Surveying Parental Neglect in Environmentally Influenced Obesity: Designing a Scaled Questionnaire through Pre-Pilot and Pilot Studies

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Keywords: *maltreatment, body mass index, parenting style,khat (Catha edulis),care and supervisory neglect.*

Abstract

Background: Association between childhood obesity and parental neglect has rejuvenated scientific interest on parenting. The term child neglect has thus got broadened in its scope along with its social acceptance. The existence of child neglect traditionally has been determined by observing the home environment and the child's surroundings. However, orthodox cultures do not permit such observation and thus different approach of determining child neglect has to be sought. This study aims to define various dimensions of a scaled questionnaire that would identify whether parents are neglectful towards their children in terms of feeding style and social activity. The study also aims to find the prevalence of obesity among adults (16 to 30 years).

Materials and methods: Using a dual moderator focus group discussion approach, a pre pilot questionnaire was prepared which was surveyed in a sample of 30 obese individuals. Data generated was used in refining a further questionnaire that would be used to explore the variables associated with child neglect. The questionnaire was filled by the obese child, his father and his mother (15 questions each). Demographic data and questions related to neglect for feeding style and social activity was analyzed using SPSS.

Results: Prevalence of overweight/obesity was found to be 20% of a sample of 450 subjects. Obesity was found more in girls (23%) than boys. (18%). Frequency of mothers married under 20 years of age (58%) and fathers married between 30 and 40 years (52%) was observed. Average BMI for boys was 28.9 while that of girls was 27.2 (Normal =24). A large percentage of obese subjects were found in those who had either one of the parents obese (61%) or both obese (7%). Analysis of feeding style indicated high percentage of parents who pampered, rewarded, promoted unhealthy eating while most of the parents were associated with developing an inactive social life in their child.

Conclusion: Parents are negligent about the way they have to develop healthy eating habits and a competitive social spirit in their children. A questionnaire that would determine the presence of neglect that obese children or adults undergo would remarkably contribute to research in conservative cultures

Introduction

The word Obesity is derived from Latin (Obesus, Obedere), literal meaning to devour or eat away. It is closely associated to two cardinal sins/restrictions, mentioned in religious books like the Bible and Quran. “Sloth” and “Gluttony” meaning “laziness” and “excess”. Surprisingly, these are the scientific two core issues that have been linked among various major causes of obesity. WHO has estimated that by 2015, 75% adults will be overweight and 41% will be obese. [1,2] Suffering individuals pose health risks that may include cardiac, endocrine, reproductive, orthopedic, neurologic, rheumatic, psychological and in extreme cases morbidity. Being multicausal in nature, psychosocial research has implicated parent neglect not only possible source of the cause, but most effective primary preventive measure as well. The center for disease control and prevention has defined child neglect as the failure by a primary caregiver, usually a parent, to provide the physical, emotional, and psychological needs of a child and is considered a form of child maltreatment. [3] In the majority of child maltreatment cases, biological parents have been found the main perpetrators who usually are in the age range of 18 and 44 years old. [4] Although it has been argued that most of the parents do not intend to neglect their children, but evidence shows that children are neglected in various forms like physical, [5] medical, [6] supervisory[7] and care neglect. [8] Associations between childhood neglect and

adulthood obesity has been demonstrated. [9-11] Parents contribute to child obesity in the form of supervisory [10] and care [11] neglect besides medical neglect in morbidly obese subjects.

