Online self-compassion training for people living with long-term physical health conditions: A pilot study.

Selina Wolke

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Chapter 1. Lay summary

Background

A ‘long-term physical health condition’ is a health issue that lasts a year or more, impacts a person's life, and may need ongoing care and support. Common terms for it are ‘chronic illness’, ‘long-term illness’ or ‘special health care need’. The most widespread conditions in the UK include diabetes, cancer, and heart disease. People living with long-term health conditions can experience illness-related demands and stressors that impact their mental, physical and social well-being. Day-to-day management of a health condition might involve trying to manage symptoms, following treatment regimes, attending medical appointments, as well as coping with the consequences of chronic illness, such as pain and uncertainty of the future. These experiences can lead to a person feeling low, anxious or stressed, or perhaps directing blame at themselves for not meeting expectations of managing their illness. People seeking help with a long-term health condition may gain support from different medical and/or psychological services. It is therefore important that services are able to offer the most appropriate and effective techniques and therapies.

In the past two decades of modern psychology, ‘compassion’ cultivation has developed as a treatment approach. These therapies teach you how to recognise suffering and how to relieve it with an act of kindness. In other words, it is training you to see that what you are feeling is really normal given what you are going through and to find ways to be kinder to yourself and others. There are different kinds of compassion-based therapy, for example, Compassion Focused Therapy, Compassionate Mind Training, Mindful Self-Compassion, and Attachment-Based Compassion Therapy. Growing evidence shows the helpfulness of these therapies for people affected by chronic illness and for those who feel self-critical.

Aims of the research

The study had two main parts. We hoped to achieve our aims by (1) looking at previous research on this topic (a literature review), and (2) completing a new piece of research. These main aims were:

1. To review previous research and understand how various compassion-based therapies impact the mental and physical health of people experiencing chronic illness.
2. To carry out a new investigation to find out whether an *online* treatment programme focused on teaching people about self-compassion can help people affected by long-

term health conditions, and whether there are any draw-backs to this treatment programme.

Design and method

In the first study, we reviewed 872 scientific articles related to compassion-based therapies in chronic illness. Of these, 16 studies were chosen as they met our specific criteria. The results from these studies were examined together, and we compared and contrasted the intervention characteristics (e.g., online versus face-to-face therapy) as well as the effects on mental and physical health outcomes.

For the second study, we recruited 21 adults who reported that they were living with a long-term health condition for a year or more, and who were looking for better ways to manage. All participants were based in the UK and discovered the study through adverts in charities and social media. We asked participants to complete online questionnaires before and after a 4-week online therapy course. We were interested in knowing whether there would be improvements in self-compassion, self-criticism, depression, anxiety, stress, shame, quality of life and well-being after the therapy. We were also intersted in finding out how practical and suitable the online programme was for people with chronic illness. We did this by looking at the number of people who dropped out, as well as people's commitment, engagement and satisfaction levels. The course included four online sessions, with one 30 minute video session per week, which set a basis for the in-between session practises and readings. It could be accessed by participants at any time by logging into the learning portal.

Results

The first study found:

1. Compassion is a rapidly emerging field, as the majority of studies were published in the past three years.
2. People living with chronic illness reported that the compassion-based therapy courses that they completed were helpful and they tended to rate that they were satisfied with the course.
3. Less people tended to drop-out of compasion-based therapies that were held face-to-face compared to online.

4. There were trends for compassion-based interventions to improve self-compassion, self-assurance, pain acceptance and well-being, whilst also decreasing self-criticism, shame, anxiety, depression and stress.

The second study found:

1. The majority of people who completed the study rated that they were satisfied with the course and that they would recommend the course to a friend facing a similar difficulty.
2. Around 50% of people who completed the questionnaires at the start of the study, went onto complete the self-compassion course and completed the questionnaires at the end of the study. As we could not monitor peoples progress on the course, it could be that drop-out was over-estimated.
3. People with long-term health conditions reported improvements in self-compassion, self-criticism, depression, stress, shame, quality of life and well-being after the therapy. As this study did not compare the online self-compassion training to another kind of therapy, we could not conclude whether improvements were related to the intervention itself or other factors, such as, learning a new skill, or passing of time.

The implications of this study are that online self-compassion training shows promise as a feasible and acceptable intervention for people living with chronic illness. Further research is needed to help understand the barriers to engagement and how this therapy compares to other current mainstream therapies.

Public involvement

Experts by Experience looked over the survey and all the documents that were to be shown to participants. They were asked to comment on several aspects of the study for example how to advertise, recruit and assess sensitive things (like shame and self criticism). Participants were invited to give feedback upon completion.

Distribution

The results of this study will form a scientific publication to be used at conferences focusing on long-term health conditions and compassion, as well as other relevant psychology conferences.

Chapter 2. A systematic review of self-compassion based interventions for people living with long-term health conditions

Abstract

Interventions that teach self-compassion are increasingly used to address mental and physical health outcomes in individuals living with long-term health conditions. This systematic review aimed to summarize literature up until May 2022 that had investigated how *compassion-based* interventions (Compassion Focused Therapy (CFT), Compassionate Mind Training (CMT), Mindful Self Compassion (MSC), Cultivating Compassion Therapy (CCT), Cognitively Based Compassion Therapy (CBCT) and Attachment-Based Compassion Therapy (ABCT)) impact upon process (e.g. self-compassion), psychological, physical and functional outcomes in chronic illness. It also examined the quality of the questionnaires used to measure outcomes and how differences in compassion-based intervention formats may affect outcomes (e.g., mode of delivery, duration, use of technology). Cochrane, Medline, and PsycINFO databases were searched using "compassion" AND "chronic illness" and their synonyms. Eligible studies had an experimental design, with compassion training at the core of the course content, and in populations with long-term health conditions. Study quality was assessed using the Mixed Methods Appraisal Tool (MMAT). The review included sixteen studies published between 2014-2022, including a total of 571 participants with nine different kinds of chronic illness and seven different intervention types. 10 of 16 studies were randomized controlled trials (RCTs) and the remaining six studies were non-randomized pre-post studies. There were trends for compassion-based interventions to improve self-compassion, mindfulness, pain acceptance and objective physical measures of well-being, whilst also decreasing self-criticism, shame, anxiety, depression and stress. There was more variation in findings with regards to whether these improvements remained significant in comparison to a control condition and at follow-up. Self-compassion may be a key transdiagnostic factor of psychopathological and physiological change processes in chronic conditions, although the mechanisms underlying these changes are not known and require further investigation. This in-turn calls for more RCT studies with larger sample sizes and studies that use appropriate measurement scales and feasibility/acceptability measures. Future studies should also examine moderating factors on treatment outcomes. Overall, compassion-based interventions in chronic illness is an emerging field and shows promise for improving self-compassion as well as other psychological and functional outcomes.

Introduction

Individuals living with long-term health conditions such as cancer, chronic pain, HIV/AIDS, and diabetes experience illness-related demands and stressors that can have significant impacts on their mental, physical and social aspects of life (McWilliams, Cox, & Enns, 2003). The World Health Organization (WHO) reported that 9–23% of people with one or more chronic physical health conditions have comorbid depression and anxiety (Buist-Bouwman, de Graaf, Vollebergh, & Ormel, 2005; McWilliams, Goodwin, & Cox, 2004; Moussavi et al., 2007). Comorbid mental health difficulties can lead to poorer illness outcomes, treatment adherance and premature death (Krishnan et al., 2002; Mykletun et al., 2009). This highlights the importance of developing treatments that target mental health difficulties alongside physical health conditions to improve well-being and prognosis.

There are a variety of standard treatments available for long-term health conditions. Psycho-social interventions mainly focus on improving self-management skills to manage symptoms (Anderson & Ozakinci, 2018; Linden et al., 1996). Cognitive behavioural therapy (CBT) aims to change a person's problematic thinking, beliefs and behaviour to improve functioning (Moseley & Butler, 2015). Empirical evidence shows that CBT is effective in reducing pain and psychological symptoms in chronic illness, with findings yielding small to moderate effect sizes pre- to post-intervention relative to control conditions (waitlist, treatment as usual) (Eccleston, Hearn, & Williams, 2015; Jassim, Whitford, Hickey, & Carter, 2015). However, negative self-evaluations can interfere with CBT and achieving optimal outcomes (Ford & Troy, 2019; Plaufcan, Wamboldt, & Holm, 2012; Voth & Sirois, 2009). Indeed, a substantial number of people living with chronic illness report rumination, self-criticism, shame and self-blame (Callebaut et al., 2016; cancer: Hopwood, Fletcher, Lee, & Al Ghazal, 2001; pain: Smith & Osborn.2007; Lumley et al., 2011).

In recent years, new therapeutic approaches working with long-term health conditions focus on acceptance and cultivating compassion/self-compassion. Compassion is a complex concept that has been defined in several ways (see Goetz, Keltner, & Simon-Thomas, 2010). Broadly speaking, compassion is defined as the recognition of suffering and the inclination to relieve it with an act of kindness (Gilbert, 2009).

The benefits of compassion have been discussed for centuries in Buddhist traditions and the Dalai Lama has spoken that "if you want others to be happy – focus on compassion; if you

want to be happy yourself – focus on compassion" (Dalai Lama 1995, 2001). These components of compassion have been incorporated into western psychological science and research, where compassion can be thought of as a skill that one can train in and cultivate over time (Gilbert 2000, 2005a, 2009; Davidson 2002; Neff 2003a, b). Compassion-based interventions were developed primarily to help people shift from rumination, negative bias, shaming, self-criticism and blame to how to work with these difficulties more compassionately (Gilbert & Choden, 2013). In this way, compassion-based interventions can be thought of as targetting trans-diagnostic psychological processes or struggles across disorders (Misurya et al., 2020). Since individuals with chronic illness often experience self-criticism and negative affect, and can encounter acute and/or chronically stressful situations; compassion training may be a promising adjunct treatment for existing interventions or stand-alone intervention (Sirois & Hirsch, 2019; Sirois, Molnar, & Hirsch, 2015).

Self-compassion in the general population

Much of the research to date has focused on the concept of *self-compassion*. Existing evidence suggests that self-compassion is important for adaptability, effective coping and enhanced well-being in physically healthy populations (Kirby, 2017; Kirby, Doty, Petrocchi, & Gilbert, 2017; MacBeth & Gumley, 2012; Neff, 2003). Self-compassion has been linked with positive psychological strengths such as happiness, optimism, curiosity and emotional intelligence (Heffernan, Griffin, McNulty, & Fitzpatrick, 2010; Hollis-Walker & Colosimo, 2011; Neff, Rude, & Kirkpatrick, 2007). Meta-analyses including mostly cross-sectional studies of community samples experiencing mental health problems found large effect sizes for negative correlations between self-compassion and psychopathology (r = -0.53-0.54) (MacBeth & Gumley, 2012; Muris & Petrocchi, 2017). Individuals with high self-compassion had better quality of life and mental health relative to those with low self-compassion, and self-compassion was postively correlated with resilience (MacBeth & Gumley 2012; Neff & McGehee, 2010).

Self compassion in chronic illness – correlational studies

Over the past decade, there has been increasing empirical attention to the effects of self-compassion in chronic illness. The literature suggests that building self-compassion has the potential to help people manage the physical and psychological consequences of long-term conditions (Sirois & Hirsch, 2019; Sirois et al., 2015; Terry & Leary, 2011). A recent meta-analysis involving 2,713 patients suffering from a variety of medical illnesses, demonstrated

that higher trait self-compassion was related to better psychosocial outcomes (anxiety, depression, and stress) and clinical outcomes such as haemoglobin A1c (HbA1c) and blood glucose levels in diabetes (Misurya, Misurya, & Dutta, 2020).

As long-term health conditions are associated with additional uncertainty, self-criticism and self-blame, one could expect that compassion training would be equally or more effective in chronic illness populations as compared to physically healthy adults. However, this assumption requires testing as people with chronic illness may find it harder to cultivate self-compassion in the context of difficulty attending sessions (due to pain, reduced mobility, conflicts with medical appointments) or hopelessness as they adapt to changes in chronic illness status (Stanton et al., 2007). The conclusions of the cross-sectional studies discussed above are limited by their correlational nature. Longitudinal clinical trials are required to test whether compassion-based interventions can benefit individuals with different kinds of chronic health conditions. It is important to examine the efficacy of these approaches in vulnerable populations such as chronic physical conditions, prior to recommending them as adjuncts or substitutes for other treatment approaches.

Compassion-based interventions

The past decade has seen the development of various evidence-based compassion programmes. These include Compassion Focused Therapy (CFT) (Gilbert, 2000), Compassionate Mind Training (CMT; (Irons & Heriot-Maitland, 2021)), Mindful Self-Compassion (MSC) (K. D. Neff & Germer, 2013), Compassion Cultivation Training (CCT) (Jazaieri et al., 2013), Cognitively-Based Compassion Training (CBCT) (Pace et al., 2019), Cultivating Emotional Balance (CEB) (Kemeny et al., 2012), and, Attachment-Based Compassion Therapy (García-Campayo, Navarro-Gil & Demarzo, 2016). These approaches were developed from a common background, namely Buddhism and mindfulness (Brach, 2003; Salzberg, 1997), yet there are some nuances in the models and theories underpinning these approaches. This is described in more detail below.

Compassion Focused Therapy and Compassionate Mind Training

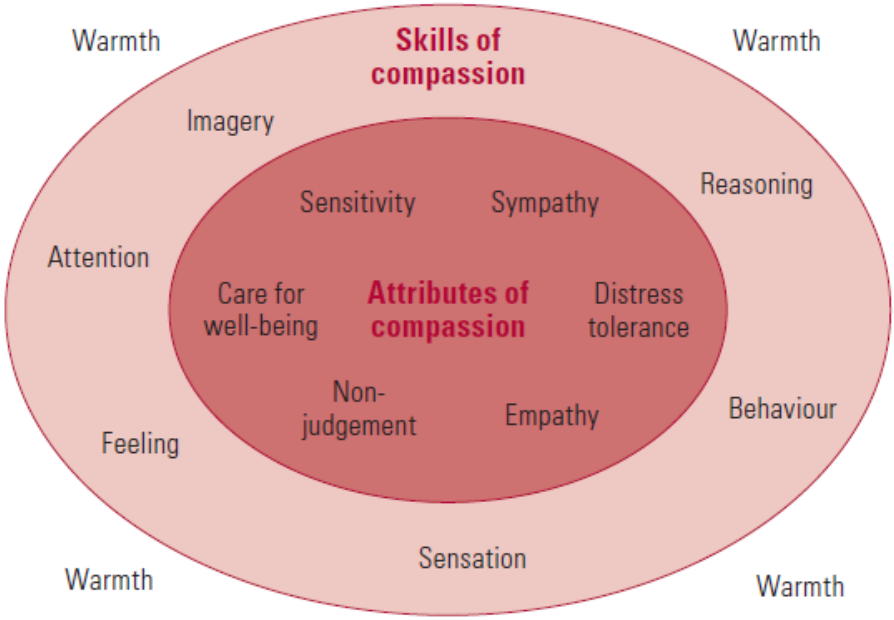
Compassion-focused therapy refers to the underpinning theory and process of applying a compassion model to psychotherapy (Gilbert, 2000). CFT draws on evolutionary psychology, attachment theory and social mentality theory and was initially developed as a trans-diagnostic approach to support people presenting with high levels of shame and self-

criticism. It aims to bring compassion to human suffering. In this context, compassion can be defined as "a sensitivity to suffering in self and others, with a commitment to try to alleviate and prevent it" (Gilbert, 2014). Compassion or self-compassion is proposed to have three essential components: (i) *Caring commitment*: noticing and paying attention to the difficulties and distress we experience; (ii) *Wisdom*: finding wise and helpful ways of reducing distress, and being supportive, (iii) *Strength and courage*: may be required when we turn towards the things that we find difficult and to still hold onto the motivation to respond in a helpful way (Irons et al., 2021).

A key component of CFT is compassionate mind training (CMT). CMT refers to the specific activities that aim to develop compassionate skills, particularly those that influence affect regulation (Gilbert, 2000). CMT has a number of facets: (i) psycho-education about the definition of compassion (commitment to care, wisdom, strength and courage) (ii) that there are different flows of compassion (self to other, other to self, self to self), and, (iii) that there are common fears, beliefs, and blocks to compassion. The training highlights how humans' minds and bodies have evolved in such a way that we have 'tricky brains' which are 'not our fault', and that we have emotions that serve certain functions. These emotions can be placed into a three systems model – threat, drive and soothing systems. The theory postulates that an inbalance in these systems leads to psychological suffering (Gilbert, 2014, 2020). CMT uses a number of physiological and psychological practices to help activate the soothing system. These include attention training, soothing rhythm breathing, mindfulness, and compassionate imagery. In sum, CFT focuses on the skills and attributes of compassion (see Figure 1).

Figure 1

Multimodal compassionate mind training: the key aspects and attributes/engagement of compassion (inner ring) and the skills/alleviation/prevention training required to develop them (outer ring). From Gilbert (2009).



Mindful Self-Compassion

From a social psychology and Buddhist tradition, Neff (2003a, 2003b) proposes that self-compassion includes three essential components: humanity versus isolation, self-kindness versus self-judgment, and mindfulness versus over-identification (Neff, 2003). First, *common humanity* involves seeing one's experiences as part of the human condition rather than as isolating, personal and shaming. Second, *self-kindness* involves understanding one's difficulties and responding in a kind and warm way in the face of failure rather than reacting in harsh, judgemental and self-critical ways. Third, *mindful acceptance* involves awareness and acceptance of distessing thoughts and feelings rather than avoiding them or engaging in rumination.

Mindful Self-compassion (MSC) was developed as a protocol-standardized intervention aimed at increasing mindfulness and self-compassion and reducing the suffering associated with experiential avoidance (Neff & Germer, 2013). Table 1 summarizes the standard content of eight sessions of MSC. The central components of MSC are formal meditation with formal and informal self-compassion practices aimed at developing the cognitive, behavioural, and physical capacities to soothe and comfort oneself when distressed.

MSC is similarly structured to Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-based stress reduction (MBSR) but has important differences to these interventions. MSC has an explicit and central focus on self-compassion concepts and practices, and mindfulness of *negative* experiences is regarded as the first critical step before being able to respond with self-kindness and sense of common humanity. MBCT and MBSR, in contrast, involve practising mindfulness for all kinds of (positive and negative) experiences, with no emphasis on the three elements of compassion.

Table 1

MSC Session plan (extracted from Neff & Germer, 2012)

Session	Outline
Session 1	General introduction and review of self-compassion (what it is, and what it is not).
Session 2	Provides foundational knowledge and practice of mindfulness
Session 3	Discusses the application of self-compassion in various aspects of life
Session 4	Helps participants recognise their inner critic and develop a compassionate inner voice
Session 5	Emphasises the importance of living in accordance with core values
Session 6	Teaches skills to deal with difficult emotions
Session 7	Teaches skills for dealing with challenging interpersonal relationships
Session 8	Teaches skills for relating to positive aspects of oneself and one's life with appreciation

Compassion Cultivation Training

The Compassion Cultivation Training (CCT) programme was developed as a comprehensive compassion training programme by Thupten Jinpa, with contributions from a team of psychologists, neuroscientists, and contemplative scholars at Stanford University (Stanford's Center for Compassion and Altruism Research and Education (CCARE).

Unlike CFT and MSC definitions, this school defines compassion as a multidimensional mental state with four key interacting components (Jinpa, 2010; Jinpa & Weiss, 2013). These include (i) awareness of suffering (*cognitive component*) (ii) caring and tender concern related to being emotionally moved by suffering (*affective component*) (iii) a genuine wish to see the relief of that suffering and a modification of the causes and conditions that give rise to suffering (*intentional component*) (iv) responsiveness or readiness to take action to relieve suffering (*motivational for altruistic behavioral activation*).

Unlike the MSC eight-week course, CCT is a standardized nine-week course with weekly two-hour meetings. Table 2 illustrates the six steps of CCT. The first two sessions involve basic instruction in mindfulness meditation, with compassion meditation training beginning in the third week. Weeks four and five are devoted to developing self-compassion, and week six focuses on developing compassion for strangers. Week seven focuses on cultivating compassion for people through the recognition of common humanity. In week eight, the "tonglen" meditation practise is introduced, where one imagines taking in suffering (either in general or from a specific person) on the in-breath and releasing suffering on the out-breath. The last week is dedicated to how to integrate compassion practices in daily life.

Table 2

The six steps of the Compassion Cultivation Training (CCT) Course. (*) When the course is taught in an eight-week format session 2 is dropped.

Session	Step	Outline
Session 1	1	Introduction to the course and to settling and focusing the mind
Session 2*	1	Settling and focusing the mind
Session 3	2	Loving-kindness and compassion for a loved one
Session 4	3a	Compassion for oneself
Session 5	3b	Loving-kindness for oneself
Session 6	4	Embracing shared common humanity and developing appreciation of others
Session 7	5	Cultivating compassion for others
Session 8	6	Active compassion practice (*tonglen*)
Session 9		Integrated daily compassion cultivation practice (steps 1–6)

Cognitively-Based Compassion Training

Cognitively-Based Compassion Training (CBCT) is a secular adaptation of traditional Tibetan Buddhist methods for cultivating compassion known as *lo-jong* (mind training or thought transformation). The first term, *lo* or 'mind', refers to subjectivity, and *jong* refers to transformation or reorientation, with the goal to transform egoistic 'self-cherishing' toward altruism or 'other-cherishing' (Ozawa et al., 2012). CBCT can be considered 'cognitively-based' in that it relies on an analytical method of meditation to gain deeper understanding and cultivating empathy, prosocial capacity and enhance feelings of social connection and positive emotions for others. It is important to note that CBCT, like CFT, MSC and CCT, also aims to make compassion experiential and personally relevant. Thus, CBCT also has an active affective component (Negi, 2013).

Table 3 illustrates the main learning components in this manualised eight-week meditation-based intervention. The training protocol is sequential with modules 1-2 aiming to improve attention and awareness before beginning with specific compassion practices in modules 3-6. Indeed, a common theme across all compassion-based interventions is the use of mindfulness/attention/awareness training prior to the cultivation of compassion.
In CBCT, analytical practices are designed to challenge assumptions regarding feelings and actions toward others with a focus on generating cognitive reappraisals (the broader human condition) and stimulate affective experiences of compassion for themselves and others. This is facilitated by visualizations and imagery during guided meditations.

Table 3

CBCT Session Plan. Adapted from (Dodds et al., 2015)

Session	Outline
Module 1	Developing meditative concentration (shamatha)
Module 2	Developing a non-judgmental awareness of thoughts, internal bodily states, and environmental circumstances (mindfulness)
Module 3	Examining of the causes of suffering (e.g., cognitive contributions to stress reactivity) and the practicing self-compassion, defined as a resolve to 'emerge' from suffering by correcting faulty cognitions and reactions
Module 4	Practice in equanimity and the perspective that all persons are alike in the common aspirations for happiness and freedom from suffering. Thoughts and feelings are examined that contribute to social bias by categorizing individuals as 'friends, strangers, and difficult persons'.
Module 5	Practice in appreciation and gratitude for benefits received through social interconnection and interdependence
Module 6	Practice in affection (endearment) as leading to greater empathy and ultimately compassion, with focus on developing endearment toward all others regardless of their relationship to one's self
Module 7	Meditative exploration of the first stage of compassion, the aspirational wish that all beings be happy and free from suffering and its causes
Module 8	Meditative strategies for deepening the aspiration for happiness and freedom from suffering for self and others, with focus on developing active compassion (i.e., a motivational readiness to act altruistically)

Cultivating Emotional Balance

Cultivating Emotional Balance (CEB) is a secular training programme designed to reduce emotional experiences that may be 'destructive' to oneself or others and to promote skills in experiencing and expressing emotion constructively. CEB training puts emotional awareness at its core to help participants move closer to a life of choice. As such, CEB integrates wisdom traditions (in collabouration with Dalai Lama and Buddhist monks), contemplative sciences, modern psychology, and scientific emotion research. The session content is summarized in Table 4. The CEB training has a more intensive schedule compared to the compassion-based intervention described so far (CFT, CMT, MSC, CCT, CBCT). The eight-week CEB training involves four all-day sessions or four evening sessions (42 hours) and incorporates three categories of meditative practice: (i) *concentration* practices involving sustained, focused attention on a specific mental or sensory experience; (ii) *mindfulness* practices involving experiential examination of one's physical presence, feelings, and other mental processes; and (iii) *directive* practices designed to promote empathy and compassion for others (Kemeny et al., 2012).

Table 4

CEB training programme. Adapted from Kemeny et al., 2012.

Features	Content
Training Program Structure	
Training period	8 weeks: 4 all-day sessions/4 evening sessions (42 hr)
Session structure	Group format with two trainers (a meditation expert; a psychological trainer with expertise in leading support groups and meditation groups)
Session format	Didactic presentations, practice related to meditation and to emotional awareness/ understanding, assignment of home practice (meditation, emotion), discussion of home practice
Training Program Components	
Highlights of secular meditation component (recommended meditation practice: 25 min/day)	Concentration training meditation practice: (25 min/day)
	Mindfulness training
	Promotion of empathy and compassion
	Yoga and other movement practices
	Conceptual discussion including a focus on values, life meaning
Highlights of emotion component	Knowledge of functions, sensations, triggers, automatic appraisals, and cognitions associated with specific affective states (e.g., anger, fear, sadness)
	Recognizing one's own emotions
	Understanding one's own emotional patterns
	Recognizing emotion in others (face, verbal) to promote empathy

Attachment-Based Compassion Therapy (ABCT)

Attachment-Based Compassion Therapy (ABCT) can be thought of as a more distant cousin to CFT, CMT, MSC, CCT. CBCT and CEB. ABCT is a model based on attachment styles and was specifically developed for Spanish-speaking countries as it was considered as more culturally appopriate than other compassion therapies (García-Campayo, Navarro-Gil, & Demarzo, 2016). The intervention focuses on improving one's ability to be considerate and kind toward (i) themselves and their own experience of suffering, and (ii) others' experience of suffering (D'Amico et al., 2020; Navarro-Gil et al., 2020). ABCT involves eight-weekly, two hour sessions followed by three reminder monthly sessions. It involves practices of mindfulness and visualisations based on self-compassion and the attachment style that was generated in childhood (Table 5). The programme also includes daily homework assignments that take approximately 15–20 minutes to complete.

Table 5

ABCT Session plan (extracted from Montero Marin et al., 2018)

Session	Outline
Session 1	**Preparing Compassion** Theoretical aspects of brain evolution, happiness, and suffering. Concept of compassion/self-compassion and elimination of mistaken beliefs. Participants are instructed in mindfulness practices such as breathing, and compassionate body scan. These practices help to regulate attention and emphasize compassionate aspects within oneself. They are a core element of the program
Session 2	**Mindfulness and compassion.** Differences with self-esteem. How to manage and cope with fear of compassion. Practices to try to connect with affection and compassion with other beings, and to try to generate feelings of security toward oneself. It is analyzed whether participants have previously developed a mental referent figure in their life, to resort to in distressful situations
Session 3	**Developing my compassionate world** Action mechanism of compassion. Importance of replacing self- criticism with self-compassion. Development of a core element of compassion such as the figure of secure attachment. Replacing the critical voice with a more compassionate and tolerant one. Importance of acceptance in life
Session 4	**Relationships and Compassion** Parenting models during childhood. Understanding that relationships with parents generate different ways of relating to the world. Awareness of the emotional bond developed toward parents during childhood, as well as their implications for the emotional functioning of adulthood, and the capacity we have to be able to receive affection from others
Session 5	**Working on ourselves** Reconstruction of a secure attachment model, modifying our relationships with ourselves and with others by compassion. Practices to become aware of our own ability to give affection to others and ourselves. Reconciliation
Session 6	**Advanced compassion I** Forgiveness and common barriers to compassion. Importance of forgiveness toward oneself and others. Forgiveness through meditation: (1) asking forgiveness of others, (2) forgiving oneself, (3) forgiving others for wrongs received. Values guide activation to reduce suffering
Session 7	**Advanced compassion II** Envy and the importance of developing an attachment figure based on oneself. How to manage difficult relationships. Trying to understand other's suffering in order to develop applied compassion in daily life
Session 8	**Transmitting compassion toward others** Equanimity, a quality fruit of compassion practice. How to maintain compassion exercises throughout life. Practices to develop equanimity: we are all the same, the fallacy of categories, giving gratitude.

In summary, six schools of compassion-based interventions have been decribed. All approaches require training of attention/awareness/mindfulness prior to training compasson. Although many conceptual elements overlap between these approaches, the models and theories underpinning these approaches differ, as do the specific definitions of self-compassion or compassion.

Studies of compassion-based interventions in long-term health conditions

There is a growing body of work evaluating the feasibility, acceptability and efficacy of compassion-related interventions for people with chronic illness (e.g. Ogueji et al., 2020; Gooding et al., 2019; Kirby 2016; Leaviss & Uttley 2014). Systematic reviews and meta-analysis reviews on this subject (Austin et al., 2021; Ferrari et al., 2019; Kilic et al., 2021; Mistretta & Davis, 2022) have shown that most studies are low in quality (i.e., pilot studies with small samples sizes) and have targeted people with cancer or persistent pain. All four reviews showed that most compassion-related interventions improved within-person self-compassion outcomes from pre- to post-intervention and that self-compassion interventions had small-moderate effects on improvement in self-compassion compared to controls (Austin et al., 2021; Ferrari et al., 2019; Kilic et al., 2021; Mistretta & Davis, 2022). Austin's qualitative synthesis yielded experienced benefits of (i) acceptance of the condition; (ii) improved emotion regulation skills; and (iii) reduced feelings of isolation.

However, these reviews are limited in two main ways: *generalizability* to people with chronic illness and the *specificity* of self-compassion interventions. Ferrari et al.'s, (2019) meta-analysis of 11 studies included only three types of chronic health conditions (diabetes, obesity, and breast cancer survivors). The review also did not address outcomes which are highly relevant to long-term health conditions such as depression, anxiety, pain and physical functioning.

Reviews that used more diverse chronic illness samples and outcomes were limited in their examination of the specific effects of self-compassion training (Kilic et al., 2021; Mistretta & Davis, 2022). Kilic et al., (2021) included intervention studies with one-off compassion sessions in a larger course of mindfulness-based cognitive therapy (MBCT), mindfulness-based stress reduction (MBSR), acceptance-commitment therapy (ACT) etc. which have a different theoretical basis to compassion therapy. Mistretta and Davis (2021) included

interventions where compassion made up 50% or more of the course content. These reviews can be considered limited in their examination of the *specific* effects of self-compassion training when there are several other confounding variables and therapeutic techniques at play.

This systematic review differs from other recent reviews in three main ways. First, this is a review of compassion-***based*** interventions as opposed to compassion-***related*** interventions. It is a more focused review, including intervention studies that have compassion at their core. Only studies with "compassion" in their title were included, and/or only studies where the main objective of the intervention was the training of self-compassion: CFT (Gilbert, 2000), CMT (Irons & Heriot-Maitland, 2021), MSC (Neff & Germer, 2013), CCT (Jazaieri et al., 2013), CBCT (Pace et al., 2019), CEB (Kemeny et al., 2012) and ABCT (García-Campayo, Navarro-Gil & Demarzo, 2016). Each study was individually screened by two researchers to ensure that compassion was the primary basis of the intervention (having compassion in 80% of the course content). Unlike previous reviews, this review allowed for a more focused and accurate assessment of study outcomes where compassion training was the main intervention in the therapy. Second, this review provides a more in-depth analysis of quantitative outcomes, how psychometric properties of questionnaires used relate to the outcomes and whether the intervention has been tailored/adapted for the long-term health condition in question. The latter two have not been examined previously. It is important to review this kind of heterogeneity in the literature and how this could effect study outcomes. Finally, this review is a more up-to-date review with studies included up until May 2022. It uses three newly published studies not yet reported in previous reviews (Basque et al., 2021; Carvalho et al., 2021, Zheng et al., 2022).

Research Question

This systematic review aimed to summarize literature up until May 2022 that had investigated how the above compassion-based interventions (CFT, CMT, MSC, CCT, CBCT, CEB, ABCT) impact upon self-compassion and psychological and physical well-being in people living with long-term physical health conditions.

The research questions were:

1. Do compassion-based interventions (online and face-to-face) improve process (e.g. self-compassion, self-criticism), psychological (e.g. anxiety, depression), functional (e.g. QoL), and physical (e.g. cortisol levels) outcomes in people with long-term health conditions?
2. What questionnaires are used to measure outcomes and could the quality of questionnaires affect the outcomes?
3. Do differences in compassion-based intervention formats affect outcomes? (e.g. mode of delivery, duration, use of technology, tailoring the intervention to the condition in question etc.)

Methods

The systematic review was conducted according to the 'PRISMA' (preferred reporting items for systematic reviews and meta-analysis) statement (Moher et al., 2009).

Eligibility criteria

Study type

Searches were limited to peer-reviewed articles, time (date of incidence until 5th March 2022), research design (experimental studies: randomized or non-randomized), and language (English). The studies did not need an active or passive comparator condition and pilot trials were included. Studies needed to report at least one outcome pre- to post-intervention and studies reporting correlations only were excluded. The main outcome of interest was a self-report measure of self-compassion. Additional outcomes were psychological or physical well-being related outcomes such as depression, anxiety, stress, well-being, self-criticism, self-esteem, quality of life, or any concept which found relating to it. Experimental studies were excluded if there were fewer than 10 participants as statisticians have estimated that 10 subjects per group is an appropriate lower limit for pilot trials without standardized procedures (Whitehead et al., 2016). There were no restrictions on age, geographical location or culture to allow for a broad search.

Compassion-based interventions

The review examined outcomes for compassion-based interventions which aimed to increase compassion or self-compassion in individuals with long-term health conditions interventions (CFT, CMT, MSC, CCT, CBCT, CEB, ABCT). Interventions that do not specifically aim to increase compassion/self-compassion (e.g., cognitive behavioural therapy (CBT), acceptance commitment therapy (ACT)) or interventions that used one-off compassion sessions in a larger course of CBT, MBCT, ACT etc, were excluded. Compassion was defined as being at the core of the therapy if compassion-based training/therapy was in 80% of the course content.

Patient Populations

The search strategy for populations with long-term health conditions was broad to allow for identification of as many relevant studies as possible. The definition of long-term health conditions was retrieved from WHO and NHS guidelines: a health problem that requires ongoing management over a period of more than 12 months, impacts on a person's life and may be controlled with the use of medication and/or other therapies (World Health Organization, 2022; NHS, 2019). Synonyms include: chronic condition, chronic illness,

chronic disease, long-term physical health condition, medical condition, somatic physical illness, special health care needs. Search terms for long-term health conditions were determined based on Chapters 2–17 (excluding Chapters 5 and 15) of the World Health Organization's (2016) International Classification of Diseases 10 (ICD-10), as has been done previously (Kilic et al., 2021; Austin et al., 2021). All search terms are described in more detail below.

Interventions with cancer survivors were also included on the basis that there can be long-term complications following diagnosis, treatment and remission (Phillips & Currow, 2010). Studies that focused on psychiatric conditions (e.g., depression, schizophrenia) and substance misuse in the absence of a chronic health condition were excluded, as were studies of healthy populations without a chronic illness.

