



Assessing the validity and reliability of a questionnaire to identify existence of parental neglect in terms of developing feeding style and social activity in obese adult saudi population

Authors

Khurshid A Mattoo^{1*}, Mohd. Moaleem¹, Mosa Shubayr²

¹*Department of Prosthetic dental sciences, College of Dentistry, Jazan University, (KSA)

²Meharry Medical College, Nashville, Tennessee (USA)

*Corresponding Author

Khurshid A Mattoo

Email: drkamattoo@rediffmail.com

Abstract

This study aimed to validate a questionnaire that was formulated to identify existence of parental neglect in regard to the feeding style and social activity in their overweight or obese children. The questionnaire is the result of three different surveys done over a period of time (pilot, pilot and actual study). For negligence of feeding style, six domains were identified [responsibility, perception (5 item), feeding control (4 item), feeding culture (3 item), feeding, environment (6 item), feeding, monitoring (5 item) and feeding restrictions (5 items)] while social activity had a 9 item question. Validity was assessed and evaluated using average congruency percentage during the pilot study while before the actual study the I-CVI for items and for scale were determined. The content validity index for the item and for the scale were excellent with values ranging between 0.83 to 1. Internal reliability for individual questions (Cronbach alpha value of .734 to .915) and of each domain in relation to all questions and the negligence scale demonstrated excellent reliability.

Keywords: child maltreatment, research tools, index, measuring scale, child protection.

Introduction

Saudi Arabia covers 80 percent of the largest peninsula of the world, the Arabian peninsula. With less population distribution over vast areas and large resources of oil and natural gas, economic prosperity has changed the socioeconomic status of Saudis.¹ Socioeconomic boost along with unfavourable weather conditions and unfavourable landscape prompts the population to stay indoors while enjoying the luxury of food and television. Practicing of such behaviour in families has given sudden and alarming rise in the prevalence of overweight and obesity (Ow/Ob) both among the children as well as adults. While between 1988 to 2005, the rise of overweight boys was observed

from 3 to 25%,^{2,3} national survey data of 2013 estimated about 35 to 40% of the adult population to be obese.⁴ Independent studies around the same time (2014-15) have reported 66-75% of adults and 25-40 % of children to be either overweight or obese in the Arab region.⁶

Although its multifactorial aetiology is hereditary in nature in 40-70% of cases,⁷ environmental influences play important role in the remaining cases, while exaggerating those that are genetic in nature. Among environmental influences, parent neglect (child neglect) has been found to have a major influence in both cause and prevention especially on adulthood obesity.⁸⁻¹² The subject of child neglect is a socially sensitive issue in many

conservative cultures and although happening for centuries, there is a dearth of studies where cultural norms suppress any form of open discussion on child and even elder maltreatment. Saudi Arabia has had a long history of harsh physical treatment of juveniles till 1990, after which there has been growing recognition of the scale of child abuse and neglect (CAN) problem.¹³ While in 2010,¹⁴ the Saudi national family registry (NFSR) reported 292 (43% neglect) cases from 38 hospital based child protection centres, the number of reported instances rose to 1,450 in 2012¹⁵ (35% being neglect). After 2012 there has been no further reports of the government. Whether underreporting or not reporting, the fact remains that parent neglect exists and could be a dynamic factor in the development of the alarming prevalence of obesity in the region. Although there are different methods to determine child neglect, the most practical being to observe the home environment of the child. Since cultural, religious and social restrictions do not allow the use of such methods in conservative cultures, therefore, one of the methods to establish parental neglect (in terms of feeding and social activity) is by using a questionnaire as described in a study previously.¹⁶ This study is a further continuation of its previous study and in this study, we assess the validity and reliability of a refined questionnaire which can be used as a tool to measure parental negligence in terms of feeding style and social activity.

