

Associations of Clustering of Lifestyle Risk Factors and Mental Health Conditions with Overweight and Obesity Incidence among Female Teachers

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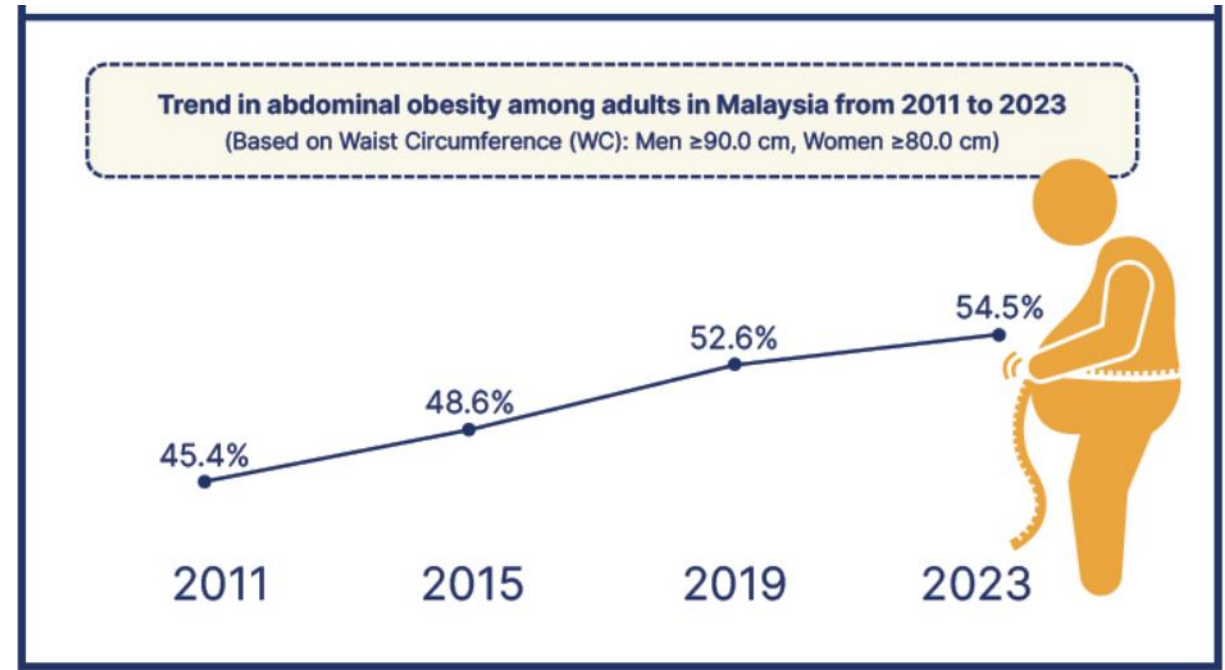
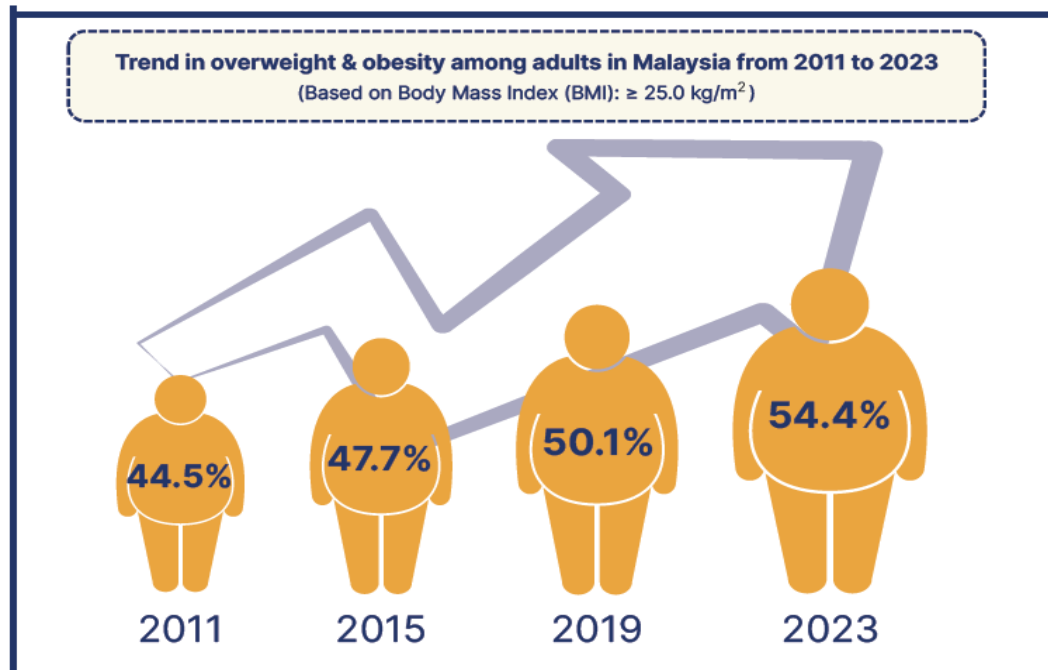
Introduction

