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Single Case Evaluation of a Mindfulness-based Mobile Application with A Substance Abuse Counselor

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Abstract

We implemented an exploratory A-B single case research design with a phenomenological lens to analyze journal entries to assess the effectiveness of a 12-week mindfulness-based mobile intervention to reduce burnout and increase mindfulness and self-compassion. Our participant was one 55-year-old White woman employed as a substance abuse counselor at a medium sized treatment facility in a midwestern state. We collected three weeks of baseline data followed by a 12-week intervention using the Calm © app and collected self-reported scores on the Copenhagen Burnout Inventory, Freiburg Mindfulness Inventory, and the Self-Compassion Scale across baseline and intervention phases. Data analyses using the Percentage of Data Exceeding the Median provide preliminary evidence that using the Calm © app across 12 weeks may decrease levels of burnout and increase levels of mindfulness but provided no evidence for increased self-compassion. We provide suggestions for substance abuse counselors and discuss the limitations and future research recommendations.

Keywords

mindfulness, burnout, self-compassion, mobile application, single case research design

Substance abuse counselors (SACs) are at a higher risk of experiencing burnout than other human services professionals (Baldwin-White, 2016) due to various work-site factors such as larger caseloads (Broome, Knight, Edwards & Flynn, 2009), clients' resistance, and a high prevalence of clients in relapse (Baldwin-White, 2016). SACs also interact with clients who may require more intensive interventions as they deal with ambivalence, interpersonal conflict, frustration, and mood fluctuation which may be more demanding than the general client population (Baldwin-White, 2016; Maslin, McGovern, Mueser, & Orford, 2001). Raab (2014) suggested one way to mitigate burnout symptoms and effects is through self-compassion practices. Self-compassion, characterized by mindfulness and kindness toward self when faced with suffering, is proposed as a protective factor for helping professionals' overall quality of life (Sirois, Bögels, & Emerson, 2018). However, there is limited research that explicitly examined self-compassion among helping professionals (Lianekhammy et al., 2018; Lloyd, Muers, Patterson, & Marczak, 2018). Hildebrandt, McCall and Singer (2017) suggested that it is important to consider the length of time one practices mindfulness when assessing the effectiveness of mindfulness practices. In addition, Neff and Dahm (2014) cautioned that mindfulness and self-compassion do not always manifest at the same time, therefore, one may be mindfully aware of the thoughts and feelings associated with burnout without engaging in self-soothing behaviors.

Kabat-Zinn (1994) described mindfulness practice as the intentional cultivation of awareness and consciousness of one's present-moment experiences and acceptance of the moment without judgment. Mindfulness practices can reduce stress, depression and anxiety, and increase levels of patience, intentionality, gratitude, and non-judgmental attention to thoughts (Bostock, Crosswell, Prather, & Steptoe, 2018; McGarrigle & Walsh, 2011). Mindfulness practice may also create a sense of grounding, relaxation, acceptance of negative self-perceptions and appreciation of life experiences. These findings align with the notion that mindfulness can serve as a safeguard against burnout amongst counselors (Testa & Sangganjanavich, 2016), improve the client-counselor relationship (Schomaker & Ricard, 2016), and increase interpersonal connections at work (Bostock et al., 2018). Researchers (Harker, Pidgeon, Klaassen & King, 2016; Schutte & Malouff, 2011) found that higher levels of mindfulness were a significant predictor of decreased burnout among counseling professionals. Mindfulness practices also act as a protective factor against burnout as it fosters the ability to accept negative emotions and increase awareness of emotions and suffering (Christopher & Maris, 2010).

