Study of the Effectiveness of an Internet- or App-based Depression for University Students from Remote Learning: Grant Proposal

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CNCSP 102
Spring 2020

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Background

The Covid-19 pandemic since January 2020 has caused numerous impacts on university and college students, since the class settings have become remote learning (online lectures) nationwide, as well as school offices, resources and extracurriculars transferring their communications to emails and phone calls. As a result, university students are having more difficulties for their academic progress. Recent research studies have indicated that the Covid-19 pandemic has produced significant impacts on the mental well-being of university students, especially increased anxiety and depression due to various adversities. According to Pragholapati (2020), there are approximately 24.9% of students that have experienced anxiety due to the Covid-19 outbreak. Among the sample of 3,881 college students in Guangdong Province, China, there are 16.98%, 3.17% and 1.01% of the students that are diagnosed with mild, moderate and severe depression, respectively (Chang, Yuan & Wang, 2020). Several reasons for such increased anxiety and depression are economic challenges, daily life stress and disruptions to academic activities (Cao et al., 2020).

Thus, when colleges and universities shift classes and services to distance learning, they do not create a supportive system for students' academics and mental health issues, which is one of the reasons that has statistically caused 20-50% of students who drop out - a higher rate than traditional in-person class setting (Horton-Tognazzini, Zorn & Austin, 2016). Such transitions can predict the same negative consequences of university students' academic progress in the midst of Covid-19 pandemic, if the lack of supportive services and resources in an online academic environment do not fulfill the need of psychological help for students.

Hence, the goal of the proposed research study is aimed to explore the potential positive effects of an Internet- or app-based depression intervention under the replication from the research study of Harrer et al. (2016), but is simplified to fit the time frame based on the current issue of Covid-19, to help students of the University of California, Santa Barbara (UCSB) who are experiencing elevated depression based on the Center for Epidemiological Studies' Depression Scale (CES-D), with a score of 16 or higher. In addition, the study of Chang, Yuan & Wang (2020) found that greater changes in future health behaviors were associated with less anxiety and depression among students. Therefore, we design the research study to compare the effectiveness of the Internet- or app-based depression intervention (IG) compared to a waitlist

control group (WCG). We hypothesize that the designed Internet- or app-based interactive depression intervention approach will be more effective.

Project Narrative

Participants

A sample of 200 undergraduate and graduate students (N = 200) of UCSB will participate in this research study. To participate, students must be 18 years old or older and currently enrolled as part-time or full-time students at the university, and must have free access to computers, smartphones and internet (Wi-fi) from remote distance.

Recruitment Plan

The research team will recruit students by sending email announcements to all UCSB students' school emails, by posting announcements on UCSB Slack in #general channel or by having their professor post announcements on GauchoSpace. The email will briefly describe the purpose of the study, and contain a website to a questionnaire powered by the UCSB Qualtrics. Students can have an option for 1-percent extra credit for their class or for $25 Amazon gift cards (if satisfied for the next phase of the research). Students who are not eligible for the next phase of research can enter the lottery of a $25 Amazon gift card.

Procedure

<u>Phase 1</u>. Students will answer a questionnaire powered by the UCSB Qualtrics, provided in the email of recruitment. Here, students will have to answer a questionnaire with data of demographics (name, age, race, etc.), history of mental health ("Have you ever been diagnosed with any mental health disorder before the Covid-19 pandemic?", etc.), and also the CES-D Scale. The CES-D Scale includes 20 questions ("I was bothered by things that usually don't bother me.", "I did not feel like eating; my appetite was poor.", etc.), coded in a Likert-scale ranging from 1*(less than 1 day per week)* to 4 *(almost every day, from 5-7 days)*. The questionnaire will also require students to provide a UCSB student ID in order to verify their student status and a verification of completion will be sent to them and the research team. The research team will verify the student status, and measure the overall score of their answers to the CES-D Scale questions. Students who have a CES-D score of 16 or higher and do not have any history of mental health before the Covid-19, are qualified for the next phase of the research and

will be announced via their UCSB email. Students who are not qualified for the next phase will receive an email of gratitude and a website to enter a lottery of a $25 Amazon gift card.

