Programa de Pós-Graduação
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Infrequent Breakfast Consumption Is Associated with Higher Body Adiposity and Abdominal Obesity in Malaysian School-Aged Adolescents

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INTRODUÇÃO

- A alimentação não saudável aumenta o risco de obesidade e distúrbios metabólicos em crianças e adolescentes
- A influência do consumo habitual de café da manhã na composição corporal e risco de obesidade em adolescentes não é bem definido

OBJETIVO

Avaliar as associações entre o consumo do café da manhã e os perfis de composição corporal em 236 adolescentes com idades entre 12 a 19 anos

MATERIAIS E MÉTODOS

- Foi utilizado um questionário auto aplicado de comportamento alimentar e estilo de vida e um questionário de frequência alimentar

- A composição corporal e o índice de adiposidade foram determinados utilizando protocolos padrão de medidas antropométricas e absorciometria de feixe duplo

RESULTADOS

- A média de idade dos participantes foi de 15,3±1,9 anos

- 71,2% estavam na faixa de normalidade para índice de massa corporal (IMC)

- 50% apresentaram padrão de consumo diário de café da manhã

- Meninos e meninas consumiram café da manhã pelo menos cinco vezes por semana apresentaram menor peso corporal, índice de massa corporal (IMC), escore z de IMC, circunferência da cintura, gordura corporal e percentual de gordura corporal (% GC)

CONCLUSÃO

•O consumo pouco frequente de café da manhã está associada à maior adiposidade corporal e obesidade abdominal

• O consumo diário de café da manhã deve ser incentivado em crianças e adolescentes para prevenir a obesidade durante esses anos críticos de crescimento

RESUMO

Abstract

Unhealthy dietary pattern increases the risk of obesity and metabolic disorders in growing children and adolescents. However, the way the habitual pattern of breakfast consumption influences body composition and risk of obesity in adolescents is not well defined. Thus, the aim of the present study was to assess any associations between breakfast consumption practices and body composition profiles in 236 apparently healthy adolescents aged 12 to 19 years. A self-administered questionnaire on dietary behaviour and lifestyle practices and a dietary food frequency questionnaire were used. Body composition and adiposity indices were determined using standard anthropometric measurement protocols and dual energy χ-ray absorptiometry (DXA). Mean age of the participants was 15.3 ± 1.9 years. The majority of participants (71.2%) fell in the normal body mass index (BMI) ranges. Breakfast consumption patterns showed that only half of the participants (50%) were consuming breakfast daily. Gender-specific multivariate analyses (ANCOVA) showed that in both boys and girls, those eating breakfast at least 5 times a week had significantly lower body weight, body mass index (BMI), BMI z-scores, waist circumference, body fat mass and percent body fat (%BF) compared to infrequent breakfast eaters, after adjustment for age, household income, pubertal status, eating-out and snacking practices, daily energy intakes, and daily physical activity levels. The present findings indicate that infrequent breakfast consumption is associated with higher body adiposity and abdominal obesity. Therefore, daily breakfast consumption with healthy food choices should be encouraged in growing children and adolescents to prevent adiposity during these critical years of growth.

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Auto-explicativo;
Sequência lógica;
Apresentou os dados mais importantes

NOTA: 2,0

INTRODUÇÃO

Introduction

An increasing worldwide prevalence of childhood obesity is a major public health challenge. Excessive weight gain and obesity during childhood and adolescence not only increase the risk of a range of health problems in youth, but also of developing chronic diseases in later life [1], [2]. Although it has been shown that genetic factors play a major role in the risk of developing obesity, modifiable environmental factors such as dietary and lifestyle practices are also important in the increasing rates of childhood obesity [2]. Furthermore, many studies have identified the determinants and correlates of excessive weight gain and obesity during childhood and adolescence. Unhealthy diets such as high intakes of energy-dense foods, along with low levels of physical activity have been shown to significantly increase the risk of weight gain and obesity in children and adolescents [3], [4], [5]. However, there is little information about the relationship between specific dietary behaviors such as habitual breakfast consumption practices and adiposity among children and adolescents.

