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E-B Environment - Behaviour Proceedings Journal

AQoL2023Bali
https://www.amerabra.org

e-IPH e-International Publishing House Ltd., United Kingdom

07th Asia-Pacific International Conference on Quality of Life
Wina Holiday Villa, Kuta, Bali, Indonesia, 30 Sep – 02 Oct 2023

Parental Feeding Practice in Relation to Their Children's Weight Status among Puncak Alam Residents

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Abstract
In Malaysia, the incidence of overweight and obesity among children has increased. Poor parental feeding behaviours lead to abnormal BMIs in children. The aim of this study is to identify parental feeding practices among Puncak Alam residents. The study involved 201 parents with children between one and five years old, with 148 mothers and 53 fathers responding to the questionnaire. Most participants were Malay and aged between 30 and 39 years old. The collected data was analyzed using descriptive statistics. Study revealed that restriction was the most used parental feeding practice for weight control, while emotion regulation was the least frequent practice.

Keywords: Parental; Feeding Practice; Children.

DOI: https://doi.org/10.21834/e-bpj.v8i26.5150

1.0 Introduction

Parental feeding practices can play a significant role in shaping their children's weight status and eating behaviours. These practices refer to the behaviours and strategies parents use to feed their children, including the foods they provide, portion sizes, feeding schedules, and how they interact with their children during mealtimes. Different parental feeding practices can affect children's weight and eating habits (Burnett et al., 2022). The critical developmental period of children was when they were under five years old, as that period represented the transition from childhood to adolescence, spanning ages 0-59 months (Ma'alin et al., 2016, as cited in Ewune et al., 2022). The household's living standard, the factor of child survival and the powerful reflection of a country's growth was measured through the children's nutritional status (Bendich & Deckelbaum, 2000, as cited in Ewune et al., 2022).

About 38.2 million children under five were reportedly overweight or obese in 2019 (World Health Organization [WHO], 2021). The prevalence of overweight and obesity of children under five years old in East African countries was 4.59% of 89,091 children (Tiruneh et al., 2021), while 132,231 children in South Asia were overweight (1.91%) and obese (0.89%) (Bishwajit & Yaya, 2020). Overweight and obesity, once considered an issue only in high-income nations, is increasingly becoming more prevalent in low and middle-income countries, especially in metropolitan areas (WHO, 2021).

The prevalence of childhood obesity in Malaysia has increased substantially in recent years. The National Health and Morbidity Survey (NHMS) 2019 revealed that childhood obesity was 14.8% (Lai et al., 2022). Child overweight and obesity have become significant

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DOI: https://doi.org/10.21834/e-bpj.v8i26.5150

public health concerns globally, and Malaysia is no exception. Some studies investigate parental attitudes towards their children's weight and eating habits. This includes exploring parental awareness of healthy nutrition, perceptions of their child's body weight, and the feeding practices they employ.

A Malaysian study by Nordin et al. (2018) found that most parents use negative parental feeding attitudes that cause an abnormal BMI in their child, and parents that practice poor parental feeding styles do not monitor their children eating unhealthy food as they just let their child eat snacks and sweets whenever their child wants to eat. By conducting these studies, researchers aim to provide policymakers, healthcare professionals, and parents with evidence-based information to develop strategies that effectively address child overweight and obesity. Ultimately, the goal is to improve the health and well-being of Malaysian children and curb the escalating rates of overweight and obesity in the country.

2.0 Literature Review

Yang et al. (2018) discovered that their research among Malay families indicated higher results in low-income families compared to high-income groups. Low-income families experienced more parental control over nutrition demands. Besides, parents in traditional Asian society ensure their children have enough food and finish the food on their plates. On the other hand, another research by Shafina et al. (2020) stated that children in families with higher household incomes were more likely to have higher BMI than those with lower incomes.

