

## **PERSUADE: A peer-led community-based intervention to aid nutritional and lifestyle behavioural changes**

*Development and feasibility testing of a community engagement among adults with metabolic syndrome in Johor Bahru*

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*PI*



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*CO-I*



Late Prof Dr Khalid Kadir  
*CO-I*

# PERSUADE

## THE TEAM



Dr Muhammad Daniel  
Azlan Mahadzir  
*PhD student*



Dr Saleem Iqbal  
*PhD student*



**PERSUADE**

RATIONALE



**Abdominal obesity**



**Increased triglycerides**



**Type 2 diabetes mellitus**



**Increased blood pressure**

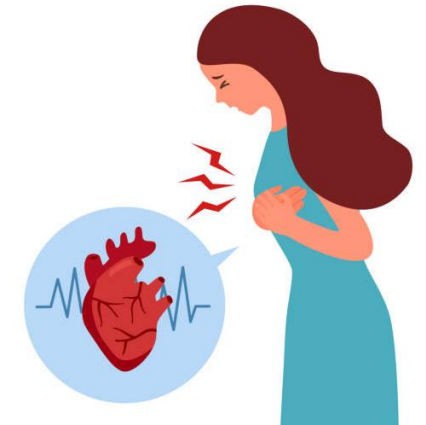
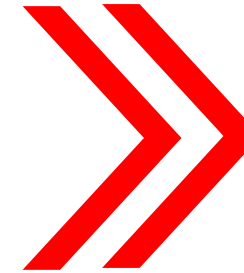
**METABOLIC  
SYNDROME<sup>[1]</sup>**



**Low HDL cholesterol**



**Increased fasting blood glucose**



**Cardiovascular  
disease**

[1] Alberti et al (2009) – doi:10.1161/CIRCULATIONAHA.109.192644



# Prevalence of MetS



**Global**  
**20 – 25%<sup>[1]</sup>**



**Asia**  
**12 - 37%<sup>[2]</sup>**



**Malaysia**  
**25 - 40%<sup>[3]</sup>**

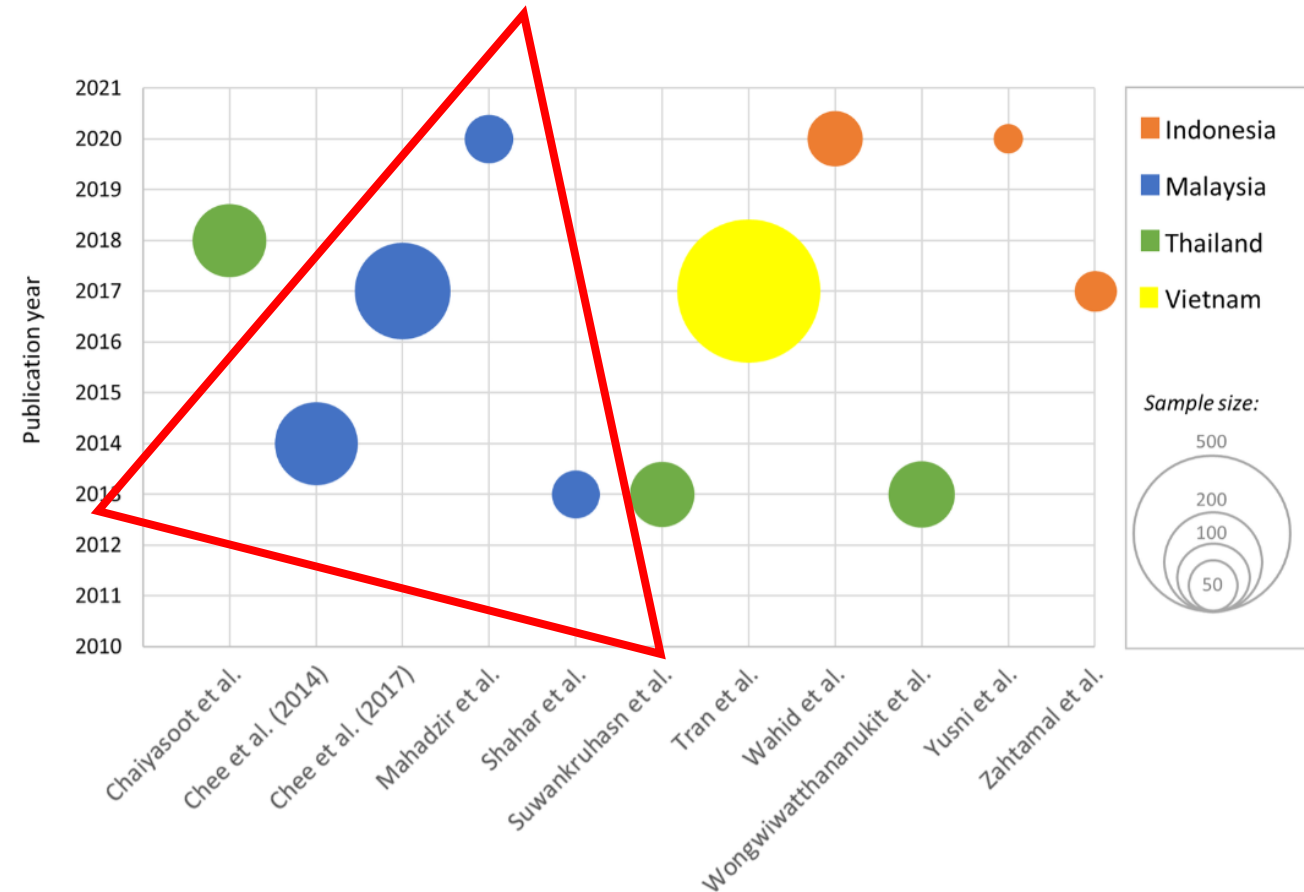
[1] Alberti et al (2009) – doi:10.1161/CIRCULATIONAHA.109.192644

[2] Ranasinghe et al. (2017) – doi:10.1186/s12889-017-4041-1

[3] Ghee & Khooi (2016), MJM

# Prevention & management of MetS

- **Lifestyle behavioural changes** tend to be the first-line approach towards the prevention and management of MetS.
- Integrating a peer support framework in lifestyle interventions is showing growing evidence to improve the outcome in chronic diseases, especially in metabolic diseases e.g. obesity, diabetes.
- However, the number of such interventions among Malaysians with MetS is limited [4].





