Mindful Caring: A pilot study of an online mindfulness workshop for medical students to improve self-compassion

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Abstract

Background: This study examines the effectiveness of a pilot Mindful Caring workshop in improving self-compassion, mindfulness, and empathy, while reducing stress.

Methods: Year 3 and 4 medical students from the National University of Singapore underwent 16 hours of online workshops over 4 days with didactic and experiential learning activities on self-compassion and mindfulness. Primary outcomes of self-compassion were measured with the Self-Compassion Scale (SCS). Secondary outcomes include mindfulness measured with the Five Facet Mindfulness Questionnaire-15 (FFMQ-15), empathy and stress levels. Qualitative comments were also sought in the feedback.

Results: Out of 21 participants, 90.5% (n =19) completed both pre- and post-intervention questionnaires. Participants experienced significant mean improvements in self-compassion (p<0.05) and mindfulness (p<0.05), while improvements in empathy and stress levels did not reach statistical significance.

Conclusions: A short online Mindful Caring workshop could be an avenue to improve self-compassion and mindfulness, which may have a downstream effect on burnout.

Keywords

Self-compassion, Mindfulness, Medical education, Online interventions
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Background

Burnout: a pressing issue

Burnout is prevalent amongst physicians, contributing to distress and depression. It correlates with decreased job satisfaction, decreased patient quality of care, lower levels of empathy, and increased rate of medical errors (Shanafelt, 2009; Thomas et al., 2007). Immense stress level often prevents them from attending to their own wellness (Irving et al., 2009; Wallace & Lemaire, 2009), increasing potential psychological illness, anxiety, alcoholism and even suicidal ideation (Brown, 2008; Knight, 2011).

Compared to college graduates from other courses, medical students bear higher prevalence of burnout. Depressive symptoms, suicidal ideation, and a low sense of personal accomplishment are also more prevalent in medical students than doctors (Dyrbye et al., 2014). A meta-analysis including 129,123 medical students showed that the prevalence of depression and suicidal ideation was 27.2% and 11.1% respectively (Rotenstein et al., 2016). Young adults between 18 to 24 years old are also vulnerable to developing mental disorders such as major depressive disorder (Patten, 2000), anxiety disorders (Alonso et al., 2004) and psychiatric comorbidities (Wittchen et al., 1998).

Sources of anxiety include both academic stressors and personal stressors, such as dealing with immense workloads, impractical expectations, lack of self-belief, intense competition, and time management (Cherkil et al., 2013; Nandi et al., 2012; O’Reilly et al., 2014). These stressors are counterproductive to academic progress, with those experiencing higher levels of distress performing poorly and dropping out of medical school (Dyrbye & Shanafelt, 2011).

Self-compassion protects against burnout

In recent years, interest in self-compassion has risen as it has become identified as a means of resiliency against burnout, compassion fatigue, work exhaustion, and higher levels of job satisfaction amongst physicians (Babenko et al., 2019; Duarte et al., 2016; Durkin et al., 2016).

Self-compassion comprises three key components:Self-kindness as opposed to self-judgement, common humanity as opposed to isolation, and mindfulness as opposed to over-identification (Neff, 2004). **Self-kindness** is the ability to be kind and understanding to oneself rather than being critical and judgemental. **Common humanity** is the recognition that our experiences are a part of the larger human experience—no one is perfect, and everyone will face challenges in this life.

Mindfulness, in the context of self-compassion, is the ability to be aware of one’s negative thoughts and feelings arising in situations of difficulty. A clinician who responds with ‘empathetic distress’ by identifying with suffering of the patient leads to distress burnout (Klimecki & Singer, 2012). The development of self-compassion is thus thought to increase healthcare professionals’ understanding of suffering and common humanity, guiding their actions to meet patients’ needs and improve patient outcomes (Reyes, 2012).

There is a developing base of evidence that contemplative practices such as mindfulness-based interventions and loving-kindness meditation can cultivate self-compassion (Boellinghaus et al., 2014). The synergistic effect between self-compassion and mindfulness can be explained as mindfulness enabled increased clarity for the development of self-compassion, while self-compassion reduces attention-interfering cognitions such as rumination, thus enhancing the development of mindfulness (Keng et al., 2012).