There is evidence suggesting that daily consumption of breakfast is associated with better foods choice, such as more fruit and vegetables, with consequently also better intakes of essential nutrients [6], [7]. However, studies on the influence of infrequent

PROBLEMA:
Obesidade infantil

REFERENCIAL TEÓRICO

INTRODUÇÃO

breakfast consumption on obesity or other health problems in growing children and adolescents have been inconclusive. Some have found that children who frequently skip breakfast have a higher risk of being obese compared to those who regularly consumed breakfast [8], [9], [10]. For example, Harding and colleagues found an association between breakfast skipping and obesity among adolescents in the United Kingdom [8]. On the other hand, studies in children and adolescents from Australia, Portugal and Saudi Arabia have reported no such positive association between infrequent breakfast consumption, and body composition and obesity risk [11], [12], [13]. Such inconsistency between studies may possibly be explained by differences in the definition used for breakfast skipping and also in the choice of dietary and lifestyle factors that were used as confounding variables.

Although it is generally agreed that breakfast is the most important meal of the day [14], there has been a gradual increase in the proportion of children and adolescents who reported that they regularly skipped breakfast [15]. A decline in regular breakfast consumption by children has also been reported in Asia [16], [17]. For instance, approximately 10% of school-aged children and adolescents in Hong Kong were reported to be skipping breakfast at least 4 times a week [16]. In Malaysia, it has been found that breakfast is the most frequently missed meal [17]. Because of this trend towards breakfast skipping in children and adolescents, and because of the possible health effects, it is important to determine whether this dietary pattern might affect body adiposity and abdominal obesity of Malaysian children and adolescents.

There is little published information on any relationship between infrequent breakfast consumption and body composition profiles in growing children in Asian countries. Therefore, the aim of the present study was to determine the influence of breakfast consumption patterns on body composition measurements among apparently healthy Malaysian school-aged male and female adolescents.

REFERENCIAL TEÓRICO

JUSTIFICATIVA

OBJETIVO

ANÁLISE CRÍTICA

NOTA: 0,7

- Título: coerente com objetivo, pertinente, e contém descritores

  -Porém, traz informações desnecessárias

- Introdução apresenta problema, referencial, justificativa e objetivo
- Objetivo: preciso e adequado à metodologia

NOTA: 1,8

MATERIAIS E MÉTODOS

Participants and Methods

Ethics statement

This study was approved by the Research Human Ethics Committees of the Universiti Sains Malaysia (USM) for human studies. In addition, written informed consent was also obtained prior to the study from both the participants and their parents or guardians.

RESPALDO ÉTICO

Study design

The present population-based study was carried-out in Kota Bharu, Kelantan, which is located in the Northeastern region of the Peninsular Malaysia. A convenience sample of 237 school-aged Malay adolescents aged 12 to 19 years of age were recruited for the study. Several recruitment approaches were used, including advertisement in schools and community settings and peer-to-peer referral in different communities in the district of Kota Bharu. Participants were selected on the basis that they were apparently healthy, without any clinical signs of bone-related disorders or other health problems that might inhibit physical activity, and if they were not currently taking any medications known to influence bone metabolism. One girl was excluded in the final study, because her body dimensions exceeded the bone scanning area. A total of 236 Malay adolescents, comprising 104 boys and 132 girls were finally included in the study.

