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## Internet Based Interventions for improving mental health on college campuses: A Scoping Review of IBIs

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Internet Based Interventions for Improving Mental Health on College Campuses: A Scoping

Review of IBIs

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## **Abstract**

**BACKGROUND** Over the past decade, Internet Based Interventions (IBI) have emerged as a possible mental health approach, reported to reduce cost and provide access to needed services. There is a dearth of literature that clearly defines the scope and components of IBIs and its efficacy. Moreover, little is known about the efficacy of IBI for college students, a population that reportedly underutilizes mental health services.

**OBJECTIVE** The purpose of this scoping review was to assess the efficacy of IBI as a mental health intervention for college students.

**METHODS** Three databases were used to initially identify 400 studies and through the scoping review process that included revised research questions, 20 studies were ultimately reviewed.

**RESULTS** The research evidence indicates that IBI is an effective mental health intervention for college students. Analysis of the included articles revealed significant improvements in symptom reduction and self-reported improved mental well-being. In addition, IBIs were consistently reported to increase student's access to mental health services.

**CONCLUSION** IBI can be a resource for college counseling centers as an alternative or additional service to reach students who may be unable or unwilling to access traditional services. However, there is still limited data clearly defining the scope and components of IBI, warranting additional research.

## Introduction

The demand for counseling services on college campuses is growing faster than institutional enrollment (Locke, Wallace, & Brunner, 2016). Most lifetime mental illnesses initially present in a person's mid-20s, however, students' self-reports of treatment-seeking behavior are low (Gaddis, Ramirez, & Hernandez, 2018). In a 2015 study published in the *Journal of College Student Psychotherapy*, among 400 similarly distressed college students, 74% did not seek help. There are multiple barriers for students seeking mental health services on college campuses, even though this population may demonstrate the highest levels of stress and anxiety compared to any other generation (American Psychological Association, 2015). To study the underutilization of services, it is beneficial to categorize these barriers as either system-related or personal-related (Marsh & Wilcoxon, 2015). System-related barriers include cost, location, availability, and awareness of resources (Gaddis, Ramirez, & Hernandez, 2018). Personal-related barriers include stigma and attitude towards seeking professional health services, and higher levels of public stigma that leads students to underreport mental health conditions (Gaddis, Ramirez, & Hernandez, 2018). Such barriers deter distressed students from seeking help, worsening possible feelings of homesickness or loneliness that, for many, derives from being geographically separated from their main support systems. Some colleges have tried to address the barrier of cost by offering low-cost services, but even small fees for mental health services could deter some students from seeking care (Marsh & Wilcoxon, 2015).

Researchers support that campus services could improve effectiveness by providing services that support resilience, build mental health gatekeeper skills, promote health-seeking behavior, and develop overall wellbeing (Locke, Wallace, & Brunner, 2016). Current models being used include integrative health care, the campus stakeholder model, and public health

models. The integrative health model is another name to describe merged services, or the combination of medical and counseling staff working within one administrative unit. The campus stakeholder model and public health models are similar in that they both advocate for community education, targeted interventions for those at risk, and support for mental health providers to assist those at higher risk (Locke, Wallace, & Brunner, 2016). There is little research comparing the effectiveness of these models on college campuses.

Some models may not be flexible enough to meet each student's varied needs. For example, models that impose time limits without flexibility may not offer the student the amount of help they require. This can be detrimental to college students as the top 10 reasons for poor academic performance, reported by students, are almost all psychological (Locke, Wallace, & Brunner, 2016). An additional service that campuses could offer to their students are internet-based interventions (IBIs), which are reportedly low-cost, accessible, educational online interventions. Research suggests that IBIs also reduce concerns about stigma and access, as they can be completed anywhere, at any time (Nguyen-Feng, Greer, & Frazier, 2017). In addition, approximately 97% of college students use the internet daily, and 90% of students in one survey said they would be willing to try an IBI. However, IBI remains a broad term that is difficult to define. Little is known about the scope and efficacy of IBIs as an intervention for college student mental health, as they are a relatively new mental health intervention. The purpose of this paper is to present a scoping review of the literature on IBIs for college students to increase understanding of the current models and use of IBIs as well as identify gaps in the literature.