Materials and Methods

This study was conducted after appropriate ethical approval from university ethics committee, that conducts research in accordance with Helsinki declaration.¹⁷ Informed consent was obtained wherever appropriate, from all subjects and their parents or legal guardians. Questionnaire used in this study is illustrated in Appendix 1 (after establishing validity and reliability). The questionnaire was the outcome of multiple pre-pilot and pilot surveys that were developed on the basis of focus group discussions.¹⁶ Parental neglect in terms of feeding had six domains (responsibility perception, feeding control, feeding culture, feeding

environment, monitoring and feeding restrictions) while social activity had one domain that contained a set of 9 questions.

Participants: The results are based on multiple surveys that were held at various times. However, for assessing the validity and reliability, the tool was surveyed among 90 adult obese subjects (18 -30 years). In establishing the domains of feeding styles and social activity, random subjects were taken irrespective of their Body mass index during a pilot study.¹⁶ For dual moderator group discussions, recognized social members of the region participated who inhabited the region for generations and possessed thorough knowledge of a population's life style. For test retest reliability, subjects were identified through convenience sampling with criteria of having a BMI above 25, subjects living with their parents both living since childhood and had no evident clinical systemic disorder that could be a cause of their being overweight. The same group of subjects was given the same questionnaire at different period of time (3 months apart).

Validity: The questionnaire was evaluated by a committee of six experts (1 social psychologist, 1 epidemiologist, 2 nutritionists, 1 behavioural analyst and 1 general physician). All members possessed relevant necessary experience in their respective fields. The experts evaluated the validity by using the method of average congruency percentage (ACP) in the first pre-pilot and a pilot study.¹⁸ Evaluation was done for readability, lucidity and viability of wording and layout and style. Domains of parental neglect were inspired by focus group dual moderator discussions done before and during pre pilot and a pilot study. The questionnaire was then translated into Arabic language (local) and then translated back into English according to the 'translation/back -translation method'¹⁹ by two bilinguals having experience of more than 5 years in the respective field. Questions were accustomed according to the socio-cultural conditions and available sports facilities in the region. Content validity was evaluated using Item - content validity index (I-CVI) and scale - content validity index (S-

CVI).¹⁸ For each domain (construct) the interrelationship among items that share sufficient variation was analysed. All unrelated items were eliminated. To study concurrent validity, the questionnaire was surveyed among the parents of obese subjects and parents of non obese subjects. The parent neglect score was calculated for each domain and a combination of six scores for determining the negligence in terms of feeding style. While for social activity, the scores were determined in one general domain.

Reliability: To determine stability of the questionnaire in determining parent neglect, test – retest method was used during which the test was administered twice to the same participants at different times (3 month interval). All subjects were verified environmentally modulated obese subjects. For internal consistency of the questionnaire statistical tests were used (cronbach alpha). Interrater reliability tests were done to ensure equivalence. Parent- child reliability was evaluated based on the parent neglect questionnaire (PNQ) filled by both the child and parent, independently of each other.

Data analysis: For determining the I-CVI, all six judges rated each question/item of the questionnaire in terms of its relevance to the underlying construct to a 4 point ordinal scale (1: not relevant, 2: somewhat relevant, 3: quite relevant and 4: highly relevant). The I-CVI was computed for each item as the number of experts giving a rating of either 3 or 4

divided by total no of experts. An I-CVI higher than 0.8 was considered as significant. Interitem reliability was calculated by cronbach alpha (α) for which a value of 0.70 was considered as significant.

Results

An overview of content validity is represented in Table 1 for both individual items and the parent neglect scale. A total of 13 individual items demonstrated highest index score of 1 (38%) while 24 items showed an index value of 0.8 (62%). About 19 judgements were highly relevant on the assessment scale while the rest were quite relevant. For parent neglect scale, the domain of responsibility perception and feeding culture showed highest index values of 1 while four domains had S-CVI score of 0.83 (feeding control, feeding, environment, monitoring, and feeding restrictions) with social activeness score index of 0.67. Reliability of individual items and various domains of parent neglect scale at the first test and retest using cronbach alpha are illustrated in Table 2. The domain of responsibility, perception (0.900 test – 0.816 retest) and feeding restrictions (0.770 test – 0.812 retest) where the two domains that showed non significant variation in values between the first test and retest. However, both values in the test and retest remained significant.