Mindfulness: attempting to improve self-compassion

In the past three decades, Mindfulness-Based Interventions (MBIs) have become popular therapeutic interventions for common psychological problems such as stress, anxiety, and depression (Keng et al., 2011). Mindfulness is the awareness that arises from paying attention, on purpose, in the present moment and non-judgmentally with the aim of cultivating a stable and non-reactive present-moment awareness (Segal et al., 2013), allowing mindfulness to alleviate intense emotional states (Keng et al., 2011).

A study demonstrated that a Mindfulness-based cognitive therapy (MBCT) course helped general practitioners reduce burnout, perceived stress, manage work pressures, feel more relaxed, and experience greater empathy and compassion for themselves, their colleagues, and their patients (Hamilton-West et al., 2018).

Mindfulness interventions have proven to improve self-compassion (Boellinghaus et al., 2014), and are readily implementable and scalable as an educational intervention in the undergraduate setting (MacLean et al., 2020).

The effects of COVID-19 as altering factors

Mental health has also taken a sharp downturn through the COVID-19 pandemic especially amongst healthcare professionals (Xiong et al., 2020). A considerable proportion of healthcare professionals experience mood and sleep disturbances, which only increases the urgency and importance of finding solutions to the mental health crisis (Pappa et al., 2020).

To reduce physical interaction and adhere to safe distancing measures, a plethora of online tools have been used for education, business continuity, or fellowship. We decided to investigate these platforms to bring mindfulness and self-compassion to medical students. An online intervention allows for increased ease of access and a lower entry barrier for participation. A recent search of the literature showed most online mindfulness interventions were asynchronous, pre-recorded, and took many weeks. A short webinar style intervention,
which could be easily integrated into a busy curriculum, has not
been tested.

One study provided three guided meditation audio clips over
three weeks, with instructions to perform the exercises on
at least three different days each week, to undergraduate stu-
dents and were shown to reduce stress and aid coping (Messer
et al., 2016). Another study provided university students with
an online platform with texts, videos, and guided mindfulness
meditations for two weeks, and showed an increase in
mindfulness, with a reduction in perceived stress, symptoms
of anxiety, and depression (Cavanagh et al., 2013). The few
online MBIs that run a full MBSR programme do so over an
extended duration of more than a month (Wolever et al., 2012;
Zernicke et al., 2014).

What is missing from the literature is a full mindfulness
programme compressed to a shorter duration and provided
through an online webinar with bidirectional interaction in real
time.

Description of the Programme
As the first part of a two-week long elective entitled “Mind-
ful Caring Workshop—Caring for Ourselves and Our Patients”,
the Mindful Caring workshop occurred before the second week
programme which covered medical humanities and which will
not be discussed in this paper. This elective was planned for
clinical year students at Yong Loo Lin School of Medicine,
National University of Singapore (NUS Medicine), a five-
year undergraduate medicine programme (Samarasekera et al.,
2015).

Mindful Caring was a 16-hour workshop over four-days
designed to foster mindfulness and self-compassion (Table 1)
among learners. Didactic sessions included topics such as under-
standing stress physiology, unhelpful thinking patterns, and

