussed optimal delivery of intervention. Main themes included strong role of illness and treatment in the aetiology of fatigue. Two contrasting illness–fatigue interpretations emerged: catastrophising versus normalising. Participants emphasised importance of a sense of purpose in facilitating active management of fatigue. Many participants described consequences of fatigue on their functioning. Low mood, frustration, and anger were common emotional consequences of fatigue. Three dominant fatigue management strategies: (i) accommodation of activities around fatigue, (ii) increasing activities to counteract fatigue, and (iii) self-compassion. Social support emerged as important - serving as a source of motivation. Participants wary of becoming a burden to others.

Table 11. Fatigue management - main themes and findings.

Study (country)	Year	Design	Objective of the study	Themes and findings
Alizadeh et al. [56] Canada **Packer Managing Fatigue: The Individual Self-Management Program.**	2024	Concurrent mixed-methods approach evaluated experiences of PwPD participating in Managing Fatigue program. Design allowed comprehensive data collection through focus groups, individual interviews, and feasibility questionnaires.	To explore experience of people with PD (PwPD) regarding content and delivery of the individual programme.	Five themes clustered into three domains: (1) Perceived Impact of the Program, which included one major theme: Program was helpful. (2) Program Content and Structure, which included two themes: Program Has Strengths and Areas for Improvement. (3) Support and Delivery, which included two themes: Individual, Online Delivery Is Feasible and More Support from OTs Would Be Helpful
Askari et al. [47] Canada **Multiple Sclerosis: An Interactive Fatigue Management Resource (MS INFoRm)**	2022	Post-study interviews after double-blind, parallel-group feasibility study.	To determine feasibility of adding coaching sessions to a website (MS INFoRM) that supports self-directed fatigue management for people with multiple sclerosis (PwMS).	Structure of program generally well accepted. Type of information presented on website perceived as "not new" or "to be more tailored to a newly diagnosed individual than a veteran." Most participants appreciated combining coaching sessions with the website. Goal setting and coaching sessions were most useful. Some participants suggested adding more coaching sessions to have time to practice and to work to generalise strategies to other aspects of life. Participants also suggested modifications to website layout and operation: • ability to integrate coach notes into website for the user to access, • being able to add to bank of strategies when coming up with a new strategy specific to your goal, and • adding section for peers to share experience
Askari et al. [48] Canada **Multiple Sclerosis: An Interactive Fatigue Management Resource (MS INFoRm)**	2023	Qualitative data from interviews from RCT on effectiveness and efficacy of MS INFoRm, and pilot study testing feasibility of delivering MS INFoRm plus OPC.	To (1) describe focus of goals set by PwMS, (2) determine if goals are different when OPC is offered with web-based fatigue management resource, (3) explore strategies identified by participants to meet their goals, as well as barriers and facilitators influencing goal achievement and (4) examine goals submitted by PwMS for whether they fulfil criteria of a SMART goal;	Strategies used by participants to achieve goals. **Higher-level cognitive functions** • Reframing perspective • Planning and prioritising • Going to bed and getting up at the same time each day • Planning day to balance rest and work **Energy and drive function** • Completing tasks that require more energy at times of less fatigue • Banking and budgeting energy **Looking after one's health** • Working towards meeting Canadian Physical Activity Guidelines for People with MS • Going to fitness classes **Products and technology for personal use in daily living** • Use of a bath chair while taking a shower • Tracking progress using a journal **Support from immediate family** • Having a spouse around for emotional support • Having spouse help with tasks **Support from others** • Delegating certain tasks to others • Talking to someone when feeling mentally overwhelmed • Explore treatment options, such as use of C-PAP with the help of physician
Farragher et al. [13] Canada **Energy Management Education Programme**	2020	Five single-case interrupted time-series studies, and follow-up qualitative interviews	To explore whether Energy Management Education Programme is associated with improvements in fatigue and life participation in adults on chronic dialysis.	Impact of the Program Program format Inconsistencies in Findings

(*Continued*)

Table 11. Continued.

Study (country)	Year	Design	Objective of the study	Themes and findings
Gillisdottir et al. [45] Sweden **Managing Fatigue Programme**	2022	Qualitative descriptive research design	To describe how Swedish MS participants experience the content and structure of the Swedish Managing Fatigue Programme, as well as what they learned from participating in the programme.	MF programme was relevant and delivered in a structured way: (i) A clear structure with a mix of teaching forms • A programme update needs to include cognitive fatigue management • An experienced course leader and the group format were important mediators • Learned skills that improved engagement in occupations • Learned to accept my new self and to decrease demands • Learned skills that helped me adapt my occupational performance
Karkon et al. [25] Ireland **Fatigue and Activity Management Education for Work (FAME-W)**	2023	Parallel mixed methods study (qualitative phase guided by qualitative description design).	1. To test feasibility and acceptability of online delivery of FAME-W. 2. To investigate transferability of content of FAME-W from in-person delivery to online delivery. 3. To explore participants' perspectives of acceptability of online delivery of FAME-W and their perspectives of impact of FAME-W on their work performance	Three themes from data analysis. Themes further divided into ten subthemes: (a) impact of FAME-W; participants showed increased awareness and understanding of how arthritis effects work and daily life (b) disease management; programme provided participants with strategies to manage their arthritis (c) programme acceptability; overall, participants were positive about the online FAME-W.
Nilsson et al. [16] Sweden	2023	Qualitative study using semi-structured interviews	To explore experiences of Swedish version of the Fatigue Management course (FMC) in adults with CP-related fatigue.	Analysis identified one main category, two categories, and five subcategories describing participant experiences. Overall, participants experienced FMC as a challenging and eye-opening course. They described experiencing an enhanced awareness regarding fatigue, which resulted in a deeper self-understanding and the feeling of not being alone. Attending the course stimulated contemplation about making changes. However, implementation was challenging because of the extensive information presented in FMC, along with demanding home assignments.
Pétrin et al. [49] Multiple Sclerosis: An Interactive Fatigue Management Resource (MS INFoRm) Related study; [50]	2018	Qualitative arm of pilot study of MS INFoRm	To understand participants' experiences with self-guided fatigue management resource, MS INFoRm, and extent to which they found its contents relevant and useful to their daily lives.	Overarching finding was participant experience of using and applying MS INFoRm was a process of change leading to variety of positive outcomes. Overall process of change made up of three central themes: (a) a shift in knowledge, (b) a shift in expectations about fatigue and oneself, and (c) a shift in behaviour. Inputs or antecedents facilitating these shifts, included reactions to MS INFoRm, baseline knowledge, and experimentation, and led to multiple outcomes. Some outcomes not linked directly to any single shift but overlapped across two or three shifts. Because of overlap, labelled as "overall outcomes."
Picariello et al. [18]	2017	Qualitative study using pluralist methodological approach	To explore renal patients' experiences of fatigue across full spectrum of ESKD, with sub questions exploring: 1. Nature of fatigue 2. How patients describe general tiredness, illness-related fatigue, and post-dialysis specific fatigue 3. Fatigue-specific beliefs 4. Consequences of fatigue on functioning 5. Strategies patients use to cope with fatigue 6. Differences in fatigue experiences between treatment modalities	Themes/Subthemes 1. Causes of fatigue 1.1 Biomedical explanations of fatigue; 1.2 Other aetiologies of fatigue 2. Double-edged fatigue 2.1 A bit more than ordinary tiredness, but not a big deal; 2.2 Negative view of fatigue 3. Finding motivation to manage fatigue 3.1 It takes effort; 3.2 Having a sense of purpose helps 4. Fatigue management 4.1 Accommodating activity around fatigue; 4.2 When busy and active fatigue doesn't exist; 4.3 At own pace, self-compassion; 4.4 To talk or not to talk about fatigue? 5. Impact of fatigue; 5.1 Emotional consequences of fatigue; 5.2 Fatigue is inhibiting; 5.3 Persevering despite fatigue; 5.4 Getting used to tiredness 6. Social support 6.1 Social support as a source of motivation; 6.2 Seeking understanding from others; 6.3 Don't want to be a burden
Poole et al. [69] United States Fatigue and Activity Management Education in Systemic Sclerosis (FAME-iSS	2024	Convergent parallel mixed methods design	To evaluate impact of an adapted virtual intervention, Fatigue and Activity Management Education in Systemic Sclerosis (FAME-iSS), in United States.	Reframing fatigue Empowerment through goal setting The power of community

Table 12. Mindfulness - main themes and findings.

