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Early telehealth support for adolescents with panic symptoms

Submission date
13/04/2026

Recruitment status
Not yet recruiting

Registration date
16/04/2026

Overall study status
Ongoing

Last Edited
16/04/2026

Condition category
Mental and Behavioural Disorders

[X] Prospectively registered
[_] Protocol
[_] Statistical analysis plan
[_] Results
[_] Individual participant data
[X] Record updated in last year

Plain English summary of protocol

Background and study aims
According to the most recent World Health Organization estimates, anxiety disorders are the second leading cause of disability among adolescents in Singapore. The most recent Singapore Mental Health Study found that more than half of adults with anxiety disorders reported that their symptoms began before the age of 21 years. Those with an earlier onset tended to have poorer health and greater productivity loss compared to those whose symptoms started later. Despite the high burden of anxiety disorders, early identification and treatment of adolescents with panic-related anxiety remains understudied in Singapore and worldwide.
By identifying teenagers in the emergency department (ED) who are experiencing panic-related anxiety and providing early support, we may be able to prevent long-term panic disorders. This approach also helps reduce the overall pressure on the healthcare system.
This study evaluates both the treatment's effectiveness and the practical factors required for hospitals to successfully adopt it. By testing a telehealth model, we address resource shortages, specifically the limited number of trained mental health professionals available on-site in emergency departments.
The study team has been approached by the Ministry of Health’s Unit for Pre-hospital Emergency Care to develop early intervention strategies for adult ED frequent attenders with panic-related anxiety and to scale up this intervention in EDs nationwide. The results of the present study could similarly inform barriers and facilitators to implementation for a younger population. If successful, this intervention could be expanded to other settings where panic patients frequently seek care (i.e., primary care, adolescent medicine, and paediatric cardiology). Findings will help refine the program and guide strategies for using it nationwide.
Study aim 1 (intervention effectiveness): to evaluate the preliminary effectiveness of the codesigned telehealth intervention for adolescent ED patients with panic-related anxiety recruited following discharge from the ED.
Study aim 2 (implementation potential): to evaluate the potential for implementation of the codesigned STEP-A intervention from multiple stakeholder perspectives.

Who can participate?
For Aim 1, eligible participants will be English-speaking adolescents aged 11-20 years with a primary complaint consistent with a possible panic attack (e.g., tachycardia, chest pain, shortness of breath, dizziness, and hyperventilation) and/or those assessed as having an anxiety or panic-

related condition by the ED physician. We will exclude patients who do not meet criteria for panic attack or panic disorder, are assigned to the most urgent triage category and deemed to have a life-threatening condition, those who present with altered mental status, those whose symptoms have a clear cardiac or other clear medical cause, those the ED physician deems unfit due to danger of adverse respiratory or cardiac outcomes, and those who are unwilling to complete the study procedures via an internet-enabled device. Potential participants who have received CBT for panic symptoms in the prior 12 months will also be excluded, but those who have received other types of psychotherapy or counselling for panic symptoms or those who are being treated with antidepressant medications will be eligible to participate.
For Aim 2, eligible participants are: 1) adolescents who have completed the psychoeducation and /or full STEP-A intervention and reached the 6-month follow-up; 2) caregivers of (1); 3) adolescents who enrolled in the STEP-A trial and did not complete the intervention; 4) caregivers of (3); and 5) clinicians and allied health professionals from the participating SingHealth institutions (e.g., emergency medicine physicians, adolescent medicine providers, paediatric cardiologists, youth connect workers, and paediatricians with a special interest in mental health) who are involved in the care of adolescent ED patients with panic-related anxiety.

What does the study involve?
The study involves a one-to-one psychoeducation session (delivered over teleconference) with the study psychologist, which provides an overview of the nature and causes of panic attacks and behavioural strategies for managing future episodes. Five weekly cognitive behavioural therapy teleconference sessions for participants who are not in remission at 1- or 3-month follow-up. Follow-up assessments (including web surveys) will be conducted at 1, 3, 6, and 12 months from the date of enrolment. In-depth interviews and web surveys are used to assess implementation outcomes.

What are the possible benefits and risks of participating?
Participants may benefit from the identification of panic symptoms that have not previously been diagnosed and may experience improvement in panic symptoms as a result of the intervention. Indirect benefits to the participants include the contributions they will make to medical knowledge about the use of brief screening and stepped care interventions in the emergency department setting. This could help reduce costs and improve treatment for patients with panic symptoms in the future.
We do not expect any major health risks or side effects from participation. The risks involved in this trial are similar to those of other behavioural interventions. These include the potential for feeling uncomfortable or anxious when completing the study assessments, or finding it inconvenient to take the time to do so. Participants may experience some physical or psychological distress or discomfort when completing symptom induction exercises and in vivo exposure tasks. The study psychologist will tailor these exercises for each participant to minimise such risks.

Where is the study run from?
Duke-NUS Medical School (Singapore)

When is the study starting and how long is it expected to run for?
April 2026 to December 2028

Who is funding the study?
National Medical Research Council (Singapore)

Who is the main contact?
Assistant Professor Sharon Sung, sharon.sung@duke-nus.edu.sg

Contact information

Type(s)
Principal investigator, Scientific, Public

Contact name
Dr Sharon Sung

ORCID ID
https://orcid.org/0000-0003-3293-2112

Contact details
8 College Road
Singapore
Singapore
169857
+65 (0)6601 1648
sharon.sung@duke-nus.edu.sg

Additional identifiers

Study information

Scientific Title
Evaluation and implementation of a brief stepped-care telehealth early intervention protocol for adolescent (STEP-A) emergency department patients with panic-related anxiety

Acronym
STEP-A

Study objectives
The study design is a prospective multi-site single-arm hybrid type 1 effectiveness /implementation trial in which the primary objective under Aim 1 is to test the preliminary effectiveness of the intervention. Secondary objectives are to evaluate implementation outcomes, which are covered under the methods for Aim 2.

