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Validation Study of Maternal Recall on Breastfeeding Duration 6 Years After Childbirth

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Abstract

Background: Breastfeeding duration is an important indicator commonly measured in maternal and child health and nutrition research. Maternal short-term recall for both initiation and duration of breastfeeding has been shown to be valid; however, validity of long-term recall is not well understood.

Research aim: This study aims to assess the validity of maternal recall of breastfeeding duration 6 years after childbirth and its association with sociodemographic factors.

Methods: Among 635 mother–child pairs, breastfeeding duration data collected monthly throughout the 1st year after childbirth in the Infant Feeding Practices Study II (IFPS II) were compared to recall data obtained 6 years later during the Year 6 Follow-Up. The intraclass correlation coefficient (ICC) and Bland–Altman plots were examined to study the agreement between the two data sets. Sociodemographic factors associated with accurate recall to within 1 month of the IFPS II breastfeeding duration were assessed using multivariable logistic regression modeling.

Results: Maternal recall of breastfeeding duration was found to be valid 6 years after childbirth with a small median overall bias (1 week) toward overestimation. The overall concordance was high (ICC = 0.84), except for high school graduates (ICC = 0.63) and smokers (ICC = 0.61). Smokers (adjusted odds ratio = 0.52; 95% confidence interval [0.4, 0.8]) and multiparous women (adjusted odds ratio = 0.57; 95% confidence interval [0.4, 0.9]) were also less likely to give an accurate recall of their breastfeeding duration to within 1 month.

Conclusion: Our study found that maternal recall of breastfeeding duration varies by sociodemographic factors but is accurate 6 years after childbirth.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Keywords

breastfeeding; breastfeeding benefits; breastfeeding duration; maternal behavior; mother–infant dyad; predominant breastfeeding

Background

The World Health Organization (2001) recommends exclusive breastfeeding for the first 6 months and then supplementing with the appropriate complementary foods until the infant's 2nd birthday and beyond. Despite the extensive evidence on the benefits of breastfeeding (Bai, Middlestadt, Joanne Peng, & Fly, 2009; Bartick, 2011; Hansen, 2016; Rollins et al., 2016), only a small proportion (21.9%) of mothers in the United States breastfed their infants for 6 months exclusively and (29.2%) were breastfeeding at 12 months among children born in 2012 (Centers for Disease Control and Prevention [CDC], 2015). Breastfeeding has been suggested to confer protective effects against chronic illnesses in later life. The preponderance of research studies (Deoni et al., 2013; Go et al., 2013; Jordan, Cushing-Haugen, Wicklund, Doherty, & Rossing, 2012; McClure, Catov, Ness, & Schwarz, 2012; Scott, Ng, & Cobiac, 2012; Stadler, Musser, Holton, Shannon, & Nigg, 2015) on long-term health outcomes of breastfeeding (including neurodevelopment, cognitive, cardiovascular, obesity, cancers) have mostly been observational, relying largely on the mother's ability to recall her breastfeeding initiation and duration several years after delivery. Also, of the 11 federally funded data sets examining breastfeeding history in the United States, 8 rely on maternal recall, with recall periods varying from 6 months to 18 years (Chapman & Pérez-Escamilla, 2009).

Maternal recall of breastfeeding history has been widely used in retrospective studies to inform population strategies for preventing chronic diseases later in life. However, associations with breastfeeding determined by this retrospective method, although a cost-efficient alternative to prospectively obtaining data, could be altered by recall bias (Rothman, Greenland, & Lash, 2008). Previous studies have shown that a mother's recall accuracy may be affected by the tendency to conform to existing norms or social desirability (Schoch & Raynor, 2012), her socioeconomic status (Tate, Dezateux, Cole, Davidson, & Millennium Cohort Study Child Health Group, 2005), and the imprecision of her memory (Bernard, Killworth, Kronenfeld, & Sailer, 1984).

Nine previous research studies (Barbosa, Oliveira, Zandonade, Neto, & Dos, 2012; Cupul-Uicab, Gladen, Hernández-Ávila, & Longnecker, 2009; Li, Scanlon, & Serdula, 2005; Natland, Andersen, Nilsen, Forsmo, & Jacobsen, 2012; Promislow, Gladen, & Sandler, 2005) have assessed the validity of recall of any breastfeeding duration. Of these, three (Cupul-Uicab et al., 2009; Eaton-Evans & Dugdale, 1986; Quandt, 1987) examined maternal recall within 3 years of delivery whereas the remaining six examined long-term (> 3 years) maternal recall. Among the six studies, five had fairly small sample sizes ($n < 150$). Of the long-term recall studies that assessed recall differences by sociodemographic factors, there was generally no mention of the magnitude and direction of the significant differences observed.

This study will address the research gaps by assessing the validity of maternal recall on breastfeeding duration 6 years after childbirth and its association with sociodemographic factors, the results of which could inform analyses relying on recall breastfeeding data.

Methods

Design and Setting

This study involved a longitudinal one-group nonexperimental secondary data analysis. Breastfeeding data from the Infant Feeding Practices Study II (IFPS II), conducted between 2005 and 2007 by the U.S. Food and Drug Administration (FDA) in collaboration with the CDC (Fein et al., 2008), were compared with breastfeeding data from the Year 6 Follow-Up (Y6FU), conducted 6 years later between March and June 2012 by the FDA and CDC (Fein, Li, Chen, Scanlon, & Grummer-Strawn, 2014). The data were collected from pregnant women of the nationally distributed consumer opinion panel across the United States.