Study (country)	Year	Design	Objective of the study	Themes and findings
Johannson & Bjuhr [62]	2016	Programme evaluation	To qualitatively evaluate Mindfulness Based Stress Reduction (MBSR) program delivered live on the Internet for participants suffering from mental fatigue after an acquired brain injury (stroke or traumatic brain injury).	Most participants across all groups reported being satisfied with the program, experiencing reduced tension, improved calmness, better sleep, faster recovery from exhaustion, and increased energy. They also reported emotional benefits like increased happiness, greater acceptance, and more self-compassion. Both delivery methods presented unique challenges. Internet participants occasionally struggled with technical equipment and sound quality issues. Face-to-face group experienced increased fatigue after the 2.5-hour sessions. Both groups found reading materials difficult due to fatigue. **Practice implementation:** Finding time for home practice was a common challenge with significant variation in practice duration. **Mindfulness experience variations:** Some participants reported restlessness during meditation, while others found it calming. Those with pain struggled with sitting and yoga practices, though they were encouraged to modify positions as needed. **Group dynamics:** Face-to-face participants particularly valued feeling safe and belonging to a group where they could share experiences. Internet participants appreciated the turn-taking approach during inquiries as energy-saving. **Fatigue management:** Both groups reported learning to better adapt to mental fatigue, including pacing activities, taking rest periods, and developing greater self-forgiveness regarding productivity expectations.
Kraemer et al. [14] **Mindful Steps**	2023	Qualitative interview study	To characterise participants' experiences with Mindful Steps and understand perceived influence of intervention on walking and health.	Theme 1: Varied Experiences with the Intervention Components Theme 2: Influence of the Intervention on Walking and Health Theme 3: Continued Use of the Intervention Components

Table 13. Physical activity promotion - main themes and findings.

Study (country)	Year	Design	Objective of the study	Themes and findings
Krawcyk et al. [42]	2023	Descriptive qualitative study using semi-structured focus group interviews	To explore possible motivators and barriers for physical activity in patients discharged after minor stroke or transient ischaemic attack (TIA).	Identified five categories: 1. The attitude towards physical activity after minor stroke is positive, 2. Preferences for delivery of physical activity after minor stroke", 3. Physical activity with others is motivating after minor stroke 4. Physical activity needs to be a habit and 5. Physical and cognitive sequelae after minor stroke form barriers to physical activity.

Barriers when understanding is misaligned. When participants' understanding of fatigue conflicted with intervention approaches, engagement diminished. Participants who held primarily biomedical understandings of fatigue often struggled with biopsychosocial interventions [21]. As one participant noted, "I don't think it [a psychological therapy] can help. Not with the fatigue anyway… I can't see how talking can help it?" [18]. Likewise, interventions that weren't tailored to specific conditions sometimes lacked coherence with participants' lived experiences. One participant in a program designed for multiple conditions noted: "I kept looking for the word Parkinson's and it wasn't there. It was all MS" [56].

Professional validation and support. Validation by healthcare professionals emerged as crucial for developing coherent understanding. Participants valued having fatigue acknowledged by medical professionals:

Table 14. Self management - main themes and findings.

Study (country)	Year	Design	Objective of the study	Themes and findings
Ablewhite et al. [63] United Kingdom	2020	Qualitative, descriptive study.	To gain insight into the lived experiences of using day-to-day strategies to manage post-stroke fatigue.	1. Themes from framework analysis. 2. Acceptance of having fatigue as a consequence of stroke and recognising the need to manage it. 3. Predicting situations when post-stroke fatigue might occur. 4. Managing post-stroke fatigue by pacing. 5. Using a diary to manage fatigue. 6. Relaxation/meditation to manage fatigue. 7. Managing fatigue by resting. 8. Goal setting to manage fatigue. 9. Managing fatigue by changing diet and exercise. 10. Help, advice and professional support with managing post-stroke fatigue. 11. Educating friends and family about fatigue and its management.
Ahern et al. [55]	2024	Sequential qualitative interview study	To explore motivation to exercise, support, and self-management needs among people with Parkinson's, their family members, and physiotherapists.	Four common themes: (1) The value of an intrinsic connection with exercise, for which there are challenges. A greater connection to exercise led to long-term adherence. (2) Adapting exercise to the needs and preferences of a person is essential. Preferred exercises and environments were mixed, with differences emerging between sexes. (3) Physiotherapists' aim to only maintain physical function led to frustration. Limited self-management opportunities, stigma, and dehumanisation were discussed. (4) Non-motor symptoms, stigma, fear, and determination as well as apathy, pain, and low mood were discussed. Exercise provided physical, emotional, and social rewards. Supports are necessary; however, challenges arise when PwP's motivations are mismatched to family member and physiotherapist goals. Co-created goals, tailored to their preferences, and exercise plans with supported self-management are recommended.
Akbar et al. [46] **MS INFoRm**	2018	Single-group, mixed-methods, before-after pilot study	To determine whether MS INFoRm, a self-directed fatigue management resource for individuals with MS, was worth further evaluation.	Individuals with significant reductions in fatigue impact reported behavioural changes including tracking fatigue, better communication with others, greater awareness, improved quality of life and being more proactive.
Babbage et al. [43] **New Zealand and United Kingdom**	2019	Field test using in-depth qualitative interview	To develop a comprehensive cognitive behavioural intervention for fatigue through interactive smartphone application (app) that people with MS could use to self-manage their fatigue.	Four themes: 1. **Validation of participants' own experiences of living with MS fatigue** Reflects how app validated users' experiences. Includes two subthemes: • Made me feel more normal"—relating to real people • Someone doing something (developing an app that addresses their concerns) 2. **The personal cost in engaging with such an intervention** Addresses effort required to use the app and included three subthemes: • Using the app could be fatiguing • Focusing on fatigue could prompt negative thoughts • Challenging existing strategies 3. **Reframing experiences and adding to knowledge** Focuses on how participants discovered new information or ways of thinking about their fatigue management, despite having lived with MS for many years. 4. **That the app was generally a good idea** Participants viewed app positively overall. Two subthemes: • Hitting the mark (the app was appropriate and relatable) • A good idea if you're new (particularly valuable for newly diagnosed individuals)

(*Continued*)

Table 14. Continued.

Study (country)	Year	Design	Objective of the study	Themes and findings
Barakou et al. [9]	2024	Qualitative study with constructivist approach	To explore fatigue and physical activity behaviour experiences and management, with emphasis on activity pacing among adults with chronic conditions.	1. understanding fatigue 2. barriers to managing fatigue 3. facilitators of fatigue management 4. activity pacing
Delbridge et al. [64]	2024	Qualitative study using semi-structured interviews	To explore (1) the experience of post-stroke fatigue from the perspective of stroke survivors and their caregivers and (2) fatigue management strategies that are used.	1. fatigue is unexpected after stroke and symptoms vary 2. the individual experience of fatigue is complex, influenced by multifactorial and biopsychosocial factors 3. learning to adapt and accept fatigue 4. strategies to manage fatigue and personal approaches to rest
Dibley et al. [29] ***IBD-BOOST*** (United Kingdom)	2021	Exploratory qualitative study	To understand how people with IBD experience and self-manage these symptoms and to inform future development of an online self-management programme.	**Theme 1: The Impact of Symptoms** • Relentless presence of symptoms • Aggravators of symptoms • Consequences of symptoms • Unpredictability and uncertainty due to symptoms • Identity and symptoms **Theme 2: Positively taking control of symptoms** • Self-appraisal • Aspects of control **Theme 3: Seeking and Receiving Support** • Needs not recognised • Gaining understanding and support
Fawson et al. [30] ***IBD-BOOST*** (United Kingdom)	2022	Exploratory qualitative methods using focus group and individual interviews	To understand patients' symptom self-management strategies and preferred design for future online symptom self-management intervention.	Three core themes: ways of coping; intervention functionality; and intervention content. Participants attempt to manage all three symptoms simultaneously, recognising combined influence of factors such as food, drink, stress, and exercise on all symptoms. They wanted an accessible online intervention functioning across several platforms, with symptom and medication management, and activity-tracking features.
Krawcyk et al. [42]	2023	Qualitative study	To explore possible motivators and barriers for physical activity in patients discharged after minor stroke or transient ischaemic attack (TIA).	Identified five categories: (1) The attitude towards physical activity after minor stroke is positive" (2) Preferences for delivery of physical activity after minor stroke", (3) Physical activity with others is motivating after minor stroke", (4) Physical activity needs to be a habit", and (5) Physical and cognitive sequelae after minor stroke form barriers to physical activity".
McCallum et al. [60]	2024	Co-design workshops and additional 3 interviews with participants unable to attend workshop.	To explore self-management approaches and challenges experienced by people living with SS and produce corresponding design recommendations to inform design of a self-management app.	1. Challenges that participants faced in managing their condition and 2. Psychosocial needs in terms of competency, autonomy, and relatedness.