Ethics approval required
Ethics approval required

Ethics approval(s)
approved 22/02/2024, SingHealth Centralised Institutional Review Board (CIRB) (20 College Road, Academia Level 6, Singapore, 169856, Singapore; +65 (0)8126 3660; irb@singhealth.com.sg), ref: 2024/2299

Primary study design
Interventional

Allocation

N/A: single arm study

Masking
Blinded (masking used)

Control
Uncontrolled

Assignment
Single

Purpose
Health services research, Treatment

Study type(s)

Health condition(s) or problem(s) studied
Early intervention for adolescents with panic attacks or panic disorder

Interventions
The first telehealth session will be scheduled within 1 week of discharge from the ED. All adolescent participants and their caregivers will be invited to complete a 1-hour introductory session delivered via the secure Zoom video conference platform. The introduction session includes information regarding the nature and causes of panic attacks and behavioural strategies to manage future attacks (e.g., allowing symptoms to come and go, reducing avoidance and safety behaviours). Information is tailored to each participant's symptoms and written materials are provided via email or smartphone for patients and caregivers to refer to after completion of the introduction session.

Participants who do not reach remission of panic attacks at 1-month follow-up will be "stepped-up" to receive five weekly 1-hour Zoom sessions of the co-designed STEP-A protocol adapted from our previous CBT intervention. All telehealth sessions will be delivered by a trained psychologist in accordance with the Singapore Medical Council's standards for telemedicine.

Intervention Type
Behavioural

Primary outcome(s)
1. Panic symptom severity measured using the Panic Disorder Severity Scale (PDSS-A) at baseline, 1, 3, 6 and 12 months

Key secondary outcome(s))
1. Clinical severity and improvement measured using the Clinical Global Impression Scale (CGI) at baseline, 1, 3, 6 and 12 months

2. Panic-related cognitions measured using the Agoraphobia Cognitions Questionnaire (ACQ) at baseline, 1, 3, 6 and 12 months

3. Fear of physical symptoms measured using the Body Sensations Questionnaire (BSQ) at baseline, 1, 3, 6 and 12 months

4. Depressive symptoms measured using the Patient Health Questionnaire for Adolescents (PHQ-A) at baseline, 1, 3, 6 and 12 months

5. Generalized anxiety symptoms measured using the Generalized Anxiety Disorder seven item scale (GAD-7) at baseline, 1, 3, 6 and 12 months

6. Mental health difficulties measured using the Strengths and Difficulties Questionnaire (SDQ) at baseline, 1, 3, 6 and 12 months

7. Quality of life measured using the Youth Quality of Life-Short Form Instrument (YQOL-SF) at baseline, 1, 3, 6 and 12 months

8. Healthcare service use measured using the Healthcare Service Use Expenditure Questionnaire at baseline, 1, 3, 6 and 12 months

Completion date
31/12/2028

Eligibility

Key inclusion criteria
Aim 1:
1. English-speaking adolescents aged 11-20 years
2. Triage level 1 (Non-threatening condition), 2 or 3
3. Able to provide informed consent and read study materials
4. Presenting complaint of tachycardia, chest pain, shortness of breath, dizziness, hyperventilation and/or those assessed as having an anxiety or panic-related condition by the ED physician
5. Diagnosis of panic attack or panic disorder confirmed on the ADIS interview
6. Willing to complete study procedures

Aim 2:
1. Adolescents who have completed the psychoeducation and/or full STEP-A intervention and reached the 6-month follow-up
2. Caregivers of adolescents who have completed the psychoeducation and/or full STEP-A intervention and reached the 6-month follow-up
3. Adolescents who enrolled in the STEP-A trial and did not complete the intervention
4. Caregivers of adolescents who enrolled in the STEP-A trial and did not complete the intervention
5. Clinicians and allied health professionals from the participating SingHealth institutions (e.g., emergency medicine physicians, adolescent medicine providers, paediatric cardiologists, youth connect workers, and paediatricians with a special interest in mental health) who are involved in the care of adolescent ED patients with panic-related anxiety

Healthy volunteers allowed
No

Age group
Mixed

Lower age limit

11 years

Upper age limit
64 years

Sex
All

Total final enrolment
0

Key exclusion criteria
1. Clear cardiac or other medical cause for cardiopulmonary symptoms
2. Deemed unfit by ED doctors due to possible adverse cardiac or respiratory outcomes
3. Received cognitive behavioural therapy for panic symptoms in past 12 months
4. Unable to complete study procedures

Date of first enrolment
20/04/2026

Date of final enrolment
31/12/2027

Locations

Countries of recruitment
Singapore

Sponsor information

Organisation
National Medical Research Council

ROR
https://ror.org/04x3cxs03

Funder(s)

Funder type

Funder Name
National Medical Research Council

Alternative Name(s)

The National Medical Research Council, National Medical Research Council (NMRC) Singapore, NMRC

Funding Body Type
Government organisation

Funding Body Subtype
National government

Location
Singapore

Results and Publications

Individual participant data (IPD) sharing plan

IPD sharing plan summary
Not expected to be made available