



# A therapist-guided internet-based cognitive behavioral therapy program for Hong Kong university students with psychological distress: A study protocol for a randomized controlled trial

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## ABSTRACT

**Background:** University students are at high risk of various mental health problems due to high levels of psychological distress. However, university counseling services are often inadequate to meet their mental health needs due to shortage of mental health professionals, especially in Hong Kong. Internet-based cognitive behavioral therapy (iCBT) has shown similar effects as those of face-to-face CBT in addressing these mental health concerns, but few iCBT programs have been developed for Hong Kong university students.

**Objective:** This study protocol aims to develop and evaluate a culturally and linguistically appropriate iCBT program called “REST Online” to reduce the psychological distress and improve the mental health of Chinese university students in Hong Kong in a randomized controlled trial (RCT).

**Method:** The contents and functionality of the “REST Online” program which includes both web- and app-based versions, are described. A blended mode of service delivery is adopted, with 8 online modules and 2 counseling sessions. Therapist support will be provided by a CBT therapist. A total of 338 Chinese university students with mild to moderate levels of psychological distress will be openly recruited and randomized to three groups: the (1) web-based and (2) app-based “REST Online” groups, and (3) waitlist control group. The program effectiveness is evaluated in psychological distress, depression and anxiety symptoms, and positive and negative emotions and positive and negative thoughts at pre-, post- and 3-month follow-up tests. Linear mixed effect models will be conducted for data analysis.

**Discussion:** The “REST Online” program is among the first of its kind to address the mental health needs of Hong Kong university students by an internet intervention. Theoretically, this study will provide some empirical evidence for the effectiveness of this iCBT program in the Hong Kong context for Chinese clients. Practically, if proven effective, this program can be provided to local university counselors as an option for service delivery. Strengths and limitations are also discussed.

## 1. Introduction

University students are often psychologically distressed (Watson et al., 2008) due to a variety of academic stressors such as heavy coursework load and career development considerations, and personal stressors such as adjustment to a new environment, parental conflict and expectation, peer judgement and acceptance, and financial difficulties (Murphy and Archer, 1996; Wong, 2005). The prevalence of psychological distress of university students ranges from 8.8 % among Chinese students (Cheung et al., 2020) to 83 % among American students (Rosenthal and Wilson, 2008). The large variation is caused by using

different scales and criteria in different studies. It is also related to the cross-cultural variation in the expression of psychological distress, in which Chinese tend to deny or minimize the emotional components of psychological distress, and favor more socially acceptable somatic symptoms (Kirmayer, 2001). Thus, the prevalence rate of psychological distress among Chinese university students may be under-reported. However, during recent years in Hong Kong, the stress level of the university students in the cohort of Year 2015–2018 are significantly higher than those in the cohort of Year 2014 as the political situation in Hong Kong became stressful after the Umbrella Movement in 2014 (Li et al., 2021). The intensity of the psychological distress of Hong Kong

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university students also escalated during the COVID-19 pandemic (Leung and Mu, 2022). High levels of psychological distress may have negative psychological and behavioral impacts, such as poor academic performance and interpersonal relationships, physical health problems, poor quality of life and suicidal ideation (e.g. Drapeau et al., 2012). Yet mental health services are underutilized by university students. For example, Rosenthal and Wilson (2008) reported that only 10 % of university students use counseling service and the majority who reported clinically significant levels of distress had not received counseling. While there are many reasons for this phenomenon, one major reason is the shortage of university counselors. In Hong Kong, the average student-to-counselor ratio was 1674:1 in 2017, which falls far short that of Western countries such as the U.S. (513:1 (as cited in Lewis and Borunda, 2006)). In addition, Chinese university students are more likely to seek professional help when they are experiencing relatively few or quite a lot of mental health issues (Liu et al., 2017). In another word, the majority students who have a moderate level of psychological distress are reluctant to seek help from university counseling service. One remedy is to use e-technology, a highly cost-effective approach, to deliver mental health services (Stallman, 2012), especially for Chinese university students. Internet-based cognitive behavioral therapy (iCBT) is the most popular e-mental health service especially for university students (Farrer et al., 2013). Although prevalent in the West, especially European countries and Australia, iCBT is seldom found in Chinese communities. In response, this study has developed an iCBT program protocol for this population through a randomized controlled trial (RCT).

