Parental perceptions of factors influencing the development of childhood obesity in Brunei Darussalam: A cross-sectional study.

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ABSTRACT

Introduction: Childhood obesity has become a global pandemic as the prevalence has increased over the past few decades. Positive perception and attitude among parents are important in the prevention and management of childhood obesity. This study aimed to investigate the parental perception of factors influencing childhood obesity in Brunei Darussalam. **Materials and Methods**: This is a cross-sectional study conducted from July to September 2016 using random sampling that involved 358 parents from 4 primary schools in Brunei-Muara district in Brunei. The data collection tool used was modified validated questionnaires with themes such as demographic characteristics, parental knowledge of obesity, children eating habits and physical activity and on their children body weight status. **Results**: We found 61.4% and 49.4% parents reported 'inheritance' and 'genetics' as the key contributor to childhood obesity. The majority of parents (80.4%) revealed that their child does not like to eat vegetables because of the taste. Most parents (68.7%) reported their children have sufficient physical activity, despite their children having lower than recommended physical activity (93.0%). Parental fear of crime and traffic dangers are the main barriers to physical activity among children. Most parents (91.8%) did not know how to calculate BMI but 48.1% perceived their children were at their "ideal" weight. **Conclusion**: Inheritance and genetics, children dislike for vegetables and fear of crime and traffic dangers all play a major role in parents perception of contributory factors to their children's obesity. Combined with parental misconception of their children adequate level of physical activity, can influence the development of childhood obesity in Brunei. Thus interventional programmes aimed at reducing childhood obesity should also target parental perception of the above factors contributing to their children's obesity.

Keywords: Childhood obesity, dietary habit, physical activity, child health

INTRODUCTION

The dramatic rising in the global prevalence of childhood obesity with 170 million children under the age of 18 being classified as overweight and obese has been described as a global pandemic. [1] In Brunei, 33.5% of its children are overweight and 18.2% are obese.[2] Similarly, 1 out of 2 of Bruneian children over the age of 5 is either overweight or obese, and the prevalence of childhood obesity has increased from 12% to 18% from 2008 to 2014 in Brunei, showing a dramatic rising of 1% per year. [3]

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Obesity has serious adverse health effects in the long-term such as Type 2 Diabetes, cardiovascular diseases and certain types of cancer as well as adverse psychosocial conditions such as low self-esteem which may lead to anxiety and depression. [4] Active participation of parents with positive attitudes is integral in the prevention and management of childhood obesity as parents play a critical role model in establishing and promoting healthy behaviors in their children. [5,6] However, involving parents would require them to recognize the problems so corrective actions can be initiated. For instance, inability to recognize child's excess weight among parents may lead parents to feel resistant to behavior change and unsafe neighborhoods as perceived by parents for their child to do physical activities may lead to a preference for indoor activities such as television viewing for their child. [4,7]

Therefore, this study aimed to investigate the parental perception of factors influencing childhood obesity in Brunei Darussalam. Ability to identify these would help in designing an effective parental intervention to prevent, control and manage childhood obesity more effectively.

Materials and methods

Study Design

This is a prospective cross-sectional study conducted from July to September 2016 at 4 primary schools in Brunei-Muara district in Brunei Darussalam. The research data was collected through self-administered structured questionnaire that has been pilot tested prior to the actual study. The demographic characteristics were obtained (including age, race, nationality and highest level of educational attainment) as well as information on parental knowledge about obesity, children eating habits and physical activity and on their children body weight status.

Participants

Parents of Year 4, 5 and 6 primary school children from 4 randomly selected primary schools in Brunei were recruited in the study. The study included all parents with Bruneian nationality. No sampling method was used as all eligible parents were included. Parents with missing data on their questionnaires were excluded from the study.

Study Protocol

The purpose, objective and research procedure of the study were explained via a briefing to the schools' principals and involved teachers. A package containing participant's information sheet, consent form and a questionnaire was distributed to parents via their children by their class teachers. Participants were fully informed about the study, the voluntary nature of participation and their rights to withdraw at any point during the study so that they could make an informed decision before participating in the study. Parents who signed the consent form and returned the completed questionnaires were included in the study.

Statistical Analysis

The sample size was calculated using a sample size calculator based on the proportion of overweight children in Brunei which was 33.5%.[2,8] The required sample size was 343 to achieve 5% precision with 80% power. Taking account of possible 20% non-response rate, the total sample size was 410. The data gathered was analyzed using IBM SPSS, Version 20.0. Descriptive statistics such as frequencies and percentages were used.

