# Effects of mobile technology-based interventions in promoting mental health and psychosocial wellbeing among young people in low-and middle-income countries: a systematic review protocol

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**Declarations**

We declare that the content for this systematic review protocol has not been published or submitted for publication elsewhere. The authors for this protocol are from diverse experiences with expertise in public health, digital technologies and evidence synthesis.

**Author contributions**

All authors were involved in conception or design of this systematic review protocol. DR and SB drafted the protocol in consultation with RD. All authors were involved in the critical revision of this protocol. The final version of this protocol has been approved by all authors.

**Availability of Data**

PDFs of articles included for data extraction and raw extraction data tables can be provided by the corresponding author upon reasonable request

**Conflicts of interest**

The authors declare no conflict of interest.

## Review title

Effects of mobile technology-based interventions in promoting mental health and psychosocial wellbeing among young people in low-and middle-income countries: a systematic review protocol

## Abstract

**Objective:** This review will aim to examine the effectiveness of mobile-based technologies implemented in low-and middle-income countries (LMICs) among young people (10-24 years) to promote their mental health and psychosocial wellbeing. Such promotional interventions may be in the form of mobile technology-based education, information and psychosocial counselling.

**Introduction:** Young people in LMICs have limited access to mental health services. Mobile-based technologies like remote consultations, telehealth and smartphone applications can offer possibilities for improved access to mental health services. However, to the best of our knowledge, there are no systematic reviews of effectiveness in this area.

**Inclusion criteria**: Evidence sources from LMICs involving mobile-based technologies for Mental Health and Psychosocial Support (MHPSS) interventions for young people will be included. All experimental and observational studies published in English from 2010 to 2022 will be included.

**Methods:** The review will follow JBI Methodology for Systematic Reviews of Effectiveness. EMBASE (Ovid), CINAHL (EBSCO), PsycINFO (ProQuest), AMED (Ovid), HMIC (Ovid) MEDLINE (Pubmed) and Web of Science (Clarivate Analytics) will be searched. Grey literature will be identified through OpenGrey, Directory of Open Access Journals, ProQuest Dissertations and Theses, EThOs, Asia eHealth Information Network, Google Scholar, and Grey Literature Report. Retrieved articles will be screened using Covidence software followed by assessment for methodological quality using standardized JBI appraisal tools by two reviewers independently. Data extraction will be through standardized JBI data extraction tool incorporated within JBI SUMARI. Narrative synthesis will be conducted, followed by meta-analysis, where feasible and certainty of evidence will be assessed through GRADE approach.

**Systematic review registration number:** CRD42022338749

**Keywords:** Digital health; mHealth; Mental Health; Psychosocial Support; Young People

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## Introduction

Young people comprise a quarter of the global population, with 89% living in low-and middle-income countries (LMICs).[1] Mental disorders and substance abuse account for over a quarter of Years Lived with Disability (YLDs) for young people in LMICs.[2] Socio-economic stressors coupled with multitude of emotional changes make them more prone to mental disorders and suicide ideation.[2-4] The COVID-19 pandemic further amplified these pre-existing stressors and generated new ones making them more vulnerable towards poor mental health.[5,6]

Evidence suggests that for most individuals with mental health conditions, the symptoms start before they reach 24 years old.[7] Mental health conditions prevalent among young people include range of emotional, eating and behavioural disorders, psychosis, suicide and other risk-taking behaviors.[2,3] 17% of adolescents in LMICs are found to have suicidal ideation. Mental disorders and substance use jointly standing as the 7th leading case of Disability Adjusted Life Years (DALYs) among young population.[2,4] However, mental health conditions remain highly underreported due to attached stigma; undermining its real burden. Without timely and effective intervention, these have severe adverse effects on young person's interpersonal and socio-economic life.[3] Hence, there is a need for tailored interventions to promote mental health and psychosocial wellbeing in the young population.

