Original Article

Revising the Comprehensive Feeding Practices Questionnaire Used in Planning Preventive Overweight, Obesity, and Underweight Programs for 2–5-year-old Children

Mina Minaie, Khadijeh Mirzaei[1], Ramin Heshmat[2], Ariyo Movahedi[3], Ahmadreza Dorosty Motlagh[1], Mahboubeh Parsaeian[4], Soori Soghra Raghebi[5], Abolghasem Djazayery[1]

Department of Community Nutrition, School of Nutritional Sciences and Dietetics, International Campus, Tehran University of Medical Sciences (IC-TUMS), Tehran, Iran, [1]Department of Community Nutrition, School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences, Tehran, Iran, [2]Chronic Disease Research Centre, Endocrinology and Population Sciences Research Institute, Tehran University of Medical Sciences, Tehran, Iran, [3]Department of Nutrition, Science and Research Branch, Islamic Azad University, Tehran, Iran, [4]Department of Epidemiology and Biostatistics, School of Public Health, Tehran University of Medical Sciences, Tehran, Iran, [5]Department of Clinical Nutrition, Deputy of Curative Affaires, Birjand University of Medical Sciences, Birjand, Iran

Address for correspondence:
Prof. Abolghasem Djazayery, Department of Community Nutrition, School of Nutritional Sciences and Dietetics, Tehran University of Medical Sciences, Tehran, Iran.
E-mail: jazaiers@sina.tums.ac.ir

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Abstract

Background: Overweight, obesity, and underweight are common child health problems in Iran. Child-feeding practices are one of the major factors affecting children's weight through eating behavior and dietary intake. The Comprehensive Feeding Practices Questionnaire (CFPQ), a 49-item measure comprising 12 subscales, assesses parental child-feeding practices. It is used to determine factors that may affect the development of overweight, obesity, and underweight and therefore, helps us plan appropriate preventive action. The aim of this study was to revise and adapt CFPQ to be used for 2–5-year-old children. **Methods:** This study including, 300 mothers selected by simple systematic random sampling, was conducted in the rural and urban areas of Birjand city, Iran. Health workers interviewed the mothers and completed questionnaire according to the standard protocol. Exploratory factor analysis (EFA), tests for internal consistency, and test–retest reliability were conducted. **Results:** EFA resulted in a final questionnaire with 39 items distributed over seven factors, including Healthy Eating Guidance, Modeling, Parent Pressure, Monitoring, Emotion Regulation, Child Control, and Restriction. The internal consistency reliability for the proposal scales was acceptable for five out of the seven factors and all of the seven factors demonstrated excellent test–retest reliability. **Conclusions:** The revised CFPQ is a valid tool for determining the various aspects of parental feeding practices aiming to prevent overweight, obesity, and underweight among 2–5-year-old children.

Keywords: *Comprehensive Feeding Practices Questionnaire, feeding behaviors, feeding practices, validation studies*

Introduction

Overweight, obesity, and underweight are common children's nutritional issues in some provinces of Iran.[1] Parental feeding practices, especially pressure to eat and restriction to food intake, can influence weight outcomes (over- or under-weight) through eating behavior and dietary intake.[2-4]

The Comprehensive Feeding Practices Questionnaire (CFPQ) is an instrument that can determine many new aspects of parental feeding practices. The CFPQ is used for assessing feeding practices of parents of 2–8-year-old children. It consists of a 49-item measure comprising 12 subscales that is completed with using a 5-point Likert response scale. The CFPQ subscales include child control, emotion regulation, encourage balance and variety, environment, food as reward, involvement, modeling, monitoring, pressure, restriction for health, restriction for weight control, and teaching about nutrition subscales.[5]

Understanding the factors that can influence a child's weight, dietary intake, and eating behaviors is very important for planning preventive overweight, obesity, and underweight programs for 2–5-year-old children. The aim of this study was to revise and adapt CFPQ to be used for 2–5-year-old children.