A study by Spyreli et al. (2020) reports that mothers restricted children's access to unhealthy snacks and encouraged them to eat more fruits and vegetables. Mothers are more likely to strictly control the food children eat than fathers. Fathers are generally less likely to limit food access and monitor their children's dietary intake (Scaglioni et al., 2018). Schmidt et al. (2019) stated that parental controlling feeding practices, such as monitoring and pressuring to eat, have been associated with lower child BMI and malnutrition. Moreover, inadequate complementary feeding practices, including insufficient food or a balanced diet, can lead to malnutrition, weight loss, muscle wasting, and stunting in children (Ganesan et al., 2022). Furthermore, research by Mazza et al. (2022) revealed that coercive control practices, including restrictive feeding practices, have been associated with unfavourable food intake and may contribute to malnutrition or wasting in children.

Russell et al. (2018) study results show that parents of preschoolers who were randomly allocated to a nutrition intervention used less food as a reward, less pressure to eat, and less child control than parents of preschoolers who had not participated in the nutrition intervention arm of the study. Due to the use of food as a reward when children are five to seven years old and the restriction of food for health reasons when they are three to five years old, children may consume more food than usual at this age (Derks et al., 2017, as cited in Scaglioni et al., 2018).

The ability to control a child's emotions by age two was solely associated with boys with strong appetites from four to 24 months old (Guivarch et al., 2021). The study by Guivarch et al. (2021) also found that having a large appetite was linked to more frequent parental use of food to control a child's emotions in boys but not in girls. In three to four-year-old children, consuming more food while not hungry has been connected to an increase in BMI, and using food to suppress emotions and "make things better" has also been found to be associated with these behaviours (Stifter et al., 2011, as cited in Scaglioni et al., 2018). Regarding parental feeding practices, monitoring and limitations were positively related to children's emotional eating (Klosowska et al., 2022).

3.0 Methodology

This study is a cross-sectional study designed to determine parental feeding practices concerning their children's weight status among Puncak Alam residents.

3.1 Research Setting

Data for this study was collected in the Puncak Alam residential area including Puncak Alam Fasa 1, Fasa 2, Fasa 3, and Alam Suria. Puncak Alam was chosen due to its suitability for gathering initial data to support the forthcoming community intervention program within the same locality.

3.2 Sample

Puncak Alam's overall population amounted to 136,000 individuals. The research used a convenience sampling approach to determine a sample size 384 using the Raosoft calculator. This calculation was based on a 95% confidence level and a 5% margin of error, resulting in the recommended sample size. The study participants comprised Malaysian parents residing in the Puncak Alam region, having children aged between one and five years and excluding those with chronic or congenital illnesses.

3.3 The Research Instrument

Demographic information about parents and their children, including age, marital status, ethnicity, educational attainment, employment status, income, gender, weight, and height, was collected. The research utilized a Comprehensive Feeding Practices Questionnaire (CFPQ), as adapted from Musher and Holub's work in 2007, as cited in Russell et al.'s study from 2018. This questionnaire consisted of 49 items, employing a five-point Likert scale.Each response to the question was assigned a score ranging from one (indicating "never" or "disagree") to five (representing "always" or "agree"). The questionnaire featured 12 subscales, aiming to gauge how parents encourage, facilitate, or manage their children's dietary intake.

3.4 Data Collection

Prior to commencing data collection, a pilot study involving 38 participants was carried out by the researchers. The analysis of Cronbach's alpha for the questionnaire yielded a value of α = 0.723, indicating good internal consistency. The study received ethical approval from the UiTM Research Ethics Committee (REC). Data collection took place between March 2023 and June 2023. The researcher approached potential participants who met the specific research criteria and expressed willingness to participate. Detailed information about the research was provided to the eligible participants, and their consent was obtained. The questionnaire, requiring approximately 20 to 30 minutes for completion, was distributed to participants. Upon completion, the researcher collected the questionnaires from the participants.

3.5 Data Analysis

The gathered data underwent analysis through IBM Statistical Package for the Social Sciences (SPSS), version 22 software. Descriptive statistics were employed to examine participant characteristics and children's weight status in frequency and percentage. Meanwhile, parental feeding practices were scrutinized using mean, standard deviation, frequency, percentage, minimum, and maximum scores. The Department of Statistics Malaysia's criteria (Haron, 2020) were employed to categorize participants' household income. Body Mass Index (BMI) was computed using the formula weight in kilograms divided by the square of height in meters. The BMI status of parents and children was categorized based on the Clinical Practice Guidelines Management of Obesity 2nd Edition (MaHTAS, 2023) and the WHO Child Growth Standards, respectively.