AMOSTRA

MATERIAIS E MÉTODOS

Statistical analysis

Body mass index (BMI) was calculated as weight (kg) divided by height (m) squared and converted to age- and sex-specific BMI z-scores using the LMS method with the UK 1990 growth reference data [22]. Classification of BMI was based on the new revised WHO reference chart for BMI-for-age [23]. All the variables were tested for normality by the Kolmogorov-Smirnov test and test of homogeneity of variance before any statistical comparisons were made. Descriptive statistics were reported as mean values±SD for numerical variables and frequency and percentage for categorical variables, unless otherwise indicated. An independent *t*-test was used to assess the differences between sexes for continuous variables, whereas the Chi-square tests were used for categorical variables. A gender-specific analysis of covariance (ANCOVA) was used to determine the differences in body composition and total adiposity levels according to two breakfast groups, after taking into account other known potential confounding factors such as age, household income, Tanner pubertal status, daily energy intakes, eating-out and snacking frequency and total physical activity levels. Gender-specific analysis was done in order to see any differences of breakfast frequency on body composition between boys and girls. Data analyses were performed using the SPSS for Windows version 18.0 (SPSS Inc. Chicago, IL). A *P* value of less than 0.05 was considered to be significant.

ANÁLISE ESTATÍSTICA

ANÁLISE CRÍTICA

NOTA: 1,0

- Material e tipo do estudo;
  - Delineamento amostral: amostra por conveniência?
  - Cálculo amostral ausente
  - Estudo de base populacional, porém não foi citado o tipo de recorte (transversal)
- Métodos
  - Não foi usado questionário já validado (questionário elaborado pelos próprios pesquisadores e posteriormente foi feito teste piloto)

NOTA: 1,0

RESULTADOS

Table 1. General characteristics and body composition profiles of school-aged adolescent boys and girls.

	Boys	Girls	Total
	(*n* = 104)	(*n* = 132)	(*n* = 236)
	Mean ± SD		
Age (years)	15.4 ± 1.9	15.2 ± 1.9	15.3 ± 1.9
Household income (RM)	2692 ± 3148	1797 ± 1883[b]	2191 ± 2553
Pubertal growth status% (N)			
- Pre-pubertal (Tanner 1)	5.8 (6)	0.8 (1)[b]	3.0 (7)
- Pubertal (Tanner 2–4)	78.8 (82)	(89)	72.5 (171)
- Post-pubertal (Tanner 5)	15.4 (16)	31.8 (42)	24.6 (58)
Daily energy intakes (kcal)	2346 ± 468	2152 ± 547[b]	2238 ± 522
Eating out practices% (N)			
- Daily	7.7 (8)	5.3 (7)	6.4 (15)
- 4–6 times/week	21.2 (22)	24.2 (32)	(54)
- 1–3 times/week	71.2 (74)	70.5 (93)	70.8 (167)
Snacking frequency (times/day)	1.8 ± 1.0	2.4 ± 1.1[c]	2.1 ± 1.1

RESULTADOS

Body composition profile

Body weight (kg)	52.5±14.1	48.6±13.4[a]	50.3±13.8
Height (m)	1.6±0.1	1.5±0.1[c]	1.6±0.1
BMI (kg/m^2)	20.4±4.3	20.6±4.8	20.5±4.6
BMI classification% (N)			
- Underweight	9.6 (10)	10.6 (14)	10.2 (24)
- Normal weight	70.2 (73)	72.0 (95)	71. 2 (168)
- Overweight	20.2 (21)	17.4 (23)	18.6 (44)
Waist circumference	68.0±11.3	65.1±10.3[a]	66.4±10.8
WHR	0.8±0.1	0.7±0.1[c]	0.8±0.1
TFM (kg)	9.9±8.7	16.3±8.9[c]	13.5±9.4
Percentage of BF (%)	17.1±10.0	31.7±8.4[c]	25.3±11.6

BMI = body mass index, WHR = waist hip ratio, TFM = total fat mass, BF = body fat, RM = ringgit Malaysia.
Classification of the BMI was based on the new revised WHO reference chart for BMI-for-age [25].
Significant difference from boys at [a]$p<0.05$, [b]$p<0.01$ and [c]$p<0.001$.
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Table 2. Breakfast consumption of male and female adolescents.

