GRETCHEN SWANSON
CENTER FOR NUTRITION

RESEARCH ★ PARTNERSHIP ★ EVALUATION

Measures to Assess Household Nutrition Security, Healthfulness Choice, and Dietary Choice

Scoring and Interpretation Guide

The Gretchen Swanson Center for Nutrition

The Gretchen Swanson Center for Nutrition (GSCN) is a non-profit research and evaluation organization providing scientific expertise and partnership in the key public health areas of healthy eating-active living, food insecurity, policy advocacy, and health equity. GSCN specializes in the development and implementation of mixed-methods approaches, which are primarily focused on measuring changes that occur through policy, systems, and environmental interventions. GSCN works nationally providing research and evaluation services to communities, non-profits, academic and government institutions, and policy makers. For more information about the Center, please visit the GSCN website.

Corresponding Author: Eric Calloway, RD, PhD; ecalloway@centerfornutrition.org
Supporting Authors: Leah Carpenter, MPH, Tony Gargano, MPH, Julia Sharp, PhD, and Amy Yaroch, PhD

Table of Contents

www.centerfornutrition.org/food-insecurity-measures

1. Introduction and Measures Description

This user's guide provides instruction and context for administering, scoring, and interpreting three newly developed measures, which assess factors associated with the ability for a household to obtain foods that meet their nutritional and health needs, and dietary preferences, without resource limitations or worry. Three related, but separate, measures were created to assess this – **Household Nutrition Security, Household Healthfulness Choice, and Household Dietary Choice.**

The guide provides a brief background on the development of the measures, descriptions of the measures, examples for potential uses, and guidance for scoring and interpreting scores. The measures and supporting materials and resources can be found on our website. The measures can be used freely and without permission from the authors as long they are implemented according to guidance provided in this user's guide and/or the peer-reviewed study describing the development and validation of these measures, also found on our website, and have cited the peer-reviewed study in any publications developed utilizing these measures.

The items were developed in an iterative process involving input from the scientific literature, an expert advisory group, and interviews with individuals that have experienced or were at risk for food insecurity. The developed items then underwent a cognitive interviewing process where clarity was assessed and wording was refined. Next, the items were pilot tested in a multi-state sample and underwent psychometric testing and validity assessment. For a detailed description of the methods used for developing and validating these measures, please read the corresponding peer-reviewed study mentioned above.

Table 1, below, shows a description of the three measures, along with information about item counts, descriptive statistics, and internal consistency of the measures. These measures are modular and can be used separately or as a set based on the objectives and interests of those implementing them. See the **Appendix** for full item wording and response options. To view the tools in other languages, visit the Nutrition Security and Related Measures webpage.

Table 1. Descriptions of the Household Nutrition Security, Healthfulness Choice, and Dietary Choice Measures

Measure	Description	Item Count	Score Range	Mean Score (SD)[A]	Median (IQR)[A]	Cronbach's Alpha[A]
Household Nutrition Security	Assess a household's perceived ability to acquire healthful foods without resource limitations or worry.	4	0-4	2.58 (0.87)	2.50 (2.00-3.25)	0.85
Household Healthfulness Choice	Assess the degree of control a household perceives they have in acquiring foods that meet their healthfulness needs.	3	0-4	2.47 (0.96)	2.33 (2.00-3.00)	0.79
Household Dietary Choice	Assess the degree of control a household perceives they have in acquiring foods that meet their food preferences.	3	0-4	2.57 (0.90)	2.67 (2.00-3.33)	0.80

[A]Descriptive statistics and Cronbach's alpha based on data from a largely low-income and food insecure sample from CA, FL, MD, NC, and WA.

2. Potential Uses of the Measures

The measures can be used in a variety of ways, such as needs assessments, program evaluations, clinical screenings, and other research activities. The following table presents these uses along with descriptions and examples to further illustrate their potential use. These measures are modular and can be used separately or as a set of two or three measures depending on the needs of the project. Visit the Food Insecurity Related Measures webpage for more examples of potential uses.

Table 2. Potential Uses Across Community and Clinical Settings

Potential Uses	Description	Example Types of Organizations	Example Projects
Needs Assessment	Needs assessments identify key health needs and issues through systematic, comprehensive data collection and analysis.	• Anti-hunger non-profits/non-governmental organizations • Health Departments • Non-Profit Hospitals	A non-profit hospital working with their community could utilize the measures as part of their Community Health Needs Assessment process.
Program Evaluation	Program evaluation is a systematic way to improve and account for public health actions by involving procedures that are useful, feasible, ethical, and accurate.	• Anti-hunger non-profits/non-governmental organizations • Health departments • Philanthropic organizations	An anti-hunger non-profit conducting community programming could utilize the measures as part of their program evaluation to assess impacts.
Intake/Clinical Screening	Screening refers to the use of brief measures to assess risk and identify individuals in need of additional support and/or resources.	• Hospitals/Clinics • Social services (e.g., WIC clinics) • Food pantries/food banks	A food pantry could utilize the brief screener version(s) of the measures as part of their client intake process to screen for households at risk and inform food distributions and referrals to services.
Research/Surveillance	Public health surveillance is the ongoing, systematic collection, analysis, and interpretation of health-related data essential to planning, implementation, and evaluation of public health practice.	• Researchers • Governmental agencies	The measures could be added to an existing surveillance system conducted by a government agency aimed at measuring factors related to food insecurity, to see trends in the measures over time.

