

MODULE 2: Holistic mHealth Interventions for Promoting Healthy Ageing: A Systematic Review

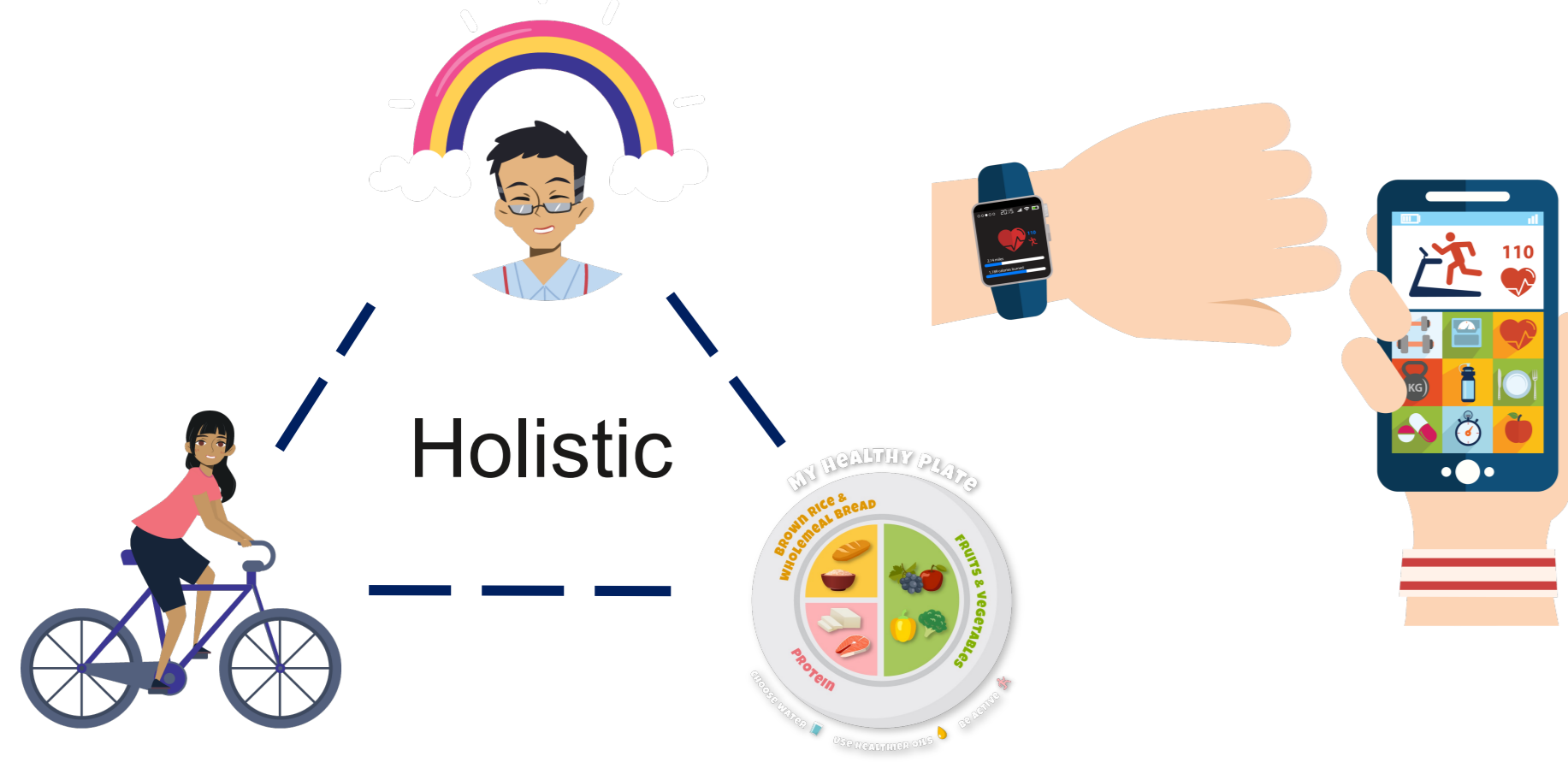
Shenglin Zheng¹, Sarah Martine Edney¹, Jacqueline Louise Mair^{1,2}, Oscar Castro², Tobias Kowatsch², Chin Hao Goh¹, Alicia Salamanca-Sanabria², Falk Müller-Riemenschneider¹

¹National University of Singapore and National University Health System, Singapore

²Singapore-ETH Centre, Future Health Technologies Programme, CREATE Campus, Singapore

1 Background

- Healthy ageing can be achieved by **targeting modifiable lifestyle factors** such as physical activity and diet.