Literature Search and Strategy

This review searched the following three electronic bibliographic databases with a pre-determined search strategy: Cochrane Central Register of Controlled Trials (CENTRAL), the OVID databases which are PubMed/MEDLINE, EMBASE, PsycINFO and WebofScience up until 5th March 2022. The search also included reference mining of all studies and prior systematic reviews identified (Austin et al., 2021; Ferrari et al., 2019; Kilic et al., 2021; Mistretta & Davis, 2022). All retrieved titles and abstracts were reviewed for inclusion.

Keywords for compassion-based interventions included: compassion*, CFT, CMT, Mindful Self-Compassion, MSC, CCT, CBCT, Cultivating Emotional Balance, CEB, ABCT.

Synonyms of 'long-term health conditions' included: chronic condition, chronic illness, chronic disease, long-term physical health condition, medical condition, somatic physical illness, special health care needs. These were entered into the following syntax for Titles/ Abstracts: "(……)"AND (compassion* OR CFT OR CMT OR Mindful Self-Compassion OR MSC OR CCT OR CBCT OR Cultivating Emotional Balance OR CEB OR ABCT) AND (intervention OR training OR programme* OR therapy).

Other search terms for long-term health conditions were determined based on Chapters 2–17 (excluding Chapters 5 and 15) of the World Health Organization's (2016) International Classification of Diseases 10 (ICD-10). See Table 6. These can broadly fit into six categories: (1) Cancer/blood disorder (2) Chronic infection (3) Respiratory (4) Metabolic/ Endocrine/ Digestive/ Renal/ Genitourinary (5) Musculoskeletal/Skin (6) Neurological. Names of long-

term health conditions were entered as “[NAME OF CONDITION]” AND (compassion* OR CFT OR CMT OR Mindful Self-Compassion OR MSC OR CCT OR CBCT OR Cultivating Emotional Balance OR CEB OR ABCT) AND (intervention OR training OR programme OR therapy).

Second round of searches used (on-line OR online OR app OR computer*) in the search syntax in order to identify all online intervention studies.

Table 6

Search terms utilised in the systematic review

Concept	Search Terms
Self-compassion	self-compassion OR self?compassion* OR compassion* OR kind* OR compassion focused therap* OR CFT OR mindful self?compassion OR MSC OR compassion cultivation training OR CCT OR cognitively based compassion training OR CBCT OR cultivating emotional balance OR CEB OR ABCT
Long-term health condition	chronic care OR chronic health OR chronic illness* OR chronic disab* OR chronic impair* OR chronic condition* OR chronic disease* OR "long-term care" OR "long-term health" OR long-term illness* OR long-term impair* OR long-term condition* OR long-term disease* OR "life long" OR "special health care needs" OR disabled OR disease OR survivor
Cancer/Blood Disorder	Cancer* OR An?emia OR Neoplas* OR Tumo?r* OR Leuk?emia OR Myeloma OR Platelet* OR "Blood Disorder"
Chronic Infection	HIV OR AID* OR Tuberculosis OR Infection OR Prion*
Respiratory	"Chronic Obstructive Pulmonary Disease" OR COPD OR Asthma* OR "Cystic Fibrosis" OR Congenital* OR Bronch* OR Emphysema* OR "Lung Disease" OR Bronchospas* OR Respiratory* OR "Lung Disorder" OR Bronchi* OR Pulmonary*
Metabolic/Endocrine/ Digestive/Renal/ Genitourinary	Hypertens* OR Diabet* OR Hypothyroidism OR Chronic kidney* OR "Inflammatory Bowel Disease" OR "Coeliac Disease" OR "Celiac Disease" OR IBD OR Metabolic* OR Diet* OR "Glucose Tolerance" OR Dialysis OR H?modialysis OR "Kidney Failure" OR "Irritable Bowel Syndrome" OR IBS OR "Kidney Disease" OR Gastrointestinal* OR Obesity OR Endometriosis
Musculoskeletal/ Skin	Osteoarthritis OR Arthritis OR "Back Pain" OR Pain* OR "Foot Care" OR Lumbar* OR Rheumatoid OR Eczema OR Musculoskeletal OR Skeletal* OR fibromyalgia
Neurological	"Parkinson's Disease" OR "Chronic Fatigue Syndrome" OR CFS OR "Multiple Sclerosis" OR "Motor Neuron Disease" OR "Myalgic Encephalomyelitis" OR Epilep* OR Cerebr* OR Seizure OR Alzheimer* OR Dement*

Data extraction (selection and coding)

Data extraction was conducted by two independent reviewers (SW and TC). Agreement between the two raters was $\kappa = 0.69$ (i.e., strong level of agreement), before any discussion took place to resolve discrepancies between the reviewers. The relevant databases were searched by reviewers using the pre-determined search terms. The results of these searches were uploaded to EndNote to create a database. Papers were searched on title and abstract and reviewers removed duplicate papers by using EndNote and hand searching.

Titles and abstracts were screened for relevance using an inclusion/exclusion screening protocol (outlined above). The full-text articles were retrieved through online journals and inter-library loans and read to determine eligibility for the review. Authors were contacted if the article was not accessible online. The PRISMA flow diagram (Figure 2) illustrates the number of papers that matched eligibility criteria of the systematic review and the number of ineligible studies.

Once the final papers were selected, study methods and findings were extracted into a screening table by one reviewer and were examined and reviewed by a second reviewer. Codes included: compassion-based intervention type, country of study, mode of delivery, duration of the intervention, target long-term health condition group, screening questionnaires used to measure outcomes, use of technology, tailoring or adaptation of the intervention, type of analysis, use of control groups, information collection points, study results (feasibility, acceptability and efficacy), and the advantages and limitations of the study. Demographic characteristics were collected for all participants which included age and gender.

Quality assessment

Methodological quality of each study was assessed by two independent reviewers using the Mixed Methods Appraisal Tool (MMAT) (Hong, Fabregues, et al., 2018; Hong, Gonzalez-Reyes, & Pluye, 2018). The discrepancies between the assessors were resolved through discussion. The MMAT examines the quality of studies on the basis of the study design. The MMAT can be used to appraise the methodological quality of five categories of studies: (1) qualitative research, (2) randomized controlled trials, (3) non-randomized studies, (4) quantitative descriptive studies, and (5) mixed methods studies. Most studies in this review were randomized controlled trials and non-randomized studies and were thus rated using criteria in lists (2.1, 2.2, 2.3, 2.4, 2.5) and (3.1, 3.2, 3.3, 3.4, 3.5). Example criteria includes

(2.1) is randomisation appropriately performed? (2.2) are the groups equal at baseline? (2.3). Each criterion was rated as sufficient or insufficient, resulting in scores of out of 5 for single method studies and out of 15 for mixed method studies. Summary scores are discouraged to prevent oversimplification (Crowe & Sheppard, 2011; Hong et al., 2018) and thus individual scores were presented for each study included in the systematic review.

Strategy for data synthesis

A narrative synthesis of the studies key findings was conducted. Themes and information were synthesised from the extraction table and studies were grouped according to intervention method, type of long-term health condition, type of measures used, to see effects on process, psychological, physical and functional outcomes. Data on intervention evaluation, helpful elements and barriers were also extracted.

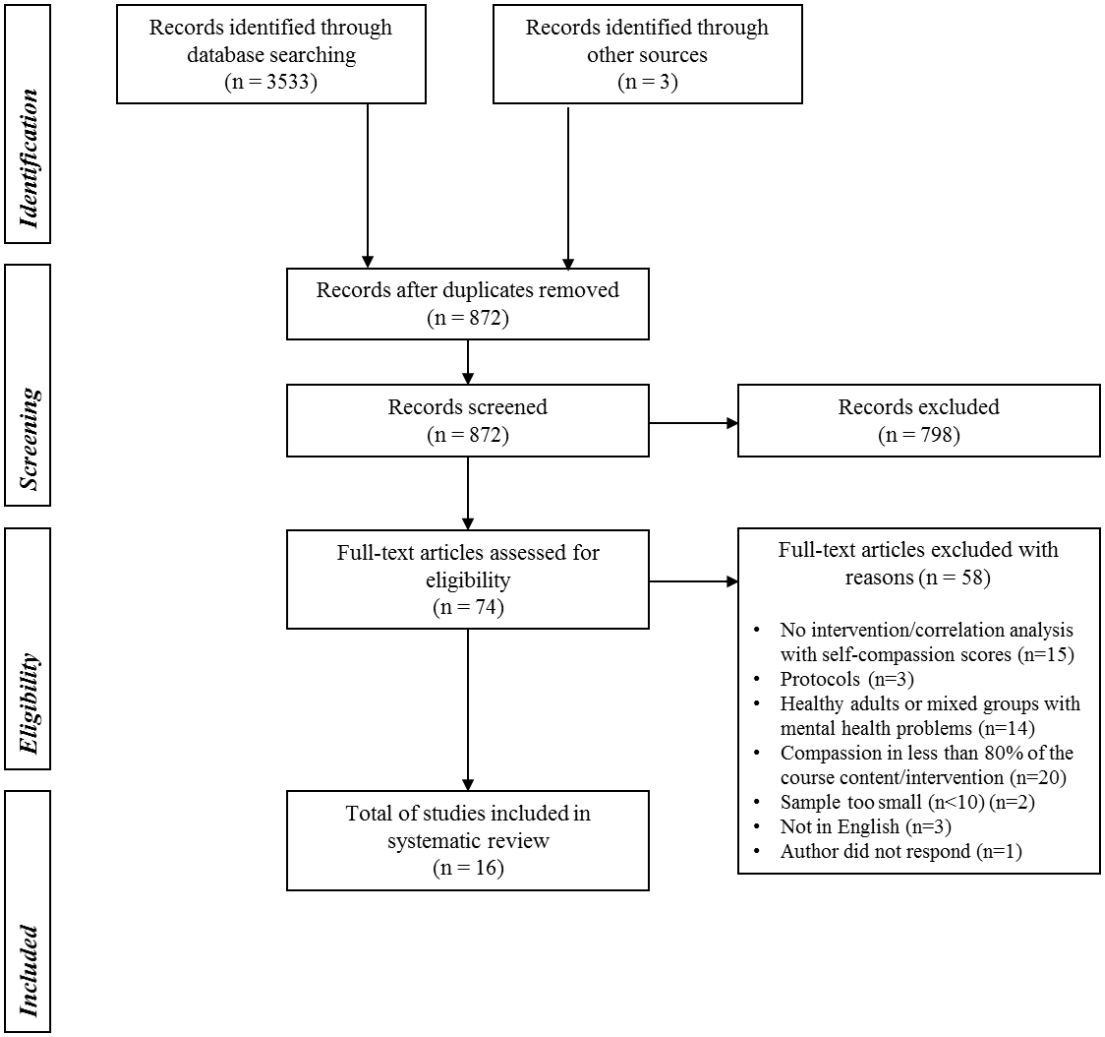
Results

Study selection

The PRISMA flow diagram (Figure 2) illustrates the identification process of the relevant papers by reviewers throughout the study. A total of 16 articles met the inclusion criteria. A total of 3536 articles were intially identified, with 872 articles screened after duplicates were removed. 74 full-text articles were assessed for eligibility, with 58 records being excluded (e.g., studies without chronic health conditions (n=14), compassion in less than 80% of the intervention (n=20)). Compared to previous reviews, this review overlapped with nine studies and had seven additonal studies compared to Austin et al., (2020), overlapped with two studies and had 14 additonal studies compared to Kilic et al., (2021) and overlapped with nine studies and had seven additional studies compared to Mistretta el al., (2022) and had one overlap relative to Ferrari et al., (2019).

Figure 2

PRISMA flow chart



Data extraction

The relevant data was extracted from the 18 included studies and is displayed in Table 7 and 8.

Quality Assessment

All studies were critically appraised with the MMAT (Hong, Fabregues, et al., 2018; Hong, Gonzalez-Reyes, et al., 2018). 10 of 16 studies were randomized controlled trials and were rated using criteria in lists (2.1, 2.2, 2.3, 2.4, 2.5). The remaining six studies were non-randomized studies and were rated using criteria in lists (3.1, 3.2, 3.3, 3.4, 3.5). Two of these non-randomized studies (Ashworth et al., 2015; Chapin et al., 2014) also had qualitative or

mixed-methods elements are were rated using additional criteria in lists (1.1, 1.2, 1.3, 1.4, 1.5) and (5.1, 5.2, 5.3, 5.4, 5.5).

11 of 16 studies rated 4-5 out of 5 points and five studies rated 2-3 points (Table 9). All studies used the appropriate design for their research aims and provided descriptive statistics of participants' demographic and clinical characteristics, although the variables reported differed across studies (e.g., ethnicity not reported in all studies).

Several studies did not present clear methodology and retention percentages were inaccurate or not clearly explained (Sadeghi et al., 2018). 40% of studies (n=6) did not have any control group (Ashworth et al., 2015; Basque et al., 2021; Brooker et al., 2020; Campo et al., 2017; Chapin et al., 2014; Collins et al., 2018) and 40% of studies did not have an active control group (e.g. waitlist control group) (n=6). Few studies used Intention-to-Treat (ITT) analyses (Hudson et al., 2020; Torrijos-Zarcero et al., 2021). All randomized trials used some form of random sequence generation to assign participants to conditions, however not all study assessors and participants were blinded to the intervention provided (Basque et al., 2021; Dhokia et al., 2020; Dodds et al., 2015; Friis et al., 2016; Hudson et al., 2020; Sadeghi et al., 2018). The majority of online compassion intervention studies (Basque et al., 2021; Campo et al., 2017; Carvalho et al., 2021; Hudson et al., 2020; Zheng et al., 2022) had difficulties with participant adherence to the intervention (imperfect compliance or cessation of intervention) and several studies did not have clear methods or scales for measures of adherence.

No studies were excluded from the review following the quality assessment; however, their limitations are considered in the Discussion and summarized in Table 9.

Study characteristics

Studies were published between 2014 and 2022, and the majority of studies had been published in the past three years. There were three studies which were carried out in the USA, four in UK, three in Spain and one of each in Canada, Portugal, Iran, China, New Zealand and Australia. The majority of studies were completed in high income countries as classified by the World Bank (World Bank Country and Lending Groups, n.d.). The sample size of the studies ranged from 12 to 123 participants recruited from a wide range of sources, from specialist clinics to community forums and social media.

Study Design

In terms of study designs, 10 of 16 studies were randomized controlled trials (RCTs) (Carvalho et al., 2021; Dhokia et al., 2020; Dodds et al., 2015; Friis et al., 2016; Gonzalez-Hernandez et al., 2018; Hudson et al., 2020; Montero-Marin et al., 2019; Sadeghi et al., 2018; Torrijos-Zarcero et al.; Torrijos-Zarcero et al., 2021; Zheng et al., 2022). The remaining six studies were non-randomized pre-post studies (Ashworth et al., 2015; Basque et al., 2021; Brooker et al., 2020; Campo et al., 2017; Chapin et al., 2014; Collins et al., 2018), two of which also had qualitative or mixed-methods elements (Ashworth et al., 2015; Chapin et al., 2014). Control conditions also varied in RCTs, from passive waitlist control conditions (Dodds et al., 2015; Friis et al., 2016; Hudson et al., 2020) to treatment as usual control conditions (Gonzalez-Hernandez et al., 2018), relaxation control groups (Dhokia et al., 2020; Montero-Marin et al., 2019), to active control conditions (motivational enhancement control group: Sadeghi et al., (2018); CBT: Torrijos et al., (2021), ACT: Carvalho et al., (2021); core-strength exercise group: Zheng et al., (2022).

Population/ Chronic Illness Conditions

Five studies focused on chronic pain conditions (e.g. fibromylagia, chronic lower back pain, athiritis) (Basque et al., 2021; Chapin et al., 2014; Dhokia et al., 2020; Montero-Marin et al., 2019; Torrijos-Zarcero et al., 2021; Zheng et al., 2022), five focused on cancer (Brooker et al., 2020; Campo et al., 2017; Dodds et al., 2015; Gonzalez-Hernandez et al., 2018; Sadeghi et al., 2018) (three of which focused on breast cancer only), and one of each that focused on diabetes (Friis et al., 2016), skin conditions (Hudson et al., 2020), dementia (Collins et al., 2018), and, brain injury (Ashworth et al., 2015). One study recruited participants with differnet kinds of chronic illnesses (Carvalho et al., 2021) (e.g., Crohn's disease, ulcerative colitis). Most study participants had been living with their condition for a considerable amount of time (>6 months to decades; chronic or survivor) while for a few studies the time since diagnoses was not reported.

The mean age of participants in samples ranged from 25-74 years old (Table 7). Most studies recruited predominantly females and three studies included only female participants (breast cancer). Studies inconsistently reported data on race or ethnicity of participants. Some studies reported whether participants had previous experience of mindfulness or meditation, which,

as discussed above, is a key foundation or technique for subsequently developing compassion (Gilbert, 2002).

Interventions characteristics

Type of compassion-based intervention

This review included the following types of compassion-based interventions, all of which had compassion at the core of the training: CFT (n=5) (Ashworth et al., 2015; Carvalho et al., 2021; Collins et al., 2018; Hudson et al., 2020; Sadeghi et al., 2018), CMT (n=1) (Dhokia et al., 2020), MSC (n=4) (Brooker et al., 2020; Campo et al., 2017; Friis et al., 2016; Torrijos-Zarcero et al., 2021), CCT (n=1) (Chapin et al., 2014), CBCT (n=2) (Dodds et al., 2015; Gonzalez-Hernandez et al., 2018), ABCT (n=1) (Montero-Marin et al., 2019) and other kinds of self-compassion programmes (n=2) (Basque et al., 2021; Zheng et al., 2022). No papers were found that used cultivating emotional balance (CEB) in the context of chronic illness. Intervention protocols ranged from a topic list to fully manualized sessions, thus varying in their degree of consistency and flexibility. All interventions included mindfulness or meditation sessions at the start of the treatment. Interventions varied in their use of other methods, such as psychoeducation, meditation, writing tasks, or breathing techniques.

Duration

The length of interventions ranged from four to 16 sessions, with sessions ranging from eight minutes to 150 minutes in duration. Most interventions ran for eight sessions, with one session per week. Face-to-face self-compassion interventions were generally longer in length (mean: 120 minutes) relative to online sessions, which were shorter in length (range: 8-30 minutes), excluding daily homework tasks. Twelve studies were delivered in a group format and four studies were delivered on an individual basis.

Mode of delivery (face-to-face versus online group versus online platform/website) and use of technology

There were three main modes of delivery: individual face-to-face sessions, group face-to-face, online group sessions and individual access to an online platform/website. The majority of compassion-based interventions were delivered by group face-to-face with a professional trained in that specific compassion course (n=11). Campo et al., (2017) delivered MSC via an online group, and the remaining four online compassion-based interventions used websites and platforms where participants could access written material, audio recordings, and

animated videos (Basque et al., 2021; Carvalho et al., 2021; Dhokia et al., 2020; Hudson et al., 2020).

The majority of face-to-face group interventions also utilised technology and online tools to allow participants to practise techniques and recap learnings outside of session. These included e-mail reminders and summary of learnings (Friis et al., 2016), websites for online discussions/guided recordings/meditations (Brooker et al., 2020; Chapin et al., 2014; Dodds et al., 2015; Gonzalez-Hernandez et al., 2018; Zheng et al., 2022), written reflective exercises (Brooker et al., 2020) and compassionate texts, reminders, alerts, images on smartphone (Ashworth et al., 2015). As such, most interventions (n=13), included homework practices such as audio-supported guided meditations.

Tailoring to the target population

The majority of compassion-based interventions were not tailored to the target population and adhered to the original intervention protocols. Some studies provided minimal tailoring e.g., changing certain terms to 'skin conditions', so as to make them applicable to the audience (Hudson et al., 2020). Most of the tailored interventions were based on CFT (Ashworth et al., 2015; Collins et al., 2018). The neurobiological CFT theories were expanded upon to provide psychoeducation specific to brain injury and dementia. For example, it was explained that participants have 'even trickier brains' to frame difficult experiences related to the physical condition. There were also practical adaptations to make the CFT intervention more manageable for dementia patients, by (i) using increased repetition, (ii) having a supportive other and (iii) having visual presentations to help with memory.

Table 7

Characteristics of studies using compassion-based interventions in long-term physical health conditions

Study (year)	Location	Sample characteristics (type/size)	Condition	Intervention	Study Design	Duration	Mode of delivery	Technology	Guided/tailored
Friis et al., (2016)	New Zealand	People with diabetes type I or II. Intervention group N= 31 (M = 12, F = 20), mean age 42 Control (CAU) N=31 (M = 8, F = 23), mean age 47	Diabetes	Mindful self-compassion (MSC) programme	RCT MSC; waitlist Control 3 months FU	8 weekly sessions of 150 min Home practice encouraged	Group Face-to-face	E-mail reminders and summary of learnings	V/-
Gonzalez-Hernandez et al., (2018)	Spain	56 women with Breast Cancer Intervention group N=28 mean age 52 Control (wait-list) N=28 mean age 53	Breast Cancer	Cognitively-Based Compassion Training (CBCT)	RCT CBCT; TAU Control 6 months FU	8 weekly sessions of 120 min	Group Face-to-face	Guided recordings for each module	V/-

Ashworth et al., (2015)	UK	People with acquired brain injury N=12 (M =7, F = 5) mean age 40	Brain Injury	Compassion-focused therapy (CFT) embedded in rehabilitation programme	Mixed methods evaluation study (pre-post & individual interviews) 3 months FU	6 group sessions max. 18 individual therapy sessions (mean = 16)	Group/ individual Face-to-face	Compassionate texts, reminders, alerts, images on smartphone	V/V
Chapin et al. (2014)	USA	Adults with chronic pain (for interviews: their partners) N=12 (M = 2, F = 10), mean age 48 years	Chronic pain	Compassion Cultivation Training (CCT)	Mixed methods pilot study (pre-post & individual interviews)	9 weekly sessions of 120 min	Group Face-to-face	Website for exercises, discussions	V/-
Dodds et al. (2015b)	USA	Women who survived breast cancer. Intervention N=12 (M = 0,F = 12), mean age 55 Control (wait-list) N=16 (M = 0, F = 16), mean age 56	Breast cancer	Cognitively-Based Compassion Training (CBCT)	RCT pilot study 1-month FU Psychological 95% CI's reported	8 weekly sessions of 120 min	Group Face-to-face	Website for exercises	V/-
Sadeghi et al., (2018)	Iran	Women with breast cancer n= 15	Breast cancer	Compassion-focused therapy (CFT)	Pilot RCT Control group –	2 weekly sessions over a course of 8	Group Face-to-face	-	V/-

		Control (motivational enhancement) N=15 Mean age both groups: 38			motivational enhancement	weeks (16 sessions in total) of 90 min			
Montero-Marin et al. (2018)	Spain	Adults with fibromyalgia. N=23 (M =0, F = 23), mean age 51 Control (relaxation) N=19 (M= 0, F =19)	Fibromyalgia	Attachment-Based Compassion Therapy (ABCT)	RCT ABCT versus Relaxation control condition 3months FU	8 weekly sessions of 120 min with 3 monthly reminder sessions	Group Face-to-face	Daily homework assignments that take approximately 15–20 min	V/-
Brooker et al., (2019)	Australia	Adults who survived cancer N=30 (M=13, F=17) mean age: 62.93	Cancer	Mindful self-compassion (MSC) - adapted version	Feasibility and acceptability study, pre- to post-intervention changes	8 weekly sessions of 105 mins	Group Face-to-face	Written reflective practices and guided meditations via audio-recordings	V/-
Torrijos et al., (2021)	Spain	Adults with chronic pain 87% female. mean age 48.76 (n = 123)	Chronic pain	Mindful self-compassion (MSC)	Single blind RCT. MSC versus CBT	8 weekly sessions of 150-min	Group Face-to-face	-	V/-

Collins et al., (2018)	UK	People with dementia and their spouses N=32 patients (M = 20, F = 12), mean age 74	Dementia Alzheimer's disease (47%) Mixed Vascular & Alzheimer's Dementia (28%) Vascular Dementia (12.5%), Dementia with Lewy Bodies (9%) Parkinson's with Lewy Body Dementia (3%)	Compassion-focused therapy (CFT)	Pre-post pilot study	6 weekly sessions of 120 min	Group Face-to-face	-	V/V
Zheng et al., (2022)	China	Nonspecific chronic low back pain (NCLBP). N=37 (M=9, F=28) Intervention N=19 Control N=18	Chronic lower back pain	M-health-based core stability exercise (CSE) combined with self-compassion training (SCT)	Pilot, patient-blinded RCT m-health-based core stability exercise (CSE) combined with self-compassion training	4 weekly face-to-face group interventions (2h per session) and family exercises.	Group face-to-face (physiotherapists and psychologists) once a week. Online guidance the rest of the time	Self-help exercises at home Electronically filled in questionnaires	V/V

					(SCT) versus m-health-based CSE alone 4 weeks and 16 week FU				
Campo et al. (2017)	USA	Young adults (age 18-29) who survived cancer. N=25 (M = 0, F = 25), mean age 27	Cancer (breast, leukemia, CNS/brain, thyroid, ovarian, Hodgkin and non-Hodgkin Lymphoma, tumor)	Mindful Self-Compassion (MSC) - adaptation of MSC and Making Friends with Yourself	Pre-post feasibility study	8 weekly sessions of 90 min	Online group	Video conference, Facebook group, access to homework audio recordings (compassionate meditations)	V/-
Hudson et al., (2020)	UK	Skin conditions N=76 (M=25, F=151), mean age = 33.81 CFT-based self-help (n=85) Waitlist control group (N=91)	Skin conditions	Online self-help intervention based on Compassion-Focused Theory (CFT)	RCT: CFT-based self-help versus a waitlist control group (usual medical care)	Daily practise of soothing rhythm breathing (8 minute sessions) over a 2 week period	Online platform	Intervention was comprised of a written booklet and an audio MP3 Intervention provided by e-mail	V/V
Dhokia et al., (2020)	UK	Adults with chronic pain conditions	Chronic pain conditions	Compassionate mind training (CMT)	RCT compassionat e mind	21-day online intervention	Online Website	Websie to access online course	V/-

		and concerns about their use of analgesics N=73 (M=25, F=48)	Fibromyalgia n=17 Back pain n=9 Arthiritis n=34 Other n=13		training (CMT; n = 38) versus relaxation music (n = 35)	(10-15 minutes per day)		Participants received reminders in a 'personal timetable' feature	
Carvalho et al., (2021)	Portugal	Chronic Illness Crohn's disease (n = 16; 32.4%), Sjogren syndrome (n = 4; 8%), fibromyalgia (n = 5; 10%), ulcerative colitis (n = 4; 8%), and systemic lupus erythematosus (n = 4; 8%).	Chronic Illness	CFT	RCT CFT versus ACT	4 weekly sessions of 20 minutes	Online Platform	Online platform session contents were delivered through audios, animated videos and text.	V/-
Basque et al., (2021)	Canada	Chronic pain n=26	Chronic pain	Self-compassion psychoeducation Video, writing exercises, guided meditations	Single group pre-test and post-test design 3 month FU	6-week programme	Online platform	Online self-compassion psychoeducation website Weekly automated emails	V/-

	and automated emails

Feasibility and acceptability

A wide variety of feasibility and acceptability benchmarks were used across the studies. First, recruitment rate was reported by two studies. These showed a recruitment rate of approximately 19/month and an enrolment rate of 21% -38% of total participants screened (Basque et al., 2021; Dodds et al., 2015). Second, retention and drop-out rates varied from 50%-100% retention (Ashworth et al., 2015; Carvalho et al., 2021; Zheng et al., 2022).

Treatment adherence and treatment engagement were examined by weekly 'practise recording diaries', log-ins and modules completed on online platforms and post-intervention questionnaires. Several studies considered 80% completion of course content as sufficient or having been exposed to a substantial part of the treatment content (van Ballegooijen et al., 2014). One study reported 100% attendance to group face-to-face sessions by brain injury clients (Ashworth et al., 2015). Other studies reported that 68-94% of participants attended 80% of sessions or six or more of the eight session programme (Brooker et al., 2020; Campo et al., 2017; Gonzalez-Hernandez et al., 2018; Hudson et al., 2020; Montero-Marin et al., 2019).

Acceptability was measured by some studies with quantitative measures (e.g. satisfaction ratings, quality of material ratings), and others measured in more qualitative terms. Nine of the 16 included studies in this review examined acceptability (Basque et al., 2021; Brooker et al., 2020; Campo et al., 2017; Carvalho et al., 2021; Collins et al., 2018; Dhokia et al., 2020; Dodds et al., 2015; Gonzalez-Hernandez et al., 2018; Montero-Marin et al., 2019). All nine studies reported that participants rated the intervention as acceptable and no study reported that the intervention was not acceptable. Satisfaction was the most common indicator of acceptability, which ranged from 87 to 95%.

In general, 62-86% reported that once-per-week sessions were the right frequency and that the length of the sessions were right. Some people reported wanting a longer programme length to consolidate learnings (Brooker et al., 2020). 100% of participants reported that MSC and CFT respectively helped them cope better with stress (Brooker et al., 2020; Carvalho et al., 2021) and 97% rated CFT as having 7-10 helpfulness, with 93% recommending the intervention to a friend (Basque et al., 2021).

Collins et al., (2018) and Ashworth et al., (2015) had participants with dementia and brain injury and provided qualitative data on helpful elements and barriers within the intervention

in the context of experienced effectiveness. Both studies found that the most helpful element was support by the group or therapist/trainer. Brain injury patients described how CFT gave them a new way to relate to themselves, with understanding and developing empathy for their own situation as a key step in the process (Ashworth et al., 2015). They reported that psychoeducation about the 'old' and 'new' brain was helpful (Collins et al., 2018). Some couples felt that CFT would have been most beneficial for people in the early stages of dementia.

Outcome measures

For ease of interpretation, outcomes of the 16 included studies were categorized into process (e.g. self-compassion, self-criticism), psychological (e.g., depression, anxiety), and physical/functional (e.g. quality of life (QoL), diabetes stress) outcomes. All interventions measured outcomes pre-post and seven studies also examined outcome measures at follow-up. Time from pre-intervention to follow up ranged from 1-6 months. Most outcome measurements comprised of self-rating scales and the main study outcomes were self-compassion, stress, mindfulness, depression, anxiety and QoL (Table 8).

Process outcomes

Self-compassion

Half of the included studies (n=8) measured self-compassion using the Self-Compassion Scale (SCS) or its 12-item short form version (SCS-SF). Eight studies did not measure self-compassion. Seven of the eight studies which measured self-compassion, reported that self-compassion significantly increased from pre- to post-intervention both within-subjects (moderate-large effect sizes) (Basque et al., 2021; Campo et al., 2017; Carvalho et al., 2021; Friis et al., 2016; Gonzalez-Hernandez et al., 2018; Hudson et al., 2020; Torrijos-Zarcero et al., 2021) and between-subjects (relative to waitlist control/treatment as usual) (Friis et al., 2016; Gonzalez-Hernandez et al., 2018; Hudson et al., 2020) and CBT active control condition (Torrijos-Zarcero et al., 2021). In the latter study, effect sizes were small-moderate and average treatment effects on self-compassion in the intention-to-treat (ITT) analyses favoured MSC, over CBT. Carvalho et al., (2021) used a different analytical method, whereby compassionate and uncompassionate attitudes towards self were assessed separately. This study found significantly reduced uncompassionate self-responding from pre- CFT intervention to 6-month follow-up only, with no statistically significant differences between CFT and ACT. There was variation as to whether increased self-compassion was sustained at

follow-up (Friis et al., 2016; Gonzalez-Hernandez et al., 2018) or not (Basque et al., 2021). Linked to the concept of self-compassion is self-kindness and common humanity (Neff, 2003). Gonzalez et al., (2018) found increases in self-kindness and common humanity pre- to post-CBCT in breast cancer survivors compared to treatment as usual. The only study to find no significant change in self-compassion from pre-to-post intervention was Brooker et al., (2020).

Mindfulness

Three of the 16 studies reported changes in mindfulness. Campo et al., (2017) and Brooker et al., (2019) found that MSC interventions significantly increased mindfulness, as measured by the Mindful Attention Awareness Scale (MAAS) and Cognitive and Affective Mindfulness Scale-Revised (CAMS-R 10) respectively. However, these studies did not use a control group. Dodds et al., (2015) found that mindful presence signficantly increased from pre- to post- CBCT intervention relative to a waitlist control group.

Self-criticism/Hated self/reassured self

Three of the 16 included studies examined self-criticism and illness related shame using the Forms of Self-Criticism/Self-Attacking and Self-Reassuring Scale (FSCRS) and Chronic Illness Shame Scale (CISS) (Ashworth et al., 2015; Carvalho et al., 2021; Dhokia et al., 2020). A CFT intervention for people with brain injury found reduced self-criticism from pre- to post- intervention. Analysis by subscales, showed that this was related to reductions in inadequate and hated self, and increases in reassured self (Ashworth et al., 2015). Effect sizes (Cohen's d) for within group comparisons pre- to post-intervention showed large effect sizes for reductions in self-criticism (inadequate r = .67, d = 1.81; hated r = .60, d = 1.5) and for increases in reassured self (r = .56, d = 1.38). Compared to a relaxation music control condition, Dhokia et al., (2020) found that CMT in chronic pain reduced self-reported measures of self-hate. There was a more rapid reduction in illness-related shame in CFT relative to ACT (active control condition) (Carvalho et al., 2021)

In summary, most compassion-based interventions yielded significant changes in process measures such as self-compassion, mindfulness and self-criticism from pre to post-intervention. There was more variation in findings with regards to whether these improvements remained significant in comparison to a control condition and at follow-up.

Psychological outcomes

Depression

The most frequently reported outcome measure was depression. There was some variation in terms of how depression and anxiety were assessed: Beck Depression Inventory; Depression Anxiety and Stress Scale; Hospital Anxiety and Depression Scale; Patient Health Questionnaire; and 7-item Generalized Anxiety Disorder scale. Regardless of the measure used, 13 of 16 studies reporting significant reductions in depressive symptoms from pre- to post- compassion intervention regardless of intervention type, chronic illness populations and mode of delivery (Ashworth et al., 2015; Brooker et al., 2020; Campo et al., 2017; Collins et al., 2018; Dodds et al., 2015; Friis et al., 2016; Gonzalez-Hernandez et al., 2018; Hudson et al., 2020; Montero-Marin et al., 2019; Sadeghi et al., 2018; Torrijos-Zarcero et al., 2021; Zheng et al., 2022). Significant reductions in depression were found relative to waitlist control (Dodds et al., 2015; Friis et al., 2016), treatment as usual (Gonzalez-Hernandez et al., 2018), and active control conditions such as relaxing music (Hudson et al., 2020), motivational enhancement therapy (Sadeghi et al., 2018), core stability exercise (Zheng et al., 2022) and CBT (Torrijos-Zarcero et al., 2021).

Anxiety

Similar to the findings of reductions in depression, there were significant reductions in self-reported anxiety symtoms (Ashworth et al., 2015; Basque et al., 2021; Campo et al., 2017; Hudson et al., 2020; Montero-Marin et al., 2019; Sadeghi et al., 2018; Torrijos-Zarcero et al., 2021). Randomized control trials found that reductions in anxiety were significant relative to control conditions (Hudson et al., 2020; Sadeghi et al., 2018; Torrijos-Zarcero et al., 2021; Zheng et al., 2022).