	Boys	Girls	Total
	(*n* = 104)	(*n* = 132)	(*n* = 236)
	% (N)		
Frequency of breakfast consumption per week			
- ≥5 times a week	61.5 (64)	(69)	56.4 (133)
- <5 times a week	38.5 (40)	47.7 (63)	43.6 (103)
Common breakfast foods[1]			
- bread	63.5 (66)	78.8 (104)	72.0 (170)
- rice dishes	(75)	65.2 (86)	68.2 (161)
- noodle dishes	25.0 (26)	36.4 (48)	31.4 (74)
- sweet and fried traditional cakes	27.9 (29)	27.3 (36)	27.5 (65)
- biscuits	7.7 (8)	21.2 (28)	15.3 (36)
Common breakfast beverages[1]			
- chocolate malt drinks	72.1 (75)	72.7 (96)	72.5 (171)
- tea	57.7 (60)	60.6 (80)	59.3 (140)
- coffee	14.4 (15)	18.2 (24)	16.5 (39)
- milk	9.6 (10)	15.9 (21)	13.1 (31)
- fruit juices	10.6 (11)	7.6 (10)	8.9 (21)
Place of breakfast[a]			
- home	56.7 (59)	83.3 (110)	71.6 (169)
- school cafeteria	28.8 (30)	15.9 (21)	21.6 (51)
- other places (food stalls)	8.7 (9)	0.0 (0)	3.8 (9)

[1]Participants may report more than one type of food.

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Table 3. Gender-specific multivariate analysis of the relationships between breakfast consumption status and body composition profiles in male and female adolescents[1].

	≥5 times a week	<5 times a week	*P*-trend
	Mean±SE		
Boys			
n	64	40	
Body weight (kg)	50.0±1.5	56.4±1.9	0.010
Height (m)	1.59±0.01	1.59±0.01	0.990
BMI (kg/m^2)	19.5±0.5	21.8±0.6	0.004
BMI z-score	−0.19±0.15	0.40±0.19	0.021
WC (cm)	66.3±1.3	70.6±1.6	0.006
WHR	0.79±0.01	0.80±0.01	0.256
TBF (kg)	7.8±1.0	13.1±1.3	0.002
BF (%)	15.1±1.2	20.4±1.5	0.006

	≥5 times a week	<5 times a week	*P*-trend
	Mean±SE		
Girls			
n	69	63	
Body weight (kg)	46.3±1.5	51.0±1.6	0.039
Height (m)	1.52±0.01	1.54±0.01	0.261
BMI (kg/m^2)	19.8±0.6	21.5±0.6	0.032
BMI z-score	−0.39±0.17	0.21±0.18	0.017
WC (cm)	62.8±1.2	67.6±1.3	0.008
WHR	0.73±0.01	0.75±0.01	0.155
TBF (kg)	14.9±1.0	17.9±1.1	0.048
BF (%)	30.4±0.9	33.0±1.0	0.045

[1]adjusted for age (years), household income (RM), pubertal growth status, eating out status (times/week), snacking practices (times/day), daily energy intakes and daily physical activity levels (hours/day).

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ANÁLISE CRÍTICA

- Tabelas formatadas
- Auto-explicativas?
- Expõe os dados para fundamentar a discussão
- ***n*** é suficiente para fundamentar as conclusões?

NOTA: 1,8

DISCUSSÃO

- Vários estudos que corroboram seus achados
- Outros estudos divergentes:
  - Variáveis de confusão diferentes
  - Definições imprecisas da frequência do desjejum
- Motivos para não realizar o desjejum
- Faz diversas sugestões sem embasamento
- Limitações
- Pontos fortes do estudo

ANÁLISE CRÍTICA

- Explica a significância dos resultados
- Compara com a literatura
- Menciona limitações
- Sugere novas abordagens

NOTA: 2,0

- CONCLUSÃO

NOTA: 1,6

- Extrapola o objetivo
- Sugere novos estudos (deveria ser na discussão)
- REFERÊNCIAS
- Pertinentes
- Relevantes
- Atuais (em sua maioria)

NOTA: 1,8

AVALIAÇÃO GERAL

- Redação:
  - Clara - sim
  - Objetiva – em alguns momentos não
- Conteúdo:
  - Consistente
  - Coerente
  - Coeso

NOTA: 1,4

NOTA FINAL: 7,55

OBRIGADA!

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