(*Continued*)

Table 14. Continued.

Study (country)	Year	Design	Objective of the study	Themes and findings
Mulligan et al. [51] New Zealand **Minimise Fatigue, Maximise Life: Creating Balance with Multiple Sclerosis (MFML)**	2016	Qualitative study using semi-structured telephone interviews	To explore the perceived impact of Minimise Fatigue, Maximise Life: Creating Balance with Multiple Sclerosis (MFML), a group-based, 6-week fatigue self-management program for participants who attended the program.	**Achieving behaviour change to manage fatigue (Theme 1)** • Reflective learning • Taking control • Developing new habits **Whole of life effects (Theme 2)** • Building resilience • A new support network • Obtaining balance • Improved family dynamics
Silverman et al. [52] **Fatigue: Take Control (FTC) program**	2024	Cross-sectional survey design.	To use very long-term data from FTC study to understand fatigue management strategies used 5 years after enrolment, identify facilitators and barriers to utilising strategies, and explore potential relationships between strategy used and fatigue outcomes.	**Theme 1: Frequently Used Strategies for MS Fatigue Management** • Improve efficiency and productivity by strategic planning. • Energy conservation: pacing, resting, using assistive devices or services. • Improve sleep quality. • Stay physically active without overexertion. • Maintain a healthy diet. **Theme 2: Facilitators and Barriers Influencing the Implementation of Fatigue Management Strategies** • Availability of and access to needed devices and services. • Companions for exercise. • Family influence. • Personal factors: intention, emotions, beliefs.
Sweeney et al. [31]	2024	Feasibility study with stakeholder interviews	To describe process of developing a supported digital self-management intervention for fatigue, pain, and urgency in IBD using theory and evidence-based approaches and stakeholder input.	Newly diagnosed people reported inconsistent access to clear and reliable sources of information on IBD and barriers to finding guidance that matched their unique experience of symptoms. People with a longer time since diagnosis expressed need to better track their symptoms over time to identify patterns and better understand the impact of psychological factors on symptoms. All interviewees voiced need to confront their experience with others' experience of IBD and find ways in which to feel socially supported and validated in relation to their symptoms. (See [29].
Tremayne et al. [65] **Fatigue After Stroke Education (FASE)**	2022	General qualitative inquiry design	To develop understanding of stroke survivors' current experiences and perceptions of fatigue and role of Post Stroke Fatigue education in subacute phase of stroke	Overarching theme of acceptance and adaptation reflected possible mechanisms in how stroke survivors manage post-stroke fatigue. Three themes: 1. the individual and diverse nature of post-stroke fatigue. 2. the variability of stroke survivors' current experiences, reflected variability in content and context of post-stroke fatigue education. 3. the role of stroke services, described perceived responsibility and ability of stroke services to provide post-stroke fatigue education.
Zuidema et al. [59] Netherlands	2019	Qualitative study	To explain earlier findings of Randomised Controlled Trial, which showed that rheumatoid arthritis patients did not benefit from online self-management program.	Themes: 'motivation', 'expectations of the program' and 'support needs for self-management' to analyse phase before (not) using the program. 'Usability' and 'usage of the program' used to analyse phase of program use. 'Experiences' and 'satisfaction with program' used to analyse the phase after using the program.

Table 15. Supervised exercise - main themes and findings.

Study (country)	Year	Design	Objective of the study	Themes and findings
Ackah et al. [17] (United Kingdom)	2025	Qualitative	To explore experiences and perceptions of rest among adults with long-term conditions and fatigue, and healthcare professionals	**Operationalisation of Rest** – How rest is understood and defined by participants, including: • Low energy activities and/or connecting with nature • Detachment and disconnecting • Stopping/slowing down **Rest as a Skill to Be Practiced** – Rest is not automatic but requires intentionality and learning, with differences in: • Psychological vs. physical engagement • Planned vs. spontaneous rest • Serene environments as facilitators **Rest as a Tool for Optimising Functioning** – Rest supports: • Energy management • Symptom control • Activity participation Barriers to Achieving Restful Experiences – Challenges include: • Environmental and interpersonal factors • Responsibilities and expectations • Lack of resting skills • Physical symptoms (patients) vs. "all-or-nothing" thinking (HCPs) Themes reflect a transdiagnostic and transdisciplinary understanding of rest, highlighting its complexity and strategic role in rehabilitation.
Ahern et al. [55]	2024	Sequential qualitative interview study	To explore motivation to exercise, support, and self-management needs among people with Parkinson's (PWPs), their family members, and physiotherapists.	Four common themes emerged: 1. The value of an intrinsic connection with exercise, for which there are challenges. A greater connection to exercise led to long-term adherence. 2. Adapting exercise to the needs and preferences of a person is essential. Preferred exercises and environments were mixed, with differences emerging between sexes. 3. Physiotherapists' aim to only maintain physical function led to frustration. Limited self-management opportunities, stigma, and dehumanisation were discussed. 4. Non-motor symptoms, stigma, fear, and determination as well as apathy, pain, and low mood were discussed. Exercise provided physical, emotional, and social rewards. Supports are necessary. Challenges arise when PwP's motivations are mismatched to family members' and physiotherapists' goals. Co-created goals, tailored to their preferences, and exercise plans with supported self-management are recommended.
Bennett et al. [36]	2022	Nested qualitative study	To evaluate participants' experiences of taking part in intervention, including ideas about future service delivery.	Five themes: In the theme 'not a miracle cure, but a way to better manage fatigue', LIFT could not cure fatigue; however, most felt better able to manage after participating. Participants valued 'building a therapeutic relationship' with same therapist throughout the intervention. In 'structure, self-monitoring and being accountable', participants liked inclusion of goal-setting techniques and were motivated by reporting back to the therapist.
Krawcyk et al. [42]	2023	Qualitative study	To explore possible motivators and barriers for physical activity in patients discharged after minor stroke or transient ischaemic attack (TIA).	Identified five categories: 1. The attitude towards physical activity after minor stroke is positive 2. Preferences for delivery of physical activity after minor stroke 3. Physical activity with others is motivating after minor stroke 4. Physical activity needs to be a habit and 5. Physical and cognitive sequelae after minor stroke form barriers to physical activity.

(*Continued*)

Table 15. Continued.

Study (country)	Year	Design	Objective of the study	Themes and findings
Mudge et al. [20]	2024	Mixed methods with single system design to evaluate first aim and qualitative interviews to address second aim	(1) To explore effectiveness of online physical activity focussed programme based on behavioural change principles to decrease fatigue, modify physical activity and improve sense of wellbeing and confidence to exercise in people with prior GBS. (2) To explore perspectives of participants regarding acceptability and feasibility of programme.	Participants very positive about programme of online coaching sessions. Three aspects of how and why the programme worked for them are represented by first three themes. (1) participants identified that the programme "was personal" to each participant - they felt supported and specifically valued the personal connection they formed with the therapist. (2) participants described "things I've learnt" about fatigue, themselves and strategies to cope with fatigue. (3) intervention helped participants develop and carry out "my plan" to manage fatigue using goals, feedback and ways to keep themselves on track. (4) Because of the programme, participants identified "change" in fatigue and other aspects of their lives. (5) Participants questioned how long they would be able to maintain these changes recognising they had the skills to carry on with their plan but different levels of confidence to do so.
O'Brien et al. [58]	2016	Qualitative study utilising in-depth semi-structured interviews analysed using grounded theory methodology	To explore how the meaning of exercise and other factors interact and influence exercise behaviour of individuals with Parkinson's disease (PD) enrolled in 6-month minimally supervised exercise program.	Four main themes: 1. Adapting to change and loss, 2. The influence of others, 3. Making sense of the exercise experience 4. Hope for a more active future. Participation in the PD-specific physiotherapy program involving group exercise provided an opportunity for participants to reframe their identity of their "active" self. Three new influences on exercise participation identified and explored: non-motor impairments of apathy and fatigue, the belief in a finite energy quota, and the importance of feedback. Model developed incorporating themes and influences to explain decision-making for exercise participation in this group.
Svedjebrant et al. [68] (Sweden)	2025	Qualitative, using semi-structured individual interviews	To explore experiences of participating in cardiorespiratory training among people with post-stroke fatigue	Motivation to Participate – Participants described personal goals, curiosity, and a desire to improve fatigue and health as key motivators. Experiences of the Training – Reflections on the physical and emotional impact of the cardiorespiratory training, including perceived benefits and challenges. Perceived Effects of the Training – Participants reported changes in fatigue, mood, physical capacity, and daily functioning, with varied levels of improvement. Suggestions for Improvement – Feedback on programme structure, support needs, and recommendations for future adaptations to enhance accessibility and adherence. Participating in supervised cardiorespiratory interval training provided a model for how to exercise, which they could apply to other areas of their daily lives. It boosted their confidence and helped them to challenge themselves in everyday activities. Support should be offered in managing intense training after stroke, and those with post-stroke fatigue should not be excluded.
Wolf et al. [54] **Rehabilitation, Fatigue, and Exercise (ReFEx)**	2022	Qualitative interview study nested within a feasibility RCT, comparing MAT and SET	(1) To explore experiences of fatigued persons with multiple sclerosis (pwMS) with new multimodal agility-based exercise training (MAT) framework and (2) to investigate demands of the Rehabilitation, Fatigue, and Exercise (ReFEx) study protocol to identify possible adaptations for a randomised controlled trial (RCT).	Three key categories: (1) facilitators regarding MAT were variety and playfulness, group setting and challenging exercises. Barriers regarding MAT were feeling overburdened, feeling pressured in the group setting and the wish to perform 'traditional' strength training (not part of MAT). (2) MAT benefits of physical and psychological nature, with improved balance stated the most. (3) Demands described the perceived exertion during MAT and SET, reflecting that there is no accumulation of fatigue during the intervention.