Mobile-based mental health and psychosocial support (MHPSS) can be cost-effective tailored interventions to promote mental health and psychosocial wellbeing.[8,9] These interventions refer to any form of mobile or smartphone based interventions with objectives to promote psychosocial well-being and/or prevent or treat mental disorder.[10] [(pg.8)] Psychosocial wellbeing represents a multidimensional construct integrating social and psychological health.[11] [(pg.5)] Mental disorders represent broad array of conditions like anxiety, depression, substance abuse etc. Mobile-based MHPSS interventions can range from text message-based counselling to application-based specialised therapies delivered online or offline.[12,13]

With an increased access to internet from 20% in 2010 to 50% in 2019 in LMICs, mobile cellular subscriptions saw a steep rise of nearly 33% between 2010 to 2020 .[14] Thus mobile-based MHPSS offer possibilities for higher uptake and enhanced accessibility of care by avoiding stigmatization associated with in-person services.[15] Mobile-based MHPSS interventions supported existing overwhelmed health system in LMICs during this pandemic through digitally accessible remote consultations, telehealth, smartphone-based applications and low cost digital solutions.[8,13] Despite this, there are hardly any reviews offering details of MHPSS interventions for young people in LMICs context.

A preliminary search on PROSPERO, MEDLINE, Cochrane Database of Systematic Reviews, and JBI Evidence Synthesis was conducted. Lehtimaki et al. reported that only computerized cognitive behavioral therapy was an effective digital mental health intervention for anxiety and depression among adolescents and young people.[9] This study mostly included papers from high-income countries (HICs) and was inconclusive on the effectiveness of other digital mental health interventions. Furthermore, two systematic reviews without including any studies from LMICs, recommended sustained usage of mobile-based apps to treat mental health conditions for college students and children.[16,17]

Additionally, two meta-reviews of meta-analysis investigated the impact of mobile-based interventions.[18,19] While Lecomte et al. underscored the aptitude of mobile apps for anxiety and depression; Goldberg et al. did not find strong evidence to support positive effects of mobile-based interventions on a range of mental health outcomes.[18,19] Nevertheless, none of these meta-reviews included LMIC-specific contexts or young people-focused outcomes.

Systematic reviews with focus on LMICs and MHPSS retrieved three reviews.[20-22] Barry et al. focussed on effects of mental health promotion without inclusion of studies with mobile-based MHPSS interventions. [20] Hoque et al. assessed quality of evidence reported within mobile health intervention literature in developing countries without focus on young people.[21] Acharibasam et al. published a systematic review of telemental health in LMICs including all population groups.[22] Therefore existing reviews from LMICs either lack focus on young people or do not include mobile-based MHPSS interventions. Our initial search revealed that no systematic review of effectiveness of mobile-based MHPSS interventions for young people in LMICs has been published. However, there are empirical studies relevant for young people in LMICs pertaining to MHPSS interventions outlined in Annexure I, relevant for this review.

Owing to rapid advancements in mobile technologies, there is an interest in tapping into this opportunity to deliver MHPSS interventions in an accessible and economical manner. The existing evidence syntheses are seemingly skewed towards HICs.[9,23] The aim of this systematic review is

therefore to determine effectiveness of mobile technology-based MHPSS interventions implemented in LMICs targeted at young people in promoting their mental health and psychosocial wellbeing.

## Review question(s)

What is the effectiveness of mobile technology-based MHPSS interventions implemented in LMICs targeted at young people in promoting their mental health and psychosocial wellbeing compared with other standard care or placebo or MHPSS interventions without the use of mobile technology?

Sub-questions are :-

- What types of technologies and modes of intervention delivery have been used to deliver mobile-based MHPSS interventions to young people to promote their mental health and psychosocial wellbeing in LMICs?
- In what country contexts and settings have these mobile-based technologies been implemented?
- What were the frequency and duration of mobile-based MHPSS interventions targeted at young people to promote their mental health and psychosocial wellbeing in LMICs?

