The Effect of Self-Compassion on Psychosocial and Clinical Outcomes in Patients With Medical Conditions: A Systematic Review

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Abstract

Studies about the role of self-compassion have focused primarily on psychological well-being, but there is solid evidence to suggest that self-compassion may have larger and more prominent implications in the medical world. Therefore, this systemic review aimed to investigate the effects of self-compassion on psychosocial and clinical outcomes in medically ill patients.

A comprehensive search of several databases from their inception to August 10, 2020, was conducted, which included Ovid MEDLINE(R) and Epub Ahead of Print, Ovid Embase, Ovid Cochrane Central Register of Controlled Trials, and Cumulative Index to Nursing and Allied Health Literature (CINAHL). Eligible studies needed to include psychosocial or clinical outcomes of self-compassion in medically ill patients.

Nineteen articles (n=2,713 patients; 73.3% females) met our eligibility criteria and were included in this systematic review. There was a negative correlation between self-compassion and psychosocial outcomes such as anxiety, depression, and stress. Moreover, based on self-compassion intervention, there was an improvement in clinical outcomes related to diabetes such as hemoglobin A1c (HbA1c) and blood glucose levels.

This systematic review highlights the effect of self-compassion on psychosocial and clinical outcomes. Further studies are needed to evaluate long-term outcomes of a self-compassion-based-intervention to highlight its importance in the role of disease management.

Introduction And Background

Individuals suffering from medical illnesses are affected on both physical and psychological levels. The combination of exhaustion, pain, and decreased quality of life can cause self-doubt, low self-esteem as well as an inability to complete any personal or work-related tasks [1]. Psychological symptomatology of stress, anxiety, and depression can further exacerbate existing illnesses, contributing to a decreased desire for engaging in health-promoting or disease management behaviors [2-4]. Moreover, this burden can cause further psychological damage by causing individuals to direct blame at themselves for not being able to meet expectations of managing their illness [5].

In the past decade, evidence has emerged to suggest that self-compassion can be an important tool to help manage psychological issues. The concept of self-compassion, as defined by Neff, constitutes "being touched by and open to one's own suffering, not avoiding or disconnecting from it, generating the desire to alleviate one's suffering and to heal oneself with kindness" [6]. Self-compassion thus involves offering nonjudgmental understanding to one's pain, inadequacies and failures, so that one's experience is understood as a part of the larger human experience" [6]. It involves the idea that individuals should treat themselves with the same care as they would treat their loved ones. The concept of self-compassion is further defined by three essential components, which include common humanity versus isolation, self-kindness versus self-judgment, and mindfulness versus over-identification [6].

Previous studies have demonstrated that self-compassion is linked to many factors of psychological well-being such as happiness, decreased anxiety, depression, stress, and a better quality of life [7-9]. A meta-analysis by MacBeth and Gumley revealed that individuals with high self-compassion reported having better mental health and quality of life compared to those with low self-compassion [10]. Furthermore, a study by Neff and McGehee demonstrated that self-compassion is correlated with resilience [11]. Another study by Neff, Kirkpatrick, and Rude demonstrated the protective role of self-compassion against anxiety [12].
To date, most of the research has directed its efforts toward the role of self-compassion in psychological well-being; however, there is evidence to suggest that self-compassion may well have a stronger contribution to make in the medical world as well. Although the research is limited to the role of self-compassion for health-related outcomes in medically ill patients, there are promising results to support the incorporation of self-compassion interventions to improve disease trajectory and management. This systematic review aimed to investigate the effects of self-compassion on psychosocial and clinical outcomes in medically ill patients.

**Review**

**Methods**

**Data Sources and Search Strategies**

A comprehensive search of several databases from their inception to August 10, 2020, was conducted based on the Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) guidelines [13]. The databases included Ovid MEDLINE(R) and Epub Ahead of Print, Ovid Embase, Ovid Cochrane Central Register of Controlled Trials, and Cumulative Index to Nursing and Allied Health Literature (CINAHL). The search strategy was designed and conducted by an experienced librarian. Controlled vocabulary supplemented with keywords was used to search for studies describing self-compassion and medical treatment. The actual strategy listing all search terms used and how they are combined is available in the Appendix section (Table 1).

**Eligibility Criteria and Quality Assessment**

Studies were deemed eligible if they met all of the following inclusion criteria: 1) investigate self-compassion; 2) involve patients aged more than 18 years with medical disorders, and 3) deal with psychosocial or clinical outcomes of self-compassion in medically ill patients. Case reports, conference abstracts and/or abstracts, and articles that were not in English were excluded from the study. The quality of each study was independently evaluated by two authors using the National Institutes of Health (NIH) Quality Assessment Tool [14]. Results of the quality assessment of all included studies are shown in the Appendix section (Table 3). All observational and cross-sectional studies were judged to be of good quality. The patients appeared to represent the whole experience of the investigator and the exposure and outcomes were adequately ascertained, and the length of follow-up was also deemed adequate.

**Results**

**Study Selection and Characteristics**

A total of 5,024 records were identified from the initial search of electronic databases. After the exclusion of duplicated articles, 2,827 articles underwent title and abstract review. Following the exclusion of articles that did not fulfill the eligibility criteria, 27 articles underwent a full-length review. Eight articles were further excluded, for reasons shown in the Appendix section (Figure 1). Finally, 19 articles (n=2,713 patients, of which 73.3% were females) met our eligibility criteria and were included in this systematic review [15-33]. The baseline characteristics of the included studies are comprehensively described in Table 1.