Obesity rates among the population in the middle east countries has increased drastically in the past few decades, especially in countries that comprise the gulf cooperation council (GCC). [12-15] Within Arabian peninsula, saudi Arabia covers the major part ($4/5^{th}$) with inhabitants of 20.8 million out of which 15.6 million comprises local population. [13] Studies have reported more than 60 percent of the adult population to be overweight or obese with a concomitant rise in childhood obesity also. [16,17] Traditionally, culturally, geographically as well as historically, the kingdom has its own set of social elements, mainly guided by religion, even though economic prosperity and rapid urbanization along with its expatriate dependence has caused a more sedentary lifestyle among its native population. The relation between parent neglect and adulthood obesity has not been explored in the kingdom probably because the conventional approach of identifying child neglect is not possible because of social and cultural restrictions. Therefore, some other method of identifying parents neglecting their children has to be devised. Although our final goal is to identify the existence of parental neglect during childhood in terms of developing feeding habits and social activity among obese adults through the use of a scaled questionnaire, the present study is aimed to identify multiple dimensions that should be included in the scale. The present prepilot and pilot survey will be be first in a series of studies that is intended to establish various themes and dimensions that need to be addressed on a scale which will help to determine whether parents are negligent or not. The study is also aimed to find the prevalence of overweight and obesity in young adults between 16 to 30 years of age in Jazan region, which has been declared as a future economic city in the kingdom.

Materials and methods

The present study was initiated by procuring an ethical clearance from the ethics committee of Jazan university, which conducts studies in accordance with the Helsinki Declaration. [18] A systematic literature search of 7 electronic databases was conducted as guided by the PRISMA statement. [19] Relevant papers were selected after screening of titles, abstracts and full texts by two independent reviewers. Various themes along which the research has been conducted in this area were noted. These themes formed the scaffold for a dual moderator focus group discussion in which 75 items in a general questionnaire were finalized. These items were then grouped under three categories (questions for obese child, questions for the father of the child and questions for the mother of the child). The primary focus was on the variables associated with the predictors of adulthood obesity like parenting, home environment, feeding style, social activity and child neglect related to the Jazan region. This questionnaire was then prepiloted on a randomly selected first round sample of obese subjects (n=30). After the pre pilot study, 30 questions from the main questionnaire were removed (overlapping, repeated, questions not indicating neglect as per the culture and customs of the region) which left 45 questions for the pilot study.

The final questions were modified for language first and then divided into three sets (for father, for the mother and for the obese subject). The final questionnaire (closed type) **(Annexure 1)** was then translated into local language first which was retranslated into English and then independently compared with the original English version for its consistency. Subjects who were to participate in the survey were randomly selected from various schools and colleges of the university which is representative of the population of the region. A total of 450 subjects was randomly screened for their body mass index by well trained medical assistants. [20-22] Anthropometric measurements of height and weight were done by measuring height to the nearest "0.5 cm" without shoes and weight was measured to the nearest "100 g" with the subject in lightweight clothes. A digital scale whose reliability was first determined by comparing the values of some individuals tronic commerce BMI analyzer (Bomeitong, Beijing, China) was used to measure weight. 95 subjects were found to be either overweight or obese (specific to their respective ages)

Annexure 1
Questionnaire (for developing dimensions of a parent neglect scale in terms of feeding and social activity)