## Inclusion criteria

### Participants

This review will include young people (as service recipients/ target population) in LMICs between 10-24 years    or where >=50% of participants included in the studies meet this age limit, irrespective of their existing health condition (i.e., either considered or reported as disease-free or with pre-existing mental disorders).[1]

### Intervention(s)

Mobile-based MHPSS interventions refer to "any type of local or outside support that aims to protect or promote psychosocial well-being and/or prevent or treat mental disorder" using mobile technologies. [10 (pg.8)] Local supports refer to those interventions operational within the ambit of health sector agencies and outside support constitute interventions/programs implemented by other sectors such as education and social protection. This review will include studies assessing the effectiveness of such mobile-based MHPSS interventions in LMICs implemented at any setting (clinical, non-clinical,

facility-based, home or community-based) and may include mobile-technologies for education, information and psychosocial counselling. Likewise, we adopted World Health Organization (WHO)'s concept of mental disorder consisting of disturbance in an individual's cognition, emotional regulation, or behaviour which is clinically significant and this includes broad range of disorders such as depression, dementia, bipolar disorder and so on.[24] Furthermore, mental health condition is a broader concept which encompasses mental disorders, psychosocial disabilities and varied other mental states associated with self-harm risk, cognitive impairment or individual distress. [24] This review intends to use concepts such as "telemental health", "e-mental health", "telepsychiatry", and "telepsychology" synonymously with mobile-based health interventions. We aim to consider mobile interventions which will be delivered online, offline or a combination of both.

Studies which offer a futuristic product design without a proof-of-concept will be excluded.

## Comparator(s)

This review will consider studies that compare the intervention to standard care (such as cognitive behavioural therapy, interpersonal psychotherapy, etc.) or placebo or practice of MHPSS interventions without the use of mobile technology (such as face-to-face counselling services and follow up visits, face to face social and life skills training, in-person story sharing sessions, etc.).

## Outcomes

This review will consider studies that include either self-reported or diagnosed indicators of mental health and psychosocial wellbeing as primary outcomes of interest, such as coping attitude (e.g., COPE Inventory), self-esteem (e.g., Rosenberg Scale), anxiety (e.g., State Trait Anxiety Inventory), depression (e.g., Beck Depression Inventory, Centre for Epidemiologic Studies Depression Scale), suicidal ideation (e.g., Attitudes Toward Suicide Scale), Quality of Life (e.g., WHO Quality of Life Scale, EuroQoL instrument, Short Form Health Survey-36, The 12-item General Health Questionnaire), social support (e.g., Multidimensional scale of perceived social support) and stress (e.g., Perceived Stress Scale). The primary outcomes have been selected considering these outcomes are prominent within the age group of adolescent and youth. Likewise, secondary outcomes for this review will be resilience (e.g., Youth Resiliency: Assessing Developmental Strengths), substance abuse (e.g., Alcohol, Smoking, and Substance Involvement Screening Test) and self-efficacy (e.g., New General Self-Efficacy Scale). Only objective measures of outcome(s) and studies where at least one primary outcome has been measured will be included.

## Types of studies

This review will consider both experimental and quasi-experimental study designs including randomized controlled trials, non-randomized controlled trials, before and after studies, and interrupted time-series studies. Besides, analytical observational studies including prospective and retrospective cohort studies, case-control studies, and analytical cross-sectional studies will be considered. This review will also consider descriptive observational study designs including case series and descriptive cross-sectional studies. Conference abstracts, letters, opinion, study protocols and case reports will be excluded.

