MODULE 2: Exploring perceptions of mobile health interventions for the prevention of common mental disorders in Singaporean university students: A qualitative study

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1   Antecedents

Mental health interventions delivered via mobile health (mHealth) technologies can increase access to mental health services, especially among young adults (1). The development of mHealth interventions is complex and needs to be context sensitive (2). There is limited evidence on the perceptions, needs, and barriers related to these interventions in the Southeast Asia context (3). This qualitative study aims to **explore the perception of university students and mental health supporters on mental health services, campaigns, and mHealth interventions with a focus on conversational agent (CA) interventions for the prevention of common mental disorder**s such as anxiety and depression.

2   Methods

We performed six online focus group discussions with **university students (N=30)** and one-to-one online interviews with **mental health supporters (N=11).** The analysis followed a reflexive thematic analysis framework (4).

3   Results: Participants

Students	n (%)
Female	19 (63.3)
Male	11 (36.7)
Mean Age (SD)	22.95, (1.89)
Age Range	21-35
Ethnicity	
Chinese	27 (90)
Malay	2 (6.7)
Indian	1 (3.3)

Mental health supporters	n (%)
Female	6 (54.5)
Male	5 (45.4)
Working Experience	
< 1-2 years	2 (18)
3-5 years	2 (18)
6-10 years	2 (18)
>10 years	5 (45)
Profession	
Clinical Psychologist	1 (9)
Counsellor	3 (27)
Faculty members	3 (27)
Psychiatrist	1 (9)
Others	3 (27)

3   Results: Themes

Theme 1: Healthy lifestyle as students	Theme 2: Access to mental health services
"I think that, like a healthy lifestyle will be across all the aspects of health that could possibly be in life, so like, physical, social, emotional, cognitive health… Then what stops me from making healthier lifestyle choices would be like, sometimes I have obligations to fulfil." (FGD1:S001)	"For me, I'll just most likely talk to friends who I've already established like a connection with, and like we've already talked about mental health issues before, because I feel that I'll receive less stigma lah than trying to talk to someone new" (FGD3: S009) "If it really gets very serious, then that's when I'll take like therapy or counselling, where it's like a, you know, third party." (FGD6: S013)

Theme 3: Roles of mental health promotion campaigns	Theme 4: Preferred mHealth engagement features
"I think the programs, the mental health awareness, uh the programs that they bring, they help in terms of like, bringing up, uh, like, for example they… they … disprove the stigma … of those with mental health, uh, issues." (FGD6:S018)	"When you compare to Lumihealth, they do have challenges, but you don't really know what you are doing the challenges for. Of course, you are doing it for own health, but then, it did not feel like very significant… So like if, these challenges, maybe there's like a simple, like story behind it, something that will engage the users right, then at least it would like, it would stay in their heads for longer and so they would be more likely to log back in to that." (FGD2:S021)

Theme 5: Factors influencing the adoption of mHealth interventions	Theme 6: Cultural relevance in the design and development of mHealth intervention
"Personally, I would prefer something that is more specific, because then it feels like the chatbot like understands what I'm going through and is able to speak to my specific situation, but I feel like that might not work if it needs to be suitable for a large audience." (E017, Mental Health First Aider)	"The more relatable the chatbot seems, the more effective it is likely to be. I'm reminded of a telegram bot, I think, that was made by a local and let me see… I believe the telegram what was programmed so that it will respond in a very Singlish manner" (E019, Associate Psychologist)

4   Conclusions

1. Our findings show that students were reluctant to use mental health services due to concerns such **as fear of stigma and a potential lack of confidentiality**.
2. mHealth interventions for mental health were seen as important primarily as a part of a **blended intervention.**
3. mHealth interventions for mental health should be **personalised and able to manage adverse events such as suicidal ideations.**