### 1.1. ICBT for university students

Evidence has shown that internet-based interventions for common mental health issues often result in outcomes similar to those of face-to-face psychotherapy (Carlbring et al., 2018). As for university students, recent studies have developed some guided iCBT programs that address their mental health concerns, such as perfectionism (Buhrman et al., 2020), anxiety and/or depression (e.g. Harrer et al., 2021; Raevuori et al., 2021;), procrastination (Küchler et al., 2019), and somatic symptom distress (Hennemann et al., 2018); and some unguided iCBT programs addressing psychological or physical problems (Fabritiis et al., 2022), social anxiety and insomnia (Attridge et al., 2020), and public speaking fear (Tillfors et al., 2008). However, few iCBT programs specifically help university students cope with psychological distress. Furthermore, research has shown that iCBT with therapist guidance appears to produce better outcomes than unguided intervention (Andersson and Titov, 2014). Guided iCBT was associated with more effectiveness and lower attrition than unguided iCBT for coping mental health issues (Gershkovich et al., 2017; Karyotaki et al., 2021).

Meta-analyses have consistently showed that, in comparison to inactive controls, internet interventions can have significant small-to-moderate effects on a range of mental health conditions for university students, such as symptoms of depression and anxiety, stress, sleep, eating disorders and role functioning (Becker and Torous, 2019; Davies et al., 2014; Harrer et al., 2018). Preventive intervention of various iCBT programs can prevent university students from developing poor mental health. Upon completion of different iCBT programs, university students of non-clinical sample were found to have significant improvement in perceived stress, psychological stress, symptoms of anxiety and depression, worry, social anxiety, negative thoughts, insomnia, depression literacy, satisfaction with studies, and work output (Attridge et al., 2020; Dear et al., 2019; Harrer et al., 2021; Lintvedt et al., 2013; Saleh et al., 2018). Large clinical reductions were also reported in the symptoms of anxiety (41 %), depression (36 %), stress (45.8 %), insomnia (43.4 %), respectively, for university students who are at risk for developing mental health problems (Attridge et al., 2020; Dear et al., 2019). Some of the positive effects have been maintained at 2-month (Lintvedt et al., 2013), 3-month (Dear et al., 2019; Harrer et al., 2021)

and 1-year follow-up assessments (Andersson et al., 2012). Nevertheless, 29 % of 27 studies on technology-based intervention for the mental health of university students in a systematic review fail to find a significant effect at postintervention (Farrer et al., 2013). Thus, the effectiveness of iCBT for university students appears to be inconsistent. More RCTs are necessary to test the effectiveness of these interventions (Christensen et al., 2002). Moreover, very few iCBT studies can be found for Chinese population. Preliminary evidence shows that iCBT is effective in reducing anxiety, depression, and perceived stress for Hong Kong university students (Young et al., 2022). Thus, positive effects of iCBT would be expected for Chinese university students.

The promising outcomes might be attributed to the advantages of iCBT over conventional face-to-face approaches. iCBT is more accessible, tailor-made for the needs of students, available during times of high stress, allows anonymity, protects privacy, reduces related stigma due to private use of the service at private place, provides proactive monitoring, and permits self-referrals via the internet, and has high user satisfaction and acceptability (e.g., Andersson and Titov, 2014; Kauer et al., 2014; Lintvedt et al., 2013). However, internet interventions for university students often have low adherence and completion rates, low repeated use, and expectations for more human contact and immediate responsiveness (Becker and Torous, 2019; Gericke et al., 2021; Lattie et al., 2019).

### 1.2. Cultural adaptation of iCBT to Chinese clients

Cultural adaptation is prioritized in applying CBT to different ethnic groups (Nicolas et al., 2009). A meta-analysis of 55 studies on CBT for Chinese clients showed a stronger short-term effect for culturally adapted CBT than for unadapted CBT (Ng and Wong, 2018). Culturally adapted CBT was found to be more effective than unadapted CBT in reducing depressive symptoms for Chinese clients with depression (Hwang et al., 2015); and in decreasing psychological distress, and negative thoughts and emotions of Chinese university students, as well as increasing their positive thoughts and emotions, and personal growth (Pan et al., 2021).

