Appetite 51 (2008) 468–473

Contents lists available at ScienceDirect

Appetite

journal homepage: www.elsevier.com/locate/appet

Research report

Parent food purchases as a measure of exposure and preschool-aged children's willingness to identify and taste fruit and vegetables

Deborah Brzys Busick [a,*], Judith Brooks [b], Sandra Pernecky [b], Rebecca Dawson [a], Joy Petzoldt [a]

[a] Washtenaw County Health and Human Services, 555 Towner, Ypsilanti, MI 48197, USA
[b] School of Health Sciences, 313 Marshall Building, Eastern Michigan University, Ypsilanti, MI 48197, USA

ARTICLE INFO

Article history:
Received 15 October 2007
Accepted 16 January 2008

Keywords:
Fruit and vegetable
Exposure
Food purchases
Food preferences
Children
Parents

ABSTRACT

This study explored whether parents who purchase more fruit/vegetables have preschool-aged children who are able to identify fruit/vegetables and in turn are more likely to consume them. Sixty-two parent–child pairs were recruited during a 4-month period. The data collection included a child interview, a parent/guardian interview, a fruit/vegetable taste test for children, and a month-long food-receipt collection by the parent/guardian. As the percentage of fruit/vegetables purchased by parent increased, the child was more likely to accept all of the fruit/vegetables offered to him/her. A weak correlation was found between the child's ability to name fruit/vegetables and their willingness to try the fruit/vegetables offered. A trend was established between the child's ability to name the 10 fruits/vegetables and parent fruit/vegetable purchases. Parents who purchased the most fruit/vegetables, causing increased exposure, had children who were more willing to taste the fruit/vegetables offered to them.

Introduction

Fruits and vegetables are key ingredients to a healthy diet and contribute to the prevention of many chronic diseases. Of the nine 2005 Dietary Guidelines, six are directly or indirectly related to the amount of fruit/vegetables that should be eaten daily (United States Department of Agriculture, 2004). The American Institute for Cancer Research is one of many research organizations recommending that Americans rethink the ratio of plant-based to animal-based foods in their diet. They suggest that two-thirds or more of every meal should consist of plant-based foods including vegetables, fruit, whole grains, and beans (American Institute of Cancer Research, 2004).

To demonstrate the continuing decline of healthy eating behaviors, the USDA's Economic Research Service (ERS) stated that from 1994 to 1996, children between the ages of 2 and 18 years old drank 17.5 ounces of soda or sweetened tea and ate less than one serving of whole grains per day (USDA Economic Research Service, 2004a). The ERS also reported that between 1970 and 2002, fruit and vegetable availability in the United States was up from 578 pounds to 684 pounds per person per year (USDA Economic Research Service, 2004b). Nevertheless, study after study shows that fruit and vegetable consumption among American children is nowhere near the accepted recommendations (Dennison, Rockwell, & Baker, 1998; Fox, Pac, Devaney, & Jankowski, 2004).

WIC (Women, Infant, and Children) is a federally funded nutrition-education program in the United States that aims to provide supplemental foods, nutrition education, and health-referral services to millions of lower income women and children (USDA Food and Nutrition Service, 2006). WIC was created to address food and health insecurity among the nation's poor, but it is becoming an integral player with expertise and resources to influence the complex milieu of eating and health-related behaviors prenatally and in early childhood. WIC dietitians need to fully understand the development of food preferences and how to identify early-childhood eating behaviors, particularly those related to the consumption of vegetables and fruit. WIC dietitians also need the tools to determine which children and families require the most nutrition intervention regarding fruit/vegetable intake.

The study's purpose is to create an easy yet valid identification tool for nutritionists to use to recognize preschool-age WIC participants who are and are not being regularly exposed to fruit and vegetables by parents and in the home. It also explores whether a parent who purchases more fruit and vegetables have preschool-aged children who are able to identify more commonly eaten fruit and vegetables and whether preschool-age children who identify commonly eaten fruit and vegetables are more likely to consume them.

* Corresponding author.
E-mail address: busickd@ewashtenaw.org (D.B. Busick).

0195-6663/$ – see front matter © 2008 Elsevier Ltd. All rights reserved.
doi:10.1016/j.appet.2008.01.013

Methods

Participants

Sixty-two preschool-aged children along with one parent/guardian from the Washtenaw County WIC Program in Ypsilanti, Michigan were recruited during a 4-month period from February to June, 2006. The Washtenaw WIC clients participated in the study at the end of their regular WIC certification appointments. Convenience sampling was used. Only one of the parents (of 63 asked) refused to participate. Participants were selected based on their willingness to participate and taking into account clinic flow. Each parent/guardian signed a written consent form for himself/herself and their child prior to the study. The study was approved by the Eastern Michigan University Human Subjects Research Review Board, the Washtenaw County Research Committee, and the State of Michigan Institution Review Board.

