Supplementary Figure 1 - Confirmatory factor analysis (CFA) model
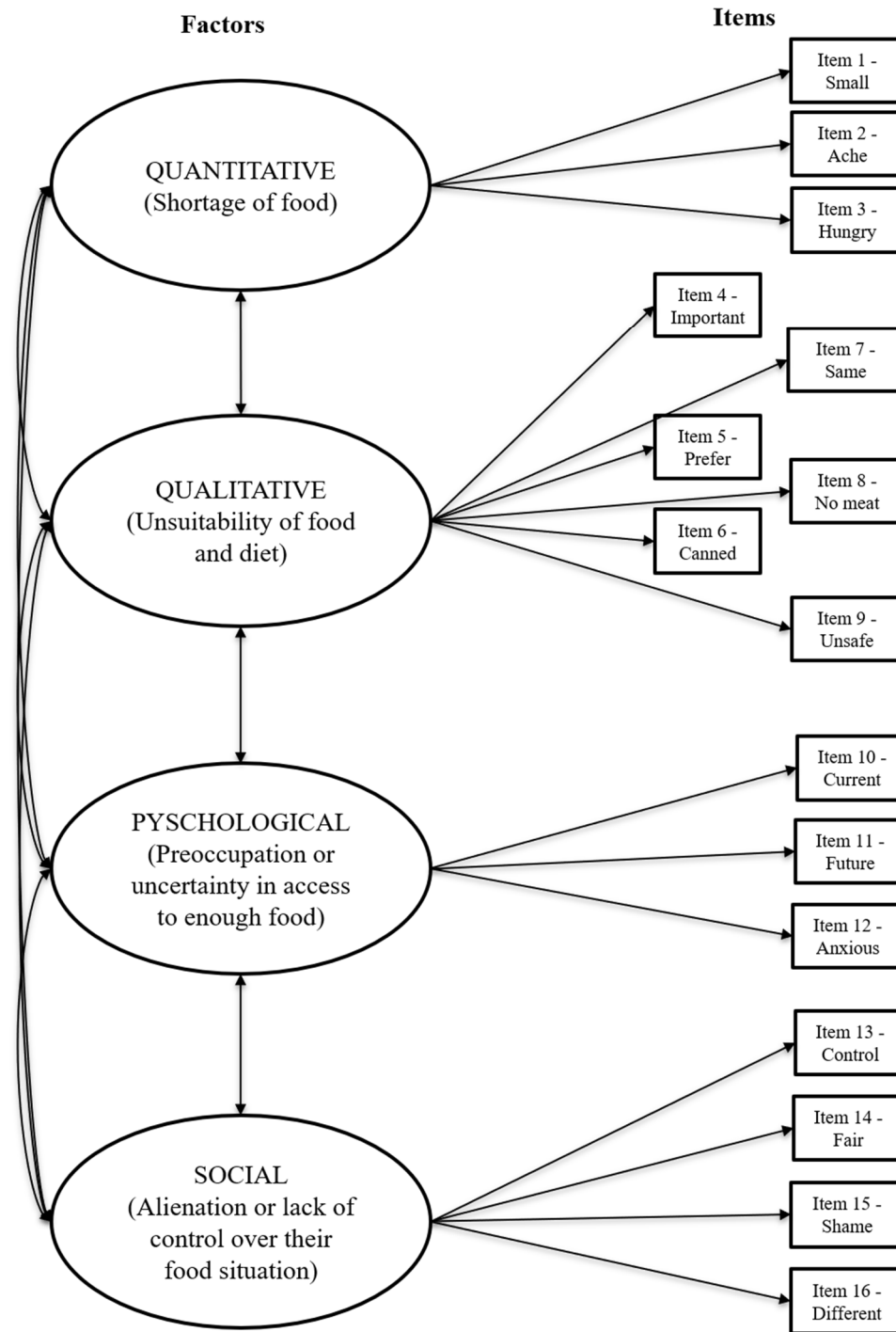

Latent variables (factors) are shown in circles and observed variables (scale indicators) are shown in squares. Single-headed arrows represent the associations between latent variable and indicators. Double-headed arrows represent the covariance between two factors. This model included four factors and 16 observed variables in the Four Domain Food Insecurity Scale (4D-FIS).