However, there are challenges of using CBT with Chinese clients, such as translation of some of the CBT terms from English to Chinese in a culturally relevant manner (Guo and Hanley, 2015); working with negative automatic thoughts and core beliefs that are culturally defined (Guo and Hanley, 2015); and low compliance with therapy homework (Guo and Hanley, 2015). Thus, cultural modifications are necessary to work with Chinese clients with CBT. First, fine-tuned translations and examples that better fit the Chinese context and culture are recommended (Huang et al., 2021). For example, Wong (2005) translated "cognitive distortion" into "Si Xiang Xian Jing (思想陷阱)" in Chinese and also translated different types of cognitive distortions into four-character Chinese words that can be explicitly comprehended by Chinese clients. Second, it is recommended that more work be done with Chinese clients to find more flexible beliefs that are culturally rooted in collectivism (Guo and Hanley, 2015). For example, reframing skills in ways that promote the Chinese values of respect, saving-face, filial piety and interpersonal harmony (Choi et al., 2012), and considering using community resources and family responsibility to facilitate change (Guo and Hanley, 2015). Third, the assignment of therapy homework should be reconsidered by presenting the work as an experiment to enhance self-understanding (Guo and Hanley, 2015). Fourth, the five strategies proposed by Wong (2005) can be used to cope with negative emotions, including stop-and-think, self-talk and positive self-statement. Fifth, client's own examples can be used to demonstrate how to use CBT skills to cope with daily life stress (Pan et al., 2021). Finally, client and therapist could speak the same language and share a similar cultural background (Shen et al., 2006).

Like CBT, iCBT should also accommodate the language and cultural contexts of Chinese clients. However, most iCBT programs were developed in non-Chinese languages, with a select few in Chinese, such as

“TourHeart” (Mak et al., 2017; Tsoi et al., 2022) and “The Little Prince is Depressed” (Wong et al., 2012), but they mainly promote mental health, and provide psychoeducation resources and online assessment tools with few interactive components and minimal therapist support (coaching). Young et al. (2022) recently developed an iCBT program for Hong Kong university students, but it is self-guided with technical support only. For Chinese clients, the design of web-based mental health service programs is suggested to be easy to navigate and understand, user-centered and therapist-guided for self-help, add life examples that resonate with local clients, and have more interactive features and less text (Patel et al., 2017; Tsoi et al., 2022; Young et al., 2022). Therefore, this project develops a therapist-guided and video-based iCBT program that is linguistically and culturally appropriate for Chinese university students in Hong Kong and will evaluate its effectiveness in improving mental health outcomes, particularly in reducing psychological distress.

## 2. Material and methods

### 2.1. Participant and selection criteria

The participants are Chinese students who are attending a university in Hong Kong. The inclusion criteria are: (1) can understand Cantonese; (2) at least 18 years old; (3) a General Health Questionnaire-12 (GHQ-12) score of 2–10 (0–0–1–1 scoring) (i.e., mild to moderate levels of psychological distress); (4) no suicidal risk in the past three months; (5) no severe mental illness, such as bipolar disorder and schizophrenia, diagnosed by a psychiatrist or a clinical psychologist; (6) no concurrent counseling services when joining the program; (7) a computer/smartphone with internet connection; and (8) a valid email address.

### 2.2. Participant recruitment and screening

Students will be recruited by university mass email, posters and leaflets with a QR code of the program website which will be posted on campus noticeboards and distributed through on-campus booths; and advertising on social media, such as Instagram. Interested students can register by completing an online screening questionnaire, which includes the GHQ-12 and questions related to the participant selection criteria, on the program website. Initially qualified students will attend a 1-hour intake interview, conducted either on Zoom or face-to-face chosen by the participant, for further assessment of participation qualification based on the selection criteria such as suicidal and other risks, self-reported diagnosis of mental illness and treatment. Marginal cases will be discussed in a case meeting that consists of the first author, intake worker and therapist, to determine their eligibility. Those who meet the selection criteria after the intake interview and case meeting will be invited to join the program.

