


Effectiveness of Online Mindfulness Training for People Experiencing Mental Illness

Chris Griffiths* , Farah Hina, Lorraine Pollard, Isabel Reid

Innovation and Research Department, Northamptonshire Healthcare NHS Foundation Trust, Northampton, UK

Email: *chris.griffiths@nhft.nhs.uk

How to cite this paper: Griffiths, C., Hina, F., Pollard, L., & Reid, I. (2022). Effectiveness of Online Mindfulness Training for People Experiencing Mental Illness. *Open Journal of Depression*, 11, 15-29. <https://doi.org/10.4236/ojd.2022.112002>

Received: March 4, 2022

Accepted: May 7, 2022

Published: May 10, 2022

Copyright © 2022 by author(s) and Scientific Research Publishing Inc. This work is licensed under the Creative Commons Attribution International License (CC BY 4.0). <http://creativecommons.org/licenses/by/4.0/>



Open Access

Abstract

Background: Evidence has shown that self-guided web application mindfulness training can improve mental health. In this study, the “Be Mindful” online-based mindfulness training software application was offered through a United Kingdom (UK) universal community healthcare provider to patients with a mental illness diagnosis. Be Mindful is an online course providing instruction on mindfulness theories and practice training, progress tracking, integrated guidance/feedback, and motivational emails. **Objective:** The aim of this paper is to present feasibility findings and outcomes on anxiety, depression, and stress of an intervention offering Be Mindful. Participants were adults who had a mental illness diagnosis and were under the care of community mental health services. **Methods:** Open-label patient cohort design, with no control group. Pre- and post-intervention assessment using participant self-report measures: Generalised Anxiety Disorder-7 (GAD-7); Perceived Stress Scale (PSS-10); and Patient Health Questionnaire-9 (PHQ-9; a measure of depression severity). **Results:** Two hundred and seventy-four started and thirty-one patients completed the Be Mindful programme and outcome measures. PSS scores at baseline significantly improved from 24.6 (1.79) to 18.7 (2.05) at the end ($p < 0.001$), with a large effect size of 0.498. GAD-7 scores at baseline significantly improved from 11.4 (1.3) to 8.00 (1.35) at end ($p < 0.001$), with a medium effect size of 0.354. PHQ-9 scores at baseline significantly improved from 13.7 (1.42) to 9.09 (1.76) to 9.81 (1.77) at end ($p < 0.001$), with a medium effect size of 0.378. **Limitations:** There was no control group, and the intervention was adjunct to existing treatment. **Conclusions:** Be Mindful can be offered through a UK community NHS Trust and can have a significant impact on symptoms of anxiety, depression, and stress in patients with experience of mental illness. Roll-out through community mental health providers to people with experience of mental illness is justified. Well-designed and sufficiently powered randomised controlled trials of theory-driven online mindfulness training for mental illness

patient populations are required.

Keywords

Depression, Mental Illness, Anxiety, Stress, Mindfulness

1. Introduction

Mental illness is the second-largest source of burden of disease in England (Public Health England, 2019). Around one in four people in the United Kingdom (UK) experience mental health issues each year (Mental Health Taskforce, 2016) and one in six working-age adults currently have symptoms associated with mental illness (McManus et al., 2016). More severe mental illnesses, such as bipolar disorder and schizophrenia, have population prevalence rates of around 2% and 1% respectively (Public Health England, 2016). The total cost of mental ill health in England is estimated at £105 billion per year (Mental Health Taskforce, 2016) and around 300,000 people with a long-term mental health condition lose their jobs every year (double the rate of those without a mental health condition) (Stevenson & Farmer, 2017). The most common treatment offered is a psychiatric medication (NHS Digital, 2016); this can be effective for some people, but psychiatric medication can have negative side effects (Anderson et al., 2012; Gafoor et al., 2018; Lingam & Scott, 2002) and in some cases, withdrawal effects can be long-lasting and severe (Davies & Read, 2019). Around 70% - 75% of people with diagnosable mental illness receive no treatment at all (Davies, 2014).

Mindfulness derives from Buddhist practice, cultivating intentional and non-judgmental awareness of experiences in the present moment (Ludwig & Kabat-Zinn, 2008). Mindfulness can help people enjoy life more and understand themselves better (NHS, 2021). Mindfulness-based interventions (MBIs), including mindfulness-based cognitive therapy (MBCT), are thought to decrease distress by encouraging individuals to relate to their experiences in the present with focus, acceptance, and compassion (Williams, 2010). A systematic review of randomised controlled trials (RCTs) examining the effects of mindfulness on stress and anxiety symptomatology concluded that it increases parasympathetic nervous system activation and decreases anxious symptomatology in various populations (Pascoe & Crewther, 2016).

