

# Association of FOOD ENVIRONMENT and WEIGHT STATUS in URBAN POOR COMMUNITIES in Kuala Lumpur

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## “Food environment is not directly associated with weight”

### Introduction

- Obesity prevalence of adults in the B40 community is 45.8% (Andoy-Galvan *et al.* 2020).
- Food environment includes the environmental influences relating to food, such as availability, affordability and quality (Herforth and Ahmed 2015).
- A poor food environment could lead to poor dietary intakes, contributing to obesity (Monsivais and Drewnowski 2007, Dimitri and Rogus 2014).

### Methods

- Study design (What? conducted when?) – A cross-sectional study done in 8 PPR flats and stores & restaurants 1km around each PPR flat, conducted from 8th November 2021 to 8th February 2022.
- Data analysis - SPSS version 18 with significant level  $p < 0.05$

Variables	Tools
<b>Sociodemographic factors</b>	Questionnaire
<b>Body Mass Index of participants</b>	
<b>Perceived food environment of participants</b>	Perceived Nutrition Environment Measures Survey (NEMS-P)
<b>Identification of food outlets</b>	Quantum Geographic Information System (QGIS) 3.20.1
<b>Price, availability and quality of items</b>	Nutrition Environment Measures Survey in Stores (NEMS-S) and Nutrition Environment Measures Survey in Restaurants (NEMS-R)
<b>Overall food environment of stores and restaurants</b>	

### Weight status



**65.8%** of participants are overweight or obese

Table 1: Association of food environment and BMI

BMI <sup>a</sup>	Frequency (%)
Underweight	7 (4.9)
Normal Weight	42 (29.4)
Overweight	48 (33.6)
Obese	46 (32.2)
<b>Mean ± SD</b>	<b>28.29 ± 6.85</b>

<sup>a</sup> Cut-off points are based on WHO standards

### Food environment

Table 2: Composite score of food environment by store type

Scoring	Mean score ± SD		P-value
	G/S (n=15)	CS (n=56)	
<b>Availability</b>	13.20 ± 7.98	7.80 ± 4.96	0.018*
<b>Pricing</b>	0.20 ± 2.34	-0.32 ± 1.75	0.747
<b>Quality</b>	6.40 ± 3.56	2.73 ± 3.40	0.001*
<b>Total score</b>	19.80 ± 11.18	10.21 ± 8.32	0.004*

Statistically significant at  $p$ -value  $< 0.05$   
 G/S = Grocery stores/supermarkets  
 CS = Convenience stores

Table 3: Composite score of food environment by restaurant type

Variable	Mean score ± SD			P-value
	SD (n=42)	FC (n=14)	FF (n=14)	
<b>Total score</b>	0.14 ± 1.35	0.71 ± 1.54	-1.50 ± 1.54	0.000*

Statistically significant at  $p$ -value  $< 0.05$   
 SD = Sit down  
 FC = Fast casual  
 FF = Fast food

### Association



Perceived food environment is significantly associated with weight status but opposite of the expected direction

Food environment in stores and restaurants are not significantly associated with weight status



Table 4: Association of food environment and BMI

Variables	R-value	P-value
<b>NEMS-P total score</b>	<b>0.200</b>	<b>0.017*</b>
<b>NEMS-S total score</b>	<b>-0.087</b>	<b>0.301</b>
<b>NEMS-R total score</b>	<b>-0.086</b>	<b>0.307</b>

\* Statistically significant at  $p$ -value  $< 0.05$

### Discussion

- 65.8% of participants are overweight or obese, Andoy-Galvan *et al.* (2020) found a similar trend.
- Food environment is not directly associated with weight status.
- Previous studies discovered BMI decreases with an increase in supermarket availability (Morland *et al.* 2006, Lopez 2007, Powell *et al.* 2007) whereas the opposite is true for an increase in availability of convenience stores (Lopez 2007, Powell *et al.* 2007).
- This inconsistency may be due to physical activity, dietary intake and common cooking methods not being considered, food markets were not surveyed during data collection. The food store commonly frequented by the participants is not necessarily within their neighbourhood (Chaix *et al.* 2012, Drewnowski *et al.* 2012), meaning a larger survey radius (e.g. 2km) around a participant's residence might yield a result. Lastly, no instruments suited for the food environment in Malaysia being valid and reliable.

### Conclusion

- Food environment has no direct association with weight status.
- Further investigation of the associated is recommended to applied for policy decisions.
- Future studies should measure dietary intake, common cooking methods and physical activity, which could affect weight status.

### References

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