Methods

Translation and content validity of the CFPQ was done in a previous study in Iran, so we used the translated CFPQ in our study.[6] The study was conducted in rural and urban areas of Birjand city, capital city of the South Khorasan province in Iran. An acceptable sample size for doing factor analysis (300 mothers with 2–5-year-old children) was selected with simple systematic random sampling.[7]

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Trained local health workers, after obtaining mothers' agreement and signature of written consent, interviewed them and filled the CFPQ according to the standard protocol. In order to determine test–retest reliability of CFPQ, after 2 weeks, fifty mothers were interviewed again. This research received ethical approved from Tehran University of Medical Sciences' research ethical review board (Ethical Approval code: 9313475003).

Statistical analysis

IBM SPSS Statistics Software (V.23, Chicago, IL, USA) was used for conducting exploratory factor analysis (EFA). A combination of the Kaiser criterion (the eigenvalues >1.5) and scree plots was used to determine the number of factors that should be extracted.[8,9] Items with loading >0.4 were initially included in a factor.[9] Unrelated items that do not belong together and do not determine the construct should be deleted.[10]

The internal consistency of items within each identified factor and all the proposed factor items were tested using Cronbach's alpha, with values >0.7 considered acceptable.[9] Finally, test–retest reliability was tested by calculating Intraclass correlation coefficients (ICCs), for each factor of the proposed factor solution, with scales considered reliable if ICC values were >0.75.[11]

Results

EFA with Varimax rotation determined seven factors that explained 50% of the variance. This resulted in a final questionnaire with 39 items distributed to the seven factors. The factors, items, and loadings from exploratory factor analysis are shown in Table 1. Five excluded items were with a loading of <0.4 and five items were excluded because they did not belong to factor structure. The extracted factors were as follows:

Restriction

This factor demonstrates how much a parent controls a child's food intake and weight gain.

Healthy eating guidance

This factor determines how much a parent models, teaches and encourages healthy eating for the child.

Modeling

This factor assesses how much parents show healthy eating for the child.

Parent pressure

This factor determines how much parents use pressure in order to increase their child's food intake.

Monitoring

This factor indicates how much parents follow the child's consumption of unhealthy food.

Emotion regulation

This factor determines how much parents use food in order to regulate the child's emotional condition.

Child control

This factor determines how much parents let the child control eating behavior.

The excluded items from original factors were as follows:

Items with a loading factor less than 0.4

43. I have to be sure that my child does not eat too many sweets (candy, ice cream, cake, or pastries) (Restriction health).

36. I withhold sweets/dessert from my child in response to bad behavior (Food as reward).

42. I tell my child what to eat and what not to eat without explanation (Teaching about nutrition).

11. Do you allow this child to eat snacks whenever s/he wants? (Child control).

10. If this child does not like what is being served, do you make something else? (Child control).

Items with less meaningful construct

16. I keep a lot of snack food (potato chips, Doritos, cheese puffs) in my house (Environment).

23. I offer sweets (candy, ice cream, cake, pastries) to my child as a reward for good behavior (Food as reward).

19. I offer my child his/her favorite foods in exchange for good behavior (Food as reward).

37. I keep a lot of sweets (candy, ice cream, cake, pies, and pastries) in my house (Environment).

13. Do you encourage this child to eat healthy foods before unhealthy ones? (Encourage balance and variety).

Reliability

Table 2 shows that the internal consistency reliability for the proposal scales was acceptable for five factors (0.727–0.882). The internal consistency for all the proposed factors was acceptable factors (0.873). All the seven factors demonstrated excellent test–retest reliability (correlations above 0.7, all $P = 0.0001$).