Substantial evidence indicates that MBIs are effective in reducing mental health difficulties, such as anxiety and depression (Strauss et al., 2014). A systematic review of 93 RCTs of dispositional (human capacity or trait) mindfulness (DM) found a consistent positive relationship between DM, psychological well-being and mental health, and that DM reduces the propensity to engage in negative thinking patterns (Tomlinson et al., 2018). A systematic review of 44 MBI RCTs showed superiority to passive controls across a wide range of populations,

problems, interventions, comparisons, and outcomes (Goldberg et al., 2021). Although effects were smaller and less often statistically significant with active controls, MBI effects were similar or superior to specific active controls and other evidence-based treatments (Goldberg et al., 2021). A systematic review and meta-analysis of the effects of mindfulness exercises as a stand-alone intervention in 12 RCTs found that the regular application of mindfulness exercises reduces symptoms of anxiety and depression (Blanck et al., 2018).

Mindfulness effectiveness has been assessed in specific mental illness diagnosis populations. A systematic review of mindfulness interventions in psychosis found that they are feasible (with no adverse effects reported), and can provide benefits (e.g. potentially reduce depression, improve insight, and reduce fear of relapse) (Aust & Bradshaw, 2017). A narrative synthesis within a systematic review evaluating MBCT for bipolar disorder provided precursory evidence that MBCT could have a positive impact on symptoms of anxiety and depression – as well as mood regulation, attentional control, and executive control (Lovas & Schuman-Olivier, 2018). Furthermore, patients with bipolar disorder have self-reported the beneficial impacts of MBCT at long-term follow-up (Weber et al., 2017). Mindfulness-based interventions reduce symptoms of Obsessive Compulsive Disorder (OCD) and may complement existing CBT interventions and increase their efficacy and help prevent relapse (Fairfax, 2008). Mindfulness is recommended by the UK National Institute for Health and Care Excellence (NICE) to prevent depression in people who have had three or more bouts of depression (NICE, 2009). In 2021 NICE draft guidelines for mild to moderate depression recommended offering MBCT prior to prescribing anti-depressants (NICE, 2021).

Evidence suggests that self-guided online MBIs can be as effective as face-to-face therapy in managing mental health difficulties in the general population (Saddichha et al., 2014). A systematic review and meta-analysis of 12 RCTs evaluating web-based mindfulness interventions for mental health treatment concluded that the evidence supports the effectiveness of web-based mindfulness interventions in reducing depression and anxiety symptoms and improving quality of life, particularly in those with clinical anxiety (Sevilla-Llewellyn-Jones et al., 2018). For mindfulness software apps to be successful, they need to be easy for users to navigate, engaging, enjoyable, provide access to technical support, and be aligned with users' needs, skills, and resources (Connolly et al., 2021).

Be Mindful is an online MBCT course teaching mindfulness theories and practice, completed on a computer or mobile device. Be Mindful has undergone a United Kingdom (UK) National Health Service (NHS) Digital technical evaluation using the Digital Assessment Questions (DAQ2) tool, and met standards for approval (NICE, 2019). It is offered through some local Improving Access to Psychological Therapy (IAPT) services in the NHS in England (NICE, 2019), and a link to access is provided in NHS mental health self-help tips and support internet pages (NHS, 2021). The use of Be Mindful in IAPT offers increased pa-

patient choice and may free up IAPT clinician time, which could in turn reduce waiting times and increase access to psychotherapy (NICE, 2019). There is the public interest in and demand for mindfulness-based treatments, and a digital MBCT therapy such as Be Mindful may be popular with mental health service users (NICE, 2019). There are many paid or free mindfulness resources/apps available via the internet; but, unlike Be Mindful, these often do not have research evidence of effectiveness, are not NHS Digital approved, or do not provide feedback and evaluation of mental health change using valid and reliable measures.

A randomised waitlist control trial found that participants who completed the Be Mindful training course had significantly lower levels of self-reported depression, anxiety, and stress (Querstret et al., 2018). However, the trial compared the programme with a waitlist control (i.e. no treatment) rather than with standard care, and comparing Be Mindful with another active intervention, such as face-to-face mindfulness training, would be more informative (NICE, 2019). Research has shown that Be Mindful can reduce stress, anxiety, pain levels, fatigue, and rumination, and improve sleep (Krusche et al., 2012; Krusche et al., 2013; Querstret et al., 2017; Querstret et al., 2018).

The aim of this study was to investigate if it was feasible to offer Be Mindful through a UK community healthcare NHS Trust: would clinicians offer it to patients and would patients start and complete the training. The project aimed to find out the effect of Be Mindful online training for patients with a mental illness diagnosis on self-reported depression, anxiety, and stress. This is the first study to report feasibility and outcomes data from a project delivered through a UK community healthcare NHS Trust.

2. Methods

2.1. Design

Open-label patient cohort design with no control group. Pre- and post-intervention assessment with participant self-report measures.