<table>
<thead>
<tr>
<th>Topic</th>
<th>Session</th>
<th>Method</th>
<th>Components</th>
</tr>
</thead>
</table>
| Mindfulness     | 1       | Didactic| • Stress physiology and the impact of chronic stress
                   |         | • The cognitive model
                   |         | • Mental distractions and emotional states
                   |         | • Mindfulness of the body
                   |         | • The three emotional regulation systems |
|                 |         | Experiential | • Informal mindfulness: raisin exercise
                   |         | • Mindful movement
                   |         | • Pleasant events calendar
                   |         | • Mindfulness of body and breath
                   |         | • Mindfulness of routine activity |
|                 | 2       | Didactic| • Managing mental states
                   |         | • Understanding unhelpful thinking patterns
                   |         | • Renewing energy for work
                   |         | • Understanding the exhaustion funnel |
|                 |         | Experiential | • Mindful responses to negative thinking
                   |         | • Mindfulness of a home or work situation
                   |         | • Stress signature and wise action plan |
| Self-compassion | 3       | Didactic| • Introduction to self-compassion
                   |         | • Dispelling misgivings about self-compassion |
|                 |         | Experiential | • Supportive touch
                   |         | • Self-compassion break
                   |         | • 3-centre check-in
                   |         | • STOP practice
                   |         | • Soles of the Feet |
|                 | 4       | Didactic| • Motivating self with compassion instead of criticism
                   |         | • Self-Compassion and Resilience
                   |         | • Self-compassion and burnout
                   |         | • Compassion with equanimity |
|                 |         | Experiential | • Working with difficult emotions (soften-soothe-allow)
                   |         | • Core intentions and Values for health professionals |
how to motivate the self with compassion instead of criticism. Experiential activities included the mindfulness of body and breath, the raisin exercise, and the self-compassion break.

The main facilitator (VL) was a Mindfulness-Based Cognitive Therapy (MBCT)-trained instructor who was undergoing further mindfulness training at the time of the elective, who was supported by a co-facilitator (LC) attuned to the effects of burnout among health-workers at the palliative care setting. Learners were Year 3 (M3) and 4 (M4) students who responded to the invitation to attend the workshop.

As the COVID-19 pandemic unravelled from Feb 2020, the original in-person didactic sessions had to be conducted via livestream, and experiential hospice fieldwork sessions planned prior to the COVID-19 pandemic had to be omitted. Separate teaching workshops were offered for M3 (April 2020) and M4 (May 2020) students.

The workshop was livestreamed over Zoom, a video-conferencing software as a real time seminar. Several tutors (AT, AL, MSC, VLWK) who were active in medical training participated in the programme to provide a rich learning platform for the students to learn from experienced clinicians.

The programme is divided into two complementary sections derived from the Mindful Self-Care programme (MSCP) (Kenny, 2016) and the Self-Compassion Training for Healthcare Communities (SCHC) programme (Neff et al., 2020). Eight hours each were dedicated towards covering mindfulness and self-compassion respectively.

**Research question**
Given the constraints of the busy medical curriculum, we were interested in how the week-long Mindful Caring workshop would improve the primary outcome of self-compassion (Self-Compassion Scale) among medical students. Secondary outcomes of this study include mindfulness (Five Facet Mindfulness Questionnaire-15), empathy (Toronto Empathy Questionnaire), and its possible effect on stress reduction (Perceived Stress Scale).

**Methods**
**Intervention design**
A single arm pre-post interventional design was adopted for the purpose of pilot programme evaluation.

**Study population**
M3 and M4 students enrolled in NUS Medicine in AY2019/2020 were recruited via email invitation sent to all M3 and 4 students (total 600 students) as an option for their electives. Students who signed up for the Mindful Caring workshop were eligible to be participants in the study as part of programme evaluation. In total, 21 students participated in the Mindful Caring workshop, of which 90.5% (n=19) completed both pre- and post-course surveys (Figure 1). Only the completed responses were included in the analysis.

**Data collection**
Participants were sent a link to the pre- and post- semi-quantitative survey with 70 questions and space for qualitative response (Tan (2021)). The survey was hosted on Google Forms. Participants were given identification codes generated by a research assistant who was not involved with the intervention or data analysis.

The demographic data collected included gender and year of study. A Self-Compassion Scale was used to assess self-compassion (Neff et al., 2017). It comprises 26 items categorised into 6 subscales (self-kindness, self-judgment, common humanity, isolation, mindfulness, and over-identification). Subscales are calculated first, with reverse scoring for the negative subscales, and finally a total score is created from the mean.

A Five Facet Mindfulness Questionnaire-15 was used to assess mindfulness (Baer et al., 2008). It comprises 15 items organised into 5 subscales (observing, describing, acting with awareness, non-judging, non-reactivity). Responses are provided on a five-point Likert scale. Subscales are calculated first, with reverse scoring for certain questions, and a total score is created from the summation of subscale scores.

