Parental Understanding and Motivation in the Management of Childhood Obesity

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ABSTRACT

Objective: To assess the extent to which parental understanding and motivation influence their efforts to manage the obese child; with special emphasis on eating habits and physical activity.

Method: The National Child Management Programme Evaluation Study (NCMPE) questionnaire was administered to parents of children 5 to 16 years of age who were enrolled in a programme to reduce their body mass index (BMI) at the Wendy Fitzwilliam Paediatric clinic (WFPC) between January 2012 and June 2016. Excluded were children on medication affecting their weight, children with eating disorders and those diagnosed with mental illness. They were followed over ten consecutive visits to assess the change in their BMI.

Results: Fifty parents/guardians were found to be eligible to participate in the study. Of these twenty-eight parents' (56%) perception of their child's weight status was different from the child's actual weight status. Forty parents (80%) expressed readiness to implement healthy eating and exercise habits as part of the child's daily routine. Parents demonstrated a fair understanding of the present and future consequences of their children being overweight and obese; and 64% (n = 32) said that they were committed to encouraging increased physical activity among the children. Parents generally felt more confident about changing the diet than increasing activity. They stated that time, cost and access were not hindrances to their ability to provide healthy food or promote increased physical activity.

Conclusion: The study showed that parents were not good at assessing their child's weight status and had a limited understanding of the present and future consequences of their child being overweight or obese. They were, however, motivated to implement a healthy diet and exercise to their child's daily routine but felt more confident with the former.

Keywords: Healthy food, motivation, management childhood obesity, understanding

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INTRODUCTION

In 2013, the World Health Organization (WHO) reported that worldwide, 42 million children under the age of five years were either overweight or obese (1). The Caribbean Food and Nutrition Institute (CFNI) reported the incidence of obesity among the 0-5 year age group as 2.5%, 3.0%, 3.9% and 6.0% in St Lucia, Trinidad and Tobago, Barbados and Jamaica, respectively. Ongoing reviews show an upward trend in obesity as these children grow older (2).

The World Health Organization established a commission group on Ending Childhood Obesity (ECHO) to review existing mandates and establish strategies that raise awareness and build momentum for action against childhood obesity (1). If current trend were to continue, in 2025 there would be an alarming 70 million overweight and obese infants and young children globally (3). It is of utmost importance to address one of the most serious health challenges of the early twenty first century. A key factor that influences a child's healthy lifestyle is the parents' recognition of their child's overweight status. Given their critical role in the success of the child's weight loss, it is important to address this awareness as well as the parents' confidence in undertaking any weight loss intervention. Schetzina *et al* (4) highlighted three components of motivation that are key in the adoption of a healthier lifestyle.

1. Readiness to adopt behavioural changes
2. Importance of implementing changes
3. Confidence in ability to make and conform to changes

Parental confidence was shown to have the greatest influence on the completion of treatment and weight loss achieved by the child. Braet *et al* (5) have shown that parents' motivation at baseline predicted treatment completion.

The Lifestyle clinic at the Wendy Fitzwilliam Children Hospital was established in January of 2012. It began with the enrolment of 120 patients. The clinic was instituted to:

1. Determine the incidence and increase public awareness of childhood obesity
2. Identify overweight and obese children in the population
3. Investigate comorbidities associated with obesity
4. Provide counselling on eating habits and physical activities for prevention of chronic non-communicable diseases

This study is being done three years after the inception of the Lifestyle clinic at the Wendy Fitzwilliam Children Hospital. As we seek to improve the effectiveness of the Lifestyle clinic, one area of concern is the factors that influence the successful management of the identified obese child. This study investigated parents' perception of childhood obesity, and the factors influencing their motivation and willingness to make life style changes.

METHODS

Target population

Parents of children 5–16 years of age who were enrolled in a programme to reduce their body mass index at the Wendy Fitzwilliam Paediatric clinic (WFPC), Trinidad between January 2012 and June 2016. Parents of enrolled children on medication that affected appetite and weight, or treated for an eating disorder or any mental health condition were excluded from the study. On enrolment in the programme the child's BMI status was recorded. The child was followed-up two weeks

later, then at three monthly intervals for a total of ten consecutive visits. The weight and height of the child were recorded at each visit. The weight status of the child was determined using the WHO standards for overweight and obesity. Only parents who agreed monitor the weight management process at home in the interim between the first and the tenth visit were eligible to take part in the study.