4.0 Findings

As depicted in Table 4.1, 148 mothers (73.6%) completed the questionnaire among the participating parents. All participants were married, with 198 (98.5%) identifying as Malay. The distribution of households saw 70 participants (34.8%) categorized within low- and middle-income brackets, while an equal number, 61 participants (30.3%), belonged to the high-income category. Considering age, a significant portion of the cohort, comprising 150 fathers (74.6%) and 137 mothers (68.2%), fell within the 30 to 39-year-old range. Regarding education, 154 fathers (76.6%) and 167 mothers (83.1%) had attained tertiary education. Most fathers were employed, while 141 mothers (70.1%) were reported to be in the workforce. Examining the BMI status of parents, eight fathers (4%) and seven mothers (3.5%) were categorized as underweight, whereas 153 fathers (76.1%) and 125 mothers (62.2%) fell into the obese category. Concerning the children, most were female, and the age group of three to four years exhibited a higher representation than other age groups. Within the children's BMI status, 74 (36.8%) were categorized as wasted, followed by 71 children (35.3%) in the normal range, and 56 children (27.9%) classified as obese.

Table 1. Socio demographic Characteristics of Participant (n=201)

Sample Characteristic	Frequency (%)			
	1 – 2 Years Old	3 – 4 Years Old	5 Years Old	Total
Who Answer Questionnaire				
Mother	33 (22.3)	67 (45.3)	48 (32.4)	148 (73.6)
Father	11 (20.8)	22 (41.5)	20 (37.7)	53 (26.4)
Age of father				
20 - 29 years	14 (56.0)	8 (32.0)	3 (12.0)	25 (12.4)
30 - 39 years	27 (18.0)	68 (45.3)	55 (36.7)	150 (74.6)
40 - 49 years	3 (11.5)	13 (50.0)	10 (38.5)	26 (12.9)
Marital status of Father				
Married	44 (21.9)	89 (44.3)	68 (33.8)	201 (100.0)
Race of Father				
Malay	42 (21.2)	88 (44.4)	68 (34.3)	198 (98.5)
Others	2 (66.7)	1 (33.3)	0 (0)	3 (1.5)
Level of education of father				
Secondary Education	10 (21.3)	18 (38.3)	19 (40.4)	47 (23.4)
Tertiary Education	34 (22.1)	71 (46.1)	49 (31.8)	154 (76.6)
Employment of Father				
Working	44 (21.9)	89 (44.3)	68 (33.8)	201 (100.0)
Category BMI of Father				
Underweight	2 (25.0)	5 (62.5)	1 (12.5)	8 (4.0)
Normal weight	12 (30.0)	18 (45.0)	10 (25.0)	40 (19.9)
Obese	30 (19.6)	66 (43.1)	57 (37.3)	153 (76.1)
Age of Mother				
20 - 29 years	18 (40.0)	21 (46.7)	6 (13.3)	45 (22.4)
30 - 39 years	25 (18.2)	60 (43.8)	52 (38.0)	137 (68.2)
40 - 49 years	1 (5.3)	8 (42.1)	10 (52.6)	19 (9.5)
Marital status of Mother				
Married	44 (21.9)	89 (44.3)	68 (33.8)	201 (100.0)
Race of Mother				
Malay	44 (22.2)	86 (43.4)	68 (34.3)	198 (98.5)
Others	0 (0)	3 (100.0)	0 (0)	3 (1.5)
Level of education of Mother				
Secondary Education	4 (11.8)	16 (47.1)	14 (41.2)	34 (16.9)