### 2.3. Research design

A waiting-list control group design will be adopted to conduct an RCT. As both computer and smartphone are widely used among university students, two versions of the iCBT program (“REST Online”) will be developed: web-based program and smartphone application. The content of the two versions is the same except the presentation of the interface. Those students who are assigned an account for the web-based version are unable to login the app with a web-based account, and vice versa. Qualified participants will be randomized into three conditions: (1) Web-based CBT program; (2) App-based CBT program; (3) Waiting-list control (WLC) group. The two experimental groups will have immediate access to the iCBT program after randomization; while the WLC group will receive the app-based service after the two experimental groups complete the service program. Both the experimental and control groups will complete the same online questionnaire (see Section 2.6) at pre-test, post-test and 3-month follow-up test. The control group will complete the questionnaire once more after the experimental group

completes the iCBT program. The participant flow chart is shown in Fig. 1. To facilitate the implementation of the RCT, participants will be randomized to the three groups in cohort. No significant differences in the treatment effectiveness were found between guided smartphone-delivered and internet-based CBT programs, with both conditions being effective in reducing anxiety symptoms and increasing psychological well-being (Stolz et al., 2018). Thus, compared with the WLC condition, positive effects are expected for both the web-based and app-based iCBT program in this study.

### 2.4. Sample size

The sample size was calculated by using the G\*Power version 3.1.5 program. The effect size was assumed to be 0.25 (medium effect, Cohen, 1992); the number of groups was three (two experimental groups and one control group); and the number of measures was five (please refer to Section 2.6 Outcome measures). The alpha and power values were set at 0.05 and 0.80, respectively. As a result, the minimum sample size is 186. It is assumed that 55 % (Karyotaki et al., 2022) of the participants will complete the intervention. Thus, we will aim at recruiting approximately 338 participants which will result in around 186 valid data, with 62 in each group.

### 2.5. Intervention program: “REST Online”

The “REST Online” Program will be delivered in a blended mode, which includes 8 online modules and 2 counseling sessions provided by a certified CBT therapist. The program can be accessed at the website (<https://restonline.hkbu.edu.hk/>) and a smartphone application can be downloaded on Google Play or Apple Store. The functions of the program include: (1) 8 online modules, which focus on a variety of cognitive behavioral skills to cope with university stress. The contents are developed based on CBT in Beck (2011) and Wong (2005) for Chinese clients, and the CBT work for Chinese university students (Pan and Zhuang, 2022). The skillsets include cognitive skills such as self-talk, building evidence for and against, advantage and disadvantage analyses, pie chart and cognitive continuum, and behavioral skills such as behavioral experiment and behavioral activation. The session outline of the program is provided in Table 1. Students will have access to one online module weekly. The skillsets are briefed and debriefed with animation videos and demonstrated by self-produced case videos of Hong Kong university students. Each module contains a mood check at the beginning and an exercise assignment at the end to practice the CBT skills to manage their own issues; (2) Online forums, where students can share their experiences and feelings under the guidance of a therapist. They can “like” and “reply” to the posts in the forum, as well as report inappropriate replies; (3) Internal messaging, which students can communicate with their therapist by one-on-one text messages; (4) Online questionnaire, which the students can submit online at pre-test, post-test and 3-month follow-up in the system; (5) Booking counseling sessions, which students can book with the therapist (one during the program and another at the end of the program) for face-to-face or online counseling (Zoom, WhatsApp video call or telephone call due to COVID-19 pandemic), to discuss the application of the CBT skills for managing personal issues; (6) Client portfolio, which students can access to check their progress, including total progress and progress of each task, such as the online module and questionnaire, and counseling sessions; and (6) Reminders. Students will receive a number of reminder messages that prompt the implementation of different tasks at different times, such as online modules, counseling sessions and assessments. An introductory video shows participants how to use this online program after logging in. To ensure data security and privacy, participants will log in the system on the program website or app with a self-set password and a one-time password sent to their email address. The program will be hosted on a secure server at the Information and Technology Office of the university of the first author. A user acceptance test (UAT) is carried