- Malaysia is a upper middle income country in South East Asia
- With rapid development and globalization, there is a shift away from traditional diet towards more globalized dietary patterns (Shyam et al 2019)
- In 2023, one in three of the adult population was physically inactive, higher than reported in 2019 (24.6%)

- Shyam, et al. Association between dietary patterns and overweight risk among Malaysian adults: Evidence from nationally representative surveys. *Public Health Nutr.* **2019**, 23, 319–328.
- Institute for Public Health 2024. National Health & Morbidity Survey (NHMS) 2023: Non-communicable Diseases and Healthcare Demand – Key Findings

Introduction

- According to the National Health & Morbidity Survey (NHMS) 2023:
 - Prevalence of overweight / obesity (BMI) - 54.4%
 - Prevalence of abdominal obesity - 54.5%



Introduction

- Lifestyle behaviours and mental health conditions are independently associated with overweight and obesity among adults.
- However, there is a scarcity of studies focusing on the clustering of lifestyle factors with mental health conditions.
- Aim of study:
 - to investigate the clustering of lifestyle factors and mental health conditions and its associations with overweight/obesity among female teachers.

Methodology

- Study design: prospective cohort study
- Participants: 4664 female teachers from the state of Selangor, Malaysia.
- Baseline data was collected in 2013/2014:
 - Weight and height were measured
 - Self-administered questionnaire on:
 - lifestyle behaviours (physical activity, alcohol consumption, smoking, fruits and vegetables consumption)
 - mental health conditions (depression, anxiety, stress)
- Follow up was conducted in 2020/2021:
 - online questionnaire using REDCap on
 - Self-reported weight to generate overweight/obesity ($BMI \geq 25 \text{ kg/m}^2$)
- Cluster analysis was performed to determine the cluster groups of lifestyle and mental health conditions
- Complex sample analysis with multiple logistic regression was conducted
- All statistical analyses were conducted using SPSS

Results

- A total of 3221 (69%) participants were followed up
- Mean age of the participants was 40.82 (95% CI: 40.41, 41.23) years at baseline
- Prevalence of overweight/obesity at
 - baseline - 51.2 (95% CI: 48.8, 53.5) % (n=1616)
 - follow up - 61.7 (95% CI: 59.3, 63.9)% (n=1889)
- From the participants who were normal & underweight (n=1605) at baseline
 - Incidence of overweight/obesity at follow up : 34.4 (95% CI: 31.2, 37.7)% (n=525)

Results

Baseline characteristics

Participants were :

- Malays (73%)
- Married (89%)
- Degree holders (86%)

