

## Chunk 1

Systematic Review of Mindfulness-Based Cognitive Therapy and  
Mindfulness-Based Stress Reduction via Group Videoconferencing:  
Feasibility, Acceptability, Safety, and Efficacy

Alesia Moulton-Perkins

University of SurreyDuncan Moulton

Canterbury Christ Church University

Kate Cavanagh

University of SussexAlex Jozavi

University of Surrey

Clara Strauss

University of Sussex and Sussex Partnership NHS Foundation Trust, Hove, East Sussex

## Chunk 2

Mindfulness-Based Cognitive Therapy (MBCT) and Mindfulness-Based Stress Reduction (MBSR) are effective in reducing distress among people with physical or mental health problems. However, implementation is limited by variable geographic provision, ability to travel, and the need for remote service delivery during the coronavirus disease 2019 (COVID-19) crisis. Integration with Internet-enabled technologies like videoconferencing potentially enhances access. This article reports a

### Chunk 3

systematic review exploring the feasibility, acceptability, safety, and efficacy of delivering MBCT/MBSR by videoconferencing (MBCT/MBSR-VC). No restrictions were made about population or study design. Eleven online databases were searched and 10 studies met inclusion criteria. Narrative synthesis was used because of study heterogeneity. Articles featured physical health and nonclinical samples, but not mental health. Three studies had moderate-strong methodological quality. Results

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supported the feasibility and acceptability of MBCT/MBSR-VC. Considerations of safety were largely unreported. MBCT/MBSR-VC demonstrated medium positive effects on mental health outcomes compared with inactive controls ( $d_s = 0.44 - 0.71$ ), and little difference compared with active controls like in-person delivery (all confidence intervals crossed zero). Evidence regarding mindfulness or self-compassion as potential mechanisms of action was inconclusive. Future

implementation research should target mental health populations using noninferiority designs. Adapting MBCT/MBSR to remote delivery will require development of guidelines and training packages to ensure best practice in this medium and adherence to evidence-based MBCT/MBSR models.

Keywords: mindfulness, MBCT, MBSR, videoconferencing, systematic review

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Alesia Moulton-Perkins, School of Psychology,

University of Surrey;

Duncan Moulton, Salomons

Institute for Applied Psychology, Canterbury Christ Church University; Kate Cavanagh, School of Psychology,

University of Sussex;

Alex Jozavi, School of

Psychology, University of Surrey; Clara Strauss, School of Psychology, University of Sussex, and Research and Development Department, Sussex Partnership NHS Foundation Trust, Hove, East Sussex. Alex Jozavi is now

at the New School of Psychotherapy and Counselling, Middlesex University.

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of the data extraction.

Correspondence concerning this article should be  
addressed to Clara Strauss, School of Psychology, University  
of Sussex, Pevensey Building, Falmer, Brighton BN1  
9QH, United Kingdom. Email: c.y.strauss@sussex.ac.uk

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This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. Mindfulness is the psychotherapeutic orientation

predicted to increase the most over the next decade(Norcross, Pfund, & Prochaska, 2013 ). The most

studied mindfulness-based intervention (MBI;



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studied mindfulness-based intervention (MBI;

Chiesa, Fazio, Bernardinelli, & Morandi, 2017 )i s

Mindfulness-Based Stress Reduction (MBSR;Kabat-Zinn, 1990 ), adapted by Segal, Williams, and Teasdale (2002) for patients with recurrent

depression to become Mindfulness-Based Cogni-tive Therapy (MBCT). MBCT/MBSR is resource-intensive, however, and access is variable ( Crane &

Kuyken, 2013 ). Where MBCT/MBSR groups

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Kuyken, 2013 ). Where MBCT/MBSR groups exist, access may be limited by rural location, perceived stigma, caring duties, or mobility difficulties

(Schoultz, Macaden, & Hubbard, 2016 ). Some patients experience access issues because of “transport poverty ”(Sustrans, 2012 ).

MBCT/MBSR has been integrated with online delivery methods ( Spijkerman, Pots, & Bohlmeijer, 2016). However, changes to the traditional protocols risk reducing efficacy: early evidence suggests

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that the number of sessions and their degree of guidance moderates effect sizes ( Spijkerman et al., 2016). Furthermore, fewer sessions limits opportunities for between-session mindfulness practice, which is positively related to outcome ( Parsons, Crane, Parsons, Fjorback, & Kuyken, 2017 ).

Improving access to MBIs is challenging, but technologies like videoconferencing (VC) may provide a convenient, cost-effective solution. Most people have Internet access and use it daily ( Office

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for National Statistics, 2018 ), and there is a public willingness to use video consultations with health professionals ( NHS England, 2019 ). The cancellation of in-person treatments because of the coronavirus disease 2019 (COVID-19) crisis attests to the need to review evidence for VC integration.

Reviews of individual interventions by VC attest to its equivalence to in-person treatments: it is as effective ( Backhaus et al., 2012 ; Chakrabarti, 2015; Drago, Winding, & Antypa, 2016 ), and the

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2015;Drago, Winding, & Antypa, 2016 ), and the therapeutic alliance is preserved ( Simpson & Reid, 2014). However, translating traditional 8-week group MBCT/MBSR to remote delivery presents unique challenges: sessions are long (2 –2.5 hr), and as the central medium of effect is the skillful delivery of mindfulness practices and the guided inquiry that follows, synchronous communication with an experienced mindfulness instructor able to manage group dynamics remotely and technology is key.

group dynamics remotely and technology is key.

Searches revealed no existing systematic

reviews of MBCT/MBSR-VC. Five reviews of digitally delivered MBIs have evaluated diverse technologies; they did not focus solely on MBCT/

MBSR ( Krolikowski, 2013 ;Russell, Ugalde,

Milne, Austin, & Livingston, 2018 ;Sevilla-Lle-

wellyn-Jones et al., 2018 ;Spijkerman et al., 2016 ;

Toivonen, Zernicke, & Carlson, 2017 ). All five

touched on VC, but none examined issues speci-

fic

touched on VC, but none examined issues speci

fic

to live VC groups, such as feasibility, acceptability,

and safety. Given the 19% yearly increase in mind-

fulness studies ( Chiesa et al., 2017 )a n dr a p i dd e v e l -

opments in VC technology, a systematic review

focusing speci fically on MBCT/MBSR-VC is

timely.

Therefore, this article presents a systematic

review of the literature evaluating the feasibility,

acceptability, safety, and ef ficacy of MBCT/

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acceptability, safety, and efficacy of MBCT/MBSR-VC. Data on mental health outcomes (self-reported anxiety, depression, or distress) will be extracted. Given evidence that mindfulness significantly mediates the effects of MBIs on mental health outcomes and that self-compassion also plays a role (Gu, Strauss, Bond, & Cavanagh, 2015), data pertaining to both will also be extracted. MBCT, MBSR, and their variants will be included because of their established evidence base.



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because of their established evidence base.

### Aim and Review Questions

This review aimed to describe current evidence about the feasibility, acceptability, safety, and efficacy of delivering MBCT/MBSR via group VC.

The review questions were:

1. How feasible and acceptable is delivering group MBCT/MBSR-VC?
2. What technical considerations are necessary to ensure safe delivery of MBCT/MBSR-VC?
3. How efficacious is MBCT/MBSR-VC compared with non-VC MBIs and other

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compared with non-VC MBIs and other control conditions (active and inactive) on mental health outcomes and potential mechanisms of action such as mindfulness and self-compassion?