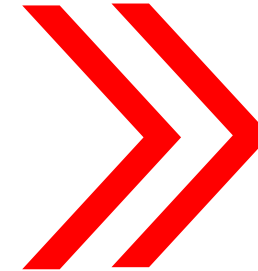
MetS prevalence: 32.2%  
(> among Malaysian  
Indians - (51.9%).



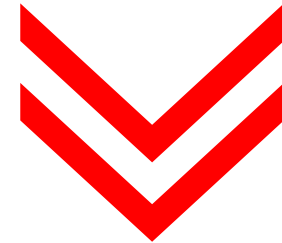
Increase in odds for MetS with  
age (2x @ 40-49 yr, 4x @ >60 yr)  
& Indian ethnicity (2x) and  
lower odds with higher  
education (1/2).



Quick finishing of meals  
(2x) & low physical  
activity (5x) increased  
odds in certain groups.



Growing prevalence of MetS  
in Malaysia sparks the need  
for a wholesome and cost-  
effective lifestyle  
intervention.



## PLOS ONE

OPEN ACCESS PEER-REVIEWED

RESEARCH ARTICLE

### Relationship of sociodemographic and lifestyle factors and diet habits with metabolic syndrome (MetS) among three ethnic groups of the Malaysian population

Saleem Perwaiz Iqbal, Amutha Ramadas, Quek Kia Fatt, Ho Loon Shin, Wong Yin Onn, Khalid Abdul Kadir

Published: March 19, 2020 • <https://doi.org/10.1371/journal.pone.0224054>



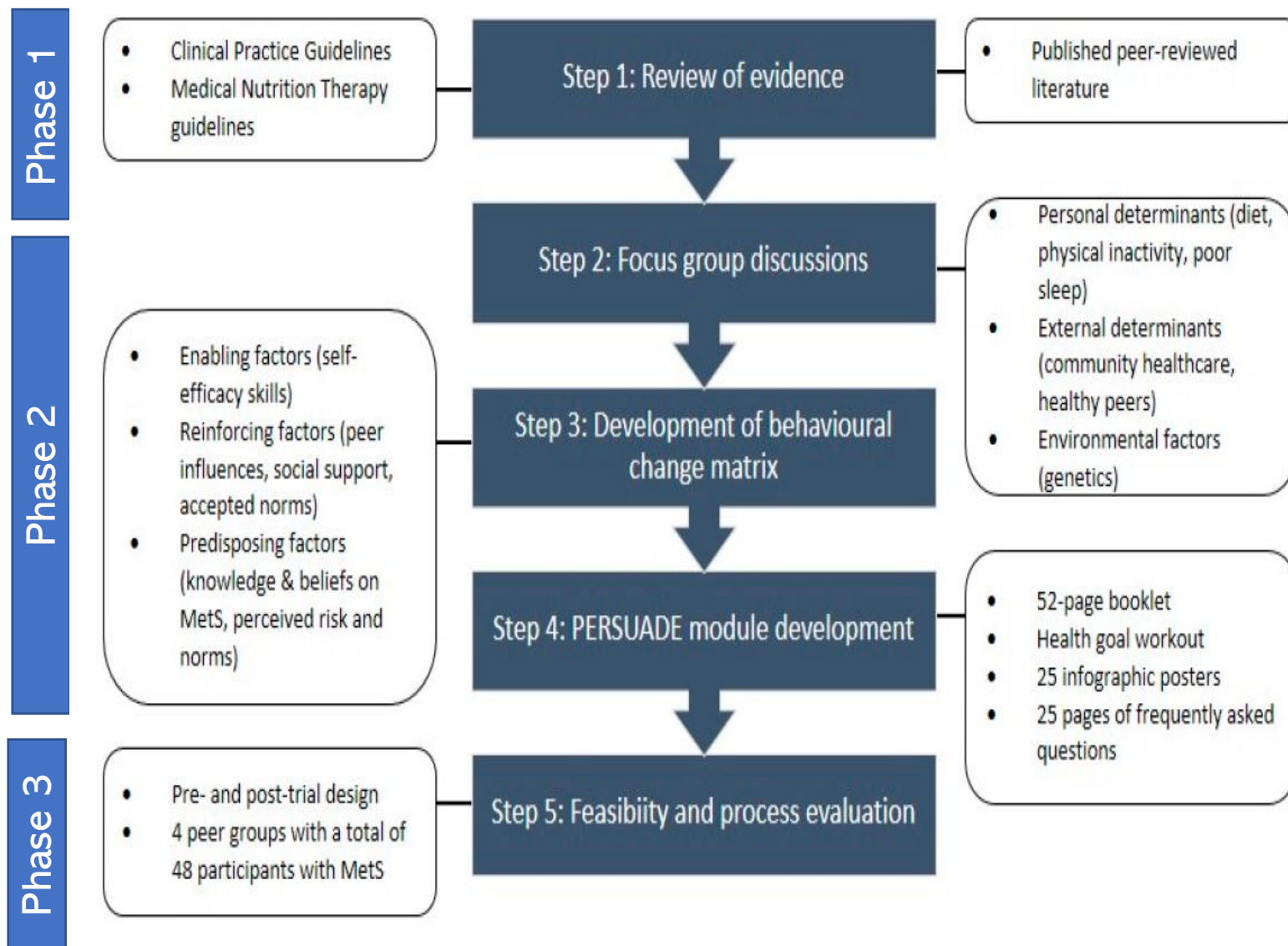
We developed a community-based  
nutrition and lifestyle behavioral “*PEer*  
Support program for *AD*ults with  
*mE*tabolic syndrome” (PERSUADE).