The institutional review boards at Emory University and the CDC exempted this analysis from ethical approval as it involved a secondary analysis of publicly available data.

Sample

Figure 1 illustrates how the sample of this study was obtained. A sample of 3,033 eligible women was selected for the IFPS II study from a nationally distributed consumer opinion panel of 500,000 households across the United States and followed from their third trimester of pregnancy and throughout the 1st year of their infant's life (Fein et al., 2008). The eligibility criteria included a healthy woman of at least 18 years of age who gave birth after at least 35 weeks gestation to a singleton infant weighing at least 5 pounds at birth who had not stayed in intensive care for more than 3 days. To qualify for the Y6FU study (n = 2,958), mothers had to have participated in the IFPS II study and not be subsequently disqualified from it (n = 75) (Fein et al., 2014). The exclusions resulted in a final eligible sample size of 1,542 for the Y6FU study with a response rate of 52.1%. The disqualification criteria for the IFPS II and Y6FU studies are described in the prisma diagram (see Figure 1). Our final analytic sample included 635 mother–child pairs (see Figure 1).

Data Collection

A total of 10 postpartum questionnaires was mailed to our eligible IFPS II mothers with almost monthly intervals to collect data about various infant-feeding practices including cessation of breastfeeding (CDC, 2014). Six years later, the Y6FU data collection was conducted mainly by mail, with telephone interviews offered to those who could not respond to the questionnaires by mail. Additional details have been described elsewhere (CDC, 2014; Fein et al., 2008; Fein et al., 2014).

Measures of Breastfeeding Duration

Any breastfeeding duration was defined as the total time that infants were fed human milk irrespective of whether they additionally received water, other fluids, and solid food (Labbok & Krasovec, 1990). The measures of breastfeeding duration from IFPS II were considered as

the reference (recorded data) as mothers were surveyed repeatedly by mail questionnaires at approximately 1, 2, 3, 4, 5, 6, 7, 9, 10.5, and 12 months after birth. Breastfeeding duration was determined from these almost monthly IFPS II surveys using mothers' responses to the following two questions: "Have you completely stopped breastfeeding and pumping milk for your baby?" and, if yes, "How old was your baby when you completely stopped breastfeeding and pumping milk?" with response options in either days or weeks (CDC, 2014). The recalled measures of breastfeeding duration were obtained from the Y6FU questionnaires. From this survey, mothers were asked again in the same wording as the IFPS II with response options in either weeks or months: "How old was this child when you completely stopped both breastfeeding and pumping milk for him or her?" (CDC, 2014). All the data on breastfeeding duration were converted to weeks using the common factors of 1/7 for days and 4.35 for months.

Independent Variables

To determine the factors that might be associated with the validity of maternal recall on breastfeeding duration, this study included a series of sociodemographic characteristics previously suggested (American Congress of Obstetricians and Gynecologists, 2007; Eaton-Evans & Dugdale, 1986; Huttly, Barros, Victora, Beria, & Vaughan, 1990; Kark, Troya, Friedlander, Slater, & Stein, 1984; Promislow et al., 2005) to be associated with recall of breastfeeding duration and obtained from either the IFPS II for comparison between responders and nonresponders or the Y6FU for all the other analyses. The maternal covariates included were age (in years) (23 to < 30, 30 to < 35, 35 to < 40, ≥ 40 years), education (not a high school graduate, high school, not a college graduate, college or greater), parity (primiparous vs. multiparous), poverty status calculated as the percentage of federal poverty level (poorest < 185%, somewhat poor = 185%–349%, not poor > 350%), race/ethnicity (white, black, Hispanic, other), marital status (married vs. unmarried), occupation (employed vs. unemployed), smoking status (smoker vs. nonsmoker), and participation in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) (yes vs. no). The infant's covariates included gender (male vs. female) and birth weight (in pounds) (< 8.8 lbs vs. ≥ 8.8 lbs).

Statistical Analysis

The recalled data from the Y6FU were linked to the reference IFPS II database using the respondent's sampling identity number. To examine the differences between the two groups, demographic characteristics of mothers who were included in the final analytic sample were compared with those excluded using the independent-samples *t*-test for normally distributed continuous variables or Mann–Whitney *U* test for nonnormally distributed continuous variables and chi-square for categorical variables. Because breastfeeding duration measured in this study was a continuous variable with a nonnormal distribution, the overall median breastfeeding duration for both the baseline and 6 years later was compared using the nonparametric Wilcoxon signed rank test for paired samples. A two-tailed *p* value of .05 or less was set to determine the level of statistical significance. The population medians were presented for recalled and recorded breastfeeding durations both overall and across the different sociodemographic groups, but the comparisons were made by calculating the median of the individual differences between the two data sets. Positive values represented

overestimation whereas negative values represented underestimation of the reference values by the recalled data.

Analytic techniques assessing intertest score differences and plots of intertest differences against means account for measurement biases and have been stated to be more appropriate measures of validity (Karras, 1997) as opposed to tests of correlation. Thus, recalled and recorded breastfeeding durations were compared using intraclass correlation coefficient (ICC) and Bland–Altman plots. The ICC was calculated as a measure of absolute agreement between the recalled and recorded breastfeeding durations for both overall and different sociodemographic groups. It was assessed as a ratio of variability between subjects to the total variability and was performed after ranking the original data for both recorded and recalled duration from smallest to largest (Kim, 2013). Strength of agreement was defined as follows: ICC < 0.4 = poor, 0.4 ≤ ICC < 0.75 = fair to good, and ≥ 0.75 = excellent (Rosner, 2011). Linear regression analysis was also performed to model the relationship between differences in breastfeeding duration (recalled–recorded) and the averages of two methods to determine the existence of proportional bias in the Bland–Altman plot.