### Method

The review methods were established before its conduct and the protocol registered with PROSPERO, the International Register of Systematic Reviews (CRD42018081724). The scope and methods were adjusted when initial

scope and methods were adjusted when initial

scoping searches revealed the limited nature of  
SYSTEMATIC REVIEW OF MBCT/MBSR BY  
VIDEOCONFERENCING 111This document is copyrighted by the American Psychological  
Association or one of its allied publishers.

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disseminated broadly. the evidence. Reporting followed PRISMA  
guidelines ( Moher, Liberati, Tetzlaff, & Alt-  
man, 2009 ).

Design

man, 2009 ).

### Design

A mixed methods design was utilized and data extracted from quantitative, qualitative, and mixed methods studies was narratively synthesized (Popay et al., 2006 ).

### Inclusion and Exclusion Criteria

Publications featuring adults participating in group MBCT/MBSR or variants delivered by videoconferencing were included. Only English lan-

## Chunk 21

eoconferencing were included. Only English language articles were searched because of resource limitations. Mindfulness practice and principles had to feature in at least 50% of sessions. Studies of interventions not explicitly based on MBCT/ MBSR were excluded. Groups could consist of participants attending remotely, or mixed remote and in-person attendance. The location of the facilitator

was not stipulated. Initial scoping searches revealed a modest body of literature and, therefore, no limit

was made concerning population, setting, or design.

#### Search Strategy

Electronic searches of the peer reviewed and gray literature were conducted by the first author

(Alesia Moulton-Perkins) using a combination of free text and MeSH headings to find synonyms of

the terms MBCT, MBSR, mindful\*, and videoconferencing in title and abstract (see Online

Supplemental Materials Resource 1 ). Databases

Supplemental Materials Resource 1 ). Databases

searched were: Web of Science (CORE Collection

including conference proceedings), SCOPUS, PubMed, BNI, CINAHL, EMBASE, HBE, HMIC, PsycINFO, MEDLINE, and AMED. Searches

were conducted on 27.03.2018 and then updated on

19.04.2019. In the interim the HBE database had ceased to be available through HDAS and, there-

fore, only articles to 27.03.2018 were included

from this database. A final search was conducted on

23.11.2019. Publications from 1998 were included as this was the year when the first guidelines were published on videoconferencing ( American Psychiatric Association, 1998 ). The International Trials Registry Platform was checked for studies registered between 2017 and 2019 but none met inclusion criteria. Reference lists from published articles were also consulted. Where reported data was incomplete, study authors were contacted. Two authors responded, one of whom provided suf-



Two authors responded, one of whom provided sufficient further data to calculate effect sizes.

#### Procedure

Records identified through database searching were independently double screened on title and abstract by two authors (Alesia Moulton-Perkins and Alex Jozavi). Full text articles were obtained and independently assessed for eligibility by Alesia Moulton-Perkins and Alex Jozavi. Data was extracted using a tailormade form (see Online Supplemental Materials Resource 2 ) by a member

Supplemental Materials Resource 2 ) by a member of the research team and checked by another (Alesia Moulton-Perkins or Duncan Moulton). Data pertaining to effect size calculations and quality appraisal was independently extracted and completed in duplicate by Alesia Moulton-Perkins and Duncan Moulton. Where disagreements arose, these were resolved through discussion with reference to a third party (Clara Strauss and Kate Cavanagh).

Analytic Strategy

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### Analytic Strategy

Data on populations, interventions, comparators, outcome, and the review questions were extracted, tabulated, and narratively synthesized to draw conclusions about the similarities and differences across studies. Where indices were unreported, these were calculated where possible. Feasibility was operationalized as the proportion of those approached who responded, were eligible, consented, and who were study completers (provided a

complete dataset). Indices were calculated from the whole sample where a study was controlled and from the VC intervention where it was not. Acceptability was analyzed according to intervention completer rate (participants completing at least 50% of the intervention) and patient satisfaction. Safety indices were extracted using guidelines for delivery of VC mental health services ( Luxton, Sirotin, & Mishkind, 2010 ).

The Effective Public Health Practice Project

The Effective Public Health Practice Project

(EPHPP) Quality Assessment Tool for Quantitative

studies ( Thomas, Ciliska, Dobbins, & Micucci,

2004) was used to appraise the methodological qual-

ity of the included studies, a tool deemed reliable

(Armijo-Olivo, Stiles, Hagen, Biondo, & Cum-

mings, 2012 ). Two raters independently completed112 MOULTON-PERKINS ET AL.This

document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. the table and any discrepancies were resolved to arrive at an agreed overall rating of “strong, ”“moderate,”or“weak”for each article.

Outcomes pertaining to mental health (distress, anxiety, or depression), and potential mechanisms

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anxiety, or depression), and potential mechanisms of action (mindfulness, self-compassion) were extracted. Mindfulness and self-compassion were considered potential mechanisms of action if they were shown to be impacted positively by the mindfulness intervention. No formal mediation analysis was conducted. Effectiveness was assessed by extracting relevant author-reported results showing statistically significant post-intervention group differences in controlled stud-

intervention group differences in controlled studies or prepost improvement in uncontrolled studies. Where there were no significant differences, true null findings were not assumed unless studies used a noninferiority or equivalence study design.

In addition, individual study means, standard deviations, and Ns were extracted and the Standardized Mean Difference (SMD) calculated separately for active controlled and inactive-controlled studies. Effect size  $d$  was calculated as the mean dif-



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ference in postintervention scores between groups, divided by the pooled postintervention SD, using an online calculator ( Lenhard & Lenhard, 2016 ).

Effect size was interpreted as small, medium or large (  $d = 0.2, 0.5$ , or  $0.8$ , respectively) according to

Cohen 's (1969) convention. Control conditions

were categorized as active or inactive using theCochrane handbook criteria ( Higgins et al., 2019 ).

To interpret nonsignificant effect sizes, 95% con fi-

dence intervals (CIs) were inspected. Where CIs crossed zero but were highly skewed around zero the possibility of lack of statistical power was considered. Because CIs represent not just a means of null hypothesis significance testing, but a “range of plausible values for the true effect ”(Finch, Cumming, & Thomason, 2001 , p. 204), CIs with a markedly asymmetric spread around zero were noted as evidence toward a possible effect requiring further research.

research.

Finally, a “vote counting” approach ( Thomas,

O’Mara-Eves, Kneale, & Shemilt, 2017 )w a s

a p p l i e d t o r e s u l t s a s a “descriptive tool ”to summa-

rize effectiveness across the two methods. Results were narratively synthesized in light of the quality

appraisal using a positive deviance ( Bradley et al.,

2009) approach: studies with the best outcomes

were identified and compared with those with the

worst outcomes and shared features noted. Results

## Chunk 36

worst outcomes and shared features noted. Results

In total, 1,716 records were identified

through

database searching, and another nine through

hand searches of reference lists (see Online

Supplemental Materials Resource 3 for PRISMA

diagram). After screening title and abstract and

removing redundant records, 22 articles were

assessed for eligibility on full text. Ten were

excluded because they were not based on MBCT/MBSR or did not

feature group videoconferencing

(see Online Supplemental Materials Resource 4 for full details of articles excluded). Twelve articles representing 10 empirical studies were selected for the review.

#### Study Characteristics

Selected characteristics of the included studies are summarized in Table 1 . Publication dates ranged from 2008 to 2019, with most 2014 or later. Included studies featured a total of 789 participants (median = 66.5). The majority focused on physical

(median = 66.5). The majority focused on physical health populations, with the remainder covering nonclinical populations such as universities and the corporate sector. None targeted mental health populations.