One intervention or training tool that may increase or introduce these benefits of mindfulness is the use of a mindfulness based mobile application. Mobile application-based interventions are becoming popular given the benefit of standardized instructions, flexibility for participants to control when and how they use the intervention, and provides objective measures of adherence (using data collection from the app) as opposed to self-report (Bostock et al., 2018). However, there is limited research exploring the efficacy of mindfulness based mobile applications (Huberty, Green, Glissmann, Larkey, Puzia, & Lee, 2019). Although researchers express the importance of evaluating the efficacy of mindfulness based interventions for burnout (Luken & Sammons, 2016), investigating the magnitude of change in self-care based on mindfulness practices (Christopher & Maris, 2010), and understanding factors that contribute to mindfulness and self-compassion (Evans, Wyka, Thorpe Blaha, & Allen, 2018; Huberty et al., 2019), there is dearth literature on the role of mindfulness and efficacy of mindfulness based interventions especially among substance abuse counselors (Vilardaga et al., 2011)

Purpose of Study

The purpose of this exploratory study was to evaluate the efficacy of a mobile application (MA) as a mindfulness-based intervention, for promoting desired change across perceived levels of burnout, mindfulness, and self-compassion. These variables were selected due to the high prevalence of burnout among substance abuse counselors and the limited research on self-compassion and mindfulness with substance abuse counselors. We were guided by three research questions: (a) How effective is the MA for promoting desired treatment effect for one substance abuse counselor's levels of burnout, mindfulness, and self-compassion? (b) How many sessions of the MA are required for self-reported decreased levels of burnout, and increased levels of mindfulness and self-compassion? (c) What is the experience of the substance abuse counselor while using the MA?

Method

We implemented an A-B single case research design (SCRD) and used a phenomenological lens to analyze the weekly journal entries. We evaluated the efficacy of a 12-week mindfulness-based intervention (MA) to reduce levels of burnout and increase levels of mindfulness and self-compassion. We selected this design based on the desire to understand the degree of change and response characteristics while using the MA over time and the ability to use a small sample size (Kazdin, 2011). We collected journal and interview data throughout the study to support understanding the lived experience receiving the MA that may not be captured through the measurements. We selected this phenomenological lens to gain a deeper understanding of how the participant created meaning throughout the experience of using the MA.

Measurement of Constructs

Self-Compassion.

The Self-Compassion Scale (SCS; Neff, 2003) is a 26-item self-report measure of self-compassion that yields six subscales: *Self-Kindness*, *Self-Judgment*, *Common Humanity*, *Isolation*, *Mindfulness*, and *Over-Identification*. The SCS utilizes a 5-point Likert scale (1=almost never, 5=almost always). Neff reported scores on the SCS as being in good range of internal consistency for the Self-Kindness (0.78), Self-Judgment (0.77), Common Humanity (0.80), Isolation (0.79), Mindfulness (0.75), and Over-Identification (0.81) subscales. Neff reported the six-factor model of the SCS to have internal consistency of .92.

Mindfulness.

The Freiburg Mindfulness Inventory (FMI; Walach, Buchheld, Buttenmuller, Kleinknecht, & Schmidt, 2006) was developed to measure the frequency of practicing mindfulness. The FMI is a 14-item, self-report measure that uses a four-point Likert scale (1 = rarely, 4 = almost always) to assess one's frequency of using mindfulness skills. Higher scores on the assessment indicate frequent use of mindfulness while lower scores suggest infrequent use. Familiarity with mindfulness terminology is not necessary to understand and respond to the items. The FMI demonstrated good internal consistency ($\alpha = .86$).

Burnout.

The Copenhagen Burnout Inventory (CBI; Kristensen, Borritz, Villadsen, & Christensen, 2005) was developed based on responses from a study of employees working in the human service sector to measure burnout related to one's occupation. The CBI is a 19-item, self-report measure that uses one of two Likert scales depending on the question (Always, Often, Sometimes, Seldom, Never/Almost never and To a very high degree, To a high degree, Somewhat, To a low degree, To a very low degree) and measures burnout across three subscales: *Personal*, *Work-related*, and *Client-related*. The CBI scales have high internal reliability ranging from .85 to .87.

Journal Prompts.

The journal prompts used during the intervention phase were as follows: (a) what was your experience with challenging clients this week, if any, (b) in what ways did this client challenge affect you? (c) what was your experience with mindfulness this week? (d) how long was the mindfulness activity? (e) describe your experience before and after using the mindfulness app, (f) describe your experience with self-compassion this week, and (g) anything else that we should know about your experiences in the past week.

Interview Protocol.