Sensitivity and specificity estimates were also calculated as measures of validity. Breastfeeding was arbitrarily dichotomized as ≤ 6 months and > 6 months. Sensitivity was defined as the proportion of mothers who accurately recalled breastfeeding for up to 6 months among those who had reported it during the IFPS II study, and specificity was defined as the proportion of mothers who accurately recalled not breastfeeding up to 6 months among those who did not report it during the IFPS II. These estimates were categorized as excellent (> 90%), moderate (70%–90%), or poor (< 70%) (Piper et al., 1993).

We examined the association of sociodemographic determinants of accurate recall of breastfeeding duration within 1 month using logistic regression analysis. The odds of having accurately recalled breastfeeding duration 6 years after childbirth by sociodemographic characteristics were examined first individually using bivariate logistic regression and then simultaneously using multivariable logistic regression. Sociodemographic variables that were significantly associated with accurate breastfeeding recall ($p < .10$) were then examined after controlling for all the covariates using backward logistic regression. Variables were dropped from the full model if the p value was > .05 and the change in the odds ratio (OR) of any of the variables was less than 10%. SAS® version 9.4 (SAS Institute Inc., Cary, NC, USA) was used for all analyses.

Results

Among our analytic sample of breastfeeding mothers ($n = 653$), the average maternal age at baseline study was 30.1 (± 5.3) years. In addition, the majority of women were white, nonsmokers, married, and multiparous, with fewer than half having a college or higher degree (see Table 1).

The demographics of women included in the final analytic sample differed significantly ($p < .05$) from those excluded ($n = 2,398$) (see Table 1). Specifically, the excluded

participants were slightly younger (28.4 vs. 30.1 years) (data not shown) and included a higher proportion of mothers who were underweight or of normal weight and were more likely to be smokers, unemployed, and unmarried and a lower proportion of mothers with college and higher degrees (see Table 1).

Among the analytic sample, the overall median breastfeeding duration was 21.5 weeks (interquartile range [IQR] = 36.0) for the recorded data in the IFPS II and 26 weeks (IQR = 31.0) for the recalled data in the Y6FU study. The overall median difference was small (1 week), with a large variability (IQR = 6.6 weeks, $p < .0001$), showing a tendency for women to overestimate their breastfeeding duration 6 years later. Positive median differences ranging from 0.3 to 4.6 weeks were observed between recalled and recorded breastfeeding duration across all the sociodemographic variables, indicating a tendency for mothers to overreport their breastfeeding duration 6 years later regardless of their sociodemographic status (see Table 2).

Table 2 also demonstrated a higher overall percentage of overreporting (35.4%) than underreporting (12.0%), with similar patterns observed across most sociodemographic groups. Significant proportional differences between over- and underreporting were observed only between the primiparous and multiparous ($p = .004$) and within the multiparous subgroups ($p = .013$) (see Table 2). Among mothers who overreported their breastfeeding duration ($n = 225$) by more than a month, the median recorded breastfeeding duration was 17.2 weeks (IQR = 28.4) versus 26.0 weeks (IQR = 31), recalled at Year 6. Among those who underreported breastfeeding duration ($n = 76$) by more than a month, the median recorded duration was 34.4 weeks (IQR = 22.5) versus 24.0 weeks (IQR = 20.5), recalled at Year 6. Whereas only 36.0 (~ 6.0%) mothers recalled the exact breastfeeding duration of their infant as recorded, 334 (~ 53.0%) accurately recalled it to within a month and 474 (74.7%) to within 2 months of the recorded data in the IFPS II (data not shown).

The overall agreement between the recorded data in the IFPS II and recalled data in the Y6FU on breastfeeding duration was high (ICC = 0.84) and was highest among mothers who had infants above the normal birth weight (ICC = 0.91). Smokers and high school graduates had the lowest agreement (ICC = 0.61 and 0.63, respectively). In general, agreement appeared to improve with age and education. However, agreement by age decreased slightly for mothers 40 years and older when compared to those between 35 and 40 years, whereas agreement by education was highest among mothers who had college and higher degrees (see Table 2). The sensitivity (91%; 95% confidence interval [CI] [87.6, 93.7]) and specificity (88.5%; 95% CI [84.0, 92.0]) estimates also showed a moderate to excellent overall rating (data not shown).

The Bland–Altman plot showed a small but significant systematic bias with a mean of the differences slightly above zero (see Figure 2). The limits of agreement were narrow and the majority of points ($n = 618$, 97.3%) fell within the 95% limits, with only 17 (3.7%) extreme points falling outside the limits. There was no evidence of proportional bias, as the slope of a regression line fitted to the Bland–Altman plot after the exclusion of two extreme outliers did not significantly differ from zero ($p = .3549$).

The bivariate analyses showed that smoking and parity were the only significant determinants of accurate recall to within 1 month at $p < .10$ (see Table 3). Smokers or multiparous women were less likely to give an accurate recall of their breastfeeding duration compared to nonsmokers or primiparas. After controlling for maternal age, education, marital and employment status, race/ethnicity, WIC participation, and gender and birth weight of the infants, smoking status (adjusted OR = 0.57; 95% CI [0.3, 1.0]; $p = .040$) and parity (OR = 0.58; 95% CI [0.4, 0.9]; $p = .010$) remained significant (see Table 3).