**PERSUADE**

PROTOCOL





## Process Evaluation of a Nutrition and Lifestyle Behavior Peer Support Program for Adults with Metabolic Syndrome

by Muhammad Daniel Azlan Mahadzir \* ,  
 Kia Fatt Quek and Amutha Ramadas \*

Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Jalan Lagoon Selatan, Bandar Sunway 47500, Malaysia

\* Authors to whom correspondence should be addressed.

*Int. J. Environ. Res. Public Health* **2020**, *17*(8), 2641;  
<https://doi.org/10.3390/ijerph17082641>



Step 1: Review of evidence

Step 2: Focus group discussions

Step 3: Development of behavioural change matrix

Step 4: PERSUADE module development

Step 5: Feasibility and process evaluation

Review > Medicina (Kaunas). 2021 Oct 28;57(11):1169.

doi: 10.3390/medicina57111169.

## Group-Based Lifestyle Intervention Strategies for Metabolic Syndrome: A Scoping Review and Strategic Framework for Future Research

Muhammad Daniel Azlan Mahadzir <sup>1</sup>, Kia Fatt Quek <sup>1</sup>, Amutha Ramadas <sup>1</sup>



### Critical point 1: Prevention of MetS

- Focus on knowledge acquisition
- Prevention of risk factor accumulations over time
- Cost-effective group-based interventions are feasible at this stage
- Interventions ideally to be multifaceted and community-based in nature

### Critical point 2: Detection and diagnosis

- At the point of risk factor diagnosis or detection, patients can be intervened as a group, with healthcare professionals guiding the lifestyle changes and ensuring medication adherence.

### Critical point 3: Follow-up

- Group interventions with consistent peer reminders to improve retention to care.
- This benefits patients with financial barriers, transportation issues and facilitating follow-ups with providers.

### Critical point 4: Quality of care and coordination of care

- Group or peer interventions to facilitate improvement in self-monitoring skills
- Interventions coordinated with clinic visits provides add-on value to quality of care provided by healthcare professionals.