## Methods

The proposed systematic review will be carried out in accordance with the JBI methodology for systematic reviews of effectiveness.[25]

## Search strategy

The review will apply a three-stage comprehensive search strategy based on the JBI methodology for systematic reviews of effectiveness. Initially, a limited search of MEDLINE (PubMed) and CINAHL (EBSCO *host*) was performed on 06th February 2022 to identify relevant text words and index terms from retrieved articles. Subsequently, following PRESS guidelines, a full-blown search strategy was developed on MEDLINE(PubMed) (see Appendix II) in consultation with two university librarians independently.[26] Search results were filtered to those published from 2010 onwards concerning human species within 10-24 age group. Only those published in English will be selected due to translation limitations of the review team. Timeline of 2010 was selected because WHO initially acknowledged importance of mobile-based public health interventions in 2010 and followed it up with the first global eHealth survey results in 2011.[12]

Furthermore, online databases EMBASE (Ovid), CINAHL (EBSCO *host*), PsycINFO (ProQuest), AMED (Ovid), HMIC (Ovid), Web of Science (Clarivate Analytics) and Google Scholar will be searched in a similar manner. Finally, reference lists of included evidence sources and relevant journals like Journal of Medical Internet Research and Journal of Telemedicine and Telecare will be manually searched by reviewers to identify additional articles.

For grey literature, websites of relevant global organisations such as WHO, Centre for Global Mental Health, World Mental Health Federation and university portals will be explored using relevant keywords. Google will be searched online for potential grey literature. In addition, OpenGrey, Directory of Open Access Journals, ProQuest Dissertations and Theses, EThOs, Asia eHealth

Information Network (AeHIN), and the Grey Literature Report will be searched comprehensively using similar tactics.

All studies in which full-text articles cannot be accessed online will be considered for exclusion. However, we will attempt to retrieve full text of such studies, prior to exclusion, through inter-library loans, British library loan service, web-based portals (e.g., ResearchGate) and by contacting the corresponding author up to three times by e-mail.

## Study selection

This review will use Covidence (Veritas Health Innovation, Melbourne, Australia) for data management where search results will be uploaded and duplicates automatically removed. Screening of titles & abstracts will be pursued following a pilot test of screening process on Covidence by two reviewers (RD & DR). Studies without any abstracts will be first searched on online search engines (e.g., Google) followed by contacting corresponding author up to three times and if still unavailable, will be excluded. After screening, full texts of potential studies will be examined by two reviewers (RD & DR) independently based on inclusion criteria. Any conflict regarding inclusion and exclusion will be mediated by a third reviewer (SB). Additionally, references will also be managed on EndNote X7 (Clarivate Analytics, PA, USA). Search results and entire screening process will be reported in line with Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) diagram.[27]

## Assessment of methodological quality

Two independent reviewers (SB & DR) will be involved with critical appraisal of included studies by utilizing standardized critical appraisal instruments from JBI for experimental, quasi-experimental, and observational studies.[25] We do not plan to exclude studies for data extraction & data synthesis (where possible) based on the methodological quality as the results from these studies can be important for our systematic review. The results of critical appraisal will be represented through a table along with narrative description.

## Data extraction

Two reviewers (DR & RD) will independently extract data by employing standardized JBI data extraction tool incorporated within JBI SUMARI.[28] Any disagreements will be resolved in consultation with a third reviewer. Data extraction tool will include study and sample population characteristics (e.g., country, type of setting, sample size), details of the intervention (e.g., duration, frequency, type of technology, mode of delivery) and comparator, primary and secondary outcome measures (e.g.,

depression, anxiety, coping attitudes, quality of life). Authors of papers will be contacted to request missing, ambiguous or additional data, where required. Any necessary modifications to the data extraction tool will be justified and explained in final review.

