Challenges and Proposed Solutions: Implementing an App-based Intervention for Youth Stimulant Use in a Middle-Income Country

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Presentation outline

- Introduction
- Malaysian App-based Intervention for Meth-use (MyAIM™)
- Implementation of an app-based intervention for youth stimulant use
- Challenges in the implementation
- Possible Solutions to overcome the challenges

Disclaimer

There are no conflicts of interests to declare in regards to this presentation.

Introduction — Stimulant-use in Malaysia

Stimulant-Use

Illicit substance-use within the Southeast Asian region remains a regional issue especially regarding Amphetamine-type Stimulants.[1]

Production mainly focused in the Shan State, Myanmar with smaller labs in the Philippines, Indonesia, Malaysia and China.[2]

Amphetamine-type stimulants remain the most-used substance in Malaysia caught by authorities.[3]

References:
1. The Lancet Regional Health – Southeast Asia. 2023. Escape from Quicksand: Illicit substance use among youths in southeast Asia.
2. UNODC. 2023. Synthetic drugs in East and Southeast Asia.
3. Agensi Antidadah Kebangsaan. 2023. Maklumat Dadah 2023.

Amphetamine-type Stimulants in Malaysia

Malaysia, a country with a population of 35 million, reported known substance use cases were roughly 145,000.

63.2 percent of whom were aged 15 – 39.

77.2 percent were using amphetamine-type stimulants.

References:
1. Agensi Antidadah Kebangsaan. 2023. Maklumat Dadah 2023.

Difficulties in Treating Stimulant Use

General — Cumming et al 2016 [1]

- Stigma
- Believes treatment is not needed
- Prefers to withdraw from substance use alone
- Privacy concerns

Malaysia – Singh et al 2021 [2]

- Self-perceived ability to stop any time
- Fear of discrimination
- Long waiting time for treatment
- Embarrassed to stay in a centre
- Don’t know how to seek help
- Need to work to support familhy

References:
1. Singh et al. 2021. Treatment Barriers associated with Amphetamine-type Stimulant Use in Malaysia. *Journal of Psychoactive Drugs.*
2. Cumming et al. 2016. Barriers to assessing methamphetamine treatment: a systemic review and meta-analysis. *Drug and Alcohol Dependence.*

Implementation of an App-based Intervention

Implementing an App-based Intervention

The rates of smartphone ownership is increasing, with more than 98 percent of Malaysians owning one.[1]

Benefits of an App-based Intervention

- High accessibility
- Low running cost
- Standardisation
- Private & confidential

Implementing an App-based Intervention

Several availabke apps

i. MOMENT by Shrier et al (2012) targeting cannabis use disorder

i. D-Arianna by Carra et al (2015) targeting alcohol use disorders

ii. Pharmquit by Asayut et al (2022) targeting tobacco use disorder

iii. Affect by Muhlner (2023) targeting general substance use disorder

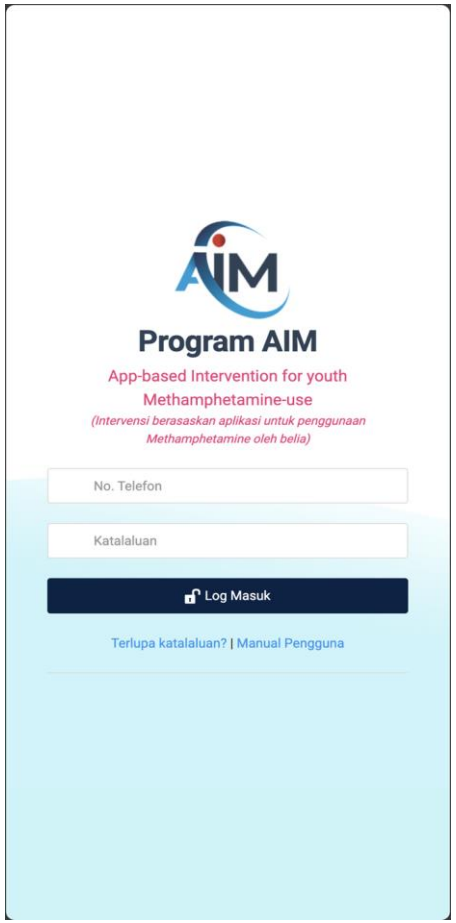

MyAIM™

MyAIM™

The Malaysian App-based Intervention for Methamphetamine Use (MyAIM™) is locally developed app-based intervention for stimulant-use that provide the basis of essential components targeting recovery.

- Development phase 4 years starting from need analysis.
- Pilot tested in the local community
- Delivered in sessions over a few weeks.

Features in MyAIM™



Challenges in Implementing an App-based Intervention

Challenges in Implementing an App-based Intervention for Stimulant-use

Several potential challenges that might occur during the implementation of an app-based intervention:

- Cultural suitability
- Digital literacy
- Infrastructure issues
- Engagement & treatment adherence
- Financial constraints

Challenges — Cultural Suitability

Most model app-based intervention initially developed in iwestern countries; may have different cultural elements compared to some SouthEast Asian countries.

- Developing an app using the local language that can be understood well is mandatory for successful mass implementation
- Addressing important cultural values that may influence or be protective against substance use.
- App content to be tailored to scenarios that match the local culture/ community targeted.

References:
1. Aila Naderbagi et al. 2024. Cultural and Contextual Adaptation of Digital Health Intervention: Narrative Review. *J Med Internet Res,* 26.