Tertiary Education	40 (24.0)	73 (43.7)	54 (32.3)	167 (83.1)
Employment of Mother				
Working	30 (21.3)	62 (44.0)	49 (34.8)	141 (70.1)
Not Working	14 (23.3)	27 (45.0)	19 (31.7)	60 (29.9)
Category BMI of Mother				
Underweight	2 (28.6)	2 (28.6)	3 (42.9)	7 (3.5)
Normal weight	15 (21.7)	35 (50.7)	19 (27.5)	69 (34.3)
Obese	27 (21.6)	52 (41.6)	46 (36.8)	125 (62.2)
Category Income of Household				
Low Income (B40)	14 (20.0)	34 (48.6)	22 (31.4)	70 (34.8)
Middle Income (M40)	17 (24.3)	29 (41.4)	24 (34.3)	70 (34.8)
High Income (T20)	13 (21.3)	26 (42.6)	22 (36.1)	61 (30.3)
Gender of Child				
Male	21 (21.0)	47 (47.0)	32 (32.0)	100 (49.8)
Female	23 (22.8)	42 (41.6)	36 (35.6)	101 (50.2)
Category BMI of Child				
Wasted	16 (21.6)	32 (43.2)	26 (35.1)	74 (36.8)
Normal	14 (19.7)	32 (45.1)	25 (35.2)	71 (35.3)
Obese	14 (25.0)	25 (44.6)	17 (30.4)	56 (27.9)

Table 4.2 provides a comprehensive overview of the descriptive data about the 12 subscales of parental feeding practices and the associated questions from the CFPQ. Subscales demonstrating elevated mean values indicate that these feeding practices are commonly employed by most parents while feeding their children. The parental feeding practice with the highest mean value and standard deviation was "restriction for weight control" (mean = 23.79 ± SD = 6.453). Notably, a substantial portion of parents (33.3%) expressed disagreement (scored as one) regarding the notion that children who eat less will not gain weight. Similarly, a significant percentage (37.3%) disagreed (scored as one) with the idea that children should diet to maintain a healthy weight.

On the other hand, a majority of parents (39.3%) agreed (scored as five) with the practice of monitoring the food their child consumed and recognized certain foods that could lead to weight gain (34.8%). Furthermore, parents expressed a neutral stance (scored as three) on certain practices. For instance, they were divided in their perspective on controlling a child's weight by providing small portions during meals (33.8%). Similarly, parents were divided on whether they restrict eating at subsequent meals if their child eats more than usual (31.3%), restrict certain foods their child consumes (37.8%), and prevent their child from eating between meals (31.8%).

The second-highest mean value was attributed to the "encourage balance and variety" subscale (mean = 17.05 ± SD = 2.306). A notable observation was that a substantial proportion of parents (41.8%) responded with a score of four (indicating "mostly") to the practice of encouraging their child to consume healthy foods before indulging in unhealthy options. Additionally, a significant percentage (52.2%) expressed agreement (scored as 5) with encouraging their child to try new foods. Most parents (59.7%) affirmed that they inform their children that healthy foods are tasty, while 52.7% mentioned providing their children with a diverse range of foods.

Table 4.2 Parental Feeding Practices and Questions of CFPQ

Variables/ Questions	Mean (SD)	Frequency (%)					Minimum	Maximum
		1	2	3	4	5		
Restriction for weight control	23.79 (6.453)						10	40
1. I have to be sure that the child does not eat too many high-fat foods.	3.96 (1.004)	2 (1.0)	12 (6.0)	57 (28.4)	51 (25.4)	79 (39.3)		
2. I encourage the child to eat less so he/she won't get fat.	2.51 (1.372)	67 (33.3)	35 (17.4)	53 (26.4)	21 (10.4)	25 (12.4)		
3. I give the child small helpings at meals to control his/her weight.	2.53 (1.229)	55 (27.4)	39 (19.4)	68 (33.8)	23 (11.4)	16 (8.0)		
4. If the child eats more than usual at one meal, I try to restrict his/her eating at the next meal.	2.95 (1.254)	34 (16.9)	36 (17.9)	63 (31.3)	43 (21.4)	25 (12.4)		
5. I restrict the food the child eats that might make him/her fat.	3.38 (1.182)	16 (8.0)	23 (11.4)	76 (37.8)	41 (20.4)	45 (22.4)		
6. There are certain foods the child shouldn't eat because they will make him/her fat.	3.77 (1.149)	10 (5.0)	14 (7.0)	59 (29.4)	48 (23.9)	70 (34.8)		
7.. I don't allow the child to eat between meals because I don't want him/her to get fat.	2.50 (1.154)	48 (23.9)	53 (26.4)	64 (31.8)	24 (11.9)	12 (6.0)		
8. I often put the child on a diet to control his/her weight.	2.20 (1.166)	75 (37.3)	44 (21.9)	61 (30.3)	9 (4.5)	12 (6.0)		
Encourage balance and variety	17.05 (2.306)						10	20