Table 16. Single condition interventions – remote ischaemic conditioning main themes and findings.

Study (country)	Year	Objective of the study	No. of (relevant)/no. of main themes	Themes
Moyle [66]	2022	To investigate individual participant experiences with repeated RIC to treat fatigue after stroke.	Five main themes emerged from thematic analysis	(1) participant expectations of the treatment (2) positive treatment responses (3) treatment side effects (4) facilitators and barriers to compliance with the intervention, and (5) willingness to have the treatment in the future.

> Just that the fatigue is acknowledged … having a medical professional sit in front of you and say, 'This is a thing … we understand it's a thing, we can't explain why it's a thing and we can't give you a tablet to fix it, but we understand it is a thing' [24].

Many studies noted that prior to interventions, participants had received little or no information about managing fatigue [20,64]. Healthcare professional understanding and validation of fatigue as a legitimate symptom was therefore crucial to patient engagement with management strategies.

Theme 2: Process of change

Included studies reveal consistent evidence that acceptable FMIs facilitate a multifaceted process of change across three key domains: knowledge acquisition, expectation adjustment, and behaviour modification. These shifts collectively lead to normalisation of fatigue experiences, increased self-permission to rest, and a greater sense of control over symptoms. Interestingly, clinical experience suggests that effective rest is not simply the absence of activity but rather an active skill requiring acquisition and practice. Some clinics frame this specific process of change as "project rest," acknowledging the paradoxical work involved in learning to rest effectively.

Knowledge acquisition. Participants across studies reported gaining valuable knowledge about fatigue and its management, which formed the foundation for subsequent changes. Knowledge acquisition often involves understanding fatigue's nature, recognising patterns, and learning specific management strategies.

For stroke survivors, the process of "acceptance of the impact of fatigue on their lives and the changes required" was described as "a long one" [63]. In MS fatigue management, participants "shifted their knowledge in one form or another by either refining or reinforcing prior knowledge or gaining new knowledge" [49]. This knowledge acquisition was often transformative, helping participants recognise options they hadn't previously considered:

> I'm not as terrified now… You can kind of do things to help eliminate it or maybe minimize it if that makes sense… [49].

Knowledge development was frequently linked to self-awareness. In mindfulness interventions, participants reported "increased awareness of the connection between body and mind" and "becoming more attuned to what is going on in their bodies" [62].

Similarly, participants in a mind-body walking intervention noted "being more aware of my movements and integration with your breathing" [14], demonstrating how knowledge acquisition extended beyond factual understanding to bodily awareness. Regarding expectations, participants shift from fearing that strenuous activity would cause harm or worsen fatigue to recognising that "this type of physical activity is good for me. It's not something that makes it worse" [68]. One mechanism observed in clinical settings is that as patients develop bodily awareness, they become able to recognise early warning signs of exhaustion, allowing them to implement pacing strategies before reaching complete depletion of energy.

Expectation adjustment. The second domain of change involved shifts in expectations about fatigue and oneself. This included reframing identity, developing self-compassion, and adjusting performance expectations to align with energy capacity.

Participants described how interventions helped them adjust their expectations about what they could realistically accomplish. As one participant with cerebral palsy noted: "I have understood that it is not possible to work full time anymore. I had a lot of resistance to it, strange, but now I feel, well okay" [16]. This acceptance process was crucial, as another participant explained: "At the moment we have had to make some changes and we have accepted it, but it's part of getting better" [65].

Carmichael et al. (2025) explicitly identifies "Acceptance," "Taking Control," and "Building Knowledge and Skills" as themes, directly mapping to shifts in knowledge, expectations, and behaviours [61]. Enhanced self-efficacy and confidence may transfer to everyday life, indicating shifts in expectations and behaviours [68]. Acceptance can be seen to comprise acknowledging limitations, adjusting expectations, permitting rest, and developing realistic views of one's capabilities. This multifaceted understanding could help when operationalising the concept in clinical settings. Ackah frames rest as "a practiced skill" and "a tool for optimising functioning," demonstrating knowledge and behavioural change [17].

The adjustment of expectations often involved profound identity shifts, especially for those who previously defined themselves through high activity levels:

> I was always sort of one to go at a hundred miles an hour you know doing things, very active. Then suddenly to lose it [58].

This adjustment process wasn't always easy; participants frequently described initial resistance before reaching acceptance. The evidence suggests that adjusting expectations was a gradual process that required emotional work alongside cognitive understanding.

Behaviour modification. The third domain—implementing concrete behavioural strategies—was consistently reported across studies as critical to effective fatigue management. Behaviour changes typically focused on pacing, prioritising, and establishing sustainable routines.

Participants described shifting from "all-or-nothing behavioural patterns" to better pacing through "self-monitoring, introducing breaks, planning their time effectively and learning to say no" [28]. Specific techniques included "breaking things into parts and not trying to accomplish everything at the one time" [25] and "banking and budgeting energy" [48].

One participant vividly describes their behavioural transformation:

> I would just try and ignore it as best I can and basically get on with it and try and rush and get everything done before it came to the point I had to stop. Where now I do try and, if you like, pace myself a little bit more [28].

Multiple studies noted that self-monitoring was crucial for behaviour change. Keeping diaries or activity logs helped participants identify patterns and adjust accordingly: "I started keeping a fatigue diary and I still do that now… One of the things that I noticed very, very quickly was a pattern that I hadn't really thought of, and having noticed the pattern I was then able to alter my working regime" [36].

Outcomes of change process. Shifts in knowledge, expectations, and behaviours consistently suggest positive outcomes that are remarkably consistent across studies and conditions. Most prominently, participants reported:

1. Increased sense of control over fatigue: "It just feels like I've got more control over fatigue…" [24]
2. Self-permission to rest: "It's given me permission and a licence to give myself that care, which I don't think I was allowing myself before" [24]
3. Normalisation of fatigue experience: "I feel more normal after dialysis than before" [21]
4. Improved quality of life and function: "I think like as long as I'm sticking to the plan… it really became a habit" [20]

A small minority of studies reported limited or no perceived benefits. For example, in a cognitive bias modification intervention, "None of the patients reported experiencing benefits from the training" [41], suggesting that not all intervention approaches successfully facilitate this change process.

The consistency of this three-domain change process across diverse conditions (MS, stroke, arthritis, kidney disease, Parkinson's, inflammatory bowel disease) suggests common underlying mechanisms for

fatigue management. The three-domain change process (knowledge, expectations, behaviours) aligns well with established behaviour change frameworks such as COM-B. This framework recognises that behaviour change requires capability (knowledge), opportunity, and motivation - elements that parallel our findings across multiple conditions. Future intervention design could explicitly draw on these theoretical frameworks. Successful interventions appear to target al.l three domains—knowledge, expectations, and behaviours—rather than focusing solely on one aspect.