Participants' mean ages ranged from 30 to 73.

Most participants were female (range = 47–88%), although three studies did not report age and gender. None reported socioeconomic status, rural or urban residence, or transport poverty status. Regions represented were North America (N=4),

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Australasia ( N= 2), and Europe ( N= 3), including one in the United Kingdom.

Comparators were utilized in the majority of studies: eight were controlled, of which four were randomised controlled trials (RCTs). Two studies compared MBCT/MBSR-VC to the same face-to-face (F2F) intervention. Two featured active control conditions (self-guided online MBI = 1; non-MBI = 1) and 6 inactive control conditions (Wait List Control [WLC] = 5; walking group = 1). Two

## Chunk 40

List Control [WLC] = 5; walking group = 1). Two studies featured both active and inactive controls.

Authors generally reported positive outcomes, with no statistically significant negative or adverse effects found. Of the seven comparisons of VC to non-MBI control (inactive or active), six reported statistically significant between-groups differences in favor of VC on at least some of the out-



ces in favor of VC on at least some of the out-comes. The three studies comparing VC with aSYSTEMATIC REVIEW OF MBCT/MBSR BY VIDEOCONFERENCING 113This document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. Table 1

Selected Characteristics of Included Studies

Outcomes: Between-group ( within-group )

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Outcomes: Between-group ( within-group )

Study Design Population VC intervention Comparator Positive difference

favours VC

( $p, .05$ )

(improvement ) No difference (  $p, .05$ ) Negative

difference

favours control

( $p, .05$ )

(deterioration )

Aikens et al. (2014) RCT U.S. MBSR-VC Inactive control:

WLC PSS FFMQ (nonjudge) —

Corporate

employees  $N=44$   $N=45$  FFMQ observe

describe aware nonreact

Bogosian et al.

(2015) RCT U.K. MBCT-VC Inactive control:

WLC GHQ HADS-A —

Multiple

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WLCGHQ HADS-A —

Multiple

sclerosis N=19 (F= 47%) N=21 (F= 62%) HADS-D

M

age53 Mage51

Cavalera et al.

(2019) RCT Italy MBSR-VC Active non-MBI con-

trol: Self-guided online psychoed HADS-D —

Multiple

sclerosis N=54 (F= 67%) N=67 (F= 62%) HADS-A

M

age42 Mage43

Farver-Vestergaard

et al. (2018) Pre-post

mixed

methods Denmark

COPD MBCT-VC — HADs-tot —

N=8 (F= 50%)

Mage73

Gardner-Nix et al.

(2008) Quasi-Exp Canada

chronic

pain MBSR-VC Active control:

MBSR-F2F — SF-36-MCS —

N=57 (F= 88%) N=99 (F= 80%)

## Chunk 44

N=5 7( F= 88%) N=9 9( F= 80%)

Mage54 Mage51

Inactive control:

WLCSF-36-MCS —

N=5 7( F= 75%)

Mage52

Gardner-Nix et al.

(2014)Quasi-Exp Canada

chronic

painMBSR mixed F2F

and VC N=6 0Inactive control:

WLC N=5 9SF-36-MCS —

(table continues )114 MOULTON-PERKINS ET AL.This document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. Table 1 ( continued )

Outcomes: Between-group ( within-group )

Study Design Population VC intervention ComparatorPositive difference

favours VC

(p,.05)

(improvement ) No difference ( p..05)Negative

difference

favours control

(p,.05)

(deterioration )

Johansson et al.

(2015)Quasi-Exp

Mixed

methodsSweden MBSR-VC Active control:

MBSR-F2F— SCS —

Johansson and

## Chunk 46

MBSR-F2F— SCS —

Johansson and

Bjuhr (2016)TBI N=1 3( F= 85%) N=1 2( F= 92%) CPRS-D

Mage46 Mage48 CPRS-A

Inactive control:

Walking group— SCS —

N=9( F= 67%) CPRS-D

Mage51 CPRS-A

Krägeloh et al.

(2019)Pre-post New Zealand University

students and staffMBSR/MBCT-VC N/A BDI BAI —

N=3 2( F= 66%) PANAS-N PANAS-P

Mage30 SCS FFMQ (aware describe

nonreact observe) FFMQ (total

nonjudge)

Simmons and

Redman (2018)Quasi-Exp Australia University

studentsMBSR/MBCT-VC Active control: Self-

guided MBI— MAAS —

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guided MBI— MAAS —

N=19a N=52a

Zernicke et al.

(2014, 2016) RCT Canada cancer MBSR-VC Inactive control:

WLC POMS FFMQ (observe describe

nonjudge nonreact)—

N=30 (F=73%) N=32 (F=72%) CSOSI

MAAS Mage58 FFMQ (aware)

Note. Uncontrolled studies in italics. BAI = Beck Anxiety Inventory; BDI-II = Beck Depression Inventory-II; CSOSI = Calgary Symptoms of Stress Inventory ; CPRS-A, D =

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Comprehensive Psychopathological Ratings Scale-Anxiety, Depression; F = female; F2F = face to face; FFMQ = Five Facet Mindfulness Questionnaire; G HQ = General Health Questionnaire; HADs-A, D, Tot = Hospital Anxiety and Depression Scale-Anxiety, Depression, Total; MAAS = Mindfulness Attention Awareness Scale; M BI = Mindfulness-Based Intervention; PANAS-P, A = Positive and Negative Affect Scale-Positive, Negative; POMS = Profile of Mood States; PSS = Perceived Stress Scale; Quasi-Exp = Quasi-



experiment; SCS-SF = Self-Compassion Scale-Short Form; SF36-MCS = Short Form-36 - Mental Component Score; VC = Videoconference.

aFigures not given by authors and, therefore, were calculated from proportions reported. SYSTEMATIC REVIEW OF MBCT/MBSR BY VIDEOCONFERENCING 115 This document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. mindfulness control found no significant differen-

ces between groups, whether that was self-guided, or F2F. However, given none were designed to test noninferiority effects, we cannot assume this implies equivalence. Evidence regarding potential mechanisms of action (mindfulness or self-compassion) was inconclusive. For mindfulness, when VC was compared with a non-MBI control the results were contradictory: Zernicke et al.

(2014) found no significant difference in four of the five FFMQ (Five Factor Mindfulness Ques-

the five FFMQ (Five Factor Mindfulness Questionnaire) subscales, whereas Aikens et al. (2014) found all but one significant. Given that Zernicke et al. (2014) was rated strong methodologically, greater confidence can be taken in their results.

Self-compassion was measured in two studies: Johansson, Bjuhr, Karlsson, Karlsson, and Rönn-bäck (2015) found no significant difference between VC and F2F MBSR or a walking group, while Krägeloh et al. (2019) found a difference favoring VC.

favoring VC.

Intervention characteristics are described in Ta-

ble 2 . Six studies were based on MBSR, two

MBCT and two mixed MBCT/MBSR. Three studies adhered to the original manual in terms of intervention length ( Farver-Vestergaard et al., 2018 ;

Johansson et al., 2015 ;Zernicke et al., 2014 ), the

latter two featuring an online retreat. MBCT/MBSR often include a 1-day retreat during the 8-week course to give participants opportunity to deepen their mindfulness practice. Scant details were given about the online retreat other than stating it was held for a full day, and in the Johansson et

al. (2015) qualitative evaluation that participants

enjoyed it. Details regarding treatment integrity were also largely absent. Only Bogosian et al.

