INPLASY PROTOCOL

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Corresponding author:
Xiaogang Gong

chrisgong@buu.edu.cn

Author Affiliation:
College of special education, Beijing Union University.

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None declared.

Effects of online mindfulness-based interventions on the Mental Health of university students: A protocol for systematic review and meta-analysis

Gong, XG[1]; Wang, LP[2]; Rong, G[3]; Zhang, DN[4]; Zhang, AY[5]; Liu, C[6].

Review question / Objective: **Are online mindfulness-based interventions effective in improving stress, anxiety, depression, mindfulness, and well-being for university students?**
Condition being studied: **University students' mental health problems have caused widespread concern. The use of mindfulness-based interventions (MBIs) delivered online has considerable potential in helping university students to handle mental health challenges. However, general conclusions of the efficacy of online MBIs remain unclear. The aim of this meta-analysis was to determine whether they are feasible and effective for improving university students' mental health.**

INPLASY registration number: This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 20 September 2022 and was last updated on 20 September 2022 (registration number INPLASY202290099).

INTRODUCTION

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analysis was to determine whether they are feasible and effective for improving university students' mental health.

METHODS

Participant or population: Participants who enrolled as a full-time or part-time students at university.

Intervention: This review will focus on interventions that are both online and mindfulness based.Inclusion criteria:1) The intervention is primarily a mindfulness-based intervention (e.g., mindfulness-based stress reduction, mindfulness-based cognitive therapy)2) The intervention must be delivered online including any digital format (e.g., web-based, smartphone app, DVD, live virtual,)3) The studies must have examined MBIs as the only intervention. Exclusion criteria:1) Studies in which mindfulness does not form the majority of the intervention (e.g., tai chi, Baduanjin, yoga, acceptance and commitment therapy).2) The intervention is not delivered online (e.g., face to face) .3) Studies in which MBIs combined with other interventions, such that the individual effects of MBIs cannot be assessed.

Comparator: All comparator/control groups are eligible.

Study designs to be included: Only randomized controlled trials (RCTs) were considered eligible.

Eligibility criteria: Eligibility criteria were detailed using the Participants, Interventions, Controls, Outcomes, and Studies (PICOS) framework. 1) study is conducted using a university student sample.2) study includes an intervention that is online and mindfulness-based3) study includes a measurement for the mental health outcomes (stress, anxiety, depression, mindfulness, and well-being)4) study is available in the English language5) study is a randomized controlled trial.

Information sources: The following electronic bibliographic databases will be searched to identify relevant studies: PubMed, Embase, Cochrane Library, Web of Science. In addition, clinical trial registries, such as ClinicalTrials.gov, will also be searched for ongoing trials with unpublished data.

Main outcome(s): Primary outcomes: stress, anxiety, depression. Secondary outcomes: mindfulness, well-being.

Additional outcome(s): Safety measurements and adverse events.

Data management: Two reviewers will assess the eligibility of the studies retrieved during the searches independently against the inclusion and exclusion criteria, and those studies meeting the criteria will be selected for use in the review. The following data will then be extracted from the studies selected for inclusion using a data collection form, and recorded in an Excel file: first author and year, study design, sample, intervention, control group, type of measures, risk of bias assessment and findings. The results will be cross-checked by the two reviewers, and any disagreements will be resolved by consensus, with any ongoing differences in opinion being arbitrated by a third reviewer. We may also contact the original authors to provide additional relevant information, if necessary.

Quality assessment / Risk of bias analysis: Two reviewers independently assessed the quality of each trial according to the Cochrane risk of bias tool, which contained 7 domains: random sequence generation, allocation concealment, blinding of participants and investigators, blindness of outcome assessments, incomplete outcome data, selective outcome reporting, and other biases. We will judge the each of the domains as 'low risk of bias', 'high risk of bias', or 'unclear risk of bias' according to Higgins (2011). Disagreements were rechecked by discussion with a third reviewer. We will illustrate the potential biases within each of the included studies by presenting a 'risk of bias' table or graph and summary.

Strategy of data synthesis: Meta analysis was performed using RevMan 5.4 software provided by the Cochrane Collaboration. For continuous outcomes, data will be analyzed by using a standard mean difference (SMD) with 95% CIs or a weighted mean difference (WMD).The WMD will be used for the same scale or the same assessment instrument; SMD will be used for different assessment tools. If subsets of studies are sufficiently homogeneous, we will perform a meta-analysis to combine their results for our primary outcomes. Statistical heterogeneity will be assessing using a standard χ^2 test, with a significance level of $P<0.05$ regarded as significant, and the I^2 statistic will also be used. The fixed-effects model will be utilized if the heterogeneity test indicates no significant difference ($I^20.1$); otherwise, the random-effects model will be used.

Subgroup analysis: Where possible, the analysis of sub-groups will explore the difference in the effectiveness of MBIs for varying population groups, intervention length, and the type of intervention.

Sensitivity analysis: Sensitivity analysis may be performed by removing low quality studies, or trials with a short-term follow-up.

Country(ies) involved: China.

Keywords: mindfulness-based interventions, mental health; university students; meta-analysis.

Contributions of each author:

Author 1 - Xiaogang Gong.
Email: chrisgong@buu.edu.cn
Author 2 - Lepeng Wang.
Author 3 - Guang Rong.
Author 4 - Daoning Zhang.
Author 5 - Ayuan Zhang.
Author 6 - Chao Liu.