The evidence typically indicates that the change process is gradual and requires ongoing effort. As one participant noted: "It is ludicrous but it [post-stroke fatigue] has changed our life enormously… you just have to accept that it is the way it is. It takes years….to acclimatise to what you've been left with" [63].

Theme 3: Personalisation and applicability

Across the reviewed studies, the importance of personalisation and individual relevance in FMIs emerged as a consistent theme. Participants strongly valued approaches that could be tailored to their specific circumstances, priorities, and daily realities. This review demonstrates that intervention effectiveness was closely linked to how relevant and adaptable the content was to participants' individual needs.

Individualised approaches to management. A clear finding across studies was that no single approach to fatigue management works for everyone. As noted in the post-stroke fatigue study, "Managing post-stroke fatigue was described in different ways, and there was not one particular fatigue management strategy that seemed effective for everyone" [63]. Similarly, participants with inflammatory bowel disease recognised that "we're all individuals and unique in how we respond to different types of food, I don't think there's any one set piece of advice that can be dished out to all patients" [29].

The highly personal nature of fatigue experiences necessitated tailored approaches. As one male stroke survivor eloquently described:

> Very, very personal and that's actually a good thing. In that, instead of it being a given set of rules [to manage it], it helps people to think about who they are and what is particularly exhausting or not exhausting for them as an individual [64].

Across various conditions participants consistently emphasised the need for interventions to accommodate individual differences. For those with Parkinson's disease, exercise interventions needed to "check the individual and design a program that suits him" [55]. The inherent variation in fatigue experiences meant that effective interventions had to be flexible enough to adapt to diverse needs.

Personally relevant goal-setting. Goal-setting is considered particularly valuable when it focuses on a participant's personal priorities. The MS INFoRm study showed that participants appreciated being able to "reflect on perceived meaningful activities affected by fatigue, define goals, and find solutions to achieve their goals" [48]. Similarly, in the LIFT study, "Individual goal setting led by participants was acknowledged as a helpful part of the interventions" with participants noting that goals were agreed upon "on the basis of where I live and what seemed suitable" [36].

The fatigue intervention for systemic sclerosis found that structured goal setting "made me think about things that I haven't addressed. And then put me in a situation where I needed to address them and had to be accountable for it the next week … that helped me to get things done that I've kind of put off for years" [69]. This focus on personal priorities increased motivation and ensured that interventions addressed what mattered most to participants.

Applicability to daily life. How well interventions could be integrated into daily life was crucial to their perceived effectiveness. Participants particularly valued content that could be applied to their specific life contexts and routines. For example, in the MS fatigue management program, "The homework in-between sessions gave them an opportunity to practice skills learned during the group sessions, in their own home environment" [45]. This practical application allowed participants to adapt strategies to their unique living situations.

One participant described how they had adapted their home environment based on program principles:

> I bought new, nice pots that match my kitchen tiles, so I can leave them on the countertop and don't have to lift them in and out from the cupboards all the time…I have put all things I use the most up front… [45].

The ability to apply strategies to everyday activities enhances both relevance and sustainability. Participants in a work-focused fatigue management program valued being able to apply concepts to "planning things around being mentally and physically able for my paid work" [25]. Similarly, participants in the personalised activity program appreciated that their plan was "optimised for them in their specific context" [20]. From the update, exercise training was considered "transferable to other contexts in everyday life," [68] while CBT participants continued to use strategies post-treatment [61], both suggesting personal relevance.

Limitations when personalisation was lacking. When interventions failed to adequately personalise content, engagement and effectiveness suffered. Some participants noted that their fatigue program "wasn't specifically designed for fatigue in [Parkinson Disease], it was for fatigue in general" [56], indicating insufficient tailoring for their condition. Similarly, a study of online self-management for rheumatoid arthritis identified "a mismatch between individual patients' support needs and the needs included in the program" [59].

The importance of personal relevance was particularly evident in the cognitive-behavioural therapy for IBD-fatigue study, where participants suggested "the intervention may be more useful for people with more severe fatigue or those who have been newly diagnosed" [28].

Theme 4: Barriers to engagement

Challenges that hinder engagement cluster around three areas: cognitive burden, illness and treatment burden, and technical challenges. For example, key barriers identified in one study [17] include cognitive burden (difficulty switching off thoughts, worries interfering with rest), illness burden (physical symptoms like pain and discomfort preventing effective rest), environmental barriers (noise, excessive screen time), and responsibilities (caregiving, work commitments making it difficult to prioritise rest). Understanding these barriers is crucial for designing accessible and acceptable interventions.

Cognitive burden. The cognitive demands of FMIs emerged as a significant barrier across multiple studies. For participants already struggling with fatigue-related cognitive difficulties, engaging with complex or text-heavy materials proved especially challenging.

In the MS Energise app trial, participants reported that the cognitive effort required by the intervention could paradoxically worsen their fatigue: "There's too much to read when you're going through all the instructions… yeah, that actually contributes quite badly to your fatigue" [43]. Another participant in this study poignantly noted: "I found that my experience of my fatigue while I was putting so much thought into it was actually worse" [43].

For participants in mindfulness-based interventions, cognitive limitations directly impacted engagement: "The written didactic material was, for some hard to use as they experienced difficulties reading due to fatigue" [62]. Similarly, participants in a fatigue management course for adults with cerebral palsy struggled with information overload: "About half of the participants found the amount of information and work in the course too much to cope with during the allotted time" with one participant explaining, "Maybe it would have worked with one and a half hour max; otherwise, I feel it's a long time […] I lose concentration so it's not sure that I hear everything […]" [16].

Cognitive challenges were particularly evident in interventions requiring homework or self-monitoring. Participants in the cerebral palsy fatigue management course reported that "the homework was challenging" with instructions that were "hard to understand" [16]. Similarly, participants receiving cognitive behavioural therapy for fatigue in haemodialysis expressed difficulties with concentration: "I just find it so difficult to concentrate" [21].

Illness and treatment burden. Managing fatigue was often just one aspect of a complex illness experience with multiple competing medical conditions and treatments. Time constraints from medical treatments were particularly evident in studies involving dialysis patients: "it [dialysis] does encroach on your time a bit" [21]. The post-dialysis recovery period further limited engagement: "When I've come off, I can't tell you how I feel when I've come off of dialysis. It's awful" [21]. Similarly, participants in the CBT feasibility trial cited "time commitment required for the study" as the main reason for declining participation [28].

Additional health conditions often complicated engagement. Participants with Parkinson's disease described how comorbidities interfered with exercise participation: "What happened was I ended up with a bad back and some of the exercises used to make it worse…I'd end up limping around all the time so that's…the only reason I stopped" [58]. Similarly, participants in the mind-body walking intervention noted that health challenges impeded their participation: "The thing that stood out most to me, was having a lot of health problems during the last 6 months—the blood pressure…—and so I didn't feel like getting as much out of it as I wanted to" [14].

Paradoxically, fatigue itself often constituted a barrier to engagement: "Well if I'm going to do anything, like housework… I just have to do it when I can… And if it's 7 o'clock at night, or 8 o'clock at night, then that's when I do it" [18]. This created a challenging situation where participants most in need of fatigue management strategies were also most likely to struggle with intervention engagement.

These findings align with Burden of Treatment Theory [83], which conceptualises the work required of patients in managing chronic conditions. This theoretical framework could provide additional insights for understanding engagement barriers and developing accessible interventions.

Technical challenges. For digital interventions, technical barriers presented significant obstacles. In the cognitive bias modification training for kidney disease patients, the most mentioned obstacle was patient computer skills with healthcare professionals with an estimated 40% to 66% unable to participate because of low digital literacy or the lack of a laptop [41]. Even when devices were provided, "the 2 participants who borrowed a laptop stopped the intervention study because they lacked the skills to interact with the borrowed laptop" [41]. These findings regarding digital literacy barriers are particularly important given the increasing shift towards digital healthcare delivery and suggest the need for tiered technical support options and alternative delivery formats.

Website navigation problems further complicated engagement: "Some found the website difficult to navigate due to their technical knowledge" [14]. Similar issues were noted in the online self-management program for rheumatoid arthritis: "The password…was experienced as difficult and forced patients to use an alternative password. To open the homepage on the IPad also appeared to be difficult" [59].