	Father's questionnaire	Mother's questionnaire	Child's questionnaire
1)	Do you know the difference between an overweight child and an obese child? ○ Yes ○ No ○ can't say	Was the overweight child in question born after ○ full term ○ preterm	Which way will you describe the social status of your parents? ○ Both belong to high socioeconomic status ○ Father only belongs to higher status ○ Mother only belongs to higher status
2)	Do you feel that you are in some way responsible for your child becoming obese ○ Yes ○ No○ can't say	How often does your spouse/family members criticize your cooking? ○ Never○ Often ○ Sometimes○Once a while	Which food do you like to eat most? ○ home cooked meals and snacks ○ ready-made meals and snacks like canned food ○ junk food like pizza and burgers
3)	As a parent are you aware that obesity is a scientific problem in children and adolescents ○ Yes ○ No ○ can't say	What was his birth weight? ○ Less than 2 kgs ○ Between 2-3 kgs ○ More than 3 kgs○ If others please specify	How many members of your family like to eat sweets and junk food (please include your parents, brothers and sisters) ○ None ○ one ○ two ○ three ○ all except one or two
4)	Was the nutritional requirement for the child decided by ○ Mother ○ Father ○ Doctor ○ Elders ○ None	How have you learned cooking? ○ Through self and recipes ○ Through self ○Through mother ○ Know only few dishes ○ Don't know cooking	As a growing child whenever you felt hungry what was the food (other than meals) offered to you by your parents ○ Food and snacks prepared by a parent (mother) ○ Sweets like chocolates and candies ○ Snacks purchased from market ○ Fruits and salads
5)	Was the child in question selective/ choosy in eating food ○ Yes ○ No ○ can't say	How long did the child feed only on mother's milk ○ 2 months or less ○ 3 to 5 months ○ 6 to 12 months ○ more than a year	As a growing child how you used to spend time ○ Playing outdoors ○ Playing video/ computer/ mobile games ○ Sitting idle
6)	Was the mother of the child having any habits (like smoking, khat chewing, shama) during pregnancy ○ Yes ○ No	Was the child given supplemental milk formula like aptamil, progress etc. ○ Yes ○ No	What is your daily intake of soft drinks like Pepsi, coca cola? ○ None ○ Once ○Twice ○Thrice ○ More than above mentioned times
7)	Who was the first to notice that the child was gaining weight? ○ You ○ mother ○elder ○ friend ○ relative ○ none	Was supplemental milk formula given upon consultation ○ with a pediatrician○ watching an advertisement ○ consultation with the elders/ friends	Before living away from parents, if you at times desired to go outside to eat, how often would your wish be fulfilled ○ Never ○ Only at times ○ All the time
8)	Does the subject as a child consumed low fat milk or high fat milk products? ○ Yes ○ No ○ can't say	While pregnancy of your overweight child, did you eat ○ normally ○ over eating ○ under eating ○ can't say	Whose cooking do you prefer most ○ Mother ○ Father ○Brother/ sister ○ Relatives/ friends ○ Outside from a restaurant
9)	How often does the child in question consume meals that are not prepared in house ○ Daily ○ once in a week ○ once in a month ○ frequently ○ never	When did you introduce solid foods to your overweight child? ○ before 6 months ○ between 6 to 12 months ○ after 12 months	Who among your parents tries to stop you from eating sweets and candies? ○ Mother ○ Father ○ No one
10	Was the child spending more time on ○ Outdoor games ○ computer	How do you spend most of the spare time? ○ watching television ○ playing	During your childhood when you used to visit a provision store what eatables did you buy most for yourself

	games ⚬ mobile games ⚬ video games	video or mobile games ⚬ talking with friends/ relatives ⚬ learning some extra skills ⚬ do nothing at all	⚬ Candies ⚬ Chocolates ⚬Wafers and chips ⚬ Fruits ⚬ vegetables
11.	How long did the child use to spend time in outdoor sport activity in a day ⚬ Less than 1 hour ⚬ between 1 to 3 hours ⚬ never ⚬ more than 5 hours in a week	Whenever the concerned child would feel hungry what was the thing that he ate most ⚬ fruits ⚬ salads ⚬sweets ⚬ chocolates ⚬ other milk product	Have you ever been educated about the ill effects of eating excessive junk food in your school or at home? ⚬ yes ⚬ no
12.	Did you ever notice that while having meals like lunch or dinner, the child was eating less amount than normally one would? ⚬ Yes ⚬ No	While your husband would be away for work, what activities was the child involved in ⚬ studying ⚬ playing video/ computer games ⚬ watching television ⚬ doing nothing ⚬ eating most of the times	In case any of your family members including parents and brother/ sister are overweight, what will you attribute it to ⚬ lack of knowledge of cooking ⚬ life style ⚬ non availability of healthy cooked food at home
13.	Which of the following food did the child eat more ⚬ Packed ready food ⚬ Cooked food at home ⚬ Cooked food from outside	Whom does the child in question listen to most ⚬ father ⚬ mother ⚬ grandparents ⚬ brother/ sister ⚬none	If anyone of your family member brings any food from outside have you ever refused to eat it because it was not healthy for you ⚬ yes ⚬ no
14.	Was the child ever scolded for spending extra time in playing has been it outdoor or indoor games like video games ⚬ Yes ⚬ No?	How many times do you visit your friends/ relatives with your children in a week? ⚬ once ⚬ twice ⚬ thrice ⚬ never	Who among your family members stresses upon you the importance of doing physical exercises? ⚬ father ⚬ mother ⚬ brother / sister ⚬ relative / friend ⚬ no one
15.	According to your observation which of his diet do you think has increased his weight potentially more than required ⚬ Milk products ⚬ oily food ⚬ junk food ⚬ sweets and chocolates ⚬ others	If you are requested to learn something that would reduce the risk of your children becoming obese would you ⚬ do it yourself ⚬ hire someone to do the necessary things ⚬ do nothing ⚬ ask your husband to do the needful	Do your parents blame each other if you do anything in excess like eating excessive sweets, playing video or mobile games most of the times ⚬ yes ⚬ no According to you what is the main reason for children being overweight ⚬ parents negligence ⚬ parents lack of care ⚬ availability of ready to eat food ⚬ a and c ⚬ b and c