The literature defines multiple models for IBI. IBIs are most commonly based on a cognitive behavioral theoretical framework such as Internet-based cognitive behavioral therapy (iCBT) (Schroder, et al., 2017). These iCBTs focus on decreasing the severity of mental health

symptoms. During iCBT, patients log in regularly to a secure website to access lessons and modules, which include homework to be completed and computer- administered questionnaires to track progress and outcomes. iCBT treatments have been developed and tested for many diagnoses including anxiety disorders such as panic disorder, generalized anxiety disorder, post-traumatic stress disorder, obsessive-compulsive disorder, severe health anxiety, and specific phobia, as well as major depressive disorder (Andersson & Titov, 2014). Though many IBIs target specific disorders, new forms of iCBT interventions are emerging called transdiagnostic treatments, which aim to treat comorbid conditions such as a co-occurrence of an anxiety disorder with other mental or physical disorders (Berger, et al., 2017).

IBIs with a mindfulness focus are formed with the intent of increasing skills for coping, stress management, self-regulation, present control and skills specific to college students such as handling examination stress. Mindfulness IBIs draw from present control, focusing on current thoughts, feelings and behavior (Frazier et. al, 2017) and positive psychology theories and aim to improve self-regulation of attention and orientation to present (Spijkerman & Bohlmeijer, 2016).

There two methods of delivery for IBIs are guided vs. unguided. Guided IBIs offer varying levels of guidance, types of coaches, and can be on secure websites or online forums. A guided intervention includes prompts for patients to increase their adherence to the program, with methods including automated email and text-message prompts, Web-design, and interactive tasks (Baumeister, Reichler, Munzinger, & Lin, 2014). Some unguided programs are beginning to use automated reminders to increase adherence, which is more cost effective (Andersson & Titov, 2014).

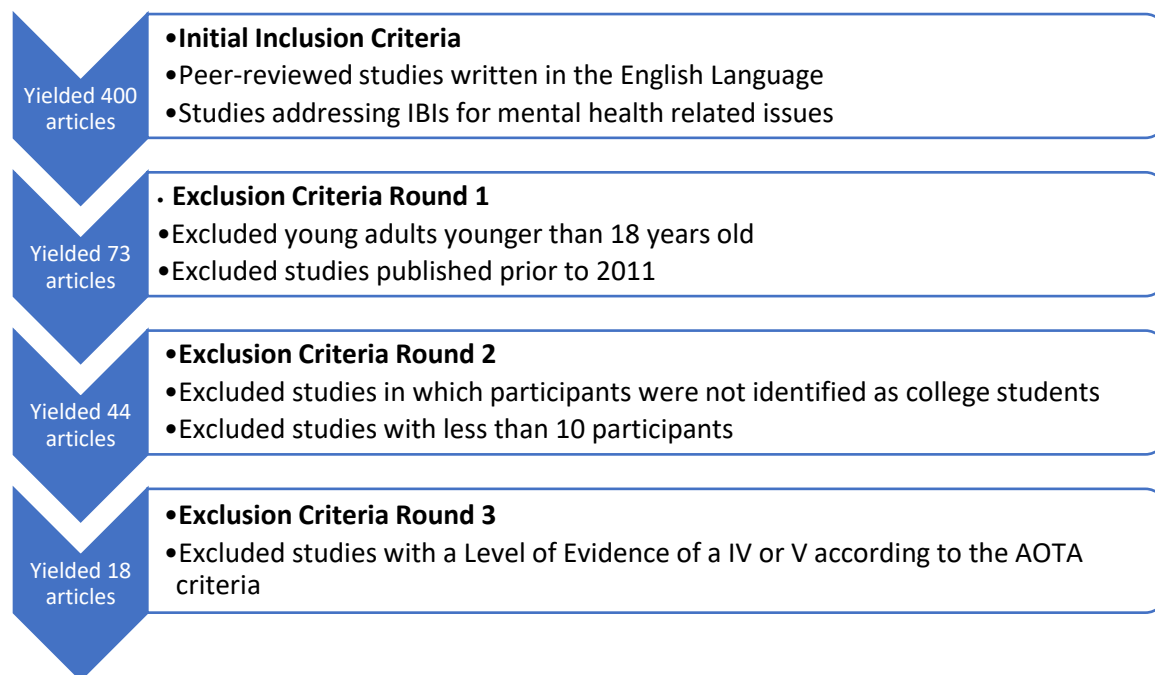
## Methods

To assess the evidence for IBIs as a mental health intervention for college students, I chose to approach the current study using a scoping review process. Scoping reviews are a relevant method when researchers seek to collect and organize existing evidence related to an intervention strategy and apply that evidence to a new area of practice where gaps in the literature may exist (Eschenfelder & Gavalas, 2017). Scoping reviews allow researchers to start with a broad research question to be refined as the study progressed as well as decide upon inclusion and exclusion criteria to evolve systematically over the course of the study. The steps in the process followed those of Arksey and O'Malley (2005) and included:

1. Identifying and refining the research question
2. Identifying relevant studies by following a structured search study
3. Selecting studies using a multi-stage individual approach to refine exclusion criteria
4. Obtaining results by charting the data through critical appraisal of the studies
5. Synthesizing and summarizing findings as related to mental health interventions on college campuses

The initial research focus was to determine the effectiveness of IBIs as a possible intervention for college student. Over the course of the study, this evolved into more specific questions including: What structure of IBI, guided vs. unguided, is more beneficial for college students seeking mental health services? What are the long-term outcomes of IBI as a mental health intervention for college students? What frequency/duration of IBI for mental health is most successful for the college student population?

Research for this study began with a search of three databases – PsycInfo, Wiley, and Pubmed- using the following key words: Internet Based Intervention, mental health, and college. The following inclusion criteria guided the initial search of the database: Studies had to be peer-reviewed, written in the English language, study IBIs for mental health in some way, and include participants classified as young adults. The initial inclusion criteria yielded 400 peer-reviewed articles to be considered in this study.



After the initial yield of studies, the articles were assessed through critical appraisal of topics. The purpose of this analysis was to elicit themes in the data to further develop exclusion criteria. The final exclusion criteria used for the study were refined to exclude adults not identified as college students, studies published before 2011, and studies below Level III evidence according to the American Occupational Therapy Association (AOTA) evidence guidelines (AOTA, 2012).



## **Results**

All the studies in this analysis are classified as Level I, Level II, or III based on the AOTA evidence standard. Level I includes systematic reviews and randomized controlled trials, Level II includes nonrandomized studies such as case and cohort studies, and Level III includes nonrandomized pretest posttest studies (AOTA, 2012). Of the 18 included studies, two were systematic reviews, and most (n=10) featured randomized controlled trial (RCT) design, two were nonrandomized trials, one quantitative studies, two qualitative studies and one mixed methods. Most of the studies were based in North America (7), followed by Australia (3), China (3), Germany (2), Ireland (1), England (1), and Norway (1).

### **Level I Results**

Table 1 charts all the available data gathered from study, including the 2 systematic reviews. In total, the reviews contained 39 articles, and examined 71 interventions. Upon further analysis, only 23 of the 71 interventions met the criteria for IBI. The other interventions used a technological device or process but did not meet the definition for IBI (Farrer et. al, 2013). It was unclear what definition the systematic reviews used to classify IBI but this data was exempt from the current study due to inconsistency with IBI definition.

Table 2 charts all the available data gathered from the 10 RCTs included in this study. Of the RCTs, 7 are guided and 3 unguided. Subject numbers ranged from 62-1047. The types of supports provided for guided interventions include ecoaches (2), automated emails (3), telephone calls (1), and personalized emails (1).

**Table 1**

Master chart for all data from included studies

Author	Year	Country	Study Type	Sample	Supports (Guided vs. unguided)	Frequency/ Duration	Outcome measures	Follow Up	Intervention
Gulliver et. al	2015	Australia	Systematic Review and Meta-Analysis (of 12 RCTs)	Sample sizes ranged from 65-517	Predominantly self-help interventions, minimal contact interventions and therapist-administered interventions				Targeted Abstinence
Farrer et. al	2013	Australia	Systematic Review (of 27 studies)	18-25 years	30/51 interventions self-administered				
Han et. al	2017	Australia	Randomized controlled trial	n= 101	Unguided	5 min 2 modules	GHSQ ATSPPHS-SF	1 m	ProHelp  Primary Outcomes: Help-seeking beliefs, attitudes, and intentions  Secondary Outcomes: Suicide literacy, suicide stigma, self-reliance, preparedness to assist a suicidal friend, social support
Harrer et. al	2018	Germany	Randomized Controlled Trial	n= 150	Guided: HW assignments, personal diary app, automatic daily messages eCoach (trained master's student)	30-90 min, 8 modules, 5-7 w total	PSS-4, The 39-item Five Facets Mindfulness Questionnaire WHO-5, PSS, DASS-21	3 m	StudiCare Stress  Perceived stress and college-related outcomes including presenteeism and loss of productivity
Morris, Scheller, & Picard	2015	United States	Randomized Controlled Trial	n= 166	Unguided, crowdsourced interactions	25 min/w for 3 w	CES-D ERQ	None	Panopoly  Cognitive reappraisal
Mak et. al	2015	China	Randomized Controlled Trial	n= 321	Guided: pop-up motivational messages	20-30 min session, 6/w, weekly mindfulness log	DASS-21 PSS SWLS	3 m	HAPA-enhanced mindfulness  Action and maintenance self-efficacy, action planning, coping planning, recovery self-efficacy
Hintz, Frazier, & Meredith	2014	United States	Randomized Controlled Trail	n=223	Guided: Feedback on logs and modules	4 modules, 1/w	PCOSES DASS-21 PSS	3 w	Present control  Coping self-efficacy