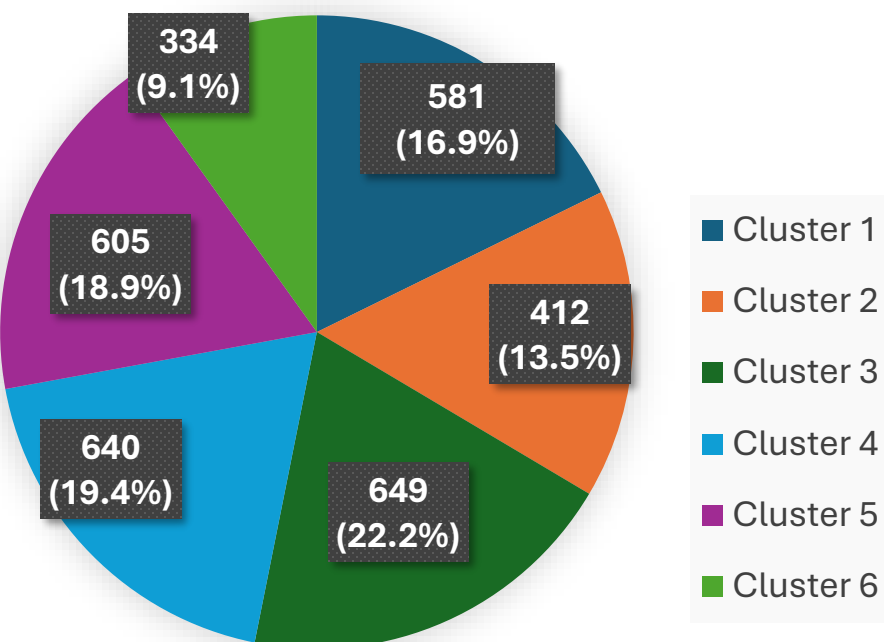
- Never smoke (99%)
- Non drinker (97%)
- Inadequate fruits & vegetables consumption (91%)
- Physically inactive (35%)

Mental health conditions:

- Abnormal depression score (>9) : 26%
- Abnormal anxiety score (>7): 52%
- Abnormal stress score (>14) :18%

Results

Distribution of cluster groups among participants at baseline (N=3,221)



Cluster groups

Cluster groups according to the most frequent category of lifestyle and mental health indicators

Variable	Fruit/vegetable consumption (F)		Depression (D)		Anxiety (A)		Stress (S)		Physical activity (P)		
	Adeq	Inadeq	N	Abn	N	Abn	N	Abn	HA	MA	IA
Cluster 1 (FDAS)		✓		✓		✓		✓		✓	
Cluster 2 (FDA)		✓		✓		✓	✓			✓	
Cluster 3 (FA)		✓	✓			✓	✓			✓	
Cluster 4 (FP)		✓	✓		✓		✓				✓
Cluster 5 (F)		✓	✓		✓		✓			✓	
Cluster 6 (no risk)	✓		✓		✓		✓			✓	

N= normal, ABN= abnormal, Adeq= adequate, Inadeq= inadequate, HA= highly active, MA= minimally active, IA= inactive
 Chi square test showed that all five indicators were significantly different (p -value <0.05) between cluster groups.

Results

Association of Cluster groups with incidence of overweight /obesity

Cluster groups	aOR*	95% CI
Cluster 6 (None)	1	
Cluster 5 (F)	1.62	0.86, 3.03
Cluster 4 (FP)	1.45	0.78, 2.67
Cluster 3 (FA)	1.84	1.01, 3.34
Cluster 2 (FDA)	1.93	1.02, 3.64
Cluster 1 (FDAS)	2.33	1.23, 4.40

*adjusted for ethnicity, age, education levels, smoking status, medical history and alcohol consumption

Discussion

- Less than 10% of participants had no risk factor (Cluster 6)
- Clusters 4, 5 and 6 with normal mental health conditions were not associated with overweight/obesity incidence
- Cluster 1 (FDAS), Cluster 2 (FDA) and Cluster 3 (FA) had increased odds of overweight/obesity incidence
- Mental conditions such as depression, anxiety and stress may have influenced the diet to be unhealthy, hence contributing to weight gain

Conclusions

- Clustering of lifestyle risk factors and mental health conditions were associated with incidence of overweight/obesity among the female teachers
- There is an urgent need to integrate multicomponent interventions, with lifestyle modification and psychological approaches, to enhance the effectiveness of overweight/obesity prevention strategies and weight-loss programs among female teachers

Thank you