| Study                | Year | Country | Sample size | Gender | Age (in years) | Education | Medical condition | Treatment of disease | Time from diagnosis | Study design       |
|---------------------|------|---------|-------------|--------|----------------|-----------|-------------------|---------------------|--------------------|-------------------|
| Abdollahi, Taheri, and Allen [15] | 2020 | Iran    | 210         | All females | 43.2 ± 7.4 | Diploma (n=54); bachelor’s degree (n=86); master’s degree (n=28) | Breast cancer | Chemotherapy (n=155); radiation (n=147); hormone (n=166); reconstructive (n=73) | ≤1 year (n=70); 1-2 years (n=85); 2-5 years (n=52); >5 years (n=27) | Cross-sectional study |
| Ambridge, Fleming, and Henshall [16] | 2020 | UK      | 66          | 32F, 34M | NA            | GCSE (n=37); A-level (n=16); degree (n=10); doctoral degree (n=4) | Brain injury | NA                  | ≤1 year (n=10); 1-2 years (n=10); 2-3 years (n=4); 3-4 years (n=4); 4-5 years (n=4); >5 years (n=21) | Mixed methods         |
| Arambasic, Sherman, and Elder [17]    | 2019 | Australia | 82          | All females | 58.46 ± 8.77 | Grade 12 or less (n=26); vocational (n=15); bachelor’s degree (n=27); master’s degree (n=13) | Breast cancer | Chemotherapy (n=53); radiation (n=58); hormone (n=55); targeted (n=15); reconstructive (n=21) | 82.14 ± 19.34 months | Cross-sectional study |
| Brown et al. [18]        | 2019 | UK      | 184         | All females | 51.54 ± 6.42 | Degree and above (n=105); non-degree (n=71) | Breast cancer | Chemotherapy (n=116); radiation (n=132); hormone (n=138); NA |                         | Cross-sectional       |
| Study Details | Year | Location | N | Gender Distribution | Age (Mean ± SD or Range) | Disease/Condition | Treatment Details | Study Type |
|---------------|------|----------|---|---------------------|-------------------------|-------------------|-------------------|------------|
| Dowd and Jung [19] | 2017 | Canada | 220 | 202F, 17M, 1 preferred not to say | 44.01 ± 13.33 | Celiac disease | NA | Prospective study |
| Edwards et al. [20] | 2019 | USA | 339 | 236F, 98M | 51.86 ± 14.58 | Chronic pain | NA | Cross-sectional study |
| Friis et al. [21] | 2015 | New Zealand | 110 | 72F, 38M | 47.6 ± 15.2 | T1DM (n=67); T2DM (n=20); type 2 insulin (n=23) | NA | Cross-sectional study |
| Friis et al. [22] | 2016 | New Zealand | 63 | 20M, 43F | 44.37 ± 15.62 | T1DM (n=46); T2DM (n=9); type 2 insulin (n=8) | NA | RCT |
| Hayter and Durbin [23] | 2019 | Australia | 97 | 64F, 33M | 40.1 ± 11.8 | Spina bifida | NA | Cross-sectional study |
| Karami et al. [24] | 2018 | Iran | 20 | Control: 43.57 ± 2.59; experimental: 44.38 ± 2.35 | NA | T1DM | NA | Quasi-experimental study |
| Klein et al. [25] | 2020 | USA | 85 | 33F, 53M | 29.7 ± 14.4 | Bleeding disorders | NA | Cross-sectional study |
| Morrison et al. [26] | 2019 | UK | 176 | 120M, 56F | 54 ± 8 | T1DM | NA | Cross-sectional study |
| Ferrari, Dal Cin, and Steele [27] | 2017 | Australia | 310 | 58M, 252F | 37.6 ± 15.1 | High school (n=50); TAFE (n=81); some high school (n=31); university (n=115); postgraduate (n=8); apprenticeship (n=6) | Insulin injections (n=98); diet and exercise (n=97); insulin pump (n=76) | Cross-sectional study |
| Hurwitz, Yun, and Ebbeck [28] | 2018 | USA | 259 | 41M, 218F | NA | Multiple sclerosis | NA | Cross-sectional study |
| Baillargeon et al. [29] | 2018 | Canada | 48 | All females | 26.83 ± 5.98 | Vulvodynia | NA | Cross-sectional study |
| Skilton et al. [30] | 2020 | USA | 34 | 17F, 17M | 47.79 ± 12.87 | HIV | NA | Cross-sectional study |
| Vaishg et al. [31] | 2019 | Iran | 168 | 91M, 77F | 43.13 ± 8.76 | Literacy reading and writing (n=13); diploma (n=66); academic (n=66) | Migraine | NA | Cross-sectional study |
| Wren et al. [32] | 2015 | USA | 88 | 71.6%F | 53.93 ± 9.85 | Some high school or less (n=7); high school graduate (n=10); some college (n=20); college graduate or higher (n=31) | Mucoskeletal pain | NA | Cross-sectional study |
| Zhu et al. [33] | 2018 | China | 153 | 52M, 100F, 1 | 50.78 ± 11.61 | Low (n=16); middle (n=132); Cancer | Chemotherapy (n=54); radiation (n=32); Longitudinal | Longitudinal study |
Baseline Characteristics

As shown in Table 1, 19 studies were included of which four studies were from the UK, five studies from the USA, four studies from Australia, two studies from New Zealand, three studies from Iran, and one study from China; 2,715 patients were included of which 1,989 were female, with an age range of 26-64 years. Common medical conditions included were diabetes (n=5), breast cancer (n=5), multiple sclerosis (n=1), spina bifida (n=1), celiac disease (n=1), HIV (n=1), brain injury (n=1), migraine (n=1), musculoskeletal pain (n=1), and vulvodynia (n=1). Studies were mostly cross-sectional (n=14), followed by randomized controlled trials (n=2), mixed methods (n=1), longitudinal study (n=1), and quasi-experimental (n=1). Time from diagnosis ranged between 6-18 years for different medical conditions. Treatment options were included for breast cancer and diabetes. Breast cancer treatment options in different studies were similar and included chemotherapy, radiation, surgery, and hormone therapy. Treatment for diabetes included insulin pumps, insulin injections, and lifestyle modifications (diet and exercise).