- Poor mental health conditions contribute to physical inactivity and unhealthy diet.
- Holistic interventions** that integrate physical activity, diet, and mental health may promote healthy ageing.
- These interventions can be **scaled up** to the population level by **using mobile health technologies**
- Few systematic reviews have focused on holistic mHealth interventions

2 The Aim

To review the current evidence on holistic mHealth interventions for adults and their effects on behavioural and health outcomes.

3 MAIN FINDINGS

Total **28 studies (21 RCTs)** included.

Study characteristics

	20-50 Years old		71% High education level
	62% Female		93% High-income country
	93 % <=6 months		57% Theoretical models
	54% Multiple channels		57% Personalisation

- Top 3 technology channels:** app, SMS, website
- Top 3 mental health topics:** sleep, stress, relaxation
- Engagement decreased over time**

Table 1. Effect direction plot for most reported outcome measures

Outcomes	Positive effects n (%)	No effects n (%)	Negative effects n (%)
Weight change	5 (45.5%) ▲	5 (45.5%) ◀▶	1 (9.0%) ▼
Moderate to vigorous physical activity	2 (66.7%) ▲	1 (33.3%) ◀▶	
High-density lipoprotein	2 (66.7%) ▲		1 (33.3%) ▼
Diet quality		5 (100.0%) ◀▶	
Stress	3 (37.5%) ▲	6 (62.5%) ◀▶	

4 Methods

The conduct of the review followed by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (**PRISMA**) guideline

Eligibility criteria

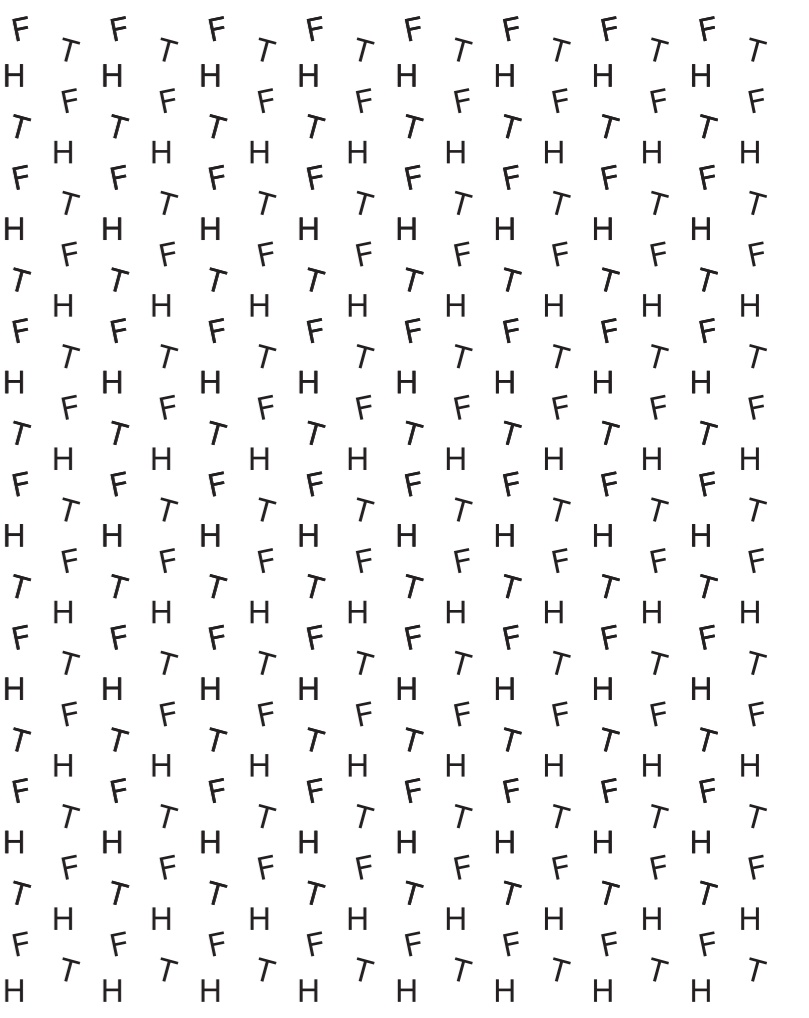
- Participants:** >=18 years old, healthy or at risk of NCDs or mental health disorders
- Interventions:** content on physical activity, diet, and mental health and delivered via mobile technologies
- Outcomes:** relevant behavioural and health outcomes
- Study design:** randomised control trials (RCTs) and non-randomised studies of interventions (NRSIs)

Information sources

- MEDLINE, Embase, PsycINFO, Scopus, Cochrane, CNKI, Google scholar, and reference lists
- Time frame: 2011 - April 2022

5 Conclusions

- More than 50% of holistic mHealth intervention reported non-significant results for subjective measures like diet quality and stress.
- Future holistic mHealth interventions may need to focus more on population with low socio-demographic status.



(FHT) FUTURE HEALTH TECHNOLOGIES