Discussion

After comparing prospectively recorded and recalled breastfeeding duration data from a large U.S. population of mothers in their 1st year after giving birth, maternal recall of breastfeeding duration was found to be valid 6 years after childbirth with a high overall concordance and a small median overall bias toward overestimation. These findings were also consistently observed among different sociodemographic groups except for high school graduates and smokers, where concordance was fair.

Validity of long-term (> 3 years) maternal recall of breastfeeding duration has been previously investigated, and a tendency toward overestimating the recall breastfeeding duration has been reported (Kark et al., 1984; Natland et al., 2012; Promislow et al., 2005; Tienboon, Rutishauser, & Wahlqvist, 1994; Vobecky, Vobecky, & Froda, 1988). Compared to a cohort of 374 Norwegian women with a recall period of 20 years (Natland et al., 2012), the validity of maternal recall 6 years after childbirth as measured by ICC among only breastfeeding mothers was similar. However, it was lower than that studied among 567 Mexican women (ICC = 0.94) with a recall period of 2 to 4 years (Cupul-Uicab et al., 2009). In comparison to other previous studies, our findings in terms of recall accuracy to within 1 month of the recorded data were comparable to that reported by Promislow et al. (2005) of a longer recall period. But, our overall median difference and IQR were smaller than that of the Natland et al. (2012) study with a longer recall period. These findings to some extent are consistent with the suggestions by some researchers (Burns, Moll, Rost, & Lauer, 1987; Oates & Forrest, 1984) that recall accuracy appears to decrease as the length of the recall period increases. The inconsistencies could possibly be due to variations in recall with increasing age and inherent differences between the different population groups.

The association of education with accuracy of long-term maternal recall on breastfeeding has been inconclusive (Launer et al., 1992; Oates & Forrest, 1984; Seidman, Slater, Ever-Hadani, & Gale, 1987; Troude et al., 2008). Our study showed that mothers with higher education (college and beyond) had the highest agreement between recorded and recall breastfeeding. Consistent with the Huttly et al. (1990) study, we observed a significantly small overall recall bias toward overestimation among these women. Contrary to expectations, some of the groups with low socioeconomic status, except for race, were associated with a high agreement, such as unemployed participants, non-high school graduates, and WIC participants.

Our multivariable logistic regression analysis indicated parity and smoking as the only sociodemographic determinants associated with the accuracy of maternal recall of

breastfeeding duration to within 1 month of the IFPS II. This is in agreement with the Cupul-Uicab et al. (2009) study, which showed a higher likelihood of poorer recall among women with four or more children. With regard to smoking, the paucity of research studies examining the association of smoking on accuracy of maternal recall of breastfeeding duration makes it difficult to compare our findings. Natland et al. (2012), however, did not find any significant association between smoking and overreporting. To our knowledge, this study is the first to comprehensively examine long-term maternal recall of breastfeeding duration by sociodemographic factors among a sample of U.S. women at their reproductive age.

The main strengths of our study include its large sample size and wide distribution of study participants across the United States. Information on many sociodemographic factors was collected and examined for its association with the validity of maternal recall on breastfeeding duration. Also, the prospective design and monthly frequency with which the breastfeeding duration data were collected during the 1st year made the data from the IFPS II a good reference for comparison with a similarly worded question surveyed 6 years later.

Limitations

All the variables analyzed for this study were self-reported, thus the possibility of inaccurate reporting cannot be excluded completely.

Other limitations were that the IFPS II is a convenience sample from a consumer panel with an overrepresentation of white women of higher socioeconomic status (Fein et al., 2008), implying that our findings may not be generalizable to the entire U.S. population of breastfeeding mothers. Second, information on the mother's occupation was not captured; therefore, we cannot rule out the fact that their professions could have enhanced their understanding of the importance of breastfeeding and the likely effect on their recall. Third, as is typical of long-term studies, the extent of losses to follow-up (i.e., 52.1% response rate) may indicate the possibility of selection bias in our findings. Fourth, since the response units for the duration questions are not exactly the same (days or weeks at IFPS II vs. weeks or months at Y6FU), some of the differences observed in maternal recall could be due to the common factor used to convert months to weeks. In addition, the reference data on breastfeeding duration were missing for mothers who were still breastfeeding at the last survey of the IFPS II. Even though these mothers tend to breastfeed longer, we could not determine the effect of excluding them on the validity of maternal recall.

Conclusion

Long-term maternal recall of breastfeeding duration was valid even 6 years after childbirth with a small overall tendency toward overestimation. In comparison with primiparity and nonsmokers, multiparous women and smokers had a larger median bias toward overestimation and were associated with lower odds of accurate recall. Future studies should explore the existence, magnitude, and direction of recall bias associated with other sociodemographic factors that may influence maternal recall of breastfeeding duration.

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Key Messages

- A long-term recall of breastfeeding duration with a large sample (n = 635) can yield valuable information about breastfeeding.
- Maternal recall of breastfeeding duration was found to be valid 6 years after childbirth with a high overall concordance (ICC = 0.84).
- Smokers and multiparous women were less likely to give an accurate recall of their breastfeeding duration to within 1 month.
- This study provides data on sociodemographic factors affecting maternal recall accuracy and the direction and magnitude of the significant differences.

