Digital Interventions for Reducing Alcohol Consumption in Young Adults: A Systematic Review

Lau Hin Tung[1], Li Meng Yao[2], Wang Man Ping[2] Dr Lubecca Zhao[2]

[1] LKS Faculty of Medicine, The University of Hong Kong, Hong Kong
[2] School of Nursing, The University of Hong Kong, Hong Kong

Introduction

Young adults comprise an at-risk population due to heavy alcohol consumption and alcohol-related problems, including academic and psychological impairment, risky sexual behaviour and victimisation, car accidents, and violence. Digital interventions provide a cost-effective means to expand alcohol education outreach among digitally connected young adults.

-Research question
Can the digital interventions effectively reduce alcohol consumption and alcohol-related problems among young adults?

-Objectives
To explore the effectiveness of digital interventions on reducing alcohol consumption and alcohol-related problems among young adults.

Methods

- Identified relevant evidence from the Cochrane Central Register of Controlled Trials (CENTRAL), PubMed, Web of Science, CINAHL, Embase, and PsycINFO using key terms of alcohol drinking, digital intervention and young adults from inception to 29th February 2024
- searched clinical trial registers and hand-searched references of topic-related systematic reviews and the included studies
- all studies took place in either university or community care setting

-Selection criteria
- Only randomised controlled trials in young adults aged 18-25 years comparing digital interventions for reducing alcohol consumption with no intervention, assessment only or alternative interventions were included.

