

PILOT STUDY: SURVEY TOOLS FOR ASSESSING PARENTING STYLES AND FAMILY CONTRIBUTORS TO THE DEVELOPMENT OF OBESITY IN ARAB CHILDREN AGES 6 TO 12 YEARS

Suzan H. Tami, MS¹; Debra B. Reed, PhD, RDN, LD¹; Elizabeth Trejos, PhD²; Mallory Boylan, PhD, RDN, LD¹; Shu Wang, PhD¹

Objectives: Our pilot study was conducted to test the reliability of the Caregiver's Feeding Styles Questionnaire (CFSQ) and the Family Nutrition and Physical Activity Assessment (FNPA) in a sample of Arab mothers.

Design: Twenty-five Arab mothers completed the CFSQ, FNPA, and the Participant Background Survey for the first administration. After 1-2 weeks, participants completed the CFSQ and the FNPA for the second administration. The two administrations of the surveys allowed for test/retest reliability of the CFSQ and the FNPA and to measure the internal consistency of the two surveys.

Results: Pearson's correlation between the first and second administrations of the 19-item scale (demandingness) and the 7-item scale (responsiveness) of the CFSQ were .95 and .86, respectively. As for the FNPA, Pearson's correlation was .80. The estimated reliabilities (Cronbach's alpha) of the CFSQ increased from .86 for the first administration to .93 for the second administration. However, the estimated reliabilities of the FNPA slightly increased from .58 for first administration to .59 for the second administration.

Conclusion: In our pilot study of Arab mothers, the CFSQ and FNPA were shown to be promising in terms of reliability and content validity. *Ethn Dis.* 2015;25(4):463-468; doi:10.18865/ed.25.4.463

Keywords: Pilot Study, Parenting Style, Arab Mothers, Nutrition, Physical Activity, Caregiver's Feeding Styles Questionnaire (CFSQ), Family Nutrition and Physical Activity Assessment (FNPA), Childhood Obesity

INTRODUCTION

Family environmental factors and parenting styles can be major determinants of obesity risk in children.¹⁻⁴ According to the Centers for Disease Control and Prevention, in 2012, 18% of children (aged 6-11 years) were obese, and 21% of adolescents (aged 12-19 years) were obese in the United States.⁵ In Arabic-speaking countries, the prevalence of obesity in children and adolescents ranges from 5% to 14% in males and from 3% to 18% in females.⁶ However, there is a lack of accurate and comprehensive data on the extent of the problem of obesity among Arab children.⁷ To prevent obesity in Arab children, there is a need for research on parenting styles and family factors contributing to obesity so that nutrition education programs can be developed to address these factors. The validation

and reliable Caregiver's Feeding Styles Questionnaire (CFSQ) and the Family Nutrition and Physical Activity Assessment (FNPA) have been used to identify family nutrition and physical activity behaviors that contribute to excessive weight in children in studies that included a diversity of ethnicities (African Americans, Caucasians, and Hispanics).⁸⁻¹³ However, no studies were found that have used these parenting assessment surveys in Arab populations. Prior to using the CFSQ and the FNPA in-

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¹Department of Nutritional Sciences, Texas Tech University

²Department of Human Development and Family Studies, Texas Tech University

Address correspondence to Suzan H. Tami, MS; Department of Nutritional Sciences; Texas Tech University; Box 41240; Lubbock, TX 79409-1240; 806-834-6629; 806-742-3042 (fax); suzy.tami@ttu.edu.

strument for intervention research with Arab mothers to address childhood obesity, it is essential to determine the reliability and validity of these parental assessment tools for this target population. Therefore, our pilot study was conducted to test the CFSQ and the FNPA for reliability and validity (content validity) with Arab mothers in the United States.

METHODS

For pilot studies, a sample of approximately 20-25 participants is considered to be sufficient for an expected alpha of .80 to assess reliability and validity.¹⁴ Forty Arab mothers, with children aged 6-12 years, were recruited during the “Family Night” event at the Islamic Center of South Plains in Lubbock, Texas. Mothers who were interested in participating provided their phone numbers, and were contacted later to complete all the surveys in person with the first author (SHT). Since culture appropriateness is important to reliability and validity, surveys were translated to Arabic by SHT and reviewed and evaluated for content validity by a bilingual (Arabic/ English) graduate Nutritional Sciences student with children in the priority age range. All surveys were available in English and Arabic. For the first administration, the Study Consent Form, Participant Background Survey, CFSQ, and the FNPA were completed. After 1-2 weeks, SHT met again with participants to complete the CFSQ and the FNPA for the second administration. Mothers were given health education materials based on USDA’s MyPlate in

appreciation of their time.¹⁵ The two administrations of the surveys allowed for test/retest reliability of the CFSQ and the FNPA instrument to be determined. Internal consistency of the two surveys was also evaluated with Cronbach’s alpha (coefficient alpha). Study protocol and measures were approved by Texas Tech University’s Human Research Protection Program.