Additionally, digital interventions could exacerbate symptoms: "Looking at the screen of a computer or smartphone for a very long time could exacerbate eye dryness" for Sjögren's syndrome patients [60]. As one participant explained: "It's okay [when it's] short, but you can't spend a long time looking at the screen, because your eyes are just too sore" [60].

Theme 5: Social support elements

Across the QES, social support emerged as a pervasive theme in FMIs. Participants consistently valued the opportunity to share experiences with others facing similar challenges, with peer validation often described as therapeutic beyond the formal intervention content itself. Even when interventions targeted individuals, participants either expressed a need for social support, as being absent, or pursued complementary strategies to meet this need. Participants in one study "felt validated and less isolated from interacting with other patients also struggling with endometriosis and fatigue" [19]. One participant expressed looking forward to sessions because "I felt I was talking to people who really, really understand what I was going through without having to explain a whole lot of things" [19].

The power of community in group interventions. Group-based interventions consistently demonstrated the therapeutic value of shared experiences. Participants in the MS fatigue management program emphasised "the importance of the group format" as they "seldom met others in the same situation with whom they could share the struggle they had to undertake to handle their MS-fatigue" [45]. The power of this collective experience ("the power of community") [69] was captured by one participant who noted:

> …I liked the group format, we were able to share each other's experiences, things others had tried…setbacks and things that worked out fine…I learnt a lot…One of the group participants …tried to decrease the amount of working hours. Listening to her reasoning made me reflect and remember how I have struggled the same way and I could share my experiences [45].

Group settings could create a unique sense of understanding and acceptance that was difficult to find elsewhere. As one participant with Parkinson's disease explained, "It's not that you want sympathy but understanding. So when you're down there (referring to the group) I actually totally relax because we are all understanding each other" [58]. This sentiment was echoed across multiple studies, with participants valuing both the emotional support and practical knowledge gained from peers.

Validation through shared experiences. Validation from peers with similar experiences emerged as particularly valuable. For participants with multiple sclerosis, such validation countered a sense of isolation: "It's been an absolute godsend because just realising you're not the only person that suffers from this has been great for me" [51]. Similarly, a participant with cerebral palsy expressed relief in finding others with similar experiences: "It was nice to get confirmation from others that I am not alone in this" [16].

This peer validation often helped legitimise participants' experiences in ways that professional input alone could not achieve. For those with systemic sclerosis, the group format "was eye-opening because I've never met anybody that has scleroderma before… It helped to know that there are ways to get around things and having everybody else add their tips and little things that they do gave me a lot of ideas" [69]. The collective experience created a powerful space for learning and validation:

> There was a power that was in our group because we had a common condition, and I've not had that…there wasn't a clear understanding of exactly what…I was facing, but when I was with this particular group, it was like, finally, someone [understands] [69].

Beyond intervention content: Therapeutic value of peer support. The social support elements often contributed therapeutic value beyond the formal intervention content. In mindfulness-based interventions, participants reported that "a feeling of safety was reported and they appreciated belonging to a group and sharing experiences with others" [62]. This sense of belonging persisted even in online formats, where "the sense of belonging to a group, and sharing experiences with others were also possible to achieve with the live Internet groups" [62].

For participants with inflammatory bowel disease, peer support provided unique benefits that couldn't be replicated through professional guidance alone: "Nothing helps more than talking to someone else that has [IBD] … I come out of those [meetings] feeling really good because you can just talk about it really openly and also you get to hear about what other people are doing and experiencing" [29]. This combination of emotional support and practical knowledge exchange was highly valued.

Support without direct peer contact. Even interventions without direct peer interaction could provide aspects of social support. Participants using the MS INFoRm self-guided resource reported that it "provided them with a sense that they were not alone in their experience of fatigue" despite having no direct contact with peers [49]. As one participant noted: "Just knowing you're not the only one… I know of no one else who has it. So, nobody I can talk to about it. You kind of feel less alone with that experience" [49].

This finding suggests that professionally-developed content featuring testimonials or examples from others with similar conditions can partially satisfy the need for validation and normalisation typically provided through direct peer contact.

Family and professional support. While peer support was prominently valued, family support and professional guidance was also emphasised. Stroke survivors highlighted that family involvement was crucial: "They should involve families. If they know how to support you, it makes that adjustment a bit easier" [65]. Similarly, participants with post-stroke fatigue found that "talking to friends and family about the experience of fatigue and how they manage it was described as important in terms of educating friends and family about post-stroke fatigue" [63]. The theme of close family and friends 'not getting it'

is recurrently observed in clinical settings, underscoring the importance of including family in educational components of interventions

The therapeutic relationship with health professionals also emerged as significant, particularly in interventions delivered to individuals, not groups: "I felt supported and guided. I think that was the most useful thing to me, that there was somebody helping me navigate this journey of fatigue and that was really powerful" [20].

Theme 6: Delivery format considerations

This theme explored significant variation in participants' preferences and needs regarding intervention delivery format across studies. Three sub-themes emerged: preferences for delivery mode (online vs. in-person, individual vs. group), timing of intervention in the disease trajectory, and considerations of intervention structure and intensity. The four update studies [17,19,61,68] do not explicitly discuss mixed preferences, timing in disease trajectory, and the balance between duration and burden.

Mixed preferences for delivery mode. The studies demonstrated considerable diversity in preferences for intervention delivery mode, with no one-size-fits-all approach emerging. Significantly the four update studies [17,19,61,68] covered diverse delivery modes: for example, virtual group delivery [19] and home-based supervised training [68], showing format variety. Additional dropout data suggests issues with structure and burden [19]. Participants typically value the convenience of remote or online delivery, particularly those with mobility limitations or transportation barriers. Participants consistently value home-based delivery formats, finding them "less stressful" and avoided energy-consuming travel to facilities [68]. In the LIFT study, "Participants found telephone delivery an acceptable way to interact with their therapist. Many described the telephone calls as convenient, with less impact on their fatigue compared with travelling to meet in person" [36]. Similarly, in the inflammatory arthritis fatigue management program, participants stated they "couldn't attend if it was in person" and found "online format was more accessible" [25].

However, preferences were not universal. In the cognitive-behavioural therapy study for IBD-fatigue, "For future iterations of the intervention, six (60%) participants reported they would prefer to complete the intervention online and 4 (40%) participants reported they would prefer to complete the sessions face-to-face instead of over the telephone" [28]. This diversity of preferences suggests that offering multiple delivery options may be optimal.

Group versus individual preferences also varied substantially. Some participants valued the social aspects and shared experiences of group interventions, as seen in the systemic sclerosis intervention, where the virtual format "facilitated this community 'because we live very far away, in very remote areas … it would've been impossible any other way'" [69]. In contrast, others preferred individual approaches: "Being told what you can do and can't do. People telling me that I shouldn't do this then I shouldn't do that or I need to slow down or I need to stop…" [55], reflecting frustration with one-size-fits-all instruction.

Timing in disease trajectory. Timing of interventions relative to diagnosis emerged as crucial across studies. Participants indicated that newly diagnosed individuals have different needs compared to those with longstanding conditions. In the MS Energise app study, "Users who had lived with MS for many years described…having many questions at the beginning of their journey…the app was a resource with much helpful information…that would be likely to have been valuable to them when they were first coming to understand MS" [43].

Similar patterns emerged for other conditions, with the rheumatoid arthritis online program participants noting that "the information they read in the online program would be helpful when RA is just diagnosed" [59]. For stroke survivors, there was "general consensus of the necessity and value of PSF education early within the context of the individual's home environment to aid recovery" [65].

However, the optimal timing wasn't always immediately after diagnosis. Participants in the haemodialysis fatigue intervention suggested that patients should be approached "early on in their illness journey, such as at the time of diagnosis" but also acknowledged the importance of acceptance first: "When they've accepted it and perhaps, they're looking around for something helpful, but not at the beginning of their illness" [21]. This suggests that the receptivity to interventions may depend on patients' psychological adjustment process. Clinical experience confirms different needs at different points in the illness

trajectory - newly diagnosed patients often benefit from interventions focused on acceptance, while those with longer-standing conditions may need approaches that target refinement of management strategies

Intervention structure, frequency, and duration. Finding the right balance in intervention structure proved challenging across studies. Interventions needed to be substantial enough to facilitate change but not so demanding that they created additional burden for already fatigued participants. Duration and frequency preferences varied considerably. In the cerebral palsy fatigue management course, some participants found sessions too long: "Maybe it would have worked with one-and-a-half-hour max; otherwise, I feel it's a long time […] I lose concentration so it's not sure that I hear everything […] I see the person talking, but then nothing goes in, it doesn't" [16]. In contrast, for the IBD-fatigue CBT intervention, "Aside from one participant who thought they were the right length, the majority found the 30-min telephone sessions to be rushed and would have preferred for them to be longer" [28].