(2015) monitored treatment integrity through lis-

(2015) monitored treatment integrity through lis-

tening to tapes in supervision. None of the studies used standardized tools such as the MBI:TAC (Mindfulness-Based Interventions: Teaching Assessment Criteria; Crane et al., 2013 ).

#### Reporting

of mindfulness practice, intended or actual, was incomplete or omitted in most cases, with only two studies reporting sufficient data to allow total rec-

ommended practice minutes to be calculated. Group sizes ranged from four to 22. Studies featuring the largest groups all followed a model whereby participants met as an in-person group while the facilitator joined remotely (N = 3). Study authors did not comment on how participants experienced these varying methods of delivery. Four studies failed to report group size.

### Feasibility and Acceptability

Feasibility results are presented in Table 3. Zernicke and colleagues (2014) were unique in report-



ing feasibility as their primary outcome measure, with a priori criteria. They met their targets in all indices except study completion (missed by 2%). Only two studies reported sufficient data to be able to calculate the majority of feasibility indices, making inferences difficult to draw. Differences in study design and recruitment strategy led to large variations in response rates (10 to 75%). Eligibility rates followed a similar pattern, with recruitment

strategies designed to achieve a more representative sample generally experiencing lower rates (e.g., Zernicke et al., 2014 : 37%) than those studies drawing from a more selective, and arguably less representative pool of participants (e.g., Krägeloh et al., 2019: 99%). Consent rates varied from 17 to 93%, although this variation is probably best explained by differences in recruitment strategies and reporting. Finally, the rate of study completion (partici-

pants completing postintervention measures) ranged from 27 to 100%. Overall, however, study completion rates were high, with only three studies reporting rates below 75%.

Acceptability results are shown in Table 3 .

Intervention completion rates (participants receiving at least half the intervention) could not be calculated in four studies; the remaining six ranged from 67 to 100%. Four studies included formal participant satisfaction measures and one reported informal participant comments.

one reported informal participant comments.

Two studies reported participant satisfaction rates, with most recommending it to others and 75–100% remarking it was beneficial or met their expectations. Two studies specifically probed satisfaction with VC in their questionnaire wording, with only Farver-Vestergaard et al. (2018) complementing this quantitative data with a thematic analysis. Two themes were relevant to VC: “Practical aspects of attendance ”

vant to VC: "Practical aspects of attendance "

and"Relating. "Positive experiences included attending from home and reduced travel. For example, one participant said, "I have been glad that it is home-based. Otherwise I wouldn't have been able to participate "(p. 472). Some also felt the online nature of the group enhanced relating to others as it demanded more intense management of group dynamics, with one participant saying "Well the upside of using the tele-moni-

saying “Well the upside of using the tele-monitor . . . were that if someone raised their hand they got to say something. And it was not like

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Table 2

Mindfulness by VC Intervention Characteristics

MBI intervention Technology Location

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MBI intervention Technology Location

Study Model Group format Hardware and software Technical problems and support Participants and facilitator

Aikens et al. (2014) MBSR 7 360 min

Recommended total prac-

tice: In session: 420 min, home: 648 min (actual 720) Company conference room with webinar

broadcast screen Not reported Participants: Mixed F2F/VC

VC software not stated Facilitator: Unclear

Assumed clinically unsuper-

vised location

Bogosian et al.

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vised location

Bogosian et al.

(2015)MBCT 8 360 min Webcams and headset provided Problems: Some participants cited technical problems, for exam-ple, computer virus, stolencomputer, problems with audioParticipants and facilitator: All separate remote locations

Group size max 5 Skype Assumed clinically unsuper-

vised location Recommended total practice:

In session:120 -160 min

home: 420 -940 min

Cavalera et al.

(2019)MBSR 8 sessions, length not reported Personal PC Problems: Average one lost con-



## Chunk 65

nection per session but did not

significantly impact on group

activities or discussionsParticipants and facilitator: All

separate home-based

locations

Average group size 5 Skype Clinically unsupervised

location

Farver-Vestergaard

et al. (2018)MBCT 8 3120 min VC-enabled touch screen computer Support: 1:1 pregroup

orientation Participants and facilitator: All

separate home-based

locations

Group size 4 EWII Telecare Problems: Connection issues

mentioned but not clarified

## Chunk 66

mentioned but not clarified

how frequent they were. Clinically unsupervised

location

Recommended total home

practice: 980 min

Gardner-Nix et al.

(2008) MBSR 10 3120 min Hospital-based VC hardware Not reported Participants: Mixed F2F/VC

Group size 10 –20 Ontario Telemedicine Facilitator: Remote

384 kbit/s Assumed clinically supervised

location

Gardner-Nix et al.

(2014) MBSR 12 sessions, length not

reported Hospital-based VC hardware Not reported Participants: Mixed F2F/VC

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Group size 12 –22 Ontario Telemedicine Network Facilitator: Remote

Recommended total in session

practice: 145 min Assumed clinically supervised

location

Johansson et al.

(2015) MBSR 8 3150 min + 1 day retreat Adobe Connect Not reported Participants and

facilitator: All

separate remote locations

Johansson and

Bjuhr (2016) Actual home practice: 1,197

min Assumed clinically unsuper-

vised location

minAssumed clinically unsuper-  
vised location

(table continues )SYSTEMATIC REVIEW OF MBCT/MBSR BY VIDEOCONFERENCING 117This document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. Table 2 ( continued )

MBI intervention Technology Location

## Chunk 69

MBI intervention Technology Location

Study Model Group format Hardware and software Technical problems and support Participants and facilitator

Krägeloh et al.

(2019)MBSR/

MBCT6390-110 min College-based conference room Support: Researcher and additional clinical psychologist

present in person at all sessionsParticipants: F2F

(session 1 F2F) GoToMeeting Facilitator: Separate remote location

Group size 15 -17 Clinically supervised location

Recommended total home

practice: 450 min (actual

## Chunk 70

Recommended total home

practice: 450 min (actual

175 min)

Simmons and

Redman (2018)MBSR/

MBCT4390 min Adobe Connect Support: Online forum Problems:

Some participants did not have

microphones and this limited

discussionNot reported

Assumed clinically unsuper-

vised location

Zernicke et al.

(2014 ,2016 )MBSR 8 3120 min sessions + 6 hr

retreatWebcams and headset provided Support: 1:1 pregroup orientation

+ continuous live technical

supportParticipants and facilitator all

separate remote locations

separate remote locations

Group size 4 -11 eMindful Assumed clinically unsuper-

vised location Recommended total home

practice:

2,205 min (actual 1050 min)118 MOULTON-PERKINS ET AL.This document is copyrighted by the American Psychological Association or one of its allied publishers.

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Feasibility and Acceptability

Feasibility rates Acceptability

Feasibility rates Acceptability

7.94 (4.22) 69Study Response Eligibility Consent Study completionIntervention

completers Participant satisfaction

Aikens et al. (2014) 23% Unable to calculate Unable to calculate 87% 77% Average satisfaction ratings 87%

Bogosian et al. (2015) 70% 46% 93% 90% 95% Not reported

Cavalera et al. (2019) Unable to calculate 73% 58% 98% Unable to calculate Not formally collected but spontaneous

positive comments. Some organized

F2F group after course.



Chunk 73

F2F group after course.

Farver-Vestergaard et al.

(2018)Unable to calculate Unable to calculate 17% 100% 100% Positive comments: Reduced travel.