Psychosocial Outcomes

Eighteen included studies exhibited outcomes of self-compassion using the Self-Compassion Scale (SCS) questionnaire as shown in Table 2. Five studies provided the values of self-compassion based on the average of all subscales from 1-5. The range for the self-compassion values was between 2.8-5.46. Three studies looked at specific subscales with the SCS [16,18,30]. A study by Ambridge, Fleming, and Henshall looked at the Self-Compassion Scale-Short-Form (SCS-SF), which was 5.69 ± 1.15 [16]. A study by Brown et al. demonstrated self-kindness: 2.74 ± 0.94, common humanity: 5.11 ± 0.95, mindfulness: 5.18 ± 0.83, and reflection: 1.70 ± 0.61 [18]. Lastly, a study by Skelton et al. observed scores of 64.12 ± 19.48 for compassionate engagement and action [50]. The rest of the studies reported SCS as an average of the total score, which ranged from 18-80.

Important Correlations

All included studies evaluated the correlation of self-compassion with other important psychosocial outcomes such as depression, anxiety, stress, resilience, shame, quality of life, and other outcomes as shown in Table 2. Nine studies evaluated the correlation between self-compassion and depression [16,18,20-23,26,29,33]. All studies found that a higher self-compassion was correlated with lower levels of depression in individuals with a medical illness. Four of these studies looked specifically at self-compassion scores in relation to the Patient Health Questionnaire-9 (PHQ-9) scores, which found that increased SCS scores were associated with decreased levels of PHQ-9 scores [21,22,26,33]. Moreover, two studies looked at self-compassion in relation to the Hospital Anxiety and Depression Scale (HADS) questionnaire and demonstrated similar results [16,19]. Five studies looked at the correlation between self-compassion and anxiety, two of which were previously discussed using the HADS questionnaire. The rest of the three studies used different types of questionnaires but revealed that self-compassion scores were negatively correlated with anxiety [23,29,33].

Two studies looked at the relationship between self-compassion and shame [16,30]. One study showed that as self-compassion levels increased, shame decreased, while the other study showed no correlation between self-compassion and shame. Four studies looked at the correlation between self-compassion and quality of life [19,21,28,30]. Two studies showed that increased self-compassion improved quality of life, while two studies showed that higher levels of self-compassion correlate with any improvement [19,21,28,30]. Four studies investigated correlations between self-compassion and levels of stress [21-23,26]. Three of the four studies looked at self-compassion and Diabetes Distress Scores (DDS-17) and demonstrated that as self-compassion increased, DDS decreased [21,22,26]. The other study demonstrated that higher self-compassion levels correlated with lower stress levels [23]. One study by Hurwit, Yun, and Ebbeck demonstrated that higher self-compassion is associated with higher resilience [28]. Furthermore, the self-compassion interventions are likely to be more effective with women, as they have previously been reported to have lower self-compassion levels than men [6]. Lastly, two studies investigated the link between self-compassion and adherence behavior [19,30]. Skelton et al. demonstrated that self-compassion was not associated with increased adherence behavior in HIV patients [30]. On the other hand, Dowd and Jung exhibited that self-compassion at baseline was able to predict adherence to a gluten-free diet in celiac patients [19].

Clinical Outcomes

TABLE 1: Baseline characteristics of included studies

| F: female; M: male; GCSE: general certificate of secondary education; NA: not applicable; T1DM: type 1 diabetes mellitus; T2DM: type 2 diabetes mellitus; TAFE: technical and further education; HIV: human immunodeficiency virus |
|---|---|---|---|
| TABLE 1 | Baseline characteristics of included studies | unknown | high (n=30); missing (n=3) |
| operation (n=22); Chinese medicine (n=12) | study | | |
Only two studies investigated the effect of self-compassion on clinical outcomes specifically for diabetes with HbA1c and blood glucose levels, as shown in Table 3 [22,24]. Karami et al. demonstrated an improvement in blood glucose levels in patients who were in the intervention group (self-compassion program) compared to the control group at baseline and after the completion of the intervention [24]. The control group had a glucose level of 271 ± 35.88 at baseline compared to 272.75 ± 21.96 for the experimental group [24]. Post-intervention (after eight weeks), the control group had glucose levels of 267 ± 28.98 compared to 205.25 ± 12.55 for the experimental group [24]. Similarly, the other study by Friis et al. aimed to compare HbA1c levels between the control group and the experimental group [22]. They demonstrated that HbA1c levels improved after the intervention and at the three-month follow-up significantly in the experimental group (baseline: 74.25 ± 15.11; post-intervention: 71.44 ± 18.34; follow-up: 64.03 ± 16.25) compared to the control group (baseline: 64.04 ± 15.32; post-intervention: 66.03 ± 14.20; follow-up: 62.32 ± 12.41) [22].

| Studies                      | Year | Questionnaires                                | Psychosocial outcomes | Correlations                                                                 |
|------------------------------|------|-----------------------------------------------|------------------------|-----------------------------------------------------------------------------|
| Abdollahi, Taheri, and Allen | 2020 | Self-compassion Scale                         | Mean: 56.1 ± 9.25      | Self-compassion moderates the relationship between perceived stress and self-care behaviors. Stress and self-compassion were significant predictors of self-care behaviors |
|                              |      | Perceived Stress Scale                        | Mean: 24.3 ± 5.23      |                                                                             |
|                              |      | Self-care utilization questionnaire            | Mean 43.2 ± 7.4        |                                                                             |
| Ambridge, Fleming, and Henshall | 2020 | Self-Compassion Scale-Short-Form              | 5.69 ± 1.15 (SCS-SF); 95.93 ± 6.01 (AQ) | A negative relationship at the .1 level (p = .055) was demonstrated between anxiety and self-compassion; participants who felt anxious were less likely to be self-compassionate. The results also illustrated a significant regression coefficient for self-compassion and shame (β = - 1.615, SE = .515, t = -3.138, p = .003). This provides evidence that as the levels of self-compassion increased, shame decreased |
|                              |      | Self-awareness perceived responsibility        | 23.48 ± 32.89          |                                                                             |
|                              |      | Shame and guilt scale                          | 11.51 ± 4.82 (shame)   |                                                                             |
|                              |      | Hospital Anxiety and Depression Scale         | 9.29 ± 5.24 (anxiety); 7.67 ± 4.09 (depression) |                                                                             |
| Arambasic, Sherman, and Elder | 2019 | General attachment style                      | Attachment avoidance: 3.12 ± 1.11; attachment anxiety: 2.51 ± 1.05 | Both attachment anxiety and attachment avoidance negatively correlated with self-compassion |
|                              |      | Self-compassion                                | 3.46 ± 0.57            |                                                                             |
|                              |      | Psychological adjustment (negative impact of cancer) | 2.76 ± 0.77           |                                                                             |