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3. Scoring and Interpreting the Measures

3.1. Household Nutrition Security Scoring and Interpretation

Table 3 shows the four items that comprise the Household Nutrition Security measure and the scoring approach. The four items within the measure are scored from 0 (if the participant selects "Always") to 4 (if the participant selects "Never"). Then, the measure's score is simply the mean of the responses.

Higher scores indicate a greater degree of Household Nutrition Security, which means households feel they are able to acquire healthful foods without resource limitations or worry. "Low" scores are 2.00 or below. This cutoff was determined form the first quartile of scores from a pilot study among 380 racially/ethnically diverse and largely low-income and food-insecure households across five states (CA, FL, MD, NC, and WA). In the same study, low scores were associated with increased food insecurity, poorer general health, less frequent intake of fruits and vegetables and "scratch-cooked" meals, and less frequent intake of processed/"heat-and-serve" meals.

The potential for test bias was examined by test mode (paper versus web-based), age, race, gender, and education. There was potential test bias detected in the pilot study sample by test mode. Therefore, in future studies that include this measure in both paper and web-based surveys, the mode of survey delivery should be assessed for influence on the findings and controlled for in analyses if needed.

A one-item screener version was created that may be useful for applications of the measure in situations and settings that limit the number of items that can be administered (e.g., intake/clinical screening). Those selecting "Sometimes," "Often," or "Always" to the item N3 (See Table 3) were considered to have screened positively for "low" Household Nutrition Security. This item was sensitive (93%), specific (78%), and showed good agreement (Cohen's kappa of 0.663) with the full measure.

Table 3. Items Comprising the Household Nutrition Security Measure Along With Item Scoring and Measure Scoring

Item ID	Question Text	Response Options to All Items	Item Score	Measure Score
N1	In the last 12 months, (I/we) had to eat some foods that were not good for (my/our) health and well-being because (I/we) could not get other types of food.	Never = 4 Rarely = 3 Sometimes = 2 Often = 1 Always = 0		Mean of Item Scores
N2	In the last 12 months, (I/we) knew there were things (I/we) should or should not eat for (my/our) health and well-being but could not get healthful food.			
N3	In the last 12 months, (I/we) worried that the food (I/we) (was/were) able to eat would hurt (my/our) health and well-being.			
N4	In the last 12 months, (I/we) had to eat the same thing for several days in a row because (I/we) did not have money to buy other food.			

3.2. Household Healthfulness Choice Scoring and Interpretation

Table 4 shows the three items that comprise the Household Healthfulness Choice measure and the scoring approach. The three items within the measure are scored from 4 (if the participant selects "Always") to 0 (if the participant selects "Never"). Then, the measure's score is simply the mean of the responses. Note that because these items are positively worded, the scoring direction is reversed compared to the other two measures.

Higher scores indicate a greater degree of Household Healthfulness Choice, which means households feel they are freer from external constraints, giving them the ability to meet their dietary healthfulness needs by having control over their food options. "Low" scores are 2.00 or below. This cutoff was determined from the first quartile of scores from a pilot study among 380 racially/ethnically diverse and largely low-income and food-insecure households across five states (CA, FL, MD, NC, and WA). In the same study, low scores were associated with increased food insecurity, poorer general health, less frequent intake of fruits and vegetables and "scratch-cooked" meals, and less frequent intake of processed/"heat-and-serve" meals.

The potential for test bias was examined by test mode (paper versus web-based), age, race, gender, and education. There was potential test bias detected in the pilot study sample by education level and race/ethnicity. Therefore, in future studies that include this measure within samples that are diverse by education level and race/ethnicity, these variables should be assessed for influence on the findings and controlled for in analyses if needed.

A one-item screener version was created that may be useful for applications of the measure in situations and settings that limit the number of items that can be administered (e.g., intake/clinical screening). Those selecting "Never," "Rarely," or "Sometimes" to the item N6 (See Table 4) were considered to have screened positively for "low" Household Healthfulness Choice. This item was sensitive (93%), specific (85%), and showed good agreement (Cohen's kappa of 0.768) with the full measure.