Follow-up support emerged as particularly important. Participants expressed concern about maintaining changes after formal interventions ended: "Even those with high confidence to continue by themselves, stated they would prefer to continue with sessions, even if on a less frequent basis" [20]. In the LIFT study, participants suggested "further follow-up sessions…to prevent a possible 'slide' back into less active behaviours" [36]. Clinical experience with fatigue management supports this finding, with some services implementing 'rolling follow-up' where patients check in every 6-12 months over several years, providing ongoing support while promoting self-management.

Flexibility in structure was widely valued. For IBD symptom management, participants "wanted something they could dip in and out of, as needed: 'I like the idea of modules you can work through'" [30]. The Packer Managing Fatigue Program participants appreciated access to materials: "Having the physical manual was really helpful. I could go back and review it whenever I needed to…" [56].

Acceptability of interventions evaluated across single long-term conditions

In addition to interventions with data that facilitates transdiagnostic comparison, one non-pharmacological intervention was condition-specific (Tables 8 and 16). While evidence for the effectiveness and acceptability of remote ischaemic monitoring is limited in comparison, a single qualitative study [66] examining its use for post-stroke fatigue can be analysed using the same six-factor framework generated by the qualitative evidence synthesis.

Remote ischaemic conditioning (RIC)

Importance of coherence and understanding. Participants demonstrated basic understanding of RIC as a non-pharmacological intervention, with one noting "I wasn't worried about it because it didn't involve taking anything" (Female) [66]. However, there's limited evidence that participants developed a biopsychosocial understanding of their fatigue through the intervention. The mechanism of action (temporary blood flow restriction) was acknowledged but deeper conceptual understanding of fatigue appears limited.

Process of change. Although changes in knowledge weren't extensively documented, changes in expectations and behaviours were evident. Participants reported feeling "better within myself" (Male) [66] and increased physical activity: "The past few days I've walked a lot further than I have done in ages" (Female) [66]. The quote "I went hoping it would make me better and help. I was better for a while and think it did help" (Female) suggests shifted expectations, though the process wasn't comprehensively documented [66].

Personalisation and applicability. The RIC protocol appears standardised rather than personalised, with all participants receiving the same treatment approach (blood pressure cuff inflation three times weekly for 6 weeks). No mention was made of tailoring the intervention to individual circumstances or personal goal-setting, which were key aspects within the framework.

Barriers to engagement. The study documented specific barriers including timing issues: "The only thing I did do a couple of times is forget to switch the timer on" [66]. Physical side effects like "mild swelling,

pins and needles, and initial discomfort" were noted, though generally well-tolerated [66]. These align with the "illness and treatment burden" aspect of this framework.

Social support elements. Hospital-based treatment provided social benefits: "It was sociable which is good if you are isolated" [66]. However, this was incidental rather than a designed element of the intervention, and only available to the hospital-based cohort, not those self-administering at home.

Delivery format considerations. The study explicitly compared two delivery formats (hospital-based versus home-based), acknowledging different preferences. The home delivery offered convenience: "It was manageable. I just think it was easier to be able to do it at home" (Female), while hospital-based treatment provided structure and social interaction [66]. This aligns with the framework's identification of "mixed preferences for delivery" and the need for options.

Overall, the RIC study demonstrates partial alignment with the six-factor framework, with strongest evidence for delivery format considerations and barriers to engagement, moderate presence of process of change and social support elements, and limited evidence for coherence/understanding and personalisation. This first in-depth exploration of patient experiences with RIC for post-stroke fatigue, highlights overall acceptability and perceived benefits while identifying practical considerations for implementation.

Discussion

This QES represents a novel approach to understanding fatigue management across multiple long-term conditions. By examining interventions through a transdiagnostic lens, we have identified common themes that transcend specific diagnoses, offering valuable insights for future intervention development and clinical practice. Of thirteen previously published QESs only two include more than one long term condition, the remainder highlighting single conditions. Crucially, both reviews [84,85] miss the opportunity to synthesise transdiagnostically across included studies and conditions. In contrast, our chosen approach aligns with emerging research suggesting that fatigue factors may be consistent across various long-term conditions [7], prioritising symptom-dependency over disease-independency [9].

The six transdiagnostic themes we have identified demonstrate remarkable consistency across diverse conditions including multiple sclerosis, stroke, rheumatoid arthritis, inflammatory bowel disease, chronic kidney disease, and Parkinson's disease. This consistency supports the hypothesis that common mechanisms, beyond specific physiological requirements e.g. breathing exercises for COPD. underlie fatigue experiences and successful management strategies regardless of diagnosis.

Limited transdiagnostic research

Despite growing interest in transdiagnostic approaches, only two primary studies [9,17] explicitly adopted a transdiagnostic methodology. The first of these [9] examined activity pacing across multiple long-term conditions rather than within a single diagnosis. This qualitative study interviewed 15 adults with diverse chronic conditions including CFS/ME, antiphospholipid syndrome, fibromyalgia, and Ehlers-Danlos syndrome [9]. Participants described fatigue consistently as energy-draining and qualitatively different from ordinary tiredness. They identified common barriers including overactivity-induced boom-and-bust cycles, mental health challenges, and workplace difficulties, alongside facilitators such as rest, meditation, supportive social environments, and tailored physical activity. A second study [17], from the October 2025 update, explored rest across numerous conditions associated with fatigue. Long Covid was the most common condition (9 patients, one with comorbid Postural Orthostatic Tachycardia Syndrome). Chronic Fatigue Syndrome was present in a further 3 patients as a primary diagnosis with an additional one patient experiencing both chronic fatigue and rheumatoid arthritis. Multiple Sclerosis and Sjögren's Syndrome (both 3 patients each) and various forms of arthritis were present across the cohort. Specifically, osteoarthritis was documented in 2 patients, rheumatoid arthritis in one (above-mentioned) patient and general arthritis in 2 additional patients (one with chronic renal conditions and one with fibromyalgia). In total, 5 patients exhibited some form of arthritis [17].

Two additional studies [61,62] explored mental fatigue across both stroke and traumatic brain injury, but otherwise the literature remains predominantly condition-specific, representing a significant research gap.

Management of fatigue in long-term conditions could benefit from generic strategies that address common underlying mechanisms rather than isolated disease characteristics, with interventions designed for one group potentially being applicable and beneficial to others [7]. Supporters of this transdiagnostic argument assert that fatigue is a generic symptom, and that management strategies effective for one condition may also apply to others [86]. Although biological factors such as inflammation may initiate fatigue, cognitive and activity-based transdiagnostic factors tend to perpetuate it [87]. For example, fatigue significantly affects occupational participation and quality of life in patients with ankylosing spondylitis, indicating a need for tailored fatigue management strategies that consider the full context of an individual's experience beyond their specific condition [88].

Fatigue interventions need to factor in diverse underlying mechanisms and to explore a transdiagnostic approach that accommodates the unique pathology of each patient population [89]. This perspective aligns with the broader biopsychosocial model of health, which acknowledges psychological, social, and lifestyle factors as significant contributors to fatigue [90].

Employing validated multidimensional assessment tools enables healthcare professionals to identify relevant fatigue impacts and customise management strategies accordingly [91]. Additionally, similarities in strategies to manage fatigue across different conditions suggest that a transdiagnostic approach could streamline development of effective interventions [92].

However, important contradictions caution against overgeneralising transdiagnostic approaches. Some patients resist fatigue-focused interventions, finding excessive attention to symptoms counterproductive. Generic content may fail to resonate, with participants desiring condition-specific information and feeling disappointed by materials referencing other diagnoses. Perceived effectiveness varies dramatically, and while social support benefits many, it creates anxiety or comparison pressure for others. Format preferences diverge substantially regarding session length, frequency, intensity, and delivery environment, indicating that transdiagnostic frameworks require considerable flexibility to accommodate diverse patient experiences and needs.

The predominance of disease-specific research likely reflects traditional funding structures, specialist clinical services organised by diagnosis, and condition-focused advocacy groups. Nevertheless, this synthesis demonstrates valuable insights emerging from cross-condition examination, particularly for boundary-spanning symptoms like fatigue, suggesting condition-specific elements can be effectively integrated within transdiagnostic frameworks that acknowledge both commonalities and nuances.