Self-compassion subscales demonstrated a negative correlation with...
| Study | Year | Variables | Reflection | Note |
|-------|------|-----------|------------|------|
| Brown et al. [18] | 2019 | Hospital Anxiety and Depression Scale | 8.33 ± 4.59 | HADS, depression, and anxiety, although only smaller correlations were observed between common humanity than self kindness and mindfulness subscales. The final model included structural paths that showed that kindness and mindfulness scores, but not common humanity, uniquely predicted reduced brooding, depressive brooding, and worry. |
| Dowd and Jung [19] | 2017 | Celiac Dietary Adherence Test | Baseline: 11.78 ± 3.22; after: 11.18 ± 2.68 | Both self-compassion and self-regulatory efficacy at time 1 had a direct relationship with the prediction of adherence to GFD at time 2. Self-compassion directly predicted celiac QoL. |
| Edwards et al. [20] | 2019 | Self-Compassion Scale | Baseline: 3.34 ± 0.75; After: 3.38 ± 0.76 | Self compassion accounted for a significant and unique amount of variance in physical and psychosocial disability, depression, pain acceptance, success in valued activities, use of traditional pain coping strategies, use of flexible pain coping strategies, and pain anxiety. |
| Friis et al. [21] | 2015 | Pre-control SCS: 2.88 ± 0.60 | As self-compassion increased, depression and diabetes-distress scores decreased. A positive relationship between distress and HbA1c among persons with lower self-compassion. |
| | | Post-control SCS: 3.12 ± 0.64 | | |
| | | Pre-experiment SCS: 2.52 ±0.57 | Self-compassion increased in the MSC group between T1 and T2, with gains maintained at T3. |
| Author(s) and Year | Study Year | Scale | Pre-control | Post-control | Pre-experiment | Post-experiment | Notes |
|--------------------|------------|-------|-------------|--------------|----------------|----------------|-------|
| Friis et al. [22]  | 2016       | PHQ-9 | Pre-control: PHQ-9: 9.74 ± 6.06 | Post-control: PHQ-9: 7.30 ± 5.02 | Pre-experiment: PHQ-9: 14.01 ± 4.52 | Post-experiment: PHQ-9: 9.16 ± 6.50 | The intervention reduced depression scores in the MSC group between T1 and T2, with results maintained at T3. |
|                    |            | DDS17 | Pre-control: DDS17: 2.35 ± 0.63 | Post-control: DDS17: 2.29 ± 0.85 | Pre-experiment: DDS17: 3.16 ± 0.88 | Post-experiment: DDS17: 2.33 ± 0.86 | |
| Hayter and Dorstyn [23] | 2013 | CD-RISC 10 scale | 25.65 ± 8.07 | | | | Increased self-compassion was associated with lower levels of depression, anxiety, and stress. |
|                      |            | Self-Compassion Scale | 18.04 ± 3.90 | | | | |
|                      |            | Self-esteem | 18 ± 5.43 | | | | |
|                      |            | Depression | 11.92 ± 11.59 | | | | |
|                      |            | Anxiety | 9.36 ± 9.39 | | | | |
|                      |            | Stress | 13.90 ± 10.18 | | | | |
| Karami et al. [24]  | 2018       | NA | NA | NA | NA | | |
| Klein et al. [25]   | 2020       | Self-Compassion Scale | 3.45 ± 0.72 | | | | Hope and self-compassion together predicted physical and psychosocial QOL. Hope stood as the primary significant predictor of all three QOL scores. |
|                      |            | Adult Hope Scale | 53.3 ± 7.00 | | | | |
|                      |            | QoL | 75.92 ± 16.62 | | | | |
| Morrison et al. [26] | 2019 | Self-Compassion Scale | 3.29 ± 0.69 | | | | A negative correlation was found between levels of SCS and both depressive symptoms (PHQ-9) and diabetes distress (DDS-17). |
|                      |            | PHQ-9 | 5.4 ± 6.5 | | | | |
|                      |            | DDS-17 | 1.84 ± 0.90 | | | | |
| Study | Year | Measure | Mean ± SD | Findings |
|-------|------|---------|-----------|----------|
| Ferrari, Dal Cin, and Steele [27] | 2017 | Compassion Scale-Short-Form | NA | Self-compassion was correlated with higher well-being, lower HbA1c, higher self-management behaviors, and adherence to diet and exercise |
| Hurwit, Yun, and Ebbeck [28] | 2018 | Resilience | 3.60 ± 0.64 | Self-compassion had a significant positive relationship with HRQoL and resilience. A similar relationship was found between resilience and HRQoL |
| | | Self-Compassion Scale | 3.32 ± 0.76 | |
| | | Health-related QoL | 4.89 ± 1.24 | |
| Baillargeon et al. [29] | 2018 | Self-Compassion Scale | 2.81 ± 0.61 | Women’s higher self-compassion was associated with their own lower anxiety and depression. Self-compassion was not associated with their own sexual distress |
| | | Spielberger Trait Anxiety Scale | 43.92 ± 9.60 | |
| | | Beck Depression Inventory-II | 10.69 ± 6.25 | |
| | | Female Sexual Distress Scale | 33.48 ± 9.83 | |
| | | Self-Compassion Scale | 64.12 ± 19.48 (compassionate engagement and action) | |
| | | Experience of Shame Scale | 49.71 ± 20.68 | Self-compassion was not associated with adherence behavior, shame, or quality of life |
| | | Adherence to Medication and Refill Scale | 17.87 ± 5.67 | |
| | | QoL-HIV | 40.30 ± 22.63 | |
| | | Mindfulness questionnaire | 53.33 ± 4.69 | |
| | | Self-Compassion Scale | 71.48 ± 4.85 | |
| | | Numeric rating scale | 3.33 ± 1.75 | There was no relationship between self-compassion and pain |
| Vasigh et al. [31] | 2019 | Self-Compassion Scale | 19.37 ± 4.12 | There was a correlation between self-compassion and pain self-efficacy, pain disability, negative, and positive affect |
| | | Pain intensity | 65.95 ± 26.16 | |
| | | Positive and Negative Affect scale | Positive: 2.79 ± 0.89 | |
| | | | Negative: 1.75 ± 0.85 | |
| | | Pain Disability | 35.89 ± 11.41 | |
Zhu et al. [33] 2018