## Data synthesis

We aim to pool quantitative data for a statistical meta-analysis using JBI-SUMARI.[25,28] However, if pooling is not possible, narrative synthesis will be performed to describe the included studies. We plan to report effect sizes at a 95% confidence interval either in Relative Risk Ratio (RR)/Odds Ratio (OR) for dichotomous data or Standard Mean Differences (SMD) for continuous measures of the similar outcome construct (e.g., varied scales for depression). Post-intervention data will be offered where available and changes from baseline data will be presented where post-intervention data is not mentioned. Statistical analysis will be performed using fixed-effects model if there are less than five included studies otherwise random-effects model will be preferred.[29]

Heterogeneity will be assessed using $I^2$ statistic and considered substantial if values are greater than 50%. Sensitivity analysis will be conducted with at least two eligible studies to examine robustness of results and to examine influence of variances in excluding studies of poor methodological quality, not peer reviewed, not written in English on the effect estimates only if the intervention significantly improved any of the primary outcomes.

If there is sufficient data then sub-group analysis will be performed. At least two eligible studies per category will be required for sub-group analysis and influence of the following hypothesized factors on the results will be investigated: (i) face to face/ online Interventions, (ii) single component/multi-component interventions, (iii) age groups (early adolescents: 10-12 years, teenagers: 13-18 years and adults: 19-24 years), (iv) low-income population/general population, (v) population with pre-existing mental health conditions/general population, (vi) study designs and (vii) pre-pandemic/pandemic (COVID-19) studies. A funnel plot will be created to assess publication bias in case there are 10 or more studies in meta-analysis and statistical test for asymmetry using the Egger, Begg, or Harbord test will be performed where possible.

## Assessing certainty in the findings

The Grading of Recommendations, Assessment, Development and Evaluation (GRADE) approach will be followed for strength of evidence of each primary outcome and a Summary of Findings (SoF) will be created using GRADEpro GDT 2022 (McMaster University, ON, Canada).[30] Two reviewers will be

independently performing the assessment and a third reviewer will be consulted in case of any conflict. The SoF will possibly present Relative Risk Ratio (RR)/Odds Ratio (OR) for dichotomous outcomes, Standard Mean Differences (SMD) for continuous measures of outcome and ranking of the quality of the evidence based on a gradation of high, moderate, low or very low based on factors influencing the strength of evidence such as risk of bias, heterogeneity, risk of publication bias, inconsistency of evidence, precision and indirectness.

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# Appendix I: List of Individual Studies that tested mobile based mental health interventions for youth mental health in LMICs.

| Sl.No. | Citation Details | Remarks |
|---|---|---|
| 1 | Osborn TL, Rodriguez M, Wasil AR, Venturo-Conerly KE, Gan J, Alemu RG, Roe E, Arango G S, Otieno BH, Wasanga CM, Shingleton R. Single-session digital intervention for adolescent depression, anxiety, and well-being: Outcomes of a randomized controlled trial with Kenyan adolescents. Journal of consulting and clinical psychology. 2020;88(7):657. | Study Design: RCT. Country: Kenya. Intervention: Computerized Single Session Digital Interventions (SSI). The computerized SSI could reduce depression amongst adolescents. No significant effects were observed for anxiety symptoms, wellbeing or happiness. |
| 2 | Moeini B, Bashirian S, Soltanian AR, Ghaleiha A, Taheri M. Examining the effectiveness of a web-based intervention for depressive symptoms in female adolescents: applying social cognitive theory. Journal of research in health sciences. 2019;19(3):e00454. | Study Design: RCT. Country: Iran. Intervention: Internet based intervention. Intervention improved depression in 12 weeks. However, this achievement seemed to decrease by 24th week. Mean scores of the constructs of social support and self-regulation increased after intervention. The intervention had no effect on self-efficacy. |
| 3 | Menon V, Selvakumar N, Kattimani S, Andrade C. Therapeutic effects of mobile-based text message reminders for medication adherence in bipolar I disorder: Are they maintained after intervention cessation? Journal of Psychiatric Research. 2018;104:163-8. | Study Design: Mixed Method. Country: Nigeria. Intervention: Mobile based text messaging. No other statistically significant differences between study arms were observed for social support, depression and social isolation. |
| 4 | Ramos RM, Cheng PG, Jonas SM. Validation of an mHealth app for depression screening and monitoring (psychologist in a pocket): correlational study and concurrence analysis. JMIR mHealth and uHealth. 2019;7(9):e12051. | Study Design: Quantitative Study. Country: Phillipines. Intervention: Mobile App for Depression Screening. Mobile app was found apt for depression screening for youth. |
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# Appendix II: Search strategy

