An Evaluation of Eating Behavior, Psychosocial Status and Body Mass Index among Malaysian Adolescents

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ABSTRACT:

- **Objective:**

  To produce an abbreviated Malay version of Weight and Lifestyle Inventory (MWALI), to examine the psychometric properties of the eating behavior which formed part of MWALI.

- **Methods:**

  The MWALI was translated 'forward–backward' and administered to 135 adolescents. The factor construct of the 24-item eating behavior and the relationships between factor scores and demographic profile, dysphoria, global self-esteem and body mass index (BMI) were examined.

- **Results:**

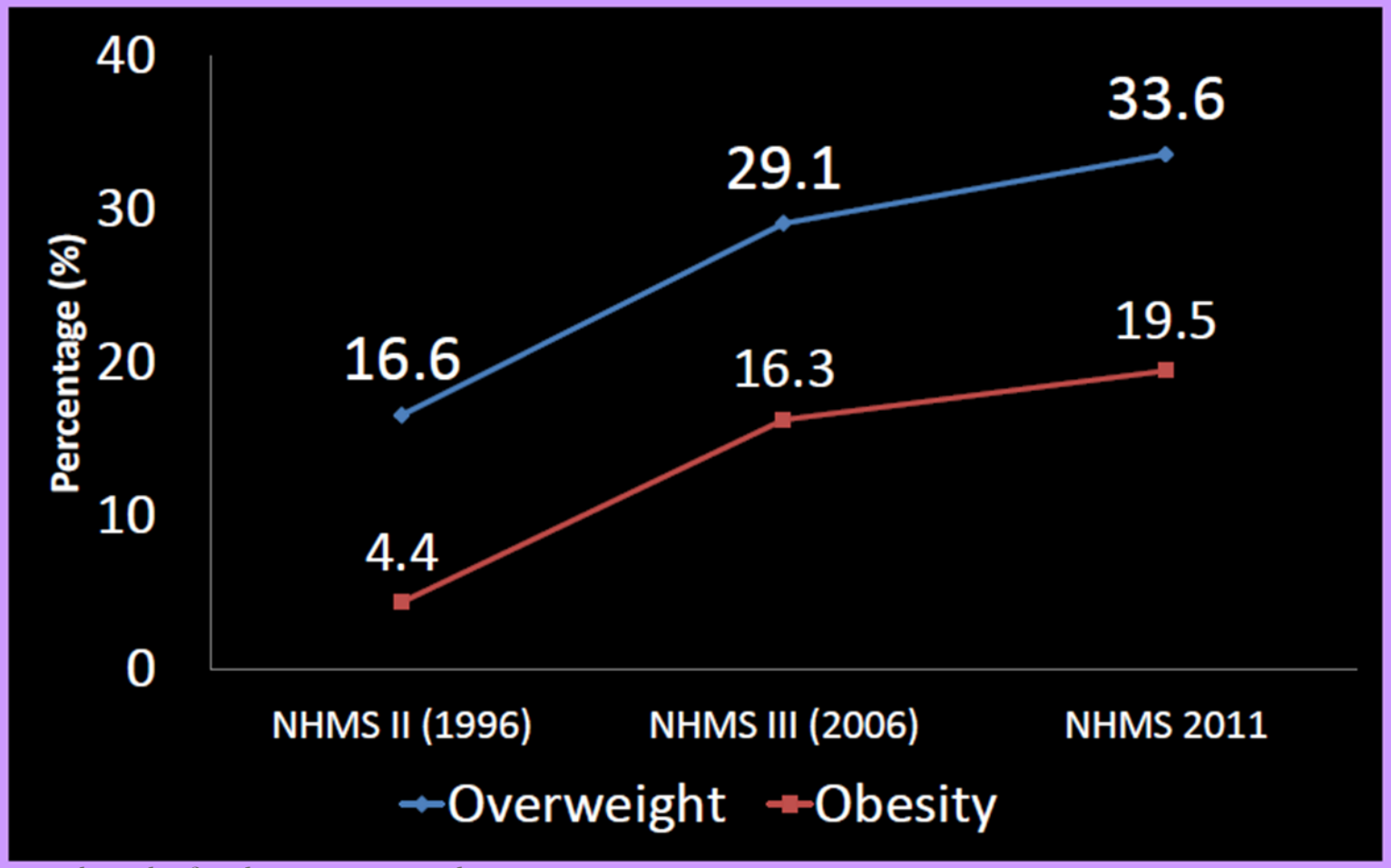
  The EFA yielded five factors: Negative Emotion, Poor Impulse Control, Social Cues, Snacking and Early Meals in relation to over-eating that were significantly and positively correlated with BMI.