Mixed comments on whether relating was enhanced or decreased.

Therapeutic relationship: Scores simi-lar F2F and VC.

Gardner-Nix et al. (2008) Unable to calculate Unable to calculate 77% 51% Unable to calculate Not reported

Gardner-Nix et al. (2014) Unable to calculate Unable to calculate 97% Unable to calculate 68% Not reported

Johansson et al. (2015)

## Chunk 74

Johansson et al. (2015)

Johansson and Bjuhr(2016)75% Unable to calculate 75% 89% Unable to calculate Most satisfied.

Some refused allocation

to VC because they did not want toattend an internet group or could not

use computer for long periods. All

remained awake despite mentalfatigue.

Krägeloh et al. (2019) Unable to calculate 99% 21% 52% 67% Not reported

Simmons and Redman

(2018)Unable to calculate Unable to calculate 44% 27% Unable to calculate Satisfaction for the

VC group aggre-

gated with the self-guided group soundable to assess.

Zernicke et al. (2014) 10% 37% 93% 82% 83% 100% satisfied, 49% met 51% exceeded

expectations; 98% recommend it to

othersSYSTEMATIC REVIEW OF MBCT/MBSR BY VIDEOCONFERENCING 119This document is

copyrighted by the American Psychological Association or one of its allied publishers.

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disseminated broadly. the same people talked all the time, which is of-

ten the case on courses like these (p. 472). "Negative relational impacts of VC were focused on technical difficulties. Some participants felt this created a barrier to feeling safe enough to disclose personal experiences and feelings.

#### Safety

VC-specific safety issues were underreported (see Online Supplemental Materials Resource 5 ).

Preliminary planning was better reported than other safety indices like emergency planning, adverse events, deterioration or data security, and privacy

issues. About a third of studies provided precourse technical instruction, personal equipment, or featured clinic-based VC systems. Three did not report whether equipment was provided and one stipulated that participants should provide their own. At least two studies took place in “clinically unsupervised” (Luxton et al., 2010) locations, without direct access to clinical support (see also Table 2 );

four further studies did not explicitly state the location of participants. Krägeloh et al. (2019) reported

that participants had in-person access to a clinical psychologist and Gardner-Nix, Backman, Barbati, and Grummitt (2008, 2014) use date medicine link from participants' local hospitals. Of the six locations known or assumed to have been clinically unsupervised, only two reported providing ongoing

unsupervised, only two reported providing ongoing technical support. None of the studies mentioned VC-specific good practice guidelines or facilitator training in conducting psychological interventions online. Of these technological details, the most comprehensively reported was VC platform (see Table 2 ), with all but one study naming it. Few studies reported on frequency of technical problems, with only one quantifying it ( Cavalera et al., 2019 ).

## Chunk 80

Technical support was provided in four studies, although only Zernicke et al. (2014) indicated it was continuous and live.

None of the studies reported emergency plans

for supporting remote participants. Adverse events such as technical barriers to participation were cited in three studies. Farver-Vestergaard et al. (2018)

reported that one participant suggested the provi-



## Chunk 81

sion of a hotline to contain worries at the end of the session or in the event of technical failure. This was also the only study to mention a significant deterioration in one of their participants. Data security and privacy issues were almost entirely unaddressed: only Zernicke et al. (2014) described procedures to ensure that only approved group members could attend.

### Study Quality

Study quality was rated using Thomas and colleagues' (2004) EHPP tool (see Online Supplemental

Materials Resource 6 for quality table and breakdown of ratings). Two of the RCTs were rated as “Strong ” and one as “Moderate. ”All other studies were rated as “Weak. ”Selection bias regarding recruitment method and lack of randomized controls compromised study quality in most cases.

#### Efficacy

A meta-analysis of study outcomes was not conducted because of study heterogeneity. Between-groups postintervention effect sizes for the three

studies with active controls (see Table 4 )w e r e s t a t -  
istically nonsigni ficant (95% CIs crossing zero) for  
all outcomes except the depression subscale of the  
Hospital Anxiety and Depression Scale (HADs),  
where Cavalera et al. 's (2019) MBSR-VC was  
superior to a self-guided non-MBI psychoeduca-  
tion intervention with a small effect (  $d=0.40$  ) .N e i -  
ther of the studies comparing VC to F2F found  
statistically signi ficant differences. These findings

## Chunk 84

cannot be regarded as conclusive as in most cases the 95% CIs crossed zero asymmetrically in favor of the VC group, which could indicate lack of statistical power. Given that none of the included studies conducted noninferiority comparisons between MBCT/MBSR-VC and non-VC MBIs, we have not analyzed them separately from comparisons with active controls. Of the four studies with inactive comparators (see Table 5 ) all found small to medium, or medium

## Chunk 85

effect size differences ( $d = 0.44 - 0.71$ ) favoring VC on most distress measures, although not on the HADs anxiety subscale and the General Health Questionnaire in Bogosian et al. 's (2015) study. Results evidencing mindfulness as a potential mechanism of action were contradictory: Aikens et al. (2014) found a large effect on the FFMQ observe subscale and medium effects on the rest, while for Zernicke et al. (2014) confidence intervals for all subscales of the FFMQ crossed zero, suggesting no

subscales of the FFMQ crossed zero, suggesting no impact of the VC-MBI on this hypothesized mechanism of action. The evidence for self-compassion outcomes was also inconclusive: although confidence intervals on self-compassion crossed zero<sup>120</sup> MOULTON-PERKINS ET AL. This document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. when VC was compared with F2F MBSR or a walking group by Johansson et al. (2015), the sample size was very small and, therefore, should be interpreted with caution.

## Discussion

This review aimed to describe the current evidence for the feasibility, acceptability, safety, and efficacy of MBCT/MBSR-VC. We identified 10 studies, including five new studies not found in

studies, including five new studies not found in previous reviews. MBCT/MBSR-VC appeared effective for reducing psychological distress compared with inactive controls, with medium effect sizes evidenced. Effectiveness compared with active controls was less clear however, as were any effects on potential mechanisms of action. No studies were sufficiently powered to conduct noninferiority analyses comparing MBCT/MBSR-VC to in-person treatment. Drawing firm conclusions



about feasibility and acceptability was hampered by lack of reporting and general low study quality. However, in the three studies that were of strong/moderate quality, results were promising, with high participant satisfaction and intervention completion rates. We were unable to draw conclusions about safety as few studies reported on adverse events or data security-privacy issues. Nevertheless, we believe the preliminary evidence for MBCT/MBSR-VC effectiveness recommends it

## Chunk 90

as a remote alternative for people currently denied in-person treatment by the COVID-19 crisis.

### Characteristics of Included Studies

We found that physical health conditions among a largely female population were most frequently studied, echoing other mindfulness studies (Bodenlos, Strang, Gray-Bauer, Faherty, & Ashdown, 2017). The most common intervention was

## Chunk 91

MBSR, followed by adapted combined MBCT/MBSR, and the least common traditional MBCT. This is perhaps not surprising given MBSR was originally developed to help people cope with illness and pain. However, there is clear gap in the literature for VC delivery in mental health settings.

Reporting of adherence and treatment integrity was largely absent.