Our interview protocol consisted of questions designed to gather additional qualitative data about the participant's use of the MA and quality of life after completing the study. The interview lasted one hour and consisted of the following questions: (a) describe your experience since completing the study? (b) what is your experience of practicing mindfulness since completing the study? (c) in what ways, if any, have you noticed changes in your levels of stress and self-compassion? (d) is there anything else you want me to know about your experience?

Procedures

The first author contacted all residential and outpatient counselors ($N = 9$) employed at a medium sized treatment facility (TF) in a midwestern state after receiving approval from the Institutional Review Board. Counseling staff at the TF serve clients with substance use and mental health diagnoses with treatment modalities including individual and group therapy, psychoeducation, and family therapy. Each counselor received a recruitment request via their work email which included information about the nature of the study, the screening process, and compensation for participation (\$25 for completing all baseline data; \$30 for completing all intervention data; \$35 for completing a one-month follow-up interview).

Six counselors completed the screening for a response rate of (67%). We reviewed counselors' scores on the CBI to determine whether they met criteria for burnout. We determined that three (3) counselors met criteria to be included in the study based on their CBI scores of 45 (P1), 44 (P2), and 45 (P3). The participants were screened (yes/no) to indicate whether they had prior knowledge or experience with mindfulness or self-compassion. We did this to determine whether we had to provide psychoeducation on mindfulness prior to the study. All potential participants ($n=3$) indicated familiarity and experience with mindfulness and self-compassion. All counselors who met criteria for inclusion ($n=3$) received an email with the baseline assessments and one counselor (P1) completed all requirements. We also conducted a phone interview one month after completing the study to learn more about the experience with the MA and quality of life since completing the study.

Participant

Quiche was a 55-year-old who identified as a single, unmarried, White woman in recovery with no children and employed full time at the TF as a substance abuse counselor and licensed in her state as a Substance Abuse Counselor-In Training (SAC-IT). She coordinated residential and day treatment admissions, facilitated groups in residential and outpatient, planned, implemented and evaluated Victim Impact Panel, and conducted recovery coaching and community engagement. *Quiche's* clients were primarily women between 20-50 years old and presented with issues related to drug/alcohol use disorders and co-occurring depression and anxiety. *Quiche* self-reported increased anxiety, unhealthy eating habits, inattention to her self-care, low energy in her personal life and at work, and reported difficulty focusing at work. She reported being familiar with mindfulness and self-compassion and stated she engages in these practices daily. *Quiche* was enthusiastic, open to the research experience throughout the study, compliant with weekly assessments, and reported consistent utilization of the MA.

Intervention – The Calm © App

Calm© is a user-friendly and accessible application that is adaptable across smartphone, computer, and tablet devices and a leading app for mindfulness and sleep at the time of this study. Calm provides meditations that target novice and experienced users of all ages and vary in length from 3-30 minutes. Meditations are grouped into one of six categories: body (mindful movement and gentle stretching), scenes (nature scenes and sounds), meditate, sleep (restful sleep, and wake up feeling refreshed), music (focus, relax, sleep), and masterclass (audio programs taught by world renowned mindfulness experts). Among these six categories are ten sub-categories: sleep, anxiety, beginners, stress, self-care, inner peace, focus, emotions, less guidance, relationships, and personal growth.

Data Collection

We collected baseline phase data for three consecutive weeks followed by an intervention phase across 12 consecutive weeks. The baseline data consisted of weekly self-reported scores on the CBI, FMI, and SCS across three weeks, documented in the Qualtrics survey program. Baseline scores functioned as a pre-intervention measure of *Quiche's* burnout, mindfulness, and self-compassion behaviors as she engaged with her clients and workplace environment. *Quiche* received weekly scheduled reminder emails from the first author about completing the assessments for each week to increase the likelihood that we would obtain data during the baseline phase. *Quiche* was only informed that she will be using a mindfulness-based intervention when prompted, without describing or identifying the app. We did this to reduce the risk of any exposure to the MA prior to treatment

Quiche received compensation once she completed all baseline assessments and was notified via email to begin the intervention. We provided Quiche with a code for a prepaid subscription for the MA which provided access to all available mindfulness and meditation sessions. The only instruction Quiche received was to use the MA as often as she deemed necessary each week. Quiche was not given a specific length of time to use the MA and was not given any direction or prompt about using the app for any particular purpose. Quiche received weekly reminder emails to complete the CBI, FMI, and the SCS during the intervention and completed journal entries in Qualtrics. Weekly emails did not include a reminder about using the MA. In the journal, Quiche documented using mindfulness and meditation sessions, for between 10 to 30 minutes each time. The reported meditations targeted sleep, anxiety, happiness, and self-esteem. Quiche also used the daily meditations that automatically appear on the MA home screen.