2.2. Setting

UK NHS community healthcare provider in England. NHS community health trusts deliver physical and mental health care, support, rehabilitation, and treatment for children, adults and older adults through locally based and outreach services; they typically offer access to physical and psychological therapies and treatment, physical and mental health assessment, employment support, personalised and trauma-informed care, and medicines management (NHS England, 2021).

2.3. Inclusion/Exclusion Criteria

Inclusion:

- 1) 18 years or over

- 2) Under the care of community health services
- 3) A mental illness diagnosis

Exclusion:

- 1) Lack of capacity to consent
- 2) Diagnosis of dementia

2.4. Be Mindful Intervention

The course comprises four structured exercise training modules that are explained in visual information, instructional videos, and audio files that participants gain access to as they progress through the course. Module themes are entitled: “Stepping out of Auto Pilot”; “Reconnecting with Body & Breath”; “Working with Difficulties”; and “Mindfulness in Daily Life”. The course can be completed in around 4 weeks, or over a longer period at users’ own pace. The aim of the training and exercises is to teach mindfulness theory and practice, cultivate present moment focus and awareness, and enable non-judgmental attitudes towards thoughts and feelings that arise. Be Mindful provides motivational emails and encourages continued engagement through weekly e-mail reminders. Users can access information and charts to understand their progress. Be Mindful is NHS approved, NHS commissioned, offered through some NHS Improving Access to Psychological Therapies (IAPT) services, and has passed the NHS DAQ2 assessment required for inclusion on the NHS Apps Library. The app has been reviewed by The Organisation for the Review of Care and Health Applications (ORCHA) and was found to comply with the Digital Technology Assessment Criteria (DTAC) criteria (national baseline criteria for digital health technologies entering the NHS) and scored 87.5% in usability & accessibility (NHSX, 2021). The current individual licence fee for Be Mindful is £40 GBP. Web page: <https://www.bemindfulonline.com/>.

2.5. Procedure

Measures of anxiety, depression and stress were collected within the web application at baseline and at the end of the course. The first assessment was collected at the end of the “Introduction Module”, before commencing Module/Week 1 of the course. “At Finish” was taken at the end of the final training course. Follow-up was taken one month after the finish.

2.6. Consent

Participants provided informed consent to allow evaluators access to Be Mindful and their NHS patient data for analysis and publication of anonymised group results. The project was reviewed and approved by the NHS Trust provider.

2.7. Measures

The Generalised Anxiety Disorder-7 (GAD-7) is a seven-item self-report measure of GAD (Spitzer et al., 2006). A score that is rated as severe on this scale is 15

- 21. The GAD-7 has good sensitivity and specificity for GAD and is moderately good at screening three other anxiety disorders: panic disorder, social anxiety disorder, and post-traumatic stress disorder (PTSD) (Kroenke et al., 2007). It has good internal consistency shown by Cronbach's Alpha value of $\alpha = 0.92$ (Kroenke et al., 2007).

Patient Health Questionnaire-9 (PHQ-9) is a nine-item self-rated measure of the severity of depression symptoms (Kroenke et al., 2001). The PHQ-9 has good sensitivity and specificity for major depression; it also has good internal consistency with Cronbach's Alpha value of $\alpha = 0.89$ (Kroenke et al., 2001).

The Perceived Stress Scale (PSS-10) consists of 10 items and evaluates the degree to which an individual believes their life has been unpredictable, uncontrollable, and overloaded during the previous month (Cohen et al., 1994). It is a self-report questionnaire designed to measure the degree to which individuals appraise situations in their lives as stressful (Cohen et al., 1994). Internal consistency reliability, factorial validity, and hypothesis validity of the PSS are acceptable (Lee, 2012).

2.8. Medical Records

Demographic information (gender, date of birth, ethnicity, and diagnosis) was extracted from clinical records containing routinely collected data. Analysis was conducted using an anonymised database.

2.9. Statistical Analysis

Analysis of change from baseline to post-course treatment scores and correlational analysis was carried out using appropriate statistical tests. Data were analysed using the statistics software package SPSS® Statistics v28. All tests were 1-sided, at a 5% level of statistical significance.

3. Results

3.1. Participant Characteristics

Participant characteristics are described in **Table 1** and **Table 2** below.

Table 1. Characteristics of participants who started the training (n = 274).