None of the studies featured an average age below 30. This profile challenges assumptions

below 30. This pro file challenges assumptions about digital interventions suiting a young adult de-mographic and suggests that age may not be a
Table 4

Mental Health Outcomes and Potential Mechanisms of Action for Face to Face MBCT/MBSR and Active-Control Conditions

VC intervention Non-MBI control SMD
Face to face MBCT/MBSR control SMD

Study Design Measure
PreM

(SD)Pre

NPost M

(SD)Post

NPreM

(SD)Pre

NPost M

(SD)Post

Nd 95% CI
PreM

(SD) NPost M

(SD) Nd 95% CI

Cavalera et

(SD) NPost M

(SD) Nd 95% CI

Cavalera et

al. (2019)RCT HADS A 7.94 (4.22) 69 6.19 (3.53) 69 6.84 (3.41) 70 6.80 (3.83) 70 0.17 [ /C00.17, 0.50] — ——— — —

HADS D 4.69 (3.47) 69 3.64 (2.91) 69 4.66 (3.24) 70 4.92 (3.52) 70 0.40 [0.06, 0.73] — ——— — —

Gardner-Nix

et al.

(2008)Quasi-Exp SF36 MCS 34.3 (12.6) 57 38.5 (12.9) 40 — — — — — 34.8 (13.2) 99 38.7 (13.2) 50 0.02 [ /C00.40, 0.43]

Johansson

et al.

Johansson

et al.

(2015)Quasi-Exp CPRS-D 6.6 (2.7) 16 5.2 (2.6) 13 — — — — 8.3 (3.5) 12 7.4 (4.9) 12 0.57 [ /C00.23, 1.37]

CPRS-A 8.2 (2.3) 16 6.0 (2.6) 13 — — — — 8.2 (3.8) 12 7.1 (4.4) 12 0.31 [ /C00.48, 1.10]

SCS 36.8 (7.1) 16 39.9 (7.0) 13 — — — — 36.2 (11.6) 12 40.3 (11.1) 12 0.04 [ /C00.74, 0.83]

Note. Measures in italics higher score = less distress/disability. All measures positive dfavors intervention (except SCS). SMD calculated postintervention between-groups;

CPRS-D, A = Comprehensive Psychopathological Rating Scale, Depression, Anxiety; HADS-A, D = Hospital Anxiety and Depression Scale, Anxiety, Depression; Quasi-Exp = Quasi-experiment; SCS = Self-Compassion Scale; SF36 MCS = Short Form 36 Mental Component Score; SMD = Standardized Mean Difference; CI = confidence interval. SYSTEMATIC REVIEW OF MBCT/MBSR BY VIDEOCONFERENCING 121 This document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. Table 5

Mental Health Outcomes and Potential Mechanisms of Action for Inactive Control Conditions

VC intervention Control SMD

Study Design Measure Pre M(SD) Pre N Post M(SD) Post N PreM(SD) Pre N Post M(SD) Post Nd  
95% CI

Aikens et al. (2014) RCT PSS 24.46 (6.29) 44 18.00 (7.01) 44 24.76 (8.16) 45 23.32 (8.45) 45  
0.69 [0.26, 1.11]



## Chunk 97

FFMQ awa 24.11 (5.01) 44 27.67 (5.33) 44 23.96 (6.14) 45 24.29 (6.35) 45 /C00.58 [  
/C01.00,/C00.15]

FFMQ obs 23.25 (5.54) 44 28.81 (5.44) 44 24.22 (5.46) 45 23.91 (5.90) 45 /C00.86 [  
/C01.30,/C00.43]

FFMQ des 26.43 (4.73) 44 28.72 (6.15) 44 25.29 (5.72) 45 25.48 (4.79) 45 /C00.59 [  
/C01.01,/C00.16]

FFMQ nrea 21.14 (4.14) 44 24.17 (4.51) 44 21.31 (4.52) 45 21.43 (4.10) 45 /C00.64 [  
/C01.06,/C00.21]

FFMQ njud 28.50 (6.14) 44 30.33 (5.89) 44 27.13 (5.40) 45 27.98 (5.86) 45 /C00.40 [ /C00.82,  
0.02]

Bogosian et al. (2015) RCT GHQ 16.10 (6.35) 19 11.43 (4.55) 17 17.29 (4.89) 21 14.87 (5.94) 19  
 0.65 [ /C00.03, 1.32]  
 HADS-A 6.96 (3.72) 19 5.48 (2.75) 17 6.98 (3.11) 21 6.58 (3.42) 19 0.35 [ /C00.31, 1.01]  
 HADS-D 6.24 (3.51) 19 5.12 (3.20) 17 7.20 (3.35) 21 7.63 (3.96) 19 0.69 [0.02, 1.37]  
 Gardner-Nix et al. (2008) Quasi-Exp SF36 MCS 34.3 (12.6) 57 38.5 (12.9) 40 33.2 (11.6) 59 33.2  
 (11.6) 53 /C00.44 [ /C00.85,/C00.02]

Johansson et al. (2015) Quasi-Exp CPRS-D 6.6 (2.7) 16 5.2 (2.6) 13 6.9 (2.9) 10 6.9 (2.9) 9 0.62 [ /C00.2, 1.49]

CPRS-A 8.2 (2.3) 16 6.0 (2.6) 13 5.9 (2.8) 10 4.5 (2.8) 9 /C00.56 [ /C01.43, 0.31]

SCS 36.8 (7.1) 16 39.9 (7.0) 13 36.0 (11.8) 10 38.6 (10.0) 9 /C00.16 [ /C01.01, 0.70]

Zernicke et al. (2014) RCT POMS 37.43 (35.69) 30 17.16 (30.72) 30 42.16 (27.40) 32 35.69 (31.52) 32 0.60 [0.09, 1.10]

CSOSI 59.70 (32.52) 30 36.83 (21.87) 30 66.10 (33.77) 32 58.72 (37.38) 32 0.71 [0.20, 1.22]

Chunk 100

FFMQ awa 27.17 (7.67) 30 30.21 (5.00) 30 27.78 (6.05) 32 27.80 (5.64) 32 /C00.45 [ /C00.96, 0.05]

FFMQ obs 24.53 (6.29) 30 26.29 (5.02) 30 24.88 (7.23) 32 26.34 (6.06) 32 0.01 [ /C00.49, 0.51]

FFMQ des 26.17 (6.20) 30 28.13 (6.03) 30 23.81 (7.28) 32 25.53 (6.73) 32 /C00.41 [ /C00.91, 0.10]

FFMQ nrea 19.73 (4.68) 30 22.13 (3.71) 30 18.75 (4.07) 32 20.84 (4.81) 32 /C00.30 [ /C00.80, 0.20]

FFMQ njud 26.63 (7.06) 30 29.50 (5.68) 30 28.03 (7.12) 32 28.84 (5.86) 32 /C00.11 [ /C00.61, 0.38]

Note. CPRS-D, A = Comprehensive Psychopathological Rating Scale, Depression, Anxiety; HADS-A, D = Hospital Anxiety and Depression Scale, Anxiety, Depression; Quasi-Exp = Quasi-experiment; SCS = Self-Compassion Scale; SF36 MCS = Short Form 36 Mental Component Score; SMD = Standardized Mean Difference; CI = confidence interval; RCT = randomised controlled trials; PSS = Perceived Stress Scale; FFMQ = Five Facet Mindfulness Questionnaire; GHQ = General Health Questionnaire; POMS = Profile of

Mood States; CSOSI = Calgary Symptoms of Stress Inventory.<sup>122</sup> MOULTON-PERKINS ET AL. This document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. barrier to health care technology ( Banbury, Nancarrow, Dart, Gray, & Parkinson, 2018 ). We were unable to clarify participants 'urban or rural location

or transport poverty status. High income countries were overrepresented, although digital technologies are increasingly being recognized as a key to addressing the mental health needs of low- and mid-income countries ( Naslund et al., 2017 ).