A Perceived Stress Scale was used to assess perceived stress levels (Cohen et al., 1983). It comprises 10 items scored on a 5-point scale with scores from 0 to 4. Certain questions require reverse scoring, and a total score is created from summation of all scores. A score from 0–13 indicates low stress, 14–26 indicates moderate stress, and 27–40 indicates high perceived stress.

The Toronto Empathy Questionnaire was used to assess empathy levels (Spreng et al., 2009). It comprises 16 items scored on a 5-point scale with scores from 0 to 4. Negatively worded questions are reverse scored, and a total score is created from the summation of all scores. Participants were also given two open-ended questions regarding their stressors and stress management techniques: 1) Tell us about your stressors. 2) Tell us about how you cope. Open-ended feedback for the programme was also collected.

**Analysis**
Quantitative analysis was performed using R commander. A paired t-test was used for comparison between the mean pre- and post-intervention scores of the participants for the validated tools.

![Figure 1. Timeline of the programme.](image)
Qualitative content analysis was conducted through open coding on Microsoft Excel by DH and CT, where narratives relating to stress, coping mechanisms, and the effects of the Mindful Caring workshop were identified. Categories of codes were created, and emergent common themes were obtained. Only data from complete responses were analysed.

Ethics and consent
Ethical approval for this study was granted by the National University of Singapore Institutional Review Board (NUS-IRB reference code: S-20-147). The study was exempt from full review and the requirement for documented participant consent.

Students and clinical tutors who participated in each workshop were informed that the teaching workshops would be recorded on the Zoom recording platform for the purpose of teaching evaluation within the university. Verbal consent for recording was obtained at the beginning of each workshop.

Results
Participant Demographics
21 students comprising fourteen M3 students (13–16 April 2020) and seven M4 students (12–15 May 2020) attended the mindful caring workshop. Of the 90.5% (n = 19) who completed both the pre-course and post-course questionnaire, the age ranged from 21- to 24-years-old (Table 2). The full raw dataset can be found in the Underlying data (Tan (2021)).

<table>
<thead>
<tr>
<th>Gender</th>
<th>Year of Study</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>M3</td>
</tr>
<tr>
<td>Male</td>
<td>5 (26.3%)</td>
</tr>
<tr>
<td>Female</td>
<td>6 (31.6%)</td>
</tr>
<tr>
<td>Total</td>
<td>11 (57.9%)</td>
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| Table 2. Characteristics of study participants. |

Self-compassion
Participants reported an improvement in self-compassion, with the pre-workshop mean score of 2.77 rising to the post-workshop mean score of 3.4 (Figure 2).

All components of the self-compassion scale, including the reverse scored scales (self-judgment, isolation, over-identification) saw statistically significant increases, with the sole exception of the common humanity component (Figure 3).

Mindfulness
The baseline mean FFMQ-15 total mindfulness score of participants was 45.89. The mean FFMQ-15 total mindfulness score post-workshop rose to 50.58. The T-test indicated that students significantly improved their mindfulness after participating in the workshop, p<0.05 (Figure 3).

While positive increases throughout scores of 5 components making up the FFMQ-15 (observing, describing, acting with awareness, non-judging, and non-reactivity) were seen, only the observing component reached statistical significance, with the mean pre-workshop score being 9.79, and the mean post-workshop score being 11.42, p<0.05) (Figure 4).

Perceived stress levels
Perceived stress fell from 19.3 (5.84) to 17.9 (5.86) with a p-value of 0.48 (Figure 5).

Empathy
Empathy saw a positive increase from 48.7 (6.22) to 50.4 (5.93) with a p-value of 0.40 (Figure 6).

Qualitative outcomes
Learner experience. When it came to stress, the vast majority of participants quoted academic concerns as one of the main contributors of stress. One participant wrote, “lacking confidence in my skillsets/application of knowledge, concerns about

Figure 2. Pre-intervention and post-intervention mean scores for Self-Compassion Scale total score and subscales.
being behind compared to my peers.” Managing personal expectations, and juggling social relationships were the next two most pressing stressors, followed by extracurricular commitments.

A majority of participants reported that they benefitted from this short programme, with many stating that they found it applicable in their daily life. They described being “more aware of how I respond to my own misgivings in life and in career” and how learning self-compassion was “the right step forward in order to provide better healthcare for everyone else”.