Stress

Psychological stress was only measured in cancer survivor popoulations. Two studies reported reduced fear of cancer recurrence both within-subjects (Brooker et al., 2020) and between-subjects (versus treatment as usual) (Gonzalez-Hernandez et al., 2018). Campo et al., (2017) reported improvements in post-traumatic growth following 8-weeks of MSC in cancer survivors.

Pain

Measurements of pain included pain interference, pain acceptance, pain resilience and pain catastrophizing. Unlike self-compassion measures, pain was measured in a number of ways: Brief Pain Inventory, Chronic Pain Acceptance Questionnaire, Pain Numbered Rating Scale;

Numerical Rating Scale of Pain Intensity; Pain Catastrophizing Scale; and Pain Resilience Scale. These studies found signficant decreases in pain interference and pain catastrophizing, and significant increases in pain acceptance and pain resilience (Basque et al., 2021; Chapin et al., 2014; Torrijos-Zarcero et al., 2021; Zheng et al., 2022). Similarly, Torrijos and collegues found that this pattern of findings was maintained when comparing the MSC intervention to CBT. Zheng et al., (2022) found that reductions in pain catastrophizing were greater for the compassion intervention group relative to an active control condition (core stability exercises) in patients with chronic lower back pain, and these findings were maintained at one and four month follow-up.

Other – anger, fatgiue, vitality

Other psychological measures included anger, fatigue and vitality. Chapin et al., (2014) reported significant reduction in anger using The Patient Reported Outcomes Measurement Information System (PROMIS) questionnaire for chronic pain patients following a CCT intervention. Dodds et al., (2015) reported reductions in fatigue and increased vitality in breast cancer surviviors after eight weeks of CBCT relative to waitlist control.

In summary, depression was the most frequent outcome measured, followed by measures of anxiety pain and stress. Compassion-based interventions had consistent benefits in reducing psychological outcomes, both within-subject and in comparison, to control conditions and other treatments. Some studies also reported positive psychological findings such as increased pain acceptance, resilience and vitality.

Physical and functional outcomes

Physical measures

Physical outcome measures were reported by three of 16 studies, and included measures of diabetes-stress for diabetes patients (HbA1c) (Friis et al., 2016), respiratory rate (a correlate of psychological wellbeing) for chronic pain patients (Collins et al., 2018) and cortisol (a stress-related endocrine biomarker) in a breast cancer survivor sample (Dodds et al., 2015). The data showed a significant reduction in diabetes-stress for patients with no significant change in the waitlist control group. There was also a reduction in respiratory rate for patients and spouses with a large effect size (d= 1.20) following CFT. However, there were no significant changes in cortisol levels following CBCT in survivors of breast cancer.

Quality of Life and functional status

Studies utilised two different kinds of quality of life measure: overall quality of life and condition-specific quality of life (Hudson et al., 2020; Montero-Marin et al., 2019). Online CFT and face-to-face sessions of ABCT showed increases in condition-specific quality of life versus waitlist control (Hudson et al., 2020) and relative to a relaxation control (Montero-Marin et al., 2019). In addition to this, Montero-Marin and collegues reported improvements in functional status in the fields of family, friendship, love, work, spirituality, and general well-being. Similarly, Dodds et al., (2015) found reduced functional impairment due to fear of cancer recurrence (e.g., future planning, close relationships, social and work activities) and reduced perceived stress in the past week from baseline to 4 week follow-up with a CBCT intervention. Similarly, Zheng and collegues found that people living with chronic lower back pain reported improved functional status following a four week self-compassion training versus a core stability exercise control group. Linked to functional status, Dhokia and collegues showed that people with chronic pain signficantly reduced their use of analgesics following a CMT intervention as compared to a relaxation music control condition. In terms of social QoL, survivors of cancer felt less socailly isolated (Campo et al., 2017) and less lonely (Brooker et al., 2020) following a course of MSC. However, not all findings on changes in QoL were consistent. Two RCT studies showed no significant change in QoL for compassion-based intervention versus a control group (Gonzalez-Hernandez et al., 2018) or versus CBT (Torrijos-Zarcero et al., 2021).

Table 8

Main findings of studies using compassion-based intervention in long-term physical health conditions

Study (year)	Outcome measures	Comparators/control group	Data Analysis	Retention/feasibility	Results
Friis et al., (2016)	SCS PHQ-9 DDS	Waitlist control	Mixed ANOVAs	Dropout rate: (6.30%) Of the 63 participants who provided baseline data, 4 withdrew (2 from each condition).	***Efficacy*** **Pre-post measures. MSC versus Waitlist control** ↑ Self-compassion for the treatment group and maintained in the follow-up ($F(2,60) = 0.06$, $p = .001$). T1 to T2: $t(31) = 4.70$, $p < .001$; T1 to T3: $t(31) = 5.1$, $p < .001$. ↑ Depression scores in intervention group ($F(2,60) = 7.07$, $p < .05$), in contrast to control group. ↓Diabetes-stress for patients (HbA1c ($F(2,60) = 12.24$, $p < .001$) N.s change in waitlist control group
Gonzalez-Hernandez et al., (2018)	SCS-SF FACT-B+4 BSI-18 FCRI FFMQ-SF CBCT Evaluation Survey	Treatment as usual	A linear mixed modal	94% of participants attended 5 or more of the 8 sessions of the programme. 16% drop out rate	***Acceptability*** 25 (89.30%) participants practiced at home from 12 to 24 minutes, across all 8 weeks 25 participants practiced at home from 12 to 24 or more minutes across all 8 weeks 25 participants indicated that they would participate in future CBCT courses if offered and that they would continue to practice after the course programme ended; 26 (92.90%) said that they were satisfied with the programme and that they would recommend CBCT to other participants ***Efficacy*** **Pre-post measures. CBCT group versus TAU** ↑ self-kindness ($F[2,97.453] = 5.769$, $p < .01$) ↑common humanity ($F[2,98.323] = 6.161$, $p < .01$) ↑ general self-compassion ($F[2,69.277] = 5.234$, $p < .01$), maintained at FU

					↓psychological stress (fear of cancer recurrence) in intervention group (F[2,69.863] = 3.521, p < .05) ↓depression (Cohen's d = 0.44) and general symptomatology (Cohen's d = 0.55) , with moderate effect sizes. N.s difference in Quality of life in intervention versus the control group.
Ashworth et al., (2015)	HADS FSCRS	No control group	Wilcoxon signed rank test	100% attendance	***Efficacy*** **Pre-post CFT** ↓Anxiety: post r = .53, d > .80, FU z= -2.14* ↓Depression: post r = .58, d=1.43, FU z = -2.39* ↓Self-criticism pre-post intervention ↓inadequate self: post r= .67, d=1.81, FU z = -2.67* ↓hated self: post r = .60, d=1.5), FU z = -2.4* ↑reassured self: post (r = -.56, d = -1.38), FU z = -2.39 Effect sizes (Cohen's d) for within group comparisons pre to post intervention - large effect size for reductions in anxiety (r = .52), depression (r = .58, d = 1.43), and self-criticism (inadequate r = .67, d = 1.81; hated r = .60, d = 1.5). Large effect size for increase in reassured self from pre- to post-intervention (r = .56, d = 1.38).
Campo et al. (2017)	SCS MAAS PROMIS BIS BRS PTGI	No control group	Paired t-tests	(39% dropout rate/ 61.76% retention) 34 enrolled 23 completed 8 week intervention. Of these, 84% of participants attended six out of eight classes.	***Acceptability*** 95% of participants reported that they enjoyed participating in the sessions through videoconference 86% reported once a week was the right frequency for the sessions 62% reported 90-min sessions were the right length. 71% reported 8 weeks was a sufficient length. 100% reported that MSC would help them cope better with stress. ***Efficacy*** **Pre-post MSC** ↑Self-compassion: d=1.23, p = .03

					↑Mindfulness: d = .87, p = .001 ↑Body image resilience: d=1.39, p < .0001 ↑Posttraumatic growth: d=0.50, p = .008 ↓Anxiety: post d=1.24, p < .0001 ↓Depression: post d = .99, p < .0001 ↓Social isolation: d=1.10, p < .0001 Effect sizes for changes were large - body image (d = 1.39), anxiety (d = 1.24), and self-compassion (d = 1.23).
Chapin et al. (2014)	PROMIS Anger Scale BPI CPAQ Semi-structured interview - collect information about meditation experience & expectations Online post-treatment survey	No control group	One-way repeated measures analysis of variance (RM-ANOVA). Time as the repeated measures factor. Pearson correlation	28 enrolled, 9 participants dropped out and 7 participants were excluded for not meeting eligibility criteria. 12 completed the study.	***Efficacy*** **Pre-post CCT** ↓Physical Pain severity: t(11) = 2.45, p = 0.03 ↓Pain interference: F = 2.54 p =.102 ↓Anger: t(11) = 2.92, p = 0.01 ↑Pain acceptance: t(11) = −2.94, p = 0.01 ↑Functional Quality of Life: M=6.58, SD=1.98 n.s positive correlation between time spent in compassion meditation and change in pain acceptance score (r = 0.48, p = 0.12) Greater change in anger for the chronic pain patients correlated with significant others' ratings for post-treatment improved quality of life in their chronic pain partners (r = .68, n = 12, p = .016).

Dodds et al. (2015)	PSS-4 CES-D-10 FCRI IES-R R-UCLA SF-12 CAMS-R 10 GQ-6	Waitlist control group	ANCOVA mixed models, with the base- line outcome measurement as a covariate and participant as a random effect.	Recruitment rate: 19/month Screening and enrolment rate: 33 enrolled of 160 screened (21 %) Retention: 22/33 = 67 %	***Acceptability*** Participant satisfaction: 11/12 = 92 % ***Efficacy*** **Baseline to study week 8. CBCT versus Waitlist control** 🡻depressive symptoms (−3.7, 95 % CI −6.3, −1.1) 🡻 functional impairment due to fear of cancer recurrence (e.g., future planning, close relationships, social and work activities) (−1.3, 95 % CI −2.5, −0.1) 🡻 reduced avoidance (−0.3, 95 % CI −0.6, −0.02) 🡻 fatigue 🡹vitality (5.5, 95 % CI 1.5, 9.6) 🡹mindful presence (3.6, 95 % CI 1.2, 6.0). **Baseline to week 4 FU. CBCT versus Waitlist control** 🡻perceived stress in the past week (−1.6, 95 % CI −3.1) 🡻 physical well-being (−4.3, 95 % CI −7.7, −0.9) 🡹mindful presence (3.1, 95 % CI 0.4, 5.8) n.s difference saliva cortisol or diurnal cortisol rhythm at either of the post-baseline assessments.
Sadeghi et al., (2018)	SCID BDI BAI	Motivational enhancement therapy control group	Chi-square test and covariance analysis	Not reported	***Efficacy*** **Baseline to study week 8. CFT versus MET** 🡻 Depression: p <.0001 🡻 Anxiety: p <.0001
Montero-Marin et al. (2018)	FIQ CGI-S PCS HADS-A HADS-D EQ-5D	Relaxation control group	Mann–Whitney *U* for ordinal data, and the Fisher exact probability test for	20 (87.0%) participants in the ABCT, and 15 (78.9%) in the Relaxation group completed the study	***Acceptability*** 17 participants (85.0%) in the ABCT group and 13 (81.3%) in the Relaxation (Fisher's test, p = 0.742) group completed their homework. ***Efficacy***

	AAQ-II		categorical variables Linear mixed-effects models in which restricted maximum likelihood regression (REML)	(Fisher's test, p = 0.682). 7 participants dropped out of the study (3 in the ABCT group, 4 in the Relaxation group). 36 (85.7%) in ABCT group and 35 participants (83.3%) in Relaxation group completed the posttreatment and 3-month FU assessments. 81.5% (SD = 19.90) of ABCT sessions attended, 90.1% (SD = 13.55) of Relaxation sessions attended [n.s between groups t(40) = 1.60, p = 0.117.	**Pre-post ABCT versus Relaxation control group** ↑funcitonal status in ABCT group versus Relaxation group at posttest (B = −22.07, Z = −3.01, p = 0.003) and at 3-month follow-up (B = −24.78, Z = −3.33, p = 0.001), with high ESs (d = 1.33 and d = 1.38, respectively). ↑quality of life (EQ-5D) (p=.002) ↑ psychological flexibility (AAQ-II) (p=.001) ↓ Anxiety (p<.001) ↓ Depression (p<.001) n.s change PCS pain catastrophizing ***Risk reduction/Number needed to treat*** 75% of participants in the ABCT group and 18.8% of participants in the Relaxation group [15 of 20 (ABCT) reached the criterion of ≥20% FIQ reduction. Risk reduction in ABCT vs Relaxation ↑56.3% (95% CI = 29.3–83.2%), with an NNT = 2 (95% CI = 1.2–3.4%)
Brooker et al., (2019)	SCS DASS-21 FCRI-SF UCLA Loneliness Scale BAS CAMS-R	No control group	Fisher's exact test Paired-samples t-test or Wilcoxon-signed rank test,	90% retention Of the 32 individuals who consented to the programme, 30 commenced and 27 completed Mean number of group sessions attended by the 27 programme-	***Acceptability*** 3 (85%) programme- completers reported that the programme was the right duration for them, 1 (4%) reported a preference for a shorter programme and 3 (11%) preferred a longer programme. 9 (33%) of programme-completers reported "much improved" mental wellbeing, 8 (30%) reported "mildly improved" and 10 (37%) reported "much the same," with none reporting "mildly worse" or "much worse" mental wellbeing ***Efficacy*** **Pre-post MSC**

				completers was 6.93 of 8 sessions (SD 1.11)	↓Depressive symptoms t(25) = 2.55 p=.017 ↓stress symptoms t(25) = 2.21 p=.036 ↓fear of recurrence Z = 3.446 p=.001 ↓loneliness t(24) = 2.16 p=.041 ↑mindfulness t(24) = −2.84 p=.009 n.s change in self-compassion Medium-sized effects for depressive symptoms, fear of recurrence, and mindfulness. Small effects were determined for stress, loneliness, body image satisfaction, and self-compassion.
Torrijos et al., (2021)	SCS BPI Pain VAS HADS SF-36 PCS CPAQ	MSC versus Active control group CBT	Independent samples *t* tests Mann–Whitney *U* test Intention to treat analyses	20% attrition	***Efficacy*** **Pre-post MSC versus CBT** ↑ self compassion in MSC group versus CBT (small-medium effect size) ↑pain acceptance (medium effect size) ↓pain interference ↓pain catastrophizing ↓anxiety (small effect size) ↓depressive symptoms n.s changes detected for QoL Average treatment effects on the primary outcome (self-compassion) in the intention-to-treat (ITT) analyses favoured MSC with 95% confidence intervals. Average treatment effects on the secondary outcomes, pain interference, anxiety symptoms and pain acceptance, in the ITT analyses, favoured MSC with 95% confidence intervals.

Collins et al., (2018)	HADS QOL- AD RR Respiratory Rate	No control condition	paired t-tests (no control of family wise error rate)	64 participants completed the intervention, an attrition rate of 6%.	***Acceptability*** After session 1 of CFT, 69% rated the intervention 7-10 helpfulness. After session 6, 97% rated the intervention 7-10 helpfulness Several couples said the psychoeducation about dementia and the 'old' and 'new' brain was useful. Some reported the intervention was too focused on compassion and some felt it would be most beneficial for people in the early stages of dementia. ***Efficacy*** **Pre-post CFT** n.s change Anxiety for patients or spouses ↓depressive symptoms for patients (not spouses) (t (19) = 2.40, p = .03), with a moderate effect size (d_{RM}) of .53. ↓ Respiratory Rate for patients and spouses (t (12) = 4.34, p < .001), with a large effect size (d_{RM}) of 1.20 ↑QoL (t (8) = −3.16, p = .01), with a large effect size (d_{RM}) of 1.03 4/7 (57%) people with 'borderline' or 'abnormal' baseline scores showed clinically significant improvement
Hudson et al., (2020)	SCS- SF PSS HADS DLQI	Waitlist control group	ANCOVA Intention-to-treat (ITT) analysis Independent samples t-test	87 completed T3 outcome measures. 49.43% completion rate. Practised on a median of 9/14 days. Differential attrition - 61 participants (67.03%) completed T3 measures	***Efficacy*** **Pre-post CFT versus Waitlist control group** ↑ self compassion (p=.010) ↑dermatology-specific QoL (p<.001) ↓ depression (p=.030) ↓ stress (p=.001) ↓ anxiety (p=.001)

				in the control group. 26 (30.59%) completed T3 measures in the intervention group. The compassion-focused self-help technique was practiced by at least 68% of participants on 11/14 days (80%).	Intention-to-treat (ITT) analyses, these findings remained significant, however effect sizes reduced from moderate to small. n.s difference in completers versus non-completers
Dhokia et al., (2020)	FSCRS LDQ	Relaxation music control condition	Repeated-measures multivariate analyses of variance, between-participant ("group"; CMT vs. RM) and within-participant ("time"; baseline vs. postintervention vs. follow-up) factors	187 eligible participants, 108 (58%) chose not to take part. Drop out – 6 participants. 93% retention	***Acceptability*** Mean completion rate for CMT exercises was 86.25% per day (range 79% to 92%). ***Efficacy*** **Pre-post online CMT versus RM Control group** 🡻self-criticism (self-hate) F =12.218, p = .001 🡻Impulsivity F = 7.323, p =.006 🡻analgesic use F = 6.123, p = .015

Carvalho et al., (2021)	SCS HADS CISS CFQ CompACT	CFT versus ACT	Linear mixed models RCI for each outcome - clinically significant change over time	50% drop out in both conditions	***Acceptability*** CFT – 25% considered the intervention too short. 75% considered intervention to be appropriate. 70% considered session duration to be appropriate. All (100%) participants reported it was worth participating in the intervention. ***Efficacy*** **Pre-post online CFT** Intention-to- treat analyses - ↓less illness-related shame in CFT (MD = 3.01, t = 2.20. p = .032) & ACT (MD = 3.41, t = 2.628, p = .012). Sustained at 3- and 6-month FU. ↓uncompassionate self-responding in CFT & ACT. statistical significance from T0 at 6-month follow-up (T3; ACT MD = 0.421, t = 2.28, p = 0.026; CFT MD = 0.381, t = 2.02, p = 0.049) ↑valued living in CFT (MD = 7.33, t = 2.9, p = .005) & ACT (MD = 6.33, t = 3.15, p = .003) ↑psychological flexibility (CompACT Total) scores from baseline to immediate post-intervention for the CFT group (MD = 6.22, t = 2.238, p = 0.03 **Pre-post CFT versus ACT** n.s differences between CFT and ACT through reliable change index (RCI). More rapid↓ Illness related shame in CFT versus ACT
Basque et al., (2021)	SCS GAD-7 PHQ-9 PRS PCS CPAQ-8 NRSPI IIRS	No control group	Chi-square tests and t-tests to assess differences between study completers and non completer Intent-to-treat mixed effect	***Attrition/retention*** 42% attrition 68% retention 58% completed post-test ***Ease of recruitment*** Of the 69 eligible applicants, 26 opted to	***Acceptability*** 93% would recommend the programme to a friend. 87% (n = 13/15) reported being satisfied/mostly satisfied 80% reported that compassionate writing exercise helped them realise that they were treating themselves harsher than a close friend writing exercises (n = 9/15; 60%) or guided meditations (n = 6/15; 40%) were too long. 67% (n = 10/ 15) mentioned ease of accessibility and convenience of doing it from home.

			model to compare scores at T1 (pre-test), T2 (post-test) and T3 (3-month FU)	enroll in the study (n = 26/69; 38%) ***Treatment adherance*** n = 6/26; 23% completed all writing exercises n = 12/26; 46% completed 4-6 writing exercises.	***Efficacy*** **Pre-post online self-compassion intervention** ↑self-compassion among people with chronic pain pre-post intervention, n.s T2 to T3 (p<.001) ↑pain resilience T1 to T2. Maintained at T3 (p = .007). T1 to T2 (d = 0.55) and T1 to T3 (d = 0.71). ↓in pain T1 to T2 (all ps < .010) ↑pain T2 to T3 ↓pain catastrophizing (p<.050) ↓ GAD-7 (p<.001) ↓ PHQ-9 (p<.001) ns change in pain intrusiveness Intent-to- treat mixed effects models ↑self-compassion (d = 0.92)
Zheng et al., (2022)	RMDQ NRS GAD-7 PHQ-9 PCS PSEQ	M-based core stability exercise (CSE) control group	Mixed model for repeated measures (MMRM)	No drop outs in intervention group. 100% retention 72.2% (13/18 participants) in the control group attended at least 3 of 4 face-to-face group sessions	***Efficacy*** **Pre-post self-compassion training** ↑function (p= .047) and ↓pain in the intervention group at week 4 and 16 FU. **Pre-post self-compassion training with CSE versus CSE control group** ↓anxiety for self-compassion intervention group relative to control at 16 week FU (p=.030) ↓depression in self-compassion intervention group (p= .047) ↓Pain catastrophizing for intervention group (p= .047) 4 and 16 week FU ↑ function and ↓pain happened faster in the self-compassion training intervention group versus control

Note. AAQ-II. Acceptance and Action Questionnaire; ASI-R. Appearance Schemas Inventory-Revised; BAS. The 10-item Body Appreciation Scale; BDI. Beck Depression Inventory; BIS. Body Image Scale; BPI. Brief Pain Inventory; BRS. Brief Resilience Scale; BSI-18. Brief Symptom Inventory; BSI-18; CAMS-R 10. Cognitive and Affective Mindfulness Scale—Revised; CES-D-10. Brief Centre for Epidemiologic Studies—Depression questionnaire; CFQ. Cognitive Fusion Questionnaire; CGI-S

Clinical Global Impression-Severity Scale; CISS. Chronic Illness Shame Scale; CompACT. Comprehensive assessment of Acceptance and Commitment Therapy processes; CPAQ-8. Chronic Pain Acceptance Questionnaire; DASS-21. Depression Anxiety and Stress Scale 21; DDS. Diabetes Distress Scale; EQ-5D-5 L. Quality of Life; DLQI. Dermatology Life Quality Index; FIQ. The Fibromyalgia Impact Questionnaire; Functional Assessment of Cancer Therapy; FACT-B. Functional Assessment of Cancer Therapy - Breast Cancer; FCRI. Fear of Cancer Recurrence Inventory; FFMQ. Five Facet Mindfulness Questionnaire; GAD- 7. 7-item Generalized Anxiety Disorder scale; FSCRS Forms of Self-Criticism/Self-Attacking and Self-Reassuring Scale; GQ-6. Gratitude Questionnaire—6; HADS. Hospital Anxiety and Depression Scale; IIRS. Illness Intrusiveness Rating Scale; IES-R. Impact of Events Scale—Revised; LDQ. Leeds Dependence Questionnaire; MAAS. Mindful Attention Awareness Scale; NRS. Pain Numbered Rating Scale; NRSPI. Numerical Rating Scale of Pain Intensity; PANAS. Positive and Negative Affect Schedule; PCS. Pain Catastrophizing Scale; PES. Pain Effects Scale; PF-10. Physical Functioning; PHQ-9. Patient Health Questionnaire – 9; PROMIS. Patient-Reported Outcomes Measurement Information System; PSS. Perceived Stress Scale; PRS. Pain Resilience Scale; PSEQ. Pain Self-Efficacy Questionnaire; PTGI. Posttraumatic Growth Inventory; QOL- AD. Quality of Life in Alzheimer's Disease; RMDQ. Roland–Morris Disability Questionnaire; R-UCLA. Revised UCLA Loneliness Scale Version 3; SF12. Medical Outcomes Study Short Form 12-Item Health Survey; SCID. Structured Clinical Interview for the DSM; SCS. Self-compassion Scale; SF-12. Short Form – 12; CPSS. Chronic Pain Self-Efficacy Scale; VAS. 100-mm Visual Analogue Scale; MSC. Mindful Self-Compassion Course; CBCT. Cognitively Based Compassion Therapy; WL. Wait list; TAU. Treatment as Usual.

Table 9

Evaluation of study quality for compassion-based intervention studies included in the Systematic Review using the Mixed Methods Appraisal Tool (MMAT) version 2018 (Hong, Fabregues, et al., 2018; Hong, Gonzalez-Reyes, et al., 2018) and general comments. Consensus obtained from two independent reviewers. Different MMAT criteria for different studies on the basis of the study design. 1= qualitative, 2 = quantitative randomized controlled design, 3= quantitative non-randomized, 5= mixed methods.

Study	**Limits**	**Helpful elements**	**MMAT (0=no, 1=yes, 2=can't tell)**
Friis et al., (2016)	Non-generalizable findings Failure to randomize baseline groups No active control condition	Use of both subjective and objective (physical) metrics	2.1=1 2.2=1 2.3=1 2.4=0 2.5=1
Gonzalez-Hernandez et al., (2018)	Non-generalizable findings for other ethnicities Possible influencing effect of participants previous experiences	Participants encouraged to meditate daily using the recorded meditations, gradually increase length of meditation and cumulative amount of practice time.	2.1=1 2.2=1 2.3=1 2.4=1 2.5=1
Ashworth et al., (2015)	Small sample size No control group	Support of the group/ therapist embedded in regular care Brain injury survivors reported that CFT provided them with tools to manage continued psychological difficulties	1.1=1 1.2=1 1.3=1 1.4=1 1.5=1 3.1=1 3.2=1 3.3=1 3.4=0 3.5=1 5.1=1 5.2=1

			5.3=1 5.4=2 5.5=1
Campo et al., (2017)	Small sample No control group Mainly female/high-education sample – findings not generalizable	Participants were e- mailed links to access the audio recordings for that week's home practice e.g., meditations	3.1=1 3.2=1 3.3=1 3.4=0 3.5=1
Dodds et al. (2015b)	Bias in recruitment strategy Future studies should use email reminders, smartphone apps with time-tracking capacity, and motivational interviewing techniques	Use of both subjective and objective (physical) metrics (saliva cortisol levels)	2.1=1 2.2=1 2.3=1 2.4=0 2.5=1
Sadeghi et al., (2018)	Small sample Not generalizable Difficulties with participant cooperation	Participants recruited from hospital	2.1=1 2.2=1 2.3=2 2.4=0 2.5=1
Montero-Marin et al. (2018)	Small sample No control for therapist influences	Good evalutation of feasibility	2.1=1 2.2=1 2.3=1 2.4=1 2.5=1
Brooker et al., (2019)	No control group	Heterogenous sample	3.1=1 3.2=1 3.3=0

	Inclusion of some participants without elevated baseline distress may have reduced observed effect sizes.	Adaptation of the MSC programme is feasible and acceptable to cancer patients.	3.4=0 3.5=1
Torrijos et al., (2021)	Moderate attrition rates Absence of non-active control group/usual care group No FU No objective outcomes e.g., retun to work/ecological momentary assessment	Attempts made to reduce selection bias Random allocation, blind outcome assessment, active control group Well-trained therapists and therapy manulization	2.1=1 2.2=1 2.3=1 2.4=1 2.5=2
Collins et al., (2018)	No control group No control of family-wise error Small sample	Tailored for people with dementia Measure of respiratory rate Study in patients and their spouses	3.1=1 3.2=1 3.3=1 3.4=0 3.5=1
Zheng et al., (2022)	No control group with self-compassion training alone Selection bias (younger/technology minded population)	Treatment session on weekends was helpful for participants	2.1=1 2.2=1 2.3=1 2.4=1 2.5=0
Chapin et al., (2014)	Intervention not tailored. No pain didactics nor any specific focus on attention to somatic awareness	Use of multi-informant report (self and ‘significant other’ report)	1.1=1 1.2=1 1.3=1 1.4=1 1.5=1 3.1=1 3.2=1 3.3=1

			3.4=2 3.5=1 5.1=1 5.2=1 5.3=1 5.4=0 5.5=1
Hudson et al., (2020)	Findings limited by high attrition rate Less applicable to men, older people, and those who are economically disadvantaged	Control group Minimal contact support mechanism	2.1=1 2.2=1 2.3=1 2.4=0 2.5=0
Dhokia et al., (2020)	Lack of power Passive control condition Small sample size Slow recruitment	High participant retention and exercise completion rates	2.1=1 2.2=1 2.3=1 2.4=0 2.5=1
Carvalho et al., (2021)	Small sample High attrition No full qualitative analysis	Active comparator condition Mixed chronic illness in sample – increases ecological validity	2.1=1 2.2=1 2.3=1 2.4=1 2.5=0
Basque et al., (2021)	Small sample No control group Limited generalizability	Pre- and post-treatment telephone interviews to review study procedures, motivate participants and obtain their feedback post-treatment Satisfaction ratings high for study completers	3.1=1 3.2=1 3.3=1 3.4=0 3.5=0

	Recruitment strategy may have negatively impacted participant engagement	Ease and accessability rated highly

Discussion

This systematic review aimed to explore how compassion-based interventions (CFT, CMT, MSC, CCT, CBCT and ABCT) impact upon both self-compassion and psychological and physical well-being, in people living with chronic illness. This is the first review to focus on interventions that have compassion at their core and consider the quality of the questionnaires used to measure outcomes. As such, this review allowed for a more focused and accurate assessment of study outcomes. It aimed to address the following questions:

1. Do compassion-based interventions improve process (e.g., self-compassion, self-criticism), psychological (e.g., anxiety, depression), functional (e.g., QoL) and physical outcomes (e.g., cortisol levels) in people with long-term health conditions?
2. What questionnaires are used to measure outcomes and could the quality of questionnaires affect the outcomes?
3. Do differences in compassion-based intervention formats affect outcomes? (e.g. mode of delivery, duration, use of technology)

Summary of main findings

The findings showed that compassion is a rapidly emerging field. The majority of studies were published in the past three years, with several exploratory and pilot studies. Most interventions targeted chronic pain and cancer conditions. Most compassion-based interventions were based on compassion focused therapy (CFT) and mindful self-compassion (MSC) protocols. No papers were found that used cultivating emotional balance (CEB) in the context of chronic illness. The mode of delivery and structure varied, ranging from individual face-to-face sessions, group face-to-face, online group sessions and individual access to an online platform/website. Most interventions included ‘offline’ homework practices such as audio-supported guided meditations.

Acceptability and feasiblity measures varied. Overall, compassion-based studies had high acceptability on the basis of satisfaction ratings. Face-to-face interventions showed greater feasibility relative to purely online compassion-based interventions, on the basis of lower drop-out rates regardless of chronic illness population and type of intervention. Most studies reported around 80% completion rate of study material by 80% or more of participants.

Overall, compassion-based interventions showed encouraging results for process, psychological and physical/functional measures. The results showed improvements in process

measures (self-compassion, mindfulness, shame and self-criticism) in the majority of studies with some variation as to whether these improvements remained significant in comparison to a control condition and at follow-up. The most consisitent results were found for changes in psychological outcomes. Self-reported depression, anxiety, and pain improved from pre-to post-intervention, both within-subject and in comparison, to control conditions and other treatments. The most varied findings were for physical and functional measures. Compassion-based interventions had a tendency to improve quality of life, but this did not always remain significant relative to a control condition. On the physical level, there were changes in physical markers of stress and well-being in two of three studies that measured this.

Do compassion-based interventions improve process, psychological, functional and physical outcomes in people with long-term health conditions?

Although the results were mainly consistent, showing improvements in self-compassion from pre-to-post intervention, the conclusions were limited by the low number of studies that measured self-compassion. Two randomized control studies in this review provided comparators, and found that CBCT and MSC increased self-compassion ratings relative to treatment as usual and CBT (Gonzalez-Hernandez et al., 2018; Torrijos-Zarcero et al., 2021). To this extent, the findings thus far provide evidence that compassion-based interventions were effective at significantly increasing self-compassion across a range of chronic illness conditions.

There was some variation as to whether improvements in self-compassion were sustained at follow-up or not. Most courses that measured self-compassion were 6-8 weeks in length and included home practise. The studies that measured self-compassion at follow-up did not report, for example, the frequency with which self-compassion exercises were practised in the follow-up period, and thus it was difficult to infer why some studies found that self-compassion was sustained (Friis et al., 2016; Gonzalez-Hernandez et al., 2018) and others did not (Basque et al., 2021). In line with various theories of compassion and dose-response effects; self-compassion requires regular and consistent practise for sustained effects (Gilbert, 2020; Neff, 2003; Pace et al., 2019). This could be a potential variable to investigate in future studies.

The only study to find no significant change in self-compassion from pre-to-post intervention was Brooker et al., (2020). There could be various methodological, demographic and

psychological explanations for the differences in these findings. One interesting avenue, that was not explored or measured by any of the studies included in this review, is the domain of fear of self-compassion (The Fears of Compassion Scale; Gilbert et al., 2011). Emerging research has demonstrated that fear of being self-compassionate can predict poor response to treatment (Kelly et al., 2013). Individuals with chronic illness who have reservations (Beaumont & Irons, 2016) about being self-compassionate may find it harder to engage in exercises of self-compassion. Future work may consider investigating the moderating effects of fear of self-compassion on treatment outcomes.

Compassion interventions were initially developed for people high in shame and self-criticism (Gilbert, 2003), and perhaps linked to this, the review found decreases in shame and self-criticism (Ashworth et al., 2015; Carvalho et al., 2021; Dhokia et al., 2020). Further analysis by subscales, showed that this was related to reductions in inadequate and hated self, and increases in reassured self (Ashworth et al., 2015). The qualitative data supported this finding and provided a description of the experience of self-criticism and how this may relate to depression and anxiety (Ashworth et al., 2015). Consistent with previous CFT evaluation studies, individuals' descriptions were in line with moving from the experience of 'self-hatred' threat-based mentality to a more secure and compassionate 'it's not my fault' mentality. The findings may suggest that increasing self-compassion facilitates a positive self-view even when an individual feels judged or devalued, or has not met their own expectations (Gilbert, 2014; Leary, Tate, Adams, Allen, & Hancock, 2007).

The most consistent and widely reported finding was reductions in depression and anxiety, both within-subject and in comparison, to control conditions and other treatments, across all intervention types, chronic illness populations and modes of delivery. This is consistent with previous research in community and mental health populations (e.g. Kirby, 2017; MacBeth & Gumley, 2012; Wilson et al., 2019; Zessin et al., 2015). CFT led to significant reductions in depression relative to CBT (Torrijos-Zarcero et al., 2021). As reviewed earlier, rumination, self-criticism, shame and self-blame are commonly reported by people living with chronic illness and negative self-evaluations can interfere with CBT and improving psychological well-being (Ford & Troy, 2019; Plaufcan et al., 2012; Voth & Sirois, 2009). A tentative explanation is that compassion interventions may lead to greater improvements in depression and anxiety than CBT, by reducing uncompassionate attitudes that interfere with the treatment process (Gilbert, 2003).

In contrast to anxiety and depression, compassion-based interventions did not seem to reduce pain intensity itself, but rather reduced the impacts of pain, which is in line with previous findings (Mistretta & Davis, 2022). This review found signficant decreases in pain interference and catastrophizing, and significant increases in pain acceptance and resilience. The research suggests that self-compassion may benefit affective processing of pain, with individuals building negative associations between self-compassion and pain catastrophizing, and positive associations between self-compassion and pain acceptance (Costa & Pinto-Gouveia, 2011, 2013; Wren et al., 2012). Approaching the difficulties caused by pain (e.g., limited mobility and role functioning) with self-compassion may help individuals regulate negative emotions, which are known to impact the experience of pain (Lumley et al., 2011). In sum, self-compassion may not decrease pain itself but may help people function better despite pain (Purdie & Morley, 2016). This requires further testing and studies, as has been completed in the field of mindfulness-based interventions (MBCT, ACT) (Majeed, Ali, & Sudak, 2018; Reiner, Tibi, & Lipsitz, 2013).