MEASURES

Participant Background Survey

The Participant Background Survey was designed to obtain demographic data, including age, weight, height, income, employment, and education level. Using the self-reported height and weight, body mass index (BMI) was calculated and categorized according to guidelines from the Centers for Disease Control and Prevention.¹⁶ In addition, questions relative to the acculturation of participants, such as used and preferred language and specific cultural background, were included in the survey.

Caregiver’s Feeding Styles Questionnaire (CFSQ)

The Caregiver’s Feeding Styles Questionnaire (CFSQ) has been used with Whites / Caucasians, Hispanics, and African Americans in an effort to better understand childhood obesity.⁸⁻¹² The CFSQ measures the overall feeding style of parents based on two dimensions: demandingness and responsiveness. “[D]emandingness refers to how much the parent encourages eating, whereas responsiveness refers to how

parents encourage eating, that is, in a responsive or nonresponsive way.”¹⁰ Using the typological approach to scoring the CFSQ, two scores were derived – demandingness and responsiveness and measured on a 5-point Likert scale (ranging from *never* to *always*). To score demandingness, the total mean of the 19 items was calculated; to score responsiveness, the mean of 7 items (child-centered: 3+4+6+8+9+15+17) over the total mean score was calculated. Then, the median splits for the sample on two dimensions of demandingness and responsiveness were calculated. Based on their scores on demandingness and responsiveness, participants were categorized into four feeding styles: 1) Authoritative Feeding Style - high demandingness/high responsiveness; 2) Authoritarian Feeding Style - high demandingness/low responsiveness; 3) Indulgent Feeding Style - low demandingness/high responsiveness; and 4) Uninvolved Feeding Style - low demandingness/low responsiveness.

Family Nutrition and Physical Activity Assessment (FNPA)

The Family Nutrition and Physical Activity Assessment (FNPA) was developed in collaboration with the Academy of Nutrition and Dietetics using a comprehensive evidence analysis-based approach and has been used with a wide variety of populations including Whites, African Americans, Hispanics, Asians, and other minorities (eg, Native Americans, and mixed ethnicities).¹³ FNPA collects detailed information on home obesogenic environments and behaviors. The FNPA assesses 10 risk factors found to be as-

RESULTS

Table 1. Participant characteristics of the Arab mothers (n = 25)

Characteristics	n	%	Mean (SD)
Age (years)			33.96(7.01)
25 – 34	14	56.0	
35 – 44	9	36.0	
>45	2	8.0	
Level of education			
High school or less	2	8.0	
Bachelor’s degree or some college	13	52.0	
Post bachelor’s degree	10	40.0	
Length of time in the original country (years)			23.56(6.67)
<20 years	3	12.0	
20 – 29 years	18	72.0	
30 – 39 years	4	16.0	
Length of time in US (years)			7.32(6.25)
<10 years	17	68.0	
10 – 19 years	6	24.0	
>20 years	2	8.0	
Plan to move back to home country	20	80.0	
Employed	6	24.0	
Student	14	56.0	
Number of children at home			2.84(0.94)
2-3	20	80.0	
4-5	5	20.0	
Household income			
<\$20,000	5	20.0	
\$20,000- \$39,999	5	20.0	
>\$40,000	10	40.0	
Would rather not say	5	20.0	
Body mass index			
<18.5 (underweight)	0	0	
18.5 – 24.9 (normal weight)	9	36.0	
25 – 29.9 (overweight)	12	48.0	
≥ 30 (obese)	4	16.0	

Of the 40 Arab mothers recruited, 25 mothers (2 Egyptians, 3 Jordanians, 2 Moroccan, 3 Palestinians, 14 Saudi Arabians, and 1 Syrian) living in Lubbock, Texas participated. All participants were married, and most were under the age of 45 (33.96 ± 7.01 years, mean ± SD) (Table 1). Most participants were well educated with 23 (92%) having at least a bachelor’s degree. Almost all participants were born and spent most of their lifetime in the Middle East, and most of them (n=20) had a plan to go back to the Middle East. More than 65% lived <10 years in the United States and were not students. More than two-thirds were not employed and 80% had three or less children in the household. Household income varied as 10 of the 25 mothers reported <\$40,000 per year while 10 mothers reported >\$40,000 per year, and five mothers declined to respond. Nine mothers had a normal BMI while 12 mothers were overweight, and four mothers were obese.