Author	Year	Country	Study Type	Sample	Supports (Guided vs. unguided)	Frequency/ Duration	Outcome measures	Follow Up	Intervention
<i>Lindtvedt et. al</i>	2011	Norway	Randomized Controlled Trial	n= 163	Unguided	One module/w	CES-D ATQ TDL	5 w	MoodGYM and BluePages Reduce symptoms of depression through interpersonal therapy and relaxation techniques
<i>Frazier et. al</i>	2014	United States	Randomized Controlled Trial	n= 194	Guided	4, 1 h modules	PCOSES PSS DASS-21	3 w	Increase perceived control over stressful events
<i>Frazier et. al</i>	2017	United States	Randomized Controlled Trial	n=185	Guided. Generic reminder emails sent 2x/week for participation	4 modules, 1 h/2 w	PSS-4	3 w	Replicate results of previous study
<i>Musiat et. al</i>	2013	England	Randomized Controlled Trial	n= 1047	Unguided	15-30 min modules	PHQ-9 GAD-7	12 w	PLUS Personality and Living of University students. Online resource for students to learn more about how to cope with challenges of student life
<i>Mak. et al</i>	2017	China	Randomized Controlled Trial	n=1255	Guided. Support offered weekly through telephone and email by first tier supporters, second tier were clinical psychologists	8, 30-45 min sessions	WHO-5 MHI SWLS MOS Sleep Scale VAS	8 w	iMIND vs. iCBT improve mental well-being, psychological distress, life satisfaction, energy level, sleep disturbance, and pain.
<i>Bettis et. al</i>	2017	United States	Randomized Trial	n= 62 age 18-22	Guided. Doctoral students served as cognitive training "coaches." Called participants weekly	15-20 min, 5 days/w for 6 w (30 sessions)	RSQ-SSV PSS PHQ ASRS	None	Lumosity to increase executive functioning skills: working memory, attention control/inhibition, shifting/cognitive flexibility
<i>Nguyen-Feng, Greer, &amp; Frazier</i>	2017	United States	Randomized Trials	n= 121	Guided. Email reminders to complete tasks and weekly mindfulness logs	4 w	DASS-21 PSS	4-5 w	Present Control (PCI) + mindfulness vs. mindfulness only
<i>Li et. al</i>	2013	China	Quantitative evaluation	n=73	Unguided	10 "missions"	Mental health literacy questionnaire MSLQ	None	ChingChing Story Identifying stressors and how to handle stress

Author	Year	Country	Study Type	Sample	Supports (Guided vs. unguided)	Frequency/ Duration	Outcome measures	Follow Up	Intervention
Horgan, & McCarthy, & Sweeney	2013	Ireland	Qualitative evaluation	n= 118 aged 18-24	Unguided Peer support, links to supports and information	Participants posted to an online peer support forum	CES-D	None	Forum for students experiencing depressive symptoms to go and post about their experience anonymously. Access info about depression.
Fleischmann et. al	2018	Germany	Qualitative Study	n= 10 Age 20-32	Guided: eCoach. Standardized reminders sent by email and SMS coach with automatic text messages	30-90 min, 7 modules, 10 elective modules	Interview	None	StudiCare Stress Mindfulness, acceptance and tolerance, self-compassion, problem-solving
George, Dellasega, Whitehead, & Bordon	2012	United States	Mixed method	n= 95	Unguided Peer support, peer dialog Usage monitored daily by a mental health professional	Intervention content viewed a total of 369 times	Focus Group	None	Coping strategies: changing the environment through reframing or relaxation, and emotion-focused strategies that addressed feelings/responses to stress

A maximum of 30 sessions and a minimum of 2 were offered to students during RCT interventions. The shortest session length reported was 5 minutes and the longest, an hour and a half. Overall duration of studies ranged from as short as 2 weeks to 8 weeks.