**MEDLINE (PubMed) Search conducted in June 2022. Filters applied: Humans, English, Child: 6-12 years, Adolescent: 13-18 years, Young Adult: 19-24 years. Dt: 2010-2022.**

| Search | Query | Records retrieved |
|--------|-------|-------------------|
| #1 | (adult*[Title/Abstract] OR youth [Title/Abstract] OR young*[Title/Abstract] OR adolescent*[Title/Abstract] OR teenag*[Title/Abstract] OR minors [Title/Abstract] OR boy [Title/Abstract] OR boys [Title/Abstract] OR girl*[Title/Abstract]) | 2426981 |
| #2 | ("young adult"[MeSH Terms]) OR ("adult"[MeSH Terms]) OR ("adolescent"[MeSH Terms]) OR ("child"[MeSH Terms]) OR ("minors"[MeSH Terms]) OR ("men"[MeSH Terms]) OR ("women"[MeSH Terms]) | 9394803 |
| #3 | #1 OR #2 | 10327789 |
| #4 | "telemedicine"[MeSH Terms] OR "telecommunications"[MeSH Terms] OR "remote consultation"[MeSH Terms] OR "mobile applications"[MeSH Terms] OR "software"[MeSH Terms] OR "electronic mail"[MeSH Terms] OR "computers"[MeSH Terms] OR "computers, handheld"[MeSH Terms] OR "smartphone"[MeSH Terms] OR "digital technology"[MeSH Terms] OR "self help devices"[MeSH Terms] | 353105 |
| #5 | telenursing OR "artificial intelligence"[Title/Abstract] OR ehealth OR mhealth OR telemedicine* OR teleconsultation* OR telecommunicat* OR exergame* OR "digital storytel*"[Title/Abstract] OR "assistive tech*"[Title/Abstract] OR "welfare tech*"[Title/Abstract] OR informatic* [Title/Abstract] OR telepsychiatry [Title/Abstract] OR digital[Title/Abstract] OR "digital devices"[Title/Abstract] OR sensor*[Title/Abstract] OR online[Title/Abstract] OR sms[Title/Abstract] OR ipad[Title/Abstract] OR tablet*[Title/Abstract] OR electronic*[Title/Abstract] OR web[Title/Abstract] OR "web-based"[Title/Abstract] OR video[Title/Abstract] OR "video conference*"[Title/Abstract] OR "medical tech*"[Title/Abstract] OR "information tech*"[Title/Abstract] OR internet[Title/Abstract] OR "fall prevention tech*"[Title/Abstract] OR "smart home*"[Title/Abstract] OR "ambient assisted living"[Title/Abstract] OR "mobile device*"[Title/Abstract] OR "mobile app*"[Title/Abstract] OR "wearable device*"[Title/Abstract] OR "fitness | 1892204 |

