

## **Protocol for a scoping review: A review of Internet-delivered of mindfulness-based interventions**

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### **Background:**

Depression is a common mental illness affecting more than 264 million people worldwide (James et al., 2018). It can cause the affected person to suffer much and function poorly at work, school, and the family, leading to suicide in the worst case (World Health Organization, 2020). Rates of depression have increased during the COVID-19 outbreak, with prevalence ranging from 7.45% to 48.30% and an average or pooled prevalence rate of about 25% (Bueno-Notivol et al., 2021). The prevalence rate of depression is seven times higher than a global estimate, accounting for 3.44% in 2017 (Bueno-Notivol et al., 2021). It seems that the COVID-19 pandemic has also resulted in anxiety and depression in people with and without a history of mental illnesses (Gulliver et al., 2021). Generally, psychological therapies can reduce stress and depression symptoms severity and improve well-being by teaching psychotherapeutic strategies (Gulliver et al., 2021).

Mindfulness-based Interventions (MBIs) are psychotherapies that have increased in use rapidly in the past decade (Hofmann & Gómez, 2017). MBIs have effectively reduced anxiety and depression symptom severity in various individuals (Hofmann & Gómez, 2017). Recently, mindfulness-based interventions are increasingly being delivered using the Internet in people's homes (Spijkerman, Pots, & Bohlmeijer, 2016). Telehealth modalities, smartphone apps, and websites of mindfulness-based interventions are more likely to be utilized during social distancing in the coronavirus pandemic (Dana R Garfin, Amada L Cipres, & Rachel M Reyes, 2021). Nevertheless, the recent systematic review and meta-analysis indicated that previous studies have limited evaluation of long-term change of Internet-delivered MBIs to reduce depression, anxiety, stress, and improve the well-being of people who participated in the therapies (Spijkerman et al., 2016). Moreover, a recent study used a small convenience sample, leading to external generalizability (Zhang, Zhang, Liu, Xiao, & Wang, 2021).

Based on the literature research above, Internet-delivered MBIs' efficacy still needs to explore whether the results could be generalized to clinical samples. Furthermore, the effects of Internet-delivered MBIs on mindfulness, emotion regulation, depression, and anxiety are maintained over time should be examined in future long-term research. Consequently, there seems to be a need to review the literature regarding Internet-delivered MBIs in more detail to identify areas for future research. Therefore, a scoping review was deemed most appropriate for these outcomes because it is exploratory and incorporates various research designs, focusing on breadth rather than depth (Peters MDJ et al., 2020). Therefore, this scoping review will summarize the current literature on Internet-delivered MBIs for people with depression, stress, and anxiety and identified gaps to provide direction for future research in the area.

### **Methods:**

This review will use the methodological framework of scoping review based on Joanna Briggs Institute Reviewers' Manual 2020 Methodology for JBI Scoping Reviews (Peters MDJ et al., 2020) and methodological framework as mentioned by Arksey and O'Malley (2005) and Levac, Colquhoun, and O'Brien (2010). These frameworks will allow the authors to identify both in-depth and broad literature. The process of this scoping review will adhere to the following guidelines: (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, and (5) collating, summarizing, and reporting the results.

#### **1. Identifying the research questions:**

Concept: MBI Mindfulness-based Interventions

Context: Online/Internet-based/Internet delivered

The main research question in the study: What are the Internet-delivered MBIs approaches that have been used to reduce depression, anxiety, stress, and improve well-being?

The research sub-questions:

- What are barriers and facilitators to the implementation of Internet-delivered MBIs?
- Which patient samples comprise the participants in Internet-delivered MBIs?
- What are the teacher training and credentials in Internet-delivered MBIs?
- Which issues should be concerned, such as cultural issues?

#### **2. Identifying relevant studies:**

The search strategy will develop from the primary and sub-research questions as mentioned. The search strategy will contain a broad literature search in the electronic databases PubMed, CINAHL Complete (EBSCO), PsycINFO (EBSCO), Embase (Elsevier), Scopus (Elsevier), and Web of Science. The search strategy will be constructed around two concepts: Mindfulness and internet-based interventions. Relevant controlled vocabulary and keywords will vary depending on the database. The MEDLINE (PubMed) search strategy will be provided in Appendix A. The final search will be supplemented with a

search for grey literature, including Thai Jo, OpenGrey, and Google Scholar. The literature selected will be described by the PRISMA-ScR diagram (Tricco et al., 2018). This scoping review protocol will be written according to the guidance provided by the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols (PRISMA-P) checklist and will be deposited in the University of Michigan's institutional repository Deep Blue (<https://deepblue.lib.umich.edu/documents>).

### **Supplemental Strategies**

- A hand search for articles will be performed by viewing the reference lists in articles found and conducting a search on the electronic database Scopus.
- Citation tracking (backward/forward) of the final set and some relevant reviews

### **3. Study selection:**

First of all, the selection process will start with screening the titles and abstracts found by each author individually. Next, the inclusion and exclusion criteria will be used to ensure that the literature included is relevant to answer the main and sub-research questions.

#### **Concept: MBI Mindfulness-based Interventions**

Inclusion:

- Interventions must include MBI
  - mindfulness, mediation
- Outcomes:
  - depression, anxiety, stress, and improved well-being (example, self-report, quality of life, happiness)

Exclusion:

- Studies that don't include mindfulness
- Biofeedback
- Outcomes: weight loss, smoking,

#### **Context: Online/Internet-based**

Inclusion:

- Interventions must have been delivered using the Internet: Telehealth modalities, smartphone apps, and websites;

#### **Types of evidence sources:**

Inclusion:

- Primary study
- Previous studies examined the efficacy of mindfulness-based interventions, mindfulness-based stress reduction, and mindfulness-based cognitive therapy
- Study designs using randomized controlled trials, non-randomized studies, quasi-experimental designs, controlled before-after studies, and pre-post studies will be included in this review.