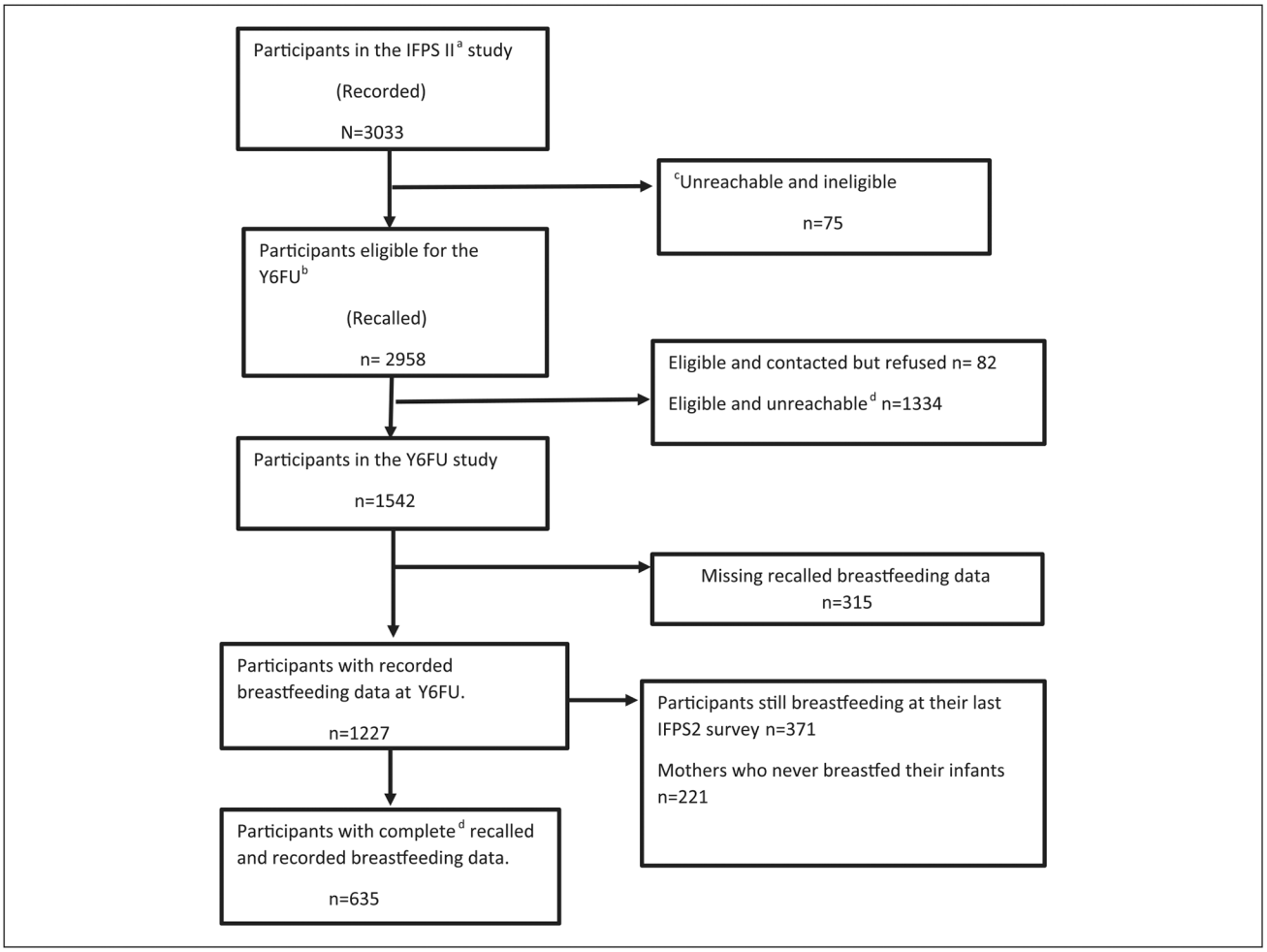

Figure 1.

Sample flow chart. [a] Infant Feeding Practices Study II. [b] Year 6 Follow-Up study. [c] Mother lived in a state where mail service was stopped due to the Gulf Coast hurricanes in 2005 or infant died or had an illness that prevented breastfeeding. [d] Unreachable due to a previous request to be removed from the mailing list, a change of address, nonworking phone number, and unavailability of respondent by phone.