Importance of personalisation

While our findings support a transdiagnostic approach to understanding fatigue, they simultaneously emphasise the critical importance of personalisation in intervention delivery. Across all included studies, participants consistently valued approaches that could be tailored to their specific circumstances, priorities, and daily realities. As one stroke survivor describes, fatigue management is "very, very personal… instead of it being a given set of rules, it helps people to think about who they are and what is particularly exhausting or not exhausting for them as an individual" [64].

This tension between transdiagnostic commonality and individual uniqueness suggests that effective interventions should draw on common underlying mechanisms yet al.low for personalisation based on individual circumstances, preferences, and needs. Standardised, one-size-fits-all approaches were frequently perceived as less effective than those offering flexibility and individualisation. Condition-specific differences may have important effects on acceptance of different intervention components- so, for example, exercise was less accepted among those who have gait problems with men apparently being more concerned about group-based exercise than women.

Within-condition differences

An important finding from our synthesis is that within-condition differences could be as significant as between-condition variations. Participants with the same diagnosis often reported markedly different fatigue experiences, management preferences, and responses to interventions. These differences appeared to be influenced by factors such as disease severity, comorbidities, personal circumstances, and individual coping styles. These findings were also confirmed by participants in associated EIFFEL focus groups. Duration

of fatigue also appears significant, both in the past and within recent medical history, particularly given that the temporal dimension of chronic fatigue influences both experience and management approaches.

Collectively, our findings challenge simplistic disease-centred approaches and highlights the need for nuanced, person-centred interventions even within condition-specific services. As noted in the post-stroke fatigue study, "Managing post-stroke fatigue was described in different ways, and there was not one particular fatigue management strategy that seemed effective for everyone" [63]. This suggests that even when working *within* a specific condition, clinicians should consider the unique characteristics and preferences of each individual.

Strengths and limitations of the review

This review has several methodological strengths. First, our comprehensive search strategy across multiple databases helped ensure a thorough representation of qualitative research on FMIs. Second, the inductive thematic analysis approach allowed themes to emerge organically from the data before applying them as a framework for the remaining studies. Third, the focus on interventions demonstrating effectiveness or promise ensured that the findings have direct clinical relevance. Finally, the transdiagnostic approach provides novel insights that extend beyond previous condition-specific reviews.

The use of the ENTREQ statement guidelines [12] enhanced transparency in reporting, while adherence to Cochrane Collaboration QES methods [11] strengthened methodological rigour. The two-stage inclusion process allowed for both broad initial inclusion and subsequent focusing on clinically relevant (effective or promising) interventions.

Despite its strengths, this review has several limitations. First, our inclusion criteria, excluded several conditions including cancer, COVID-19, HIV-AIDS, spinal cord injury, myalgic encephalomyelitis, and chronic fatigue syndrome. While this decision aligns with the commissioning brief and prevented the review from becoming unwieldy, it means that potentially valuable insights from these conditions are not represented. Nevertheless, clinicians in our team were able to draw on their clinical experience in highlighting how the identified themes extend across an even greater diversity of conditions.

Second, restricting our analysis to studies published after 2013 and in English may exclude relevant earlier work or research published in other languages. Third, the focus on interventions demonstrated to be effective or promising through quantitative research meant that potentially valuable qualitative insights relating to less effective interventions are not considered. Similarly, acceptability was primarily focused on the views of patient participants – the views of carers and those delivering the interventions need to be similarly taken into account, offering a collective opportunity for further qualitative synthesis.

Finally, our synthesis necessarily involved interpretation of the primary study findings, raising the possibility that our analysis may not fully capture the nuances of the original data or may reflect our own disciplinary perspectives and preconceptions.

Strengths and limitations of the evidence base

The evidence base for this synthesis demonstrates several strengths. The 40 included papers covered 35 different studies across multiple conditions, providing a rich and diverse dataset for analysis. Many studies employed rigorous qualitative methodologies with clear sampling strategies, appropriate data collection methods, and transparent analytical approaches. The diverse intervention types allowed for examination of common themes across different modalities. Furthermore, inclusion of studies exploring various delivery formats (online, telephone, face-to-face, group, individual) provided insights into implementation considerations across diverse contexts. Several studies incorporated longitudinal elements, interviewing participants at multiple time points to capture changes in experiences and perspectives over time. This temporal dimension adds valuable insights into the sustainability of intervention effects and the evolution of fatigue management strategies.

Several limitations in the evidence base should be acknowledged. First, despite the diverse conditions represented, some long-term conditions with significant fatigue burden were underrepresented or absent. Second, participants were predominantly female, white, and relatively well-educated, limiting the transferability of findings to diverse populations. Third, few studies explicitly addressed the needs of participants from culturally and linguistically diverse backgrounds or those with low health literacy. Fourth,

while most studies reported robust methodological approaches, the depth and richness of qualitative analysis varied considerably, with some offering relatively descriptive rather than interpretive accounts. Finally, few studies explicitly incorporated co-production approaches involving patients as research partners rather than mere participants. Greater involvement of people with lived experience of fatigue in research design, data collection, analysis, and interpretation could strengthen future evidence.

Implications for practice and research

This synthesis has implications for clinical practice and future research. For clinicians, findings suggest that acceptable FMIs should incorporate education about the biopsychosocial nature of fatigue, facilitate a process of knowledge acquisition, expectation adjustment, and behaviour modification, offer personalisation options, address potential barriers to engagement, incorporate social support elements, and provide flexible delivery options.

For researchers, this review highlights the potential value of explicitly transdiagnostic approaches to studying fatigue management, while also emphasising the need for interventions that can be personalised to individual circumstances. Future research should explore how to balance standardisation (for efficiency and scalability) with personalisation (for relevance and effectiveness). Findings align well with Normalisation Process Theory (NPT), particularly regarding cognitive participation (how participants engage with and understand interventions), reflexive monitoring (how they appraise effects), and interactional workability (how interventions fit into daily life) [93]. Future intervention development could benefit from explicitly utilising this theoretical framework

Additionally, research exploring experiences of diverse populations, including those from different cultural backgrounds, socioeconomic circumstances, and education levels, would strengthen the evidence base. Studies incorporating co-production approaches with patient partners could ensure that interventions address priorities that matter most to those experiencing fatigue.

Implications for future interventions

Future FMIs should privilege biopsychosocial explanations of fatigue that help patients make sense of their experiences, reduce self-blame, and establish a foundation for effective management. This coherent understanding appears critical for patient engagement and outcomes. Where such an initial approach proves unsuccessful healthcare providers should seek to identify alternative explanations that are consonant with the evidence and with the patient's belief system. Importantly, developing a shared understanding between patient and clinician appears just as crucial as the specific explanation model used. Even predominantly biological explanations can be effective if they are collaboratively developed and provide a clear rationale for management strategies.

Interventions should facilitate a comprehensive process of change across cognitive, emotional, and behavioural domains. Approaches addressing all three areas appear to yield superior results compared to narrower approaches. Education and knowledge acquisition emerged as particularly welcome components of successful interventions and this underscores the importance of prioritising clear, accessible information as a foundation upon which other intervention components can build.

Personalisation emerges as essential, with interventions needing to accommodate individual variations in fatigue experiences and circumstances: "Having personal choice to decide which techniques to try, as opposed to being directed by a health care professional, provided some participants with a sense of control." [60]. This sense of agency was consistently valued across conditions.

Technical design should minimise additional burden for already fatigued participants by balancing informational depth with cognitive accessibility. This might include flexible formats, tiered information delivery, and multimodal presentation options to improve engagement. Technical design should further involve pre-assessment of intervention cognitive participation, workability, and coherence using frameworks such as Normalisation Process Theory (NPT), along with patient and public involvement to minimise additional burden.

Social support components appear valuable across conditions, either through group formats or by incorporating testimonials and peer connection options in digital interventions. Several studies indicated participants' desire for ongoing peer contact beyond formal intervention periods. Delivery formats should offer choices (online/in-person, individual/group) and be tailored to disease trajectories, with

interventions available at different stages from diagnosis onward. As Tremayne observes, interventions "need to be flexible to help them cope" [65]

Conclusions

In conclusion, this QES demonstrates that acceptable FMIs must balance structure with flexibility, provide coherent explanations while accommodating individual experiences, and offer practical strategies without creating additional burden. Future interventions should prioritise personalisation, accessibility, and sustainable support to help individuals effectively manage the complex challenge of persistent fatigue in long term conditions.

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