Discussion

This CFPQ validation study showed a final questionnaire with seven factors. The results of this study, such as other results of CFPQ validation studies did in New Zealand and Brazil, could not confirm the original CFPQ subscales.[12-14] The New Zealand's version consisted of five factors with 32 items and Brazilian version included six factors with 43 items.[12-14]

It can be clearly observed that the social and cultural differences can lead to producing different results in CFPQ

Table 1: Factors, items, and loading from exploratory factor analysis

Item number in the original 49 questions	Proposed factors and items	Original factor	Factor loading	Mean (SD)
	Restriction			2.7 (1)
27	I encourage my child to eat less so he/she won't get fat	Restriction for weight control	0.773	2.6 (1.5)
29	I give my child small helpings at meals to control his/her weight	Restriction for weight control	0.718	2.2 (1.4)
35	There are certain foods my child shouldn't eat because they will make him/her fat	Restriction for weight control	0.699	2.6 (1.6)
34	I restrict the food my child eats that might make him/her fat	Restriction for weight control	0.666	2.9 (1.5)
41	I don't allow my child to eat between meals because I don't want him/her to get fat	Restriction for weight control	0.655	2.3 (1.4)
45	I often put my child on a diet to control his/her weight	Restriction for weight control	0.650	2.6 (1.5)
33	If my child eats more than usual at one meal, I try to restrict his/her eating at the next meal	Restriction for weight control	0.648	2.3 (1.4)
40	I have to be sure that my child does not eat too much of his/her favorite foods	Restriction for health	0.617	3.2 (1.5)
21	If I did not guide or regulate my child's eating, s/he would eat too much of his/her favorite foods	Restriction for health	0.579	2.7 (1.5)
28	If I did not guide or regulate my child's eating, he/she would eat too many junk foods	Restriction for health	0.481	3.3 (1.5)
	Healthy eating guidance			4 (0.79)
25	I discuss with my child why it is important to eat healthy foods	Teaching about nutrition	0.697	4.3 (1)
24	I encourage my child to try new foods	Encourage balance and variety	0.664	4 (1.2)
26	I tell my child that healthy food tastes good	Encourage balance and variety	0.578	4.4 (0.9)
31	I discuss with my child the nutritional value of foods	Teaching about nutrition	0.556	4.2 (1)
18	I have to be sure that my child does not eat too many high-fat foods	Restriction for weight control	0.527	3.6 (1.4)
32	I encourage my child to participate in grocery shopping	Involvement	0.527	3.7 (1.4)
22	A variety of healthy foods are available to my child at each meal served at home	Environment	0.519	4.3 (1)
15	I involve my child in planning family meals	Involvement	0.513	3.9 (1.3)
20	I allow my child to help prepare family meals	Involvement	0.464	3.2 (1.5)
14	Most of the food I keep in the house is healthy	Environment	0.457	4.1 (1.2)
	Modeling			4.3 (0.8)
47	I try to show enthusiasm about eating healthy foods	Modeling	0.792	4.4 (0.9)
48	I show my child how much I enjoy eating healthy foods	Modeling	0.773	4.5 (0.9)
44	I model healthy eating for my child by eating healthy foods myself	Modeling	0.741	4.5 (0.9)
46	I try to eat healthy foods in front of my child, even if they are not my favorite	Modeling	0.668	3.9 (1.3)
38	I encourage my child to eat a variety of foods	Encourage balance and variety	0.445	4.2 (1)
	Pressure			2.7 (1.15)
39	If my child eats only a small helping, I try to get him/her to eat more	Pressure	0.785	2.8 (1.5)
30	If my child says, "I'm not hungry," I try to get him/her to eat anyway	Pressure	0.784	2.3 (1.5)

Contd...

Table 1: Contd...