Ethical Considerations

Ethical approval for the study was obtained from PAP RSB Institute of Health Science Research and Ethics Committee (PAPIHSREC) and further approval from Ministry of Education to conduct the study at the 4 primary schools. The study was conducted according to the Declaration of Helsinki Ethical principles

to the Declaration of Helsinki Ethical principles for medical research involving Human subjects.[9] Consent was obtained from all participants and their identities will be kept confidential.

Result

A total of 410 parents were recruited and consented but only 358 parents returned their questionnaires, giving a response rate of 87.3%. Forty-two questionnaires were incomplete and these were excluded from analysis. Demographic characteristics of parents participating in the analysis showed that half were fathers and another half were mothers (Table 1). The mean age of parents was 41.6 ±8.1 years old. Racial distribution of parents are shown in Table 1 with majority (95.9%) consisting of Malays. 89.2% of the parents had medium level of education (secondary to Diploma level), 7.0% had higher education (university degrees) and only 3.8% had low education (primary school or none).

Table I. Demographic characteristics of participants (N = 316)

Characteristics	n(%)	Mean(SD)
Relation to child		
Father	157 (49.7)	
Mother	158 (50.0)	
Grandparent	1 (0.3)	
Age		41.56 (8.13)
Race		
Melayu Brunei	276 (87.3)	
Dusun	13 (4.1)	
Kedayan	10 (3.2)	
Murut	4 (1.3)	
Chinese	4 (1.3)	
Others	9 (2.8)	
Nationality		
Brunei Citizen	253 (80.1)	
Permanent Resident	63 (19.9)	
Education		
Primary	12 (3.8)	
Secondary/Diploma	282 (89.2)	
University	22 (7.0)	

Obesity knowledge

A total of 61.4 % of parents considered overweight and obesity as something that is "inherited" and 49.4 % reported genetic as predisposition of body weight. 'Inherited' refers to a trait that is passed down from parent to child whereas 'genetic predisposition' refers to a genetic mutation (occur either randomly or due to some environmental exposure) that alters the genetic instructions of one's genes.

Eating habits

The majority of parents had a good knowledge of the required servings of fruits and vegetables (68.7%), food labeling (78.8%) and food pyramid (89.2%). The top three foods always made available by parents to their children at home were vegetables (46.2%), fruits (28.5%) and processed-meats (17.4%). Parents reported the most important factors considered when buying food as 'safety of food' followed by 'keeping of food (requirement for safe storage of food)', 'preparation of food', 'nutritional values' and 'price of food'. The majority of parents used vegetable oil for cooking at home (83.9%). Almost all parents (98.7%) removed visible fat on their food before consumption during meals. A total of 83.9% of parents carefully watched their child's food portion size (appropriate food portion size for children) and most parents make sure that their children do not eat excessive amount of sweets or greasy food (41.8%). As high as 80.4% of parents stated that their child does not like to eat vegetables because of the taste and 69.6% of them reported that the selling of unhealthy food in school canteen contributed to overweight and obesity among children.

Physical activity and environment

The majority of parents (93%) reported that their children were physically active for less

than 7 days in a week, which did not meet the physical activity standard for children (60 minutes per day, 7 days a week). However, 68.7% of parents reported that their children performed enough physical activity. Both parents (38.9%) and their child (44.3%) spend 1 to 2 hours of screen time (watching television and playing computer games) per day at home.

A total of 53.2% of parents highlighted that their neighborhood is safe. The main environmental barriers for children to do physical activity in their neighborhood as reported by parents were fear of crime, traffic danger, stray dogs and neighborhood parks in poor condition.

Parental perception of child's body weight status

Most parents (91.8%) did not know how to calculate body mass index (BMI) and only half of them (48.1%) perceived their children are at their "ideal" weight. 29.8% of the parents perceived their child to be overweight or obese because they thought that their children have bigger body size.