Six RCTs tracked students' symptoms of anxiety and depression throughout the intervention. One RCT tracked college related outcomes (Harrer et. al, 2018). Six studies included outcome measures for depression and anxiety. The most frequently used measures were the Center for Disease Epidemiological Studies' Depression Scale (CES-D; Radloff, 1977) and the Depression Anxiety Stress Scales (DASS-21; Lovibond & Lovibond, 1995).

Other common outcome measures addressed perceived stress, measured by the Perceived Stress Scale (PSS; Cohen, Kamararck, & Mermelstein 1983), GHSQ for professional help seeking (GHSQ; Wilson, Deane, Ciarrochi & Rickwood), and the 5 item WHO Well-Being Index for mental well-being (WHO-5; Berwick, 1991). One study included the GAD-7 as a measure of anxiety (GAD-7; Spitzer, Kroenke, Williams, & Lowe, 2006). Two studies' outcomes involved mental health literacy (Lintvedt et. al, 2013), one specifically for depression literacy, and the other, suicide literacy (Han et. al, 2017). Two studies measured life satisfaction with the Satisfaction With Life Survey (SWLS; Diener, Emmons, Larsen, & Griffin, 1985; Mak et. al, 2015; Mak et. al, 2017).

Measures for stress, negative automatic thoughts (Lintvedt et. al, 2011), emotional regulation, physical health and eating disorders (Mak et. al, 2017), ADHD with the self-report measure the Adult ADHD Self-Report Scale (ASRS; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000). A single study contained measures for college-related outcomes, neuroticism, and substance abuse (Musiat et. al, 2014).

**Table 2***Master chart for all data from included Randomized Controlled Trials*

Author	Year	Country	Sample Size	Intervention	Frequency/ Duration	Topics	Outcome measures	Supports provided (guided vs. unguided)	Association on Mental Health
<i>Frazier et. al</i>	2015	United States	n=194	PCI	4 modules 1 h/2w	Increasing perceived control over stressful events	PCOSES PSS DASS-21	Guided. Email for participation in completing stress logs	Present control scores significantly increased at post intervention and follow up
<i>Frazier et. al</i>	2017	United States	n=185	PCI + MF	4 modules 1 h/2 w	Replicate findings of previous study	PSS-4	Guided. Generic reminder emails sent twice per week for participation	Significant increase in present control for participants in all three intervention conditions
<i>Han et. al</i>	2017	Australia	n= 101	ProHelp	2 modules 5 minutes	Professional health seeking beliefs, attitudes, and intentions suicide literacy	GHSQ ATSPPHS-SF	Unguided	Increase in positive attitudes towards seeking professional help for suicidal ideation
<i>Harer et. al</i>	2018	Germany	n= 150	StudiCare Stress	8 modules 30-90 min, 1-2 modules/w for 5-7 w	Problem focused coping strategies	PSS-4, The 39-item Five Facets Mindfulness Questionnaire WHO-5, PSS, DASS-21	Guided. eCoach, a trained student in a master's program in psychology	Moderate to large intergroup effects for the reduction of perceived stress, health and college-related outcomes
<i>Hintz et. al</i>	2014	United States	n= 223	PCI Present Control Intervention		Present control Coping self-efficacy	PCOSES DASS-21 PSS	Guided. Feedback on homework and modules	Intervention groups experienced significantly greater reductions in perceived stress, symptoms of anxiety, depression, and stress than the comparison group
<i>Lintved et. al</i>	2011	Norway	n=163	MoodGYM and BluePages	5 modules, 1 module/w for 8 w	Interpersonal therapy and relaxation techniques to teach users about their symptoms, negative automatic thoughts, dysfunctional attitudes, emotions and coping strategies	CES-D ATQ TDL	Unguided	Participants reported significantly lower levels of depressive symptoms, fewer negative automatic thoughts and improved depression literacy