Table 4. Items Comprising the Household Healthfulness Choice Measure Along With Item Scoring and Measure Scoring

Item ID	Question Text	Response Options to All Items	Item Score	Measure Score
N5	In the last 12 months, (I/we) could control if (I/we) (was/were) able to eat quality fruits and vegetables.	Never = 0 Rarely = 1 Sometimes = 2 Often = 3 Always = 4		Mean of Item Scores
N6	In the last 12 months, (I/we) could control if (I/we) (was/were) able to eat foods that were good for (my/our) health and well-being.			
N7	In the last 12 months, (I/we) could control if (I/we) did or did not have only processed foods from a box, bag, or can to eat (e.g., mac and cheese, ramen noodles, canned ravioli, frozen TV dinners, or other processed foods).			

3.3. Household Dietary Choice Scoring and Interpretation

Table 5 shows the three items that comprise the Household Dietary Choice measure and the scoring approach. The three items within the measure are scored from 0 (if the participant selects "Always") to 4 (if the participant selects "Never"). Then, the measure's score is simply the mean of the responses.

Higher scores indicate a greater degree of Household Dietary Choice, which means households feel they are freer from external constraints, giving them the ability to meet their food preferences by having control over their food options. "Low" scores are 2.00 or below. This cutoff was determined from the first quartile of scores from a pilot study among 380 racially/ethnically diverse and largely low-income and food-insecure households across five states (CA, FL, MD, NC, and WA). In the same study, low scores were associated with increased food insecurity, poorer general health, less frequent intake of fruits and vegetables and "scratch-cooked" meals, and less frequent intake of processed/"heat-and-serve" meals.

The potential for test bias was examined by test mode (paper versus web-based), age, race, gender, and education. There was no potential test bias detected in the pilot study sample.

A one-item screener version was created that may be useful for applications of the measure in situations and settings that limit the number of items that can be administered (e.g., intake/clinical screening). Those selecting "Sometimes," "Often," or "Always" to the item D3 (See Table 5) were considered to have screened positively for "low" Household Dietary Choice. This item was sensitive (90%), specific (83%), and showed good agreement (Cohen's kappa of 0.704) with the full measure.

Table 5. Items Comprising the Household Dietary Choice Measure Along With Item Scoring and Measure Scoring

Item ID	Question Text	Response Options to All Items	Item Score	Measure Score
D1	In the last 12 months, (I/we) had to eat some foods that (I/we) did not want to eat because (I/we) could not get other types of food.		Never = 4 Rarely = 3 Sometimes = 2 Often = 1 Always = 0	Mean of Item Scores
D2	In the last 12 months, the types of foods (I/we) ate were always changing because (I/we) did not know what (I/we) would be able to get to eat.			
D3	In the last 12 months, (I/we) had little control over the food (I/we) (was/were) able to eat.			

Appendix

Supplementary Table. Items and response options for the Household Nutrition Security, Healthfulness Choice, and Dietary Choice measures.

Measure	Item Number From Testing	Item Name	Item	Response Options
Nutrition Security	N1	Had to eat unhealthy	In the last 12 months, (I/we) had to eat some foods that were not good for (my/our) health and well-being because (I/we) could not get other types of food.	Never - Rarely - Sometimes - Often - Always - Don't know
	N2	Should or should not	In the last 12 months, (I/we) knew there were things (I/we) should or should not eat for (my/our) health and well-being but could not get healthful food.	Never - Rarely - Sometimes - Often - Always - Don't know
	N3	Worried	In the last 12 months, (I/we) worried that the food (I/we) (was/were) able to eat would hurt (my/our) health and well-being.	Never - Rarely - Sometimes - Often - Always - Don't know
	N4	Same thing in a row	In the last 12 months, (I/we) had to eat the same thing for several days in a row because (I/we) did not have money to buy other food.	Never - Rarely - Sometimes - Often - Always - Don't know
Healthfulness Choice	N5	Control fruits and vegetables	In the last 12 months, (I/we) could control if (I/we) (was/were) able to eat quality fruits and vegetables.	Never - Rarely - Sometimes - Often - Always - Don't know
	N6	Control healthful food	In the last 12 months, (I/we) could control if (I/we) (was/were) able to eat foods that were good for (my/our) health and well-being.	Never - Rarely - Sometimes - Often - Always - Don't know
	N7	Control processed food	In the last 12 months, (I/we) could control if (I/we) did or did not have only processed foods from a box, bag, or can to eat (e.g., mac and cheese, ramen noodles, canned ravioli, frozen TV dinners, or other processed foods).	Never - Rarely - Sometimes - Often - Always - Don't know
Dietary Choice	D1	Did not want to eat	In the last 12 months, (I/we) had to eat some foods that (I/we) did not want to because (I/we) could not get other types of food.	Never - Rarely - Sometimes - Often - Always - Don't know
	D2	Always changing	In the last 12 months, the types of foods (I/we) ate were always changing because (I/we) did not know what (I/we) would be able to get to eat.	Never - Rarely - Sometimes - Often - Always - Don't know
	D3	Little control	In the last 12 months, (I/we) had little control over the food (I/we) (was/were) able to eat.	Never - Rarely - Sometimes - Often - Always - Don't know

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