Out of the 95 (60 boys and 35 girls) subjects only 90 qualified for the research criteria. The inclusion criteria were, age (between 16 to 30 years only), both parents alive and living together with parents since birth, no history of systematic diseases, no parental separation or divorce, unmarried female subjects and subjects who were not overweight since birth. These subjects were then grouped into three categories according to the distribution of the questionnaire. In the first phase, the fathers of the respective subjects were given the questionnaire and two weeks after collecting their filled questionnaires, the questionnaire for mothers of respective subjects were distributed. Once both the questionnaires were returned, the subject was asked to fill the questionnaire. Some of the sensitive questions where response bias and social desirability bias was apprehended, the children questionnaire was used to verify the parents' response. The data from the respective questionnaires was organized in Microsoft excel and was then analyzed using SPSS (IBM) version 22 software.

Results

A total of 450 subjects, that comprised 310 boys (68%) (average age 22.7 years) and 140 girls (32%) (average age 21.3 years) ranging from the age of 16 and 30 years were screened for the Body mass index. Table 1 illustrates that about 20 % (n=90) of the screened subjects were either overweight or obese. The problem of overweight /obesity (Ow/Ob) was higher in girls (23.58%) than in boys (18.38%). Average BMI for boys was 28.9 while that of girls was 27.2 (normal =24.9). Among the selected sample, 30.8% belonged to those families whose parents were not

obese, while 7.3 % had both parents either overweight or obese, while the rest (61.9%) of subjects had one of the parent overweight or obese. The relation between obesity and parents age at the time of the birth showed more chances of a child being obese if fathers age is between 31 to 40 years (51.42%) and mother's age is less than 20 years (58.89%). Potential variables that are related to obesity are illustrated in **Table 2**. Pampering, rewarding and promoting of unhealthy habits was more associated with mothers while fathers showed an equal predilection in other unhealthy eating habits (praising child on finishing entire food, encouraging eating outside, not knowing the drawbacks of fast food/packed food, not stressing the child to consume proper and entire meals especially breakfast and promoting eating while watching television). Regarding promoting social activity in which physical activity is an essential component both parents were found to inadvertently discourage child's activity in one way or the other. Mothers encouraged the child to use cars (64.28%), not encouraging child to develop friendship with physically active children (87.02%), tendency to compare the child with another child (63.34%) while fathers inadvertently did the same by getting annoyed if a child was playing outside (60.32%), avoiding a situation to go out (49.67%). Both parents showed less encouragement to promote social activity by visiting family friends or relatives.