Author	Year	Country	Sample Size	Intervention	Frequency/ Duration	Topics	Outcome measures	Supports provided (guided vs. unguided)	Association on Mental Health
Mak <i>et. al</i>	2015	China	n=321	HAPA enhanced mindfulness	20-30 min sessions 6x/w, weekly mindfulness log for 8 w	Health Action Process Approach (HAPA) in enhancing the effect of mindfulness	DASS-21 PSS SWLS	Guided. Automated weekly emails for attendance. Weekly mindfulness log	HAPA-enhanced group showed significant improvement on overall mindfulness
Mak <i>et. al</i>	2017	China	n=1255	iMIND vs iCBT	8, 30-45 min sessions for 8 w	iCBT for emotional regulation, increase self-esteem, effective communication skills, and stress	WHO-5 MHI SWLS	Guided. Telephone and email to encourage participation	Prevention focused intervention successful in reducing current anxiety and depression in students with high risk of developing a mental disorder
Morris <i>et. al</i>	2015	United States	n=166	Panopoly	25 min/w for 3 w	Teaching cognitive reappraisal to regulate emotions to think differently about stressful events	CES-D ERQ	Guided. Automated emails sent to users whose posts mention self-harm. Email includes links to mental health resources	Reappraisal helped reduce depression and perseverative thinking for the Panopoly platform.
Musiat <i>et. al</i>	2014	England	n= 1047	PLUS	15-30 min modules	Online resource for students to learn about strengths, weaknesses, challenges of student life, and build coping strategies	PHQ-9 GAD-7	Unguided	Intervention successful in reducing student's current levels of anxiety and depression

Of the ten RCTs, two had no long-term follow-up. The eight follow ups ranged from as immediate as three weeks post intervention, to as much as 3 months. Most interventions had a follow up three weeks post intervention. Follow ups were mostly questionnaires and surveys.

### **Level II & III Results**

Level II studies included randomized trials with no control group (2). The sample sizes were 62 and 121 and the studies both took place in the United States.

Both randomized trials were guided; one study utilized doctoral student “coaches” as supports, and the other used emails (Bettis, et. al, 2017; Nguyen-Feng, Greer, & Frazier, 2017). Other outcome measures included were the Patient Health Questionnaire (PHQ; Spitzer, Kroenke & Williams, 1999). DASS-21, RSQ-SSV for coping strategies, and the ASRS (ASRS; Connor-Smith, Compas, Wadsworth, Thomsen, & Saltzman, 2000). Only one study had a follow-up at 4 weeks post intervention (Bettis et. al, 2017).

Level III studies included qualitative (2), quantitative intervention (1), and mixed methods (1). Sample sizes ranged from 10-150 college students and took place in Ireland (1), United States (1), Germany (1), and China (1).

Three of the four interventions were unguided IBIs. There were two unguided intervention in which students were encouraged to support each other in a peer support model. One of the interventions was an unguided iCBT, and one guided iCBT. Other outcome measures used included the PSS-4, CES-D, and the Mental Health Literacy Questionnaire (MSLQ). None of the studies included a follow-up.



Other common measures addressed were perceived stress (4), present control (3), help-seeking behaviors (2) and mental well-being (2). The Perceived Stress Scale (PSS; Cohen, Kamararck, & Mermelstein, 1983) was most commonly used to track perceived stress outcomes, the Present Control Subtest of the PCSOS for present control.

## **Discussion**

Critical appraisal of topics and analysis of charted data pulled from RCTs revealed that most studies found significant positive changes as a result from IBIs. Six RCTs tracked students' symptoms of anxiety and depression throughout the intervention. Of those six studies, two observed a significant decrease in depression symptoms (Morris, Scheller, & Picard, 2015; Lintvedt et. al, 2013), one a decrease in anxiety and improvements in ADHD symptoms (Bettis et. al, 2017), one a decrease in anxiety, depression, and stress (Hintz, Frazier, & Meredith, 2013), and one study measured a decrease in mental health symptoms (Frazier et. al, 2014). Four RCTs revealed a significant decrease in perceived stress (Harrer, et. al, 2018; Hintz, Frazier, & Meredith, 2013; Frazier et. al, 2014; Meredith & Frazier, 2017). Two studies' outcomes involved mental health literacy, one specifically for depression literacy (Lintvedt et. al, 2013), and the other, suicide literacy (Han et. al, 2017), and both intervention groups demonstrated improved literacy at post intervention. Mental health literacy is concerned with knowledge about mental disorders, including how to seek mental health information, the available treatments including self-help approaches and what professional help is available (Lintvedt et. al, 2013). Other significant outcomes included self-reported improvements in mindfulness (Mak et. al, 2017a) and improved feelings of mental well-being (Mak et. al, 2017b).