Step 1: Review of evidence

Step 2: Focus group discussions

Step 3: Development of behavioural change matrix

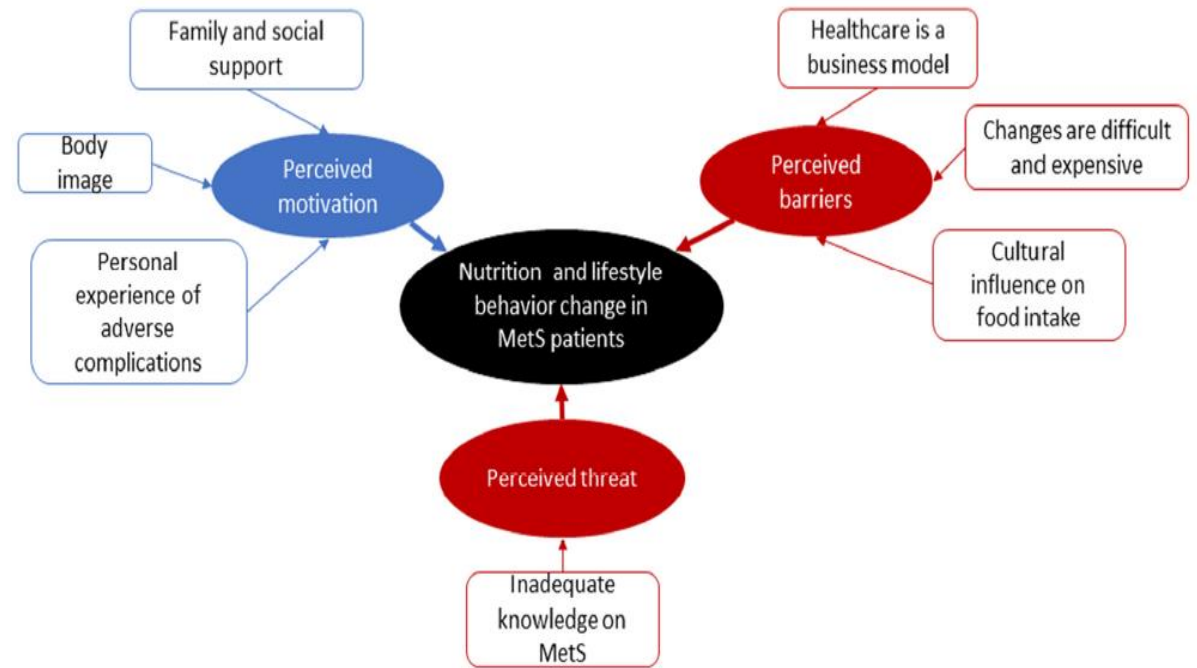
Step 4: PERSUADE module development

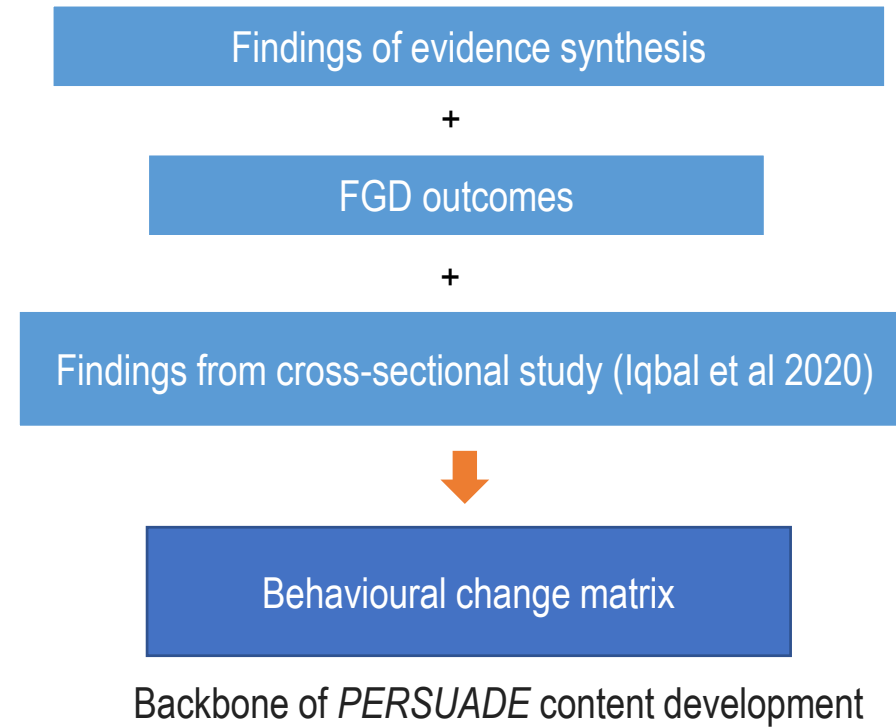
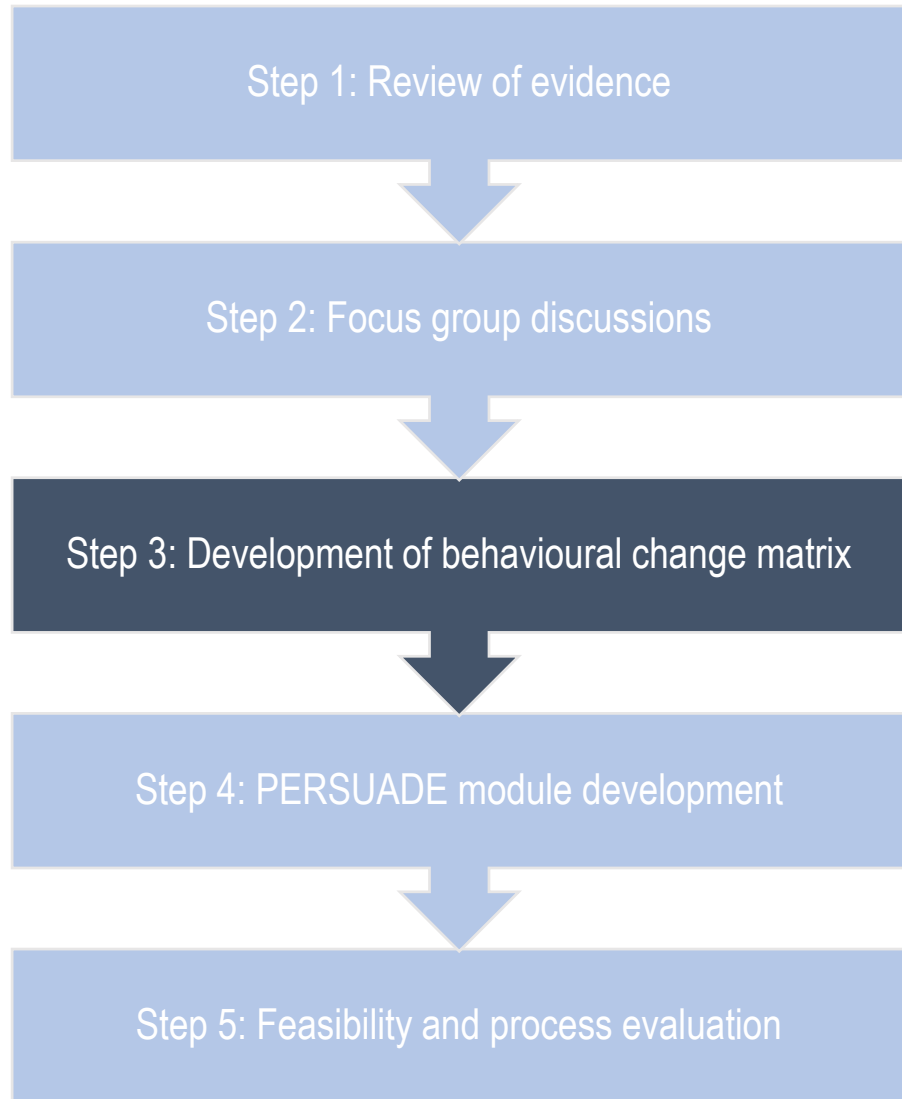
Step 5: Feasibility and process evaluation

> Healthcare (Basel). 2022 Aug 30;10(9):1653. doi: 10.3390/healthcare10091653.

## Comprehending Nutrition and Lifestyle Behaviors of People with Metabolic Syndrome: A Focus Group Study

Muhammad Daniel Azlan Mahadzir <sup>1</sup>, Kia Fatt Quek <sup>1</sup>, Amutha Ramadas <sup>1</sup>