Data Analyses

Quiche's ratings on the CBI, FMI, and SCS during the baseline and intervention phases were transferred from Qualtrics into a Microsoft Excel file to generate graphical representations of the data for visual analyses. The CBI, FMI, and SCS scores were situated on the vertical axis and phases (i.e., baseline and intervention) on the horizontal axis. We analyzed our data based on the characteristics of the baseline scores and the nature of our research questions. We utilized visual analysis to determine the efficacy of the intervention and the course of response to the intervention over time by inspecting changes in variability, trend, and level across the intervention phases (Lenz & Callender, 2018). Changes in variability were evaluated based on the range of scores within and between the baseline and intervention phases. The trend was evaluated by identifying data patterns in the baseline and intervention phases and using the split-middle line of progress. To determine the degree of change in the level, we compared the means for baseline and intervention phases. We also provided estimation of treatment effect using the Percentage of Data Exceeding the Median (PEM; Ma, 2006) procedure to analyze scores for burnout, mindfulness, and self-compassion in the intervention phase. Two of the three baseline data sets (burnout and mindfulness) had an outlier score, therefore, we chose to use the PEM as it accounts for outlier data points which can influence the interpretation of the intervention data (Lenz, 2013;). To calculate the PEM, we identified the intended direction of change for each variable, then identified the median point in the baseline phase. Next, we started at the median score in the baseline and used a straightedge to draw a line through the data across the baseline and intervention phase (12). Then, we counted the number of data points in the intervention phase that were in the desired direction of the intervention data (decreased burnout and increased mindfulness and self-compassion) and divided that number by the number of points in the intervention phase. We referred to Scuggs and Mastropieri (1998) to determine whether our intervention was very effective (> 90%), moderately effective (70% - 89%), possibly effective (50% - 69%), or not effective (< 50%).

We utilized a phenomenological lens to analyze the weekly journal entries and the interview transcription. We coded meaningful statements and reviewed the data independently and collectively to identify important themes and reflect on the meaning associated with Quiche's lived experiences of receiving the MA (Moustakas, 1994). We interpreted qualitative data in reference to our quantitative data associated with each outcome variable.

Results

Scores for burnout (CBI), mindfulness (FMI), and self-compassion (SCS) are represented in Figure 1.

Burnout

The baseline data revealed a mean of 45 on the CBI across 3 weeks of measurement. By contrast, the intervention data revealed a mean of 38 on the CBI across 12 weeks. The trend of the data indicated a slight downward slope for ratings on the CBI in the baseline, followed by a reduction and continued trend toward desired effect (decreased scores) once the MA was implemented. Evaluation of variability of data between the phases revealed a 17-point range of scores during the baseline as opposed to a 30-point degree of variation during the intervention phase. When evaluating the efficacy of the MA, the PEM estimate of treatment effect indicated that 58% of the data points in the intervention phase were not overlapped with the baseline median score (40) which suggests possible effectiveness. Taken together, these findings suggest that the average scores decreased between baseline and intervention, and the reported effect showed an immediate and significant reduction in scores between baseline and intervention. Quiche reframed her thoughts and practiced acceptance related to clients and her work. Quiche revealed: "Sometimes we help them [in treatment], sometimes we can't. All I can do is give them a chance...It helps to remember this [personal responsibility] is what I have control over...it [stress] adds up over the day but I can leave it after I'm done."