Instrument

The National Child Management Programme Evaluation Study (NCMPE) questionnaire (6) was used to collect data from parents on a random visit. The questionnaire consisted of 44 items with a Cronbach's alpha of 0.72. Variables measured included selected sociodemographic characteristics (age, gender, education, housing, family size, employment status of spouse/partner *etc*) weight and height of parent and child at the initial visit, family history of selected non-communicable disease including cancer, knowledge of association between overweight and obesity and selected health conditions or co-morbidities, dietary and exercise habits of the child, level of concern as to the current weight status of the child, desire and ability to provide a healthy diet for the child and encourage physical activity, willingness and ability to access professional services to assist in promoting healthy eating and exercise habits and degree of involvement in child's daily eating and exercise practices.

Data analysis

Data were analysed using SPSS version 21 for both descriptive and inferential statistics methods. Descriptive methods included frequency tables, graphs and summary statistics. Chi-square tests of association and tests of equality of two proportions were the main inferential methods used.

Ethical considerations

Ethics approval was obtained from both The University of the West Indies Campus Ethics Committee and the North Central Regional Health Authority prior to commencing the study. Informed consent was obtained before any information was entered in the study. Data obtained was handled according to the Caldicott principles (7).

RESULTS

Demographics

Of the 200 children enrolled in the lifestyle Clinic, only 50 were eligible and agreed to participate in the study. The frequency and percentage distribution of selected demographic characteristics of these parents are shown in Table 1. Forty-four parents (88%) and five guardians (10.0%) completed the questionnaire. Of the parents/ guardians participating in the study, 84% females, 56% were in full-time employment and 54% had completed secondary school level of education.

Table 1: Frequency distribution of children and parents/guardians.

Variable	**n**	**%**
Gender of child		
Male	26	52.0
Female	24	48.0
Relation to child		
Parent	44	88.0
Guardian	5	10.0
Other	1	2.0
Employment		
Unemployed	199	86.4
Part-time	11	4.9
Full-time	15	6.7

Gender of relation to child		
Male	8	16.0
Female	42	84.0
Employment status		
Homemaker	6	12.0
Full-time	28	56.0
Unemployed	11	22.0
Other	4	8.0
Education level		
Less than primary	9	18.0
Secondary	27	54.0
University	4	8.0
Vocational	5	10.0
Other	5	10.0

The children ranged in ages from 5 to 16 years with a mean age of 11.7 years and standard deviation of 2.75 years. The male-to-female ratio of the children was 1.08:1. Only 9 (18%) had normal weight, 14 (28%) were overweight and 27 (54%) were obese at enrolment of the programme.

A family history of diabetes was reported by 35 (70.0%) of parents, 26.0% had a family history of heart disease, 72.0% had a history of hypertension; and other family histories were cancer (14.0%) and arthritis (14.0%).

Understanding

Figure 1 shows the percentage distribution of weight status of the children as perceived by parents compared to the actual distribution at the time they were enrolled in the programme.

Comparing the child's actual weight status on the first visit to the parents' perception, 46% of parents correctly perceived their child's weight status; 8% of parents correctly perceived that their child's weight was normal; 26% correctly perceived that their child was overweight and 12% correctly perceived that their child was obese.

Association between perceived weight status and actual weight status was confirmed by a Chi-square test of independence between the two that gave a *p*-value of 0.007. Table 2 provides further evidence by showing that the weight of only 23 children were correctly diagnosed by parents (concordance: 46%) and 27 were incorrectly diagnosed (discordance: 54%).

Table 2: Concordance and discordance percentages with respect to weight

	Actual weight status		
Perceived weight status	**Healthy weight**	**Overweight**	**Obese**
Healthy weight	4 (50.0)	1 (12.5)	3 (37.5)
Overweight	5 (13.9)	13 (36.1)	18 (50.0)
Very overweight	0 (0.0)	0 (0.0)	6 (100.0)

For boys concordance was 50% (13/26) and for girls it was 41.7% [10/24] (Chi-square = 0.349; df = 1; $p = 0.555$).