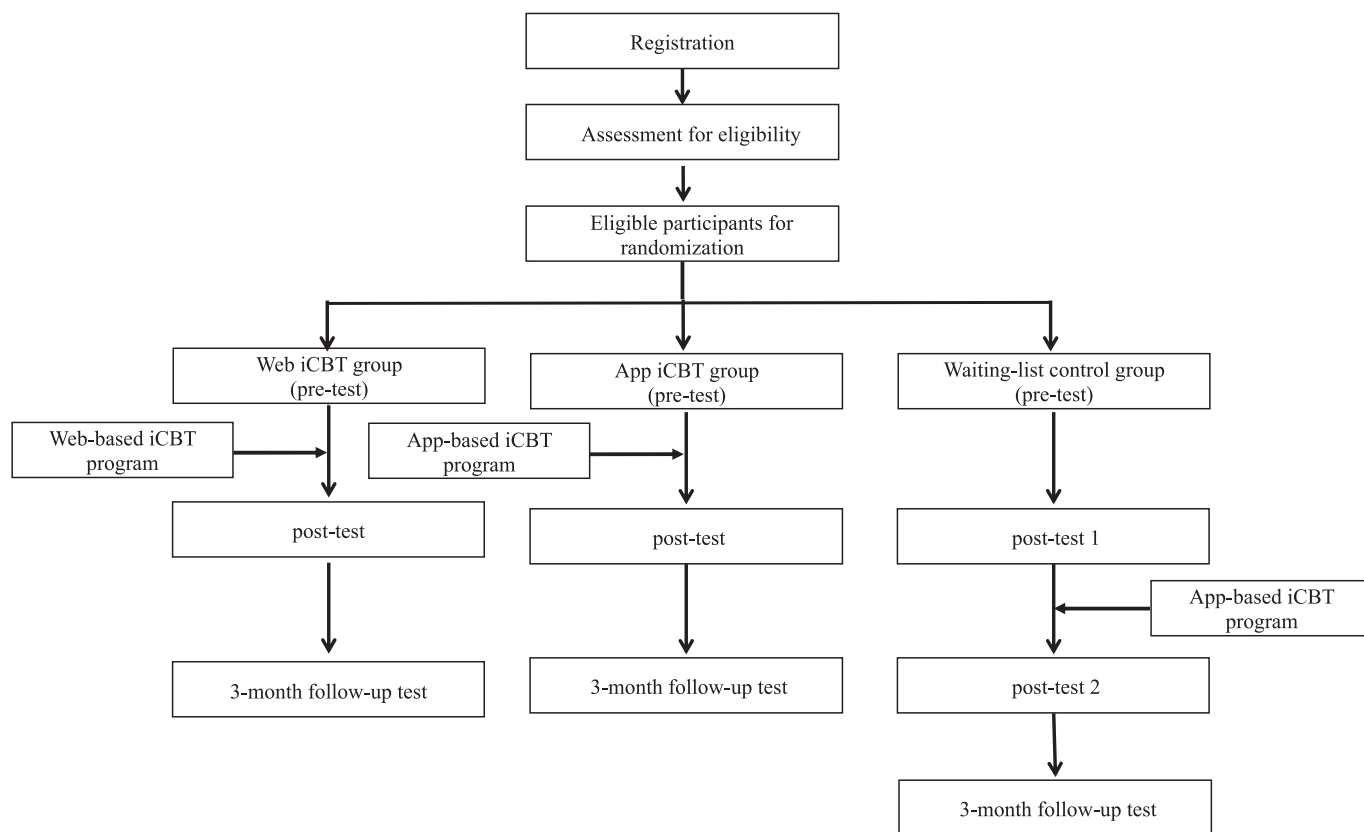


Fig. 1. Participant flow chart.

Table 1  
Session outline of REST Online Program.

Session	Content
1	<ul style="list-style-type: none"> <li>– Basic framework of cognitive behavioral therapy</li> <li>– Identify linkages among thoughts, and emotional, behavioral and physiological responses to university stressors</li> </ul>
2	<ul style="list-style-type: none"> <li>– Identify automatic thoughts and cognitive distortion</li> </ul>
3	<ul style="list-style-type: none"> <li>– Cognitive reconstruction (1): Self-talk</li> </ul>
4	<ul style="list-style-type: none"> <li>– Cognitive reconstruction (2): Build evidence for and against</li> </ul>
5	<ul style="list-style-type: none"> <li>– Behavioral strategies: Behavioral experiment and activation</li> </ul>
6	<ul style="list-style-type: none"> <li>– Cognitive reconstruction (3): Identify and understand cognitive rules</li> </ul>
7	<ul style="list-style-type: none"> <li>– Cognitive reconstruction (4): Relax dysfunctional cognitive rules</li> </ul>
8	<ul style="list-style-type: none"> <li>– Sleeping hygiene</li> <li>– Relaxation exercise</li> <li>– Summary and review</li> </ul>

out before the program launch. All of the program contents are in Chinese (Cantonese). All of the collected electronic data will be encrypted.