Related to this area, some studies reported significant improvements in functional status and condition specific and general QoL after several weeks of compassion training. The ways in which CFT improves QoL is largely unknown, however there is evidence that more self-compassionate individuals display more positive relationship behaviours and that self-compassion predicts more stable feelings of self-worth (Neff & Beretvas, 2013; Neff & Vonk, 2009). Compassion-based interventions may help people to engage in value-based activities, acceptance, and persistence, thereby reducing the impact that chronic illness has on important domains of life (Edwards et al., 2019). Mindfulness skills may also play a part, for example, by people paying more attention to connections that they have in the moment. Increased engagement in these areas of life could in turn explain how participants of self-compassion training felt less socailly isolated (Campo et al., 2017) and lonely (Brooker et al., 2020).

Two studies showed that improvements in QoL were not significant when compared to a control group (Gonzalez-Hernandez et al., 2018) or versus CBT (Torrijos-Zarcero et al., 2021). This indicates the need for larger replicable studies, as these results may be limited by power, or perhaps selective samples with higher average levels of stress and impairment, where QoL may be more resistant to change.

Three studies pioneered the use of physical, objective measures. Past studies have suggested that compassion interventions may impact the hypothalamic-pituitary-adrenal axis and immune function, thereby improving health via improved resilience to stress. A greater ability to self-soothe has also been linked to greater heart rate variability (Porges 2007), a measure of autonomic flexibility. Dodds and colleagues examined the impact of CBCT on diurnal cortisol rhythm in breast cancer survivors but found no significant decreases or associations of cortisol with either group assignment or practice time. This contrasts with previous evidence showing that self-compassion exercises are associated with reduced cortisol (Rockcliff et al., 2008).

Friis and colleagues found a significant reduction in diabetes-stress for patients with no significant change in the waitlist control group. The interaction between mental health and metabolic outcomes in diabetes is complex. One possiblity is that physiological and autonomic processes believed to underlie self-compassion and self-soothing, may reduce stress responses that are linked to blood glucose levels (Surwit et al., 2002). The results cannot show the mechanism at play, however are consistent with the concept that being kinder to oneself, and self-soothing in the face of stress or suffering, may be linked to physiological processes (e.g., release of oxytocin and opiates) that are in themselves linked to HbA1c. In a similar domain, Collins and colleagues suggested that reductions in respiratory rate in both dementia patients and their spouses could be related to soothing rhythm breathing exercises, as has been found in the general population (Wielgosz et al., 2016).

Potential mechanisms by which compassion-based interventions affect outcomes

As compassion is an emerging field, there is no clear consensus or single model to elucidate how self-compassion may be a key transdiagnostic factor of psychopathological and physiological change processes in chronic conditions. Therefore, the following explanations draw on the conceptualization of difficulties in long-term health conditions and how compassion trainings, as described in the introduction, may enable an individual to adapt to such difficulties.

Broadly speaking, suffering in long-term health conditions can be categorised into five areas (Johnstone, 2018): (1) *cognitive difficulties* and negative self-evaluation (high self-criticism, self-blame, rumination, over-identification, worries about attaining personal goals and concerns about being able to fulfil one's responsibilities and expectations) (Callebaut et al.,

2016; cancer: Hopwood, Fletcher, Lee, & Al Ghazal, 2001; pain: Smith & Osborn.2007; Lumley et al., 2011); (2) *emotional difficulties* (fear of pain, fear of being criticized or seen as a burden, shame, guilt or helplessness (Purdie & Morley, 2016; Smith & Osborn, 2007); (3) *physical difficulties* and pain (related to physical pain itself or to physical sensations that correlate with difficult emotions); (4) *behavioural aspects* (pain and experiential avoidance of activities that trigger difficult emotions, which, in turn, increases disability); and (5*) social difficulties* including disconnection, isolation and loneliness.

Drawing from theories described in the introduction, self-compassion may help people with chronic illness to cope with this suffering through the following core mechanisms: (1) *stimulating the soothing system,* which in turn stimulates attachment and is a natural regulator of the threat system (Stellar & Keltner, 2014); (2) *regulating the influence of the achievement system* when evaluating oneself with respect to worthiness (Depue & Morrone-Strupinsky, 2005; Purdie & Morley, 2016); (3) *Providing encouragement* through warm and supporting voices and attitudes, that in turn facilitate change in affect and reduce helplessness (Gardner-Nix, 2009; La Cour & Petersen, 2015); (4) *increasing self-efficacy* when approaching and managing emotions and difficulties which in turn reduces experiential avoidance; (5) *promoting neutral and positive attitudes* towards the whole experience (pain, suffering and failures) through non-judgement, kindness, curiosity and openness (Kabat-Zinn & Hanh, 2009; Neff, 2003) (6) *understanding/accepting* that these experiences are an unavoidable part of the human condition, thereby improving connectedness or the sense of *common humanity* (Edwards et al., 2019; Neff, 2001) and (7) *helping people engage in value-based activities* thereby reducing the impact that chronic illness has on important domains of life (Edwards et al., 2019) (8) *unblocking flows of compassion* (self-other, other-self and self-to self) (Gilbert, 2017).

This cycle of increased positive affect and outcomes is consistent with the '*Broaden and Build*' theory (Fredrickson, 2001, 2004). Increased experience of positive feelings on a regular basis (i.e., increased self-compassion in this context) would make individuals more resilient in the face of psychological distress and would build their personal resources and health-promoting behaviours (Homan & Sirois, 2017; Sirois et al., 2015; Terry et al., 2013). In the wider literature, positive affect and health has been associated with decreased mortality, morbidity, and disease severity and progression in people with chronic illness (Pressman et al., 2019). Self-compassionate individuals ruminate less (Odou & Brinker,

2014), have less fear of failures (Killham et al., 2018) and intrinsically motivate themselves with a compassionate voice to change their lives for the better (Zhang & Chen, 2016).

What questionnaires are used to measure outcomes and could the quality of questionnaires affect the outcomes?

It can be difficult to examine potential mechanisms of action when the scales used to measure specific constructs lack specificity. This is a key limitation that is addressed in more detail below.

All studies that measured changes in self-compassion used the same questionnaire: Self-Compassion Scale (SCS) or its 12-item short form version (SCS-SF). The scale's validity has recently come under scrutiny (Muris & Otgaar, 2020). As the scale has different subscales, (three categories with two sides), it makes it hard to clearly understand which element of self-compassion is the active element and for whom (e.g., Muris & Petrocchi, 2017). Due to the argument that the measure's two dimensions may differentially relate to external constructs (e.g. Brenner, Heath, Vogel, & Crede, 2017; Brenner et al., 2018), compassionate and uncompassionate attitude towards self, have sometimes been assessed separately (Northover, Deacon, King & Irons, 2021). Only one study (Carvalho et al., 2021) used this bi-analytical method for compassionate and uncompassionate attitudes towards self and found significant changes only in the uncompassionate self-responding. This raises the question as to the potential mechanisms of change and whether interventions that aim to train compassion demonstrate their beneficial effects by (i) reducing uncompassionate attitudes, (ii) increasing compassionate attitudes toward self or (iii) both simultaneously. Previous literature, in community-level studies has shown that self-compassion may both increase positive affect and decrease negative affect, which in turn leads to positive outcomes (Klimecki et al., 2013; Neff et al., 2007).

Taken together, it seems that there needs to be further consideration of the measurement of self-compassion. Self-compassion overlaps with related concepts such as mindfulness, self-esteem and psychological flexibility. It would also be informative to determine whether compassion-based interventions change certain aspects of self-compassion more than others.

Measures of depression, anxiety and stress also varied across studies. The only scale that has been questioned is the HADS, despite having been utilised extensively over the last thirty

years (Coyne & van Sonderen, 2012). A recent review showed considerable inconsistency in the latent structure of the HADS (Cosco et al., 2012). It was concluded that the HADS may not be a dependable means of differentiating anxiety and depression for the purposes of assessing the absolute or relative levels of these variables (Bjelland et al., 2002; Coyne and van Sonderen, 2012). Five studies in this review used this measure (Carvalho et al., 2021; Collins et al., 2018; Hudson et al., 2020; Montero-Marin et al., 2019; Torrijos-Zarcero et al., 2021), which is a potential limitation.

There was also a lack of consensus for how studies examined acceptibility and feasbility. This is discussed in more detail in the section *Quality of included studies*. The lack of consensus for measures of acceptability and feasbility, make it difficult to compare and contrast potential moderating factors for acceptability and feasbility across studies. Only one study used a comprehensive approach to assessing acceptability and feasibility (Basque et al., 2021), in line with guidelines for reporting in feasibility studies (Bowen et al., 2009), and should be a model for future studies.

Overall, outcome measures varied widely across studies and it is evident that there is no consensus yet on appropriate outcome measures. The use of too many outcome measures is common in exploratory studies, yet also, requires stricter correction of the family-wise error rate, and this can in turn increase Type II error. The use of too many questionnaires can also place high demands on participants. The focus on general outcome measures (anxiety and depression) rather than outcomes specific to chronic illness does not represent intervention benefits. Important themes raised by the participants in qualitative studies (Ashworth et al., 2015), namely acceptance of the condition, increased emotion-regulation skills and reduced feelings of isolation, were only marginally represented in the quantitative outcome measures. Therefore, it may be more important for future studies to examine process measures such as emotion-regulation and self-blame.

Do differences in compassion-based intervention formats affect outcomes?

As there is so much heterogeneity in the literature in terms of intervention type, duration, mode of delivery etc., with many potential interacting variables, it is difficult to delineate exactly how certain varibales impact upon process, psychological and physical outcomes. This would need to be formally tested using meta-regression techniques. Nevertheless, this

review will summarize trends in the studies included and offer hypotheses as to what could have lead to those trends.

One trend that could be seen in the literature was greater drop-out in purely online compassion-based interventions (i.e., online platforms) (7% (Dhokia et al., (2020) to 50% (Carvalho et al., (2021) dropout, mean: 35%), and lower drop-out in face-to-face group (0% (Ashworth, et al., (2015); Zheng et al., (2022) to 33% (Dodds et al., (2015), mean:11%) interventions regardless of chronic illness population. It is unclear whether this pattern is more related to the group versus individual process, or the face-to-face versus online delivery. Although all intervention types were guided, online platforms were inherently an individual training process and therefore called upon self-motivation and self-accountability to access and complete the training material.

In terms of the group process, groups are known to have higher accountability and the group itself can be therapeutic (Harper & Cole, 2012; Worth, 2009). Indeed, patients with acquired brain injury described that being 'in it together' and that the 'security of the group' allowed them to feel understood and that belonging was a fundamental part of the change process (Ashworth et al., 2015). Research shows that living with chronic conditions can lead to social isolation and social stigma, and thus the group process may provide the opportunity to reverse these social difficulties (Boden-Albala, Litwak, Elkind, Rundek, & Sacco, 2005; Hagger, 2011; Morton & Wehman, 1995). In line with CFT theoretical foundations ('the flows of compassion'), the group process may also be beneficial as the development and experience of compassion from self to other, can be key to the development of an affiliative compassionate approach to oneself (Bates, 2005).

However, there was one online group study (Campo et al., 2017), that neverthless had drop-out rates more similar to that of other online platform studies (31% drop-out) than to face-to-face studies (mean drop out rate: 11%). This could suggest that online therapies lack a 'human element', and this may make compassion training more challenging to complete, when compassion is fundamentally about human connection (Gilbert, 2003). For this point, it would be interesting to have data on the ease of overcoming fear of compassion in an individual versus a group context. Another possibility is that online studies do not provide direct contact with a group leader, which has shown to be important (Ashworth et al., 2015; Chapin et al., 2014). Another potential varibale, that was not mentioned in all studies, was the

level of experience of the group leader, guider, or clinician, and this could be another important variable for how engaged study participants were in the intervention.

The studies included in the review did not show a trend whereby face-to-face group studies had better psychological, process and physical outcomes. This may be unexpected, given that face-to-face interventions had double exposure with both face-to-face and online homework elements. This may suggest that despite having higher drop-out rates, online interventions are as effective as face-to-face interventions, for those who decide or are able to engage with the online material. This may indicate an important trade-off or consideration for clinical interventions and personalized therapy. Whilst online interventions are more accessible and could provide important benefits for people living with reduced mobility, they may only be suitable for people who are highly motivated, do not fear self-compassion, have access to and are proficient in using technology (Knight, Karamouzian, Salway, Gilbert, & Shoveller, 2017; Mistretta & Davis, 2022).

Given that face-to-face self-compassion interventions were generally longer in length (mean: 120 minutes) relative to online sessions, which were shorter in length (range: 8-30 minutes), duration or intensity of the intervention may not be an important factor for psychological, process or physical outcomes. Study duration and intensity may however have an important role in acceptability. Most participants reported that study duration, session length and frequency were acceptable, however some participants reported that they would have liked follow-up session to consolidate key learnings (Montero-Marin et al., 2019).

The majority of compassion-based interventions were not adapted for the target populations and adhered to the original intervention protocols. Two studies did not tailor the intervention in favour of preventing contamination with condition-specific content (Chapin et al., 2014; Friis et al., 2016), and one article reported no tailoring given the absence of an available protocol for the target population (Sadeghi et al., 2018). As discussed above, developing compassion has been considered a transdiagnostic tool, and thus tailoring may not be warranted, other than in practical adaptations to make an intervention more manageable in brain injury and dementia populations.

Implications for clinical practise

The results of this systematic review suggest that, within the limits of the study methodology, compassion-based interventions show promise for both process and psychological and physiological well-being for people living with chronic illness.

All interventions included in the review showed moderate-high acceptability. Evidence suggests that highly acceptable interventions have higher treatment adherence, which will in turn likely improve the efficacy of treatment outcomes (Sekhon et al., 2017). NICE guidelines recommend CBT as first-line treatment for the management of long-term health conditions (NICE, 2009). As discussed previously, individuals with negative self-evaluations and high levels of self-criticism respond poorly to CBT and relapse is more common (Rector et al., 2000; Teasdale & Cox, 2001). Thus, patients presenting with high self-criticism, shame or blame may consider self-compassion related therapies as an alternative first-line treatment or adjunct to CBT. Resolving these therapy blocks may increase the efficacy of treatment. Moreover, compassion training may be helpful at the relapse prevention stage as evidence suggests that increases in self-compassion buffer against chance of relapse (Karl et al., 2018; Krieger et al., 2016).

The compassion-based interventions included in this review varied widely, from purely online platforms to group and individual face-to-face weekly sessions. Thus, clinicians should carefully consider patient preferences, mobility, motivation or depression levels, socio-economic status and access to internet/smart-phone technology, as well as the intensity and duration of the therapy to understand which intervention format would be most effective and well-suited for the individual. Another consideration is that connecting with similar others and understanding that one's emotional struggles are not in isolation is reflected in one of Neff's three self-compassion components - *common humanity*. Thus, social groups and forums may be important for decreasing the sense of social isolation in chronic illness. The field would benefit from gathering more evidence about the minimum effective dose (e.g., duration of the intervention) and the potential effects of the deliverer (e.g., mindfulness practitioner versus therapist (Bruce et al., 2010).

Limitations

The strengths of the review are that it included 571 people with nine different kinds of chronic illness, with seven different therapies. It examined multiple outcomes relevant for

individuals with chronic illness. It also used a wide number of search terms and a comprehensive search strategy, with two reviewers checking data extraction and study quality using the MMAT tool (Hong, Fabregues, et al., 2018). This study was a more focused review unlike previous reviews, as it only included intervention studies that had compassion at their core (e.g. CFT, CMT, CCT, CBCT, ABCT). In this way, the review had higher specificity when examining study outcomes.

This systematic review had several limitations, both methodologically and within the available empirical database. First, this review included both randomized and non-randomized pre-post trials. This limits the strength of the evidence, yet it was deemed acceptable given the small amount of literature. There were also limits in the MMAT tool used to assess the quality of studies. This scale is unable to give an accurate aggregate score and there is some ambiguity when measuring methodological quality criteria by each study category. As more evidence accumulates, future studies should assess risk of bias, imprecision, inconsistency, and publication bias across specific outcomes (Balshem et al., 2011). This would provide a better understanding of the quality of evidence.

Quality of the inlcuded studies

Most studies had small sample sizes (n=12), were completed in high-income countries, with predominantly white samples and were thus likely underpowered or lacked generalizability. This review did not look at ethnicity as it was not reported consistently across studies, and this is an important matter, especially in the context of accessibility to NHS services. Online compassion-based interventions were also reliant on technology and smartphone ownership, and may have therefore been subject to selection bias (younger, wealthy samples) (Basque et al., 2021; Campo et al., 2017).

Several studies did not present clear methodology and retention percentages were inaccurate or not clearly explained (Sadeghi et al., 2018). Nearly half of studies (n=6) did not have any control group and the majority that did have a control group, did not have an active control group (e.g., waitlist control group). Thus, conclusions on the efficacy of self-compassion interventions on outcomes were largely limited. Few studies assessed outcomes at follow-up, so follow-up findings should also be interpreted with caution. Some studies were of low quality due to lack of random assignment, lack of masking of participants and outcome assessors, no comparison conditions, and no ITT analysis.

This highlights the need for more rigorous RCTs that include follow-up assessments, prior to determining whether self-compassion interventions are an effective stand-alone treatment for co-morbid mental and physical health challenges in people living with long-term health conditions. Having said this, low study quality is expected in pilot studies and this reflects the infancy of the field of compassion.

A larger and important conceptual issue that merits more attention in the field of compassion research relates to the multiple definitions that exist for 'compassion' (see Goetz, Keltner, & Simon-Thomas, 2010). As detailed in the Introduction, different 'schools' of compassion and their respective interventions have variations in the description of self-compassion. Some definitions incorporate other concepts into their definitions such as wisdom (CFT: Gilbert, 2014); mindfulness, acceptance (MSC: Neff, 2003a) and motivation to relieve suffering (CCT: Jinpa, 2010). This raises issues with regards to specificity, validity and how we operationalize compassion. In the same way that the definition of anhedonia (motivation versus pleasure) underwent scrutiny in the field of depression (Keren et al., 2018), the field of compassion would benefit from further theoretical work to define self-compassion and its similarities and differences to other processes. Specificity and agreement in a common definition would in-turn support the development of questionnaires that measure compassion, and potential sub-components.

Future research

Given the limitations in the studies included in this review, recommendations are made in terms of study quality and transparency in future studies.

Study quality

The field requires well-designed RCT studies, with larger samples and appropriate active control conditions (Davidson & Kaszniak, 2015) to detect differences among self-compassion and comparison conditions. Future studies should include follow-up measures for at least six months post-intervention. Within this area, it would also be helpful to include three-arm trials, which test face-to-face and online delivery of the same intervention in comparison to a control group. This would facilitate direct comparisons between modes of delivery. Based on the results of this review, in addition to depression and anxiety, other process measures (such as self-criticism) should be measured. As mechanisms of action are identified, moderators of treatment outcome (e.g., duration, mode of delivery) could also be explored in more depth as

well as effectiveness in specific chronic illness populations and ethnic groups. Underlying these suggestions is also the need to clearly define the concept compassion and develop scales to reflect this.

Study Transparency

As stated above, studies inconsistently reported important information about the population, the delivery of the intervention, and outcome measures. Protocols around feasibility and acceptability need to be adhered to (e.g., Bowen et al., 2009) as well as providing data regarding treatment fidelity, experience of treatment instructors, and amount of time spent on home practice. This information will help to determine appropriate dosages of self-compassion interventions and moderators to treatment effects (e.g., instructor level). Certain physical health conditions are known to have a higher frequency of occurrence in certain races (e.g., sickle cell anaemia), and thus it is important to test cultural variations of self-compassion interventions. Indeed, Montero-Marin and colleagues developed ABCT to make training of compassion more acceptable and understood by the Spanish population. Few studies examined the potential adverse effects for acceptability of self-compassion interventions. This is an important consideration as mindfulness-based programmes have found that over half of participants report at least one negative effect from meditation (Britton et al., 2021). Mixed-methods studies would provide a richer understanding of acceptability of compassion-based interventions.

Conclusion

In conclusion, this systematic review aimed to summarize literature up until March 2022 that had investigated how compassion-based interventions (CFT, CMT, MSC, CCT, CBCT, ABCT) impact upon process, psychological, physical and functional outcomes in people living with chronic illness. The results demonstrated that compassion therapy in chronic illness is an emerging field and shows promise for improving self-compassion as well as other psychological and functional outcomes. There were trends for compassion-based interventions to improve self-assurance, pain acceptance/tolerance and objective physical measures of well-being, whilst also decreasing self-criticism, shame, anxiety, depression and stress. Self-compassion may be a key transdiagnostic factor of psychopathological and physiological change processes in chronic conditions, although the mechanisms underlying these changes are not known and require further investigation. This in-turn calls for more

RCT studies with larger sample sizes and studies that use appropriate measurement scales and feasibility/acceptability measures. As there was heterogeneity in the intervention types, chronic illness population, modes of delivery, duration, use of technology and tailoring of interventions, future studies should examine how these variables may moderate treatment outcomes. A tentative conclusion from this review is that face-to-face, group interventions may be more feasible than online interventions, or human connection (with the group or guide) may be important in the intervention process. Online elements increase accessibility and provide the opportunity and flexibility to practise self-compassion at any time. This indicates an important trade-off or consideration for clinical interventions and personalized therapy for long-term health conditions.

Chapter 3. Online self-compassion training for people living with long-term physical health conditions: A pilot study.

Abstract

The aim of this pilot study was to assess the feasibility and accepatibility of an online self-compassion training programme for people living with long-term physical health conditions. It also investigated changes in Process outcomes (self-compassion, self-criticism and self-reassurance); Psychological outcomes (depression, anxiety, stress and shame) and Functional outcomes (health-related quality of life and well-being) from pre- to post-intervention. This programme was composed of four online sessions, with one 30 minute video session per week, which set a basis for the in-between session practises and readings. The programme could be accessed by participants at any time by logging into the learning portal. Feasibility was examined in terms of ease of recruitment, study attrition (drop-out), treatment adherence and treatment engagement. Of the 105 participants who signed up to take part in the study, 78 participants adhered to the eligibility criteria. 45 of these 78 participants completed the pre-intervention measures, and 21 participants completed the 4-week training and post-intervention measures (53.33% attrition). Treatment adherence was 100% for all 21 study completers and more than half of participants reported that they used self-compassion principles a few times per week. The self-compassion course satisfied acceptability criteria with 80-90% participants reporting that they were satisfied with the course, that it was worth their time and that they would recommend the programme to a friend facing a similar difficulty. The results showed significant improvements in all process, psychological and functional outcomes, apart from anxiety, from pre- to post-intervention. Post-hoc analyses demonstrated that there were no significant differences in baseline measures for completers versus non-completers. This study lacked a control arm, and therefore pre–post changes in outcome measures could not be attributed to the self-compassion programme. Overall, online self-compassion training shows promise as a feasible and acceptable intervention for people living with chronic illness. Further research is needed to help understand the barriers to engagement and to help tailor its format to better suit participants who disengaged. RCT studies, with larger, more representative samples are needed to examine efficacy, and mediation/moderation analyses would help inform the potential mechanisms that underlie the self-compassion intervention.

Introduction

Long-term physical health conditions

A long-term physical health condition can be defined as a health problem that lasts a year or longer, impacts on a person's life, and may require ongoing care and support (World Health Organization, 2022; NHS, 2019). The top ten leading causes of disability and morbidity worldwide (WHO, 2020) include cardiovascular diseases, respiratory conditions, Alzheimer's Disease, diabetes and kidney disease. An estimated 40% of the UK population is affected by one or more long-term physical health conditions (Census, 2021). Chronic illness becomes more prevalent with age, and by the age of 65, it is estimated that nearly two-thirds of people in the UK will have developed a long-term condition. This is particularly concerning for an ageing population, where people may be living longer, but with greater disability. Indeed, individuals living with long-term health conditions experience illness-related demands and stressors that can have significant impacts on their mental, physical and social aspects of life (McWilliams, Cox, & Enns, 2003). Day-to-day management of a health condition might involve trying to manage symptoms, following treatment regimes, attending medical appointments, as well as coping with the consequences of chronic illness, such as pain and uncertainty of the future (Bolourchifard et al., 2019; Sadoughi et al., 2017). 9–23% of people with one or more chronic physical health conditions have comorbid depression and anxiety (Buist-Bouwman, de Graaf, Vollebergh, & Ormel, 2005; McWilliams, Goodwin, & Cox, 2004; Moussavi et al., 2007). Comorbid mental health difficulties can lead to poorer illness outcomes, treatment adherance and premature death (Krishnan et al., 2002; Mykletun et al., 2009). This highlights the importance of developing treatments that target mental health difficulties alongside physical health conditions to improve well-being and prognosis. However, the efficacy of psychological interventions may face additional challenges in this population. People with chronic illness may have difficulties in mobility, attending physical appointments and may require more flexible treatment regimes depending on their relapse-remission cycles, 'flare ups' and health status (Fisher, Roberts, McKinlay, Fancourt, & Burton, 2021; Scott, Kokaua, & Baxter, 2011). Moreover, a substantial number of people living with chronic illness report rumination, self-criticism, shame, and self-blame (cancer/HIV/heart disease: Callebaut et al., 2017; cancer: Hopwood, Fletcher, Lee, & Al Ghazal, 2001; pain: Smith & Osborn.2007; Lumley et al., 2011). These negative self-evaluations can interfere with treatment and achieving optimal psychological, social, and physical health and well-being (Ford & Troy, 2019; Plaufcan, Wamboldt, & Holm, 2012;

Voth & Sirois, 2009). Higher rates of social isolation and social stigma in chronic illness populations may also play a role in perpetuating these difficulties (Boden-Albala, Litwak, Elkind, Rundek, & Sacco, 2005; Hagger, 2011; Morton & Wehman, 1995). In response to these observations, compassion-based psychological treatments, may present promising new avenues to working with people living with long-term health conditions.

Compassion and self-compassion for long-term health conditions

In the past two decades, there has been a rapid increase in compassion-focused research. As discussed in the Systematic Review, compassion is defined as the recognition of suffering and the inclination to relieve it with an act of kindness towards self and others (Gilbert, 2009). Self-compassion can be thought of as a skill that one can train in and cultivate over time (Gilbert 2000, 2005a, 2009; Davidson 2002; Neff 2003a, b) and therefore may be relevant to a long-term health condition group for a number of reasons.

First, Compassion-focused therapy (CFT) was developed primarily to help people shift from rumination, negative bias, shaming, self-criticism and blame to how to work with these difficulties more compassionately (Gilbert & Choden 2013). Compassion therapy targets important processes that other conventional psychological treatments do not (e.g., CBT) by providing a de-shaming formulation (i.e., we have 'tricky brains' which are 'not our fault') and specific work on the 'inner critic' (Gilbert, 2009). In this way, compassion-based interventions can be thought of as targetting trans-diagnostic psychological processes or struggles across disorders (Misurya et al., 2020). Since individuals with chronic illness often experience self-criticism and negative affect, and can encounter acute and/or chronically stressful situations; compassion training may be a promising adjunct treatment for existing interventions or stand-alone intervention (Sirois & Hirsch, 2019; Sirois, Molnar, & Hirsch, 2015).

Second, CFT uses a biopsychosocial model, thereby providing clear links between feelings, the body and underlying neurochemical processes (Figure 3). For example, the training highlights how humans' minds and bodies have evolved in such a way that we have emotions that serve certain functions. CFT theory postulates that an inbalance in the threat, drive and soothing system leads to psychological suffering (Gilbert, 2014, 2020). Thus, the intervention uses a number of physiological and psychological practices to help activate the soothing

system. These include attention training, soothing rhythm breathing, mindfulness, and compassionate imagery.

Third, as discussed in the Systematic Review, the purposeful cultivation of compassion has found to have both physical and psychological benefits in physically healthy as well as in chronic illness samples. Studies have reported that the above mentioned exercises are associated with changes in the functioning of the autonomic nervous system, particularly the vagus nerve (Di Bello et al., 2020; Petrocchi & Cheli, 2019). They have also shown to have lasting effects on physical measures of health (e.g. reduced HbA1c in diabetes (Friis et al., 2016), decreased respiratory rate in dementia (Collins et al., 2018), increased heart-rate variability (HRV) (Kirby, Doty, Petrocchi, & Gilbert, 2017). In terms of process and psychological changes, compassion-based inteventions are associated with increased levels of self-compassion, self-reassurance and positive emotions and a reduction in self-criticism, shame and psychological distress (Irons & Heriot-Maitland, 2021; Matos et al., 2017).

There is thus accumulating evidence as to the potential benefits of self-compassion treatments. However, there is still the need to make these interventions accessible and flexible in response to the additional needs that people living with long-term health conditions may have. Online or web-based interventions may provide the means to make this possible and are discussed in more depth below.

Figure 3

Three-system model in CFT.

Online compassion-based interventions

There is a push for mental health intitiatives to be accessible, adaptable and sustainable (Christensen & Hickie, 2010; Kazdin & Blase, 2011). In this respect, online compassion-based approaches may provide a cost-effective, accessible and time-efficient means of engaging individuals living with chronic conditions. The relevance of developing online interventions seems more relevant than ever since the coronavirus outbreak, and the mental and physical health risks that this posed to people with long-term health conditions (Fisher et al., 2021; Mishra & Chakole, 2021). This was compounded by the impacts of social isolation due to lock-down and recommendations for people living with long-term health conditions to shield (Fisher et al., 2021). Online treatment delivery may also be particularly relevant for chronic health patients given the lenghty waiting times for pain management services and multidisciplinary teams in the UK (Collett, 2004; Leach, Ndosi, Ambler, Park, & Lewis). Thus, web-based mental health services may not only overcome traditional geographical, attitudinal and financial barriers to access to care, but also to lower overall delivery costs and reduce demands on the clinical workforce (Christensen & Hickie, 2010).

Since the development of mobile apps and technology, various online interventions have been created with the intention to cultivate mindfulness, stress relief and compassion. The Systematic Review presented the results of five online compassion-based interventions for people living with chronic illness. Campo et al., (2017) delivered Mindful Self Compassion (MSC) via an online group, and the remaining four online compassion-based interventions used websites and platforms where participants had 24-hour access to written material, audio recordings, and animated videos (Basque, Talbot, & French, 2021; Carvalho et al., 2021; Dhokia, Elander, Clements, & Gilbert, 2020; Hudson, Thompson, & Emerson, 2020).

Three of these studies were RCTs and used Compassion-focused therapy (CFT)/compassionate mind training (CMT) -based interventions, ranging from brief 8 minute sessions over a two week period (Hudson et al., 2020), four weekly 20 minute sessions (Carvalho et al., 2021), to 21 daily sessions of 10 minutes (Dhokia et al., 2020). These studies demonstrated that people with chronic illness showed within-subject improvements in the outcomes measured: self-compassion, self-criticism, depression, anxiety, stress, valued living and QoL. Single group pre-post studies using MSC, and self-compassoin psychoeducation over 6-8 weeks showed a similar pattern of findings (Basque et al., 2021; Campo et al., 2017). Compared to control conditions, improvements were maintained for self-criticism (Dhokia et al., 2020), self-compassion, depression, anxiety and stress (Hudson et al., 2020) and there were more rapid decreases in illness-related shame versus ACT (Carvalho et al., 2021). These results are encouraging considering the limited scope and brief duration of the self-compassionate intervention and the fact that no contact with a clinician was provided.

A limitation of these studies was the differences in the scales and outcomes measured in each study, with some only examining two or four outcome variables (Dhokia et al., 2020; Hudson et al., 2020). Perhaps this was a strategic decision by authors given the small sample sizes and low statistical power (e.g. n=16, Carvalho et al., 2021, n=26, Basque et al., 2021; Campo et al., 2017). Potential issues with feasibility were highlighted as there was relatively high drop-out for online studies (range: 7% (Dhokia et al., (2020) to 50% (Carvalho et al., (2021) dropout, mean: 35%). There was also inconsistent reporting and transparency on feasibility and acceptability information such as treatment adherence, engagement, and statisfaction. Another concern from this limited literature is that only one study recruited a sample of people with various long-term health conditions (e.g., Chrone's disease, fibromyalgia), whilst the remaining four studies focused on specific conditions in isolation (skin conditions, cancer

only samples). This has limited generalizability in a population where individuals commonly have multimorbidity (Smith, Soubhi, Fortin, Hudon, & O'Dowd, 2012; Wallace et al., 2015).

Outline of the current study

Aims and hypotheses

Given these considerations, the current study sought to investigate the feasibility and efficacy of a brief, four-session online self-compassion course, based upon aspects of the CFT model in people living with a variety of different long-term health conditions. Pilot studies are used to determine whether an intervention is appropriate for further testing and enable researchers to assess whether the ideas and findings can be shaped to be relevant and sustainable. Therefore, the study recruited people with long-term health conditions to be allocated to a self-compassion programme, and no wait-list control. This programme was composed of four online sessions, with one 30-minute video session per week, which set a basis for the in-between session practises and readings. The course could be accessed by participants at any time by logging into the learning portal (www.balancedminds.com). The current study aimed to supplement previous findings of online CFT/CMT interventions by using a more comprehensive set of feasibility and acceptability measures, in line with recommendations by Bowen et al., (2009). Consistent with the recommendations of the Systematic Review, this study also examined pre- to post-intervention changes using a wider set of outcomes that are relevant for chronic illness populations. These included *Process outcomes* (self-compassion, self-criticism and self-reassurance); *Psychological outcomes* (depression, anxiety, stress and shame) and *Functional outcomes* (health-related quality of life and well-being)

The study had three main hypotheses. Hypotheses (1) and (2) were exploratory hypotheses concerning the feasibility (ease of recruitment, attrition, adherence and engagement) and acceptability (participant satisfaction) of the 4-week online self-compassion course, respectively. Hypothesis (3) was a directional hypothesis for process, psychological and functional outcome measures.

Hypothesis (1) Feasibility

In line with the findings of previous online compassion-based interventions (Basque et al., 2021; Campo et al., 2017; Carvalho et al., 2021; Hudson et al., 2020), it was predicted that the programme would recruit 20-25 participants, have moderate-high levels of attrition (35-

55%) and high levels of adherence and engagement by study completers (i.e., completing 80% more of the study content).

Hypothesis (2) Acceptability

In line with other online interventions that have used a CMT framework (Carvalho et al., 2021; Hudson et al., 2020; Irons & Heriot-Maitland, 2021), it was hypothesized that the programme would have high acceptability, with 80% or more of study participants rating that they were satisfied with the course.

Hypothesis (3) Process, psychological and functional outcomes.

Consistent with the emerging evidence of othe efficacy of online compassion-based interventions in chronic illness, it was hypothesized that there would be significant improvements in all process, psychological and functional outcome measures from pre-to post intervention.

Method

Design

Single group, non-randomized, repeated measures quantitative design to examine the feasibility and acceptability of an online self-compassion training programme for people living with long term physical health conditions. Participants completed process, psychological, and functional measures pre- and post-intervention.