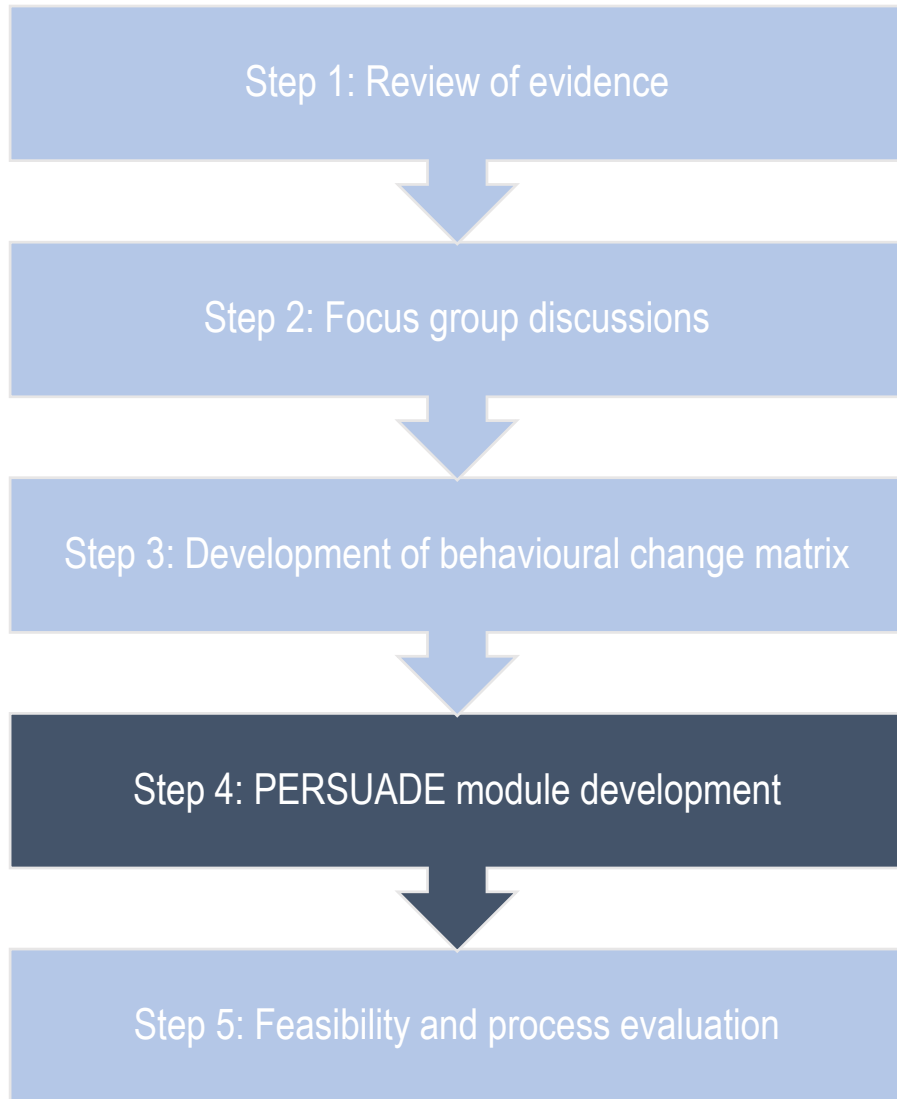




- **Aim: To combine each specific change objective with specific intervention strategies and delivery methods.**
- Domains of the **Health Belief Model (HBM)** were used as an adhesive between these three aspects to strengthen the matrix.



**Aim: evidence-based, factual, and current health information that will help peers to improve their nutrition and lifestyle behaviors.**



**12**

**weeks of  
program**

**52**

**pages of  
booklet**

**2**

**languages (English &  
Malay)**

**25**

**infographics**

**25**

**FAQs**

**1**

**health goal  
setting**

The weekly peer module addressed three main objectives: **knowledge of MetS, dietary targets, and healthy lifestyle aims.**



Step 1: Review of evidence

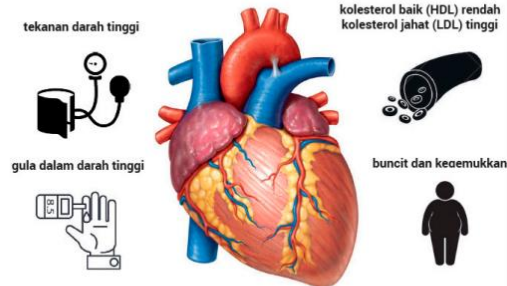
Step 2: Focus group discussions

Step 3: Development of behavioural change matrix

Step 4: PERSUADE module development

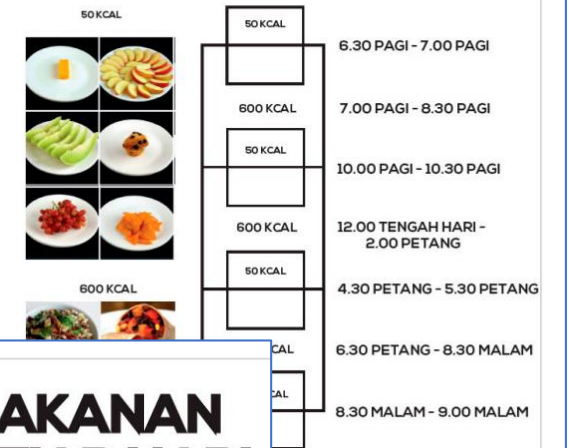
Step 5: Feasibility and process evaluation