Table 1: Demographic details of the study subjects

			Category	n	%
Total subjects (450) Non obese (360) (80%) Obese (90) (20%)	Boys (310)		Non obese	253	81.16
			Obese/O.W	57	18.38
	Girls (140)		Non obese	107	76.42
			Obese/O.W	33	23.58
Average age of obese subjects (year)	Boys (N=57)		22 .7		
	Girls (N=33)		21.3		
Average height (cms)	Boys (N=57)		171		
	Girls (N=33)		155		
Average weight (kgs)	Boys (N=57)		83.9		
	Girls (N=33)		83.8		
BMI (kg/m^2)	Boys (N=57)		28.9		
	Girls (N=33)		27.2		
Parental obesity	Non Obese		30.8 %		
	Either of the Parent		61.9 %		
	Both Parents		7.3 %		
Social status	High		n=10		14.28%
	Middle		n=38		54.28%
	Low		n=42		46.67%
Age of parent when child was born	**Father**			**Mother**	
	<20	n=10	11.12%	<20	n=53	58.89%
	20-30	n=26	37.14%	21 to 30	n=17	18.89%
	31-40	n=36	51.42%	>31	n=20	22.23%
	41-50	n=13	18.57%			
	>50	n=05	7.14%			
	Father			Mother		
		n	%	*n*	%	
Level of educatio n	Illiterate	17	24.2	24	26.67	
	Elementary	36	40	10	14.28	
	Secondary	30	42.7	34	48.57	
	University	7	10	22	31.4	
Working status of parents	Govt.	22	31.42	21	30	
	Private	15	21.42	35	50	
	Business	30	42.85	2	2.85	
	Others/None	23	25.56	32	35.56	
No of siblings	1 to 3	16	22.85	**Foot note:** Distribution of data in percentage is relative to number of subjects in the group of 90 subjects.		
	4 to 6	28	40			
	7 to 9	15	21.42			
	>9	11	16			

Table 2: Prevalent feeding habits and style among parents of subjects suffering from obesity

S.No	Questions	Father(F) (n=90) (%)	Mother(M) (n=90) (%)	Miscellaneous (no, can't say)(%)
1.	Pampering child with food he desires	61.29	85.71	3
2.	Rewarding the child with food whenever he is upset	63.14	57.14	19.72
3.	Promoting the option to eat outside more regularly than home cooked food	75.71	75.71	18.58
4.	Praising the child more whenever he eats whatever is given to him	67.14	75.67	12.85
5.	Allowing the child to consume outside food whenever he wishes to	64.28	65.71	20
6.	Knowing about drawbacks of packed/fast food	15.12	17.12	12.5
7.	Stressing the child to eat breakfast properly /regularly	7.9/23.9	18.2/38.7	35.7
8.	Offering the child to eat while watching TV or playing games	78	89	17
9.	Consuming meals at appropriate time	9.8	18.9	Not relevant
10.	Scolding child for playing outdoors	31.42	48.57	11.42

Discussion

Child maltreatment is a global phenomenon and is not new to the century that we presently live in. Among its four different types, child neglect is most common. [4] Subtle forms of child neglect can take place with most concerned and caring parents. Care and supervisory neglect by the parents has been associated with development of childhood obesity [8,10,11] while it is also considered as a strong predictor for adulthood obesity. [23] Depressive parents, [24] substance abuse [25] (khat abuse is high in the studied region), limited involvement, [25] intimate partner violence, neglected dental care, [26] poor home environment, physical risks to child at home, poor parental health literacy [27] all amounts to neglect in either one or the other form. Research has implicated that parenting has a major role to play in prevention of children and adults becoming obese. Right from intrauterine development [28] of a child to his adulthood, parents are supposed to be responsible for imparting proper eating habits and a healthy lifestyle in their children.