- **Conclusion:**

  MWALI is appropriate for assessing eating behavior among overweight and obese adolescents in the primary care setting in Malaysia.

INTRODUCTION

National prevalence of Overweight & Obesity



INTRODUCTION:

- Women contribute to more than 46 % of workforce in the country[1].
- More families choose to eat out or rely on the fast food, eating at odd hours or skip meals, and the younger children to miss breakfast
- Leading to significant increase in prevalence of non-communicable disease such as obesity[2].

1. *Department of Statistics Malaysia. Population Distribution and Basic Demographic Characteristics; 2010*
2. *Segal DG, Sanchez JC: Childhood obesity in the year 2001. The Endocrinologist 2001, 11(4):296-306*

- Obesity has always been a major public health concern with complex interactions between biological, behavioral, psychosocial and environmental factors[3]
- Management of obesity may involve a multi-disciplinary team such as the dietitian, physiotherapist, psychologist, psychiatrist, bariatric surgeons, endocrinologist

Dietz WH Jr, Gortmaker SL. Factors within the physical environment associated with childhood obesity. *Am J Clin Nutr.* 1984; 39:619-624.

- Intervention strategies:
  - evaluations of weight management that aims at early detection
  - prevention and co-treatment of those at risk such as family members and community at large
- In primary care setting where most patients enter the health system, a brief questionnaire on weight control and lifestyle may help to screen and assess the public with weight problems

OBJECTIVES

- to produce a shorter and practical Malay version of Weight and Lifestyle Inventory (MWALI)
- to examine the psychometric properties of Eating Behavior of MWALI base on demographic profile, self esteem, dysphoria, self perception on body weight and body mass index of the adolescents.

METHODS

- Obtaining permission from the original authors (Thomas A. Wadden and Gary D. Foster) of WALI [4], to translate and validate the original instrument into Malay.
- Subsequently approval from the Research Committee, National Population and Family Development Board (NPFDB) was granted.

Wadden TA, Foster GD. The Weight and Lifestyle Inventory (WALI). Obesity 2006

Stage 1: Translation

- In-depth study on WALI by ZAS, MBR and the experts (dietitian and psychiatrist)
- Forward-backward translation only for the 24-items Eating Behavior by the experts who were bi-lingual (English and Malay).
- Then, the translation was checked thoroughly followed by back-translation. A psychiatrist without prior knowledge of the original English version translated the Malay version back into English.

Stage 2a: Pre-test of translated MWALI

- Pre-tested to 13 adolescents aged 19 to 24 years old to further improve on the items.
- A final inspection of the questionnaire was done by us (ZAS, MBR, HCE) to ensure acceptable face and content validity

Stage 2b: Validation of the Eating Behavior items in MWALI

- March 2012 to August 2012 in the kafe@TEEN
- All adolescents attending daycare were offered to join the "Diet Talk", i.e. a 20 minutes discussion on healthy eating and lifestyle by MBR
- Those agreed to participate in the study, oral consent was obtained/parents' oral consent via phone for below 18 years old
- Purposive sampling was undertaken
- Allowed to ask questions regarding the study and to withdraw at any time.