# SINDROM METABOLIK



## KEMATIAN

# PELAN DIET SEHARIAN

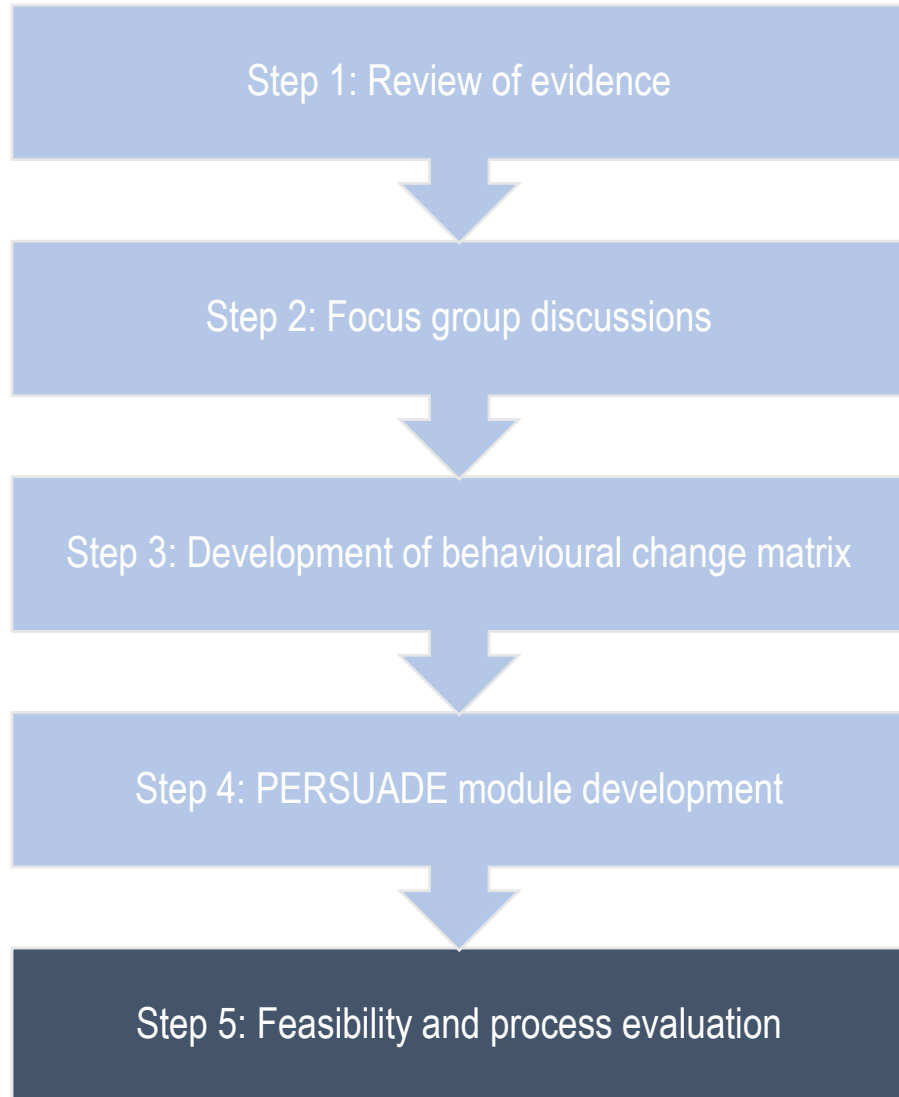


# PIRAMID MAKANAN SIHAT



# REKOD MAKANAN ANDA SETIAP HARI

	Pagi	Siang	Malam	Pagi	Siang	Malam	Pagi	Siang	Malam
Pagi									
Siang									
Malam									
H2O									



- 12 weeks pre vs post trial @ Johor Bahru
- Target: Malaysian, adults with MetS (Harmonized criteria), provided written informed consent
- Ethics: MUHREC
- Funding: FRGS

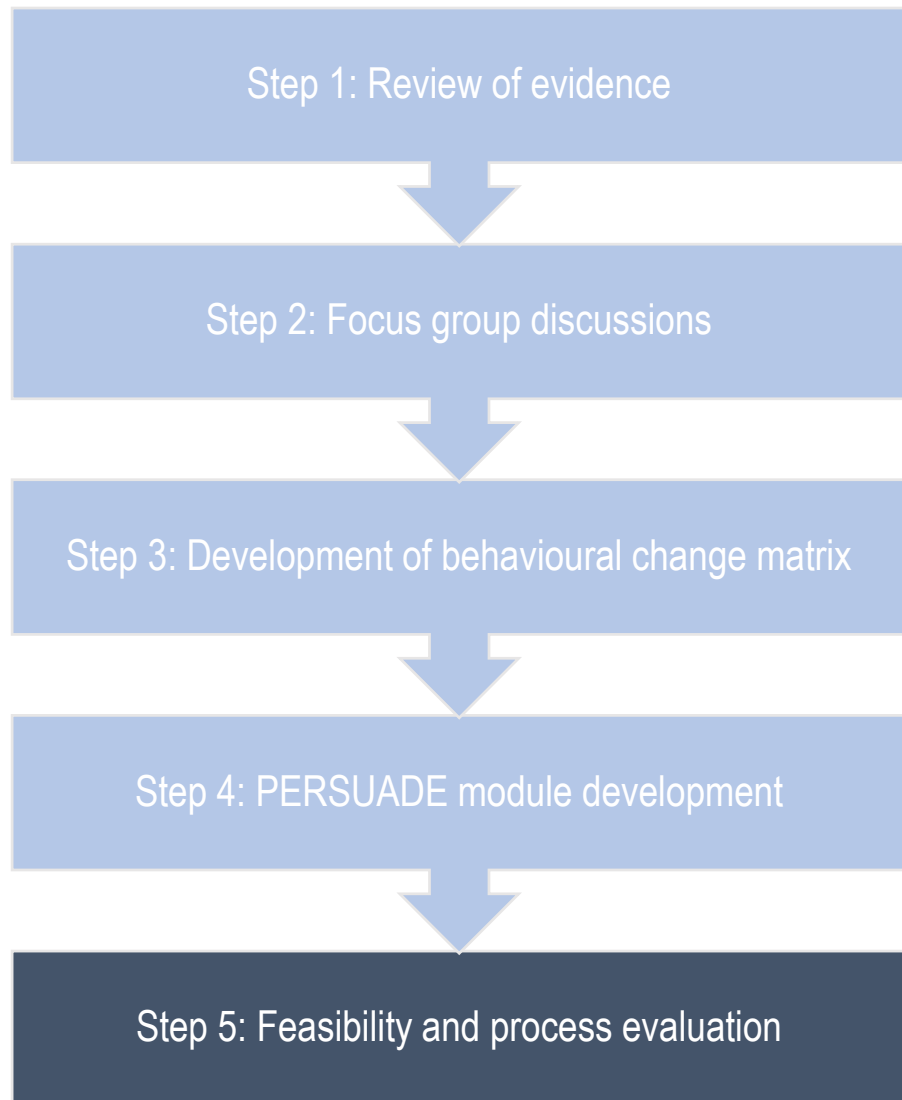
#### Peer leader training

##### **Criteria:**

- MetS
- able to communicate verbally
- available for all 12 weeks of study
- willing to attend 2 days of peer leader training