Thirteen of the 25 mothers chose to take the Arabic version of the surveys. The Arabic language was the most-used language for speaking, reading, and writing for 64% of participants (Table 2). It also was the most-used language at home for 88% of the participants and the most-used language with friends for 76% of participants. In addition, the Arabic language was the preferred language for speaking, reading, and writing for 88% of the participants. Forty-eight percent (n=12) of participants reported that they socialized about equally with Americans and Arabs (Table 3). However, 76% (n=19)

sociated with obesity in children: 1) breakfast patterns; 2) family eating; 3) food choices; 4) beverage choices; 5) parental restriction and reward; 6) TV/ video game/computer screen time; 7) TV usage; 8) family activity; 9) child physical activity; and 10) family bedtime routine. The FNPA tool uses a Likert type scale of four (1 represents negative or more obesogenic family environment and 4 represents positive or less obesogenic family environment).

Statistics and Data Analysis

For the demographic questionnaire, frequencies, means, and stan-

dard deviations were calculated for variables using Microsoft Excel 2007. The Statistical Package for Social Sciences (SPSS, v. 20, 2012) software was used to calculate the scores and reliabilities of the CFSQ and the FNPA for the two administrations. Pearson’s correlation was used to determine the relationship between the 1st and 2nd administrations (test-retest reliabilities) of the CFSQ and FNPA. Cronbach’s alpha was used to determine internal reliability in the two measures. The paired t-test was used to compare the FNPA mean score between the two administrations.

Table 2. Most-used language and preferred language

	Language	n	%
Most-used language for speaking, reading, writing	Arabic	16	64
	Arabic, English	8	32
	Arabic, English, French	1	4
Most-used language at home	Arabic	22	88
	Arabic, English	3	12
Most-used language with friends	Arabic	19	76
	Arabic, English	5	20
	English	1	4
Language preferred to speak, read, write	Arabic	22	88
	Arabic, English	3	12

reported 0 times a week for eating with Americans, and 20% (n=5) self-identified themselves as bicultural. The majority (64%; n=16) of participants reported that they eat out once a week or more with 44% (n=11) reporting that they eat takeout food or delivery food at least once a week.

Caregiver’s Feeding Styles Questionnaire (CFSQ) and Family Nutrition and Physical Activity (FNPA) Assessment

The 25 participants completed the CFSQ and FNPA at two times with at least one-week interval (7-

14 days) between the two administrations to assess test-retest reliability and internal consistency. As for the CFSQ, Pearson’s correlation for the demandingness scale and the responsiveness (or child-centered strategies) scale were -.79 and -.85, respectively (data not shown). As for the FNPA, Pearson’s correlation was .80 (data not shown). The estimated reliabilities (Cronbach’s alpha) of the CFSQ increased from .86 for the first administration to .93 for the second administration (Table 4). However, the estimated reliabilities of the FNPA slightly increased from .58 for ad-

ministration 1 to .59 for administration 2. An additional analysis, using a paired t-test, showed that there was no significant difference in the means of the two administrations ($t=.072$, $df =24$, $P=.943$).

To further assess the content validity of the two surveys to Arab mothers, participants were encouraged to add any comment if they felt their experiences/practices were different than those in the surveys. Their comments included:

- 1) The using of money as a reward to consume healthy foods or drinks (one mother stated that she gave each of her children a dollar every night to encourage them to drink a cup of milk) (related to CFSQ);
- 2) Complaint that one of their children was a picky eater (A couple of Arab mothers complained that among their children, one was a picky eater and asked for suggestions to solve this issue) (related to both CFSQ and FNPA); and
- 3) Consuming whole milk instead of low-fat milk (Several Arab mothers commented that their children consumed whole milk, not low-fat milk) (related to FNPA).