DISCUSSION

Brunei Darussalam is now facing a rise in non-communicable diseases (NCDs) such as cancer, heart disease, diabetes mellitus and cerebrovascular disease, which accounts for half of the total number of deaths.[2] This is largely driven by a change in dietary and lifestyle patterns which has led to a rise in obesity, a known risk factor for NCDs.[2] To control further increases in obesity prevalence in the future, emphasis in the current prevention and management of childhood obesity is important as obese children are more likely to become obese adults. [10] Parental role in the prevention and management of childhood obesity is crucial as parents are role models for their children in terms of healthy living, exercises and healthy diet. [5,6]

In this study, the majority of parents had medium level of education. There is a complex conundrum between education level and childhood obesity. In western developed countries, numerous studies have shown an inverse relationship between education level with childhood obesity, in that parents with lower education level tended to have children who are obese.[11–13] In contrast, in developing countries, parents with higher education are more likely to have obese children, possibly due to better income and hence better access to food sources. [13,14] This discrepancies between observations in western developed countries and developing countries could also be explained by differences in study design, sampling and other socio-demographic factors.[15]

This study also showed that many parents reported overweight and obesity is "inherited" and controlled by genetics, a finding which is consistent with previously published studies. A study among 52 parents of overweight and obese children aged 4-5 years and 10-11 years in England found that parents felt their children were genetically predisposed to being overweight or obese.[16] Such parental perception of the importance of genetic or inheritance factors in determining childhood obesity is also held by parents in the east as shown by a similar study among Vietnamese mothers.[17] American mothers also perceived that genetic factors played a determinant role in their children's weight regardless of their diet.[18]

This study also revealed that parents perceived their children dislike for vegetables is due to the "taste" of vegetables. This is supported by a study conducted in Australia where 88 parents reported their children's have taste preferences, likes and dislikes towards certain food which influence the food they provide.[19] Similarly, another study among primary school children in Netherlands stated that they do not like vegetables be-

cause of the inherent sensory properties of vegetables, particularly the "taste" and "texture".[20] A review paper found that a child's dietary preferences is a major factor in child's obesogenic dietary intake.[21]

This study also found that the majority of children did not meet the physical activity standard of 60 minutes of moderate-to-vigorous physical activity (MVPA) daily although their parents reported that their children did perform enough. A study carried out in the UK found that parents tended to overestimate their children physical activity and did not see a need for an increase in their child's physical activity.[22] British parents also reported that their children were sufficiently active despite not meeting the physical activity standard.[23] Such parental perception are also held by American parents, particularly in low-income American mothers, that their children were sufficiently active at school and therefore did not always see a need to encourage their children to be physically active outside of school hours. [24,25]

This study also found that parents regard as having no free time and their perception on environmental safety such as fear of crime and traffic dangers as the barriers to physical activity in their children. In developed countries like the United Kingdom and Belgium, parents reported that the lack of a safe neighborhood was the key environmental barriers to physical activity among their children.[22,26] Poor time management and prioritization were also barriers perceived by working parents to their children physical activities. [27]

This study also revealed that almost all parents did not know how to calculate the body mass index of their children and the majority of them perceived their children to be at their "ideal weight". A study from Saudi Arabia reported 90% of parents misclassified their children's weight status by reporting that their overweight and obese child had normal weight.[28] In addition, 60.9% of overweight and obese children in Poland were perceived as having normal weight by their parents and 13.3% of the parents actually thought that their normal-weight children were underweight.[29] Parental misconception of their children's weight as shown by these studies and our own study indicate that such misconceptions are perhaps universal. Although various studies on misclassification of weight status have been identified in literature, currently there is very little evidence to explain these. A review demonstrated some potential explanations to be fear of being judged, unwillingness to label a child as overweight, and shifting perceptions of normal weight because of increases in body weight at a societal level.[30] We also hypothesize that cultural norms in this population may value children with rounder shape, perhaps as a sign of health.

This study has some limitations. Firstly, the majority of the participants in the study were Malay therefore the result is not generalizable across all ethnic groups. Secondly, children's BMI were not taken to validate parental perception of their children's weight status. In addition, parental BMI was also not taken so the association between parental perception of risk factors and childhood obesity cannot be established. Lastly, interpretation of the findings must be made with caution due to the cross-sectional nature of the study so future longitudinal studies are suggested to establish the temporal nature and causality of associations.

In conclusion, this study has identified important factors for addressing childhood obesity in Brunei. It is crucial to address parental understanding of the contributing factors to childhood obesity with implementation of extensive and effective public health educational programmes by public health professionals and educators. The misconceptions

among Bruneian parents regarding their child's weight status may be explored further in future studies. Policy makers and urban planners may also utilize this study findings to ensure neighbourhood safety to increase the level of physical activity in community settings. Overall, this study findings may be valuable for public health professionals in planning and developing tailored interventional programmes for parents and in designing conducive environment to promote physical activity for children and their families in Brunei.

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Conflict of interest

The Author(s) declare(s) that there is no conflict of interest.

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