##### **4 peer leaders underwent 16-hours training:**

- (1) brainstorming and discussion on motivation and barriers to behavioral change;
- (2) introduction to the PERSUADE peer module;
- (3) self-efficacy skills workshop



Month 0  
Baseline assessment



Week 1 – Introductory session (2 hours)

All peer leaders (4) and peers (48)

PERSUADE handbook was given – posters & peer activities, self-monitoring



Week 1 – 12

Peer-led sessions, 60mins/week

Facilitated group discussions, learning by sharing experiences, and problem-solving strategies

Anthropometry self-assessment



Month 3

Post-intervention assessment



Month 6

Follow-up assessment

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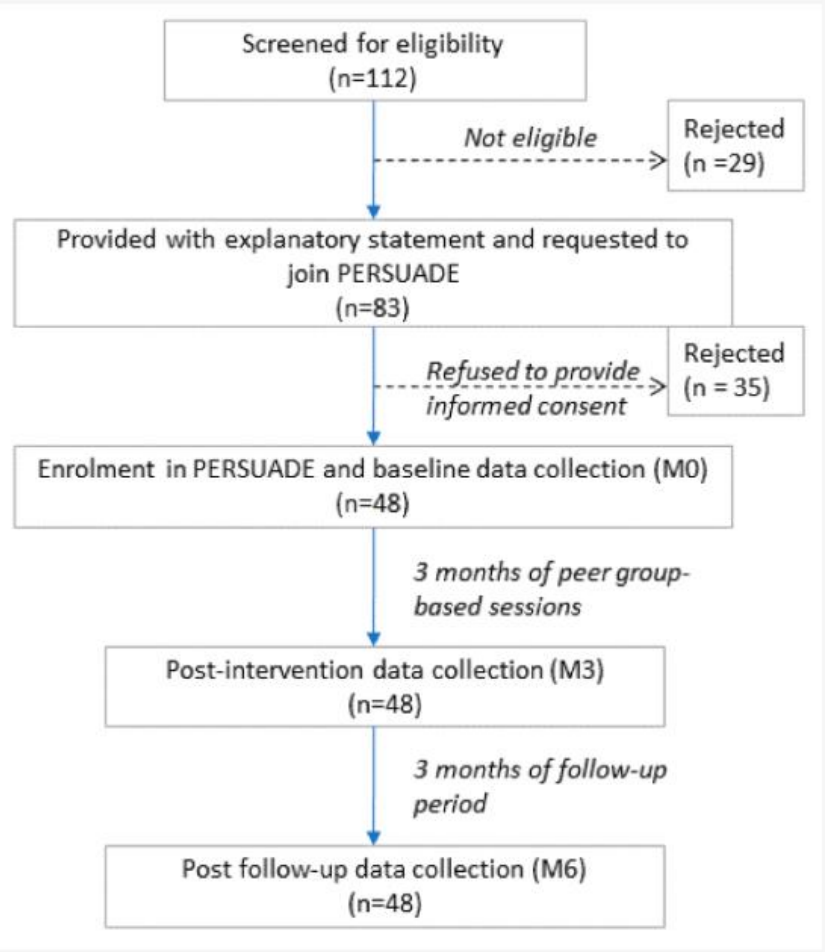


**PERSUADE**

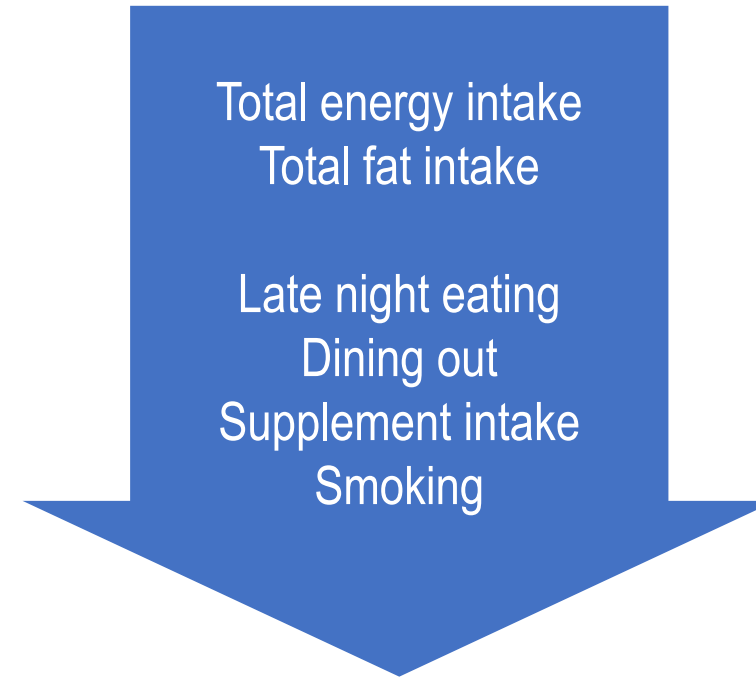
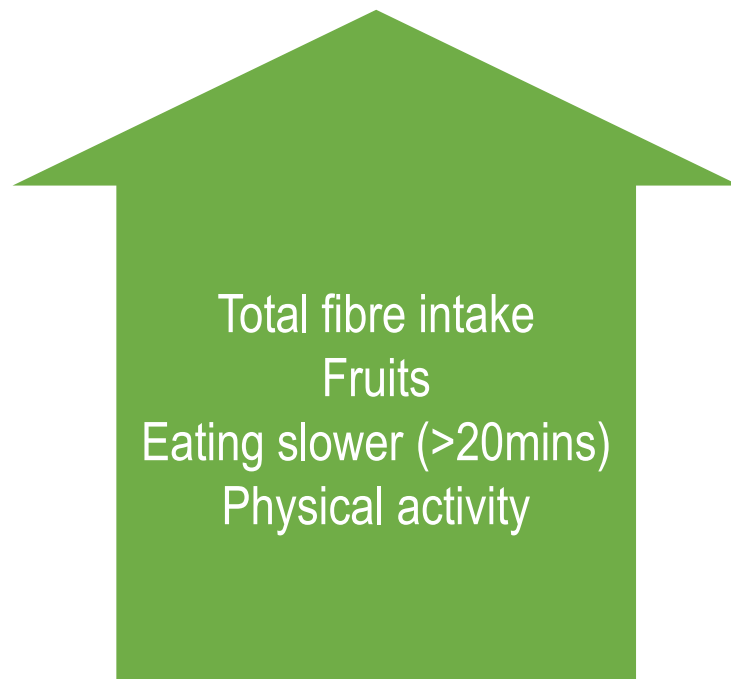
FINDINGS