| Parameter                | Baseline | After |
|--------------------------|----------|-------|
| Self-Compassion Scale    | 78.57 ± 23.88 | 79.12 ± 20.81 |
| PHQ-9                    | 7.27 ± 5.74 | 8.11 ± 6.47 |
| Checklist Individual Strength | 14.44 ± 4.14 | 14.49 ± 3.89 |

Self compassion total score at T1 was negatively associated with symptoms of depression, anxiety, and fatigue at T2.

### TABLE 2: Effect of self-compassion on psychosocial outcomes

BC Major Depression Inventory: British Columbia Major Depression Inventory; PHQ: Patient Health Questionnaire; SCS: Self-Compassion Scale, DDS17: 17-item Diabetes Distress Scale; CD-RISC 10: 10-item Connor Davidson Resilience Scale; QoL: quality of life; MSC: mindful self-compassion

### TABLE 3: Effect of self-compassion on clinical outcomes

**Discussion**

This systematic review included 19 studies involving 2,713 patients suffering from a variety of medical illnesses. The psychosocial outcomes of self-compassion scores were low and correlated with other parameters such as depression, anxiety, stress, shame, resilience, and quality of life. Moreover, two studies demonstrated the positive impact of incorporating a self-compassion-based intervention in disease management.

In previous studies, higher levels of self-compassion have been linked to lower levels of stress, depression,
and anxiety [34,35]. For example, a group of healthy females was subjected to a high-stress task, and those who were trained in self-compassion were found to have lower sympathetic nervous system response compared to the placebo group [56]. Similarly, in another study that investigated the relationship between self-compassion and depression in a German cohort of 2,404 healthy individuals, Korner and colleagues used the PHQ-9 questionnaire to determine depression symptoms and demonstrated that increased depression correlated with lower SCS total scores and subscores [37]. After a logistic regression was performed and variables were adjusted, the model showed that 23% of the variance in depression symptoms was explained by SCS [37]. Therefore, self-compassion was shown to be a protective factor against depression [37]. Self-compassion has been demonstrated to have great implications on psychological well-being in chronic diseases given the contribution of psychological parameters in the exacerbation of diseases.

Another important role of self-compassion in medical disease management is related to the increase in health-promoting behaviors. Self-management behaviors have long been a central component of symptom management and improving disease trajectory and outcomes in chronic conditions [38]. The recent 2019 novel coronavirus pandemic has affected all spheres of health. Mental health has been no exception and resultant cognitive distress, anxiety, and fear of being out in public have been reported [39]. Self-compassion may prove to be quite an effective tool in managing these.

Previous studies have also demonstrated an association between self-compassion and self-management behaviors [3,4]. A meta-analysis by Sirois pooled 3,252 individuals across 15 studies and found that higher self-compassion was positively correlated to better engagement in health-promoting behaviors for chronic diseases [40]. These behaviors included better stress management, adherence to medication, lifestyle modifications, and improved sleep quality. This was consistent with data in our review, which demonstrated that in one of the two studies, self-management behaviors increased with increasing self-compassion.

Self-compassion-based training and interventions have been linked to better clinical outcomes in individuals experiencing medical illnesses. These interventions include compassion-focused therapy (CFT) and compassionate mind training (CMT) [41]. Previous studies have demonstrated success in these targeted interventions in providing acceptance and care for oneself by practicing health-promoting behaviors [42]. A review by Leaviss and Uttley, which included 14 studies, demonstrated that CFT is an effective intervention particularly in individuals prone to high self-criticism [43]. Although limited data exist in the role of self-compassion in improving clinical outcomes, there have been promising outcomes in the effect of self-compassion therapy in the improvement of treatment of medical conditions [44,45]. As shown by two studies in this review, self-compassion intervention compared to placebo can truly affect clinical outcomes in diabetes parameters such as HbA1c and blood glucose levels [22,24].

In this review, the studies examined the effect of self-compassion on clinical diabetic outcomes in the short-term, for a period of three months. There is a growing body of evidence that self-compassion interventions need to be provided through multiple sessions for at least 12 weeks to yield any differences in both psychosocial and clinical outcomes [46]. A study by Phillips and Hine underlined the importance of a multi-session self-compassion intervention to impact self-management behaviors, improve psychological outcomes, and enhance physical health [46]. Thus, combining a self-compassion intervention with multiple sessions for a duration of more than six months can enhance the magnitude of self-compassion in its influence on disease management of individuals with medical illnesses.

The introduction of self-compassionate intervention is only the start in this realm; however, the practice of self-compassion by healthcare workers is necessary to maximize the impact of such an intervention. Studies have demonstrated that workers in the healthcare industry can affect the behaviors of patients [47]. Therefore, it is crucial to foster a compassionate setting to promote better communication, understanding, and disease management in patients [48,49]. This ongoing training and support will cultivate an environment that will enhance the patients’ sense of self-efficacy and compassion toward themselves and thus improve their attitude towards engaging in health-promoting behaviors [50].

