

Development of a school lunch observation measure to assess school district lunch menu implementation

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Background & Purpose

The prevalence of obesity among young children is a major child development and population health problem. The most recent estimate of the prevalence of child and adolescent obesity in the United States is 17% and is based on data for 2011-2014 (Ogden, Carroll, Law. Almost 1 in 5 children in the U.S. are obese, and Nebraska is one of only 5 states with increasing rates of obesity among children 2 to 4 years old residing in low-income WIC households. One factor that may contribute to childhood obesity prevention is the provision of healthy and nutritious meals in settings where children spend their time, such as child care and schools. The United States Department of Agriculture (USDA) meal policy requires school districts to adopt a meal pattern which aims to ensure students are receiving well balanced meals in the appropriate portion sizes, however evidence shows there is a disparity in the quality and quantity of the meals served in schools within the same district. Also, schools within the districts are expected to deliver the feeding program as intended. However, there is lack of information to determine if schools deliver the school district lunch menu as intended or if they adhere to the feeding program.

The purpose of this study was to develop and to establish content validity of a school lunch menu observation tool (SLMOT), that was designed to assess lunch menu implementation in school districts.

Methods

A content domain and development phase included a review of the USDA lunch meal pattern and existing literature on observations of meals in child development settings. Based on the reviews, an expert research team defined an initial content domain for the SLMOT. A content validity phase included 5 expert researchers and practitioners working in school settings rating the content validity and utility of the SLMOT.

Results

The content domain SLMOT was based on the USDA meal pattern and included the Entree 1, Entree 2, Side 1, Side 2, Fruit and Vegetable. Each menu item was rated on menu quality (fresh/whole, transitional/clean label, or highly processed), menu implementation at defined quality level (yes, no), meal appearance, and meal quantity (quantity met, quantity not met, not present). The content validity was established by raters rating all items except for meal appearance. The numeric value of content validity ratio for this tool was determined by Lawshe (1975) table. The meal appearance measure was eliminated, and the remaining items were retained based on a minimum value of 0.99.

Table 1. Calculation of CVR for the instrument items.

Items	*Ne	**CVR	Interpretation
1. Menu Implementation Outcome	5	1.0	Retained
2. Quality	5	1.0	Retained
a. Fresh/Whole item	5	1.0	Retained
b. Transitional item	5	1.0	Retained
c. Highly Processed item	5	1.0	Retained
d. Meal Appearance	4	0.6	Eliminated
3. Quantity	5	1.0	Retained

NOTE: * Number of experts rated the item essential or useful, **CVR or Content Validity Ratio = (Ne-N/2)/(N/2) with 5 persons at the expert panel (N=5), the items with the CVR >=0.99 were retained at the instrument and the rest eliminated.

PRE-K to 5

FORM A

Date: _____ School District: _____ School Name: _____
Circle the appropriate score.

List Items from the Actual Recipe Under Each of the Food Group.	Quality: Fresh/whole item*; Transitional item*; Highly processed item*		
	Fresh/whole	Transitional	Highly processed
Entrée 1:			
a.	0	1	2
b.	0	1	2
c.	0	1	2
d.	0	1	2
e.	0	1	2
Entrée 2:			
a.	0	1	2
b.	0	1	2
c.	0	1	2
d.	0	1	2
e.	0	1	2
Side 1:			
a.	0	1	2
b.	0	1	2
c.	0	1	2
Side 2:			
a.	0	1	2
b.	0	1	2
c.	0	1	2
Fruit:			
a.	0	1	2
b.	0	1	2
c.	0	1	2
Vegetable:			
a.	0	1	2
b.	0	1	2
c.	0	1	2

PRE-K to 5

FORM B

Start Time: _____ End Time: _____
shade the appropriate time and score

Beginning <input type="checkbox"/>	LUNCH OBSERVATION PERIOD				End <input type="checkbox"/>
	Menu Implementation Outcome*		Quality: Meal Appearance*		
	Menu Implementation Outcome		All Items Displayed/Observed Are Not Attractive	All Items Displayed/Observed Are Somewhat Attractive	All Items Displayed/Observed Are Attractive
	Yes	No			
Actual School Menu for The Day					
Entrée 1:	0	0	0	0	0
Entrée 2:	0	0	0	0	0
Side 1:	0	0	0	0	0
Side 2:	0	0	0	0	0
Fruits 1:	0	0	0	0	0
Fruits 2:	0	0	0	0	0
Fruits 3:	0	0	0	0	0
Vegetable 1:	0	0	0	0	0
Vegetable 2:	0	0	0	0	0
Vegetable 3:	0	0	0	0	0
Quantity*					
	Quantity Met	Quantity Not Met	Not Present		
Vegetable	0	0	0		
Fruits	0	0	0		
Grains (any type)	0	0	0		
Meat/Meat Alternatives	0	0	0		
Fluid milk (cups)	0	0	0		

Conclusions and Future Directions

- The SLMOT has preliminary content validity for assessment of implementation of school district lunch program in school settings.
- The SLMOT was designed to identify disparities in the dietary quality and quantity of meals served in schools across the United States.
- The study recommends school food authorities, public health researchers and policy makers to use this tool for further research in school nutrition to identify trends and problems in the school lunch program.
- Future research should establish the utility, validity, and reliability of the tool through direct observation.