Challenges — Digital Literacy

- Sociodemographic factors such as age, socioeconomic status, education level and social supports influence digital health literacy. [1]
- Especially crucial as lower digital literacy affects both the ability to search for and understand reliable health sources, and reduces the usability of the app. [2]

References:
1. Marta Estrela et al. 2023. Sociodemographic determinants of digital health literacy: A systematic review and meta-analysis. *Int J Med Informatics,* 177.
2. Ayhan Durmus. 2024. The influence of digital literacy on mHealth app usability: The mediating role of patient expertise. *Digit Health*, 10.

Challenges — Infrastructure Issues

Internet coverage may be wide for Malaysia, and the Southeast Asia. However, a digital divide exists.

- This digital divide is even prominent amongst the Southeast Asia countries with only 3 countries having more than 80% internet penetration. Indonesia, Vietnam, Thailand and the Philippines range from 67% – 73%.
- People in the cities may enjoy faster, more stable connection than those living in rural areas.
- Internet speeds in the greater Klang Valley may be sufficient to run the videos in the app, however in more rural areas (particularly in East Malaysia) this may not be the case.

References:
1. Huon Curtis et al. 2022. Digital Southeast Asia. https://www.orfonline.org/public/uploads/posts/pdf/20240630100922.pdf

Challenges — Engagement & Treatment Adherence

Treatment adherence is a common issue that needs to be addressed whenever planning a treatment program for substance use disorders.

- Digital interventions have catastrophically low retention rates. Even when looking at regular apps, 30-day retention is found to be only 6% with medical apps being only 3.5%. [1]
- An intervention app with low engagement rates will not give the intended outcome.
- Patient-, intervention-, and systemic-level factors influence app engagement (whether to improve or reduce). [2]

References:
1. Nayden Tafradzhiyski. 2025. Mobile App Retention. https://www.businessofapps.com/guide/mobile-app-retention/
2. Jessica M. Lipschitz et al. 2023. The Engagement Problem: a Review of Engagement with Digital Mental Health Interventions and Recommendations for a Path Forward. *Current Treatment Options in Psychiatry*, 10.

Challenges — Financial Constraints

Although app-based interventions is a cost-effective mode of delivering treatment, there is a steep upfront cost that is often overlooked.

- Every step of the app development phase requires hiring specialists and consultants to ensure the app is able to achieve its intended goal.
- App developers, software engineers, app designers, animators, voice actors, psychologists, psychiatrists, administrative staff (to run the app), etc. are several examples of experts needed.
- Keeping the app running requires dedicated staffs and servers, which also poses a financial burden.


Suggestions to Overcome Problems

Solutions to Overcoming Common Problems in App-based Intervention

These solutions may prove beneficial in beginning the implementation of an app-based intervention.

- Blended care model
- Capacity building
- User centered design model
- Data protection
- Managing costs

Solutions – Blended Care Model

A blended care model (or a hybrid model) combines both clinician care along with app-based intervention as a complementary treatment module.

- Blended care models make use of the best of both app-based intervention and clinician-based care in terms of availability, effectiveness, and engagement.
- Integration with intervention content in-app along with several face-to-face sessions may help improve overall adherence to the program. [1]
- Implementation would be made easier as this does not disrupt current treatment programs already being given to the patients.

References:
1. Lena Lincke et al. 2025. Integration of a Mental Health App (e-MICHI) Into a Blended Treatment of Depression in Adolescents: Single-Group, Naturalistic Feasibility Trial. *JMIR Form Res*, 9.

Solutions – Capacity Building

Improving systems that are already in-place to perform better or to adapt to the ever-changing substance-use scene.

- Providing training or short courses for clinicians or treatment providers to understand and truly utilise the app-based intervention for the betterment of care.
- Working along with therapists.
- Therapists initially find that it is difficult to make the treatment coherent with app-based interventions, however it becomes much easier with further use. [1]

References:
1. Kristine Tarp et al. 2025. Therapist experiences with implementation of blended (iCBT and face-to-face) treatment of alcohol use disorder (Blend-A): mixed methods study. *Front Digit Health*.

Solutions – User-centered Design

Lack of interest in the topic available within the app-based intervention program may be a cause for the reduced engagement.

- Understanding what the app-users want or are interested in may increase overall usability of the app. E.g. providing resources to housing, counseling and parenting tips for women at-risk of substance relapse. [1]

- This could be done by conducting qualitative interviews with potential clinical targets on content and mode of delivery.

References:
1. Emery R Eaves et al. 2022. Applying User-Centered Design in the Development of a Supportive mHealth App for Women in Substance Use Recovery. *American J Health Promotion*.

Solutions – Data Protection

Dealing with sensitive topics and at-risk individuals, data protection is important to be made visible to the potential clinical targets.

- Policies on data protection should be followed to ensure important data is stored safely.
- Due to the highly stigmatizing nature of substance use in Southeast Asia, some individuals may be less inclined to participate in an app-based intervention if data is not kept secure.

Solutions – Managing Costs

Developing an app may be very costly; better to adapt low-cost telecommunication methods of intervention and to procure government funding to enable large-scale implementation.

- Text-messaging intervention — utilising texts to send motivational messages, reading resources, and even activities/ homework may be much cheaper than to develop a whole new app. [1]
- Utilising open-sourced technologies will help cut down costs from paying for premium features.
- Figure out a way to monetise the app as a product. E.g. subscription-based or one-time purchase. [2]

References:
1. Borland, Balmford, & Brenda. 2013. Population-level effects of automated smoking cessation help programs: a randomized controlled trial. *Addiction,* 108(3).
2. Alex Shubin. 2025. How to Monetize a Mental Health App? Top Monetization Strategies. https://sda.company/blog/category/mental-health/mental-health-app-monetization

Meet The Team

Research Activities in the Community

Research Activities in the Community

Thank you

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