9.	Do you encourage the child to eat healthy foods before unhealthy ones?	4.10 (0.906)	2 (1.0)	11 (5.5)	28 (13.9)	84 (41.8)	76 (37.8)
10.	I encourage the child to try new foods.	4.25 (0.948)	4 (2.0)	4 (2.0)	35 (17.4)	53 (26.4)	105 (52.2)
11.	I tell the child that healthy food tastes good.	4.41 (0.820)	1 (0.5)	2 (1.0)	31 (15.4)	47 (23.4)	120 (59.7)
12.	I encourage the child to eat a variety of foods	4.29 (0.888)	2 (1.0)	5 (2.5)	31 (15.4)	57 (28.4)	106 (52.7)

Using the Mann-Whitney test, the relationship between parental feeding practices and status of employment's mother was analysed (Table 4.3). Two subscales of parental feeding practice, emotion regulation and restriction for weight control were found to significantly different with mother's employment status. Emotion regulation [z = - 2.63, p = 0.009] strongly significant different parental feeding practice with status of employment's mother whereas restriction for weight control [z = - 2.05, p = 0.040] was slightly significant different with status of employment's mother.

Table 4.3 Parental Feeding Practices and Children's Weight Status

Variables	Status of Employment of Mother		Z Statistic	P value
	Working (n=141) Median (IQR)	Not Working (n=60) Median (IQR)		
Child control	14.0 (3.0)	14.0 (4.0)	- 0.73	0.463
Emotion Regulation	8.0 (3.0)	7.0 (2.8)	- 2.63	0.009
Encourage balance and variety	17.0 (3.0)	18.0 (4.0)	- 1.35	0.177
Environment	12.0 (3.0)	12.0 (2.0)	- 0.28	0.779
Food as reward	10.0 (3.0)	10.0 (4.0)	- 1.52	0.130
Involvement	12.0 (5.0)	12.0 (3.0)	- 0.16	0.876
Modelling	17.0 (7.0)	17.0 (5.0)	- 1.13	0.258
Monitoring	16.0 (5.0)	16.0 (4.8)	- 0.29	0.772
Pressure	14.0 (4.5)	14.0 (5.0)	- 0.31	0.755
Restriction for Health	17.0 (3.0)	17.0 (4.0)	- 0.90	0.366
Restriction for weight control	24.0 (7.5)	21.5 (11.0)	- 2.05	0.040
Teaching about nutrition	11.0 (2.0)	11.0 (3.0)	- 0.86	0.388

*Mann-Whitney test

5.0 Discussion

The involvement of parents in their children's feeding practices has demonstrated a significant impact on children's weight status, as evidenced by Burnett et al. in 2022. It has been commonly observed that parents often transmit their own eating patterns and food preferences to their children. This parental influence shapes a child's dietary behaviours and food inclinations. The parental role influences a child's food selections, portion sizes, and nutritional choices. Notably, the research underscores the crucial role parents play in transmitting feeding habits and identifying their child's weight status, as highlighted by Lopez et al. in 2021.

The enduring significance of early-established eating patterns carries implications that extend well into later life. In this context, the broader parenting style and the strategies parents adopt for feeding their children wield substantial influence over their children's eating

behaviours and overall weight status. This insight is underscored by Shloim et al. in their work from 2015. An important observation is that parental feeding practices impact children's weight status through the lens of eating behaviours and nutritional intake, as suggested by Tschann et al. in their research from 2015.

The research uncovers a notable correlation between a mother's weight status and her utilization of food to regulate her child's emotions. This relationship can be attributed to the possibility that mothers with higher weight status might encounter challenges regulating their emotions, subsequently affecting their ability to assist their children in managing emotional responses. Consequently, these mothers may use food to soothe their child's emotions. This phenomenon aligns with findings suggesting that children learn to employ food to regulate negative emotions when they observe their parents doing the same, as indicated by Trevino et al. in their study from 2021. Additionally, another study discovered that the parental utilization of food to manage children's emotions acted as a complete mediator in the connection between parental and child emotional eating, as evidenced by Stone et al. in 2022.