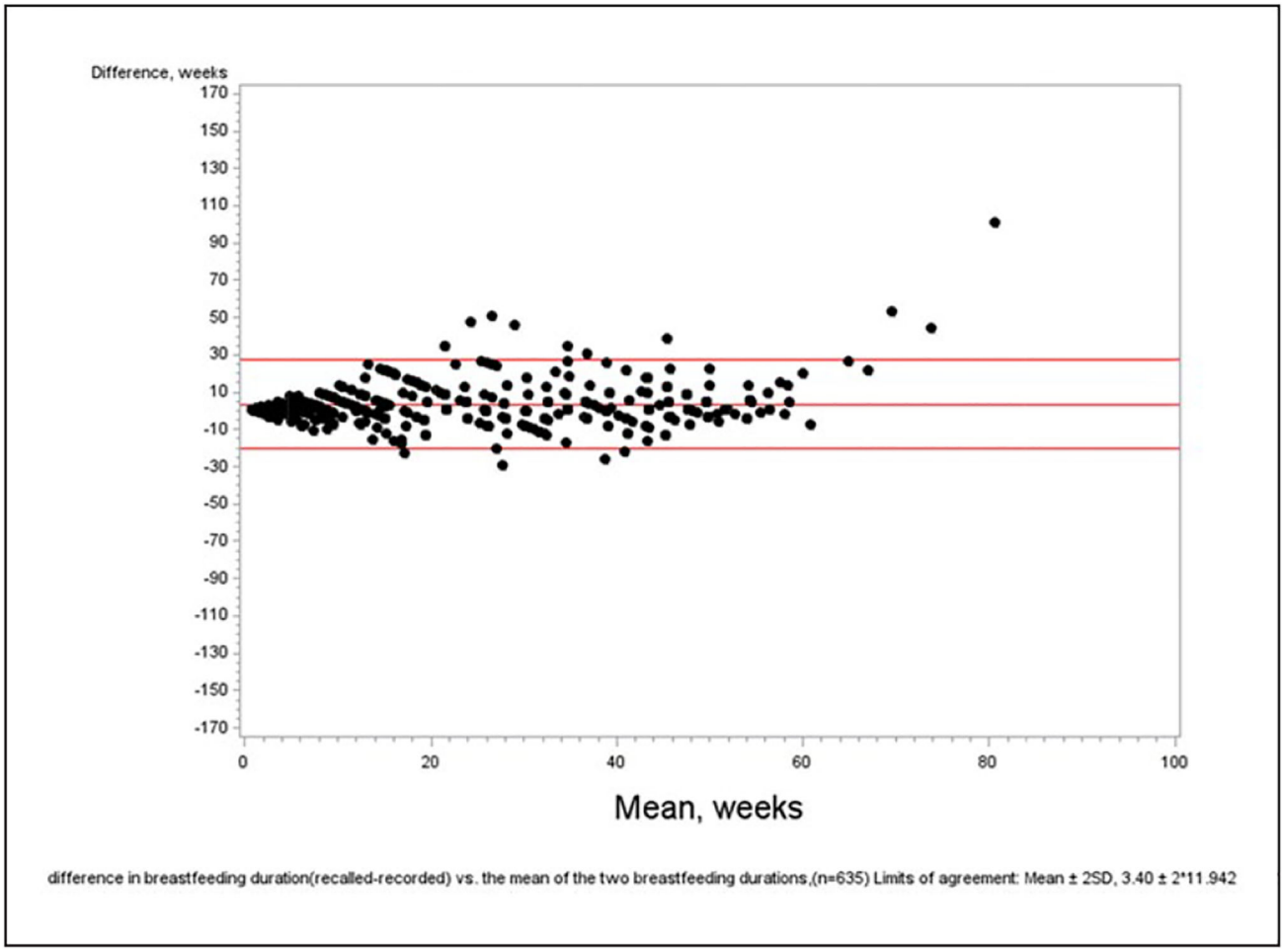

Figure 2.
Bland–Altman Plot.

Table 1.

Maternal and Child Characteristics at Baseline of Participants Included in the Final Analysis and Those Excluded.

Variable	Participants included in the final analysis (*n* = 635) [*n* (%)][a]	Participants not included in the final analysis (*n* = 2,398) [*n* (%)][b]	*p* [c]
Maternal characteristics [d]			
Pre-pregnancy BMI (kg/m^2)			
BMI < 18.5	16 (2.5)	125 (5.2)	
18.5 < BMI < 24.9	259 (40.8)	1,076 (44.9)	
25.0 < BMI < 29.9	186 (26.3)	598 (24.9)	
BMI ≥ 30	164 (26.6)	570 (23.8)	.005
Unknown	10 (1.6)	29 (1.2)	
Smoking			
No	595 (93.7)	2,218 (88.7)	
Yes	39 (6.1)	260 (10.8)	< .0001
Unknown	1 (0.2)	10 (0.4)	
Employment			
Employed	354 (55.8)	1,044 (43.5)	
Unemployed	281 (44.3)	1,354 (56.5)	< .0001
Marital status			
Married/cohabiting	519 (81.7)	1,696 (70.7)	
Unmarried	116 (18.3)	702 (29.3)	< .0001
Parity			
Primiparous	187 (29.5)	675 (28.2)	
Multiparous	448 (70.5)	1,723 (71.8)	.518
Education			
Not a high school graduate	12 (1.9)	80 (3.3)	
High school graduate	83 (13.1)	409 (17.1)	
Some college	238 (37.5)	882 (36.8)	
College and beyond	286 (45.0)	793 (33.1)	< .001
Unknown	16 (2.5)	234 (9.8)	
Race/ethnicity			
White	537 (84.6)	1,950 (81.3)	

Variable	Participants included in the final analysis (*n* = 635) [*n* (%)][a]	Participants not included in the final analysis (*n* = 2,398) [*n* (%)][b]	*p* [c]
Black	21 (3.3)	122 (5.1)	
Hispanic	39 (6.1)	144 (6.0)	
Other	38 (6.0)	182 (7.6)	.121
Infant characteristics [d]			
Gender			
Boy	320 (50.4)	1,181 (49.3)	
Girl	315 (49.6)	1,217 (50.7)	.608

Note. BMI = body mass index; IQR = interquartile range.

[a]Participants with recorded and recalled breastfeeding duration data.

[b]Participants not included in the final analytic sample are ineligible mothers, eligible mothers who refused to participate or were unreachable, mothers missing breastfeeding duration data, mothers still breastfeeding at their last survey, and mothers who never breastfed.

[c]*p* values were assessed using the independent-samples *t*-test or the Wilcoxon–Mann–Whitney test (for continuous data) and chi-square test (for categorical data).

[d]Variables are reported from the IFPS2 data set.

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Table 2.

Comparison of Recorded and Recalled Breastfeeding Duration by Sociodemographic Characteristics ($N = 635$).