Participants

A final sample of 21 participants was recruited from the UK using various media channels (Posters, Charity websites/newsletters (e.g., Action on Pain, Positively UK, Diabetes UK, MacMillan Cancer UK), Facebook, Instagram, Twitter, University well-being services). The inclusion criteria was as follows: (1) Having a chronic condition defined as an illness or medical condition that has lasted longer than a year AND reporting feeling self-critical, ashamed or non-acceptance of their condition/looking for ways to better manage the relationship with the condition (2) Living in UK (3) Access to the internet (4) Not currently having a mental health crisis/suicidal risk. The mean age of participants was 46.95 years, the majority were women and just over half of participants were white British. The mean duration of living with the long term health condition was 8.85 years and the most reported chronic condition was chronic back pain, followed by chronic fatigue/myalgic encephalomyelitis (ME), eye conditions and breast cancer.

Previous self-selected samples tend to recruit clients who are genuinely experiencing difficulties with their condition (moderate scores in depression, anxiety and stress) and thus a self-selection recruitment method was chosen (Sormeh et al., 2020; Penlington, 2018; Dhokia et al., 2020; Gooding et al., 2019).

This pilot study aimed to recruit at least 80 participants, to allow for a final sample of 25-35 participants, in the case that drop-out rates would be up to 60% (Halamova, Kanovsky, Pacutova, & Kupeli, 2020; Krieger et al., 2019).

The Intervention

The content for the online training was developed by Dr Chris Irons, drawing from CFT theory, practice, and outcome research (e.g., Gilbert, 2009; Irons & Beaumont, 2017; Matos et al., 2017) with a particular focus on Compassionate Mind Training (CMT) exercises. Each session included a 30-minute video (four in total over a period of four weeks). Following each video, participants gained access to an audio file and some written material to access for the week to guide them in their practice. The worksheet summarized the key elements from the session. Please see Table 1 for an outline of the content of each session.

Table 10

Online self-compassion intervention content. (Adapted from Northover, Deacon, King & Irons, 2021).

Session	Contents
1	**Building the foundations of self-compassion** This session explored how to lay the foundations for self-compassion by understanding the affection regulation (i.e. "three-systems") model in CFT (Gilbert, 2009). Participants then engaged in an exercise called soothing rhythm breathing which is linked to accessing and developing the parasympathetic nervous system (which has been found, amongst other things, to be related to threat regulation and social connection – see (Kirby, Doty, Petrocchi, & Gilbert, 2017)).
2	**Developing the compassionate self** This session explored the concept of developing a compassionate self and helped participants to begin to direct a sense of compassion and good will to themselves. This practice has been found to be associated with reductions in shame and stress, and an increase in self-compassion (see (Matos et al., 2017) and (Kim, Cunnington, & Kirby, 2020)).
3	**Deepening self-compassion** This session involved learning to switch from a "threat mind", to a "compassion mind", and further develop self-compassion through compassionate imagery (see (Gilbert & Irons, 2004).
4	**Self-compassion for every day life** This session explored how to apply self-compassion to one's self on a daily basis. It focused on self-compassion principally through compassionate letter writing, which utilises adaptations to expressive writing to help participants develop a more compassionate relationship with themselves (Gilbert, 2010).

Measures

Demographic Measures

The categories of personal data collected were gender, age, ethnicity, occupation, and previous experience of therapy. Participants were asked to input information about the long-term health condition, including name of condition, date of onset, current methods of management (e.g., pain relief medication, physiotherapy, meditation) and any past or present psychological interventions used.

Feasibility Measures

In order to assess feasibility, data was collected regarding (i) ease of recruitment (ii) study attrition (drop-out) (iii) treatment adherence and (iv) treatment engagement (how often practises were used). Treatment adherence and treatment engagement were examined post-intervention using three questions with multiple choice answers. The questions included: (1) "How many sessions/weeks of the 4-week self-compassion course did you complete in full?" (2) "Within which time-frame did you complete the 4-week self-compassion course?" (3) "How often did you use or apply practices or principles that you learnt on the course?"

Acceptability measures

The acceptability of the self-compassion intervention was assessed with an adapted version of the 8-item treatment satisfaction questionnaire (Titov et al., 2013). It included four multiple choice questions and four opened-ended questions for participants to describe their experience of the programme in their own words. The mutliple choice questions included: (1) "Overall, how satisfied are you with the programme?" (Satisfied/Mostly satisfied/Somewhat satisfied/Unsatisfied), (2) "How would you rate the quality of the material?" (Excellent/Good/ Not good or bad/Unsatisfactory), (3) "Was the programme worth your time?" (Yes or No), and (4) "Would you recommend the programme to a friend who has difficulties accepting his or her condition?" (Yes or No). Three opened-ended feedback questions were also used so the participants could describe their thoughts on the programme, what they perceived as most and least helpful and provide suggestions. For example: "Are there any changes that you would make to the course?"; "Please describe what you would have liked to be different to make the course more helpful for you or for others who may be having difficulties managing a health condition". This approach was used to evaluate the feasibility and acceptability of the online self-compassion intervention (Bowen et al., 2009).

Efficacy Measures: process, psychological and functional measures

The second aim was to assess changes in the following process, psychological and functional outcomes from pre- to post-intervention.

Process measures

Self-compassion was measured using the Short Form of the Self-Compassion Scale (SCS-SF (Raes et al., 2011)). This self- report scale consists of 12 items designed to measure the six subcomponents of self-compassion: mindfulness, over-identification, common humanity, isolation, self-kindness and self-judgement; each item was rated on a 5-point scale (1-Almost never to 5-Almost always). Item scores were used to generate a total self-compassion score, which has a high correlation ($r \geq 0.97$) with the total score of the long form Self-Compassion Scale (Raes et al., 2011) and has good internal reliability (Cronbach's alpha ≥ 0.86) (Raes, Pommier, Neff, & Van Gucht, 2011). The SCS is the most used measure of self-compassion (Mistretta & Davis, 2022). Due to the argument that the measure's two dimensions may differentially relate to external constructs (e.g., (Brenner, Heath, Vogel, & Crede, 2017; Brenner et al., 2018), compassionate and uncompassionate attitude towards self were also assessed separately. Compassionate attitudes included Self-Kindness items (2, 6), Common Humanity items (5, 10) and Mindfulness items (3, 7). Uncompassionate attitudes included Self-Judgment items (11, 12), Isolation items (4, 8) and Over-identified items (1, 9). As Neff and colleagues do not recommend using the short form for subscale scores (Raes, Pommier, Neff, & Van Gucht, 2011), the mean total self-compassion score was also calculated by reverse scoring the negative subscale items - self-judgment, isolation, and over-identification.

The Forms of Self-Criticising/Attacking and Self-Reassuring Scale (Gilbert et al., 2004) is a 22-item scale that measures people's critical and self-reassuring self-evaluative responses to setbacks or disappointments. This study used a 12-item short form (Sommers-Spijkerman et al., 2018) to make the total test battery more manageable for participants. Participants rated how they might typically think and react to a perceived failure or mistake using a 5-point Likert scale (0-not at all like me to 4-extremely like me). The scale measures two forms of self-criticism (i) inadequate self, which focuses on a sense of personal inadequacy (e.g., 'I am easily disappointed with myself'), and (ii) hated self, which measures the desire to hurt or persecute the self (e.g. 'I have become so angry with myself that I want to hurt or injure

myself'). The scale also measures self-reassuring and supportiveness when things go wrong (e.g., 'I am able to care and look after myself'). The scale had Cronbach's alphas of 0.90 for inadequate self, 0.86 for hated self and 0.86 for reassured self (Gilbert et al. 2004). Several replication studies have supported the reliability of the scale (e.g., Baião et al., 2014; Castilho et al., 2015; Kupeli et al., 2013).

Psychological measures

Depression, Anxiety and Stress Scale (Lovibond & Lovibond, 1995). This 21-item shortened version of the Depression, Anxiety and Stress Scale (DASS)-42 consists of three subscales, each with seven items, measuring depression, anxiety and stress. Participants rate how much each statement applied to them over the past week, on a four-point Likert scale 0–3 (0 = did not apply to me at all, 3 = applied to me very much, or most of the time). The DASS-21 subscales have Cronbach's alphas of 0.94 for depression, 0.87 for anxiety and 0.91 for stress (Antony, Bieling, Cox, Enns, & Swinson, 1998).

External and Internal Shame Scale. (EISS) (Ferreira, Moura-Ramos, Matos, & Galhardo, 2022). This 8-item measure was used to assess the experience of external shame (e.g., 'other people see me as not being up to their standards') and internal shame (e.g., 'I am unworthy as a person'). Participants were asked to rate how much they felt each statement on a 5-point Likert scale (0 = Never, 4 = Always). Good internal consistency has been found for internal shame (Cronbach's alpha = .82), external shame (Cronbach's alpha = .80) and the global score (Cronbach's alpha = .89) (Ferreira et al., 2022). External and internal shame were analysed separately they have different aetiology, are related to different self-constructs, and require different types of therapeutic management (Gilbert, 1998).

Functional measures

The World Health Organization Wellbeing Index (WHO-5) is a short questionnaire consisting of 5 simple and non-invasive questions, which tap into the subjective well-being of the respondents (e.g. 'I have felt calm and relaxed', 'I woke up feeling fresh and rested'). It is a widely used, validated measure of subjective wellbeing designed for use in clinical trials, with high test-retest reliability (Topp, Ostergaard, Sondergaard, & Bech, 2015).

Health-related quality of life was measured using The Assessment of Quality of Life – 6 Dimension (AQoL-6D) (Moodle et al., 2010). This instrument has 20 items across six dimensions - independent living, mental health, coping, relationships, pain, and senses. The AQoL-6D is considered a useful tool for assessing quality of life impairment in epidemiological cohort studies (cross-sectionally and over time). It displays appropriate levels of construct, concurrent and convergent validity and provides a sensitive description of Health-related Quality of Life (HRQoL) (Allen, Inder, Lewin, Attia, & Kelly, 2013; Richardson et al., 2012). The overall Comparative Fit Index (CFI) for the AQoL-6D of 0.97 is higher than the criterion of 0.95 recommended. The current study used the overall 'unweighted' psychometric measure (HRQoL), where lower scores denote better HRQoL.

Two further open-ended questions were used at post-intervention to assess participants' main learning points and self-perceived change. These included: (1) "What was your most important learning or experience from the self-compassion course? Please explain why." (2) "Have you noticed any changes in your patterns of thinking or behaving after completing the self-compassion course? Please explain." Open-endeed comments, as used in previous pilot studies (Carvalho et al., 2021) can be helpful for allowing particpants to express what has not otherwise been captured in quantitative questionnaire scales.

Involving experts by experience and ethics

The research proposal for the study received approval from the research sub-committee, Royal Holloway University. An ethics self-assessment form was completed as no ethical concerns related to the project were identified by the principal investigator and research supervisor (see Appendices).

Prior to recruitment, three experts by experience were asked to give their perspective on the following: how to recruit, how to advertise, how to assess (e.g., shame/ self-criticism) in a sensitive way, ethical issues (e.g., how best to sign post and work with any issues that come up during the intervention), how to run the intervention (see Appendices).

Analysis Plan

Test of Hypothesis 1: Feasibility

Feasibility was examined with percentages. The intervention was feasible if the following criteria were met:

Ease of recruitment

The recruitment of 20 to 25 participants over a period of 3 to 4 months was estimated to be feasible using low-cost or free traditional advertising methods targeting English speaking residents in the UK (Basque, Talbot, & French, 2021).

Study attrition

Drop-out was calculated form the number of eligible participatns who signed up to the study and completed pre-intervention (T1) questionnaires to the number of participants who completed post-intervention (T2) questionnaires. It was not possible to differentiate (i) participants who completed the 4-week course and did not complete post-intervention questionnaires from (ii) participants who completed both the 4 week course and the post-intervention questionnaires. Please see Discusssion section for a further evaluation of this matter. A drop-out of 42-50% would be considered in line with other online self-compassion interventions (discussed in the systematic review) (Basque et al., 2021; Carvalho et al.; Hudson, Thompson, & Emerson, 2020). Other online studies using a similar design to this study have shown attrition rates between 30-55% (Halamova, Kanovsky, Pacutova, & Kupeli, 2020; Krieger et al., 2019).

Treatment adherence

Adherence was defined as completing 80% of the intervention (completing all modules in the 4-week self-compassion course within the 4-week period). This criterion was chosen as a meta-analysis of adherence to internet-delivered CBT considered completing 80% of an intervention as having been exposed to a substantial part of the treatment content (van Ballegooijen et al., 2014).

Treatment engagement

Participants were asked how often they applied or practiced the principles learnt on the course. Practising the exercises once a day or a few times a week can be considered sufficient (van Ballegooijen et al., 2014).

Test of Hypothesis 2: Acceptability

Treatment satisfaction was examined with percentages. 80% or more participants would need to report (i) being "Satisfied" or "Mostly Satisfied" by the course; (ii) finding the course material "Excellent" or "Good"; (iii) responding "Yes" to the programme being worth their time; and (iv) responding "Yes" to recommending the programme to a friend (Basque et al., 2021). Open-ended comments by participants were also explored to add to the quantitative data. This was not a qualitative analysis.

Test of Hypothesis 3: Process, psychological and functional outcomes

This was a before-and-after comparison study (Lefebvre, Manheimer, & Glanville, 2011) using a repeated measures design. This study examined changes in the following process, psychological and functional outcomes from pre- to post-intervention: *Process outcomes* (i) **self-compassion** (self-compassion total score, compassionate and uncompassionate attitudes towards self), (ii) **self-criticism** (hated self, inadequate self) and **self-reassurance** (reassured self); *Psychological outcomes* (iii) **depression,** (iv) **anxiety,** (v) **stress,** (vi) **shame** (external and internal shame); *Functional outcomes* (vii) **health-related quality of life,** and (viii) **well-being**. It was predicted that there would be increases in total self-compassion scores, compassionate attitudes, reassured self scores and well-being scores, and decreases in uncompassionate attitudes, hated self scores, inadequate self scores, depression, anxiety, stress and health-related quality of life scores (lower scores = better HRQoL).

Changes in psychosocial measures from pre- to post- self-compassion intervention for the intervention completers were examined using the paired-samples t-test or Wilcoxon-signed rank test, depending on whether change scores from pre- to post intervention were normally distributed (Pallant, 2013). This has been completed in previous pre-post pilot studies of compassion-based interventions (Brooker et al., 2020; Campo et al., 2017; Collins, Gilligan, & Poz, 2018). Given the small sample size, and the number of dependent variables used (>10) a more complex and comprehensive statistical model that accounts for interactions between variables (e.g. MANOVA), would not be adequately powered. This is in line with criteria by Stevens (1980) and therefore a MANOVA was not used. Effect sizes were estimated and interpreted using Cohen's *d* (small effect = .20, medium effect = .50, large effect = .80) or $r = z/\sqrt{}$ (number of observations) as appropriate to the data distribution (Cohen, 1988; Pallant, 2013). *r* effect sizes were interpreted as small effect = .10, medium effect = .30, large effect = .50. As 13 independent tests were completed for each of the

outcome variables, a Bonferroni correction was made in order to control the Type I error rate. Statistical significance was set at $p<.004$. ($p=.05/13$ tests = $p= .004$). Given the small sample size ($n=21$), the results were reported with and without alpha reduction techniques. This was to avoid Type II errors (Feise, 2002) and is consistent with similar studies (e.g., Dissanayaka et al., 2017, Northover et al., 2021). Moreover, as the results were complementary towards the same hypothesis, there was reduced risk of false positives (Althouse, 2016).

Post-hoc analyses

Post-hoc analyses were not based on a particular hypothesis and were performed to examine potential biases (i.e., whether the online self-compassion course was more likely to be completed by individuals with a particular demographic or psychological profile). Post-hoc tests examined differences between participants who completed the study '*study completers*' (completed T1 questionnaires, 4-week couse and T2 questionnaires) and participants who did not '*study non-completers*' (completed T1 questionnaires and did not complete T2 questionnaires). Chi-square tests, independent samples *t*-tests (normally distributed data), Mann-Whitney U tests (non-parametric data) were used to assess differences between study completers (n=21) and non-completers (n=45) on baseline sociodemographic, process, psychological and functional measures. Participants who partially completed T1 questionnaires were not included in the analysis due to inconsistency in missing data.

Procedure

Recruitment was conducted over a period of 4 months from December 2022-March 2022. The recruitment method aimed to reach a diverse population, (i.e., through community groups as well as university groups). The advert asked whether the reader was someone who "has a long-term health condition (e.g., chronic pain, diabetes, IBS)" and whether they are "interested in learning how to improve self-compassion and acceptance" or "find better ways to manage the relationship that they have with the condition?" (See Appendix 2).

Participants recruited through social media, charities and university psychological services across the UK were directed to an online survey provider 'www.qualtrics.com' which outlined study eligibility and contained a link to the online consent form and screening measures.

The application form was completed through a secure website to assess the following eligibility criteria: (1) Having a chronic condition defined as an illness or medical condition

that has lasted longer than a year AND reporting feeling self-critical, ashamed or non-acceptance of their condition/looking for ways to better manage the relationship with the condition (2) Living in UK (3) Access to the internet (4) Not currently having a mental health crisis/suicidal risk. Applicants who did not meet eligibility criteria were re-directed and were displayed a screen thanking them for their interest in the study and were provided a list of pain management and mental health resources. Applicants showing suicidal thoughts were encouraged to contact their family physician and were sent a list of resources including contact information for emergency services and immediate helplines (e.g., Samaritans).

Participants who met inclusion criteria were automatically assigned a random participant code and were re-directed to a page to complete pre-intervention (time one, T1) questionnaires. Immediately after completing the questionnaires, participants were displayed a set of instructions for how to register to the self-compassion course on the balanced minds website (see Appendices). Participants were also sent an e-mail with the same instructions for future reference. Registering for the course involved creating a username, password and inputting a group code "CompassionResearch2021". The online self-compassion portal could subsequently be accessed by participants 24-hours a day by logging into their account via www.balancedminds.com.

Automated e-mails were set-up via Qualtrics. Participants received these (i) immediately after completing pre-intervention questionnaires (with instructions of how to enrol on the course) (ii) one week later (assuming completion of week 1 of the training to remind participants to proceed to week 2) (ii) two weeks later (assuming completion of week 2 of the training to remind participants to proceed to week 3) (iii) three weeks later (assuming completion of week 3 of the training to remind participants to proceed to week 4) (iv) four weeks later (assuming completion of the full 4-week course and to provide participants with a link to complete post-intervention (time two, (T2) questionnaires). E-mails were designed to be warm, informative and encouraging. Following the completion of each session (one session per week), participants were able to access follow-up guided audio exercises and written handouts covering ideas discussed in the session. Study completers were asked if they would like to enter themselves into a prize draw (worth £100) for having participated in the study.

The advert was closed after three months, with 109 participants enrolling on the study (Figure 4). Of the 78 applicants who completed consent and met the eligibility criteria, 21 completed pre- and post-treatment questionnaires and were included in the analyses.

Figure 4

Flowchart of participants in study.

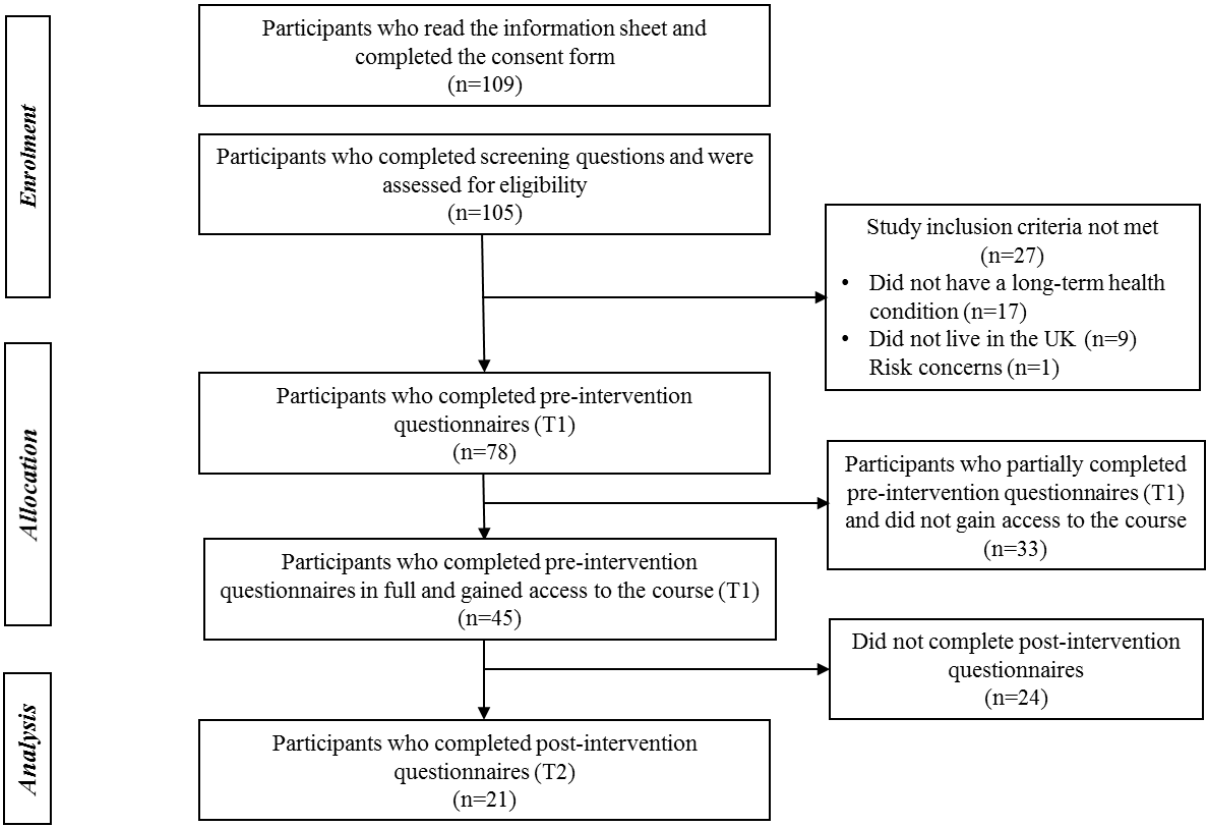
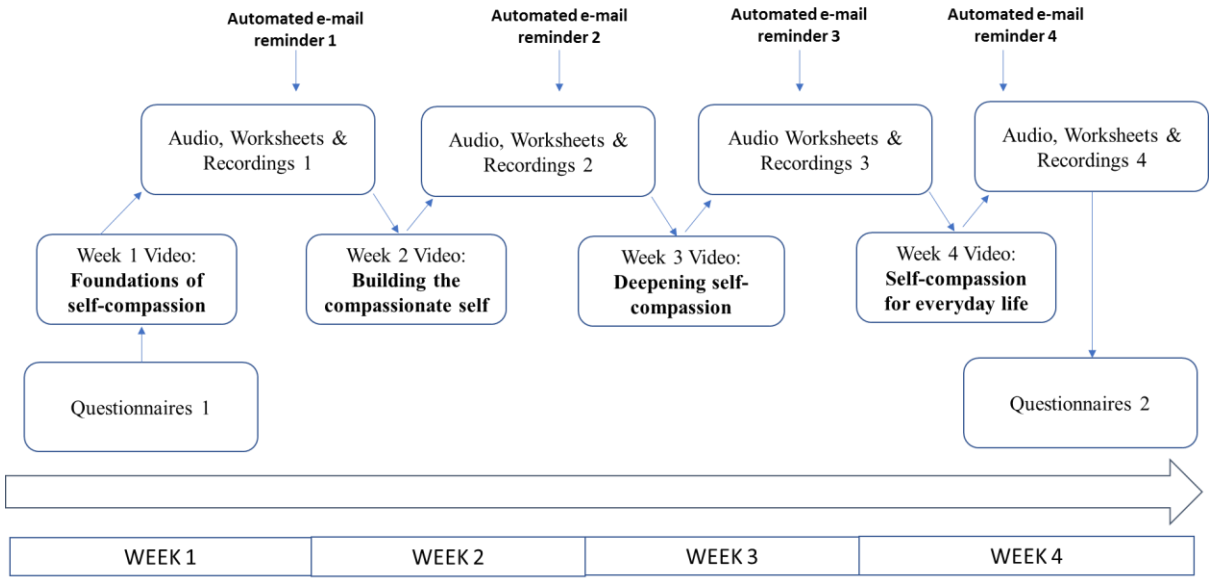


Figure 5

Protocol of the online self-compassion intervention



Results

Sociodemographic Measures

This pilot pre-post study had a final sample of 21 participants living with long-term health conditions which were included in the analysis. This was a self-selected sample and all participants self-reported *"I have a chronic condition defined as an illness or medical condition that has lasted longer than a year AND I am currently experiencing some distress associated with the condition (e.g. difficulty accepting, shame, self-criticism)/ I am looking for ways to manage it better".*

Figure 4 (Methods section) illustrates the flow of participants through the study. Table 11 demonstrates the descriptive statistics for sociodemographic variables. The mean age of participants was 46.95 years, the majority were women and just over half of participants were white British. The mean duration of living with the long term health condition was 8.85 years and the most reported chronic condition was chronic back pain, followed by chronic fatigue/myalgic encephalomyelitis (ME), eye conditions and breast cancer. One of the participants with breast cancer was a breast cancer survivor, previously treated with stage 0 breast cancer, and the other participant was diagnosed with secondary breast cancer. Three participants (14.29%) reported that they had more than one chronic condition, and just over half the sample reported that they had concurrent mental health concerns. Table 11 shows that participants had a number of ways to cope with their chronic condition. The most common management included medication and physiotherapy. 66.66% of the sample had experienced psychological therapy or interventions prior to enrolling on this course and seven participants had never experienced a psychological intervention. Three participants who had previously used psychological interventions were also currently in psychological treatment at the time that this study was being completed and 11 participants who had previously used psychological interventions were not receiving treatment at the time of the 4-week self-compassion course.

Table 11

Participant sociodemographic, physical and mental health characteristics (n=21)

Characteristic	**Participants (n=21)**	
	Mean	SD (range)
Age (years)	46.95	14.01 (25-75)
Years living with long-term health condition	8.85	7.60 (1-32)
	N	%
Sex		
Female	19	90.50
Male	2	9.52
Ethnicity		
White British	11	52.85
White European	2	9.52
White Other	3	14.29
Mixed White-Black African	1	4.76
Mixed White-Middle-Eastern	1	4.76
Latin/Hispanic	2	9.52
Asian	1	4.76
Employment		
Employed (Full-time)	9	42.86
Employed (Part-time)	4	19.05
Self-employed	2	9.52
Student	2	9.52
Retired	2	9.52
Unable to work due to health condition	1	4.76
Unemployed	1	4.76
Long-term health condition		
Chronic pelvic pain	1	4.76
Chronic back pain	4	19.05
Chronic migraine	1	4.76
Chronic fatigue/ME	2	9.52
Endometriosis/PCOS	1	4.76
Breast Cancer*	2	9.52
Lymphoedema	1	4.76
Diabetes	1	4.76
IBS	1	4.76
Eye-related conditions (glaucoma)	2	9.52
HIV	1	4.76
Asthma	1	4.76
People with more than one LTC		
Back pain & heart failure	1	4.76
ME & lymphoedema	1	4.76
Psoriasis (skin condition) & POI	1	4.76
Current mental health concern	11	52.85
Taking medication for mental health concerns	2	9.52
Current methods of condition management		
Prescribed medication	4	19.05
Pain relief medication	5	23.81
Dietry changes	2	9.52
Physiotherapy	5	23.81
Acupuncture	3	14.29
Yoga	3	14.29
Meditation/Mindfulness	4	19.05
Breathing exercises	1	4.76
Pacing	2	9.52
Avoiding activities that trigger relapse	2	9.52
Creative activities	2	9.52
None	1	4.76
Currently receiving psychological treatment	3	14.29
Previously experienced psychological intervention	14	66.66

ME: myalgic encephalomyelitis; POI: primary ovarian insufficiency; PCOS: Polycystic ovary syndrome

Test of Hypothesis 1: Feasibility

In order to assess feasibility, data was collected regarding (i) ease of recruitment (ii) study attrition (drop-out) (iii) treatment adherence and (iv) treatment engagement (how often practises were used). Feasibility was examined with percentages.

Ease of recruitment

21 participants were recruited over a period of 3 to 4 months using free traditional advertising methods targeting English speaking residents in the UK.

Study attrition

Figure 4 demonstrates the flow of participants through the study. Of the 109 participants who originally signed up to the study and completed consent, 105 went on to complete the screening questions. 27 people did not meet inclusion criteria, thereby leaving 78 participants who went on to complete pre-intervention questionnaires. 33 participants partially completed the pre-intervention questionnaires and did not gain access to the course, and 45 participants completed the questionnaires in full and gained access to the course. 21 of the 45 participants who completed the pre-intervention measures in full went on to complete the intervention and/or the post-intervention measures. There are two ways of considering study attrition. First, study attrition was operationalized as the number of participants who discontinued from the pre-intervention questionnaire stage. As 78 participants began to fill out pre-intervention questionnaires, and 21 participants completed post-intervention questionnaires, study attrition was calculated at 73.08%. Second, study attrition was operationalized as the number of participants who gained access to the course and did not complete post-intervention questionnaires. As 44 participants gained access to the course, and 21 participants completed post-intervention questionnaires, study attrition was calculated at 53.33%.

Treatment adherence

All participants completed 100% of the intervention, however there was variability in the timescale that participants completed the 4-week self-compassion course. 13 participants completed the 4-week intervention within the intended 4-week period, five participants completed the 4-week intervention within 5 weeks, and three participants completed the full intervention within a 6-week period. The three participants who completed the intervention at

an extended 6-week period reported that they needed extra time due to feeling unwell with COVID-19 (*n*=2) and needing to pace themselves given their chronic fatigue condition (*n*=1).

Treatment engagement

After completing the online course, participants were asked how often they applied or practiced the principles learnt on the course. Two of 21 participants reported that they used or applied the self-compassion exercises several times a day, three participants reported that they used self-compassion exercises at least once per day. Most participants reported that they used self-compassion principles a few times per week (*n*=12, 57.14%), and four participants reported that they applied these principles a few times in the month period.

The number of times that people used the self-compassion exercises in the duration of the course was not significantly correlated with any baseline measures. Given the non-normally distributed data, Spearman's correlation coefficient (Spearman, 1910) was utilised. As there were no significant correlations, a hierarchal regression model was not computed. Please see Table 12 for a summary of the correlations.

Table 12

Spearman's correlations between the number of times self-compassion practises were utilised during the self-compassion course (retrospective self-report) and baseline measures of process, psychological and functional outcomes (n=21; dof=19)

	Number of times self-compassion practises were utilised in the month
Self-compassion total score	.091
Compassionate attititude	.167
Uncompassionate attitude	-.157
Inadequate self	-.149
Hated self	-.066
Reassured self	.116
Depression	-.285
Anxiety	.072
Stress	-.050
Internal Shame	.019
External shame	-.016
Well-being total score	.377
Quality of life total score	.096

All non-significant at $p<.05$

Test of Hypothesis 2: Acceptability

Treatment satisfaction was also examined with percentages, with an 80% criterion considered as acceptable (Basque et al., 2021). 90.48% of participants reported that they were either 'Satisfied' (*n*=6) or 'Mostly Satisfied'(*n*=13) with the 4-week self-compassion course. Two participants reported that they were 'Somewhat Satisfied'. 80.95% of participants reported that the course material was 'Excellent' (*n*=3) or 'Good'(*n*=14), and four participants reported that the material was 'Not Good'. Participants were able to provide open comments. 'Not Good' ratings in course material were related to reports of poor sound quality (*n*=2) videos being too long (*n*=1), and not being able to download audio files to listen offline (*n*=1). 90.48% of participants (*n*=19) reported that the 4-week self-compassion course was worth their time and that they would recommend the programme to a friend.

Three opened-ended feedback questions were used so that participants could describe their thoughts on how to improve the programme (Table 13). 80.95% of participants provided feedback on how to improve the course. Five participants reported that they would make no changes. The remaining participants reported the following: (i) making audio files and resources available offline (*n*=4) (ii) having therapist check-in calls alongisde the online course (*n*=1) (iii) improve sound quality (*n*=2) (iv) issues with technology use (*n*=2) (v) lengthen the course (*n*=1) (vi) have shorter meditations and videos (*n*=1) (vii) use more concrete/less abstract exercises (*n*=1) and (viii) tailor the self-compassion course to long-term health conditions.

Table 13

Qualitative feedback from participants (n=17) about how to improve the 4-week self-compassion training course.

Are there any changes that you would make to the course? Please describe what you would have liked to be different to make the course more helpful for you or for others who may be having difficulties managing a health condition
I wouldn't change anything. it was well structured. However those kind of meditation is not for everyone. Writing was a good one tho.
No changes
I found the sound quality difficult. I think had I paid I would have expected better production
I think the content of the course works well. The problems I had were with technology. It was hard for me to go through the course.
Overall I thought the course was well-designed and very good. I would have found it easier to practice the daily audio exercises if I could've downloaded them, as I don't always have internet access and would have preferred to listen to them saved on my phone as MP3s, in which case I would have been able to do them daily as intended. This made it hard for me to maintain momentum and progress through the course.
I would like to have therapist call me up once a week to check how I am doing. Will increase my engagement
I wish there were face -to-face session – hearing was diffcult
In my view the course was very helpful in managing my health condition as it allowed me to step back from or step out of the condition in the narrow sense and find ways to deal with it in a more comprehensive fashion. The exercises were ideal for this. As I can't sit comfortably for long periods, the length of the audio support exercises was easily manageable.
Make the audios accessible offline
Having takehome resources
Being able to download the audio so could use without logging on (kept forgetting password). A reminder to practice
I found the compassionate friend concept hard to engage with. I felt that this and some of the exercises were to abstract and hard to visualise.
No it was the perfect length for me and very easy to access. I'd be interested to learn more about self-compassion now

Happy with this current structure

I would like longer course and easier to get into

I think the videos are too long and there are not enough activities. I also thought that the meditations were a little long.

This didn't feel like it was at all geared towards people with health conditions. I had hoped to learn more about issues specific to that. I understand the intent was to keep it short and accessible to all, but it felt a little bit too basic at time.

Test of Hypothesis 3: Process, psychological and functional outcomes

This study examined changes in the following process, psychological and functional outcomes from pre- to post-intervention: *Process outcomes* (i) **self-compassion** (total self-compassion score, compassionate and uncompassionate attitudes towards self), (ii) **self-criticism** (hated self, inadequate self) and **self-reassurance** (reassured self); *Psychological outcomes* (iii) **depression,** (iv) **anxiety,** (v) **stress,** (vi) **shame** (external and internal shame); *Functional outcomes* (vii) **health-related quality of life** and (viii) **well-being.**

The analyses were all conducted using SPSS version 27. Before analyses were performed, tests for assumption of normality were performed on all outcomes: testing for skew, kurtosis, outliers and linearity. There were no extreme outliers for study variables when examined with boxplots. The Shapiro-Wilk rest revealed violations of normal distribution in change scores for the following outcome variables of interest: self-compassion (total score, compassionate and uncompassionate attitudes), depression, anxiety, stress, hated self, reassured self, internal shame and well-being. Thus, non-parametric Wilcoxon-signed rank tests were completed for these variables. A normal distribution in change scores from pre- to post- intervention was found for inadequate self, external shame and quality of life outcomes and so parametric paired t-tests were used for these outcomes. In total, 10 Wilcoxon-signed rank tests were completed and three paired sample t-tests (two-tailed). As 13 independent tests were completed, a Bonferroni correction was made in order to control the Type I error rate (i.e., rejection of a true null hypothesis). Thus, statistical significance was set at $p<.004$. ($p=.05/13$ tests = $p= .004$). Given the small sample size (n=21), the reported results were reported with and without alpha reduction techniques. This was to avoid Type II errors (Feise, 2002) and is consistent with similar studies (e.g., Dissanayaka et al., 2017, Northover et al., 2021).