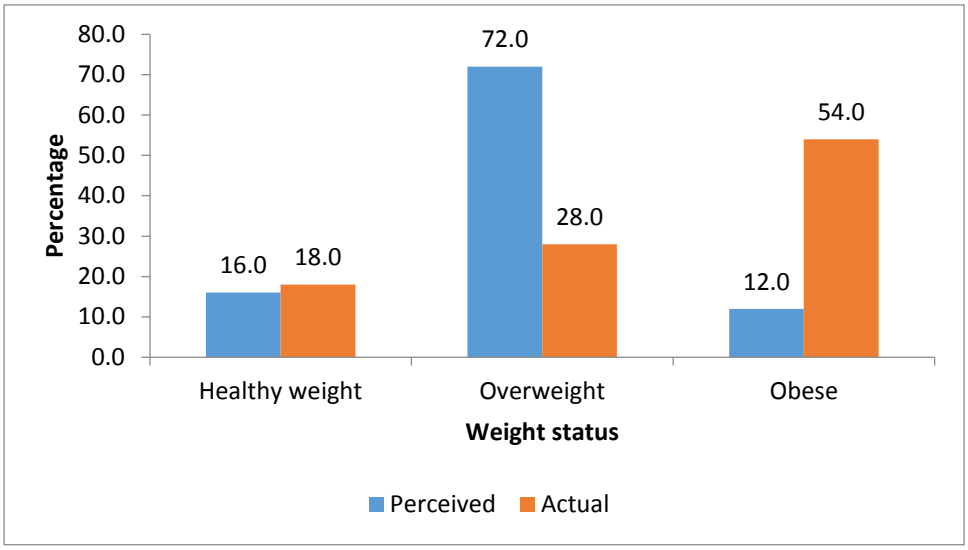

Fig. 1: Perceived *vs* actual percentage distribution of weight status.

More parents stated that the possibility of their child developing selected health conditions secondary to obesity were well along in their future, than in the present (Table 3).

Table 3: Present and future parental concern

	Concern: %		
Health condition	**At present**	**In future**	***p*-value**
Diabetes	74.0	96.0	≤ 0.001
Cancer	22.0	60.0	≤ 0.001
Hearing problems	16.0	32.0	≤ 0.001
Hypertension	70.0	90.0	≤ 0.001
Arthritis	20.0	60.0	≤ 0.001
Heart problems	46.0	88.0	≤ 0.001

Seventy-four per cent of parents said that their child was at risk of diabetes at the present time; compared to 90.0% who said that the risk was in the future. The difference was statistically significant ($p \leq 0.001$). With respect to hypertension the figures were 70.0% for the present and 90.0% for the future ($p \leq 0.001$); and 46.0% *vs* 88.0% when asked about heart disease. With respect to cancer, hearing problems and arthritis, most parents felt that their children were never at risk. Finally, when asked if they thought that their child's present weight status posed a health risk, 64% said definitely, 14% said maybe, 8% said probably and 12% said no.

Motivation and challenges

Parents were asked to state how frequently they gave their children fruits, vegetables, sugary drinks, sweet snacks, savoury snacks and other types of snacks (fruit bars, cereal bars, *etc*) with the responses summarized, and compared in Fig 2. Less than half (44%) of the children had a daily home consumption of fruits and vegetables.

The majority of parents reported children engaging in less than 30 minutes of physical activity, on school days (60%) and almost half (48%) on weekends. Almost half of the parents (48%) reported that during school days their children spent between 1–2 hours per day watching TV or playing video games; and 3–4 hours doing likewise on weekends.