**Future programme design.** A common theme was the utility of having a mix of theoretical knowledge and hands-on experiences. Five participants found that the hand-on experience was important, and one shared that having “opportunities to practise the skills being taught, rather than just receiving a didactive lecture on the practises” were useful, while three participants expressed the utility of understanding the theoretical basis, with one participant sharing that it allowed them to “understand [the] validity of claims” being made.

Another common theme expressed by seven participants was the appreciation of breakout sessions in small groups. One participant shared that they were “more comfortable sharing with their peers in a more private setting”, and that it was easier to “open the floor to personal opinions”.

Two participants felt that one barrier to experiencing the full impact of the workshop was it being conducted on a virtual platform, which according to one participant “diminished it’s...
impact”, and would have preferred physical interaction and learning in person.

**Discussion**

Our results demonstrate that the Mindful Caring workshop was able to effect improvements in participants’ self-compassion and mindfulness. The improvements in self-compassion were seen in five out of six components, while improvements in mindfulness were only seen in one out of five components. This highlights that the Mindful Caring workshop primarily exerts its effect on self-compassion, with mindfulness being secondary.

Self-compassion scores were significantly impacted through the short four-day course of psychoeducation introducing self-compassion concepts and practices. This may suggest that self-compassion is an innate quality that can be uncovered through good didactic teaching and appropriate group experiences.

However, to effect significant changes in mindfulness, especially components of describing, acting with awareness, non-judging, non-reactivity, would require more time to change the habituated neural pathways of how the mind works. Mindfulness, thus, may be more effectively implemented through a longer course format such as the eight-week MBSR or MBCT programme, or a six-week program which the MSCP was originally designed for.

The drop in perceived stress levels may be due in part to students feeling less pressured while attending ungraded electives online during the COVID-19 pandemic. Perceived stress levels may increase during clinical rotations when the academic year resumes.

We observed high levels of empathy amongst participants, which did not change significantly during this short programme. Given that medical students experience a well-documented decline in empathy over the course of their clinical training (Neumann et al., 2011), a longitudinal follow-up will be helpful to ascertain if this programme helps mitigate decline in empathy levels for participants.

**Limitations and future directions**

This study was a single arm study with no comparator, and participants self-selected to participate in the intervention as part of an elective programme. As a pilot study, our primary aim was to evaluate the impact of the Mindful Caring workshop on students before and after the intervention, thus a control group was not surveyed. The lack of a control group prevented us from understanding whether the positive changes observed in the Mindful Caring workshop were solely due to the programme intervention.

This was a modest pilot study with just 21 self-selected students, a quantum not not statistically powered to observe the true efficacy of the programme. However, the results and positive feedback from the students were promising, and future interventions should have a larger study population, the presence of a control arm, and long-term follow up measures, will clarify the true efficacy of a short online mindfulness and self-compassion programme for medical students’ well-being. It would also be interesting to study the effects of the life-streamed compared to in-person training format on learning.

Mindful Caring shows promise as a feasible, scaleable intervention that enables medical students to become more compassionate to themselves, stave off burnout, and to potentially empathise better with patients. Further interventions could be to study its effects on pre-clinical students and students from other healthcare professions. A larger clinical trial will be necessary to determine the full effectiveness of this programme, and the persistence of the changes observed.

The current COVID-19 pandemic has shown us how important it is to be aware of our stressors and to find ways to mitigate them. The cultivation of self-compassion and mindfulness in the context of a short online workshop has the potential to prevent stress in medical students from building up into psychological distress over time. This pre-emptively deals with the problem of burnout which can increase during one’s medical training and early medical career (Frajerman et al., 2019; Rodrigues et al., 2018).

**Data availability**

Underlying data

This project contains the following underlying data:

- Raw Data.xlsx (Pre-course and post-course questionnaire results from Mindful Caring workshop participants)
Extended data

This project contains the following extended data:

- Pre & Post-Course Questionnaire.pdf
- Programme Timeline.JPG
- Curriculum.docx
- Results Tabled.docx

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