Characteristics	
Age, Mean \pm SD (Min-Max)	38.12 \pm 14.63
Sex, n (%)	
Male	n = 196 (71.5%)
Female	n = 70 (25.5%)
Trans	n = 1 (0.3%)
Non-binary	n = 1 (0.3%)
Not reported	n = 6 (2.1 %)
Diagnosis	
Depression and anxiety	n = 50 (14.8%)

Continued

Depression	n = 90 (26.7%)
Anxiety	n = 47 (13.9%)
Personality disorder	n = 10 (2.96%)
Bipolar disorder	n = 32 (9.49%)
Emotionally unstable personality disorder (EUPD)	n = 37 (10.9%)
Post-traumatic stress disorder (PTSD)	n = 11 (3.26%)
Obsessive-compulsive disorder (OCD)	n = 7 (2.07%)
Eating disorder	
Psychosis	n = 8 (2.37%)
Attention deficit hyperactivity disorder (ADHD)	n = 9 (2.67%)
Autism spectrum disorder (ASD)	n = 4 (1.18%)
Other*	n = 32 (9.49%)
Not reported	n = 7 (2.07%)
Ethnicity	
White British	n = 124 (45.2%)
British or Mixed British	n = 123 (44.8%)
Not reported	n = 43 (15.6%)
Other**	n = 8 (2.9%)

*Other diagnosis includes panic disorder, self-harm and suicidal ideation, aggression, insomnia and stress, cyclothymia, alcohol use disorder (AUD) or not reported; *Some people have more than one diagnosis and so the total number of diagnoses will be higher than total number of people. **Other includes Iranian, Black/African/Caribbean/Black British, Polish, Pakistani, Indian, Caribbean.

Table 2. Characteristics of participants who completed the training and outcome measures (n = 31).

Characteristics	
Age, Mean \pm SD (Min-Max)	45.96 \pm 16.84
Sex, n (%)	
Female	n = 19 (61.4%)
Male	n = 9 (29%)
Not reported	n = 3 (9.6%)
Diagnosis	
Depression and anxiety	n = 17 (54.8%)
Other*	n = 6 (19.3%)
Bipolar disorder	n = 3 (9.6%)
Not reported	n = 3 (9.6%)
Personality disorder	n = 2 (6.4%)

Continued

Ethnicity	
White British	N = 13 (41.9%)
British or Mixed British	N = 2 (6.4%)
Other**	N = 8 (25.8%)
Not reported	N = 8 (25.8%)

*Other diagnosis included complex regional pain syndrome, EUPD, self-harm, suicidal ideation, insomnia. **Other ethnicity includes White, White Irish, White and Asian, White & Black Caribbean, Indian, Black/African/Caribbean/Black British, British Asian, Iranian.

3.2. Analysis of Change

A one-way repeated measures ANOVA was conducted to determine whether there were statistically significant differences in the reduction of stress, depression and anxiety scores after participants completed Be Mindful. There were no outliers, and the data were normally distributed, as assessed by boxplot and Shapiro-Wilk test ($p > 0.05$), respectively. The assumption of sphericity was met, as assessed by Mauchly's test of sphericity, $\chi^2(2) = 4.58$, $p = 0.101$.

The Be Mindful intervention elicited statistically significant changes in the reduction of stress levels over time, $F(2, 32.93) = 19.809$, $p < 0.001$, partial $\eta^2 = 0.498$ (large effect size), with stress levels decreasing from pre-intervention, PSS 0 - self-assessment at the start ($M = 24.6$, $SD = 1.79$) to PSS 1, self-assessment at the end ($M = 18.7$, $SD = 2.05$) to one month (post-intervention follow up) ($M = 17.6$, $SD = 2.29$). Similarly, statistically significant decreases in anxiety were found, $F(2, 33.04) = 10.960$, $p < 0.001$, partial $\eta^2 = 0.354$ (medium effect size), with anxiety decreasing from pre-intervention self-assessment at the start ($M = 11.4$, $SD = 1.3$) to PSS 1 self-assessment at the end ($M = 8.00$, $SD = 1.35$) to one month (post-intervention follow up) ($M = 7.9$, $SD = 1.48$). Likewise, there was a statistically significant difference in depression scores from pre to post intervention $F(2, 26.57) = 12.174$, $p < 0.001$, partial $\eta^2 = 0.378$ (medium effect size), with depression decreasing from pre-intervention - self-assessment at the start ($M = 13.7$, $SD = 1.42$) to PSS 1, self-assessment at the end ($M = 9.09$, $SD = 1.76$) to one month (post-intervention follow up) ($M = 9.81$, $SD = 1.77$).

Post hoc analysis with a Bonferroni adjustment was used to correct for multiple comparisons and thereby reduce the chance of false positives. The analysis revealed that stress levels were statistically significantly decreased from pre-intervention to 1-month follow-up (95% CI [2.76, 9.04], $p < 0.001$). Likewise, anxiety levels were statistically significantly reduced from pre-intervention to 1-month follow up (95% CI [1.16, 5.78], $p = 0.003$). Similarly, depression scores showed statistically significant decreases from pre-intervention to 1 month follow up (95% CI [1.59, 7.73], $p = 0.002$).

