Developing a pediatric obesity risk assessment tool to assess the EFNEP family environment

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ABSTRACT

Background: No rapid assessment of pediatric obesity risk exists for low-income parents and particularly for low-literate parents. Our purpose was to develop such a tool for EFNEP families.

Method: Literature searches identified 12 determinants of childhood obesity in the family environment under parent control. Corresponding behaviors were identified for each determinant. Question text came from 3 sources: EFNEP database, published papers, our previous work and interviews with EFNEP parents [n = 77].

Results: Parents recommended word substitutions for 24 items, response options for 28 items, instructions and title. They suggested visual substitutions for 18 items. Parents preferred a declarative item format. They preferred photographs of EFNEP parents and children over stock photos of middle class models.

Program materials: The current version of Healthy Kids with 45 items and a reading level of Grade 1-2, can be used in tandem with My Child At Meal Time about child feeding. The tools, Healthy Kids Instruction Guide and MCMT Instruction Guide are available for EFNEP at www.Townsendlab.ucdavis.edu.

METHODS

Assessment items were developed to measure the quantity and quality of behaviors related to food, physical activity, sleep and parenting practices. Cognitive interviews (n=77) of ethnically diverse parents or caregivers with children between 3-5 years provided qualitative data for instrument development. The interviews were conducted for in-depth comprehension to select text and visuals that were unambiguous to low-literate participants.

Table 1. Behaviors associated with each of 12 diet, lifestyle and parenting-related determinants [a,b]

BEHAVIOR	Model behavior 1	Eat fruit 2	Eat fast food +/or fried food 3	Eat at restaurants 4	Eat cereal RTE. 5	Eat nutrient dense/low fat diet 6	Eat breakfast 7	Eat energy dense/high fat diet 8	Picky eater 9	Availability at home 10	Prepare food 11	Plan meals 12	Family meals 13	Drink milk 14	Drink sodas, sugar 15	Skip breakfast 16	Snacking 17	Limited PA at home 18	Time outdoors 19	TV in bedroom 20	TV monitored by adult 21	Eat in front of TV 22	Eat beans or legumes 23	Direction of relationship with obesity
DIET																								
Fat	x[c]	x	x	x	x	X	x	X			x					x								+
Dietary fiber	x[d]	x			x	x	x	x	x	X						x	X						X	-
Fruit/vegetable	x[d]	x				X		X		x	x	x	x											-
Dairy (calcium)	x		x	x	x		x			x				x	x	x								-
Sweetened Beverage		x	x		x			x						x	x		x							+
Restaurant prepared foods		x	x	x	x			x				x	x	X	X									+
Breakfast					x	X																		-
Energy density	X		X	X		X	x	x								x	x					X		+
LIFESTYLE																								
Physical activity	x																	x	X			X		-
Television [e]	x																			x	x	x		+
PARENTING																								
Parenting style																								

[a] Because sleep is assessed as duration, it is not considered a behavior, and therefore is not part of this table.
[b] PA = physical activity; fruit/veg = fruit and vegetables
[c] Modeling intake of high fat foods.
[d] Parental modeling intake of fruit.
[e] includes video viewing and video gaming time.
[f] This column indicates the direction of the relationship between the determinant of obesity and the specific behavior. (+) indicates a positive association; (-) indicates a negative association.

RESULTS

The resulting 45-item visually-enhanced self-administered tool, with a reading level of Grade 1.3, is a product of parent recommended word substitutions for 24 test items, response options for 28 items, instructions, and tool title. Parents also suggested visuals as substitutes for text for 18 items, identified redundant words for 19 items, and suggested extra-linguistic modifications for 30 visuals. To improve parents' ability to relate to the tool, low-income public health clients were photographed with their children in their homes, backyards and markets demonstrating the 23 obesogenic behaviors among the 45 items.

On average, respondents took about 10-12 minutes to complete the 45-item version of HK meeting our criteria for 'rapid' assessment. Parents with self-identified literacy issues took 25 minutes. Furthermore, the 45 items with their simple format met our criteria for minimal respondent burden for a self-administered tool.

Based on these cognitive interviews, this version of the tool contains 45 items representing 23 behaviors plus sleep and wake up times for 11 determinants of obesity. The 12th determinant, parenting, is represented in a second visually-enhanced tool, *My Child at Meal Time*, and is available elsewhere.

Examples of five items from the current version of this tool, now named Healthy Kids (HK), are shown in Figures 1 and 2abcd.