- Quantitative studies
- Languages: English and Thai languages

Exclusion:

- Commentaries, editorials, news, books, book chapters
- Qualitative studies
- Reviews
- Conference proceedings
- Conference posters, presentations, papers
- Dissertations and Theses

This scoping review will use Rayyan (<http://rayyan.qcri.org>) to help expedite the initial screening of abstracts and titles from the databases using semi-automation incorporating a high level of usability (Ouzzani, Hammady, Fedorowicz, & Elmagarmid, 2016). Grey literature and hand search articles will be evaluated independently by the authors. All the material agreed on will be included, and if an agreement cannot be established, the authors will review the abstracts. If an agreement cannot be found, the full-text document will be reviewed to determine if it will be included in the scoping review. If there is disagreement during the screening process, the issue will be further discussed with a third researcher to establish if inclusion is warranted. Quality assessment of the literature selected in the study will be assessed with critical appraisal tools from Joanna Briggs Institute (Aromataris E & Munn Z (Editors), 2020). Grey literature will be evaluated and critically appraised using the AACODS checklist (Tyndall J, 2010). These tools will assess the quality of the material and establish the risks for bias.

#### 4. Charting the data:

This step aims to create a descriptive summary of the results, which addresses the scoping review's objectives and ideally answers the review questions. The final sources included in the scoping review will be read in full text and recorded in an Excel extraction framework. The data chart will contain a mixture of general information and specific information related to the study's aims. The charting will be done by using the descriptive-analytical method within the narrative tradition. This framework will allow for the appropriate organization of the included sources. It also allows for the standardized extraction of data relevant to the scoping review.

Charting the data will apply to use following the JBI Reviewers Manual (Methodology for Scoping Reviews, chapter 11) (Aromataris E & Munn Z (Editors), 2020).

#### Data Extraction

- name of the authors
- year of publication
- where the study was published or conducted
- aims of the study
- study population (cultural, religion, teacher training, and credentials, etc.)

- sample size
- methods (Internet) block
- intervention type /duration (solo, guided, etc/)
- content (MBIs)
- comparator
- outcome measures
- key findings will also be present in charting the data.

### **5. Collating, summarizing, and reporting results:**

Included studies will use qualitative content analysis to collate, summarise, and report in the data chart for considering the types and variety of data. A content analysis will synthesize the data into content-related categories and sub-categories to describe the data in more detail. The content related to the research questions will be extracted into these categories. New types can be created by the authors if any data encountered does not fit the existing categories.

#### **Discussion:**

This scoping review will identify and report the current understanding of how Internet-delivered MBIs can reduce depression, anxiety, stress and improve well-being. Moreover, it will help to examine the effectiveness of Internet-delivered MBIs. The barriers and facilitators to implementing Internet-based MBIs will also clarify to increase understanding before developing research of Internet-delivered MBIs. In addition, cross-cultural issues will be identified to provide the researchers who would like to create and examine the effectiveness of Internet-delivered mindfulness-based interventions in different countries, in particular perspectives of western and non-western countries. It will assist researchers by guiding the development of future research questions that are increasingly relevant to users. This scoping review may also help clinicians refine their ability to develop and test the effectiveness of Internet-delivered mindfulness-based interventions.

A limitation to this scoping review is that there is a risk of bias when including grey literature. For example, grey literature is not peer-reviewed, and the quality of the data is not evaluated in the same way as articles (Palermo, 2010). Another limitation is only including sources in English and Thai since there might be valuable sources in other languages. The outcomes of this scoping will be specific on depression, anxiety, stress, and improved well-being. There might be other advantages of Internet-delivered MBIs.

#### **Acknowledgment:**

The authors would like to sincerely thank Kate Saylor, a senior associate informationist, Taubman Health Sciences Library, University of Michigan. She has extensive expertise in health science literature searches and excellent support for developing the search strategy in this study.

#### **Funding**

KK has been supported for a D43 Post-doctoral traineeship in NCD research, The University of Michigan School of Nursing. Grant Number: 2D43TW009883-06. The funding source had no role in the design

and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; and decision to submit the manuscript for publication.

**Conflict of Interest Statement:**

The authors declare that they have no conflicting interests.

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**Availability of data and material:**

All data generated during this study will be included in appendix A and Deep Blue Data, University of Michigan.

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## Appendix A

### PubMed

1.

"Meditation"[Mesh] OR "Mindfulness"[Mesh] OR "Mind-Body Therapies"[Mesh:NoExp] OR Mindfulness[tiab] OR Meditation[tiab] OR Mindful[title] OR "Self-reflection"[tiab] OR "Self compassion"[tiab] OR "mind body"[tiab] OR MBSR[tiab] OR MBCT[tiab] OR Meditate[tiab] OR Meditates[tiab] OR Meditated[tiab]

2.

"Internet"[Mesh] OR "Online Social Networking"[Mesh] OR "Telemedicine"[Mesh] OR "Smartphone"[Mesh] OR "Mobile Applications"[Mesh] OR Internet[tiab] OR "World Wide Web"[tiab] OR Online[tiab] OR "Social media"[tiab] OR "Web based"[tiab] OR Telehealth[tiab] OR "Mobile Health"[tiab] OR mHealth[tiab] OR eHealth[tiab] OR Telemedicine[tiab] OR Telerehabilitation[tiab] OR "Remote Consultation"[tiab] OR Smartphones[tiab] OR "Smart Phones"[tiab] OR "mobile application"[tiab] OR "Mobile Apps"[tiab] OR "Mobile app"[tiab] OR websites[tiab] OR website[tiab]

1 AND 2