Table 1: Content validity index of individual items (I-CVI) and content validity index of the scale (S-CVI) for parent neglect questionnaire (PNQ)

Content validity index-item (I-CVI) scores for the parent neglect questionnaire								
S. no	Item	Ex 1	Ex 2	Ex 3	Ex 4	Ex 5	Ex 6	I-CVI
1)	1,3,6,8,10,12,	4	4	4	4	4	4	1
2)	19,26,31,36	4	4	4	4	3	4	.83
3)	4,5,13,15,17,18,	4	3	3	3	3	3	.83
4)	2,7, 9,20, 22,33,35,37	3	3	3	3	4	3	.83
5)	11,16,21,23,24, 29,30,	3	3	3	3	3	3	1
6)	25,27,28	3	4	3	3	3	3	.83
7)	14,37,32,34	4	4	4	4	3	4	.83
Content validity index-scale (S-CVI) scores for the parent neglect domains								
	Domain	Expert 1	Expert 2	Expert 3	Expert 4	Expert 5	Expert 6	S-CVI
1).	Responsibility perception	3	3	3	3	3	3	1
2).	Feeding control	4	4	4	4	3	4	.83
3).	Feeding culture	4	4	4	4	4	4	1
4).	Feeding environment	3	3	3	3	4	3	.83
5).	Monitoring feeding	3	3	3	3	3	4	.83
6).	Feeding restrictions	4	4	4	4	3	4	.83
7).	Social activeness	4	3	3	3	4	3	.67
A value of 0.7 or above is considered significant for validity								

Table 2 Internal consistency (reliability) values of parental characteristics in term of feeding style and social activity among saudi obese population – results of a pilot study

S.no	Parenting characteristics	Internal reliability (Cronbach α) (n=90)	Cronbach alpha based on standardized items ^a	Test retest reliability
1.	Responsibility perception	0.900	0.823	0.816
2.	Feeding control	0.819	0.784	0.802
3.	Feeding culture	0.883	0.721	0.812
4.	Feeding environment	0.915	0.745	0.902
5.	Monitoring feeding	0.734	0.739	0.798
6.	Feeding restrictions	0.770	0.819	0.812
7.	Social activeness	0.795	0.689	0.754
Overall questionnaire (34 items – one item deleted)		0.857	0.794	0.824

Discussion

Neglect is a circumstance where inaction of the parents deprives the child of his basic right. The neglect observed in children is basically either in their care or in their supervision. Social, cultural and more important religious limitations in middle east countries do not allow to observe and identify neglect of a child by observing his home environment as non family members have restrictions to a private house in many of middle east and south east cultures. However, since obesity has a very strong relation with parental neglect, this study is an attempt to prepare a scaled questionnaire that would identify the existence of parental neglect in individuals who are obese. For this study, we evaluated the reliability and validity of a saudi version of a PNQ (parent neglect questionnaire, although neglect is related to only feeding style and social activity). This study discusses the following:

Questionnaire: A questionnaire that would assess the existence of parental neglect has been formulated for this study. Because the construct neglect has highly varied domains, therefore this question focuses only parent neglect in terms of feeding style and social activity, both variables having significant impact on obesity outcome especially adulthood obesity. The questionnaire (Appendix 1) is the outcome of multiple attempts and refinement that is not reflected in this study. The questions/ items presented in the questionnaire are those who were highly valid and reliable although further studies need to be conducted on its