QUESTION DEVELOPMENT

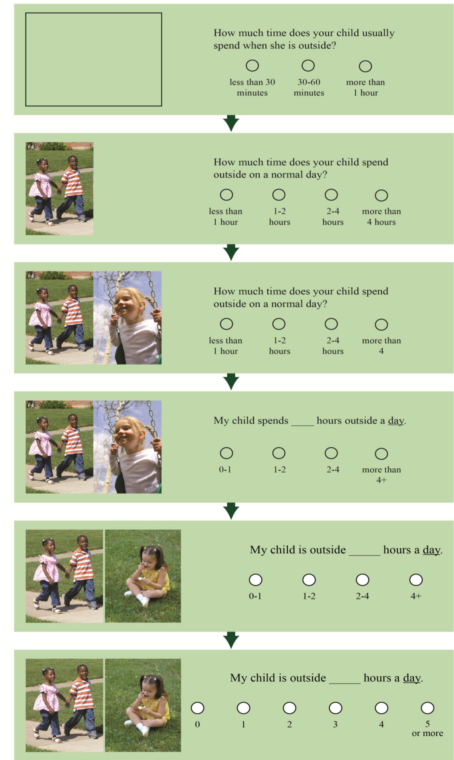

Figure 1

The original wording 'How much time does your child usually spend playing when outside?' has 11 words and 15 syllables [Figure 1]. Parents recommended new wording to increase understanding by parents with minimal literacy skills, 'My child is outside __hours a day', reducing the item to 7 words and 8 syllables plus a 2-part photograph showing children outdoors.

Parents preferred a declarative question format as opposed to an interrogative format. For example, instead of "How often does your child drink soda or sugared drinks?", parents preferred "My child drinks soda ___times a day"

Parents interpreted 'cooking' from the question 'How often do you cook meals for your child?' as removing a TV dinner from the freezer and 'cooking' it in the microwave oven. We tested other words for 'cook': 'cook from scratch', 'fix' and 'prepare'. The single visual was changed to a 2-part visual of a parent cooking food at the stove and a parent grating carrots.

Figure 2abcd

The original question 'How often do you plan meals ahead of time?" was tested with respondents who preferred, 'I plan meals" with a 2-part visual of a mother shopping with a grocery list in the produce section of the supermarket and another mother preparing to freeze 2-3 oz ground beef patties to convey planning

A simple question structure is preferred over the more complex structure. 'How often do you buy vegetables for your child?' with response options [never, seldom, sometimes, often, very often] was simplified to 'I buy vegetables'. Parents preferred 'no, sometimes, often, very often,' for response options.

CONCLUSION

The rapid assessment, Healthy Kids (HK), with a reduced literacy burden, highlights the broad determinants of obesity and corresponding 23 behaviors related to the child's environment and is appropriate for use with low-literate parents. The tool has potential for use by EFNEP for a rapid and easy-to-administer assessment of a child's family environment and the child risk for becoming overweight. This version of *Healthy Kids* and its corresponding instruction guide will be used as a risk assessment tool in tandem with *My Child at Meal Time*, the corresponding parenting measure for primary prevention interventions in community settings. With prevention key, the tool could be a valuable education opportunity for providing individualized feedback and intervention information to parents about changes now to reduce the likelihood of the child gaining excessive weight.

UC CE University of California Agriculture and Natural Resources

Healthy Food, Healthy Families EFNEP Expanded Food and Nutrition Education Program

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- Townsend MS, Sylva K, Martin A, Metz D, Wooten Swanson P. Improving readability of an evaluation tool for low-income respondents using visual information processing theories. J Nutr Educ Behav. 2008;40:181-186.
- Townsend MS, Ganthavorn C, Neelon M, Donohue S, Johns MC. Improving the quality of data from EFNEP participants with low-literacy skills: a Participant-Driven Model. J Nutrition Education Behav. In press.
- Banna JC, Vera Becerra LE, Kaiser LL, Townsend MS. Using qualitative methods to improve questionnaires for Spanish speakers: Assessing face validity of a food behavior checklist. J Am Diet Assoc 2010;110:80-90.
- Ontai L, Ritchie L, Williams ST, Young T, Townsend MS. Guiding family-based obesity prevention efforts in low-income children in the United States: Part 1–What determinants do we target? Intl J Child Adoles Health 2009; Vol 2 (1): 19-30.
- Townsend MS, Ontai L, Young T, Ritchie LD, Williams ST. Guiding family-based obesity prevention efforts in low-income children in the United States: Part 2 –What behaviors do we measure? Intl J Child Adoles Health 2009;Vol 2 (1): 31-48.
- Townsend MS, Shilts MK, Ontai L, Davidson C, Sitnick S. Rapid parental assessment of obesity risk for young children: development and initial validation. Submitted.