Mindfulness

The baseline data revealed a mean of 33 on the FMI across 3 weeks of measurement. By contrast, the intervention data revealed a mean of 41 on the FMI across 12 weeks. The trend of the data indicated a slight downward slope for ratings on the FMI in the baseline, followed by an increase and continued trend toward desired effect (increased scores) once the MA was implemented. Evaluation of variability of data between phases revealed a 14-point range of scores during the baseline as opposed to a 15-point degree of variation during the intervention phase. When evaluating the efficacy of the MA, the PEM estimate of treatment effect indicated that 83% of the data points in the intervention phase were not overlapped with the baseline median score (34) which suggests this intervention may have moderate effectiveness. Taken together, these findings suggest that the average scores increased between baseline and intervention, and the reported effect showed an immediate and significant increase in scores between baseline and intervention. The magnitude of treatment effect suggests a practically significant effect on the participant's experience of mindfulness across 12 weeks. Quiche developed the habits of noticing and awareness in the moment and shared:

"I think I am better at living in the moment than I was earlier this year. All the things [mindfulness] seem to be helping...I took a look at why was my anxiety so high. What had I stopped doing, what was bothering me, why was I unhappy. I have a lot more energy and I'm just, I'm calmer...And I'm more laid back about things too. I don't jump as fast, to okay I have all this to do, it's more like okay, what's next? You know, I don't think I really thought about it [mindfulness] before and thought about what the hell is being mindful? ...it really is about being aware of your body and aware of what's going on and being aware of how you are breathing."

Self-Compassion

The baseline data revealed an average of 43 on the SCS across 3 weeks of measurement. By contrast, the intervention data revealed an average of 36 on the SCS across 12 weeks. The trend of the data indicated a stable slope for ratings on the SCS in the baseline, followed by an immediate reduction and curvilinear continued trend toward decreased scores once the MA was implemented. Evaluation of variability of data between the phases revealed a 1-point range of scores during the baseline as opposed

to a 8-point degree of variation during the intervention phase. When evaluating the efficacy of the MA, the PEM estimate of treatment effect indicated that 0% of the data points in the intervention phase were not overlapped with the baseline median score (43) which suggests that this intervention may not be effective for increased self-compassion. Taken together, these findings suggest that the average scores decreased between baseline and intervention, and the reported effect was an immediate and significant reduction in scores between baseline and intervention. The PEM indicates that this intervention may not have had a practically significant effect for increased self-compassion. Quiche described her experience of self-compassion in relation to emotional and physical safety. Quiche shared: "I feel like I am pausing more to reset, and I have more space inside of me, if that makes sense... I can just take each day and enjoy it more...I'm working on pausing when anxiety hits, and asking myself: Look around the room, are you safe? Is there anything that can hurt you, and then relax, starting with my face and working down."

Discussion

The results of our exploratory study provide some preliminary evidence about the efficacy of the MA as a mindfulness intervention for promoting desired change across one substance abuse counselor's perceived levels of burnout, mindfulness, and self-compassion. Results of this exploratory study demonstrated possible efficacy for burnout, moderate efficacy for mindfulness, and no efficacy for self-compassion. The PEM scores varied for each outcome variable and is possibly related to the length of time for the intervention, the frequency of the intervention, and the personal characteristics of the participant.

The findings for burnout show a trend toward reduction in burnout symptoms with 12 weeks of using the MA. Although the PEM scores indicate possible efficacy, the significant reduction in the mean scores between baseline and intervention, Quiche's feedback in her journal and follow up interview suggest that using the MA decreased her level of burnout and improved the way she reframed her thoughts about clients to maintain or improve the therapeutic relationship. Despite the challenges of her work and the high levels of stress, Quiche developed the ability to improve attunement with herself and clients by being more introspective and aware of how she interacted with her clients as evidenced by her increased scores on the FMI, and the journal and interview responses. It is possible that the MA provided Quiche with an opportunity to release work stressors through the guided meditations. Our findings are similar to those of Bostock et al., (2018) and Schomaker and Ricard (2016) as they respectively found that listening to mindfulness meditation decreased distress and increased attunement in counseling relationships.

The mindfulness results show a trend toward increased levels of mindfulness across 12 weeks of using the MA. The PEM scores indicate that this mindfulness-based intervention was effective for increasing Quiche's level of mindfulness, and while there was a slight increase in the mean between baseline and intervention, her journal and follow up interview highlighted the internal and external changes she experienced as it relates to her perception of mindfulness. Quiche discovered that the intervention helped her better understand mindfulness and helped to reduce the severity of her anxiety. During her interview, and her self-report in the journal, Quiche shared she learned the ability to notice and name emotions and thoughts without judgment, the need to reduce unhelpful behaviors (overeating, not going to the gym, etc. which were the go-to habits in the past), and the ability to be more patient with herself and her clients. Our results were in line with Christopher and Maris' (2010) findings where they

discovered that a mindfulness-based intervention increased awareness of emotions and acknowledge suffering.