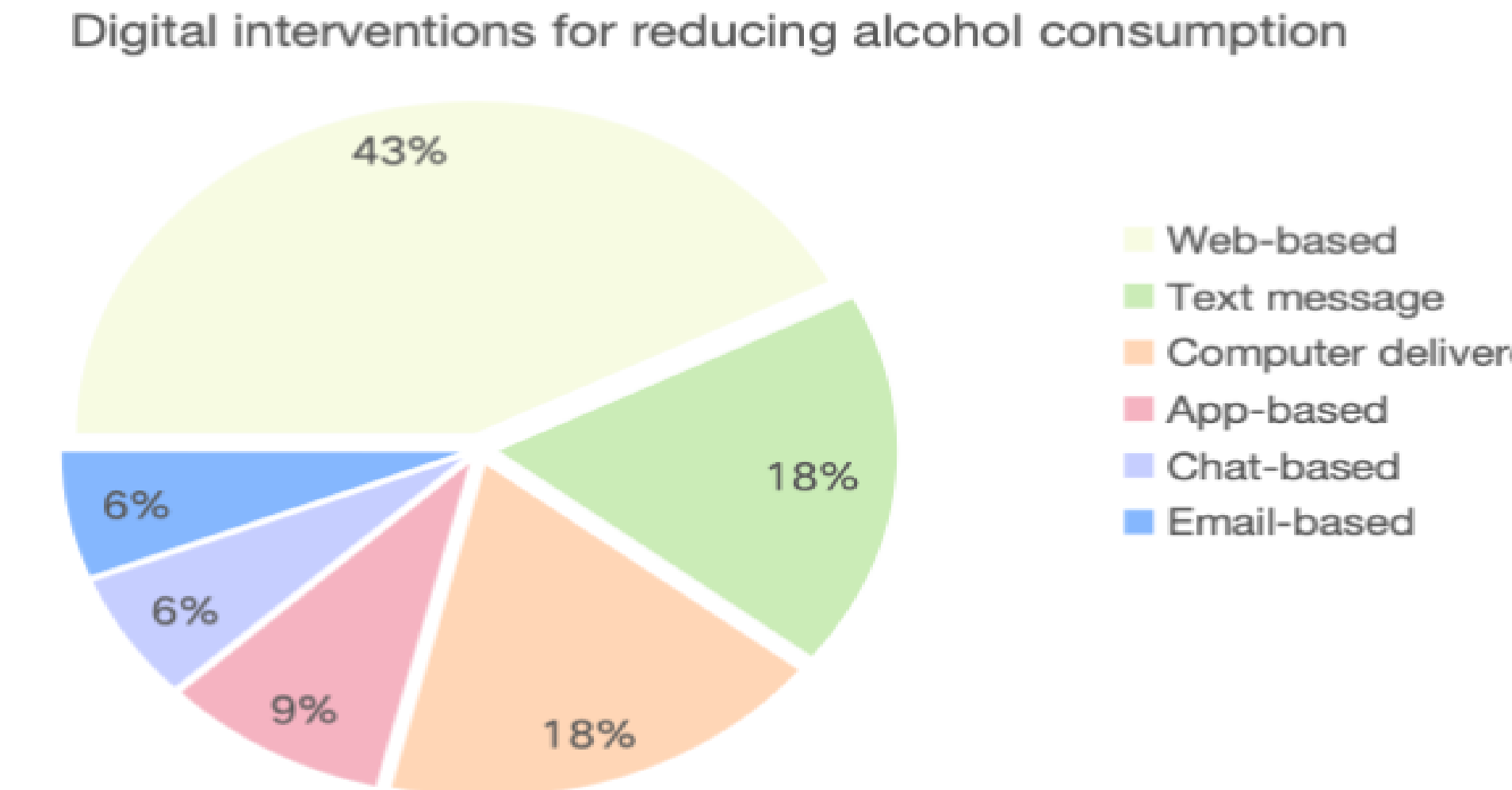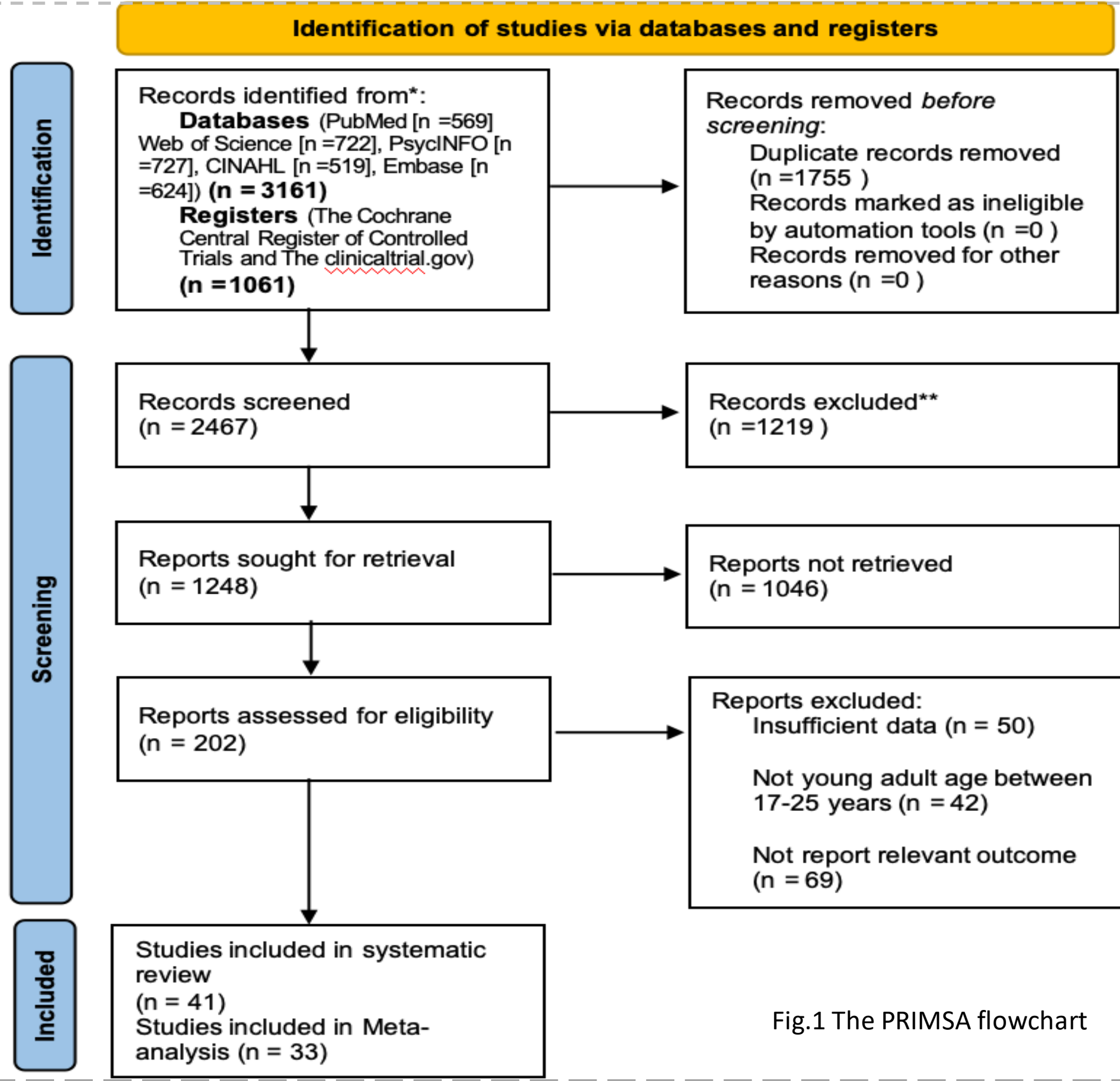### -Data collection and analysis
- Primary outcome was weekly alcohol consumption of the latest follow-up
- Analyses were conducted using the Preferred Reporting Items for Systematic Reviews and Meta-analyses reporting guidelines (PRISMA).