		Breastfeeding duration			Recall error		
	n	**Recorded median (IQR) (weeks)**	**Recalled median (IQR) (weeks)**	**Median (IQR) difference[a]**	**Underestimation > 1 month [*n* (%)]**	**Overestimation > 1 month [*n* (%)]**	**ICC**
All mothers	635	21.5 (36.0)	26 (31.0)	1 (6.6)	76 (12.0)	225 (35.4)[b]	0.84
Maternal characteristics							
Maternal age at 6 years (years)							
23 to < 30	53	6 (21.7)	13 (20.0)	1.0 (8.5)	3 (5.7)	21 (39.6)[c]	0.70
30 to < 35	158	21.5 (37.0)	26 (31.0)	1.1 (7.0)	12 (7.6)	60 (38.0)	0.84
35 to < 40	242	25.8 (35.0)	26 (34.0)	0.6 (7.0)	31 (12.2)	78 (32.2)	0.87
≥ 40	180	25.8 (33.4)	26 (31.0)	0.9 (6.9)	30 (16.7)	64 (35.6)	0.84
Employment							
Employed	401	21.5 (32.7)	26 (30.0)	1 (6.6)	45 (11.2)	144 (35.9)[c]	0.83
Unemployed	198	30.1 (35.0)	26 (35.0)	0.7 (7)	25 (12.6)	72 (36.4)	0.85
Unknown	36	21.5 (37.5)	26 (30.5)	1 (6.8)[d]	6 (16.7)	9 (25.0)	0.89
Marital status							
Married/cohabiting	527	25.8 (35.0)	26 (31.0)	0.7 (6.6)	66 (12.5)	187 (35.5)[c]	0.84
Unmarried	73	10 (21.8)	17 (21.0)	2 (9.0)	4 (5.5)	28 (38.4)	0.78
Unknown	35	21.5 (39.0)	26 (30.0)	0.6 (7.5)[d]	6 (17.1)	10 (28.6)	0.88
Education							
Not a HS graduate	5	12 (30.7)	26 (22.0)	0.3 (9.0)[d]	0 (0.0)	2 (40.0)[e]	0.88
HS graduate	63	24.7 (31.7)	26 (35.0)	1 (11.0)	8 (12.7)	24 (38.1)	0.63
Some college	235	17.2 (32.7)	26 (30.0)	1.4 (9.8)	23 (9.8)	97 (41.3)	0.82
College and above	296	25.8 (33.5)	26 (31.0)	0.6 (5.8)	38 (12.8)	92 (31.1)	0.90
Unknown	36	21.5 (36.5)	26 (28.0)	0.6 (7.7)[d]	7 (19.4)	10 (27.8)	0.88
Race/ethnicity							
White	537	25.8 (36.2)	26 (31.0)	0.7 (6.0)	65 (12.2)	180 (34.0)[e]	0.85

		Breastfeeding duration			Recall error		
	n	**Recorded median (IQR) (weeks)**	**Recalled median (IQR) (weeks)**	**Median (IQR) difference[a]**	**Underestimation > 1 month [*n* (%)]**	**Overestimation > 1 month [*n* (%)]**	**ICC**
Black	21	10.3 (13.2)	22 (31.0)	0.4 (16.7)[d]	2 (9.5)	8 (38.1)	0.70
Hispanic	39	14 (24.1)	17 (26.0)	4.6 (8.8)	1 (2.7)	20 (54.1)	0.72
Other	38	21.5 (30.6)	26 (31.0)	0.9 (6.3)[d]	5 (13.5)	12 (32.4)	0.87
Poverty index							
Poorest	115	14 (34.7)	22 (30.0)	1 (8.5)	11 (9.6)	45 (39.1)[c]	0.84
Somewhat poor	359	23 (36.0)	26 (31.0)	1 (7.0)	47 (13.1)	133 (37.1)	0.83
Not poor	161	25.8 (31.0)	26 (31.0)	0.6 (5.8)	18 (11.2)	47 (29.2)	0.88
Smoking							
No	553	25.8 (35.0)	26 (31.0)	0.7 (5.8)	62 (11.2)	191 (34.5)[c]	0.86
Yes	82	10 (17.5)	13 (18.0)	1.2 (10.0)	14 (17.1)	34 (41.5)	0.61
Parity							
Primiparous	187	17.2 (37.0)	26 (35.0)	0.7 (5.4)	11 (5.9)	58 (31.0)[b]	0.85
Multiparous	440	25.8 (35.0)	26 (31.0)	1 (7.8)	64 (14.6)	164 (37.3)	0.86
No. of other children per mother[f]							
1	263	25.8 (36.2)	26 (31.0)	0.7 (7.5)	37 (14.1)	89 (33.8)[b]	0.85
2	130	25.8 (35.0)	26 (35.0)	1 (10.0)	19 (14.6)	52 (40.0)	0.81
3	34	23.7 (28.4)	26 (31.0)	4.6 (8.0)	5 (14.7)	18 (52.9)	0.77
≥ 4	13	30.1 (19.7)	35 (28.0)	2 (9.0)[d]	4 (19.1)	8 (61.5)	0.89
Unknown	8	14.6 (13.1)	11 (14.0)	1 (8.7)	1 (12.5)	3 (37.5)	0.77
WIC participation							
Yes	201	14 (30.4)	22.0 (30.0)	2.0 (8.5)	19 (9.5)	82 (40.8)[c]	0.83
No	434	25.8 (35.0)	26 (31.0)	0.7 (7)	57 (13.1)	143 (33.0)	0.84
Infant characteristics							
Gender							
Boy	320	25.8 (34.5)	26 (31.0)	1 (5.5)	40 (12.5)	109 (34.1)[c]	0.86
Girl	315	21.5 (35.0)	26 (31.0)	1 (7.3)	36 (11.4)	116 (36.8)	0.82