#### Feasibility and Acceptability

Given variable reporting of feasibility indices, study completion rates were the clearest indicator of feasibility of MBCT/MBSR-VC as they were calculable for all but one study. The only study to

set a priori benchmarks was Zernicke et al. (2014) .

Using their 85% study completion rate target as a

guide, it is promising that five of the nine studies

reporting sufficient data met the target, with a sixth

missing by a small margin. Using a positive devi-

ance approach to identify characteristics of the

highest performers, we found all had interventions of at least eight sessions and smaller group

sizes.

Perhaps surprisingly, in all five studies the facilita-



tor and all participants were in separate places, in contrast to the mixed nature of groups in other studies.

Given few studies specifically probed VC-specific participant satisfaction and nearly half failed to report intervention completion rates, only tentative conclusions can be made about acceptability. The data that is reported suggests good satisfaction and intervention completion. Where dissatisfaction

occurred, it was generally connected to technical difficulties. These results reflect those of Banbury

et al. (2018) , who found that patients in nearly all studies valued being able to attend the group from home and otherwise would not have been able to participate.

Qualitative data was scant with only one study giving a rich picture of participants 'experiences of MBCT/MBSR-VC ( Farver-Vestergaard et al., 2018). None of the studies probed how participants

## Chunk 107

found meditating in front of a screen. The extent to which technical issues like distortions in sound quality impacted on this experience is also unknown.

### Safety

Safety reporting was markedly absent. None of the studies described facilitators being trained inVC groups or referred to practice guidelines. This is concerning, considering the first guidelines on

concerning, considering the first guidelines on delivering mental health services by VC were published 10 years before the oldest study in our review(American Psychiatric Association, 1998 ). While none of the studies involved a mental health population, facilitators may be ill-equipped to manage sessions safely without proper training and guidance,not least situations of lost connections and peoplebecoming distressed or feeling abandoned ( Luxton et al., 2010 ).

et al., 2010 ).

Reporting of adverse events was rare, but only

three studies appeared even to collect this data. Managing risk at a distance in a group VC setting

was largely unexplored. Sansom-Daly, Wake field,

McGill, and Patterson (2015) emphasize the impor-

McGill, and Patterson (2015) emphasize the importance of developing safety protocols and links with local services when working with distressed patients at a distance. Privacy concerns were not raised by participants in any of the studies, although it is not clear whether this was because researchers failed to ask, or participants were genuinely unconcerned. Banbury et al. 's (2018) systematic review

of home-based VC support groups showed few patients were concerned about others seeing into their homes. Because of limited reporting, few conclusions can be drawn about the technical aspects of safe MBCT/MBSR-VC delivery. We do not know how frequent technical difficulties were, typi-

cal bandwidths, levels of technical support, or the impact of facilitator and participant location. A third of studies failed to describe the equipment used, the group size, or other potentially important factors impacting call quality and, therefore, participant experience. For MBI-VC provision in response to COVID-19, we recommend usual risk procedures for F2F groups combined with facilitators having appropriate digital competencies (

Pote

et al., 2020 ).

Efficacy



Pote

et al., 2020 ).

Efficacy

The evidence for efficacy of MBCT/MBSR-VC

is limited by the small number of studies and their inconsistent quality. The strongest evidence came from the four waitlist-controlled studies, in which five of the seven subscales measuring mental health

outcomes showed statistically significant medium

effect sizes favoring MBCT/MBSR-VC. Three of these effects were found in the two higher quality studies ( Bogosian et al., 2015 ; Zernicke et al.,

2014), increasing the confidence we can have in

these results. Nevertheless, it should be noted that  
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Association or one of its allied publishers.

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disseminated broadly. the three studies measuring anxiety failed to find  
statistically significant effects, echoing a meta-

analysis which found effects of MBIs for depression but not for anxiety ( Strauss, Cavanagh, Oliver,

& Pettman, 2014 ).

Regarding active controls, there were no statisti-

cally significant differences found in studies com-

paring VC to face-to-face mindfulness groups. A small significant effect on depression was found

when MBCT/MBSR-VC was compared with self-guided psychoeducation ( Cavalera et al., 2019 ).

However, only further research using robustly

However, only further research using robustly powered noninferiority designs will be able to establish this definitively.

The two studies reporting mindfulness outcomes found contradictory results: Aikens et al. (2014)

found significant differences between VC and control, whereas Zernicke et al. (2014) did not. Author-

reported prepost intervention results for the majority of mindfulness subscales were nonsignificant.

This mirrors the heterogeneity found in the literature. Visted, Vøllestad, Nielsen, and Nielsen 's (2015) systematic review found a small effect of

MBIs on mindfulness compared with a WLC.

However, this obscured the fact that seven studies supported it and nine did not. Also, in a meta-analysis of mediation studies of MBCT and MBSR, Gu

et al. (2015) found moderate but consistent evi-

dence supporting mindfulness as a mediator of clin-

ical outcomes.

Self-compassion featured in two studies

Self-compassion featured in two studies

included in our review. In the one controlled study (Johansson et al., 2015) there was no difference

between the three groups (VC, F2F, and walking) on author-reported significance testing or SMDs

calculated here. Gu et al.'s (2015) meta-analysis

identified only three studies measuring self-com-

identified only three studies measuring self-compassion, just one supporting compassion as a mediator. None of our included studies conducted mediation analyses involving mindfulness or self-compassion outcomes and, therefore, no conclusions regarding mechanisms of action can be drawn.

In summary, the evidence found in the present study lends tentative support to the efficacy of

study lends tentative support to the efficacy of delivering mindfulness by VC. There was no evidence of deterioration and there were promising signs that VC groups may prove not to be inferior to traditional F2F MBCT/MBSR. Given that few studies were randomized or of moderate or strong methodological quality, our conclusions must be tentative. Given the lack of common measures of mindfulness or self-compassion, no conclusions about proposed mechanisms of action can be drawn.



drawn.

### Strengths and Limitations

This is the first review to focus on MBCT/MBSR by VC. Although the limited and heterogeneous evidence base precluded meta-analysis, methods used for conducting this narrative synthesis were rigorous. Following good practice recommendations for systematic reviews ( Karlsson & Bergmark, 2015 ) we separately extracted SMDs for the WLC and active controls. We applied a robust, flexible quality appraisal tool ( Armijo-Olivo et al.,

2012) allowing appraisal of a range of quantitative designs. However, this meant the strengths of the qualitative analysis in Farver-Vestergaard et al. 's (2018) mixed methods study were not recognized in the quality appraisal.

We were unable to aggregate data and instead extracted individual study SMDs within a narrative synthesis. Narrative synthesis, and vote counting particularly have been criticized for lacking transparency and introducing bias ( Valentine et al.,

parency and introducing bias ( Valentine et al., 2017). However, when used as an initial description of patterns across studies, vote-counting has defenders ( Popay et al., 2006 ). In the present review vote-counting was not used in isolation and conclusions were triangulated with the extraction of SMDs, which control for differing sample sizes. It has been argued that narrative synthesis is a realistic and useful method when limited evidence is avail-

and useful method when limited evidence is available, provided the aims of the review are adjusted and the claims made tentative ( Thomas et al., 2017).