This study has several limitations. Firstly, the study only included publications in the English language. Secondly, there was significant variability in data presentation between studies. For example, the questionnaires used for each study varied. Moreover, even though the same self-compassion questionnaire was used, each study had calculated the scores differently by removing various items from the questionnaire. As such, this hindered our ability to conduct a meta-analysis and grasp the extent of the effects of self-compassion on psychosocial and clinical outcomes. Finally, only two of the included studies reported the role of self-compassion intervention on clinical outcomes, thus limiting our ability to identify whether using a self-compassion program can affect clinical outcomes and disease trajectory in medically ill individuals.

**Conclusions**

In conclusion, this systematic review highlights the role of self-compassion with respect to its correlation and effect on psychosocial outcomes. Moreover, albeit the small sample size, this study showed the significance of the integration of a self-compassion program in the management of medical illnesses. Therefore, there is a dire need for the use of self-compassion as a tool to tackle the treatment of
Further studies are needed to evaluate long-term outcomes of a self-compassion-based intervention to highlight its importance in the role of disease management.

## Appendices

### Search strategy employed in our review

| Step | Search String                                                                 | Results |
|------|-----------------------------------------------------------------------------|---------|
| S5   | S3 NOT (S4 OR TI child* OR TI youth OR TI adolesc* OR TI teen*)             | 472     |
|      | Expander - apply equivalent subjects; search modes - boolean/phrase          |         |
|      | Interface - EBSCOhost Research Databases; search screen - basic; search database - CINAHL with Full Text |         |
| S4   | (MH "Child+") NOT (MH "Adult+)")                                           | 503,536 |
|      | Expander - apply equivalent subjects; search modes - boolean/phrase          |         |
|      | Interface - EBSCOhost Research Databases; search screen - Basic Search Database - CINAHL with Full Text |         |
| S3   | S1 AND S2 AND (TI(regulat* OR self-compassion*) OR AB(regulat* OR self-compassion*) AND (therap* OR treat* OR heal OR healing OR health OR recover* OR restor* OR recuperat*)) | 570     |
|      | Limiters - English Language; publication type - journal article; expanders - apply equivalent subjects; search modes - boolean/phrase |         |
|      | Interface - EBSCOhost Research Databases; search screen - Basic Search Database - CINAHL with Full Text |         |
| S2   | (MH "Disease Management+" OR MH "Disease+" OR MH "Psychosocial Aspects of Illness+" OR MH "Severity of Illness" OR MH "Attitude to Illness+" OR disease* OR illness* OR chronic* OR disorder* OR patient OR patients OR condition OR conditions OR MH "Sexually Transmitted Diseases+" OR MH "Immunologic Diseases+" OR MH "Endocrine Diseases+" OR MH "Nutritional and Metabolic Diseases+" OR MH "Skin and Connective Tissue Diseases+" OR MH "Congenital, Hereditary, and Neonatal Diseases and Abnormalities+" OR MH "Hemic and Lymphatic Diseases+" OR MH "Cardiovascular Diseases+" OR MH "Female Urogenital Diseases and Pregnancy Complications+" OR MH "Male Urogenital Diseases+" OR MH "Eye Diseases+" OR MH "Nervous System Diseases+" OR MH "Otorhinolaryngologic Diseases+" OR MH "Respiratory Tract Diseases+" OR MH "Stomatognathic Diseases+" OR MH "Digestive System Diseases+" OR MH "Musculoskeletal Diseases+" OR MH "Neoplasms+" OR MH "Virus Diseases+" OR MH "Parasitic Diseases+" OR MH "Bacterial and Fungal Diseases+" OR MH "Symptoms and General Pathology+" ) | 4,324,677 |
|      | Expander - apply equivalent subjects; search modes - boolean/phrase          |         |
|      | Interface - EBSCOhost Research Databases; search screen - Basic Search Database - CINAHL with Full Text |         |
|      | Expander - apply                                                             |         |

2020 Misurya et al. Cureus 12(10): e10998. DOI 10.7759/cureus.10998
### TABLE 4: Search strategy used

CINAHL: Cumulative Index to Nursing and Allied Health Literature

| Criterion | Abdollahi, Taheri, and Allen | Ambridge, Pansing, Sherman, and Elder | Arambasic, Dovid and Jung | Edwards, Friis et al. | Fris et al. | Huyter and Dorsey | Karami et al. | Klein et al. | Morrison et al. | Ferranti, Cal, City, Streets | Hamid, Yun, and Elder | Hallegranse et al. | Skelton et al. | Vosburgh et al. | Wren et al. | Zhu et al. |
|-----------|-----------------------------|--------------------------------------|--------------------------|---------------------|------------|------------------|-------------|-------------|-----------------|-----------------------------|----------------------|----------------|----------------|-------------|---------|---------|
| 1. Was the research question or objective in this paper clearly stated? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 2. Was the study population clearly specified and defined? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 3. Was the participation rate of eligible persons at least 50%? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| 4. Were all the subjects selected or recruited from the same or similar populations (including the same time period)? | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
5. Was a sample size justification, power description, or variance and effect estimates provided?  
|   | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |
---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
6. For the analyses in this paper, were the exposure(s) of interest measured prior to the outcome(s) being measured?  
|   | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
7. Was the timeframe sufficient so that one could reasonably expect to see an association between exposure and outcome if it existed?  
|   | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA | NA |
---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
8. For exposures that can vary in amount or level, did the study examine different levels of the exposure as related to the outcome (e.g., categories of exposure, or exposure measured as continuous variable)?  
|   | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No | No |
---|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
9. Were the exposure measures (independent variables) clearly defined, valid, reliable, and implemented consistently across all study participants?  
|   | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Question                                                                 | 1  | 2  | 3  | 4  | 5  | 6  | 7  | 8  | 9  | 10 | 11 | 12 | 13 | 14 |
|-------------------------------------------------------------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| 12. Was the exposure(s) assessed more than once over time?              | No | No | No | No | Yes| No | Yes| No | Yes| No | No | Yes| No | Yes| No |
| 13. Were the outcome measures (dependent variables) clearly defined,    | Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes|
| valid, reliable, and implemented consistently across all study          |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| participants?                                                           |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| 14. Were key potential confounding variables measured and adjusted     | Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes| Yes|
| statistically for their impact on the relationship between exposure(s)  |    |    |    |    |    |    |    |    |    |    |    |    |    |    |
| and outcome(s)?                                                         |    |    |    |    |    |    |    |    |    |    |    |    |    |    |