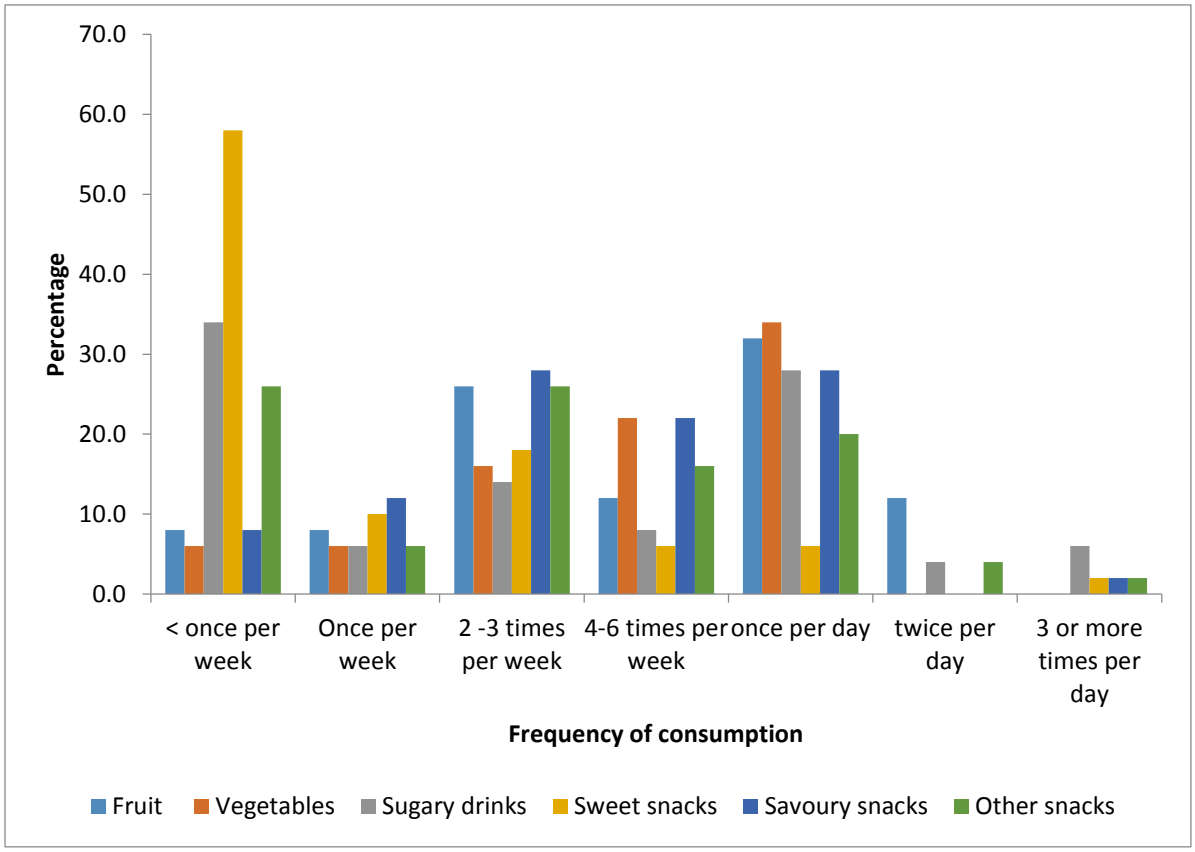

Fig. 2: Fruit, vegetable and snack consumption among children.

Eighty per cent (40/50) of the parents said that they would definitely like to change their children's diet; with an additional 10% saying maybe. Likewise, 64% said that they would definitely like to change the amount of physical activity in which their children were engaged at present; with an additional twenty per cent saying maybe.

Using a scale to indicate how confident they were in being able to effect these changes, with1 (Not confident at all) to 10 (Extremely confident) the responses were as follows:

-Confidence in being able to effect change in children's dietary habits: Mean: 6.5; standard deviation 2.84

- Confidence in being able to effect change in children's exercise habits: Mean: 5.5; standard deviation 3.51.

The majority of parents acknowledged the challenges they faced with achieving the changes they wished to help bring about in the dietary habits (Table 4) and physical activity (Table 5) of the children.

Table 4: Anticipated challenges to achieving dietary reform in the child

Challenge	**%**
Avoiding going with child to cafes or restaurant which sell unhealthy foods	80.0
Avoiding having sweets and crisps in the house	82.0
Avoiding the purchase of foods they like because they do not want the child to have them	80.0
Refrain from eating unhealthy foods when the child is around	82.0
Avoiding having biscuits and cakes in the house	74.0
Keeping track of the sweet things that the child eats	86.0
Keeping track of the snack foods that the child eats	88.0
Keeping track of the high fat foods that the child eats	90.0
Making sure the child does not eat too many sweets	96.0
Making sure the child does not eat too many high fat foods	98.0
Making sure the child does not eat too much of his/ her favourite foods	90.0
Intentionally keeping some foods out of the child's reach	64.0
Guide or regulate the child's eating, he/she would eat too many unhealthy foods	76.0