#### Further Research

Clearly MBCT/MBSR-VC groups are underresearched. We were limited in our ability to draw conclusions regarding implementation. Only two studies compared videoconference-delivered mindfulness to the same dose of face-to-face mindfulness and neither measured adherence. Future implementation research should investigate the

implementation research should investigate the comparability of the two modes of delivery using a noninferiority randomized controlled design. This should be informed by implementation science theoretical frameworks, such as the patient and provider barriers and facilitators to health care access presented by O'Connor et al. 's (2016) digital

presented by O'Connor et al. 's (2016) digital

model. Furthermore, intention to treat analyses<sup>124</sup> MOULTON-PERKINS ET AL. This document is copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. should be used, something rarely or even incor-

rectly used by study authors in the present review. Gold standard treatments should be used as only one study in the present review featured full MBSR

(Johansson et al., 2015 ) and none used classic

MBCT. Given that MBCT is an evidence-based treatment for recurrent depression, there is a clear imperative for studying its delivery by VC for this population.

As yet the cost effectiveness of implementing

MBCT/MBSR-VC is unknown. The need for tech-

nical support and potential need to provide equip-

ment to participants to ensure social inclusion and equality may mean savings are reduced. Before services seek to implement MBCT/MBSR-VC, a full economic evaluation should be conducted to ensure financial viability.

Future research should follow telehealth

research reporting guidelines ( Abel, Glover,

Brandt, & Godleski, 2017 ) and study technology-

specific aspects of VC mindfulness to better under-

stand factors influencing engagement and effec-

tiveness ( Russell et al., 2018 ). This may include



software and hardware used, Internet bandwidth,

location of participants and facilitator and rural or urban setting. The needs of older clients should be considered, as age-related cognitive and sensory functioning changes may impact telemedicine engagement ( Stronge, Rogers, & Fisk, 2007 ). It is

concerning that the present studies paid so little

attention to the equipment used. Future trials should consult a diverse range of service users regarding optimum equipment. Equipment should be offered, as Farver-Vestergaard et al. (2018) did, to promote

social inclusion and equality of access.

Given the importance of minimizing barriers to

participants' mindfulness practice and group com-

munication, trouble-free connections are essential. Facilitators should not provide live support

during calls, as this distracts from supporting others. Ban-

bury et al. (2018) describe how good technical support can significantly ease participants' anxiety.

This will be especially important as researchers

begin to work with mental health populations.

A better understanding of how cohesion in

groups influences the effectiveness of VC group

therapy is needed. Some evidence suggests VCgroup interactions may remain superficial because

of participants' difficulty trusting each other ( Koz-

lowski & Holmes, 2014 ). Measures such as the Group Therapy Alliance Scale ( Pinsof & Catherall, 1986) would differentiate alliance to group and to leader. Process variables such as therapeutic alliance and group cohesion may be influenced by VC telepresence. Bouchard, Robillard, Marchand, Renaud, and Riva (2007) found the feeling of presence predicted the strength of the therapeu-

presence predicted the strength of the therapeutic alliance over a course of CBT for panic disorder. Better image and sound quality may promote greater presence ( Lozano et al., 2015 ) and, therefore, the choice of VC platform and the Internet connection quality will be important to consider carefully in future studies. Similarly,

training programs for online mindfulness instructors should be developed based on good practice guidelines to meet the challenges of managing group dynamics remotely. An adapted form of the MBI-TAC ( Crane et al., 2013 ) could be developed from the practice of innovative programs (e.g., Meissner, 2017 ; Sansom, Crane, Karunavira Koerbel, & Yian-gou, 2020 ) to assess adherence and teacher competency when delivering MBSR/MBCT by VC. Recent calls for a digitally trained mental health

workforce (Foley & Woollard, 2019) make this need clear.

The potential for harm was not addressed in the majority of included studies, yet literature suggests this is present across all populations, even in F2F settings (Baer, Crane, Miller, & Kuyken, 2019).

Safety should be a key consideration when working via VC with clinically unsupervised participants

via VC with clinically unsupervised participants calling in from home. Risk management protocols for VC, like those produced by professional bodies such as the American Psychological Association (2013) need to be urgently developed and evaluated so that potential risks can be mitigated (e.g., clients with suicidal risk having preestablished written instructions for seeking help). Safety planning should be prioritized in any future trial, considering technology-specific issues in risk assessment and



emergency planning.

In conclusion, this review has provided an im-

portant overview of the work conducted thus far on

delivering MBCT/MBSR via VC. Although the

evidence provides preliminary support for the feasibility, acceptability, and efficacy of disseminating

MBCT/MBSR by VC, it has also highlighted significant gaps in our knowledge in all these domains,

not least safety and the long term effects of MBSR/

MBCT-VC. Given drivers such as the United King-

MBCT-VC. Given drivers such as the United King-

dom Mindfulness All-Party Parliamentary Group 's

(2015) recommendation that the provision of

MBCT be radically upscaled, the growing call from patients for convenient digital options (

Seres, SYSTEMATIC REVIEW OF MBCT/MBSR BY VIDEOCONFERENCING 125 This document is

copyrighted by the American Psychological Association or one of its allied publishers.

This article is intended solely for the personal use of the individual user and is not to be disseminated broadly. 2015), and the prediction that online clinics will soon be the norm ( Fairburn & Patel, 2017 ), the need to develop a robust base of evidence and clinical policy is clear and urgent.

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Revisión sistemática de la terapia cognitiva basada en la atención plena y la reducción del estrés basada en la

atención plena mediante videoconferencia grupal: Viabilidad, aceptabilidad, seguridad y eficacia

La terapia cognitiva basada en la atención plena (MBCT) y la reducción del estrés basada en la atención

plena (MBSR) son efectivas para reducir la angustia entre las personas con problemas de salud física o

mental. Sin embargo, la implementación está limitada por la provisión geográfica variable, la capacidad de

viajar y la necesidad de la prestación de servicios remotos durante la crisis de la enfermedad del coronavirus

2019 (COVID-19). La integración con tecnologías habilitadas para Internet como las videoconferencias

potencialmente mejora el acceso. Este artículo informa una revisión sistemática que explora la viabilidad,



aceptabilidad, seguridad y eficacia de administrar MBCT / MBSR por videoconferencia (MBCT / MBSR-

VC). No se hicieron restricciones sobre la población o el diseño del estudio. Se realizaron búsquedas en once bases de datos en línea y diez estudios cumplieron los criterios de inclusión.

Se utilizó la síntesis narrativa

debido a la heterogeneidad del estudio. Los artículos presentaban muestras no clínicas de salud física, pero

no de salud mental. Tres estudios tuvieron una calidad metodológica moderada-fuerte. Los resultados apoyaron la viabilidad y aceptabilidad de MBCT / MBSR-VC. Las consideraciones de seguridad no se informaron en gran medida. MBCT / MBSR-VC demostró efectos positivos medios en los resultados de salud mental en comparación con los controles inactivos (ds 0,44 -0,71) y poca diferencia en comparación

con los controles activos como la entrega en persona (todos los intervalos de con fianza cruzaron cero). La

evidencia con respecto a la atención plena o la autocompasión como posibles mecanismos de acción no fue concluyente. La investigación de implementación futura debe dirigirse a las poblaciones de salud mental

utilizando diseños de no inferioridad. La adaptación de MBCT / MBSR a la entrega remota requerirá el

desarrollo de pautas y paquetes de capacitación para garantizar las mejores prácticas en este medio y el

cumplimiento de los modelos MBCT / MBSR basados en evidencia.

mindfulness, MBCT, MBSR, videoconferencia, revisión sistemática

MBCTMBSR

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