After a student is given access to the "REST Online" program, s/he will receive an assigned therapist for therapeutic support by giving exercise feedback, replying internal messages and providing counseling sessions. The therapist is a certified cognitive behavioral therapist trained at the Beck Institute in the U.S. with >10 years of clinical experience of working with Chinese clients, including Chinese university students, with CBT. She will provide therapist support to the clients throughout the service period. The intake interview will be conducted by a project assistant with a Master's degree in Counseling Psychology. Therapist support is recorded in the form of feedback on the exercise assignments completed by students, counseling session reports, internal messages and forum replies. The intake interview report is also recorded by an intake interviewer and stored in the system.

2.6. Outcome measures

The primary outcome measure will be the Chinese version of GHQ-12 (Goldberg and Williams, 1988; Li et al., 2009) as it is a commonly used instrument in the CBT studies for Chinese population with good reliability and validity (e.g. Li et al., 2009; Pan et al., 2021; Wong and Poon, 2010). The 0–0–1–1 scoring method is used to calculate the scale score (which ranges from 0 to 12), with higher scores indicating higher levels of psychological distress. The cut-off point of 1/2 for the Chinese population will be used to identify the participants who are at risk of developing mental health problems (Goldberg et al., 1997). The Cronbach's alpha is 0.87 in a Hong Kong Chinese sample (Li et al., 2009).

The secondary outcome measures will include the following scales:

- (1) The Chinese version of the Beck Depression Inventory-2 (BDI-2) (Beck et al., 1996; Shek, 1990) will be used to assess the severity of depressive symptoms. It has 21 items rated on a 4-point Likert scale. The item scores will be summed up, with a higher total score indicating more depressive symptoms. The alpha coefficient is 0.86 for the Chinese BDI (Shek, 1990).
- (2) The Chinese version of the Beck Anxiety Inventory (BAI) (Beck and Steer, 1993; Cheng et al., 2002) will be used to measure anxiety symptoms. It has 21 items rated on a 4-point Likert scale. Item scores will be summed up, with a higher total score indicating more anxiety symptoms. The alpha coefficient is 0.95 for the Chinese BAI (Cheng et al., 2002).
- (3) The Chinese Automatic Thoughts Questionnaire (CATQ) (Pan et al., 2016), developed from the 8-item Automatic Thoughts Questionnaire (ATQ; Netemeyer et al., 2002) and 10 positive items in the revised ATQ (Kendall et al., 1989) will be used to measure automatic thoughts. Participants will rate the frequency of each thought in the past week on a 5-point scale (1 = "Not at all" to 5 = "All the time"). Item scores will be summed up for

positive and negative subscales, with higher scores indicating more positive and negative automatic thoughts, respectively. The Cronbach's alpha is 0.83 in a Hong Kong Chinese sample (Pan et al., 2016).

- (4) The Chinese Affect Scale (CAS, Hamid and Cheng, 1996) will be used to measure the trait and state affect of Chinese-speaking people. The CAS consists of 20 items with two subscales: positive affect (PA, 10 items) and negative affect (NA, 10 items). Participants will rate the items on a 6-point Likert scale (1 = "Not at all" to 6 = "Extremely"). Item scores will be summed up for each subscale, with higher scores indicating higher levels of PA and NA, respectively. The Cronbach's alpha coefficients range from 0.83 to 0.90 (Hamid and Cheng, 1996)

### 2.7. Ethics and registration

The clinical trial has received ethical approval from the Human Research Ethics Committee of the university of the first author (HASC/14–15/0177) and registered on [ClinicalTrials.gov](https://clinicaltrials.gov) (NCT04389242). Participants need to provide informed consent prior to joining. Their participation is voluntary and they can withdraw at any time without penalty. High-risk cases identified in the screening stage will be referred to university counseling services with consent of the client. The client names will be replaced by a code number in the dataset for anonymity.