Moreover, as the results were complementary towards the same hypothesis, there was reduced risk of false positives (Althouse, 2016).

Table 14 demonstrates changes in process, psychological and functional outcomes from pre- to post-intervention. All pre-post changes on psychosocial measures were in the direction of improvement. Self-compassion total scores significantly increased from pre- to post-intervention (z=-4.02, p<.001, r=-.62; large effect size according to Cohen's criteria). Analysis by dimension showed that this was related to both significant increases in compassionate attitudes and significant decreases in uncompassionate attitudes (see Figure 6). Participants who completed the 4-week self-compassion course also showed reductions in self-criticalness (inadequate self/personal inadequacy and hated self/ desire to hurt or persecute the self) and improvements in self-reassurance. All results showed medium to large effect sizes and remained significant at adjusted signficance level of p<.004. In terms of psychological outcomes, depressive, stress symptoms, and shame decreased significantly (large effect sizes), whilst anxiety symptom reductions did not remain significant when accounting for the adjusted p value of p<.004. Health-related quality of life scores, and total well-being scores significantly improved from pre- to post- self compassion intervention. In sum, all pre-post changes on process, psychological and functional outcomes were in the direction of improvement, and all results remained significant after correction for multiple comparisons, apart from anxiety severity.

Table 14

Changes in process, psychological and functional outcomes from pre- to post-intervention

	Time Point				Pre-post change [g]	P value	Effect size
	Pre-Intervention		Post Intervention				
	Mean (SD)	Median (Range)	Mean (SD)	Median (Range)			
Short Form of the Self-Compassion Scale [a]							
Self-compassion total score	29.48 (9.07)	29 (18-47)	43.67 (11.04)	41 (30-59)	*z*=-4.02	<.001*	*r*=-.62
Compassionate attititude	14.57 (5.70)	15 (6-24)	22.38 (4.86)	22 (14-30)	*z*=-3.62	<.001*	*r*=-.56
Uncompassionate attitude	22.67 (5.73)	24 (10-29)	14.57 (6.81)	14 (6-27)	*z*=-3.93	<.001*	*r*=-.61
Forms of Self-Criticising/Attacking and Self-Reassuring Scale [b]							
Inadequate self	23.14 (9.73)	27 (2-35)	11.71 (10.40)	7 (0-28)	*t*(20)=4.41	<.001*	*d*=.70
Hated self	7.14 (5.60)	8 (0-17)	2.76 (2.95)	2 (0-8)	z=-2.84	.004*	*r*=-.38
Reassured self	10.90 (8.63)	9 (0-29)	19.33 (7.43)	21 (7-31)	z=-3.74	<.001*	*r*=-.58
Depression, Anxiety and Stress Scale [c]							
Depression	17.24 (11.51)	14 (0-40)	6.67(7.33)	2 (0-24)	z=-3.43	.001*	*r*=-.53
Anxiety	11.04 (7.81)	10 (0-28)	5.90 (4.67)	2 (2-20)	z=-2.34	.019	*r*=-.36
Stress	19.71 (10.22)	16 (8-40)	11.05 (5.39)	10 (4-24)	z=-3.12	.002*	r=-.48
External and Internal Shame Scale [d]							
Internal Shame	9.19 (4.58)	10 (1-16)	4.10 (3.17)	2 (0-12)	*z*=-3.33	.001*	*r*=-.51
External shame	7.71 (3.84)	7 (2-14)	4.52 (2.67)	4 (0-10)	*t*(20)=3.43	.003*	*d*=.61

World Health Organization Wellbeing Index [e]							
Well-being total score	8.90 (5.36)	7 (2-19)	15.71 (5.38)	16 (8-23)	*z*=-3.70	<.001*	*r*=.57
Assessment of Quality of Life [f]							
Quality of life total score	47.33 (10.41)	47 (30-66)	39.05 (9.10)	37 (23-58)	*t*(20)=4.59	<.001*	*d*=.72
Independent living	8.57 (3.51)	8 (4-16)	7.57 (3.26)	8 (4-15)			
Relationships	6.62 (1.83)	6 (4-10)	5.38 (1.69)	5 (3-9)			
Mental health	10.81 (2.77)	11 (6-17)	7.86 (1.98)	8 (5-11)			
Coping	9.33 (2.52)	10 (6-15)	7.38 (1.96)	7 (5-12)			
Pain	6.71 (3.15)	7 (3-11)	5.90 (2.41)	6 (3-11)			
Senses	5.29 (1.10)	5 (3-7)	4.95 (1.28)	5 (3-7)			

[a] Self-compassion scale total score: the higher the number, the higher the self-compassion

[b] Forms of Self-Criticising/Attacking and Self-Reassuring Scale: the higher the number, the higher the self-criticalness (inadequate self/personal inadequacy and hated self/ desire to hurt or persecute the self) and the higher the self-reassurance.

[c] Depression, Anxiety and Stress Scale: the higher the number, the more severe the depression, anxiety or stress.

[d] External and Internal Shame Scale: the higher the number, the greater the perceived shame from others (external) or from oneself (internal)

[e] World Health Organization Wellbeing Index: the higher the number, the greater the well-being

[f] Assessment of Quality of Life: the lower the number, the better the health

[g] Pre–post differences were examined using paired t-tests or Wilcoxon-signed rank test, as appropriate to the distribution for (i) **self-compassion** (total score, compassionate and uncompassionate attitudes towards self), (ii) **self-criticism** (hated self, inadequate self) and **self-reassurance** (reassured self); *Psychological outcomes* (iii) **depression,** (iv) **anxiety,** (v) **stress,** (vi) **shame** (external and internal shame); *Functional outcomes* (vii) **health-related quality of life** and (viii) **well-being.**

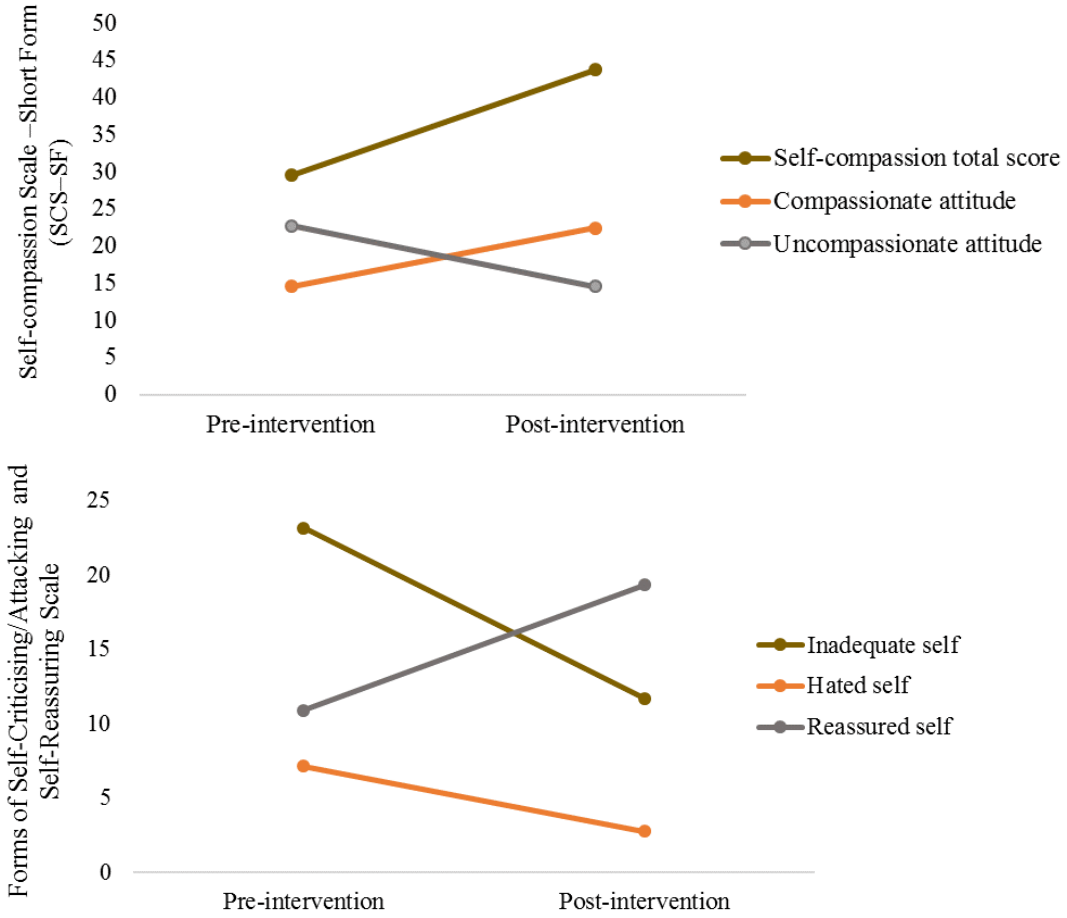
[h]Effect sizes were calculated using Cohen's d or r, appropriate to the distribution. Interpretation of Cohen's *d*: 0.20 = small, 0.50 = medium, 0.80 = large (Cohen, 1988). Interpretation of *r*: 0.10 = small, 0.30 = medium, 0.50 = large (Pallant, 2013).

*significant at Bonferroni correction significance level $p<.004$. ($p=.05/13$ tests = $p=.004$).

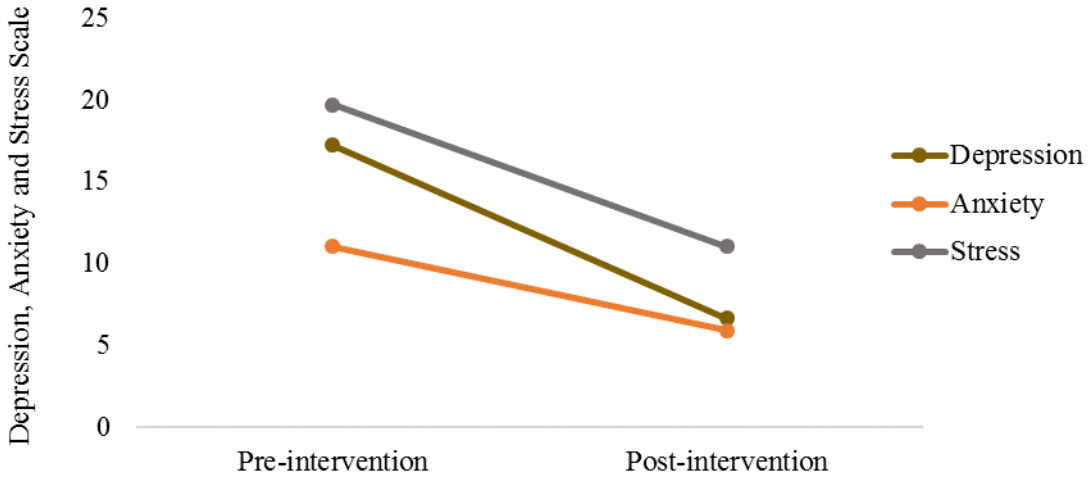
Figure 6

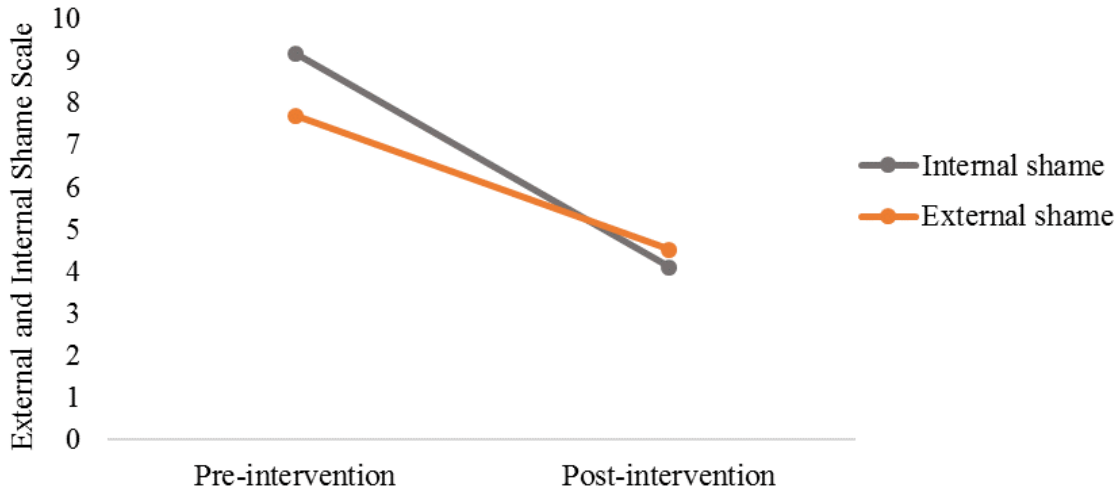
Graphs demonstrating the changes in process, psychological and functional outcomes from pre- to post-intervention

Process outcome measures

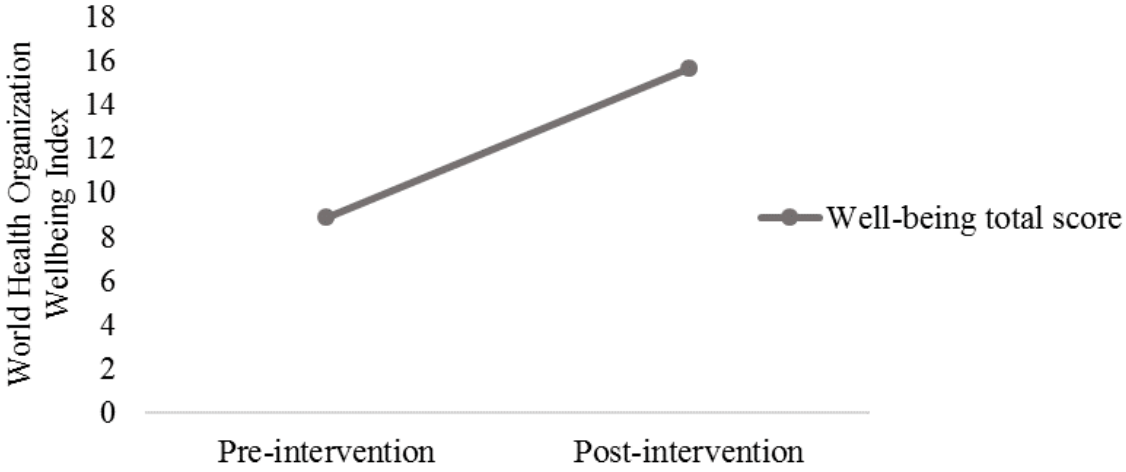


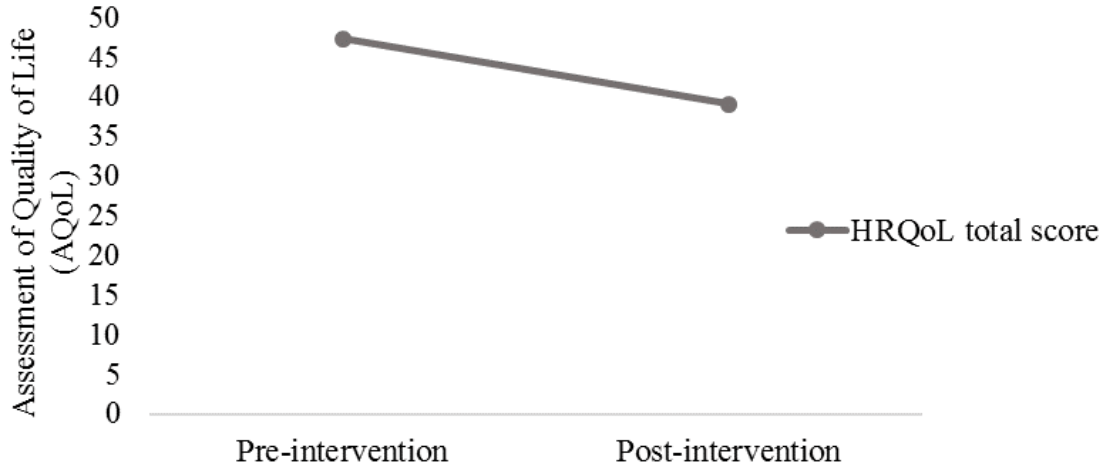
Psychological outcome measures





Functional outcome measures





Two further open-ended questions were used at post-intervention to assess participants' main learning points and self-perceived change. Open-ended comments, as used in previous pilot studies (Carvalho et al., 2021) can be helpful for allowing particpants to express what has not otherwise been captured in quantitative questionnaire scales. These are summarized in Table 15 below. Although a qualitative analysis was not completed, a tentative summary is that several participants alluded to the importance of (i) learning about the three systems (threat, drive, soothing), (ii) noticing and accepting threat/self-criticism (iii) shifting from a threat response to a soothing/compassionate response, (iv) the compassionate friend exercise (v) how to open new flows of compassion from self-to-other to self-to-self.

Table 15

Participant comments on main learning points and self-perceived change.

Have you noticed any changes in your patterns of thinking or behaving after completing the self-compassion course? Please explain.	**Have you noticed any changes in your patterns of thinking or behaving after completing the self-compassion course? Please explain.**
The idea of the compassionate self as it really resonated with me	*I feel a lot less self-critical*
Being kind to myself is as important as being kind to others	*I have noticed that when I get triggered the effects are not as intense which gives me space to be conscious enough to think kindly towards myself.*
Mostly exercises. and self-reflection	*I can't really say so. That's because meditative exercises mostly don't work on me.*
Reflection is important	*Not many changes. It needs a lot of consistent practise*
Learning to treat myself as I treat people, I care for	*I'm much more compassionate and understanding of myself*
The 'compassionate friend' was the one that stuck with me. I think that I tended to be more critical when thinking as myself, so this slight detachment helped	*I am trying to speak more kindly to myself, and recognise threat system coming into play.*

That self-criticism is a huge part of the way we think	*How swiftly I become self-critical if I am restricted because I don't feel well.*
To notice my threat system and engage in my soothing system	*I am more able to move from threat system thoughts to something more compassionate and caring*
Creating the image of a compassionate friend. This was very intensive and reached deep layers I have previously only known in hypnosis	*I have been able to recognize threatening patterns of thinking more quickly. which has been particularly useful in the past couple of weeks since the Russian invasion of Ukraine. And I have been able to be more mindful especially with the help of the breathing exercise.*
I realised that I am more self-compassionate than I thought I was although there is always room for improvement!	*If I do notice that I am being self-critical I do try to nip it in the bud and substitute something more loving.*
Being aware of my threat system. bringing soothing into my every day. increasing flow of self-care and self-compassion to myself.	*yes. more soothing. more compassionate self-talk*
To treat myself with compassion rather than my usual criticism	*I'm far less self-critical and unhappy*
The three-system model. I thought it was really interesting and helped me think about my difficulties especially about how to get in to the soothing system more and how I get trapped in threat and drive	*Yes lots I definitely feel more able to get in to sooth but also less harsh on myself*
Learnt how to think about myself with compassion rather than judgement. I find it hard not to be self-critical.	*Allowing myself to slow down & reflect on my feelings*
Learning more about the threat system and that it is normal to get stuck in a particular system	*I am much more patient and nicer to myself and to others*

Developing a compassionate relationship with myself. Allowing myself to be as I am but not subsequently feel uncomfortable, uneasy or ashamed	*Calmer, gentler, softer in the way that I speak and move during my day*
Self-compassion needs to be practiced regularly	*It is not automatic but I am trying to treat myself with more self-compassion*
I loved the compassionate friend exercise	*Yes. Easier to switch*
The reminder that self-compassion involves noticing and engaging with our distress/suffering, i.e. turning towards it (as well as trying to reduce/prevent it), because my habitual response is to reject it/try to push it away and be hugely self-critical (which obviously doesn't work, and is the opposite of being compassionate). By reminding and encouraging me to do this, the course (particularly at the start) gave me permission (or rather facilitated me to allow myself) to turn towards and accept my suffering in a given moment, which then allowed me to treat it with kindness instead of my usual harshness	*After beginning the course, I noticed an immediate decrease in self-critical thoughts and an increase in my ability to tolerate distress (mental, physical and emotional). This hasn't been so noticeable as I progressed to subsequent sessions of the course though, partly due to challenging circumstances (making it more challenging be self-compassionate, and meaning I had less time and energy to dedicate to the course), and partly because I found new ideas were introduced before I felt I'd built a solid-enough foundation on the basics)*
To be kinder to myself.	*Taking time out to think about things in a more balance*

Correlations between outcome variables

In order to examine the relationships between process, psychological and functional measures, a Spearman's correlational matrix was performed at pre-intervention and post-intervention. Tables 16 and 17 shows that there were significant correlations between most measures. The measures that did not correlate included (i) anxiety and uncompassionate attitudes and (ii) wellbeing and uncompassionate attitudes at baseline. This is in contrast to post-intervention, where these variables were shown to have a significant positive and negative correlation respectively. At post-intervention, HRQoL did not correlate with any outcomes measures, other than anxiety.

Table 16

Spearman's correlation matrix for process, psychological and functional measures at pre-intervention (n=21)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Self-compassion total score	1.00												
2. Compassionate attitude	.904**	1.00											
3. Uncompassionate attitude	-.816**	-.596**	1.00										
4. Inadequate self	-.925**	-.839**	.761**	1.00									
5. Hated self	-.894**	-.816**	.739**	.856**	1.00								
6. Reassured self	.873**	-.879**	-.628**	-.768**	-.795**	1.00							
7. Depression	-.706**	-.730**	.565**	.609**	.709**	-.790**	1.00						
8. Anxiety	-.656**	-.701**	.407	.613**	.702**	-.738**	.731**	1.00					
9. Stress	-.832**	-.851**	.598**	.775**	.762**	-.858**	.815**	.789**	1.00				
10. Internal shame	-.817**	-.792**	.591**	.591**	.819**	-.868**	.699**	.626**	.778**	1.00			
11. External shame	-.745**	-.702**	.614**	.614**	.772**	-.807**	.701**	.607**	.731**	.898**	1.00		
12. Well-being	.559**	.618**	-.360	-.469*	-.509*	.714**	-.745**	-.512*	-.545*	-.594**	-.441*	1.00	
13. Health-related QoL	-.606**	-.665*	.441*	.441*	.631**	-.717**	.531*	.711**	.612**	.524**	.510*	-.615*	1.00

** correlation is significant at $p<.01$

*correlation is significant at $p<.05$

Table 17

Spearman's correlation matrix for process, psychological and functional measures at post-intervention (n=21)

	1	2	3	4	5	6	7	8	9	10	11	12	13
1. Self-compassion total score	1.00												
2. Compassionate attitude	.901**	1.00											
3. Uncompassionate attitude	-.954**	-.790**	1.00										
4. Inadequate self	-.918**	-.856**	.910**	1.00									
5. Hated self	-.732**	-.666**	.752**	.817**	1.00								
6. Reassured self	.905**	.832**	-.870**	-.866**	-.715**	1.00							
7. Depression	-.798**	-.747**	.781**	.810**	.561**	-.816**	1.00						
8. Anxiety	-.676**	-.717**	.751**	.805**	.694**	-.698**	.582**	1.00					
9. Stress	-.794**	-.794**	.817**	.791**	.579**	-.851**	.721**		1.00				
10. Internal shame	-.847**	-.711**	.864**	.813**	.656**	-.916**	.750**	.631**	.868**	1.00			
11. External shame	-.806**	-.692**	.786**	.732**	.596**	-.822**	.650**	.556**	.751**	.890**	1.00		
12. Well-being	.849**	.845**	-.812**	-.816**	-.671**	.859**	-.826**	-.692**	-.822**	-.804**	-.748**	1.00	
13. Health-related QoL	-.271	-.336	.287	.255	.382	-.280	.165	.471*	.293	.234	.181	-.402	1.00

** correlation is significant at $p<.01$

*correlation is significant at $p<.05$

Post-hoc analyses

Study completers versus non-completers

Out of the 45 participants who completed the pre-intervention questionnaires, 21 participants (46.67%) went on to complete the post-intervention questionnaires. Chi-square tests demonstrated that there were no significant differences between study completers and non-completers on sociodemographic characteristics (sex, ethnicity, employment, chronic illness, previous experience of psychological intervention). There was also no significant difference in age between completers and non-completers.

Process, psychological and functional measures at baseline were also compared for completers (n=21) versus non-completers (n=45). Independent samples t-tests were used for variables showing a normal distribution and a non-significant Shapiro-Wilk statistic, whilst Mann-Whitney U tests (Mann & Whitney, 1947) were used for variables that violated the assumptions of a normal distribution (stress, uncompassionate attitudes, inadequate self and reassured self). Table 18 demonstrates that there were no significant differences in process, pscyhological and functional measures between individuals who completed baseline measures and post-intervention measures and individuals who only completed measures at baseline. Non-completers showed a trend to have higher self-reassurance ability than study completers, but this result was not significant when accounting for multiple comparisons, signficance level $p<.004$.

Table 18

A comparison in process, psychological and functional outcomes between study completers and non-completers at baseline.

	Completers (n=21)		Non-completers (n=45)		Difference [a]	P value
	Mean (SD)	Median (Range)	Mean (SD)	Median (Range)		
Short Form of the Self-Compassion Scale						
Self-compassion total score	29.48 (9.07)	29 (18-47)	29.98 (7.64)	31 (15-46)	*t*(64)=.509	.816
Compassionate attititude	14.57 (5.70)	15 (6-24)	16.38 (4.59)	17 (8-27)	*t*(64)=-1.38	.173
Uncompassionate attitude	22.67 (5.73)	24 (10-29)	22.33 (5.51)	24 (11-30)	*z*=-.30	.767
Forms of Self-Criticising/Attacking and Self-Reassuring Scale						
Inadequate self	23.14 (9.73)	27 (2-35)	20.58 (9.44)	22 (0-36)	*z*=-1.12	.264
Hated self	7.14 (5.60)	8 (0-17)	5.57 (4.53)	5 (0-16)	*t*(64)=1.21	.230
Reassured self	10.90 (8.63)	9 (0-29)	14.89 (7.66)	15 (2-29)	*z*=-2.10	.036
Depression, Anxiety and Stress Scale						
Depression	17.24 (11.51)	14 (0-40)	16.90 (9.29)	16 (2-40)	*t*(64)=.166	.869
Anxiety	11.04 (7.81)	10 (0-28)	10.77 (6.33)	12 (0-22)	*t*(64)=.153	.910
Stress	19.71 (10.22)	16 (8-40)	18.81 (6.81)	18 (8-36)	*z*=-.40	.688
External and Internal Shame Scale						
Internal Shame	9.19 (4.58)	10 (1-16)	7.05 (4.23)	6 (0-14)	*t*(64)=1.86	.067
External shame	7.71 (3.84)	7 (2-14)	6.38 (4.22)	7 (0-16)	*t*(64)=1.22	.227

World Health Organization Wellbeing Index						
Well-being total score	8.90 (5.36)	7 (2-19)	8.20 (4.75)	8 (2-21)	*t*(64)=.623	.535
Assessment of Quality of Life						
Quality of life total score	47.33 (10.41)	47 (30-66)	51.36 (12.37)	52 (31-75)	*t*(64)=-1.43	.159

[a]Differences between completers and non-completers were examined using independent t-tests or Mann-Whitney U test, as appropriate to the distribution for (i) **self-compassion** (total score, compassionate and uncompassionate attitudes towards self), (ii) **self-criticism** (hated self, inadequate self) and **self-reassurance** (reassured self); *Psychological outcomes* (iii) **depression,** (iv) **anxiety,** (v) **stress,** (vi) **shame** (external and internal shame); *Functional outcomes* (vii) **health-related quality of life** and (viii) **well-being.**

Discussion

Individuals living with long-term health conditions experience illness-related demands and stressors that can have significant impacts on their mental, physical and social aspects of life (McWilliams et al., 2003). In recent years, new therapeutic approaches working with long-term health conditions focus on cultivating self-compassion. This study is one of few in the emerging field of compassion research in chronic illness populations. This pilot, single group study aimed to examine the feasibility and accepatibility of a four-week online self-compassion intervention for people living with long-term health conditions, and changes in process, psychological and functional measures from pre- to post-intervention.

The study recruited 21 UK-based participants who were living with a variety of different long-term health conditions. In relation to exploratory hypothesis (1) (feasibility), four domains were explored: (i) ease of recruitment (ii) study attrition (drop-out) (iii) treatment adherence and (iv) treatment engagement. First, feasibility criertia was met for ease of recruitment, as 20-25 participants were recruited over a period of three to four months using free traditional advertising methods targeting English speaking residents in the UK and by contacting charities (Basque, Talbot, & French, 2021). Second, feasibility criteria for study attrition was partially met. The drop-out rate was determined as 73.08% or 53.33%, depending on the stage at which participants discontinued - whilst filling in T1 questionnaires or after accessing the course - respectively. Third, treatment adherence was 100% for all 21 participants and therefore surpassed the 80% adherence criteria set by a meta-analysis of adherence to internet-delivered interventions (van Ballegooijen et al., 2014). Forth, treatment engagement was met, with more than half of participants reporting that they used self-compassion principles a few times per week.

In relation to exploratory hypothesis (2), the self-compassion course satisfied acceptability criteria with 80-90% participants reporting satisfaction with the course, that it was worth their time and that they would recommend the programme to a friend facing a similar difficulty.

Consistent with the predictions of hypothesis (3), the results showed significant improvements in *Process outcomes* **self-compassion**, **self-criticism** and **self-reassurance**; *Psychological outcomes* **depression, stress** and **shame**; and *Functional outcomes* **health-related quality of life** and **well-being.** However, reductions in anxiety symptoms from pre- to post-intervention did not remain significant when using the Bonferonni adjusted significance level of $p<.004$ to control for multiple comparisons. As this study did not have a

randomized-control (RCT) design (i.e., no control comparison group), the study could not conclude whether improvements found on several outcome measures related to the self-compassion intervention or factors other than the intervention, such as, passing of time, using technology or regression toward the mean.

Overall, the results suggest that online self-compassion training shows promise as a feasible and acceptable intervention for people living with chronic illness, and future RCT studies are required to examine efficacy.

Discussion in relation to theory and similar studies

Demographics

The empirical study recruited a sample of people living with a variety of health conditions. There were three main reasons for this decision. First, compassion has been developed as a transdiagnostic model with the value of addressing underlying psychological processes, rather than symptoms alone (Gilbert, 2003; 2015). Second, there are few published studies that have recruited samples with heterogeneous conditions, including breadth in terms of chronicity, and comorbidity (Carvalho et al., 2021). The advantage of this may be increased ecological validity (Naylor, 2013) as people living with one physical health condition, are at risk of developing further physical or mental health difficulties (Smith, Soubhi, Fortin, Hudon, & O'Dowd, 2012; Wallace et al., 2015). Third, online studies have high drop-out rates (Daniore et al., 2022), and given time constraints in data collection, a broader sample audience could facilitate study enrolment.

However, this recruitment approach also had its downsides. The sample had large variation in terms of condition severity and type. The sample had individuals with life-threatening conditions/terminal illness (secondary breast cancer), which may require a different care approach to conditions that are not life threatening (IBS, skin conditions), or conditions known to be associated with high shame, stigma, and self-blame (HIV, diabetes, chronic fatigue) (Bennett, Traub, Mace, Juarascio, & O'Hayer, 2016; Burki, 2021; Persky, Costabile, & Telaak). There was also variation in chronicity (i.e., years living with condition ranged from 1-32 years), and co-morbidity (i.e., living with one condition versus living with two physical health conditions). The sample numbers were too small for sub-group analyses and investigating similarities and differences between long-term health conditions and multiple stressors may be important for determining underlying mechanisms and personalized treatment approaches. The current study had three people who were currently receiving

psychological support and people taking prescription medication for physical (n=4) or mental health (n=2), which may be important confounds to consider for pre-post outcome measures.

Similar to the sample sizes of other pilot pre-post studies (Basque et al., 2021; Campo et al., 2017), the current study included 21 participants in the final analysis. Like other studies performed in high income countries, this sample was a predominantly white female population with a mean age of 47 (Basque et al., 2021; Carvalho et al., 2021; Chapin et al., 2014; Friis, Johnson, Cutfield, & Consedine, 2016; Montero-Marin et al., 2019; Torrijos-Zarcero et al., 2021). Some studies have had different characteristics, for example, more equal gender recuritment in dementia samples (Collins et al., 2018) brain injury (Ashworth, Clarke, Jones, Jennings, & Longworth, 2015) and adult cancer survivors (Brooker et al., 2020). Study biases which may have led to demographic inbalances and the limits to generalizability are discussed in more detail below.

This sample had a number of similarities to Carvalho and collegues (2021); a study that also recruited a sample of people living with various long-term health conditions. Participants in this sample had similar previous psychological or psychiatric treatment (50-60% Carvalho et al., 2021; 66%: current study), and baseline depression and anxiety levels, although measured by different scales (HADS: Carvalho et al., 2021; DASS: current study). Overall, this study reported mean scores of depression and anxiety in the moderate-severe range, self-criticism in the moderate range and low-medium QoL on the basis that the individual said that they are "struggling with their condition and/or are looking for better ways to manage". This is similar to other self-selected samples (Sormeh et al., 2020; Penlington, 2018; Dhokia et al., 2020; Gooding et al., 2019) and suggests that self-selected samples do tend to recruit clients who are genuinely struggling with their condition.

Feasibility and Acceptability

This study had a study attrition rate between 53.33%-73.08% depending on the stage at which participants discontinued - whilst filling in T1 questionnaires or after accessing the course. Most studies have calculated attrition by the latter. The 53.33% drop-out in this study is considered in line with other online self-compassion interventions (Basque et al., 2021; Carvalho et al.; Hudson, Thompson, & Emerson, 2020) and falls at the superior end of the range of rates reported for minimally monitored or guided internet-based online self-compassion interventions in nonclinical samples (17% to 55%; Eriksson et al., 2018; Finlay-

Jones et al., 2017; Halamova´ et al., 2018a; Krieger et al., 2016; Sommers-Spijkerman et al., 2018). This reflects the wider self-help literature (Gellatly et al., 2007), and suggests that the automated reminders may not have been sufficient to improve completion rates. A tentative explanation is that high drop-out rates were related to participants not engaging with online content or the lack of a 'human' element, when compassion is fundamentally about human connection (Gilbert, 2003; Neff, 2005). The latter may be particularly important for individuals living with chronic illness, where social isolation can be particularly prominent (Boden-Albala, Litwak, Elkind, Rundek, & Sacco, 2005; Hagger, 2011; Morton & Wehman, 1995). Indeed, comments in the feedback form suggested that a therapist check-in call at the end of each week would be helpful. Another possibility is that clinical work requires more than four weeks. One-to-one CFT can use the first two sessions to explore blocks or fears to self-compassion, especially in highly critical individuals (Gale, Gilbert, Read, & Goss, 2014; Gilbert, 2010a, 2010b). A tentative explanation is that some participants may have felt that they did not have a space to explore these blocks (Irons & Heriot-Maitland, 2021), or perhaps the language around 'self-compassion' was not easily accessible (Crawford, Gilbert, Gilbert, Gale, & Harvey, 2013).