The data for self-compassion show a downward trend across 12 weeks of using the MA. The PEM score and reduction in the mean scores across baseline and intervention indicate that this mindfulness-based intervention was not effective for increasing levels of self-compassion for our participant. Based on the meditations she used in the MA, self-compassion may not have been a strong focus. Since Quiche re-engaged in counseling during this study, another possibility is that she gained more insight and awareness of her thoughts and emotions while processing her anxiety with the counselor, and this possibly evoked some difficult or challenging perspectives which caused some dysregulation. Instead of focusing on what those thoughts or experiences were, the participant focused on her new ability to recognize and notice what was happening in the moment, without a desire to change. It is possible that if the prescribed time for using the app was increased, there would be more time to further establish efficacy as the participant may not have had sufficient dosage for change. This is consistent with Hildebrant et al., (2017) findings that three months of mindfulness practice was not enough to cause changes in self-compassion.

Recommendations for Counseling Professionals

We propose a few recommendations for counselors who work with persons diagnosed with a substance use disorder based on our findings. First, it may be important to integrate mindfulness into their professional and personal development to mitigate symptoms of burnout which may directly affect client outcomes. There is evidence to support the idea that when a counselor experiences increased self-care and improved wellbeing they may improve their counseling effectiveness (Lawson & Myers, 2011; Testa & Sangganjanavanich, 2016). Given the high rate of burnout among substance abuse counselors, when counselors take proactive measures, such as mindfulness, to lower symptoms of burnout and manage stress, they can be more engaged in behaviors that will support ethical care for clients. In addition, since duration of a mindfulness practice is a factor in creating change in self-compassion (Hildebrant et al., 2017), we recommend that counselors who work with persons diagnosed with a substance use disorder cultivate a consistent and prolonged mindfulness practice individually or as part of a group. We also suggest documenting one's mindfulness practice through journaling, logs, or recordings for personal assessment of the factors that contribute to a satisfactory mindfulness practice. Documenting one's mindfulness practice may also be accompanied by monitoring other factors that may be affecting professional development or the client-counselor relationship (eg., mood).

It is our recommendation that counselors personalize their mindfulness and self-care experiences to meet their unique needs. Although this is the first study to our knowledge to explore the efficacy of the Calm © app as a mindfulness intervention with a substance abuse counselor, other researchers have supported the benefits of infusing mindfulness with counselors which may lead to better holistic outcomes for counseling professionals and their clients (Fulton & Cashwell, 2015; McGarrigle & Walsh, 2011; Testa & Sangganjanavanich, 2016; Vilardaga et al., 2011), and increased counselor self-awareness which results in increased awareness with clients (Schomaker & Ricard, 2016). Given the user-friendly nature of the MA, mindfulness interventions via mobile applications may provide an easily accessible and convenient alternative intervention for burnout and distress among counselors (Bostock et al., 2018).

Limitations and Recommendations for Future Research

Our exploratory findings provide some promising evidence for the use of the MA as a mindfulness intervention; however, there are some noteworthy limitations of this study related to the baseline instability, participants withdrawal, dose of the intervention, personalization of a mindfulness plan, use of the app, and the use of self-report. While three weeks of baseline data may be sufficient, the scores were unstable when we implemented the intervention as we decided to implement the intervention at week four due to Quiche's self-reported distress. Although Quiche reported distress she was not in imminent harm or danger, therefore, we encourage future researchers to continue collecting baseline data until there is stability to obtain more descriptive and predictive information about the level of baseline distress. We started this study with three participants and due to dropout, we ended with one participant. Although SCRDS allow for small sample sizes, including one participant or case, we acknowledge that these results are exploratory and cannot be generalized to the population of SACs.