| | tracker*"[Title/Abstract] OR phone*[Title/Abstract] OR "cellular phone*"[Title/Abstract] OR telephone*[Title/Abstract] OR smartphone*[Title/Abstract] OR computer*[Title/Abstract] OR email[Title/Abstract] OR e-mail[Title/Abstract] OR "social media"[Title/Abstract] OR "instant messaging"[Title/Abstract] OR "information science*"[Title/Abstract] OR "communication media"[Title/Abstract] OR telehealth OR assisted living OR "remote care"[Title/Abstract] OR "digital health"[Title/Abstract] OR "mobile technology"[Title/Abstract] OR "mobile technologies"[Title/Abstract] OR "telepsychiatry"[Title/Abstract] OR "mobile health"[Title/Abstract] OR "personal digital assistant*"[Title/Abstract] OR "wireless device*"[Title/Abstract] OR "mobile phone*"[Title/Abstract] OR "patient monitoring device*"[Title/Abstract] OR "instant messaging"[Title/Abstract] OR "short messaging system*"[Title/Abstract] OR "telepsychology"[Title/Abstract] OR "connected mental health"[Title/Abstract] OR "m-mental health"[Title/Abstract] OR "e-health"[Title/Abstract] OR "m-health"[Title/Abstract] | |
| --- | --- | --- |
| #6 | #4 OR #5 | 2058189 |
| #7 | #3 AND #6 | 659595 |
| #8 | "mental health"[Title/Abstract] OR "psychosocial support"[Title/Abstract] OR "mental health and psychosocial support"[Title/Abstract] | 200300 |
| #9 | "psychosocial intervention"[MeSH Terms] OR "mental health"[MeSH Terms] | 53944 |
| #10 | ("mental health"[Title/Abstract] OR "psychosocial support"[Title/Abstract] OR "mental health and psychosocial support"[Title/Abstract]) OR ("psychosocial intervention"[MeSH Terms] OR "mental health"[MeSH Terms]) | 217053 |
| #11 | ((((("depression"[MeSH Terms]) OR ("anxiety"[MeSH Terms] OR "anxiety disorders"[MeSH Terms])) OR ("trauma and stressor related disorders"[MeSH Terms])) OR ("mood disorders"[MeSH Terms])) OR ("substance related disorders"[MeSH Terms])) | 692461 |
| #12 | depression[Title/Abstract] OR anxiety[Title/Abstract] OR "self?esteem"[Title/Abstract] OR "coping attitude*"[Title/Abstract] OR "youth resilience*"[Title/Abstract] OR "mood disorder"[Title/Abstract] OR "quality of | 1797714 |

| | life"[Title/Abstract] OR "stress*"[Title/Abstract] OR "social support"[Title/Abstract] OR "self?efficacy"[Title/Abstract] OR "substance abuse"[Title/Abstract] OR "suicidal ideation"[Title/Abstract] OR "COPE Inventory"[Title/Abstract] OR "rosenberg scale"[Title/Abstract] OR "state trait anxiety inventory"[Title/Abstract] OR "beck depression inventory"[Title/Abstract] OR "centre for epidemiologic studies depression scale"[Title/Abstract] OR "EuroQoL instrument"[Title/Abstract] OR " short form health survey-36"[Title/Abstract] OR "the 12-item general health questionnaire"[Title/Abstract] OR "multidimensional scale of perceived social support"[Title/Abstract] OR "perceived stress scale"[Title/Abstract] OR "new general self-efficacy scale"[Title/Abstract] | |
|---|---|---|
| #13 | #8 OR #9 OR #10 OR #11 OR #12 | 2282198 |
| #14 | #7 AND #13 | 98911 |
| #15 | ("controlled clinical trials as topic"[MeSH Terms]) OR ("randomized controlled trial*"[Title/Abstract] OR "non?randomized controlled trial*"[Title/Abstract]) | 301727 |
| #16 | ("before and after stud*"[Title/Abstract] OR "interrupted time?series stud*"[Title/Abstract]) OR ("observational stud*"[Title/Abstract] OR "cross?sectional stud*"[Title/Abstract]) | 365609 |
| #17 | ((("observational studies as topic"[MeSH Terms]) OR ("epidemiologic studies"[MeSH Terms])) NOT ("historically controlled study"[MeSH Terms])) NOT ("seroepidemiologic studies"[MeSH Terms]) | 2936836 |
| #18 | #15 OR #16 OR #17 | 3320035 |
| #19 | #14 AND #18 | 35261 |
| **Filters: Humans, Adolescent: 13-18 years, Child: 6-12 years, Young Adult: 19-24 years, from 2010 - 2022** | | **12,173** |