### 2.8. Statistical analysis

An intent-to-treat analysis will be used for data analysis. Missing data will be handled with multiple imputation. Linear mixed effect models will be performed to test the intervention effectiveness on continuous variables over time. Time (pre-, post- and 3-month follow-up test), condition (Web-based iCBT, App-based iCBT and WLC) and the interaction of time-by-condition will be specified as categorical fixed factors. Medication will be specified as a fixed covariate. Between group effect size will be calculated by Cohen's *d* with 95 % confidence intervals. Chi-square test will be conducted to examine clinically significant changes across different time points of the tests in terms of the number (%) of participants in different groups who are at risk of developing mental health problems based on the GHQ-12 score and different levels of depressive symptoms based on the BDI score.

## 3. Discussion

This study is among the first of its kind to develop a local iCBT program for the Hong Kong population for an RCT. Theoretically, this study will provide some empirical evidence on the effectiveness of iCBT among Chinese university students. The findings will provide scientific evidence on whether iCBT is an effective and efficient approach to help cope with psychological distress and improve mental health for Chinese students. At the practice level, the program will provide Chinese university students who have mental health needs with access to e-mental health service in an easily approachable manner. If determined effective, the program can also be integrated into the service delivery mode of the counseling centers at local universities in Hong Kong to fill in the service gap of insufficient service providers and high demand for mental health services by university students.

### 3.1. Strength

The study protocol has some strengths. First, the program is culturally and linguistically appropriate for Chinese university students in Hong Kong. The program contents and counseling language are in Cantonese, the first language of Hong Kong students. The case demonstration videos are adapted from real local cases to appeal to the program participants. The CBT skills in this program have been tested and found to be effective for this group of students in group CBT in previous

studies (Pan et al., 2021; Pan et al., 2017). Cognitive beliefs rooted in the Chinese culture have been adapted to more flexible versions by these CBT skills. For example, students develop a holistic perspective of success and failure by using a pie chart and reconstruct alternative views of their performance expectations by using the advantage and disadvantage technique. Second, a blended mode of service delivery is used. Aside from the 8 online modules, therapist support is provided through two counseling sessions and feedback on exercise assignments to underscore the proper use of CBT skills for managing personal issues. Third, the qualification of the therapist in this study ensures that standards of the service delivery adhere to the CBT principles and skillset. Fourth, the "REST Online" program is a video-based instead of a text-based iCBT program. A number of videos have been produced for self-learning of CBT skills, which caters to the learning preference of university students. Fifth, both web-based and app-based versions are developed for the program to facilitate comparison of these two presentation forms for intervention effectiveness. Sixth, besides the use of a screening questionnaire, intake interviews and case meetings are conducted in the participant selection process to ensure participants' qualification. Finally, as there are few iCBT studies in Chinese communities, and majority of the Chinese university students with moderate level of mental health issues are reluctant to seek help from university counseling services (Liu et al., 2017), this study will provide some empirical evidence for the effectiveness of iCBT program for this population group with a 3-Arm RCT design, as well as provide an alternative option, if proved to be effective, for the university counseling service in Hong Kong.

### 3.2. Limitations

There are nevertheless some limitations. First, academic performance, such as grade point average and retention which are personal data and need the approval of university senior management team to obtain, has not been included as an outcome indicator. Considering the close relationship between mental health and academic performance of university students, future studies can incorporate academic performance as one of the outcome measures. Then, the short-term effect of the "REST Online" program is determined at a 3-month follow-up assessment, but long-term effects have not been examined in this study. Future studies can extend the follow-up tests to 6-months, 1-year or even longer. Finally, participants will be recruited by open recruitment, which may cause recruitment difficulties. Collaboration with counseling centers of local universities in Hong Kong to recruit participants could be a feasible solution.

## 4. Conclusion

The protocol in this study describes an indigenous iCBT program called "REST Online" for Hong Kong Chinese university students with the aim to help them manage psychological distress and improve mental health. Moreover, the effectiveness of this program will be evaluated in a 3-arm RCT with a waitlist control group design. Successful implementation of the program will provide an alternative approach to delivering counseling service in the local university counseling centers in Hong Kong to address the issue of shortage of service providers.

### Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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