- Trial selection process
- Identified: 4222 articles / Screened: 2467 articles / Assessed: 202 articles
- Included: 41 articles in systematic review after eligibility assessment

- Summary of included studies:
- Duration of intervention: 1 day to 2 weeks
- Follow up assessment: 2 weeks up to 1 year
- Digital interventions: web based (43%), text messages (18%) and computer delivered interventions (18%)

Fig.1 The PRIMSA flowchart

Digital interventions for reducing alcohol consumption

- Web-based 43%
- Text message 18%
- Computer delivered 18%
- App-based 9%
- Chat-based 6%
- Email-based 6%

Fig.2. The risk of bias summary

Results

- The 41 studies included in the systematic review are published in between 2004 to 2024. 32 studies are from the US, while 3 are from Austria, 2 from Netherlands, 1 from Switzerland, Sweden and Hong Kong.
- 38 out of 41 studies are conducted among university students, with 3 on a community based setting
- The average sample size is 452.2 young adults involved, mean age is 20.73 years
- Among the studies, 27 studies used assessment only as control, 9 studies used web based digital interventions such as web based brief advice, education, CBT and brief interventions, 5 studies used alternative educational and feedback methods such as leaflets, personalized feedback and generic feedback, 3 studies used mobile and messaging interventions
- Regarding the primary outcome, 17 studies measured the weekly quantity of alcohol consumed, 12 studies measured the daily quantity and specific drinking episodes, 10 studies measured blood alcohol concentration
- There are 25 studies with less than 4 months of follow up and 12 studies with more than 4 months of follow up
- 5 out of 41 studies have reported digital intervention on alcohol reduction to be more effective than control

Discussion

- We have included 43 studies spanning from 2004 to 2024, which effectively increase the power to detect a statistically significant difference on the effectiveness of weekly alcohol consumption reduction among young adults using digital interventions
- These studies are primarily conducted in the US, which limits the generalisability to other populations. Our selection criteria is young adult, so the result findings may not be generalisable to other population subgroups.
- Web based interventions are the most common form of digital interventions, likely due to the convenience of web platforms to deliver content for education and counselling and the ease of updating and developing such programs.
- Motivational interviewing and alcohol education is being used to enhance motivation and correct misperceptions about alcohol
- The risk of bias for most studies are of low and moderate level of risk, with only 1 study of high risk
- If digital intervention is found to be effective on reducing alcohol consumption, it can provide a more convent and cost effective approach to a digital connected crowd as these interventions can be provided 24/7 and are widely assessable to meet the high demand among teenagers.
- However, we must address the limitations that most studies have a follow up period of less than 4 months and are based in the US. Therefore, future studies that has a more culturally diverse population, with a longer follow up period should be included.