As seen in Table 4, challenges to achieving dietary reform includes example setting by parents such as avoiding going with children to cafes or restaurant which sell unhealthy foods (80%). Avoiding having sweets and crisps in the house (82%) and intentionally keeping some foods out of the child's reach (64%). In like manner, and as shown in Table 5, anticipated challenges to successful achievement of physical activity reform include regulating time child goes to bed on weekdays (12%) and on weekends (62%) and deciding on whether or not the child should have a television set in his/her room (34%). The two tables seem to suggest that achieving dietary reform presented more difficult challenges than achieving physical activity reform.

Table 5: Challenges to achieving physical activity reform in the child

Setting physical activity goals/targets for child	50.0
Regulating time child goes to bed during weekdays	64.0
Regulating time child goes to bed during on weekends	66.0
Monitoring child's wake up time during weekdays	12.0
Monitoring child's wake up time during on weekends	26.0
Decision as to whether or not the child should have a TV in his/her room	34.0

Cost, access, time

Potential elements such as cost, access and time that can affect the provision of a healthy diet and involvement in extracurricular activities were evaluated. The Table 6 shows a positive correlation ($r = 0.479$; $p \leq 0.001$) between the extent to which time affects the parents' ability to provide a

healthy diet and provide physical activities. The extent to which cost affects the ability to give the child a healthy diet and the extent to which access to healthy food affects the ability to provide the child with a healthy diet are positively correlated (r = 0.29; $p = 0.041$). The extent to which cost affects ability to give the child a healthy diet and the extent to which time affects the ability to keep the child active are positively correlated (r = 0.650; $p \leq 0.001$). The extent to which time affects the ability to keep the child active and the extent to which access to service affects the ability of the parent to keep the child active are positively correlated (r = 0.586; $p \leq 0.001$).

The extent to which access to healthy food affects the ability of the parent to provide a healthy diet and the extent to which access to services affects the ability to keep the child active are positively correlated (r = 0.3548; $p \leq 0.001$). The extent to which access to healthy food affects the ability of the parent to provide a healthy diet and the extent to which cost affects the ability to keep the child active are positively correlated (r = 0.307; $p \leq 0.001$)

Table 6: Correlations

		How much does time affect your ability to give your child a healthy diet	**How much does cost affect your ability to give your child a healthy diet**	**How much does access to healthy food affect your ability to give your child a healthy diet**	**How much does time affect your ability to keep your child active**	**How much does cost affect your ability to keep your child active**	**How much does access to services affect your ability to keep your child active**
How much does time affect your ability to give your child a healthy diet	Correlation Coefficient	1.000	.209	-.020	.479	.065	.236
	p-value		.149	.891	0.001	.657	.102

How much does cost affect your ability to give your child a healthy diet	Correlation Coefficient	1.000	.290*	-.015	.650	-.022
	p-value		.041	.917	≤ 0.001	.877
How much does access to healthy food affect your ability to give your child a healthy diet	Correlation Coefficient		1.000	.200	.307*	.548
	p-value			.165	.030	≤ 0.001
How much does time affect your ability to keep your child active	Correlation Coefficient			1.000	.132	.586
	p-value				.361	≤ 0.001
How much does cost affect your ability to keep your child active	Correlation Coefficient				1.000	.137
	p-value					.334
How much does access to services affect your ability to keep your child active	Correlation Coefficient					1.000

DISCUSSION

This study assessed parental perception of childhood obesity and the factors that affect their wiliness to implement lifestyle changes.

Parents perception of childhood obesity

The level of misclassification of children's' weight status was high. Only 46% were able to identify their children weight status correctly and this was independent of whether the child was male or female. The results of the study highlight the importance of measuring the BMI of children at each health visit and counselling parents accordingly. The skewed perception of the child's weight may be linked to the limited knowledge of complications of childhood obesity. Some parents were inclined to believe that diabetes and hypertension were the only two co-morbid diseases which the child could develop at an early age. Parents generally did not link obesity with cancer, arthritis or hearing problems. Parks *et al* (9) showed that perception of health risk is associated with the recognition of the child's overweight status. However, many parents who acknowledge their child is overweight do not perceive a related health risk.

