

ADAPTING A STEPPED-CARE TELEHEALTH INTERVENTION FOR ADOLESCENTS WITH PANIC-RELATED ANXIETY IN SINGAPORE: A CO-DESIGN APPROACH

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1 BACKGROUND

Panic-related anxiety (i.e., panic attacks or panic disorder) involves physical symptoms such as chest pain, dizziness, shortness of breath, and heart palpitations, accompanied by a marked fear of future panic attacks that results in avoidance of situations or physical sensations that may provoke future attacks.¹ Because of the physical nature of these symptoms, young people often present to the Emergency Department (ED) rather than to mental health services.^{2,3}

~1 in 3

Adolescent ED chest pain patients meet diagnostic criteria for panic attacks or panic disorder⁴

Yet panic-related anxiety is rarely diagnosed or treated in medical settings, which can drive recurrent ED visits, costly specialist referrals, and avoidable costs.

2 THE TREATMENT GAP

The average onset of panic-related anxiety is ~11.7 yrs. Onset of panic before age 20 is associated with poor long-term outcomes, including greater functional impairment and psychiatric comorbidity.^{4,5}

Locally, the Children’s ED at KK Women’s & Children’s Hospital reported a 51.5% rise in adolescents with anxiety-related somatic complaints during the COVID-19 pandemic.⁶

First-line treatment for panic-related anxiety is cognitive behavioural therapy (CBT)^{7,8}. Prior work from our team has shown that a stepped-care intervention⁸ consisting of psychoeducation and brief CBT⁹ is effective for adult ED patients in Singapore.^{10,11} We have also tested the feasibility of delivering this intervention to adult ED patients via video consultation, with promising results.

However, because the intervention was designed for adults, the effectiveness of our stepped-care telehealth model for adolescents remains unknown. **Developmentally tailored, scalable interventions for adolescents with panic-related anxiety remain lacking.**

3 OBJECTIVE

Using a structured co-design process, we developed an age-appropriate, culturally adapted version of our adult stepped-care protocol for telehealth delivery to adolescent ED patients in Singapore with panic-related anxiety.

4 METHODS

Study design

Following Boyd et al.’s¹² co-design framework, we conducted a series of focus groups to gather end-user feedback on the original adult materials. Through qualitative analysis, we identified the changes necessary to improve developmental appropriateness and cultural relevance for adolescents. We then implemented these changes to create the adolescent-adapted intervention (STEP-A).

Participants

- Patients: adolescents aged 11–20 with panic-related anxiety, along with their caregivers
- Providers: clinicians and allied health professionals from the participating SingHealth institutions
- Recruited across four public EDs (KKH, SGH, SKH, CGH)

6-Stage Co-design Framework (Boyd et al., 2012)

1 Engage

2 Plan

3 Explore

4 Develop

5 Decide

6 Change

Analysis

Through inductive thematic analysis of participant input, we identified emergent themes and systematically integrated them into the adaptation while retaining the core clinical components of CBT for panic.

Core clinical components retained

- Patient education about the nature and physiology of panic
- Cognitive restructuring
- Gradual exposure to panic-related body sensations and avoided situations

Adaptation Process

Evidence-based adult ED stepped-care protocol (face-to-face)

Structured co-design with adolescents, caregivers & providers

Adapted adolescent telehealth protocol (STEP-A)

Ongoing pilot across EDs in Singapore

5 RESULTS: FIVE CORE THEMES

1 Increase the use of visually engaging materials

2 Simplify clinical language for a youth audience

3 Integrate metaphors and concrete examples to demystify abstract concepts

4 Enhance interactivity through gamified elements

5 Contextualise language and content within Singapore’s sociocultural context

6 DISCUSSION

These themes provide insight into how an evidence-based adult CBT protocol can be adapted into a format accessible and engaging for youth. By retaining the core CBT components⁹, we preserved clinical fidelity while enhancing developmental and cultural fit for adolescents. With its scalable telehealth format, the adapted intervention offers a resource-efficient, patient-centric model for treating panic-related anxiety in adolescents.

7 NEXT STEPS: ONGOING PILOT

STEP-A is now being piloted with adolescents in Singapore. Findings on preliminary effectiveness and implementation potential will inform scalable early-intervention strategies, with the aim of changing standard practice for these patients in Singapore and worldwide.

8 CONCLUSIONS

Our co-design process yielded the first developmentally and culturally informed stepped-care telehealth protocol designed for multi-ethnic Asian adolescents with panic-related anxiety. It offers a scalable approach to early intervention for this population, with the potential to reduce the psychological, academic, and social costs of panic-related anxiety, intercept progression to panic disorder, and ease pressure on the larger healthcare system through fewer repeat ED visits for panic-related symptoms.

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