**TABLE 5: NIH Quality Assessment Tool**

NIH: National Institutes of Health; NA: not applicable
Additional Information

Disclosures

Conflicts of interest: In compliance with the ICMJE uniform disclosure form, all authors declare the following: Payment/services info: All authors have declared that no financial support was received from any organization for the submitted work. Financial relationships: All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. Other relationships: All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

References

1. Hamilton NA, Karoly P, Kitzman H: Self-regulation and chronic pain: the role of emotion. Cognit Ther Res. 2004, 28:559-576. 10.1023/B:COTR.0000045565.88145.76
2. Rod NH, Grønbaek M, Schnohr P, Prescott E, Kristensen TS: Perceived stress as a risk factor for changes in health behaviour and cardiac risk profile: a longitudinal study. J Intern Med. 2009, 266:467-475. 10.1111/j.1365-2796.2009.02124.x
3. Sirois FM, Molnar DS, Hirsch JF: Self-compassion, stress, and coping in the context of chronic illness. Self Identity. 2014, 14:334-347. 10.1080/15298868.2014.96249
4. Rahimi-Ardabili H, Reynolds R, Vartanian LR, McLeod LV, Zwar N: A systematic review of the efficacy of interventions that aim to increase self-compassion on nutrition habits, eating behaviours, body weight and body image. Mindfulness. 2017, 9:1-13. 10.1007/s12671-017-0804-6

5. Baumsteiner RV, Zell AL, Tice DM: How emotions facilitate and impair self regulation. Handbook of Emotion Regulation. Gross J (ed): The Guilford Press, New York, NY, 2007. 1:408-426.

6. Neff KD: The development and validation of a scale to measure self-compassion. Self Identity. 2003, 2:223-250. 10.1080/1529866039027

7. Neff KD: The role of self-compassion in development: a healthier way to relate to oneself. Hum Dev. 2009, 52:211-214. 10.1159/000215071

8. Neff KD, Vonk R: Self-compassion versus global self-esteem: two different ways of relating to oneself. J Pers. 2009, 77:23-50. 10.1111/j.1467-6494.2008.00537.x

9. Neff KD: Self Compassion. Hodder & Stoughton, London, UK; 2015.

10. Macbeth A, Gumley A: Exploring compassion: a meta-analysis of the association between self-compassion and psychopathology. Clin Psychol Rev. 2012, 32:545-552. 10.1016/j.cpr.2012.06.003

11. Neff KD, McGhee P: Self-compassion and psychological resilience among adolescents and young adults. Self Identity. 2010, 9:225-240. 10.1080/1529866929759707

12. Neff KD, Kirkpatrick KL, Rude SS: Self-compassion and adaptive psychological functioning. J Res Pers. 2007, 41:159-154. 10.1016/j.jrp.2006.03.004

13. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). (2020). Accessed: August 15, 2020: http://www.prisma-statement.org.

14. NIH quality assessment tool for observational cohort and cross-sectional studies. (2020). Accessed: August 15, 2020: https://www.nhlbi.nih.gov/health-topics/study-quality-assessment-tools.

15. Abdollahi A, Taheri A, Allen KA: Self-compassion moderates the perceived stress and self-care behaviors in breast cancer patients. Psychooncology. 2020, 29:927-935. 10.1002/pon.5569

16. Ambridge J, Fleming P, Hershall L: The influence of self-compassion on perceived responsibility and shame following acquired brain injury. Brain Inj. 2020, 34:945-957. 10.1080/02699052.2020.1763466

17. Arambasij B, Sherman KA, Elder E: Breast Cancer Network Australia: Attachment styles, self-compassion, and psychological adjustment in long-term breast cancer survivors. Psychooncology. 2019, 28:1134-1141. 10.1002/pom.5068

18. Brown SL, Hughes M, Campbell S, Cherry MG: Could worry and rumination mediate relationships between self-compassion and psychological distress in breast cancer survivors?. Clin Psychol Psychother. 2020, 27:1-10. 10.1002/cpp.2599

19. Dowd AJ, Jung ME: Self-compassion directly and indirectly predicts dietary adherence and quality of life among adults with celiac disease. Appetite. 2017, 113:295-300. 10.1016/j.appet.2017.02.023

20. Edwards KA, Piekich M, Hickman J, Ashworth J, Dowden G, Gowles KE: The relation of self-compassion to functioning among adults with chronic pain. Eur J Pain. 2019, 23:1558-1547. 10.1016/j.ejpain.1429

21. Friis AM, Johnson MH, Cutfield RG, Conedine NS: Does kindness matter? Self-compassion buffers the negative impact of diabetes distress on HbA1c. Diabet Med. 2015, 32:1634-1640. 10.1111/dme.12774

22. Friis AM, Johnson MH, Cutfield RG, Conedine NS: Kindness matters: a randomized controlled trial of a mindful self-compassion intervention improves depression, distress, and HbA1c among patients with diabetes. Diabetes Care. 2016, 39:1963-1971. 10.2337/dc16-0416

23. Hayter MR, Dormont DD: Resilience, self-esteem and self-compassion in adults with spina bifida. Spinal Cord. 2014, 52:167-171. 10.1038/sc.2013.152

24. Karami J, Rezaei M, Karimi P, Rafiee Z: Effectiveness of self-compassion intervention training on glycemic control in patients with diabetes. J Kermanshah Univ Med Sci. 2018, 22:1. 10.5812/jkums.82828

25. Klein DE, Winterowd CL, Elifhrdt MD, Carter JC, Khan O, Meyers S: The relationship of self-compassion and hope with quality of life for individuals with bleeding disorders. Haemophilia. 2020, 26:4-6. 10.1111/hae.13959