Another possibility is that this study may have over-estimated study drop-out as it was not possible to differentiate (i) participants who completed the 4-week course and did not complete post-intervention questionnaires from (ii) participants who completed both the 4-week course and the post-intervention questionnaires. Previous studies have managed to track stages of study drop-out more accurately by using the Compassionate Mind Practice Recording Diary (Northover et al., 2021) or tracking log-ins to online platforms (Hudson et al., 2020). This study did not use the advantages of week-by-week diary recording as interviews with experts by experience deemed that it would be too labour intensive for participants living with health conditions to complete a diary alongside other course commitments. This indicates the trade-off between study methodology and ethical issues/participant well-being. A possible solution is to ask participants' consent to track their log-ins to online platforms in order to accurately examine attrition, treatment adherence and engagement.

Similar to previous studies, there was high acceptability on the basis of satisfaction ratings (Basque et al., 2021; Hudson et al., 2020; Montero-Marin et al., 2019). These ratings were only completed by study completers and therefore may be over-estimated. Moreover, this study did not examine potential adverse effects. This is an important consideration as

mindfulness-based programmes have found that over half of participants report at least one negative effect from meditation (Britton et al., 2021). Open feedback suggested that the intervention may require improved sound quality for people with hearing difficulties and that offline resources would allow participants to practise and listen to the course material more often. Indeed, previous compassion-based intervetnions have provided audio downloads, which have been valued by course participants (Campo et al., 2017; Zheng et al., 2022).

Outcome measures

These results extend the preliminary results of other brief online compassion-based interventions for people with chronic illness by examining an extensive range of outcome measures. Participants showed improvements in both positive and negative items of the self-compassion scale, whereas other studies in chronic illness (Carvalho et al., 2021) and nonclinical populations (Halamova, Kanovsky, Pacutova, & Kupeli, 2020) only found decreases in negative self-relating. This study found similar results to those of other online platform interventions, increases in self-compassion and HRQoL, and decreases in self-criticism, depression, and stress, with medium to large effect sizes (Basque et al., 2021; Carvalho et al., 2021; Dhokia et al., 2020; Hudson et al., 2020). Consistent with previous compassion-based studies (Ashworth et al., 2015), individuals' descriptions were in line with moving from the experience of threat-based mentality to a more secure and compassionate mentality. A few participants also mentioned that the compassionate friend exercise was helpful, and this may be related to opening new channels or 'flows' of compassion from self-to-other to self-to-self (Gilbert, 2009).

Compassion interventions were initially developed for people high in shame and self-criticism (Gilbert, 2003), and linked to this, this study found decreases in shame and self-criticism, as has been found in previous studies (Ashworth et al., 2015; Carvalho et al., 2021; Dhokia et al., 2020). Further analysis by subscales, showed that this was related to reductions in inadequate and hated self, and increases in reassured self. It is encouraging that a low-cost, online format shows these results, although caution is warranted in interpretation of these findings because the study was not powered to examine efficacy.

Unlike previous studies (Basque et al., 2021; Hudson et al., 2020; Torrijos-Zarcero et al., 2021; Zheng et al., 2022), this study did not find significant reductions in anxiety, once correcting for multiple comparisons. This could be related to inadequate power, or

alternatively may indicate that CMT approaches, do not always change symptomalogy directly, but rather improve well-being and tolerance of anxiety, via increasing self-compassion (Mistretta & Davis, 2022). Indeed, the systematic review found that compassion interventions did not directly impact pain severity, but neverthless improved QoL and well-being (Costa & Pinto-Gouveia, 2011, 2013; Wren et al., 2012). This is a very tentative explanation and requires testing with larger RCT studies and mediation/moderation analyses (Callow, Moffitt, & Neumann, 2021), as this study was only able to examine correlations between variables at baseline and post-intervention.

Clinical implications

The empirical results of this study suggest that, within the limits of the study methodology, online self-compassion training shows promise as a feasible and acceptable intervention for people living with chronic illness.

First, the flexibility of this online self-compassion course was reflected by participants completing the intervention over a 6-week instead of 4-week period, due to changes in their health status. An online platform may have the advantage of participants being able to personalize care, which may be important in a chronic health population where there may be unexpected 'flare-ups' or increased need for 'pacing oneself' in order to maintain balance and self-care. However, the high drop-out rates in this study also suggest that whilst online interventions are more accessible, flexible and could provide important benefits for people living with reduced mobility, they may not be suitable for everyone. In line with the results of the systematic review, online interventions may be appropriate for people who are highly motivated, do not fear self-compassion, have access to and are proficient in using technology (Knight, Karamouzian, Salway, Gilbert, & Shoveller, 2017; Mistretta & Davis, 2022). In the feedback section, two participants mentioned that they had difficulties with hearing and the use of technology. Again, this may indicate that online interventions need to consider different demographics and individuals should be asked if they prefer an online training or face-to-face mode of delivery dependent on their needs and IT skills.

As discussed previously, individuals with negative self-evaluations and high levels of self-criticism respond poorly to treatment and relapse is more common (Rector et al., 2000; Teasdale & Cox, 2001). Thus, patients presenting with high self-criticism, shame or blame may benefit from self-compassion related therapies, although more research is needed to find out whether self-compassion can be an alternative first-line treatment or adjunct to CBT.

Compassion training may be helpful at the relapse prevention stage as evidence suggests that increases in self-compassion buffer against chance of relapse (Karl et al., 2018; Krieger et al., 2016). Moreover, an online mode of delivery may overcome traditional geographical, attitudinal and financial barriers to access specialist clinics in the UK, and may also lower overall delivery costs and reduce demands on the clinical workforce (Christensen & Hickie, 2010).

Even though self-compassion training presents the advantage of being a process-based transdiagnostic approach and may be broadly applicable to different conditions, it may also be important to tailor, personalize or customise the interventions based on the condition. One participant brought up this topic in the open feedback section. In sum, clinicians should carefully consider patient preferences, health conditions, mobility, motivation or depression levels, socio-economic status and access to internet/smart-phone technology, as well as the intensity and duration of the therapy to understand which intervention format would be most effective and well-suited for the individual.

Limitations

Several limitations of the present study should be considered. As a feasibility study, the sample was small, and a control group was not included. As this study did not have a comparator control condition, it was not possible to examine the efficacy of the online self-compassion intervention or understand whether the improvements in process, psychological and functional measures were related to the intervention or factors other than the intervention (e.g., learning a new skill). The study design and small sample in turn limited the statistical analyses that could be performed due to low power.

There were a number of other sample-related issues. First, participants were self-selected and likely highly motivated to participate. Individuals who were active in the charities and organizations were the study recruited from, may have felt motivated to support this kind of research or were seeking supportive activities for themselves. The study may have been more inviting for people who already had experience of psychological treatment, as reflected by 66% of the sample having had historical psychology input.

Like other compassion-based studies in the field, most study participants were women of white ethnicity (see Systematic Review Table 8). The lack of recruitment response from

males may reflect gender differences in intervention preferences or masculine gender role socialization proscribing help seeking (Booth et al., 2019; Gray, Fitch, Davis, & Phillips, 1996). 'Compassion' may be viewed as a more 'feminine' quality by society or may be a term that feels less accessible or acceptable by men (Booth et al., 2019; Vogel et al., 2014). The advertising, wording and presentation of the study poster may have been more targeted towards a female audience or not conducive to reaching out to more diverse groups. Indeed, the wording in the poster used 'self-compassion' and 'acceptance'. Although these terms are well known in the field of psychology, it may have been better to use more commonly used language, such as 'being kind to yourself". Future research should re-evaluate recruitment strategies and the presentation and content of study adverts in order to connect to a larger and more diverse audience. It would be helpful to interview men to obtain their views on the kinds of study adverts they would respond to in terms of wording of key terms (self-compassion), presentation and methods of distribution and using this information to develop more targeted study advert campaigns. This is in-keeping with larger campaigns to improve men's access to and perception of mental-health care (Seidler et al., 2018).

Completing an online survey requires access to the internet, and lower internet use is associated with being older, having a lower educational status and financial income (Kelfve et al., 2020). Unfortunately, sampling biases limits the generalizability of the study to the larger UK population and may be in line with the perspective that clinical psychological services and studies have an on-gong difficulty in meeting the needs from minority groups (McInnis, 2002; Patel & Fatimilehin, 2005). Different cultures have different health behaviours, beliefs, attitudes towards mental health and disease (Wood & Patel, 2015) and these variations need to be considered in order to develop compassion-based interventions that are culturally appropriate (e.g., compassion intervention adapted for Spanish population: Montero-Marin et al., 2019). Moreover, certain physical health conditions are known to have a higher frequency of occurrence in certain races (e.g., sickle cell anaemia), and thus it is important to test cultural variations of self-compassion interventions.

There were a number of limitations with the measurements obtained. As mentioned above, participant drop-out and acceptability were likely over-estimated or inaccurate. It could be that automated e-mails that reminded participants to interact with the platform were not in sync with the participants progress, and added to the lack of 'human connection' in the study.

It is also important to note that there was a two-week period in March where some participants had difficulties enrolling on the course. This technical issue could have negatively impacted upon participant recruitment and highlights the potential limitations of technology. All outcome measures were self-report, which can be prone to biases (honesty, instrospection ability, interpretation), and thus multi-informant reports (as used in Chapin et al., 2014) could be used to examine agreement between measures.

With respect to the statistical analysis, this study used non-parametic tests for outcome variables without a normal distribution. A limit of using the Wilcoxen-signed rank test as an alternative to the paired samples t-test is that the data underwent rank transformation and important information such as the variance of the data points was lost (Field, 2009). However, non-parametric tests were chosen over data transformation techniques (log transformation, square root transoformations etc.) because this study had a small sample. In line with criteria set out by Games (1984), in small samples it is difficult to determine normality (e.g., tests will have low power to detect deviations from normality and graphs are hard to interpret), and thus the conseqeunces for the statistical model of applying the 'wrong' transformation could be worse than the consequences of analyzing untransformed scores with non-parametric tests (Wilcox, 2005).

Future Directions

Given the limitations of this study, there are a number of future directions that should be considered. The emerging field of compassion research in chronic illness needs longitudinal RCT studies and appropriate active control conditions (Davidson & Kaszniak, 2015) to detect differences among self-compassion and other treatments (e.g., CBT, MBCT). Future studies should also include follow-up measures for at least six months post-intervention to examine how long the effects are sustained. Within this area, it would also be helpful to include three-arm trials, which test face-to-face and online delivery of the same intervention in comparison to a control group. This may have further clinical implications as online delivery may be more cost-effective and accessible in comparison to face-to-face. For greater generalizability, future studies would also benefit from a larger and more representative sample size with a more balanced gender and ethnic distribution among people living with chronic conditions. Improvements in study design and sample size would in turn allow for more sophisticated analyses (e.g., MANOVA, Reliable change indices (RCI) analysis) thereby yielding more

definite conclusions. Larger samples would not only provide more robust data but would allow for mediation and moderation analyses that would help inform the potential mechanisms that underlie the self-compassion intervention. It would also be helpful to understand the active components of the self-compassion programme, or the minimal dose for clinically meaningful improvements. This would in turn help in understanding how to adapt interventions to patients' socio-demographic, illness idiosyncrasies and manage multimorbidity (e.g., Geller et al., 2016). The importance of the 'human element' was raised in this study, and it may be useful to develop more sophisticated online platforms that allow for interaction between participants or between participants and therapists. Another possibility is using a *minimally monitored delivery model* (Robichaud et al., 2020), which includes several monitoring strategies (e.g., pre-treatment telephone interview, monitoring of progress and safety, and weekly emails offering instructions, validation and support). Studies using a minimally monitored delivery model have reported lower attrition and higher adherence rates (e.g., than fully automated/unguided or open access programmes (Christensen et al., 2004; Dear et al., 2015, 2018; Morgan et al., 2017; Titov et al., 2013).

To increase the accuracy of feasibility and acceptability measures, programme engagement and adherence could be measured using online programme metric such as log-ins, time spent in programme, module completion and self-reports of engagement in the programme, for example by time spent doing the exercises or homework tasks. Moreover, post- intervention interviews/questionnaires could be conducted that assess reasons behind participants' dropout. This could in turn help tailor the course format to better suit participants who disengaged.

With regards to measures, it would be helpful for future studies to use additional scales which may provide a richer portrait of the effect of self-compassion intervention (e.g., the three flows of compassion measured by the Compassionate Engagement and Action Scales; Gilbert et al., 2017). Finally, objective physical measures of well-being and stress (e.g., cortisol, respiratory rate, heart rate variability (Kirby et al., 2019)), or physical measures related to the chronic illness in question (e.g. HbA1c for diabetes) (Friis et al., 2016) may provide greater sensitivity for detecting aetiological pathways.

Conclusion

This study is one of few studies in the field that have investigated compassion-based interventions for people living with chronic illness. This pilot, single group study aimed to examine the feasibility and accepatibility of a 4-week online self-compassion intervention for people living with long-term health conditions, and changes in process, psychological and functional measures from pre- to post-intervention. In the domain of feasibility, study uptake, adherence and engagement were high, and study attrition was at the superior end of the range of rates reported online interventions. It is not clear whether participant drop-out was over-estimated, related to the programme itself or the recruitment strategy that was used. Satisfaction among study completers was high and there were suggestions of how to improve the course by making contents available offline. Consistent with the predictions of hypothesis (3), the results showed significant improvements in all process, psychological and functional outcomes, apart from anxiety, from pre- to post-intervention. This study lacked a control arm, and therefore pre–post changes in outcome measures could be attributed to the self-compassion programme. Overall, online self-compassion training shows promise as a feasible and acceptable intervention for people living with chronic illness. Further research on cost-efficient, web-based self-compassion programmes, such as this one, appears worth pursuing, especially for people who have limited access to psychological help or prefer online-based interventions. Further research is needed to help understand the barriers to engagement and to help tailor its format to better suit participants who disengaged. RCT studies, with larger, more representative samples are required to examine efficacy, as well as mediation and moderation analyses that would help inform the potential mechanisms that underlie the self-compassion intervention.

Chapter 4: Integration, Impact and Dissemination

Overview

The following chapter reflects on the process of designing and carrying out the systematic review and the empirical study, and how decisions were made about different methodological aspects and unanticipated challenges. It aims to (i) integrate the findings of the systematic review and the emprical study, (ii) discuss the potential impacts of the findings on people with long-term health conditions, clinical practice, and wider society, and, (iii) detail how the findings of both research components will be disseminated.

Integration

The empirical study and systematic review both examined compassion-based interventions in people living with chronic illness. The results of the systematic review directly informed the empirical study in several ways.

First, several studies included in the systematic review showed limitations with regards to transparency and reporting feasibility and acceptability measures. On the basis of this, I aimed to have a more comprehensive set of feasibility and acceptability measures (e.g., examining ease of recruitment, attrition, engagement and adherence), and to use standardized scales to examine participant satisfaction. In contrast to studies in the review, I made sure to explicitly describe how drop-out was measured and show the flow of participants through the study at different time points. Second, the systematic review highlighted the range of outcome measures that would be helpful to examine in the empirical study under the 'subcategories' of process, psychological and functional outcomes. Indeed, studies in the systematic review that only examined three psychological measures were limited in their conclusions and could not capture the overall experiences of people with chronic illness. Third, the systematic review prompted me to examine the reliability of different questionnaires and different ways of doing subscale analysis. I subsequently selected questionnaires with more robust properties (e.g. DASS for depression and anxiety instead of the HADS) and examined self-compassion changes by the total score as well as the compassionate and uncompassionate subscales. This empirical study analysis demonstrated improvements in both subscales, which would otherwise be concealed by using an overall score. Forth, the systematic review only had one study with a mixed chronic illness sample (Carvalho et al., 2021) and all other studies focused on a specific condition (e.g., diabetes

only) or specific illness category (e.g. chronic pain only). In discussion with the research team, I decided to supplement the exisiting literature by recruiting a mixed chronic illness sample, with the view that this could also benefit the recruitment rate without the need for NHS ethics. The empirical study therefore had more inclusive sampling, whilst conveying an acknowledgement of the complexities in recognising the more nuanced experiences of chronic illness. Fifth, the systematic review was helpful in showing the potentially high drop-out rates of web-based compassion programmes. This informed a recruitment approach that aimed to have 100 study sign-ups and 80 people completing pre-intervention questionnaires. To obtain these targets, I reached out to several charity organizations, forums, and their social media pages. Sixth, given the high drop-out rates, I discussed with the research team whether we should consider changing the study from being 'purely online' to having a 'minimally monitored contact' design (Robichaud et al., 2020), in which I would call participants after each week for a check-in. We decided against this idea for a number of reasons: (i) difficulty in tracking participant progress (ii) it would be very time-consuming for me to do this as a sole researcher (iii) potential difficulties in setting boundaries with telephone check-ins, (iv) a change in design that would no longer allow us to draw conclusions for a purely web-based design, which was the primary aim of the study. Finally, given the poor reporting of ethnicity and gender in the studies included in the systematic review, the empirical study carefully considered how to collect data on this. A dilemma involved whether to categorise this data collection to facilitate data analysis or provide free text options. After discussion with experts by experience, it was decided that free text would allow individuals to self-identify and promote inclusivity and diversity. This in turn required multiple response sets for coding and analyzing the data.

The results from both studies complemented one another. Both studies found that online compassion-based studies had moderate-high attrition, high engagement and adherence by study completers, high acceptability, and improved within-subject outcomes in process, psychological and functional outcomes. Although the empirical study did not find significant decreases in anxiety when correcting for multiple comparisons, the results were in the same direction as the systematic review findings. The current study and the studies included in the systematic review had similar demographic characteristics which as discussed previously, could be related to the intervention itself, the fact that the study was online, or the study advertising (both language used and where it was posted). Both studies agreed that the field

of compassion research in chronic illness requires RCT studies, with larger, more representative samples to examine efficacy, as well as mediation and moderation analyses that would help inform the potential mechanisms that underlie the self-compassion intervention.

Methodological dilemmas

The studies were unfortunately not able to complete some of the stated aims. The systematic review did not use a meta-analysis format and therefore could not explore moderating factors of outcomes such as study duration and mode of delivery. The review had many potential interacting variables and these were tentatively discussed, but no firm conclusions could be drawn without quantitative regression techniques. One of the suggestions of the systematic review was to have more mixed-methods studies, as qualitative approaches can complement quantitative data and provide a richer portrait of processes, benefits and limitations of self-compassion interventions. Given time constraints, I decided against this approach. Instead, the empricial study gave participants the opportunity to describe their thoughts on the programme, what they perceived as most and least helpful and provide suggestions. We hoped that participants would value the opportunity to express their experiences of the programme more fully, and we found the comments helpful to substantiate the quantitative results.

I noticed some difficulties when writing the discussion sections. Compassion is an emerging field, and thus there is no clear consensus or single model to elucidate how self-compassion may be a key transdiagnostic factor of psychopathological and physiological change processes in chronic conditions. The discussion section of the systematic review and empirical study therefore had to draw on the conceptualization of difficulties in long-term health conditions and how compassion trainings may enable an individual to adapt to such difficulties.

A particular methodological dilemma was related to measuring study attrition. Some studies included in the systematic review asked participants to fill in the Compassionate Mind Practice Recording Diary (taken from (Matos et al., 2017) each week to assess how often they practiced the exercises. Although there are advantages of week-by-week recording (e.g., higher accuracy) relative to retrospective recording and associated biases, the current study did not utilise this approach. Interviews with experts by experience indicated that weekly

questionnaires/recording would be deemed too labour instensive for participants living with health conditions, alongside the 30 minute weekly compassionate mind training material and home practises. This indicates the trade-off between study methodology and ethical issues/participant well-being. A solution that I explored was to track participants progress on the online portal. Unfortunately, this technological requirement could not be completed in the study timeframe, and we had to settle for a more inaccurate drop-out measure.

Recruitment challenges

Recruitment was conducted online for the empirical project. In addition to social media posts, I e-mailed 28 charities, of which 11 agreed to either send the study advert to their mailing list or put the advert on their website or social media page. Several charities did not respond or were unable to disseminate the advert due to their service structure. I learnt that charities were more willing to support dissemination when I offered to write a short article on compassion for their website. This highlights the potential importance of offering exchanges in order to reach a larger audience, and how the recruitment process can be more labour intensive than anticipated. I was careful about which social media groups to approach and shared the advert with groups related to compassion, psychology and various physical health condition charities.

It is also important to note that there was a two-week period in March where some participants had difficulties enrolling on the course. This technical issue could have negatively impacted upon participant recruitment and highlights the potential limitations of technology/website platforms. I managed this issue with Dr Irons by creating new accounts and passwords for participants who were unable to access the course and sending the new details via e-mail.

I was also aware of how to professionally manage the dual role of being a clinician and researcher. I held this in mind when responding to participants emails and providing appropriate signposting for support. For example, a few participants asked me whether they could complete the training or questionnaires over a longer time-frame due to their health status. I subsequently noticed that there were some technicial difficulties on Qualtrics when a questionnaire was not completed in one sitting. I had to e-mail out new links each time the participant was able to complete the next section of the questionnaire, and this meant that I

had more (written) contact with some participants than others. This is an important considertation or confound to keep in mind, given the potential importance of contact with the researcher/clinician in compassion interventions (Ashowrth et al., 2015).

Impact

There are common themes between the two pieces of research which have particular clinical relevance. There are implications for services, clinicians, support workers, researchers and people with long-term health conditions as well as wider society.

Clinicians and services

From a broad perspective, the findings of the empirical study and systematic review raise awareness that people with chronic health conditions may experience a number of challenges with respect to self-criticism, shame and their mental health. This is important for two main reasons. First, people seeking help with a long-term health condition may gain support from different medical and/or psychological services. Until recently, health settings have priotized physical health complaints or examining organic causes and medical staff have not received adequate training to detect concurrent psychological distress in chronic illness (Barnett et al., 2012). Disseminating research on psychological challenges that chronic illness patients face and the potential benefits of self-compassion in health care settings is in line with recent policy changes (Turk et al., 2011). This information could support medical staff to signpost patients to access support and promote patient self-care. It is in line with increasing evidence of the inter-relationship between physical and psychological states (Deary, Chalder and Sharpe, 2007).

Second, some illness groups may be subject to more social stigma (e.g. diabetes, HIV) or may be met less sympathetically by healthcare professionals (e.g., people with ‘medically unexplained symptoms’ (Roth & Pilling, 2013)). The latter group of patients commonly report feeling devalued and discounted by their encounters with the healthcare system, despite the fact that their symptoms can lead to considerable distress and disability (Asbring & Narvanen, 2002). This highlights the need for greater compassion and care within the NHS.

A recent report on compassionate leadership (NHS, 2018) highlighted that NHS staff need to consistently care for themselves and feel cared for by their team in order to care for patients. Organisations that prioritise staff health and well-being perform better, with improved patient

satisfaction, stronger quality scores and better outcomes. There needs to be a shift in the NHS culture to "compassion for all", whether people are delivering or receiving care. This in turn requires compassionate leaders, who are able to model these values and allow them to filter throughout the system. The results from the systematic review and empirical study do not directly speak to this point, but raise awareness as to the protective and positive properties of cultivating compassionate attitutudes, and the potential role of self-compassion by healthcare workers to maximize the impact of such an intervention.

At a more specific level of understanding, NICE guidelines recommend CBT as first-line treatment for the management of long-term health conditions (NICE, 2009). As discussed previously, individuals with negative self-evaluations and high levels of self-criticism respond poorly to CBT and relapse is more common (Rector et al., 2000; Teasdale & Cox, 2001). Thus, chronic illness patients presenting with high self-criticism, shame or blame may consider self-compassion related therapies as an adjunct to CBT. Resolving these therapy blocks may increase the efficacy of treatment. If clinicians are more aware of patients that present with high self-criticism, compassion-based interventions could be put in place sooner which could prevent highly critical individuals from further self-blame for not meeting treatment expectations. Indeed, all interventions included in the review showed moderate-high acceptability and the empirical study similarly showed high acceptability. Evidence suggests that highly acceptable interventions have higher treatment adherence, which will in turn likely improve the efficacy of treatment outcomes (Sekhon et al., 2017). Moreover, compassion training may be helpful at the relapse prevention stage as evidence suggests that increases in self-compassion buffer against chance of relapse (Karl et al., 2018; Krieger et al., 2016). As this empirical study was a pilot study and offered preliminary evidence, it is unable to inform guidelines at this stage, however, if further research were to corroborate the findings of the benefits of self-compassion, then it could inform future guidelines or policy makers about how to treat chronic illness populations.

The compassion-based interventions included in the systematic review varied widely, from purely online platforms to face-to-face sessions. Thus, clinicians should carefully consider patient preferences, mobility, motivation or depression levels, socio-economic status and access to internet/smart-phone technology, as well as the intensity and duration of the therapy to understand which intervention format would be most effective and well-suited for the individual. The use of online formats has opened up a host of intervention options such as

videos, audio, online therapist support, interactive interfaces and patient forums. Online interventions could have a potential positive economic impact on health care settings by reducing overall delivery costs and the need for highly qualified staff to deliver therapy (Christensen & Hickie, 2010). Online interventions overcome traditional geographical, attitudinal and financial barriers to access to care, and may be particularly important for individuals who continue to shield due to the COVID-19 pandemic (Fisher et al., 2021; Mishra & Chakole, 2021).

Chronic illness populations

The results of both studies suggest that, within the limits of the study methodology, online self-compassion training shows promise as a feasible and acceptable intervention for people living with chronic illness. I hope that the current empirical study has provided some validation of the challenges faced by people with long-term health conditions and potential avenues to improve self-compassion and health promoting behaviours. The development of adaptive coping strategies may also help with other aspects of having a chronic illness such as disease progression, loss of employment and challenges in interpersonal relationships. An online platform may have the advantage of being flexible and allowing people to personalize care, which may be important in chronic health populations. Future studies should consider developing online interfaces to allow for social exchange and forums. Connecting with similar others and understanding that one's emotional struggles are shared, is an important concept captured by the 'flows of compassion' (self-to-self, other-self, self-other) (Gilbert, 2017). Thus, communication channels may be important for decreasing the sense of social isolation in chronic illness, and social connection has shown to be positively associated with perceived physical and mental health status (Krokavcova et al., 2008).

Having said this, the area would benefit from more collaboration between patients with long-term health conditions and professionals. There needs to be more shared discussions, understandings and decisions for future research to improve patient outcomes (Rieckmann et al., 2018).

Wider society

As one in four people in the UK have a long-term health condition (Census, 2021), most people will likely know of someone within their family, friendship or work circles with a

health-care need. Disseminating this research to charities and on social media may help the general population to gain a greater understanding or perhaps develop greater compassion to people living with health conditions. Indeed, stigma to certain conditions requires a change in attitude and education at the societal level (Burki, 2021). The past two decades have shown a shift to a greater awareness of 'positive psychology' and the promotion of Eastern traditions and practices (e.g., meditation, mindful awareness, yoga) for everyday wellbeing (Gilbert, 2017, Seligman, 2002). There are now various platforms (e.g., Instagram, TikTok) that use illustrations and creative means to share common psychological principles. Thus, psychology and education is becoming increasingly mainstream and accessible. There is a moving away from 'labels' to promote the idea that mental and physical helath lie in a continuum of severity from normal to severe illness (Angst et al., 2000; Ayuso-Mateos et al., 2010; Lewinsohn et al., 2000; Paykel and Priest, 1992). The role of self-compassion in chronic illness links into this concept of the continuum and the relationship between body and mind and may play an important role in the above-mentioned areas.

Dissemination

To maximize the impact of the research, the findings of both studies will be disseminated through a range of different platforms. I aim to publish the systematic review with *Psychology and Health* or *Clinical Psychology & Psychotherapy*, as these journals have published research in a similar area of interest. Moreover, they have moderate impact factors and publishing through one of these journals would help develop the quality of the systematic review manuscript. The empirical study is a pilot study and is thus less likely to be published in a high impact journal. A study that used the same intervention as this empirical study previously published in *OBM Integrative and Complementary Medicine*, and this could be a potential avenue of interest. If the papers are successfully published, I will upload the papers to Research Gate and Academia.edu for other researchers and academics to gain access, whilst taking account of copyright restrictions and publishers' requirements. Both studies will be uploaded on PURE, Royal Holloway's online repository which is accessible by students, staff and the general public. I also aim to disseminate both the systematic review and empirical project at the CFT conference and the BABCP conferences. I endeavor to discuss these results in health pscyhology conferences and with specific long-term health condition conferences and chairites (e.g. sickle cell society). These conferences have a number non-clinicians present, as well as participants from with different demographic and ethnic

backgrounds and this would provide useful discussion to develop future research and culturally sensitive therapies. I will share the results within the CFT/CMT forums where different clinicians can discuss future research and clinical implications. I have already presented the findings of the empirical study at my current placement in Women's Health UCLH. There are other services that have since contacted me, which are interested in learning more about compassion-based interventions and delivering these online. I also plan to disseminate the 'lay summary' of the findings via social media so that a wider audience can learn about self-compassion research. In line with the ethics criteria, all participants in the study and interested charities will receive a report with the study findings.

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Appendices

Appendix 1.

Ethics Approval Form

Ethics Review Details

You have chosen to submit your project to the REC for review.	
Name:	Wolke, Selina (2019)
Email:	NHJT026@live.rhul.ac.uk
Title of research project or grant:	On-line Compassionate Mind Training (CMT) for clients with long-term health conditions
Project type:	Royal Holloway postgraduate research project/grant
Department:	Psychology
Academic supervisor:	Jane Vosper
Email address of Academic Supervisor:	Jane.Vosper@rhul.ac.uk
Funding Body Category:	No external funder
Funding Body:	
Start date:	31/05/2021
End date:	30/09/2023

Research question summary:

This research project wants to find out whether an online treatment programme focused on teaching people about self-compassion can help people who have long-term health conditions such as cancer, chronic pain, HIV/AIDs and diabetes. Some people with long-term health conditions may report feeling self-critical, having shame about their condition or feeling that it is difficult to accept their condition or blame themselves. Since 2004, a treatment approach has developed called "compassion-focused therapy" and there is growing evidence to support that it could be helpful for people who feel critical about themselves. Within this approach, "compassionate mind training" teaches people about self-kindness, acceptance and how to develop greater compassion through a number of exercises. It involves the idea that people should treat themselves with the same care as they would treat their loved ones. In this project, compassionate mind training will be delivered online or on a computer/phone/tablet. This method of delivery may help a greater number of people to access help, given that many people with long term health conditions do not get to see a therapist or can find it difficult to access help.

We examine pre-post CMT intervention changes in
measures of self-compassion, self-criticism and acceptance, anxiety, depression, well-being, Quality of Life.

Research method summary:

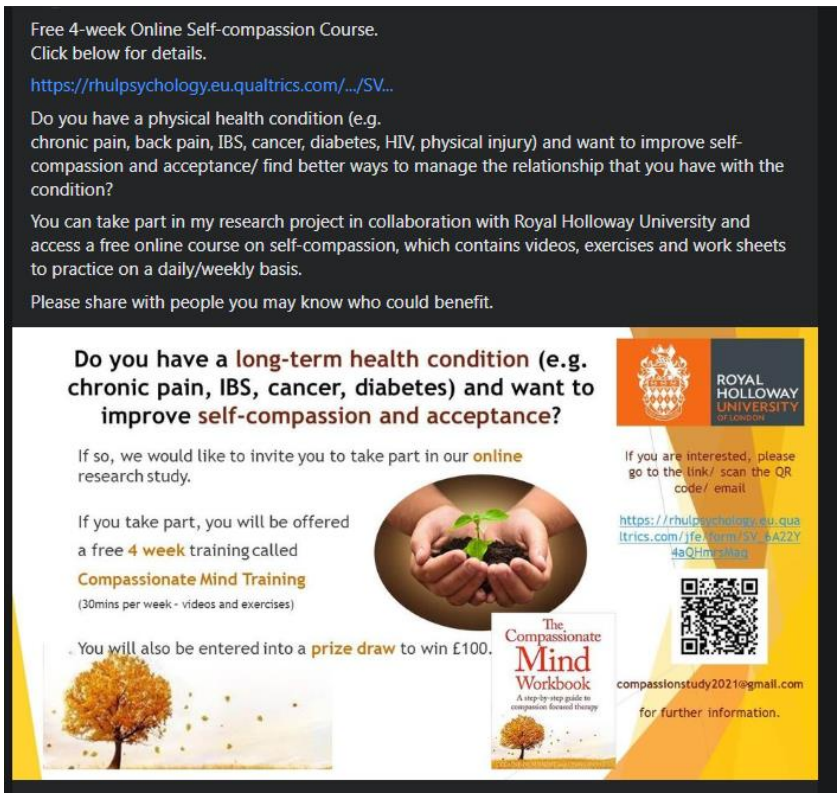
Single group, non-randomised, repeated measures design. Repeated measures – participants will complete measures pre- and post-intervention. Participants who are interested in taking part will receive screening questions that aim to ascertain inclusion/exclusion criteria. Inclusion criteria includes: Have a chronic condition defined as an illness or medical condition that has lasted longer than a year AND report feeling self-critical, ashamed or non-acceptance of their condition. No drug/alcohol abuse Regular access to the Internet; Able to access online video and audio content. Participants will complete questionnaires prior to the 4 week CMT intervention and at the end of the 4 weeks. We examine pre-post CMT intervention changes in Depression, Anxiety and Stress (Lovibond and Lovibond 1995), Wellbeing (WHO-5) (Topp et al., 2015), Health-related quality of life -(AQoL-6D) (Moodle et al., 2010), Self-compassion (SCS-SF (Raes et al., 2011)), Self-Criticising/Attacking and Self-Reassuring Scale (Gilbert et al.. 2004).Acceptance with AAQ-II (Hayes et al. 2004, Bond et al., 2011), Shame - External and Internal Shame Scale (EISS)(Ferreira et al., 2020). This pilot trial will examine feasibility and acceptability as discussed in Bowen et al., (2009). Feasibility and acceptability can be assessed by ability to recruit enough participants, drop-out, measure completion, satisfaction ratings of the intervention, adverse events during sessions, functional outcomes. All participants will be asked generic questions at the end of the study, such as satisfaction ratings of the intervention, any adverse events during sessions, % completion of exercises etc, which will be measured on a likert scale. This will help towards evaluating the feasibility and acceptability of the CFT intervention. The second aim is to assess change in psychological processes and outcomes (pre-post treatment)- distress, depression, anxiety, acceptance, shame, self-criticism, self- compassion using questionnaires above.

Risks to participants

Does your research involve any of the below?
Children (under the age of 16),
No

Appendix 2.

Study Poster



Appendix 3.

Information Leaflet as shown on Qualtrics

Information Sheet On-line Self-Compassion course for people with long-term health conditions

Dr Selina Wolke, Dr Jane Vosper, Dr Chris Irons (compassionstudy2021@gmail.com)

We would like to invite you to participate in this original research project. Before you decide whether you want to take part, it is important for you to understand why the research is being done and what your participation will involve. Please take time to read the following information carefully and discuss it with others if you wish. You should only participate if you want to; choosing not to take part will not disadvantage you in any way. Ask us if there is anything that is not clear or if you would like more information.

What is the purpose of the study?