We implemented a 12-week intervention where the participant was not prescribed a specific length of time to utilize the app or how many sittings to complete per week. It may be beneficial for future researchers to either specify a duration of time for using the MA each time (eg., use for at least 10 mins) or get documentation of the length of time spent on each feature used in the MA. Future researchers might consider extending the length of the intervention to understand the course of response over a longer dose of the intervention. While we share our exploratory findings, we are also tentative about the interpretation of the results given the 3-week baseline with unstable data. However, we encourage future researchers to consider more complex evaluations of the MA and apply different research designs such as a multiple baseline or replication designs.

Since we did not specify which intervention the participant should use, and instead allowed her to choose from any mindfulness activity on the MA, we are unable to identify exactly which aspect of the intervention was more effective for this participant in relation to scores for burnout, mindfulness, and self-compassion. Future researchers may choose to specify activities in order to determine which activities correlate with each outcome measure. Additionally, the participant can complete a weekly log to list the mindfulness activities completed each week. It may be beneficial to provide a drop-down menu or a checklist of activities. Future researchers are encouraged to identify either specific aspects of the app or allow the participant to personalize the intervention by developing a plan to target specific behavioral tasks to monitor during the intervention phase that is aligned with the outcome variables. Future researchers may also want to parse out the effects of journaling as an intervention when used with mindfulness or within SCRDS.

Our participant documented self-reported scores across the baseline and intervention phase which may increase the chances of social desirability. In our study, we did not ask the participant for her definitions of burnout, mindfulness, or self-compassion and we did not provide definitions of each. It may be beneficial for future researchers to consider having an operational definition of variables to provide more clarity to participants. In addition, we only assessed the psychological changes in the participant, thus omitting other factors which may have affected the participant's levels of burnout and self-compassion. We recommend future researchers to investigate other factors such as client outcomes in treatment or working alliance. We also recommend future researchers to use instruments that are specifically designed to be repeated weekly.

Conclusions

Mindfulness based interventions may be helpful in reducing symptoms of burnout and increasing levels of mindfulness, especially for counseling professionals who work with high risk clients in a high stress environment. While there is some evidence of the effectiveness of mindfulness-based interventions among counseling professionals, there are limited studies exploring mindfulness-based intervention among substance abuse counselors who may experience more stressful working environments than other counselor professionals. Furthermore, to our knowledge, this is the first study to use the Calm© app as a mindfulness intervention with a SAC. Although our results are promising for the use of this intervention to possibly mitigate unhelpful behaviors that may disrupt career sustaining behaviors, there is a need for further empirical investigation.