3.3. Correlations

Using Pearson's correlation, statistical significant correlations were observed

between mental health assessments at baseline and post-intervention, see **Table 3**. Baseline PSS demonstrated a statistically significant positive correlation ($p < 0.01$) with baseline PHQ-9 and GAD-7 ($r = 0.805$ and $r = 0.861$ respectively). Post-treatment PSS also showed strong correlations with post-treatment PHQ-9 and GAD-7, $r = 0.720$ (PHQ-9) and $r = 0.688$ (GAD-7). A statistically significant correlation between post-intervention PHQ-9 and GAD-7 was observed ($r = 0.916$). **Table 3** illustrates correlations of change over time for each of the mental health assessments.

4. Discussion

This study investigated the feasibility of offering Be Mindful through a community healthcare provider and the effect of Be Mindful online training for patients with a mental illness diagnoses on self-reported depression, anxiety, and stress. The results show that Be Mindful can be successfully offered, patients with mental illness diagnosis will start the training, and that it can significantly reduce depression, anxiety, and stress. The outcomes are comparable to previously published findings.

The results provide further support for evidence showing the benefits of various web-based mindfulness interventions in reducing depression and anxiety symptoms (Saddichha et al., 2014; Sevilla-Llewellyn-Jones et al., 2018). The findings align with previous studies showing that Be Mindful can reduce stress, anxiety, and depression (Krusche et al., 2012; Krusche et al., 2013; Querstret et al., 2017; Querstret et al., 2018). The results also align with evidence that mindfulness can be effective for people with a specific mental illness diagnosis (Aust & Bradshaw, 2017; Lovas & Schuman-Olivier, 2018; Weber et al., 2017).

Our results indicate that this approach is effective in targeting symptoms of anxiety, depression, and stress for people with experience of various mental illness

Table 3. Correlations.

	PSS0	PSS1	PSS2	GAD0	GAD1	GAD2	PHQ0	PHQ1	PHQ2	Age	Gender
PSS0	1	0.721**	0.787**	0.861**	0.677**	0.688**	0.805**	0.621**	0.720**	0.022	-0.099
PSS1		1	0.916**	0.681**	0.927**	0.879**	0.690**	0.860**	0.923**	-0.091	-0.068
PSS2			1	0.760**	0.881**	0.953**	0.667**	0.868**	0.930**	-0.142	-0.113
GAD0				1	0.709**	0.740**	0.840**	0.647**	0.655**	-0.187	-0.038
GAD1					1	0.894**	0.704**	0.930**	0.912**	-0.222	-0.114
GAD2						1	0.634**	0.888**	0.916**	-0.263	-0.005
PHQ0							1	0.753**	0.740**	-0.219	-0.170
PHQ1								1	0.952**	-0.238	-0.001
PHQ2									1	-0.201	-0.179
Age										1	-0.113
Gender											1

**Correlation is significant at the 0.01 level (2-tailed).

diagnoses. Many of the people in this study had a diagnosis of depression, so the results indicate the potential value of Be Mindful in meeting NICE recommendations of providing mindfulness (MCBT) for people who have had three or more bouts of depression and for mild to moderate depression prior to prescribing anti-depressants (NICE, 2009, 2021). Mindfulness can potentially help the NHS deliver its goal of enabling people to: “manage their condition or move towards individualised recovery on their own terms...” and provide: “interventions for mental health problems that are readily available and accessible...” (NHS England et al., 2019: p. 4 & p. 10).

The significant decrease in the negative mood at one-month follow-up is encouraging and suggests continued use of the skills learnt. Patient improvements on the PSS demonstrate a positive impact of Be Mindful online training on perceived stress. The PSS demonstrated strong positive correlations between PHQ-9 and GAD-7 at baseline, follow-up, and change over time; it is possible that reducing perceived stress through using Be Mindful can have a positive effect on symptoms of both anxiety and depression.

The project demonstrated that Be Mindful can be offered through an NHS community healthcare provider, that clinicians will offer to their patients and patients will take up the offer and start the training. However, the majority who started did not complete all the training modules and the post-training self-report measures. This is often the case with online training, and it is important to allow patients to choose what modules to complete and whether to complete outcome measures or not. It is important that they have ownership of the training and complete modules of their choice.

The intervention take-up findings provide useful information to healthcare providers in their consideration of the costs and benefits of providing access to the training. Cost-benefit analysis is required to understand the potential savings that could be derived from the wider implementation of Be Mindful for people with mental illness. Further research is required to investigate why some people complete the training and others do not, and why some people experience improvements in mental health and others do not, i.e., what factors determine response to this intervention.

It could be the case that completion rates would increase if clinicians offering the training were to integrate it as part of a patient’s treatment plan and contact those who choose to start to see how they are getting on and whether they have completed it or not. Clinician engagement with patients in discussion around the application of the training in a patient’s life might allow improved mindfulness practice and self-reflection to potentially enhance the beneficial effects of mindfulness in the short and long term. Research is warranted to investigate and evaluate this proposed model both using outcome measures and through patient and clinician in-depth interviews.