application in different cultures. The questions are based on modification of

Home Observation for Measurement of the Environment (HOME),^{20,21} the home environment questionnaire (HEQ),²² comprehensive feeding practices questionnaire (CFPQ),²³ parenting styles and dimensions questionnaire (PSDQ),²⁴ food frequency questionnaire (FFQ)²⁵ and the validated childhood experience of care and abuse (CECA.Q).²⁶ Since these questionnaires are long and require knowledgeable parents, the questionnaire presented in our study is short with simple language while maintaining the required internal consistency values. The sensitive part of the questionnaire is its drawback also and it is related with the reverse coding for questions that are negatively keyed items. Extreme caution must be exercised while statistical determination in such cases. To assess parent neglect, it is important to use instruments that are non invasive especially in conservative and religious cultures. Moreover, the tool is easy to use, time saving and can be used in children as well as adults. To our knowledge, there are no such questionnaires that have been attempted to assess parental negligence of overweight and obese adults. The usefulness lies in its ability to predict obesity risk in young children whose feeding and social activity has been neglected by their parents. The CECA.Q by Bifulco et al. is a self reported questionnaire whose focus is to assess lack of parental care in terms of neglect and antipathy, physical and sexual abuse before age 17. The drawbacks of the questionnaire are that it is self

reported and response bias will be present in such instruments of measurement. Moreover, reliability and validity can differ based on ethnicity, geography and lifestyle subjects. Social activity assessment in this questionnaire only relates to the responsibility of parents to cultivate such habits in their children. Similarly the same holds true for feeding style also.

Parent neglect scale: To develop the weight of the responses given by the subjects, the level of each item was determined by the following formula: (highest point in likert scale – lowest point in likert scale)/ the number of levels used.²⁷ The outcome of using this formula is that one could assess the overall construct of negligence in terms of statistically and position the subject relative to the scale (Table 3).

Table 3: Scoring of domains of parent neglect

Ranges of parent neglect individual domain scores				
1-1.80	1.81-2.60	2.61 to 3.40	3.41-4.20	4.21 to 5
Very negligent	Negligent	Neutral	Diligent	Very diligent
Range of parent neglect questionnaire (total of 6 domains)				
6-10.8	10.86-15.6	15.66-20.4	20.46-25.2	25.26-30
Very Negligent	Negligent	Neutral	Diligent	Very diligent

Conclusion

This is the first validation and reliability study of Saudi version of the parent neglect questionnaire in terms of developing feeding habits and social activity among their children. The results clearly indicate the instrument is reliable and valid for adults in the age of 18 to 30 years. The questionnaire can be considered as very useful in clinical practice to identify existence of parental neglect in these two domains in overweight and obese subjects. Such assessments are useful both at individual and community level to improve personalized intervention programs and new health policies.

Competing interests

The authors declare that they have no competing interest in publishing the results of the study

Acknowledgements

This study in totality is supported by a grant fund from the 7th research program of Deanship of Scientific Research, College of Dentistry, Jazan

University. We also thank all the participating subjects and their parents for their willingness to distribute information that is personal and sensitive.

References

1. Al-Hazzaa HM. Prevalence and trends in obesity among school boys in Central Saudi Arabia between 1988 and 2005. *Saudi Med J* 2007;28:1569-74
2. Mirmiran P, Sherafat-Kazemzadeh R, Jalali-Farahani S, Azizi F. Childhood obesity in the Middle East: a review. *East Mediterr Health J*. 2010 Sep; 16 (9): 1009-17.
3. Ng SW, Zaghoul S, Ali HI, Harrison G, Popkin BM. The prevalence and trends of overweight, obesity and nutrition-related non-communicable diseases in the Arabian Gulf States. *Obes Rev*. 2011 Jan; 12 (1): 1-13.
4. Institute of Health Metrics and Evaluation (IHME) data visualisation tool, Overweight and obesity patterns by country. Available at: <http://vizhub.healthdata.org/obesity>