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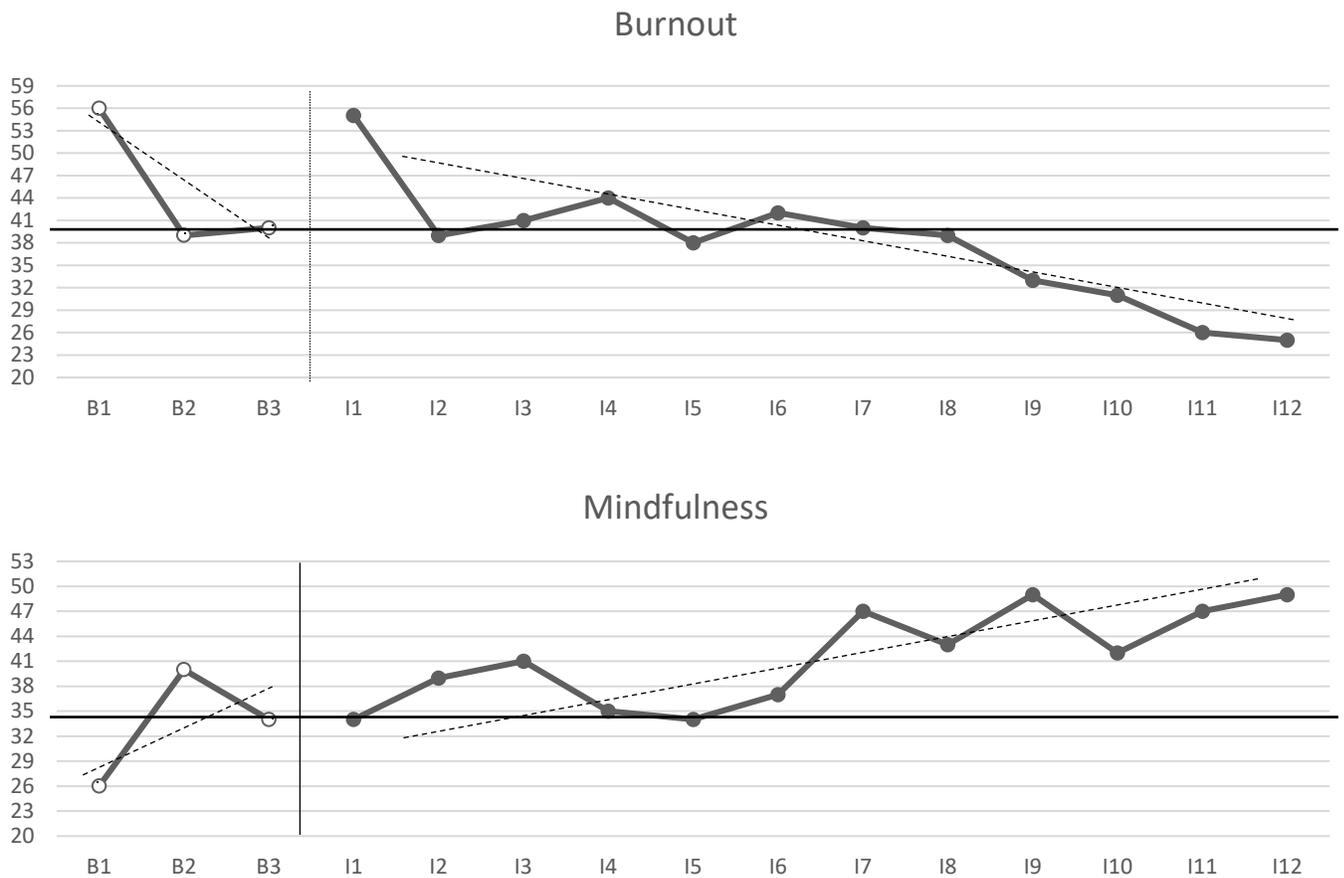
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Figure 1: Burnout, Mindfulness and Self-Compasion Scores



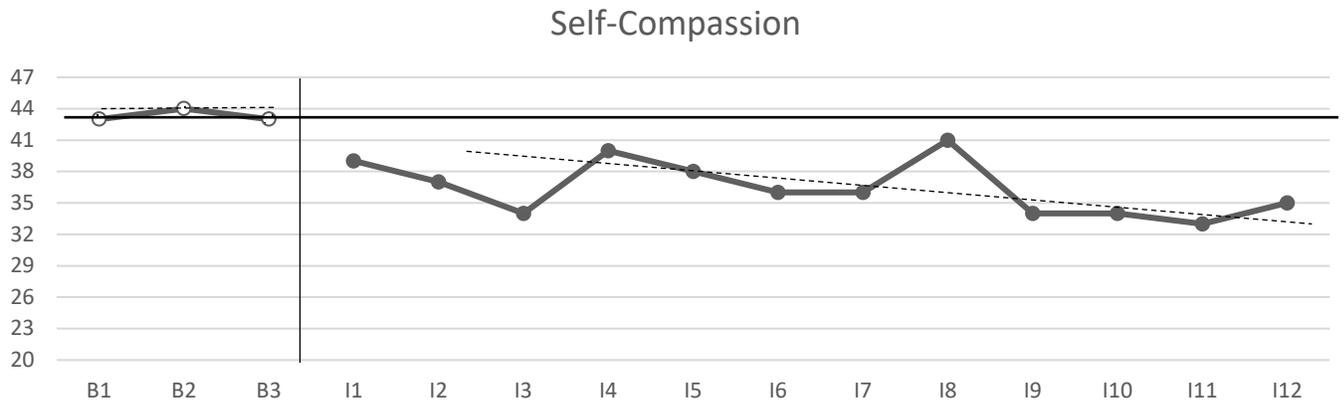


Figure 1: Visual depictions of Quiche's scores. The desired scores are decrease for burnout and increase for mindfulness and self-compassion.