Supplementary Figure 2 - Agreement between each food insecurity scale (4D-FIS and USDA FSSM adult scale) and qualitative categorizations
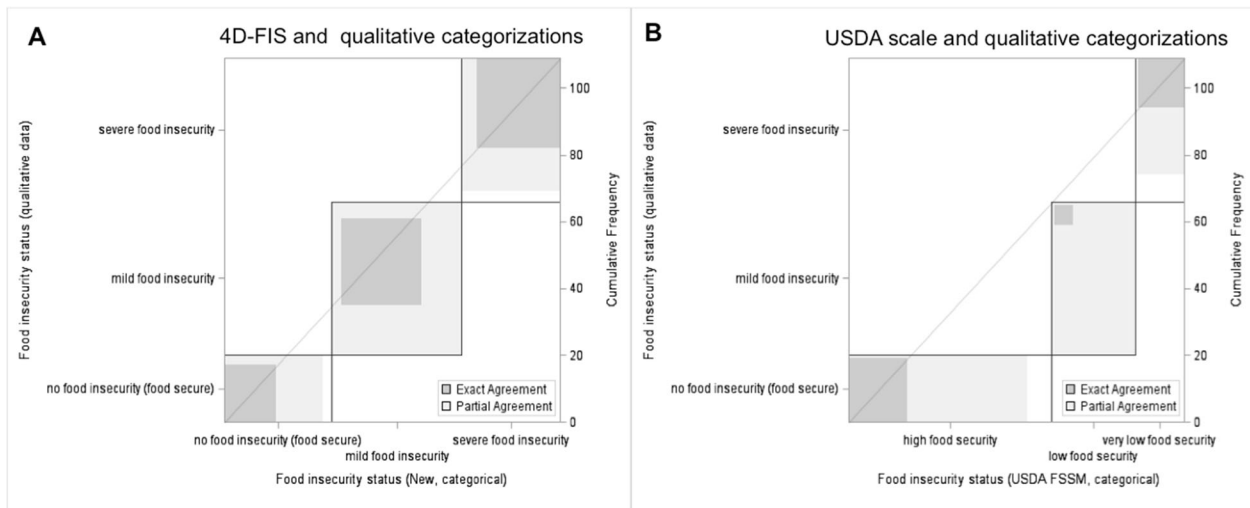
Based on qualitative data from the interview summaries, food insecurity status was defined as a three-level categorical variable: food secure, mildly food insecure, and severely food insecure. The two panels depict agreement between each food insecurity scale and the food insecurity determination based on qualitative data (nutrition interview summaries). Agreement was determined using kappa (κ), and suggested benchmarks for interpreting κ coefficients are: κ<0 poor, 0-0.2 slight, 0.2-0.4 fair, 0.4-0.6 moderate, 0.6-0.8 substantial, and 0.8-1 almost perfect [41]. **Panel A** shows agreement in categorization between the 4D-FIS and the qualitative categorization. The κ = 0.54; the 95% CI for the κ:0.42, 0.66. **Panel B** shows agreement in categorization between the USDA FSSM adult scale and the qualitative categorization. The κ = 0.29; the 95% CI for the κ: 0.19, 0.39.

FOUR DOMAIN FOOD INSECURITY SCALE (4D-FIS)