26. Morrison AE, Zaccardi F, Chatterjee S, et al.: Self-compassion, metabolic control and health status in individuals with type 2 diabetes: a UK observational study (Epub ahead of print). Exp Clin Endocrinol Diabetes. 2019, 10.1055/a-0897-3772

27. Ferrari M, Dal Cin M, Steele M: Self-compassion is associated with optimum self-care behaviour, medical outcomes and psychological well-being in a cross-sectional sample of adults with diabetes. Diabet Med. 2017, 34:1546-1553. 10.1111/dme.13451

28. Nery-Hurwitz M, Yun J, Ebbek V: Examining the roles of self-compassion and resilience on health-related quality of life for individuals with Multiple Sclerosis. Disabil Health J. 2018, 11:256-261. 10.1016/j.dhjo.2017.01.010

29. Santerre-Baillargeon M, Rosen NO, Stehen M, Pâquet M, Macabena Perez R, Bergeron S: Does self-compassion benefit couples coping with vulvodynia? Associations with psychological, sexual, and relationship adjustment. Clin J Pain. 2018, 34:629-637. 10.1097/AJP.0000000000000579

30. Skelton WM, Cardaciotto L, O’Hayer CV, Goldbacher E: The role of self-compassion and shame in persons living with HIV/AIDS (Epub ahead of print). AIDS Care. 2020, 10.1080/09540121.2020.1768836

31. Vasiß A, Tarjoman A, Soltani B, Borji M: The relationship between mindfulness and self-compassion with perceived pain in migraine patients in Ilam, 2018. Arch Neurol. 2019, 6:2-4. 10.5812/ams.91623

32. Wren AA, Somers TJ, Wright MA, et al.: Self-compassion in patients with persistent musculoskeletal pain: relationship of self-compassion to adjustment to persistent pain. J Pain Symptom Manage. 2012, 43:759-770. 10.1016/j.jpainsymman.2011.04.014

33. Zhu L, Yao J, Wang J, et al.: The predictive role of self-compassion in cancer patients’ symptoms of depression, anxiety, and fatigue: a longitudinal study. Psychooncology. 2019, 28:1918-1925. 10.1002/pon.5174

34. Krieger T, Altenstein D, Baettig I, Doerig N, Holtforth MG: Self-compassion in depression: associations with depressive symptoms, rumination, and avoidance in depressed outpatients. Behav Ther. 2015, 44:501-513. 10.1016/j.beth.2015.04.004

35. Homan KI, Siros FM: Self-compassion and physical health: exploring the roles of perceived stress and
health-promoting behaviors. Health Psychol Open. 2017, 4:2055102917729542. 10.1177/2055102917729542
56. Arch JJ, Brown KW, Dean DJ, Landy LN, Brown KD, Laudaenslager ML: Self-compassion training modulates alpha-amylase, heart rate variability, and subjective responses to social evaluative threat in women. Psychoneuroendocrinology. 2014, 42:49-58. 10.1016/j.psyneuen.2015.12.018
57. Körner A, Coroiu A, Copeland L, Gomez-Garibello C, Albeni C, Zenger M, Brähler E: The role of self-compassion in buffering symptoms of depression in the general population. PLoS One. 2015, 10:e0156598. 10.1371/journal.pone.0156598
58. Grady PA, Gough LL: Self-management: a comprehensive approach to management of chronic conditions. Am J Public Health. 2014, 104:e25-31. 10.2105/AJPH.2014.302041
59. Shah K, Kamraii D, Mekala H, Mann B, Desai K, Patel RS: Focus on mental health during the coronavirus (COVID-19) pandemic: applying learnings from the past outbreaks. Curesus. 2020, 12:e7405. 10.7759/curesus.7405
60. Sirois FM: Procrastination and stress: exploring the role of self-compassion. Self Identity. 2014, 13:128-145. 10.1080/15298868.2013.763404
61. Genes on the Couch: Explorations in Evolutionary Psychotherapy. Gilbert P, Bailey KG (ed): Routledge, Abingdon, UK; 2014.
62. Kelly AC, Zuroff DC, Foa CL, Gilbert P: Who benefits from training in self-compassionate self-regulation? A study of smoking reduction. J Soc Clin Psychol. 2010, 29:727-755. 10.1521/jscp.2010.29.7.727
63. Leaviss J, Uttley L: Psychotherapeutic benefits of compassion-focused therapy: an early systematic review. Psychol Med. 2015, 45:927-945. 10.1017/S0033291714002141
64. Przezdziecki A, Sherman KA, Baillie A, Taylor A, Foley E, Stalgis-Bilinski K: My changed body: breast cancer, body image, distress and self-compassion. Psychooncology. 2015, 24:1872-1879. 10.1002/pon.3230
65. Pinto-Gouveia J, Duarte C, Matos M, Fragaas S: The protective role of self-compassion in relation to psychopathology symptoms and quality of life in chronic and in cancer patients. Clin Psychol Psychother. 2014, 21:311-325. 10.1002/cpp.1838
66. Phillips WJ, Hine DW: Self-compassion, physical health, and health behaviour: a meta-analysis (Epub ahead of print). Health Psychol Rev. 2019, 1-27. 10.1080/17437199.2019.1705872
67. de Zulueta PC: Developing compassionate leadership in health care: an integrative review. J Healthc Leadersh. 2015, 8:1-10. 10.2147/JHL.S95724
68. Crowther J, Wilson KC, Horton S, Lloyd-Williams M: Compassion in healthcare - lessons from a qualitative study of the end of life care of people with dementia. J R Soc Med. 2015, 106:492-497. 10.1177/0141076815505595
69. Frampton SB, Guastello S, Lepore M: Compassion as the foundation of patient-centered care: the importance of compassion in action. J Comp Eff Res. 2015, 2:443-455. 10.2217/cer.13.54
70. Anhang Price R, Elliott MN, Zaslavsky AM, et al.: Examining the role of patient experience surveys in measuring health care quality. Med Care Res Rev. 2014, 71:522-554. 10.1177/1077558714541480