Item number in the original 49 questions	Proposed factors and items	Original factor	Factor loading	Mean (SD)
49	When he/she says he/she is finished eating, I try to get my child to eat one more (two more, etc.) bites of food	Pressure	0.699	2.9 (1.6)
17	My child should always eat all of the food on his/her plate	Pressure	0.596	2.9 (1.4)
	Monitoring			4.03 (0.83)
2	How much do you keep track of the snack food (potato chips, Doritos, cheese puffs) that your child eats?	Monitoring	0.746	4.1 (1)
1	How much do you keep track of the sweets (candy, ice cream, cake, pies and pastries) that your child eats?	Monitoring	0.712	4 (0.9)
4	How much do you keep track of the sugary drinks (soda/pop, Kool-Aid) this child drinks?	Monitoring	0.613	3.9 (1.1)
3	How much do you keep track of the high-fat foods that your child eats?	Monitoring	0.456	3.9 (1.2)
	Emotion regulation			2.09 (0.85)
8	Do you give this child something to eat or drink if s/he is bored even if you think s/he is not hungry?	Emotion regulation	0.726	1.9 (1)
7	When this child gets fussy, is giving him/her something to eat or drink the first thing you do?	Emotion regulation	0.616	2.5 (1.2)
9	Do you give this child something to eat or drink if s/he is upset even if you think s/he is not hungry?	Emotion regulation	0.610	1.9 (1)
	Child control			3.5 (0.8)
6	At dinner, do you let this child choose the foods s/he wants from what is served?	Child control	0.710	3.6 (1.1)
5	Do you let your child eat whatever s/he wants?	Child control	0.594	2.9 (1.2)
12	Do you allow this child to leave the table when s/he is full, even if your family is not done eating?	Child control	0.504	4 (1.1)

SD=Standard deviation

Table 2: Internal consistency and test–retest reliability on the Comprehensive Feeding Practices Questionnaire

Factor	Intraclass correlation coefficient (*n*=50)	Internal consistency of 300 samples (*n*=300)
Restriction	0.955	0.882
Healthy eating guidance	0.930	0.843
Modeling	0.723	0.821
Emotion regulation	0.860	0.668
Pressure	0.934	0.727
Monitoring	0.833	0.737
Child control	0.90	0.451
Total	-	0.873

validation studies so that we determined some noticeable differences between ours and the original scale structure.[15]

In our study, four of the seven proposed factors were similar to factors in original model that included monitoring, modeling, emotion regulation, and parent pressure.[5] Healthy eating guidance was a new factor proposed in the New Zealand and Brazil CFPQ validation studies.[12-14] Healthy eating can affect a child's dietary intake and dietary behavior.[16,17]

Restriction was a combination of restriction for weight control and for health subscales. Restriction for weight control and restriction for health subscales have similar constructs, so that in a previous study, parents could not determine the differences between these two subscales.[5]

Restrictive child-feeding practice is one of the important practices that can affect children's weight.[18] Decreasing in restrictive parent feeding practices during child obesity treatment could improve a child's body mass index; therefore, modification in restrictive feeding practices is one of the good approaches in child treatment obesity program.[19]

Child control did not include all items from the original CFPQ.[5] Child control was not one of the proposed subscales in Brazilian validation studies.[13,14]

Food as reward and environment subscales could not be extracted in this study. In the Norwegian validation study, environment factor was divided into a separate factor. The first factor reflected availability of healthy foods in the home environment and the second factor reflected availability of

unhealthy foods in the home environment.[20] Two items of the environment subscale showing availability of healthy foods in the home environment were included in the healthy eating guidance subscale and two items showing availability of unhealthy foods in the home environment were not in relevant subscale (monitoring) and were excluded from the monitoring subscale.

Food as reward was not extracted in this study. Today's parents are aware that rewarding children with food is not a good recommendation. Considering the role of teaching parents through the health system and the media about child healthy feeding behavior, it is apparent that mothers do not use low food as reward in feeding practice. In our study, most of the mothers disagreed with the food reward practice.

Decreasing the number of questions from 49 to 39, by removing 10 items that did not belong to any of the proposed factors, has the potential to drop the response burden. Considering the role of proposed factors in a child's weight status and dietary intake, we recommend its use for determining parental feeding practices.

Conclusions

A revised version of the CFPQ is a valid tool for assessing child-feeding practices for 2–5-year-old children in Iran. Determining child-feeding practices through nutrition service package in the health system and taking suitable actions can improve a child's weight and dietary intake in preventive underweight, overweight, and obesity prevention program.

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Conflicts of interest

There are no conflicts of interest.

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