INSTRUMENTS/MEASURES

Body Mass Index (BMI)

Underweight	<5th percentile	BMI < 18.5 kg/m2
Normal weight	5th-85th percentile	BMI 18.5–24.9 kg/m2
Overweight	85th–95th percentile	BMI 25.0–29.9 kg/m2
Obese	>95th percentile	BMI >30 kg/m2

Centers for Disease Control and Prevention (CDC). National Center for Health Statistics (NCHS)

- Socio-demographic profile: Age, ethnicity, religion, highest education level achieved, and living arrangement.
- The Rosenberg Self-esteem Inventory
- Malaysian Mental Health Screening (SSKM-20) Scale

➢ The data were analyzed using the Statistical Package for Social Sciences (SPSS)

Characteristics		Male N = 55 (40.7%)	Female N = 80 (59.3%)
Age (years),	mean ± sd	18.56 ±3.393	19.22 ±3.848
	13 - 18 years old	33.0 (24.4%)	32.0 (23.7%)
	19 - 24 years old	22.0 (16.3%)	48.0 (35.6%)
BMI (kg/m^2)	mean ± sd	23.76 ± 6.436	22.94 ± 6.057
	Under weight	10.0 (18.2%)	17.0 (21.2%)
	Normal	27.0 49.1%)	35.0 (43.8%)
	Overweight	10.0 (18.2%)	16.0 (20%)
	Obese	8.0 (14.5%)	12.0 (15%)
Ethnicity	Malay	46.0 (83.6%)	65.0 (81.2%)
	Chinese	6.0 (10.9%)	9.0 (11.2%)
	Indian	3.0 (5.5%)	6.0 (7.5%)
Highest education level	UPSR (Primary)	4.0 (7.3%)	18.0 (22.5%)
	PMR (Secondary lower)	16.0 (29.1%)	7.0 (8.8%)
	SPM (Secondary upper)	26.0 (47.3%)	32.0 (40%)
	Diploma/Degree (Tertiary)	9.0 (16.4%)	23.0 (28.8%)
Physical activities	Yes	48.0 (87.3%)	45.0 (56.2%)
	No	7.0 (12.7%)	35.0 (43.8%)
Total calories intake in 24 hours (kcal)	During usual weekday , mean ± *sd*	1507.93 ± 1015.09	1318.28 ± 446.14
	During usual weekend, mean ± *sd*	1210.06 ± 468.50	1221.43 ± 423.30

Table 3. Exploratory Factor Analysis of the MWALI items that assessed Eating Behaviors

Items	Factor loading*					Communalities
	1	2	3	4	5	
p. Eating when angry (*Makan apabila marah*)	0.90					0.76
o. Eating when depressed/upset (*Makan apabila murung*)	0.84					0.66
q. Eating when anxious (*Makan apabila resah*)	0.80					0.63
n. Eating when stressed (*Makan apabila tertekan*)	0.69					0.58
s. Eating when bored (*Makan apabila bosan*)	0.33				0.27	0.30
i. Eating too much food (*Makan terlalu banyak*)		0.79				0.71
g. Eating because I can't stop once I've begun (*Makan kerana sukar berhenti apabila saya telah mula*)		0.66				0.40
h. Overeating at dinner (*Makan berlebihan semasa makan malam)*		0.64			0.29	0.66
j. Continuing to eat because I don't feel full after a meal (*Berterusan makan kerana saya tidak berasa kenyang*)		0.64				0.46
e. Eating in response to sight or smell of food (*Makan sebagai respon terhadap kelibat dan bau makanan*)		0.33				0.37
f. Eating because of the good taste of foods (*Makan kerana rasa makanan yang sedap*)		0.28				0.35
d. Eating when happy (*Makan semasa gembira*)			0.84			0.72
b. Eating when socializing/celebrating (*Makan semasa bersosial/keraian*)			0.59			0.40
w. Snacking after dinner (*Ambil snek selepas makan malam*)				0.85		0.76
x. Snacking between meals (*Ambil snek di antara waktu makan*)				0.61		0.49
u. Overeating at lunch (*Makan berlebihan semasa makan tengahari*)					0.68	0.52
v. Overeating at breakfast (*Makan berlebihan semasa sarapan pagi*)					0.52	0.34
Eigenvalues	5.22	2.39	1.43	1.19	1.09	
Cronbach's α (all items, α = 0.856)	0.83	0.80	0.69	0.74	0.59	