The 48 peers were divided into 4 groups of 5 to 8 members; each led by one peer leader.



		N=48
Age (years)	Median (IQR)	46 (11)
Sex, n (%)	<b>Female</b>	<b>25 (52.1)</b>
	Male	23 (47.9)
Ethnicity, n (%)	<b>Malay</b>	<b>41 (85.4)</b>
	Chinese	3 (6.3)
	Indian	4 (8.3)
Marital status, n (%)	Single	2 (4.2)
	<b>Married</b>	<b>44 (91.7)</b>
	Widowed	2 (4.2)
Education, n (%)	Primary	5 (10.4)
	<b>Secondary</b>	<b>29 (60.4)</b>
	Tertiary	14 (29.2)
Occupation, n (%)	<b>Working</b>	<b>47 (97.9)</b>
	Not working	1 (2.1)



## **Nutrition and Lifestyle Behavior Peer Support Program for Adults with Metabolic Syndrome: Outcomes and Lessons Learned from a Feasibility Trial**

by Muhammad Daniel Azlan Mahadzir\* , Kia Fatt Quek and Amutha Ramadas\*

Jeffrey Cheah School of Medicine and Health Sciences, Monash University Malaysia, Jalan Lagoon Selatan,  
Bandar Sunway 47500, Malaysia

\* Authors to whom correspondence should be addressed.

*Nutrients* **2020**, *12*(4), 1091; <https://doi.org/10.3390/nu12041091>



	Baseline (M0)	Post-Intervention (M3)	Post Follow-Up (M6)	<i>p</i> <sup>a</sup>	Pairwise Comparison	Change (%)	<i>p</i> <sup>b</sup>
	Mean (SD)	Mean (SD)	Mean (SD)				
SBP (mmHg)	135.29 (19.65)	130.50 (17.36)	130.42 (18.36)	0.001	M0 vs. M3	-3.54	0.001
					M3 vs. M6	-0.06	1.000
DBP (mmHg)	82.58 (11.67)	81.00 (9.28)	81.75 (9.67)	0.566			
FBG (mmol/L)	8.60 (3.48)	7.57 (1.98)	7.57 (2.16)	<0.001	M0 vs. M3	-11.98	<0.001
					M3 vs. M6	0	1.000
BMI (kg/m <sup>2</sup> )	25.84 (3.91)	25.42 (3.93)	25.50 (4.07)	0.001	M0 vs. M3	-1.63	<0.001
					M3 vs. M6	+0.31	1.000
WC (cm)	91.72 (11.53)	91.07 (11.36)	91.29 (11.43)	<0.001	M0 vs. M3	-0.71	<0.001
					M3 vs. M6	+0.24	0.018
BF (%)	29.88 (6.57)	29.42 (6.43)	29.37 (6.36)	0.060			
TG (mmol/L)	2.89 (1.73)	2.19 (2.06)	2.19 (2.09)	<0.001	M0 vs. M3	-24.22	<0.001
					M3 vs. M6	0	1.000
HDL (mmol/L)	1.12 (0.35)	1.41 (0.32)	1.13 (0.33)	<0.001	M0 vs. M3	25.89	0.001
					M3 vs. M6	-19.86	<0.001

SBP = systolic blood pressure; DBP = diastolic blood pressure; FBG = fasting blood glucose; BMI= body mass index; WC = waist circumference; BF = body fat; TG = triglyceride; HDL= high-density lipoprotein cholesterol. <sup>a</sup> Repeated measures; <sup>b</sup> Bonferroni pairwise post hoc.

# Process evaluation

- High adherence - More than 81% of participants attended all peer sessions.
- Remaining attended at least 10 sessions. There were no dropouts throughout the program.
- To ensure the validity of each attendance, participants measured their weight & waist circumference during each peer session, which eventually factored into the high program adherences.
- An individual weight chart was printed and given to each participant to see changes in their anthropometry measures on weekly basis.
- All participants were satisfied with the module's content, with a median score of 93%, though the satisfaction towards peer leadership was lower at 70%.

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# PERSUADE

LESSONS LEARNT



Emphasis on modifiable nutrition and lifestyle behaviours.

Increase the intervention period (eg. 1 year) to promote sustainable lifestyle changes.

Incorporate technology in monitoring behavioral changes.

Improve the rate of acceptance and adherence by including real-time changes and a tracking system.

Improve peer leader training to ensure they are ready and inspiring.

Develop a stratified community-based sampling strategy in improve collective changes.

Conduct a needs assessment to gauge a community's societal or cultural needs before adapting PERSUADE.

Ensure that each peer group comprises peers with a similar socioeconomic background to ensure their timely and relevant discussion throughout the period.

# THANK YOU

For further details & collaboration, contact:

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