

Timing of Introduction of Complementary Foods to US Infants, National Health and Nutrition Examination Survey 2009-2014

Chloe M. Barrera, MPH; Heather C. Hamner, PhD, MPH, MS; Cria G. Perrine, PhD; Kelley S. Scanlon, PhD, RD

ARTICLE INFORMATION

Article history:

Submitted 19 June 2017

Accepted 18 October 2017

Keywords:

National Health and Nutrition Examination Surveys
Complementary feeding
Infant feeding
Infant feeding decisions
Solid food introduction

2212-2672/Copyright © 2018 by the Academy of Nutrition and Dietetics.

<https://doi.org/10.1016/j.jand.2017.10.020>

ABSTRACT

Background Although there has been inconsistency in recommendations regarding the optimal time for introducing complementary foods, most experts agree that introduction should not occur before 4 months. Despite recommendations, studies suggest that 20% to 40% of US infants are introduced to foods at younger than 4 months. Previous studies focused on the introduction of solid foods and are not nationally representative. **Objective** Our aims were to provide a nationally representative estimate of the timing of introduction of complementary foods and to describe predictors of early (<4 months) introduction.

Design We conducted a cross-sectional analysis of 2009-2014 National Health and Nutrition Examination Survey data.

Participants The study included 1,482 children aged 6 to 36 months.

Main outcome measures Timing of first introduction to complementary foods (anything other than breast milk or formula) was analyzed.

Statistical analyses performed Prevalence estimates of first introduction to complementary foods are presented by month. Logistic regression was used to assess characteristics associated with early (<4 months) introduction.

Results In this sample, 16.3% of US infants were introduced to complementary foods at <4 months, 38.3% between 4 and <6 months, 32.5% between 6 and <7 months, and 12.9% at ≥7 months of age. In unadjusted analyses, early introduction varied by breastfeeding status; race/Hispanic origin; Special Supplemental Nutrition Program for Women, Infants, and Children participation; and maternal age. In adjusted analyses, only breastfeeding status remained significant; infants who never breastfed or stopped at <4 months were more likely (odds ratio 2.27; 95% CI 1.62 to 3.18) to be introduced to complementary foods early than infants who breastfed ≥4 months.

Conclusions Despite using a broader definition of complementary foods, this analysis found a lower prevalence of early introduction in this nationally representative sample than previous studies that included only solids. However, many young children were still introduced to complementary foods earlier than recommended. Strategies to support caregivers to adhere to infant feeding guidelines may be needed.

J Acad Nutr Diet. 2018; ■:■-■.

IN RECENT YEARS, THERE HAS BEEN SOME INCONSISTENCY in the recommended timing of the introduction of complementary foods to infants. The term *complementary foods* refers to anything other than breast milk and infant formula, both solids and liquids, that are needed when milk feeds alone are no longer sufficient to meet the nutritional requirements of infants.¹ The Dietary Guidelines for Americans (DGA) serve as federal level diet and nutrition guidance for the population ≥2 years of age; however, there is no federal guidance for children under 2 years.² The 2020-2025 DGA are expected to begin incorporating or releasing federal dietary guidelines for this age group.² Some groups that do have guidelines recommend infants be introduced to complementary foods between 4 and 6 months of age³ and others recommend waiting until about 6 months^{1,4,5};

however, most agree that introduction before 4 months is too early and introduction after 8 months is too late. Currently, the American Academy of Pediatrics recommends that infants be introduced to complementary foods at about 6 months of age.⁵ Early introduction has been found to be a risk factor for obesity, although the evidence for this is inconsistent.⁶ Both early and late introduction are thought to be risk factors for celiac disease and type 1 diabetes.⁷ Late introduction has been associated with allergies, micronutrient deficiency, and poor eating patterns at later ages.^{7,8}

Previous studies in the United States have reported that 20% to 40% of infants are introduced to complementary foods before 4 months.⁹⁻¹¹ These studies were not nationally representative and focused on introduction to solid foods without consideration for liquids. In addition, two of these

RESEARCH

studies are more than 10 years old. The timing of when non-milk liquids are introduced is important to consider, as early introduction of non-milk liquids is thought to compromise adequate intake of nutrients that come from breast milk and infant formula, and reduce the duration of breastfeeding among breastfed infants.¹² One Canadian study that focused on the timing of introduction of liquids other than breast milk and infant formula found 45% of infants were introduced to other liquids before 6 months.¹³

The objective of this study was to examine the timing of first introduction of complementary foods (including both solids and liquids other than breast milk and infant formula) among a nationally representative sample of US children. In addition, breastfeeding status and the sociodemographic predictors of early (<4 months) introduction are described. These data may be relevant to the development of the DGA for this age group.²