The discovery of oil in the middle east has resulted in competition between traditional and modern cultures within the generations and overall society. While traditionally Arabs used to work themselves, modern practices like abundance of ready made food, multiple marriages and pregnancies, depending on the maid, luxury vehicles and homes, abundance of electronic media and commercial competition has resulted in an extremely obesogenic environment in which children are growing. One study has reported about 35 to 40 % (57 % males, 61% females) of the adult population to be Ov/Ob in 2013 [29] while Rahim et al [12] reported 66-75 % of adults and 25-40 % of children either Ov/Ob in 2014 with some of the highest prevalence rates in the kingdom of Saudi Arabia. Within the kingdom

the eastern and central regions have reported highest prevalence rates while the southern region were lowest. [30,31] The region of Jizan where the present study was conducted, has reported a prevalence of 12% in 2012-14, while our study reports 20% thus showing an increase of about 8% in the last four years. Females generally are likely to be more obese than males due to hormonal influence [34] and the trend is no different in this region. Our study also reports that girls (23.5%) were more obese than boys (18.3%) which are in agreement with previous studies. [35] Studies in Iran have shown that boys are more obese than girls [36,37] while a study in Saudi Arabia has also shown females were less obese than males. [38]

Table 3: Relevant data showing prevalent parental care about social activity of the child suffering from obesity

S. No	Questions	Father (n=90) (%)	Mother (n=90) (%)	Miscellaneous (can't say)(%)
1.	Encouraging the child to take the car/vehicle for any work	41.42	74.28	8.3
2.	Who used to get more annoyed if the child was not seen around in house(playing outside)	60.32	61.34	8.34
3.	Not encouraging child to develop friends who are physically active	31.7	87.02	4.63
4.	Sleeping during day time after meals	72.72	73.37	1.18
5.	Promoting entire family to visit friends, relatives, beach, etc	24.20	33.50	12.20
6.	Liking for having sports related devices, machines at home	58.28	53.29	12.34
7.	Preferences for going for a walk	12.15	10.38	7.87
8.	Tendency to compare the activity of other children	35.75	63.34	13.12
9.	Curious to know about safety of playing environment of the child	18.67	7.93	3.28
10.	Avoiding situations to go out	49.67	18.56	14.28

Obesity seems to be more prevalent in middle and low class families which is confirmed by this survey also. Obesity rates are higher in children who were born to mothers less than 20 years of age (58%) and to the fathers between 31 and 40 years (51%). This suggests young mothers and middle aged fathers may be more prone to have children who become overweight or obese. Also families having 4-6 children were seen to have higher prevalence of obese child (40%). Since this study is intended primarily to develop dimensions of neglect (supervisory, care and medical) for a future questionnaire, those dimensions can be guided by the findings of this study (table 2 and 3). Feeding style of parents is influenced by feeding culture, home environment, individual preferences, food availability, cooking ability, nutritional knowledge, parenting style and the kind of social activity that parents provide to their children. This study illustrates that both parents use food as a medium to pamper (F 61% and M 85%), reward (F 63%,M57%) and praise (F-67% and M 75%) a child while they also promote outside eating (F and M 75%), irregular and inconsistent meals either directly or indirectly.

We believe that physical activity is influenced vastly by the social activity of a person. Social competition is essential in the society as it motivates a person better than any other motivation. Details relevant to social activity investigated in this research are shown in Table 2. Promoting the physical work in one way or the other was found to be less prevalent in parents whose children were obese.

Conclusion

Obesity is a clinical disorder that requires a multidimensional diagnosis and management. Dietary habits are inherited, but are adaptable along with the lifestyle. Parent education or lack of it that amounts to neglect is fundamental to the prevention of obesity. This study supports previous studies done in Saudi Arabia that obesity is more prevalent in female subjects than male. Other factors like literacy and income also support previous views. The prevalence of obesity studied by by Al-Othaimeen et al shows 11.7% obese individuals in his study, whereas this study shows about 20% obese individuals demonstrating an increase in obesity during the last five years. However, the sample in this study is small and therefore further studies are advised. This study shows that family size, lack of constructive habits, liking for unhealthy diet and factors related to both or either of the parents are related to existence of obesity in an individual.

Acknowledgements

The study reported in this publication, is supported by a grant from Jazan University. The principal investigator and the co-authors do not hold any conflict of interest in reporting the data of this study. The terms of this project have been reviewed and approved by the University in accordance with its policy on objectivity in research

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