Design

The study was done with four segments of data collection, including (a) child interview, (b) parent/guardian interview, (c) a taste test administered to the children, and (d) a month-long collection of food purchase receipts by the parent/guardian. Once the child finished his/her interview portion, he/she was asked to clean their hands with hand sanitizer, and a plateful of fruits/vegetables was offered to the child. Parents/guardians were then interviewed in an attempt to focus attention away from the child.

Procedures

Parental surveys were used to identify possible confounding variables and compare to the objective data collected during the taste test and receipt collection. The researcher used the WIC fruit/vegetable food-frequency questionnaire for the parent/guardian and child, as well as a family meal pattern/eating behavior survey. The parental survey was pre-tested for understanding, length, and readability. The parental survey/interview took approximately 20 min to complete.

The children were asked to participate in a "game" or interview. Again the interview format was pre-tested for understanding, appropriateness of questions, and interview length prior to data collection. Both the child and parent interviews were identical in format for every participant.

The child's fruit/vegetable naming interview was conducted using colored, 5 in. $\times$ 7 in. picture cards depicting 10 commonly eaten fruits/vegetables. The picture cards included broccoli, apple, carrot, watermelon, green bean, pineapple, corn, orange, cucumber, and peach.

The interviewer documented whether each child could correctly name each item and identified the color. The interviewer also asked each child to rate the product as either YUCKY or YUMMY.

In the second portion of the interview, the child was offered mini carrots, fresh cucumber slices, fresh plum slices, and orange slices. The fruit and vegetable samples were thinly sliced and presented on a china plate. The child was given a paper napkin and told that he/she could have any or all of the foods on the plate, but he/she did not have to eat the items if he/she did not want them. The interviewer did allow the parent to encourage the child to try the items but did not direct them to encourage the child. The older and younger siblings in the room were also given an opportunity to try the foods. A slightly larger portion of each food was placed on a plate for these individuals. The interviewer documented whether the child accepted the food in their hands, put the item to their mouth, chewed the item, swallowed the item, and how he/she rated the taste.

The parent/guardian who responded to the survey was required to collect their food-purchase receipts for a period of 1 month. Participants were given a secure, cloth bag, permanent marker, a pre-addressed stamped envelope, and written instructions. Participants were instructed to collect receipts from all foods/beverages purchased, including from restaurants, gas stations, convenience stores, etc., and to include all foods/beverages purchased even if those foods were not intended for the child's consumption. Parents were instructed to use the enclosed permanent marker to erase any information on the receipt that the parent did not want to share (e.g., credit card numbers). They were given a pre-addressed envelope, marked with their identification number, a start date, and a return date. A reminder follow-up call was made if the receipts had not been returned within a 2-week time frame after the requested return date.

Results

Basic demographic descriptions

A total of 62 parent–child groups agreed to take part in the study. One hundred percent of the child and parent participants completed the initial questionnaires, interview, and taste testing. Fifty-eight percent ($n = 36$) of the original parent participants completed the 1-month receipt collection. In the entire sample population, 41% ($n = 25$) of the participants were African American, 33% ($n = 20$) were Caucasian, 10% ($n = 6$) considered themselves Other or Multiracial, 8% ($n = 5$) were Hispanic, and the rest included Arabic ($n = 2$) and Asian ($n = 3$). The average age of the child participants was 3.9 years. All parent participants were at the $\leq$185% of the US poverty level to be eligible for the WIC program.

The sample was then separated on the basis of collected data regarding both children's and parents' observed responses and behaviors. The children were grouped in Poor Taster and Good Taster groups on the basis of their willingness to try the four offered fruits and vegetables. The Poor Tasters refused at least one of the four offered fruits/vegetables, and the Good Tasters accepted all of the offered fruit/vegetables. The grouping of parents was dependent on their fruit/vegetable-purchasing habits as reflected by the monthly receipt analysis. Parents were separated into three groups on the basis of both the percentage of fruit and vegetables of the total items purchased and the percentage of food cost spent on fruit and vegetables. Group 1, Little (0–10% of food purchases were fruit/vegetables), Group 2, Some (11–20% of food purchases were fruit/vegetables), and Group 3, Lots (21% or more of food purchases were fruit/vegetables). An ANOVA was used to compare the means for the different groups.

No statistically significant difference was found between the groupings on the basis of race or age of the children. A positive trend toward the age of the child and ability to name the food items was found ($N = 62$), $p = .061$. Within the parent fruit/vegetable purchases grouping ($N = 36$) no statistically significant trend based on race was found, $p = .349$. However, for African American and Caucasian parents the means for the percentage of total foods purchased that was fruit and vegetables were 14% and 15%, respectively. Whereas the other group means were much higher, ranging from 20% (Other) to 31% (Hispanic) ($N = 36$).

Basic descriptive statistics

Most of the children in the sample ($N = 62$) were able to identify the color (7.66 out of 10) and name the different fruit/vegetables (5.29 out of 10). Of the five fruits and five vegetables the children