Numerous studies have investigated the correlation between parental involvement in feeding practices and household income. Households with lower incomes are potentially less inclined to acquire healthful foods enriched with fibre and low in salt, added sugars, and saturated fats, fostering an environment conducive to unhealthy dietary habits. This inference arises from the notion that parents within low-income households could face restricted options when offering nutritious food choices for their children. While parents from such households are likely to engage in their child's dietary intake, their decisions might be influenced by a range of factors, encompassing financial limitations, food insecurity, and the child's preferences, as illuminated by Ravikumar et al. (2022).

Considering the constraints of limited financial resources, parents with lower incomes tend to prioritize the acquisition of foods that they are confident their children will consume. This inclination might lead them to purchase unhealthy food items as compensation for non-food-related activities that contribute to social well-being but remain financially unfeasible. This perspective, emphasized by Henderson in 2022, sheds light on the complex dynamics faced by low-income families. However, the available research exploring the connection between parents monitoring their children's food intake and household income still needs to be explored. Households with higher incomes could benefit from enhanced access to nutritional education and resources, thereby assisting parents in making informed decisions about their children's dietary habits.

Conversely, lower-income households might encounter intensified financial pressures and have less time for tasks like meal planning, preparation, and monitoring their child's food intake. Within the domain of low-income families, monitoring a child's food intake could be present. Nevertheless, these choices could be influenced by various factors, encompassing financial constraints, food insecurity, and the child's preferences, as outlined by Arlinghaus et al. in 2021. Additionally, low-income parents prioritize purchasing foods their children are more likely to consume, a consideration that might include fewer healthy options due to cost-related considerations, as discussed by Pawlowski in 2021.

Consequently, these mothers might impose restrictions on their child's food intake, aiming to ensure a balanced diet even if it involves curtailing the variety of available foods. In addition, mothers with lower educational backgrounds could exhibit heightened concern about their child's weight status, motivating them to exert control over their child's dietary intake to avert the risk of overweight or obesity. This phenomenon aligns with the outcomes of prior research, which found that maternal practices of restrictive feeding to manage child weight were more prevalent among mothers with lower educational levels, lower household income, and higher maternal BMI, as indicated by Freitas et al. in 2019. Nonetheless, research has brought attention to contrasting dynamics in this realm. According to Bauer et al. (2020), the high maternal pressure exerted on a child to consume food has been connected with lower child BMI, while a more substantial practice of maternal food restriction has demonstrated a correlation with higher child BMI.

6.0 Conclusion and Recommendation

This study in the Puncak Alam region indicated a slightly higher prevalence of wasted BMI among children than those with a normal BMI. The research further revealed that the predominant parental approach towards feeding their children involved employing restrictions for weight control, with emotion regulation being a less frequently adopted strategy. Furthermore, this investigation illuminated that the most prevalent parental feeding practices with noteworthy disparities in children's weight status or parents' demographic information were emotion regulation and restriction for weight control. Emotion regulation displayed significance in connection with the mother's weight status, as well as the level of education of the father and the mother's employment status. Likewise, the restriction for weight control exhibited a significant association with the parents' educational levels and the mother's employment status.

Additionally, it is essential to consider the potential impact of socioeconomic variables on parental feeding practices and children's weight status, recognizing their potential interplay. Additionally, the development of web-based interventions is valuable. These platforms could offer parents essential information, resources, and strategies to foster healthy feeding practices, ultimately constructively supporting behaviour change. Lastly, an avenue for future research could involve organizing workshops or seminars designed for parents. These sessions, led by experts in child nutrition and feeding practices, could provide tangible guidance, practical tips, and effective strategies for parents to implement healthy feeding practices within the home environment seamlessly.

Acknowledgments

The authors gratefully acknowledge the participants who participated and spent their time in this study.

Paper Contribution to Related Field of Study

The research findings may contribute to promoting healthy feeding practices, preventing childhood obesity and malnutrition, and guide the design of effective interventions targeting parents and caregivers.

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