5. Abdul Rahim HF, SibalA, KhaderY, Hwalla N, FadhilL et al. Health in the Arab world: a view from within 2 noncommunicable diseases in the Arab world. *Lancet* 2014;383:356-67
6. AlhaqwiA, AlnasirM, Ahmed N, MasaudiE, AlotaibiS, et al. Obesity and overweight in a major family practice centre, central region, Saudi Arabia. *Saudi J Obes* 2015;3:12
7. Silventoinen K, Rokholm B, Kaprio J and Sorensen TI. The genetic and environmental influences on childhood obesity: a systematic review of twin and adoption studies. *International Journal of Obesity (Lond)*. 2010; 34(1): 29-40.
8. Garrahan SM, Eichner AW. Tipping the Scale: A Place for Childhood Obesity in the Evolving Legal Framework of Child Abuse and Neglect. *Yale Journal of Health Policy, Law, and Ethics*, 2012;12 (2): 342-48
9. Gilbert R, Widom GR, Browne K, Fergusson D, Webb E and Janson S. Burden and consequences of child maltreatment in high-income countries. *Lancet*, 2009; 373: 68–81
10. Christoffel KK and Forsyth BW. Mirror image of environmental deprivation: Severe childhood obesity of psychosocial origin. *Child Abuse & Neglect*, 1989; 13: 249–256
11. Noll JG, Zeller MH, Trickett PK and Putnam FW. Obesity risk for female victims of childhood sexual abuse: A prospective study. *Pediatrics*; 2007; 120 (1): e61-7
12. Lissau I, Sorensen TI. Parental neglect during childhood and increased risk of obesity in young adulthood. *Lancet* 1994 Feb 5;343 (8893): 324-7
13. Al-Eissa YA (1998) Child abuse and neglect in Saudi Arabia: What are we doing and where do we stand? *Ann Saudi Med* 18: 105-106.
14. Health Ministry (2010). The National Family Safety Registry Report.
15. Health Ministry (2012). The National Family Safety Registry Report.
16. Mattoo KA, Moaleem M, Shubayr M. An analytical survey to define the dimensions of a scaled questionnaire that would determine the existence of parental neglect in environmentally modulated obese subjects – A pre - pilot and pilot study. *Int. Journal of Medical Research and Pharmaceutical Sciences*, 2018;5 (3): 1-10
17. World Medical Association. Declaration of Helsinki: Ethical Principles for Medical Research Involving Human Subjects. *JAMA*. 2013; 310(20): 2191–94
18. Polit DF, Cheryl Tatano Beck. The Content Validity Index: Are You Sure You Know What's Being Reported? Critique and Recommendations. *Res Nurs Health*. 2006;29:489–97
19. Brislin RW: Back-translation of cross-cultural research. *J Cross Cult Psychol* 1970, 1:185–216
20. Caldwell BM& BradleyRH. Home observation and measurement of the environment. Little Rock: University of Arkansas Press.1978
21. Leventhal T, Senior-O'Hagan MB, Brooks-Gunn J, BingenheimerJB and Earls FJ. The homelife interview about the project on human development in Chicago neighbourhoods: Assessment of parenting and home environment for 3- to 15-year-olds. *Parenting: Science & Practice*, 2004; 4: 211–241
22. Laing JA &SinesJO. The Home Environment Questionnaire: An instrument for assessing several behavioural relevant dimensions of children's environments. *Journal of Pediatric Psychology*, 1982; 7: 425–449.
23. Musher-Eizenman D, Holub S. Comprehensive Feeding Practices Questionnaire: validation of a new measure of parental feeding practices. *J Pediatr Psychol*. 2007;32(8):960–72.
24. Sherman R, Fredman N. Handbook of measurements for marriage and family therapy. Routledge; 2013
25. Mirmiran P, Esfahani FH, Mehrabi Y, Hedayati M, Azizi F. Reliability and relative validity of an FFQ for nutrients in the Tehran lipid and glucose study. *Public Health Nutr*. 2010;13(5):654–62.
26. Bifulco A, Bernazzani O, Moran PM, Jacobs C. The childhood experience of care and abuse questionnaire (CECA.Q): validation in a

community series. Br J ClinPsychol 2005;44/Pt):563-81.

27. Dawes J. Do Data Characteristics Change According to the number of scale points used?

An experiment using 5-point, 7-point and 10-point scales". International Journal of Market Research, 2008; 50 (1): 61–77.