The intervention’s success indicates the effectiveness of Be Mindful and the need to increase availability to enable more people with experience of mental illness to potentially benefit. This intervention may offer hope to the many

people with complex mental health needs who experience symptoms of anxiety, stress, or depression that they can improve their wellbeing and quality of life.

Interventions based on mindfulness techniques hold the substantial trans-diagnostic potential to improve mental health and wellbeing (Goldberg et al., 2021). Further studies should investigate the impact of web-based mindfulness interventions on different mental health populations (Sevilla-Llewellyn-Jones et al., 2018). Future research should determine the effects of theory-driven web-based mindfulness interventions (WMIs) compared with interventions controlling for unspecific therapeutic factors (e.g., attention control) and active interventions targeting differential mechanisms; to account for potential nocebo or digital placebo effects (Sevilla-Llewellyn-Jones et al., 2018). Rigorous experimental research evaluating mindfulness interventions is warranted (Goldberg et al., 2021).

Limitations

This was not a randomised controlled trial and there was no control group, with modest sample size. Treatment was open-label and adjunct to any existing treatments. An attrition rate of 89% was observed, with 274 participants starting the course and 31 completing baseline and post-training measures and no reasons for non-completion were gathered, which are limitations. High attrition rates have been reported by many services that have used Web-based mental health applications (Lederman et al., 2014). There was insufficient data to run the analysis for any specific mental illness diagnoses. Data were collected from a single county in the UK and the sample did not have very a diverse ethnic representation (with a high percentage of missing data, limiting generalizability). There were over twice as many females as males who completed measures and so the results are less generalisable to males.

5. Conclusion

Further work is needed to define the role of online mindfulness in the mental illness treatment pathway. This work needs to understand when it is best to offer online mindfulness and when online mindfulness is a better option than other treatment options such as psychotherapy or medications, and when it is useful as an adjunct treatment. Due to low side effects, the intervention could be considered in advance of using medication. It could be offered by services seeking to take a holistic view of illness prevention, health promotion, healthier lifestyles, and self-management, such as through social prescription services (NHS England et al., 2019).

The availability of Be Mindful in the NHS is currently limited. Be Mindful app has been integrated into several IAPT services, and the future success of this and other online mindfulness training will depend on the degree of integration into mental health service provider workflows and technological updates to improve content and usability (Connolly et al., 2021). The results support the wider availability of Be Mindful as a treatment option for people with experience of

mental illness. Ideally, Be Mindful should be a treatment option freely available to people with mental health illnesses rather than just those who can afford the cost of the training. There is a need for RCTs on effectiveness in people with experience of mental illness, and comparing Be Mindful with other online training that seeks to reduce anxiety, depression, and stress symptoms.

6. Key Points

- Be Mindful offered through a UK community mental health provider can have a significant impact on symptoms of anxiety, depression, and stress in patients with experience of mental illness;
- Be Mindful is effective for people with various mental illness diagnoses;
- Be Mindful should be an option available to people with experience of mental illnesses.

Acknowledgements

The authors wish to thank the patients and staff involved and Northamptonshire Health Charity for their financial support.

Conflicts of Interest

The authors have no conflicts of interest, and the work was not funded by a company.

References

- Anderson, H. D., Pace, W. D., Libby, A. M., West, D. R., & Valuck, R. J. (2012). Rates of 5 Common Antidepressant Side Effects among New Adult and Adolescent Cases of Depression: A Retrospective US Claims Study. *Clinical Therapeutics*, *34*, 113-123. <https://doi.org/10.1016/j.clinthera.2011.11.024>
- Aust, J., & Bradshaw, T. (2017). Mindfulness Interventions for Psychosis: A Systematic Review of the Literature. *Journal of Psychiatric and Mental Health Nursing*, *24*, 69-83. <https://doi.org/10.1111/jpm.12357>
- Blanck, P., Perleth, S., Heidenreich, T., Kröger, P., Ditzen, B., Bents, H., & Mander, J. (2018). Effects of Mindfulness Exercises as Stand-Alone Intervention on Symptoms of Anxiety and Depression: Systematic Review and Meta-Analysis. *Behaviour Research and Therapy*, *102*, 25-35. <https://doi.org/10.1016/j.brat.2017.12.002>
- Cohen, S., Kamarck, T., & Mermelstein, R. (1994). Perceived Stress Scale. *Measuring Stress: A Guide for Health and Social Scientists*, *10*, 1-2.
- Connolly, S. L., Hogan, T. P., Shimada, S. L., & Miller, C. J. (2021). Leveraging Implementation Science to Understand Factors Influencing Sustained Use of Mental Health Apps: A Narrative Review. *Journal of Technology in Behavioral Science*, *6*, 184-196. <https://doi.org/10.1007/s41347-020-00165-4>
- Davies, J., & Read, J. (2019). A Systematic Review into the Incidence, Severity and Duration of Antidepressant Withdrawal Effects: Are Guidelines Evidence-Based? *Addictive Behaviors*, *97*, 111-121. <https://doi.org/10.1016/j.addbeh.2018.08.027>
- Davies, S. (2014). *Chief Medical Officer Annual Report 2013: public Mental Health*. Department of Health and Social Care, UK. <https://www.gov.uk/government/publications/chief-medical-officer-cmo-annual-repor>