Factors influencing parental

The Transtheoretical Model (Prochaska & DiClemente, 1983; DiClemente and Norcross, 1992) is an integrative, bio-psychosocial model to conceptualize the process of intentional behaviour change (10). The study showed that more than 80% had reached the stage of preparation, action and maintenance. They were at the stage of setting priorities, encouraging small initial steps and establishing problem solving skills. They also needed to be prepared to cope with a relapse.

To impact childhood obesity, one has to target their parents and guardians who stand as the child's role model and provider. This finding invites the need for regular contact with health professionals and behaviour therapists to progress and maintain the desired lifestyle.

Factors influencing parents' willingness to change

Although the guardian and child are co-managed with the dietician, the weekly consumptions did not reflect healthy food choices. This finding contradicts the 76% of interviewed parents who indicated that they took certain steps to implement a healthy eating habit for their children. The American Academy of Paediatrics recommends removing all sweetened beverages from the diets of children. Diets rich in foods with low caloric density and scarce in high caloric density should be promoted. They also recommend all forms of sedentary entertainment should be excluded from infants less than two years and limited to two hours per day for children two years and older (11).

Most parents reported that time, cost or access did not affect their ability to keep their children active. The study shows that they are misguided about the recommended life style changes. The American Academy of Pediatrics (AAP) recommends a move away from sedentary lifestyles. Implementing 60 minutes of activity, two hours of screen time a day, and nine hours of sleep a night are in the 2015 AAP clinical reports. They also advised Paediatricians to educate parents on removing televisions from kitchens and bedrooms (11).

The correlation table shows that the more or the less time a parent devotes to ensuring that the child has a healthy diet the more or the less time the parent will spend in ensuring that the child keeps active. Therefore, it is imperative that parental awareness and support to make the necessary

changes are improved. As part of this study, the successful management of the obese child was assessed. After two visits there was an increasing attrition rate among them. Thus, only four participants (8.0%) had ten visits. Of the four children who made it to 10 visits, two remained normal from the start to the end, one child who was overweight on the first visit was normal on the last visit and one child remained obese from the beginning to the end. The lack of supportive systems to compliment the stage of readiness of the parents may have contributed to the high attrition rate. Future studies on assessing the parents' reasons for aborting the programme early will aid in improving the quality of service provided in the prevention and treatment of obesity.

Limitations

The NCMPE allowed for a limited amount of information without explanation. Responders were forced to select an answer that he/she may not quite understand or may have been bias in their selection because of education, culture, age or societal status.

In light of the varied education and employment status, more diverse questions may have been necessary to capture more information. The amount budgeted for covering food and physical activity was not assessed. Parents were not asked about problems arising that may compromise effort.

Also, the parents' responses were most likely to be subjective as they may not be aware of children's activity when out of sight.

CONCLUSION

The role of the parents and guardians is crucial for effective prevention and treatment of childhood obesity. Parental misclassification of childhood obesity was very high in the study cohort. Preceding interventional programmes, it is imperative that educational programmes address parents' ability to identify and understand the consequences of childhood obesity and its management. Parents have critical roles in the management and prevention of childhood obesity as they shape the healthy eating and physical activity behaviour in their children.

We sought to determine the factors that impinge on the ability to effect change but most parents were not limited by finances, time or availability when they had to provide healthy food or life style changes. Though most parents did not express these limitations, parents still were not following the guidelines or recommendations to combat obesity. Again, this emphasises the need to increase parental awareness.

The majority of parents in the programme were motivated to make the necessary lifestyle changes but a smaller number of parents felt confident about their ability to make those changes. Low parental confidence likely affected the prognosis of the children in the life style clinic. Despite most parents confirming that finances, time and availability did not affect their capacity to affect change, the outcome was a possible reflection of some parents' lack of confidence. Clinically assessing the parents' confidence in their ability to effect change is something which will therefore, need to be addressed to help ensure the success of any intervention programme.

Understanding, motivation and confidence go hand-in-hand. Identifying the stages of change is imperative to the successful outcome of the intervention but we must be ready to offer effective support services. This finding invites the need for behavioural therapy when managing the obese child and parent.

The information gathered in this study is critical to the creation of strategies to improve the childhood obesity epidemic in the Caribbean.

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