Appendix 1: Parent neglect Questionnaire (PNQ) (Feeding style and social activity)

Category	S.No	Questions	Grades				
Parenting characteristics (feeding)	Responsibility perception	1. How often have you consulted a doctor/ relative/ friend for your child's overweight problem?	Never	Occasionally	Frequently	Mostly	Always
		2. How often have you followed advises given to you by others (like friends, relatives) regarding your child being overweight?					
		3. How often you decide what children should eat and how much portion size they eat					
		4. Have you ever been able to notice that the child's eating habits/behaviour were different from others if there was any?					
		5. How often are you responsible for deciding if your child has eaten right kind of foods?					
	Feeding control	6. *How often do you or your wife eat at irregular times like in middle of night, while watching television etc.	Never	Occasionally	Frequently	Mostly	Always
		7. *Is your child allowed to have snacks between meals?					
		8. *Do you practice giving food as a reward to your children?					
		9. How often do you ask about what your child eats when you are not with him, for example in school, friends and relatives?					
	Feeding culture	10. *Do you try to limit the amount of food your child eats during meals	Never	Occasionally	Frequently	Mostly	Always
		11. *Does your child decide how much sweets he /she wants to eat?					
		12. *Customarily, is a pregnant female encouraged to eat more during her pregnancy					
	Feeding environment	13. How often does the entire family eat together?	Never	Occasionally	Frequently	Mostly	Always
		14. *How often does the family watch television while having meals?					
		15. *How often does the family consume meals not prepared in the house?					
		16. Do you discuss with your children the importance of a healthy diet?					
		17. Are daily meals served at fixed time regularly?					
	Monitoring	18. How often you or your spouse make sure that your child does not eat too much of his / her favourite food?	Never	Occasionally	Frequently	Mostly	Always
		19. How much do you track the child's consumption of high fat milk and /or its products? (E.g. Laban, cheese, butter)					
		20. How often do you keep track of any of the following foods your children eat - sweets, snack food, oil rich food (like khapsa)?					
		21. How often do you clean the house or insist that the house needs immediately cleaning?					
		22. How often would you continue to feed the child, even when he did not want to eat?					
	Feeding restrictions	23. How often did you want the child to eat all of the food on his/her plate?	Disagree	Slightly Disagree	Neutral	Slightly agree	Agree
		24. I have to be sure that I intentionally keep some foods out of my child's reach					
		25. I have to be sure that the child does not eat too many high fat foods					
		26. I have to make sure that the first choice of food to be given to my child when he is hungry is his favourite food					
		27. I have to be sure that my child does not eat too many sweets					
		28. If I did not guide my children eating, he /she would eat much less than he / she should					
Social and physical activity	Social activity	29. How often do you visit your friends/relatives/others with your children?	Never	Occasionally	Frequently	Mostly	Always
		30. How often do you invite your friends/ relatives/ others in your home?					
		31. How often does the family enjoy physical activity with other families, friends e.g in the park?					
		32. For any recreation how often does the child help in carrying things physically					
		33. How often does the child spend time playing outdoors with his friends?					
	34. How often does the child help in cleaning his room or house?						
	35. As a child, how did he /she spend most of his time	Outdoors	Video/TV	Sitting with friends	with		
36. How many approximate hours does your child spend on sleeping	<6 hours	6-8 hrs	8-10 hrs	>10 hrs			
37. Does your child participate in school/college organized cultural and sports events?	Yes	No					
Distribution of items according to their respective measuring variables (scales):							
Parenting characteristics (feeding): Responsibility perception of parents combined (Q.no 1-5), control over feeding (Q no 6-9), practicing feeding culture (10-12), Feeding environment (Q.no 13-18), Monitoring (Q.no 19-22,24), Feeding restriction (Q.no 23, 25-28)							
Social and physical activity: Social Activeness (Q. no 29-37)							
Scoring criteria: questions marked with () are negative keyed items in context of the research and have to be reverse scored during data analysis							