It is unclear whether the success of intervention is directly relatable to the supports provided during the intervention. All RCTs recorded significant positive results from IBI, regardless of being guided or unguided.

Several studies featured methodological strengths, contributing to the quality of the findings of the current investigation. 15 studies were quantitative, mixed methods, or systematic reviews and all Level III evidenced or higher according to the AOTA's evidence guidelines (AOTA, 2012).

Despite significant methodological strengths, there are some limitations in the studies included in this analysis. Although there is evidence that IBIs can be beneficial for college students, some studies were focused on a specific age group, such as 18-24, limiting the generalizability of the results (Bettis et. al, 2017; Lindvedt, 2011; Farrer, et. al, 2013; Fleischmann, et. al, 2018). Multiple studies reported the lack of follow-up or having too short of a follow-up post intervention as being a limitation. A couple studies noted that they should have tested the intervention on a population of students with higher levels of distress or more desire for mental health services. High attrition rates were another common limitation among the included studies. In one study, only 16 people completed the post-test questionnaire (Lindvedt, 2011), and a few lost as much as 2/3 of their sample at the follow-up (Harrer et. al, 2018; Mak et. al, 2017). In those studies, researchers discussed a possible connection between the high attrition rates and the target population. They observed that those who dropped out had self-reported low levels of distress or were participating in the intervention for extra credit (Musiat, et. al, 2014; Frazier et. al, 2014). A couple of the studies also reported that the overrepresentation of female participants limited generalizability (Frazier et. al, 2014; Hintz, Frazier & Meredith, 2014). It is due to these high attrition rates that it is difficult to determine the long-term outcomes for IBI.

This scoping review aimed to critically review the evidence regarding IBIs efficacy as a mental health intervention for college students. After analyzing the results, most studies included in this review indicate that IBI may be an effective way to improve mental health symptoms and perceived stress among college students. However, it is unclear whether the success of IBI is due to its structure, specifically the supports provided or length or duration. The benefits of IBI have important implications for university counseling centers to reach students who may be unable to seek face-to-face mental health treatment due to system related barriers or unable to receive services due to cost. The results of this study also indicate the value of IBI as a preventative and treatment measure to improve mental health literacy and professional help-seeking behavior.

### **IBI Efficacy as a Mental Health Intervention for College Students**

The scholarly literature supports the efficacy of IBIs as a mental health intervention for college students. Some of the challenges, however, in using this data is the variability of IBI methods and intended outcomes. The interventions consisted of several IBI variations, sometimes on college students with the same major, and provided different types of supports. Therefore, it is hard to generalize the results of these studies as there are so many variables. Also, only one RCT prioritized college related outcomes as a primary outcome of the IBI (Harrer et. al, 2018).

It must also be noted that for many of the studies included, IBIs were not being tested as a replacement for face-to-face therapy, but rather, an additional option for mental health services. A focus group from one qualitative study viewed the concept of a virtual clinic favorably as a suitable platform for consolidating mental health resources and providing help to students reluctant to access other services due to stigma (Farrer et. al, 2015).

## **Implications for Research**

In general, further studies are needed to (1) Profile college related outcomes as an outcome measure for IBI mental health interventions for college students. (2) Expand the body of knowledge about study designs, standardized assessments, types of supports, and time points of evaluations that may provide data about IBI and its effectiveness with the college population. (3) Research the effect of IBI on a greater variety of mental health disorders including schizophrenia and bipolar disorder. (4) Explore the long-term effects of IBI for prevention and treatment of mental health issues.

More studies using quantifiable outcome measures are warranted to further explore the efficacy of IBI for treatment and prevention of mental health diagnoses. This will assist us to better understand which interventions have a better impact on mental health.

## **Strengths and Limitations**

Strengths of this review include using recommended and rigorous methods widely accepted in the conduct of scoping reviews and obtaining sources from a range of database to maximize the likelihood of capturing the available research of IBI as a mental health intervention for college students. Limitations of this scoping review result from the variability in studies' designs and methods, the relatively small number of studies that examine intervention impacts on college students, the limited mental health diagnoses studied, and the multiple assessments, assessors, intervention tools and strategies, which make it difficult to profile the effects of the interventions on mental health.

### **Conclusion**

Further research should be performed to support the effectiveness of IBI as an additional service for college students as a means for increasing overall well-being, preventing mental health conditions, and alleviating distress.

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