Correlation (Spearman's rho) between eating behavior, Dysphoria, total SSKM-20, RSES and BMI

	Eating behavior					SSKM-20		RSES	BMI
	NE	PIC	SC	Snack	EM	Dys	total	total	
NE	1.000	**0.469****	**0.659****	**0.364****	**0.454****	0.119	0.150	0.002	**0.241****
PIC		1.000	**0.504****	**0.520****	**0.616****	0.150	0.156	-0.038	**0.359****
SC			1.000	**0.425****	**0.504****	0.026	0.095	**-0.205***	**0.267****
Snack				1.000	**0.506****	0.149	**0.197***	0.002	**0.292****
EM					1.000	**0.177***	0.144	-0.056	**0.254****
Dys						1.000	**0.838****	0.159	0.079
SSKM-20 total							1.000	0.158	0.152
RSES								1.000	0.087
BMI									1.000

Difference between gender in mean Eating Behavior factor scores

EATING BEHAVIOR	Mean Difference (Male-Female)	p <0.05	95% Confidence Interval for Difference[a]	
			Lower Bound	Upper Bound
Eating in response to negative emotion	-.407*	.014	-.729	-.085
Overeating with poor impulse control	-.239	.140	-.558	.080
Eating in response to social gathering	-.357*	.023	-.663	-.051
Snacking at night/between meals	-.176	.268	-.488	.137
Overeating during early meals	-.217	.145	-.508	.075

DISCUSSION

- This study on the Malay version of WALI (MWALI) confirmed the acceptable internal consistency, test-retest stability and construct validity of the Eating Behaviors as in the previous study

Fabricatore AN, Wadden TA, Sarwer DB, Crerand CE, Kuehnel RH, Lipschutz PE, Raper SE, Williams NN. Self-reported eating behaviors of extremely obese persons seeking bariatric surgery: a factor analytic approach. Obesity 2006; vol. 14 suppl march 83 – 90.

- The five factors Eating Behaviors in the MWALI were relatively correlated which were **Negative Emotion**, **Overeating**, **Social Cues**, **Snacking** and **Early Meals**
- Each factor was also correlated with Body Mass Index (BMI) of the adolescents
- Study shows that the influence of emotions on eating behavior is stronger in obese people than in non-obese people
- High sugar and carbohydrate food are probably taken by some people to improve the mood that may explain the relationship between overeating during breakfast and lunch (factor **Early Meals**) with dysphoria.

STUDY LIMITATIONS, FUTURE RECOMMENDATION

STUDY LIMITATIONS:

- Small sample as for exploratory factor analysis, (preferably 10 samples per number of item) will yield more interpretable results.
- The use of self-rating questionnaire especially in the younger age group to rate their eating behaviors depends extensively on their intellectual abilities, social and cultural background and understanding on the concept of certain items in relation to their response to eating and their well-being.

WHAT THIS STUDY FOUND:

- 19% of adolescents were overweight
- 15% of adolescents were obese
- 31% of adolescents were inactive
- 20.7% skipped breakfast
- 21.5% took supper after 10pm
- 27.4 – 54.8 % took meals bought from outside
- 72.6% food prepared by mother
- 61.6% mothers did the grocery
- 7% of adolescents (obese/overweight) inaccurately perceived their body weight as "no problem"

RECOMMENDATION

- To use MWALI to screen and assess bio-psychosocial aspect of weight problems in primary care settings
- Concurrent use of other scales (e.g. Mental Disorders/ Quality of Life/ Nutritional intake record)
- Family-base study: Environmental factors
- Women-base study: Biological and environmental factors

CONCLUSION:

- MWALI can assist clinician and dietitian to offer more appropriate intervention to patients with weight problems in the primary health care settings
- MWALI focuses on many dimensions of weight-related biological, psychosocial and behavioral factors.