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		Breastfeeding duration			Recall error		
	n	**Recorded median (IQR) (weeks)**	**Recalled median (IQR) (weeks)**	**Median (IQR) difference[a]**	**Underestimation > 1 month [*n* (%)]**	**Overestimation > 1 month [*n* (%)]**	**ICC**
Birth weight (lb)							
≤ 8.8[g]	548	21.5 (35.7)	26 (31.0)	1.0 (7.0)	69 (12.6)	196 (35.8)[c]	0.83
> 8.8[h]	87	30.5 (35.0)	35 (31.0)	1.0 (5.0)	7 (8.1)	29 (33.3)	0.91

Note. HS = high school; ICC = intraclass correlation coefficient; IQR = interquartile range; WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

[a]Median difference = median of the individual differences (weeks) between recalled and recorded breastfeeding duration.

[b]$p < .05$ by chi-square test for significant relationships between recall error and the sociodemographic group.

[c]$p > .05$ by chi-square test for nonsignificant relationships between recall error and each sociodemographic group.

[d]Nonsignificant Wilcoxon signed rank p values > .05. The rest showed significant median differences with p values < .05.

[e]Fisher exact tests were conducted, but none of them had $p < .05$.

[f]Primiparous women were not included ($n = 187$).

[g]Normal birth weight.

[h]Above normal birth weight.

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Table 3.

Unadjusted and Adjusted Odds Ratios of Sociodemographic Determinants of Accurate Recall.

	Logistic regression analysis								
	Crude			Adjusted model 1[a]			Adjusted model 2[b]		
	Odds ratio	90% CI	Wald *p* value	Odds ratio	95% CI	Wald *p* value	Odds ratio	95% CI	Wald *p* value
Maternal characteristics									
Maternal age at 6 years (years)									
23 to < 30 (ref)	1	—		1	—				
30 to < 35	0.99	[0.6, 1.7]		1.05	[0.5, 2.1]				
35 to < 40	1.01	[0.6, 1.7]		0.92	[0.4, 1.9]				
≥ 40	0.76	[0.5, 1.3]	.473	0.69	[0.3, 1.5]	.352			
Employment									
Unemployed (ref)	1	—		1	—				
Employed	1.08	[0.8, 1.4]	.668	1.01	[0.7, 1.5]	.968			
Marital status									
Married (ref)	1	—		1	—				
Unmarried	1.18	[0.8, 1.8]	.504	1.12	[0.6, 2.0]	.700			
Education									
Non-HS graduate (ref)	1	—		1	—				
HS graduate	0.65	[0.1, 3.1]		0.50	[0.1, 3.1]				
Some college	0.64	[0.1, 2.9]		0.49	[0.1, 3.4]				
College and above	0.85	[0.2, 3.9]	.377	0.58	[0.1, 4.1]	.748			
Race/ethnicity									
White (ref)	1	—		1	—				
Black	0.97	[0.5, 2.0]		0.91	[0.4, 2.4]				
Hispanic	0.68	[0.4, 1.2]		0.62	[0.3, 1.2]				
Other	0.98	[0.6, 1.7]	.718	1.08	[0.5, 2.2]	.583			
Poverty index									
Poorest (ref)	1	—		1	—				
Somewhat poor	0.94	[0.7, 1.3]		0.91	[0.6, 1.5]				
Not poor	1.40	[0.9, 2.1]	.115	1.12	[0.6, 2.1]	.604			

	Logistic regression analysis								
	Crude			Adjusted model 1[a]			Adjusted model 2[b]		
	Odds ratio	90% CI	Wald *p* value	Odds ratio	95% CI	Wald *p* value	Odds ratio	95% CI	Wald *p* value
WIC participation									
Yes (ref)	1	—		1	—				
No	1.18	[0.9, 1.6]	.328	1.12	[0.7, 1.7]	.607			
Smoking									
No (ref)	1	—		1	—				
Yes	0.60	[0.4, 0.9]	.032	0.57	[0.3, 1.0]	.040	.57		.026
Parity									
Primiparous (ref)	1	—		1	—		1	—	
Multiparous	0.54	[0.4, 0.7]	.0007	0.58	[0.4, 0.9]	.010	.52	[0.4, 0.8]	.0005
Infant characteristics									
Gender									
Boy (ref)	1	—		1	—				
Girl	0.93	[0.7, 1.2]	.670	0.9	[0.7, 1.3]	.544			
Birth weight (lb)									
≤ 8.8[c] (ref)	1	—		1	—				
> 8.8[d]	1.33	[0.9, 2.0]	.227	1.27	[0.8, 2.1]	.342			
					HL GOF test: 0.67		HL GOF test: 1.00		

Note. Accurate recall was defined as recalled breastfeeding duration to within a month of the Infant Feeding Practices Study II breastfeeding duration. CI = confidence interval; HL GOF test = Hosmer–Lemeshow goodness-of-fit test (*p* value); HS = high school; ref = reference; WIC = Special Supplemental Nutrition Program for Women, Infants, and Children.

[a]Model 1: fully adjusted model.

[b]Model 2: reduced model excludes variables nonsignificant at $p > .05$ and nonconfounders as per the 10% rule.

[c]Normal birth weight.

[d]Above normal birth weight.

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