This research project aims to find out whether an online guided self-help programme that teaches people about self-compassion can help people who have long-term health conditions such as cancer, chronic pain, HIV/AIDs and diabetes. Some people with long-term health conditions may report feeling self-critical, having shame about their condition or feeling that it is difficult to accept their condition or blame themselves. Since 2004, a psychology treatment approach has developed called "compassion-focused therapy" and there is growing evidence to support that it could be helpful for people who feel critical about themselves. Within this approach, "Compassionate Mind Training" teaches people about self-kindness, acceptance and how to develop greater compassion through a number of exercises. It involves the idea that people should treat themselves with the same care as they would treat their loved ones. In this project, compassionate mind training will be delivered online or on a computer/phone/tablet. This method of delivery may help a greater number of people to access help, given that many people with long term health conditions do not get to see a therapist or can find it difficult to access help.

Do I have to take part?

You do not have to take part in this study if you don't want to. If you decide to take part you may withdraw at any time without having to give a reason. Your decision whether to take part or not will not affect your treatment and care in any way.

What will your participation involve?

If you decide to take part, I will first ask you to complete a consent form and make sure that you understand what the study involves. I will ask to call you to complete some questionnaires that ask about your health condition, about your well-being, how you are coping etc. These questionnaires will take about 20 minutes to complete. After completing these questions I may ask to call you to ask a few clarifying questions at a time that is convenient for you. This is to make sure that you are eligible to take part in the study. If so, you will receive a link with a 4-week course called "Self-compassion Training". Each session will be 30 minutes (four in total over a period of four weeks) and then following each video, there will be a compassionate mind exercise to practice. You will get an audio file and some written material to access for the week to guide you in your practice. Everything will be completed online. At the end of the 4 weeks, I will ask you to complete the same questionnaires that you did at the start. Doing questionnaires before and after the intervention will help us understand whether compassionate mind training has led to any helpful changes.

What are the benefits and disadvantages of your participation?

The benefits include:
- Access to a free online training that teaches you about self-compassion and acceptance and which have so far shown to be helpful for people who have high self-criticism.
- The training is online, so you can complete this in the comfort of your home and there is no need to travel anywhere.
- You can contact the researchers/clinical psychologists at any point within the study.
- In order to say thank you for your voluntary participation, you will be entered into a £100 prize draw.
- At the end of the study we will send you a report to tell you what we found in the study.

The disadvantages are that:
- You need to spare 30 minutes a week in order to complete the training over the 4 week period. We appreciate that you may have a busy schedule.
- You will need to complete questionnaires about your physical and mental health at the beginning of the study, including questions about drug and alcohol use and you might feel uncomfortable talking about such topics. However, everything you say will be kept confidential. If we are concerned about risk (to yourself or others), we will need to break confidentiality, and we would try our best to let you know if we need to do this.
- You may feel that you need more support than the intervention provides. We will include lots of sign-posting to other services that could be helpful through the 4 week course. In the case that you feel affected by a particular session, you can contact Selina Wolke, Dr Jane Vosper or Dr Chris Irons and we can help direct you to places of support for distress. Selina will also e-mail once a week to check-in how the course is going. It is unlikely that adverse responses are likely to occur as this intervention is focused on self-kindness, compassion etc.

How will we use your data?

Nobody except myself and my supervisor will be allowed to see your files/questionnaires and in the study you will be known only by number. This means that the information you provide will be anonymous and completely confidential. The consent form that you complete (with your name and signature) will be stored separately from the anonymous information you provide. The data will be stored digitally and in a secure way, and will be password protected. The data will be stored for 5 years. Copies of this anonymous information may be made available to other bodies for audit purposes. The information will not available to your GP or medical team unless you specifically ask us to tell them.

Confidentiality: Will the information that is collected about me in this research be shared?

We will not share information you provide during the research with anyone outside the research team. Any information we have collected from you or about you will be saved in a secure server (Royal Holloway University servers and password protected) but will be coded and have your name removed so that no one can tell it is you. This applies to any data, including the behavioural questionnaires you have filled in. The only exception is circumstances in which you would have expressed an immediate and significant risk to yourself, participants or other parties, like saying that you want to hurt yourself or others. If this happens, it will be discussed within the extended research team and if justifiable, confidentiality will be broken and the appropriate parties and authorities will be notified.

How will the results of your participation be used?

The results of this study will appear as articles in medical / psychological journals. If you would like to read the results you can have a summary of the findings, and links to the research article sent to you by asking Selina Wolke. However, your name will not be in any of these articles and we will not mention any individual people. The results will also be presented in form of posters or oral presentations in scientific congresses and may be presented to relevant NHS teams. Please note all results will be presented in an anonymous way, so that it will impossible to identify you.

Who has checked and approved the research?

The research project has been checked and approved by a research ethics committee at Royal Holloway University of London to ensure that the process is ethical and safe. We have also consulted Experts by Experience to help with designing the research project.

Contact details: Where do I write to?

If you decide to take part in this study or for any more information, or even if you feel this study has harmed you in any way, you can contact: Selina Wolke (compassionstudy2021@gmail.com) It is up to you to decide whether to take part or not. If you decide to take part you are still free to withdraw from the study at any time and without giving a reason. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form.

Data protection

• Reference abiding by the current data protection act and the research participant privacy notice.

GDPR statement

Important General Data Protection Information (GDPR) Royal Holloway, University of London is the sponsor for this study and is based in the UK. We will be using information from you in order to undertake this study and will act as the data controller for this study. This means that we are responsible for looking after your information and using it properly. Any data you provide during the completion of the study will be stored securely on hosted on servers within the European Economic Area'. Royal Holloway is designated as a public authority and in accordance with the Royal Holloway and Bedford New College Act 1985 and the Statutes which govern the College, we conduct research for the public benefit and in the public interest. Royal Holloway has put in place appropriate technical and organisational security measures to prevent your personal data from being accidentally lost, used or accessed in any unauthorised way or altered or disclosed. Royal Holloway has also put in place procedures to deal with any suspected personal data security breach and will notify you and any applicable regulator of a suspected breach where legally required to do so. To safeguard your rights, we will use the minimum personally-identifiable information possible (i.e., the email address you provide us). The lead researcher will keep your contact details confidential and will use this information only as required (i.e., to provide a summary of the study results if requested and/or for the prize draw). The lead researcher will keep information about you and data gathered from the study, the duration of which will depend on the study. Certain individuals from RHUL may look at your research records to check the accuracy of the research study. If the study is published in a relevant peer-reviewed journal, the anonymised data may be made available to third parties. The people who analyse the information will not be able to identify you. You can find out more about your rights under the GDPR and Data Protection Act 2018 by visiting https://www.royalholloway.ac.uk/about-us/more/governance-and-strategy/data-protection/ and if you wish to exercise your rights, please contact dataprotection@royalholloway.ac.uk NB: You may retain this information sheet for reference and contact us with any queries.

Appendix 4.

Consent Form

Participant Identification Number:

CONSENT FORM

Title of Project: On-line Compassionate Mind Training (CMT) for people with long-term health conditions

Name of Researcher: Selina Wolke

Please tick

1. I confirm that I have read the information sheet for the above study, and I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily. ☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason. ☐
3. I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers. ☐
4. I understand that all data will be kept confidential, and that no personal identifying information will be disclosed in any reports on the project, or to any other party ☐
5. I agree to take part in the above study. ☐

Name of Participant	Date	Signature
Name of Person taking consent	Date	Signature

Consent Form

CONSENT FORM

Once you have read the Information Sheet and if you are happy to take part in the study, please take some time to read and sign the consent form below.

Title of Project: On-line Self-Compassion for people with long-term health conditions

Name of Researcher: Selina Wolke

Contact Details of Researcher: compassionstudy2021@gmail.com

C1

1.

○ I confirm that I have read the information sheet for the above study, and I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily

C2

2.

○ I understand that my participation is voluntary and that I am free to withdraw at any time without giving any reason

C3

3.

○ I understand that the information collected about me will be used to support other research in the future, and may be shared anonymously with other researchers.

C4

4.

○ I understand that all data will be kept confidential, and that no personal identifying information will be disclosed in any reports on the project, or to any other party

C5

5.

○ I understand that as compensation for taking part in the study, I will be entered into a £100 prize draw and will find out about the result of this 4 weeks after the study ends.

C6

6.

○ I agree to take part in the above study

C7

Please enter your First name below (legal name)

C8

Please enter your surname below (legal name)

C9

Please provide your e-mail address below

C10

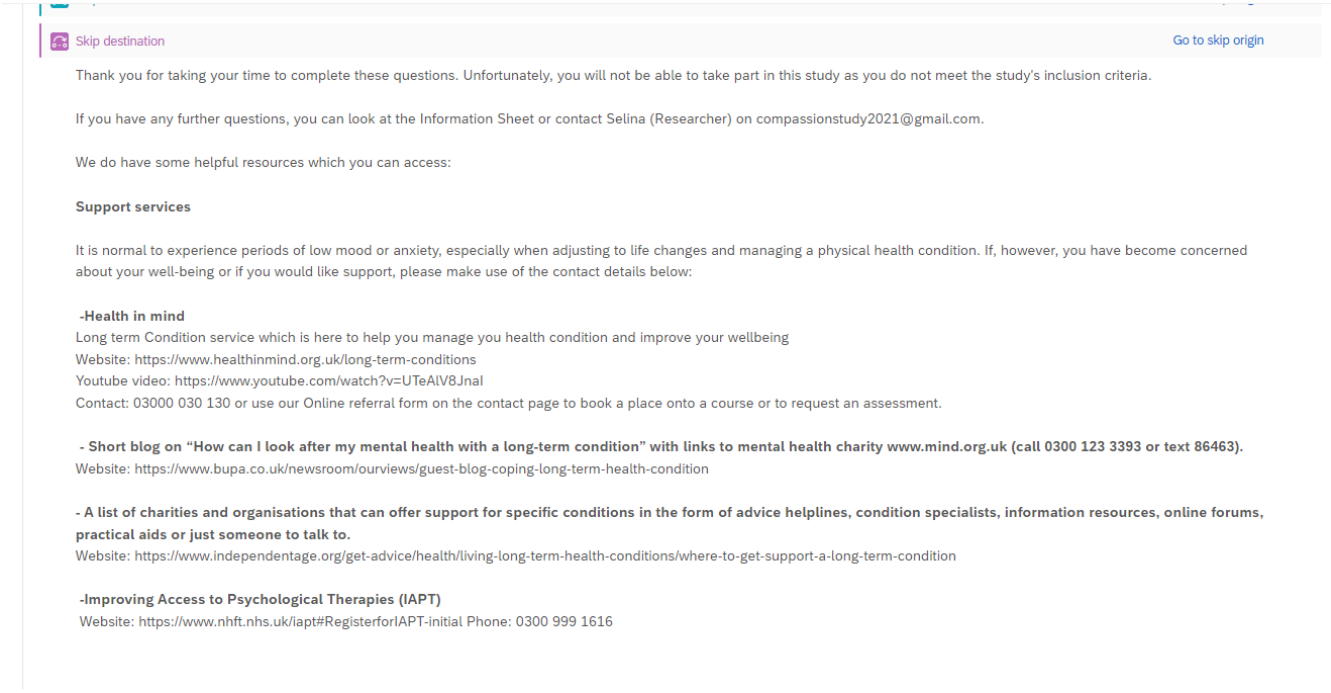
If you are happy to take part in the study, please enter your signature below.

Anonymous

Thank you for reading the information sheet and completing the consent form.
Your personal information above will be stored separately from your answers to the survey to keep your answers anonymous.

Appendix 5.

Message when participant does not meet inclusion criteria



Skip destination — Go to skip origin

Thank you for taking your time to complete these questions. Unfortunately, you will not be able to take part in this study as you do not meet the study's inclusion criteria.

If you have any further questions, you can look at the Information Sheet or contact Selina (Researcher) on compassionstudy2021@gmail.com.

We do have some helpful resources which you can access:

Support services

It is normal to experience periods of low mood or anxiety, especially when adjusting to life changes and managing a physical health condition. If, however, you have become concerned about your well-being or if you would like support, please make use of the contact details below:

-Health in mind
Long term Condition service which is here to help you manage you health condition and improve your wellbeing
Website: https://www.healthinmind.org.uk/long-term-conditions
Youtube video: https://www.youtube.com/watch?v=UTeAlV8JnaI
Contact: 03000 030 130 or use our Online referral form on the contact page to book a place onto a course or to request an assessment.

- Short blog on "How can I look after my mental health with a long-term condition" with links to mental health charity www.mind.org.uk (call 0300 123 3393 or text 86463).
Website: https://www.bupa.co.uk/newsroom/ourviews/guest-blog-coping-long-term-health-condition

- A list of charities and organisations that can offer support for specific conditions in the form of advice helplines, condition specialists, information resources, online forums, practical aids or just someone to talk to.
Website: https://www.independentage.org/get-advice/health/living-long-term-health-conditions/where-to-get-support-a-long-term-condition

-Improving Access to Psychological Therapies (IAPT)
Website: https://www.nhft.nhs.uk/iapt#RegisterforIAPT-initial Phone: 0300 999 1616

Appendix 6.

Instructions to register onto the self-compassion course.

Displayed once pre-intervention questionnaires were completed in full.

You are now ready to begin the 4-week Self-compassion course.

To register for the 4 week self-compassion course please follow these instructions. We have also sent some instructions to your e-mail:

1. Click on this link to register **https://balancedminds.com/group-code-registration/**

* Note: the username and password selected will then be the details needed to log on to the website in the future

2. Fill out your details and enter the course code: **CompassionResearch2021**

3. This should take you directly through to the course

For all subsequent log ins to access the course, please follow these instructions:

1. Go to general website: **www.balancedminds.com**

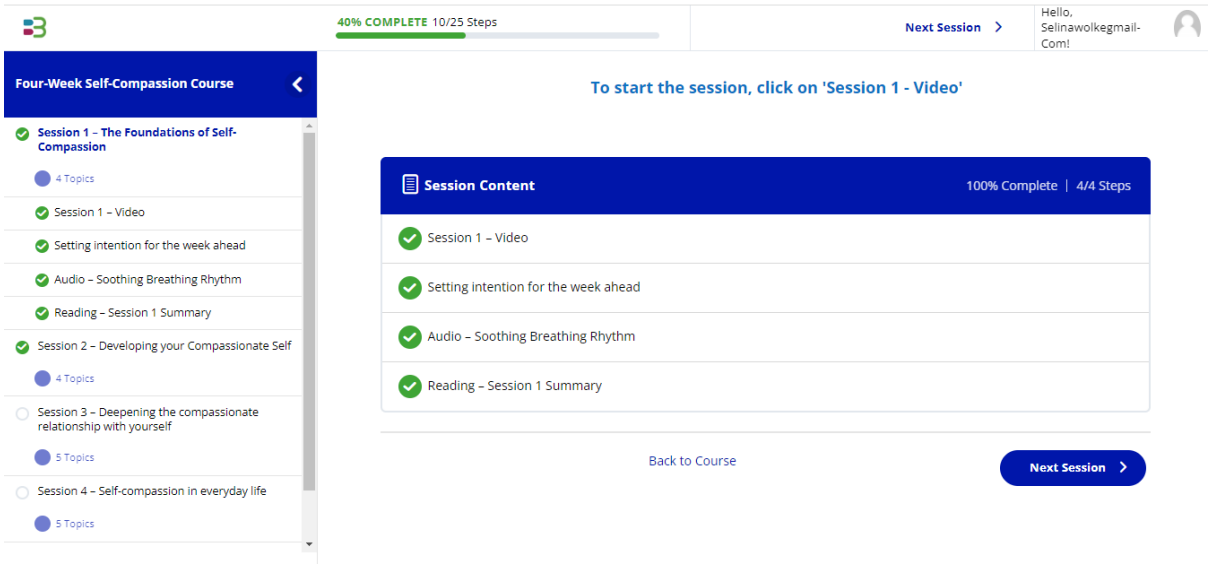
2. At the top right of the page, click where it says 'log in'

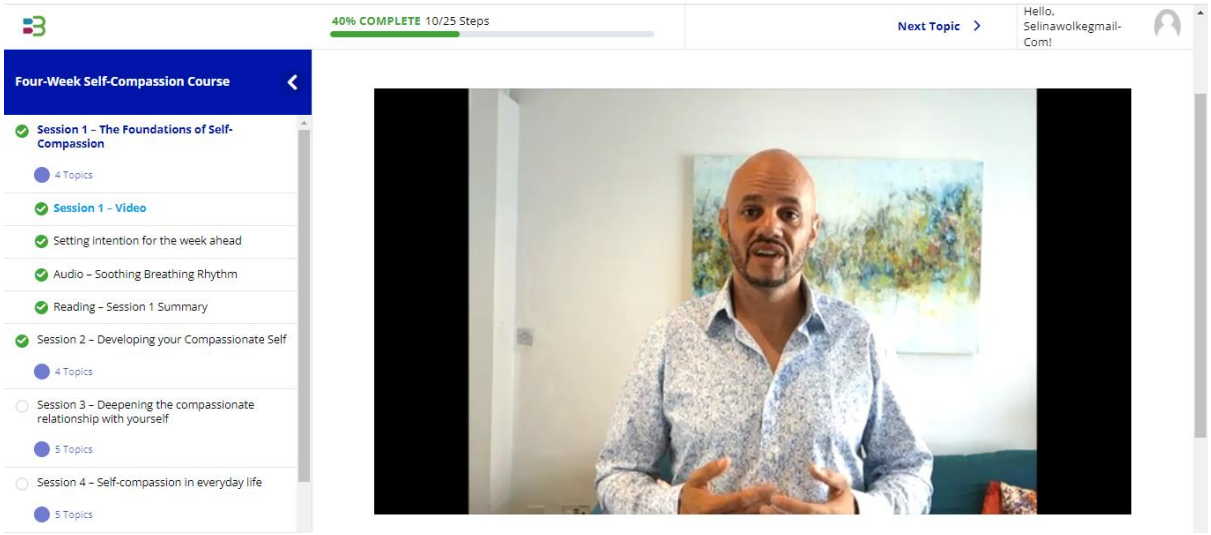
3. Use registration details (username and password) that originally used to register for course

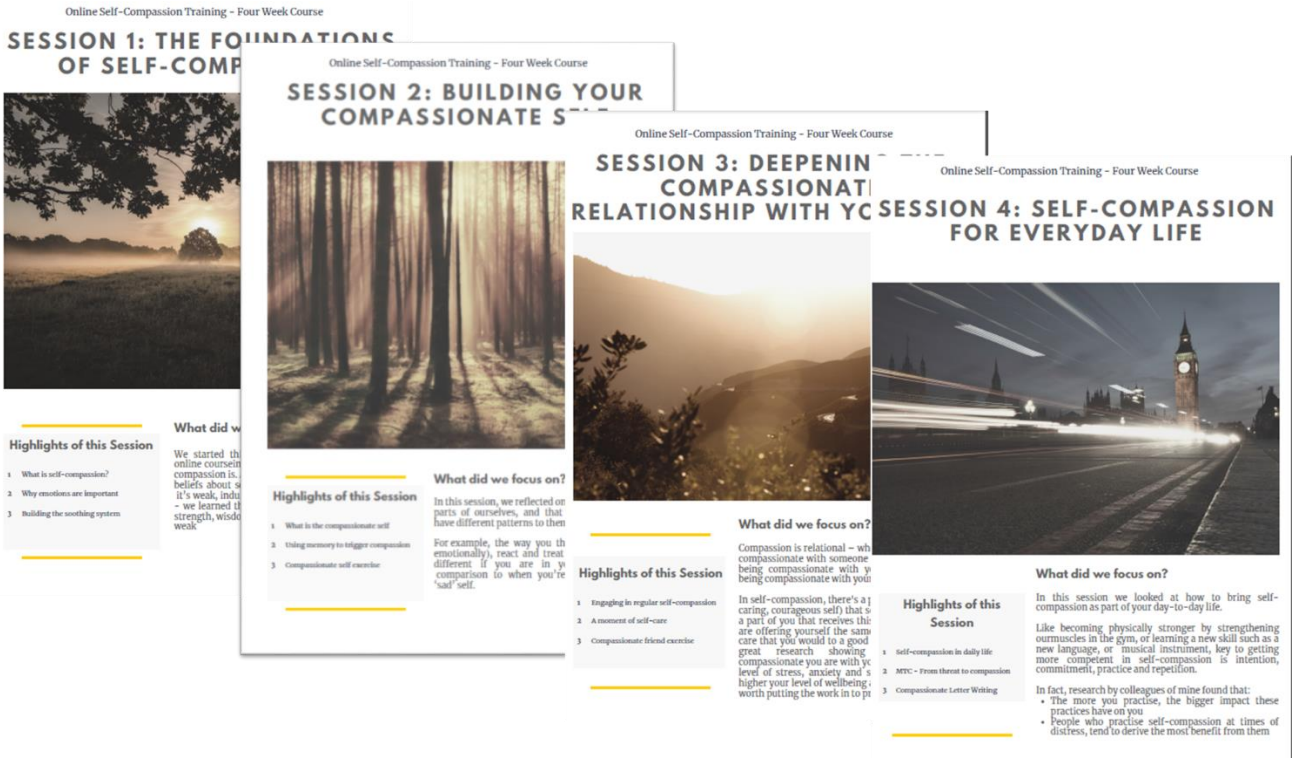
4. This will take you back to course page

Appendix 7.

Online self-compassion training platform and resources






Online Self-Compassion Training - Four Week Course
SESSION 1: THE FOUNDATIONS OF SELF-COMP
Highlights of this Session
1 What is self-compassion?
2 Why emotions are important
3 Building the soothing system
Online Self-Compassion Training - Four Week Course
SESSION 2: BUILDING YOUR COMPASSIONATE S
Highlights of this Session
1 What is the compassionate self
2 Using memory to trigger compassion
3 Compassionate self exercise
What did we focus on?
Online Self-Compassion Training - Four Week Course
SESSION 3: DEEPENIN COMPASSIONAT RELATIONSHIP WITH YO
Highlights of this Session
1 Engaging in regular self-compassion
2 A moment of self-care
3 Compassionate friend exercise
What did we focus on?
Online Self-Compassion Training - Four Week Course
SESSION 4: SELF-COMPASSION FOR EVERYDAY LIFE
Highlights of this Session
1 Self-compassion in daily life
2 MTC - From threat to compassion
3 Compassionate Letter Writing
What did we focus on?
In this session we looked at how to bring self-compassion as part of your day-to-day life.
Like becoming physically stronger by strengthening ourmuscles in the gym, or learning a new skill such as a new language, or musical instrument, key to getting more competent in self-compassion is intention, commitment, practice and repetition.
In fact, research by colleagues of mine found that:
• The more you practise, the bigger impact these practices have on you
• People who practise self-compassion at times of distress, tend to derive the most benefit from them

Appendix 8.

Questionnaires

SCS-SF

HOW I TYPICALLY ACT TOWARDS MYSELF IN DIFFICULT TIMES

Please read each statement carefully before answering. To the left of each item, indicate how often you behave in the stated manner, using the following scale:

Almost never				Almost always
1	2	3	4	5

_____1. When I fail at something important to me I become consumed by feelings of inadequacy.

_____2. I try to be understanding and patient towards those aspects of my personality I don't like.

_____3. When something painful happens I try to take a balanced view of the situation.

_____4. When I'm feeling down, I tend to feel like most other people are probably happier than I am.

_____5. I try to see my failings as part of the human condition.

_____6. When I'm going through a very hard time, I give myself the caring and tenderness I need.

_____7. When something upsets me I try to keep my emotions in balance.

_____8. When I fail at something that's important to me, I tend to feel alone in my failure

_____9. When I'm feeling down I tend to obsess and fixate on everything that's wrong.

_____10. When I feel inadequate in some way, I try to remind myself that feelings of inadequacy are shared by most people.

_____11. I'm disapproving and judgmental about my own flaws and inadequacies.

_____12. I'm intolerant and impatient towards those aspects of my personality I don't like.

FSCRS

THE FORMS OF SELF-CRITICISING/ATTACKING &

SELF-REASSURING SCALE (FSCRS)

When things go wrong in our lives or don't work out as we hoped, and we feel we could have done better, we sometimes have *negative and self-critical thoughts and feelings*. These may take the form of feeling worthless, useless or inferior etc. However, people can also try to be supportive of them selves. Below are a series of thoughts and feelings that people sometimes have. Read each statement carefully and circle the number that best describes how much each statement is true for you.

Please use the scale below.

Not at all like me	A little bit like me	Moderately like me	Quite a bit like me	Extremely like me
0	1	2	3	4

When things go wrong for me:

1.	I am easily disappointed with myself.	0	1	2	3	4
2.	There is a part of me that puts me down.	0	1	2	3	4
3.	I am able to remind myself of positive things about myself.	0	1	2	3	4
4.	I find it difficult to control my anger and frustration at myself.	0	1	2	3	4
5.	I find it easy to forgive myself.	0	1	2	3	4
6.	There is a part of me that feels I am not good enough.	0	1	2	3	4
7.	I feel beaten down by my own self-critical thoughts.	0	1	2	3	4
8.	I still like being me.	0	1	2	3	4
9.	I have become so angry with myself that I want to hurt or injure myself.	0	1	2	3	4
10.	I have a sense of disgust with myself.	0	1	2	3	4
11.	I can still feel lovable and acceptable.	0	1	2	3	4
12.	I stop caring about myself.	0	1	2	3	4
13.	I find it easy to like myself.	0	1	2	3	4
14.	I remember and dwell on my failings.	0	1	2	3	4
15.	I call myself names.	0	1	2	3	4
16.	I am gentle and supportive with myself.	0	1	2	3	4
17.	I can't accept failures and setbacks without feeling inadequate.	0	1	2	3	4
18.	I think I deserve my self-criticism.	0	1	2	3	4

DASS

Depression, Anxiety and Stress Scale (DASS21)

For each statement below, please circle the number in the column that best represents how you have been feeling in the last week.

Statement	Did not apply to me at all	Applied to me to some degree or some of the time	Applied to me a considerable degree or a good part of the time	Applied to me very much or most of the time
1. I found it hard to wind down	0	1	2	3
2. I was aware of dryness of my mouth	0	1	2	3
3. I couldn't seem to experience any positive feeling at all	0	1	2	3
4. I experienced breathing difficulty (eg, excessively rapid breathing, breathlessness in the absence of physical exertion)	0	1	2	3
5. I found it difficult to work up the initiative to do things	0	1	2	3
6. I tended to over-react to situations	0	1	2	3
7. I experienced trembling (eg, in the hands)	0	1	2	3
8. I felt that I was using a lot of nervous energy	0	1	2	3
9. I was worried about situations in which I might panic and make a fool of myself	0	1	2	3
10. I felt that I had nothing to look forward to	0	1	2	3
11. I found myself getting agitated	0	1	2	3
12. I found it difficult to relax	0	1	2	3
13. I felt down-hearted and blue	0	1	2	3
14. I was intolerant of anything that kept me from getting on with what I was doing	0	1	2	3
15. I felt I was close to panic	0	1	2	3
16. I was unable to become enthusiastic about anything.	0	1	2	3
17. I felt I wasn't worth much as a person	0	1	2	3
18. I felt that I was rather touchy	0	1	2	3
19. I was aware of the action of my heart in the absence of physical exertion (eg, sense of heart rate increase, heart missing a beat)	0	1	2	3
20. I felt scared without any good reason.	0	1	2	3
21. I felt that life was meaningless	0	1	2	3

Lovibond, S.H. & Lovibond, P.F. (1995). Manual for the Depression Anxiety Stress Scales. (2nd. Ed.) Sydney: Psychology Foundation

EISS

EISS

Questionnaire 7. EISS. This questionnaire has 8 items.

EISS | Below are a series of statements about feelings people may usually have, but that might be experienc

Below are a series of statements about feelings people may usually have, but that might be experienced by each person in a different way.

Please read each statement carefully and tick the number that best indicates how often you feel what is described in each item on a 5-point scale:

Never
1 2 3 4 Always
5 .....

	0. Never	1	2	3	4. Always
1. Other people see me as not being up to their standards	○	○	○	○	○
2. I am different and inferior to others	○	○	○	○	○
3. Other people don't understand me	○	○	○	○	○
4. I am isolated	○	○	○	○	○
5. Other people see me as uninteresting	○	○	○	○	○
6. I am unworthy as a person	○	○	○	○	○
7. Other people are judgmental and critical of me	○	○	○	○	○
8. I am judgmental and critical of myself	○	○	○	○	○

Psychiatric Research Unit
WHO Collaborating Centre in Mental Health

WHO (Five) Well-Being Index (1998 version)

Please indicate for each of the five statements which is closest to how you have been feeling over the last two weeks. Notice that higher numbers mean better well-being.

Example: If you have felt cheerful and in good spirits more than half of the time during the last two weeks, put a tick in the box with the number 3 in the upper right corner.

Over the last two weeks:	All the time	Most of the time	More than half of the time	Less than half of the time	Some of the time	At no time
1. I have felt cheerful and in good spirits	5	4	3	2	1	0
2. I have felt calm and relaxed	5	4	3	2	1	0
3. I have felt active and vigorous	5	4	3	2	1	0
4. I woke up feeling fresh and rested	5	4	3	2	1	0
5. My daily life has been filled with things that interest me	5	4	3	2	1	0

Scoring:

The raw score is calculated by totaling the figures of the five answers. The raw score ranges from 0 to 25, 0 represent- ing worst possible and 25 representing best possible quality of life.

To obtain a percentage score ranging from 0 to 100, the raw score is multiplied by 4. A percentage score of 0 represents worst possible, whereas a score of 100 represents best possible quality of life.

Interpretation:

It is recommended to administer the Major Depression (ICD-10) Inventory if the raw score is below 13 or if the patient has answered 0 to 1 to any of the five items. A score below 13 indicates poor wellbeing and is an indication for testing for depression under ICD-10.

Monitoring change:

In order to monitor possible changes in wellbeing, the percentage score is used. A 10% difference indicates a significant change (ref. John Ware, 1995).

AQOL

AQoL-6D (Data Collection Copy Simplified)

Tick the box that best describes your situation as it has been over the past week

Q1 How much help do you need with jobs around your place of residence (eg preparing food, cleaning, gardening)?

- ☐ I can do all these tasks very quickly and efficiently without any help
- ☐ I can do these tasks relatively easily without help
- ☐ I can do these tasks only very slowly without help
- ☐ I cannot do most of these tasks unless I have help
- ☐ I can do none of these tasks by myself.

Q2 How easy or difficult is it for you to get around by yourself outside your place of residence (eg to go shopping, visiting)?

- ☐ getting around is enjoyable and easy
- ☐ I have no difficulty getting around outside my place of residence
- ☐ I have a little difficulty
- ☐ I have moderate difficulty
- ☐ I have a lot of difficulty
- ☐ I cannot get around unless somebody is there to help me.

Q3 How easy or difficult is it for you to move around (using any aids or equipment you need eg a wheelchair, frame or stick)?

- ☐ I am very mobile
- ☐ I have no difficulty with mobility
- ☐ I have some difficulty with mobility (for example, going uphill)
- ☐ I have difficulty with mobility. I can go short distances only.
- ☐ I have a lot of difficulty with mobility. I need someone to help me.
- ☐ I am bedridden.

Q4 How difficult is it for you to wash, toilet, dress yourself, eat or care for your appearance?

- ☐ these tasks are very easy for me
- ☐ I have no real difficulty in carrying out these tasks
- ☐ I find some of these tasks difficult, but I manage to do them on my own
- ☐ many of these tasks are difficult, and I need help to do them
- ☐ I cannot do these tasks by myself at all.

Q5 How happy are you with your close and intimate relationships?

- ☐ very happy
- ☐ generally happy
- ☐ neither happy nor unhappy
- ☐ generally unhappy
- ☐ very unhappy

Q6 Does your health affect your relationship with your family?

- ☐ my role in the family is unaffected by my health
- ☐ there are some parts of my family role I cannot carry out
- ☐ there are many parts of my family role I cannot carry out
- ☐ I cannot carry out any part of my family role.

Tick the box that best describes your situation as it has been over the past week

Q7 Does your health affect your role in your community (eg residential, sporting, church or cultural groups)?

- ☐ my role in the community is unaffected by my health
- ☐ there are some parts of my community role I cannot carry out
- ☐ there are many parts of my community role I cannot carry out
- ☐ I cannot carry out any part of my community role.

Q8 How often did you feel in despair over the last seven days?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ often
- ☐ all the time.

Q9 How often did you feel worried in the last seven days?

- ☐ never
- ☐ occasionally
- ☐ sometimes
- ☐ often
- ☐ all the time.

Q10 How often do you feel sad?

- ☐ never
- ☐ rarely
- ☐ some of the time
- ☐ usually
- ☐ nearly all the time.

Q11 Do you normally feel calm and tranquil or agitated?
I am

- ☐ always calm and tranquil
- ☐ usually calm and tranquil
- ☐ sometimes calm and tranquil, sometimes agitated
- ☐ usually agitated
- ☐ always agitated.

Q12 How much energy do you have to do the things you want to do?
I am

- ☐ always full of energy
- ☐ usually full of energy
- ☐ occasionally energetic
- ☐ usually tired and lacking energy
- ☐ always tired and lacking energy.

Q13 How often do you feel in control of your life?

- ☐ always
- ☐ mostly
- ☐ sometimes
- ☐ only occasionally
- ☐ never.

Tick the box that best describes your situation as it has been over the past week

Q14 How much do you feel you can cope with life's problems?

- ❑ completely
- ❑ mostly
- ❑ partly
- ❑ very little
- ❑ not at all.

Q15 How often do you experience serious pain?

I experience it

- ❑ very rarely
- ❑ less than once a week
- ❑ three to four times a week
- ❑ most of the time.

Q16 How much pain or discomfort do you experience?

- ❑ none at all
- ❑ I have moderate pain
- ❑ I suffer from severe pain
- ❑ I suffer unbearable pain.

Q17 How often does pain interfere with your usual activities?

- ❑ never
- ❑ rarely
- ❑ sometimes
- ❑ often
- ❑ always

Q18 How well can you see (using your glasses or contact lenses if needed)?

- ❑ I have excellent sight
- ❑ I see normally
- ❑ I have some difficulty focusing on things, or I do not see them sharply. *E.g. small print, a newspaper or seeing objects in the distance.*
- ❑ I have a lot of difficulty seeing things. *My vision is blurred. I can see just enough to get by with.*
- ❑ I only see general shapes. *I need a guide to move around*
- ❑ I am completely blind.

Q19 How well can you hear (using your hearing aid if needed)?

- ❑ I have excellent hearing
- ❑ I hear normally
- ❑ I have some difficulty hearing or I do not hear clearly. *I have trouble hearing softly-spoken people or when there is background noise.*
- ❑ I have difficulty hearing things clearly. *Often I do not understand what is said. I usually do not take part in conversations because I cannot hear what is said.*
- ❑ I hear very little indeed. *I cannot fully understand loud voices speaking directly to me.*
- ❑ I am completely deaf.

Tick the box that best describes your situation as it has been over the past week

Q20 How well do you communicate with others (talking, signing, texting, being understood by others and understanding them)?

- ❑ I have no trouble speaking to them or understanding what they are saying
- ❑ I have some difficulty being understood by people who do not know me. I have no trouble understanding what others are saying to me.
- ❑ I am understood only by people who know me well. I have great trouble understanding what others are saying to me.
- ❑ I cannot adequately communicate with others.