METHODS

Data Source and Study Sample

This study used data from the 2009-2014 continuous National Health and Nutrition Examination Survey (NHANES). NHANES is conducted in 2-year cycles by the Centers for Disease Control and Prevention's National Center for Health Statistics. Each 2-year cycle obtains nationally representative data on the health and nutrition status of the non-institutionalized civilian population in the United States and uses a complex, stratified, multistage probability design to select participants. Respondents participate in both a household interview and a physical examination at the Mobile Examination Center; only data from the household interview questionnaires were used for this study. The unweighted response rate for the included NHANES survey years ranged from 82.2% to 88.8% for children aged <1 year and 79.0% to 90.4% for children aged 1 to 5 years.¹⁴ The National Center of Health Statistics Research Ethics Review Board approved NHANES protocol and all participants in NHANES provide written informed consent or by proxy for those who are <7 years of age.

The dietary behavior and nutrition questionnaire asks participants 0 to 6 years of age questions pertaining to infant feeding. A proxy, typically the child's parent, responds to these questions. The survey asks how old the infant was when he or she "was first fed anything other than breast milk or formula," including "juice, cow's milk, sugar water, baby food, or anything else that [the infant] might have been given, even water." The sample was limited to children who were reportedly first fed complementary foods before 12 months of age, as it is unlikely a child would receive only breast milk or formula beyond 12 months of life. Breastfeeding status was based on the following questions: "Was [name of the infant/child] ever breastfed or fed breast milk?" and "How old was [name of the infant/child] when [he/she] completely stopped breastfeeding or being fed breast milk? Breastfeeding was categorized as those who received breast milk for 4 or more months or those who did not (ie, never breastfed or stopped breastfeeding before 4 months). For both timing of complementary food introduction and breastfeeding duration, respondents could have answered in days, weeks, or months. NHANES then standardized these variables into days using the conversion factors: 7 days/week, 30.4 days/month, and 365 days/year.

RESEARCH SNAPSHOT

Research Question: When are infants in the United States first being introduced to complementary foods?

Key Findings: Among US children 6 to 36 months of age in 2009-2014, 16.3% were introduced to complementary foods too early (<4 months). An additional 38.3% were introduced between 4 and <6 months and 32.5% were introduced at the recommended 6 to <7 months of age. The remaining 12.9% were introduced to complementary foods at ≥ 7 months.

Information on age; sex; race/Hispanic origin; participation in the Special Supplemental Nutrition Program for Women, Infants and Children (WIC); poverty-to-income ratio; maternal age; and maternal smoking were collected during the in-home interview.¹⁵ Race and Hispanic origin were based on answers to questions on race and Hispanic origin and were reported in the following categories: non-Hispanic white, non-Hispanic black, and Hispanic. Estimates from the Other race/ethnicity category are not presented as a separate group for race/Hispanic origin specific estimates; however, these data are included in all analyses. WIC status was based on child's participation in WIC within the past 12 months and poverty-to-income ratio data; a poverty-to-income ratio ≤ 1.85 was used to determine WIC income eligibility.¹⁶ WIC status was reported as not income-eligible, eligible-received, and eligible-not received. Maternal age was categorized as ≥ 25 years and ≤ 24 years and maternal smoking during pregnancy was categorized as no or yes.

Two sets of analyses were completed, one including children who were 6 to 24 months of age at the time of the NHANES interview and one including children who were 6 to 36 months of age at the time of the NHANES interview. Results were similar between the narrower and expanded age groups, suggesting recall bias was not greater when including slightly older children. Therefore, in order to increase sample size, the expanded age group (6 to 36 months) was used as the analytic sample. The sample was limited to children at least 6 months of age as participants younger than 6 months of age may not yet be receiving complementary foods. In addition, the sample was limited to children no older than 36 months of age, as reporting of timing of introduction of foods and beverages may be less accurate among older children due to the potential for recall bias.

Data were available for 1,747 children 6 to 36 months of age. Children were excluded from analyses if they were reported to have been introduced to complementary foods after 12 months of age ($n=109$), had not yet been introduced to complementary foods ($n=16$), refused to answer the question pertaining to complementary food introduction or did not know when the participant was introduced to complementary foods ($n=5$), or were missing data on breastfeeding status or key sociodemographic variables ($n=135$). This resulted in a final analytic sample of 1,482.

Statistical Analysis

The distribution of the percentage of infants with reported first introduction to complementary foods is described by

Download English Version:

<https://daneshyari.com/en/article/8571912>

Download Persian Version:

<https://daneshyari.com/article/8571912>

[Daneshyari.com](https://daneshyari.com)