Table 3. Socializing, self-identification, eating out

	n	%	
Socializing with others	Mostly Arabs	11	44
	Mostly Americans	2	8
	Both about equally	12	48
Self-identification	Arab	20	80
	Bicultural	5	20
Times of eating with Americans	0 times/ week	19	76
	3 or 4 times/ year	1	4
	1-2 times/ week	5	20
Times of eating out	Once/ month	6	24
	Once/ week or more	16	64
	3-4 times/ week	3	12
	Never	3	12
Times of eating takeout food, delivery	Once/ year	1	4
	3 or 4 times/ year	3	12
	Once/ month	7	28
	Once/ week or more	11	44

DISCUSSION

This study sought to test the reliability of the Caregiver’s Feeding Styles Questionnaire (CFSQ) and the Family Nutrition and Physical Activity Assessment (FNPA) in Arab mothers living in Lubbock, Texas.^{8, 13} Twenty-five mothers completed these surveys at two times with at least a one-week interval between the two administrations, which allowed for test-retest reli-

ability to be determined of the CFSQ and the FNPA and to measure the internal consistency of the two surveys. The Arab mothers in our study appeared to be traditional as shown by the findings that almost 88% used Arabic language at home, and it was their preferred language. To increase accuracy and validity, the mothers had the option to take the survey in Arabic or English. Regardless of the lan-

In our pilot study of traditional Arab mothers, the CFSQ and FNPA were shown to be promising in terms of reliability and content validity.

guage of the survey they chose, there were only a few comments from the mothers, related to bribing children, having picky eaters, and consuming whole milk, which indicated the surveys could be more culturally appropriate. For future research, these comments should be considered.

Table 4. Reliability of surveys in the two administrations

Survey	Number of items	1st administration α	2nd administration α
The CFSQ	19	.86	.93
The FNPA	10	.58	.59

As for the CFSQ, high correlations for the demandingness scale and the responsiveness scale were $-.79$ and $-.85$, respectively, suggesting excellent test-retest reliability of the questionnaire. These were consistent with findings from Hughes et al (.85 for demandingness and .82 for responsiveness).⁹ Compared with other populations, Whites, African Americans, Hispanics, and Latin Americans (Table 5^{9-12,19}), mothers in this study showed high demandingness (3.53) and somewhat lower responsiveness (1.08). Correlations for the FNPA were .80, which were higher than Ihmels's findings ($\alpha=.72$).¹³ The coefficient alpha of the CFSQ increased from .86 for the first administration to .93 for the second administration, indicating strong internal consistency while the coefficient alpha of the FNPA slightly increased from .58 in administration 1 to .59 in administration 2. While a Cronbach's alpha of $\geq .7$ is considered acceptable, .58 or .59 is considered "questionable" in terms of

internal consistency.¹⁷ A higher Cronbach's alpha may have been achieved in our study with a larger sample size because even if only a few mothers change responses from administration 1 to administration 2, their responses may significantly affect the results. After the completion of our study, a new version of the FNPA was released that has different response options.¹⁸ Thus, research with this new version and a larger sample would allow for additional evaluation of reliability.

Reliable and valid measures of parenting styles and family factors contributing to children's nutrition and physical activity behaviors are needed for intervention studies on childhood obesity in different ethnic groups. In our pilot study of traditional Arab mothers, the CFSQ and FNPA were shown to be promising in terms of reliability and content validity. It will be helpful to conduct additional studies to determine reliability and construct validity, including factor analysis, in a larger sample of Arab mothers.

Table 5. Caregiver's feeding styles questionnaire median scores on demandingness and responsiveness across different populations^{9-12, 19}

	N	Ethnicity	Child's age (years)	Demandingness	Responsiveness
Hughes et al, 2005	231	African American, Hispanic	3-5	2.79	1.16
Hughes et al, 2008	718	African American, Hispanic, White	3-5	2.79	1.17
Hennessy et al, 2010	99	African American, Hispanic, White	6-11	2.63	1.21
Hughes et al, 2011	177	African American, Hispanic	3-5	3.00	1.14
Tovar et al, 2013	140	Haitian, Brazilian, Latin American	3-12	2.89	1.12
Tami's pilot study, 2015	25	Arab	6-12	3.53	1.08

Demandingness refers to how much the mother controls and encourages child's eating (the total mean of the 19 items).

Responsiveness refers to how much the mother accommodates and acquiesces to child's hunger and satiety cues (the mean of 7 items - child-centered: $3+4+6+8+9+15+17$ - over the total mean score).

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AUTHOR CONTRIBUTIONS

Research concept and design: Tami, Reed, Trejos, Boylan, Wang. Data analysis and interpretation: Tami. Manuscript draft: Tami, Reed, Trejos, Boylan, Wang.

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