[t-public-mental-health](#)

- Fairfax, H. (2008). The Use of Mindfulness in Obsessive Compulsive Disorder: Suggestions for Its Application and Integration in Existing Treatment. *Clinical Psychology & Psychotherapy: An International Journal of Theory & Practice*, 15, 53-59.
<https://doi.org/10.1002/cpp.557>
- Gafoor, R., Booth, H. P., & Gulliford, M. C. (2018). Antidepressant Utilisation and Incidence of Weight Gain during 10 Years' Follow-up: Population Based Cohort Study. *BMJ*, 361, Article No. k1951. <https://doi.org/10.1136/bmj.k1951>
- Goldberg, S. B., Riordan, K. M., Sun, S., & Davidson, R. J. (2021). The Empirical Status of Mindfulness-Based Interventions: A Systematic Review of 44 Meta-Analyses of Randomized Controlled Trials. *Perspectives on Psychological Science*, 17, 108-130.
<https://doi.org/10.1177/1745691620968771>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9: Validity of a Brief Depression Severity Measure. *Journal of General Internal Medicine*, 16, 606-613.
<https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- Kroenke, K., Spitzer, R. L., Williams, J. B., Monahan, P. O., & Löwe, B. (2007). Anxiety Disorders in Primary Care: Prevalence, Impairment, Comorbidity, and Detection. *Annals of Internal Medicine*, 146, 317-325.
- Krusche, A., Cyhlarova, E., & Williams, J. M. G. (2013). Mindfulness Online: An Evaluation of the Feasibility of a Web-Based Mindfulness Course for Stress, Anxiety and Depression. *BMJ Open*, 3, Article ID: e003498.
<https://doi.org/10.1136/bmjopen-2013-003498>
- Krusche, A., Cyhlarova, E., King, S., & Williams, J. M. G. (2012). Mindfulness Online: A Preliminary Evaluation of the Feasibility of a Web-Based Mindfulness Course and the Impact on Stress. *BMJ Open*, 2, Article ID: e000803.
<https://doi.org/10.1136/bmjopen-2011-000803>
- Lederman, R., Wadley, G., Gleeson, J., Bendall, S., & Álvarez-Jiménez, M. (2014). Moderated Online Social Therapy: Designing and Evaluating Technology for Mental Health. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 21, Article No. 5. <https://doi.org/10.1145/2513179>
- Lee, E. H. (2012). Review of the Psychometric Evidence of the Perceived Stress Scale. *Asian Nursing Research*, 6, 121-127. <https://doi.org/10.1016/j.anr.2012.08.004>
- Lingam, R., & Scott, J. (2002). Treatment Non-Adherence in Affective Disorders. *Acta Psychiatrica Scandinavica*, 105, 164-172.
<https://doi.org/10.1034/j.1600-0447.2002.1r084.x>
- Lovas, D. A., & Schuman-Olivier, Z. (2018). Mindfulness-Based Cognitive Therapy for Bipolar Disorder: A Systematic Review. *Journal of Affective Disorders*, 240, 247-261.
<https://doi.org/10.1016/j.jad.2018.06.017>
- Ludwig, D. S., & Kabat-Zinn, J. (2008). *Mindfulness in Medicine*. *JAMA*, 300, 1350-1352.
<https://doi.org/10.1001/jama.300.11.1350>
- McManus, S., Bebbington, P. E., Jenkins, R., & Brugha, T. (2016). *Mental Health and Wellbeing in England: The Adult Psychiatric Morbidity Survey 2014*. NHS Digital.
<https://digital.nhs.uk/data-and-information/publications/statistical/adult-psychiatric-morbidity-survey/adult-psychiatric-morbidity-survey-survey-of-mental-health-and-wellbeing-england-2014>
- Mental Health Taskforce (2016). *The Five Year Forward View for Mental Health*. Mental Health Taskforce.
<https://www.england.nhs.uk/wp-content/uploads/2016/02/Mental-Health-Taskforce-FYFV-final.pdf>