Phase 2. The student participants who meet the criteria of the study will receive an information letter along with an informed consent form. Participants will also be informed that they are able to withdraw from the study at any time. Students will then be randomly assigned into two groups: the Internet/app-based group (IG) or the waitlist control group (WCG). Both groups will consist equally of 100 members. The IG group will have access to the framework of *StudiCare Stress,* a web-based stress management intervention for employees derived from *GET.ON Stress.* The intervention is based on the cognitive-behavioral techniques that align with Lazarus' transactional model of stress (Lazarus, 1984), where problem-focused coping skills and cognitive-behavioral changes are trained for the IG group for 7 weeks, each session lasts between 30 and 90 minutes. The IG group participants will also have access to app-based psychological diary entries, where they can keep track of their mood fluctuations, attributes to their depression level, etc. The app will consist of 6 questions that are fully replicated from the study of Harrer et al. (2016), and participants are asked to answer on the app every 2 days. The intervention and app-response assessment will be supervised by a professional graduate student whose major is psychology who will provide feedback on demand based on students' response via online approaches within 48 hours. The WCG group will have access to the same application of psychological diary entries and the graduate student's supervision with feedback on demand; however, they will not receive access to the intervention process. After 7 weeks, the students from both groups will redo their CES-D Scale, and data analyses and comparison between the two groups related to the depression score will be assessed.

After the study, the IG group participants will be asked to provide satisfaction ratings on the study with 8 questions ("Quality of the training is excellent", "Very satisfied with the amount of help received", etc.) with ratings ranging from 1 *(strongly disagree)* to 5 *(strongly agree).*

Measures

The CES-D Scale score will be given in this criteria: (1) zero for answer of 1 (*less than 1 day per week),* (2) 1 for answer of 2 *(1-2 days),* (3) 2 for answer of 3 *(3-4 days),* and (4) 3 for answer of 4 *(5-7 days).* The possible score ranges from 0 to 60, with higher scores indicating the presence of higher severity of depressive symptoms.

The mean scores (M) and standard deviation (SD) for pretest and posttest CES-D scores for each group will be calculated. Higher scores indicate better outcomes. The results of the CES-D scores from both group's participants will be analyzed by analysis of covariance (ANCOVA) to produce the existence of main effectiveness of the Internet/app-based intervention. Chi-squared tests will also be applied to compare the scores between both groups in treatment response for perceived stress, system-free status for perceived stress and symptom deterioration for perceived stress.

Budget Justification

Need	Description	Cost
Supervising Professor	Salary for the supervising professor who will supervise the process of the intervention and provide support for the graduate student trainer within 7 weeks (20 hours/week, $50/hour) 1 x 50 x 20 x 7	**$7,000.00**
Graduate Research Assistant	Salary for a graduate research assistant who will be responsible for recruitment and participant orientation in administrative tasks such as informed consents, research information and guidance, etc. within first 3 weeks (20 hours/week, $25/hour) 1 x 25 x 20 x 3	**$1,500.00**
Online Trainer/Supervisor	Salary for a professional Psychology graduate student who will train and supervise IG or WCG groups of participants and provide feedback on demand within 7 weeks (15 hours/week, $30/hour) 1 x 30 x 15 x 7	**$3,150.00**
Data Analyst	Salary for a data analyst who will analyze the data for	**$1,050.00**

	the pretest scores and posttest results and comparisons between two participant groups within 3 week (10 hours/week, $35/hour). 1 x 10 x 35 x 3	
Amazon Gift Cards	Funds for 201 Amazon Gift Cards for 200 UCSB student participants and an applicant in the lottery entry. 201 x 25	**$5,025.00**
Total Requested		**$17,725.00**

References

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