Supplementary Table 1 – Items distributions for all items in the 4D-FIS

	Item in 4D-FIS	Mean	SD	Minimum	Maximum	Cronbach's alpha (α)
	Quantitative					0.69
1	How often did you eat something small or a snack instead of eating a full meal because there was not enough food?	3.1	0.9	1	4	
2	How often did your stomach ache, cramp, or feel uneasy because you needed to eat but there was not enough food?	3.6	0.7	1	4	
3	How often did you go to bed feeling hungry because you needed to eat but there was not enough food?	3.7	0.7	1	4	
	Qualitative					0.79
4	How often did you eat very little of the foods you thought were important because there was not enough food?	3.2	0.9	1	4	
	How often did you eat plenty of healthy foods because there was enough food?*	1.7	0.8	1	4	
5	How often did you eat very little foods you preferred to eat because there was not enough food?	2.9	0.9	1	4	
	How often did you eat a wide variety of foods in the same meal because there was enough food?*	2.0	0.9	1	4	
6	How often did you eat only canned foods, boxed foods, or packaged foods for	3.3	0.9	1	4	

	several days in a row because there was not enough food?				
7	How often did you eat the same foods or meals over and over again because there was not enough food?	3.2	0.9	1	4
8	How often did you have a main meal without meat because there was not enough food?	3.2	0.9	1	4
9	How often did you eat foods that were bruised, moldy, or looked unsafe to eat because there was not enough food?	3.9	0.5	1	4
	Psychological				0.91
10	How often did you worry that you would not have enough food for that night or the next night?	3.2	1.0	1	4
11	How often did you worry that you not have enough food next week or the week after that?	3.1	1.0	1	4
12	How often did you feel anxious or stressed because you did not know how you would get enough food?	3.1	1.0	1	4
	Social				0.76
13	I felt that I had little control over my food situation.	3.0	1.1	1	4
14	It's not fair that some people can have all the food they need and I cannot have all the food I	3.0	1.2	1	5

	need.				
15	I felt embarrassed or hid my food situation from others.	3.2	1.2	1	5
16	I felt different from other people because I could not get enough food.	3.4	1.0	1	5

This table shows the original 18 items included in the 4D-FIS. Two items (marked with asterisk) performed poorly and were removed from the scale and subsequent analyses (How often did you eat plenty of healthy foods because there was enough food? and How often did you eat a wide variety of foods in the same meal because there was enough food?). In addition, this table shows the internal consistency (Cronbach's α) for each subscale.

*Item had very small and negative correlations with other items and was removed.

Supplementary Table 2 - Estimated inter-factor correlations for the four-factor model of food insecurity

Factor	Quantitative	Qualitative	Psychological	Social
Quantitative	-			
Qualitative	0.70*	-		
Psychological	0.70*	0.83*	-	
Social	0.38*	0.47*	0.61*	-

The four factors represent the multiple domains of the food access dimension of food insecurity assessed in the 4D-FIS. Factors were continuous variables, and correlations were Pearson's correlations. *$p<0.05$

Supplementary Table 3 - Descriptive statistics for 4D-FIS overall and subscale scores for full sample of women (n=109) and by food insecurity status

4D-FIS component	Full sample (*n* =109)			Food secure (*n* = 20)			Mildly food insecure (*n* = 46)			Severely food insecure (*n* = 43)		
	Mean	**SD**	**IQR**	**Mean**	**SD**	**IQR**	**Mean**	**SD**	**IQR**	**Mean**	**SD**	**IQR**
Quantitative subscale	0.43	0.81	1	0.05	0.22	0	0.15	0.36	0	0.91	1.1	1
Qualitative subscale	1.3	1.7	2	0.05	0.22	0	0.72	0.96	1	2.5	1.9	3
Psychological subscale	0.86	1.3	2	0.00	0.00	0	0.37	0.88	0	1.8	1.3	3
Social subscale	1.2	1.4	2	0.15	0.67	0	0.74	1.1	1	2.1	1.4	2
Scale total	3.8	4.2	7	0.25	0.72	0	2.0	2.3	3	7.3	4.2	7

Food insecurity status was determined with qualitative data (from the nutrition interview summaries). The 4D-FIS assessed four domains of food insecurity: quantitative, qualitative, psychological, and social. Subscale score were the sum of the number of affirmative responses for that domain. The raw scale total was the sum of affirmative items across the subscales. For each subscale, the minimum score was 0. The maximum score varied for each subscale: quantitative (maximum score = 3), qualitative (maximum score = 6), psychological (maximum score =3), and social (maximum score = 4).

SD = Standard deviation
IQR = Interquartile range