- NHS (National Health Service) (2021). *Mindfulness*. <https://www.nhs.uk/mental-health/self-help/tips-and-support/mindfulness/>
- NHS Digital (2016). *Adult Psychiatric Morbidity Survey: Survey of Mental Health and Wellbeing, England, 2014*. National Health Service. <https://webarchive.nationalarchives.gov.uk/20180328140249/http://digital.nhs.uk/catalogue/PUB21748>
- NHS England (2021). *Community Mental Health Services*. <https://www.england.nhs.uk/mental-health/adults/cmhs/>
- NHS England, NHS Improvement, & National Collaborating Central for Mental Health (2019). *The Community Mental Health Framework for ADULTS and Older Adults*. <https://www.england.nhs.uk/wp-content/uploads/2019/09/community-mental-health-framework-for-adults-and-older-adults.pdf>
- NHSX (2021). *Digital Technology Assessment Criteria (DTAC)*. <https://www.nhsx.nhs.uk/key-tools-and-info/digital-technology-assessment-criteria-dtac/>
- NICE (2009). *Depression in Adults: Recognition and Management*. Clinical Guideline [CG90]. National Institute for Health Research <https://www.nice.org.uk/guidance/cg90/chapter/Context>
- NICE (National Institute for Health and Excellence) (2019). *Be Mindful for Adults with Depression: Technical Briefing*. National Institute for Health and Excellence. <https://www.nice.org.uk/Media/Default/About/what-we-do/NICE-advice/IAPT/iab-be-mindful-adults-depression.pdf>
- NICE (National Institute for Health and Excellence) (2021). *Depression in Adults: Treatment and Management Draft Guidelines*. NICE (National Institute for Health and Excellence).
- Pascoe, M., & Crewther, S. G. (2016). *A Systematic Review of Randomised Control Trials on the Effects of Mindfulness on Stress Measures and Anxiety Symptomatology* (pp. 1-23). SM Group. Anxiety Disorders. <https://vuir.vu.edu.au/40726/1/ANXD-15-012.pdf>
- Public Health England (2016). *Psychosis Data Report—Describing Variation in Numbers of People with Psychosis and Their Access to Care in England*. Public Health England. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/774680/Psychosis_data_report.pdf
- Public Health England (2019). *Health Profile for England: 2019*. Public Health England. <https://www.gov.uk/government/publications/health-profile-for-england-2019>
- Querstret, D., Cropley, M., & Fife-Schaw, C. (2017). Internet-Based Instructor-Led Mindfulness for Work-Related Rumination, Fatigue, and Sleep: Assessing Facets of Mindfulness as Mechanisms of Change. A Randomized Waitlist Control Trial. *Journal of Occupational Health Psychology, 22*, 153-169. <https://doi.org/10.1037/ocp0000028>
- Querstret, D., Cropley, M., & Fife-Schaw, C. (2018). The Effects of an Online Mindfulness Intervention on Perceived Stress, Depression and Anxiety in a Non-Clinical Sample: A Randomised Waitlist Control Trial. *Mindfulness, 9*, 1825-1836. <https://doi.org/10.1007/s12671-018-0925-0>
- Saddichha, S., Al-Desouki, M., Lamia, A., Linden, I. A., & Krausz, M. (2014). Online Interventions for Depression and Anxiety—A Systematic Review. *Health Psychology and Behavioral Medicine, 2*, 841-881. <https://doi.org/10.1080/21642850.2014.945934>
- Sevilla-Llewellyn-Jones, J., Santesteban-Echarri, O., Pryor, I., McGorry, P., & Alvarez-Jimenez, M. (2018). Web-Based Mindfulness Interventions for Mental Health Treatment: Systematic Review and Meta-Analysis. *JMIR Mental Health, 5*, Article ID:

- e10278. <https://doi.org/10.2196/10278>
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A Brief Measure for Assessing Generalized Anxiety Disorder: The GAD-7. *Archives of Internal Medicine*, *166*, 1092-1097. <https://doi.org/10.1001/archinte.166.10.1092>
- Stevenson, D., & Farmer, P. (2017). *Thriving at Work: A Review of Mental Health and Employers*.
https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/658145/thriving-at-work-stevenson-farmer-review.pdf
- Strauss, C., Cavanagh, K., Oliver, A., & Pettman, D. (2014). Mindfulness-Based Interventions for People Diagnosed with a Current Episode of an Anxiety or Depressive Disorder: A Meta-Analysis of Randomised Controlled Trials. *PLoS ONE*, *9*, Article ID: e96110. <https://doi.org/10.1371/journal.pone.0096110>
- Tomlinson, E. R., Yousaf, O., Vittersø, A. D., & Jones, L. (2018). Dispositional Mindfulness and Psychological Health: A Systematic Review. *Mindfulness*, *9*, 23-43. <https://doi.org/10.1007/s12671-017-0762-6>
- Weber, B., Sala, L., Gex-Fabry, M., Docteur, A., Gorwood, P., Cordera, P. et al. (2017). Self-Reported Long-Term Benefits of Mindfulness-Based Cognitive Therapy in Patients with Bipolar Disorder. *The Journal of Alternative and Complementary Medicine*, *23*, 534-540. <https://doi.org/10.1089/acm.2016.0427>
- Williams, J. M. G. (2010). Mindfulness and Psychological Process. *Emotion*, *10*, 1-7. <https://doi.org/10.1037/a0018360>