Areas of improvement

- Delivery format of the intervention [e.g. standalone only or with human support (hybrid)]
- Engagement feature of the intervention [e.g. gamification, rewards, reminders, story-based design]
- Presentation of the CA within the intervention [e.g., tone of the dialogue, content of the dialogues]

Barriers and facilitators

- Lack of "human-touch" in CA-delivered mHealth
- The perception that the intervention could be used as a bridging service toward professional mental health support
- Participants' preference for novel and intrinsic elements in CA intervention
- Normalization of mental health issues via public mental health campaigns

Recommendations

- Remote human support in-app (hybrid system)
- Embedding the intervention within healthcare system
- Gamification elements e.g., point-based system for completing modules
- Including shared narratives via story-driven intervention
- Include referrals information to public or private mental health institutions

Content recommendations

- Mindfulness, CBT, Psychoeducation Transdiagnostic approach
- Blended approach
- Contextualized narratives such as transitioning to university/working adult life
- Inclusion of colloquialism and local slang ('Singlish')
- Defining CAs personality and conversation style
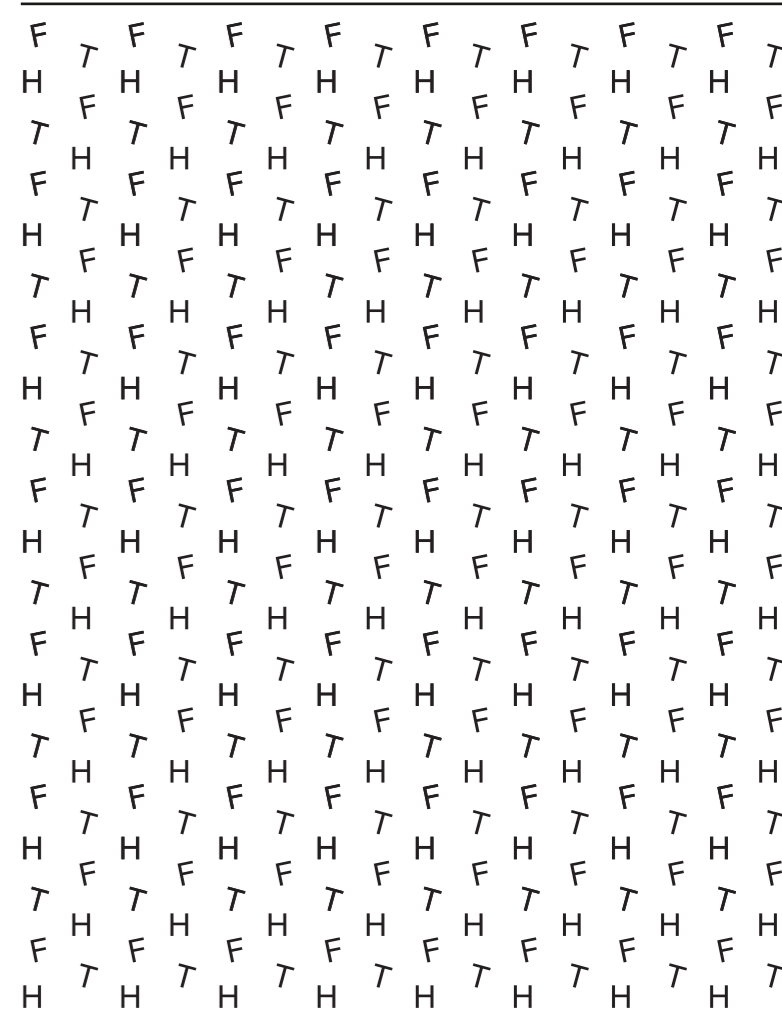
References
1. Lattie EG et al. (2019) J Med Internet Res; 21 (7):e14018
2. Torous J, et al. (2018) Evid Based Ment Health; 21(3):116–9
3. Tan GTH, et al. (2020) BMC Psychiatry; 20(1):422
4. Braun V and Clarke V (2006) Qual Res Psychol; 11(4):589-97

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