

Full Breastfeeding During the Postpartum Hospitalization and Mothers' Report Regarding Baby Friendly Practices

MIRZA RIVERA-LUGO,¹ ANA M. PARRILLA-RODRÍGUEZ,²
RENÉ ROLANDO DÁVILA-TORRES,² CARMEN ALBIZU-GARCÍA,¹
and RUTH RIOS-MOTTA¹

ABSTRACT

Objective: The objective of this study was to describe the opinion of a group of postpartum women about compliance with the Ten Steps in a hospital with the intention to be certified as a Baby Friendly Hospital.

Methods: Two hundred (200) postpartum women age 20 or greater who had delivered a healthy full-term baby (37 weeks gestation) participated in the study. Data were gathered by means of a semi-structured questionnaire in the Spanish language. Descriptive and inferential statistics (Chi-square) were used for data analysis.

Results: Thirty percent (30%) of participants were 21 to 26 years of age. Primiparas comprised 51% and legally or consensually married mothers comprised 89% of the study participants. Monthly family incomes with the highest frequencies were \$0 to \$2000 and \$2001 to \$3000, respectively. Full breastfeeding was being practiced by 43.5% of the mothers in the study, whereas 53.0% were breastfeeding partially. Compliance with the Ten Steps was perceived as deficient by 52% of the mothers, whereas only 5.5% perceived compliance as excellent. The perceived level of compliance with the Ten Steps is significantly associated with the type of breastfeeding (full or partial) in the inferential analyses ($X^2 [3, n = 193] = 33.74, p = 0.00$) and in the multiple logistic regression analyses (OR = 1.27, confidence interval [CI] = 1.14 – 1.43, $p = 0.00$). As the level of perceived compliance with the Ten Steps increases, the probability of full or exclusive breastfeeding also increases.

Conclusion: Compliance with the Ten Steps of the Baby Friendly Hospital from the perspective of the postpartum mother has an impact on the type of breastfeeding.

INTRODUCTION

THE MAJORITY OF SCIENTIFIC STUDIES concur that babies should be exclusively breastfed for the first 6 months. However, mothers' decisions as well as the practices and behaviors

of many health professionals often do not support the achievement of successful breastfeeding.¹

Scientific literature presents multiple strategies for helping mothers and health professionals promote and support the practice of ex-

¹Health Services Research Program, and ²Maternal and Child Health Program, University of Puerto Rico, Medical Sciences Campus, Graduate School of Public Health, San Juan, Puerto Rico.

clusive breastfeeding for infants.^{2,3} There is a consensus that breastfeeding should begin as soon as possible after birth, usually during the first hour.

Except in special circumstances, the newborn should remain with its mother during the entire hospital stay. All procedures that might interfere with breastfeeding or traumatize the baby should be avoided or minimized.⁴

One of the goals established by the Puerto Rico Department of Health (PRDOH) is that all health facilities that offer services to mothers and children adopt the recommendations of the Baby Friendly Hospital Initiative (BFHI) of the World Health Organization (WHO) and the United Nations Children's Fund (UNICEF).^{5,6}

The Baby Friendly Hospital Initiative includes recommendations for operational aspects in hospital facilities which adopt a plan of action for the improvement of the infants' health and nutrition through a Ten Steps program that promotes breastfeeding as the natural form of infant nutrition.⁷

The initiation of the Ten Steps has been shown to remove hospital barriers for breastfeeding and allows for effective commencement and establishment of exclusive breastfeeding.⁷⁻⁹ The Ten Steps program requires that all maternity and newborn hospital services fully comply with the recommended steps.^{9,10}

Several recent studies have identified the hospital as an important factor to consider in evaluations related to the type of infant feeding selected.^{3,7,8,10} The studies have shown that complying with the Ten Steps recommended by WHO and UNICEF for hospitals impacts positively on the incidence of breastfeeding and reduces the risks associated with artificial infant feeding.¹⁰ None of these studies, however, relates the mother's opinion during her hospital stay of compliance with the Ten Steps to the initiation and type of infant feeding she selects. The main contribution of this paper, therefore, is that it presents an issue that has not heretofore been published in the scientific literature related to breastfeeding. This work begins from the hypothesis that the mother's opinion of the hospital's level of compliance with the Ten Steps program influences the rate of breastfeeding initiation and type of feeding she

chooses for her baby during her hospital stay. Furthermore, the authors explore other factors that are associated with the type of feeding chosen by the mother during her hospital stay.

METHODOLOGY

Human rights

This study was approved by the Institutional Human Subjects Review Committee of the Medical Sciences Campus at the University of Puerto Rico.

Design and sample

The design used for this study was pre-experimental and cross sectional to evaluate the association between the chosen type of feeding and the sociodemographic maternal factors related to breastfeeding, the hospital, the delivery, and the characteristics of the baby.

A nonprobabilistic sample of 200 Puerto Rican women who delivered in a hospital in metropolitan San Juan, Puerto Rico, which presently has a Certificate of Intention to become a Baby Friendly Hospital, participated in this study, as shown in Figure 1.

All mothers participating in this study signed an informed consent form. Participants were recruited by the hospital nursing personnel working in the obstetrics and gynecology service. All participants were interviewed during the first 24 to 48 hours postpartum, and during their hospital stay.

Inclusion and exclusion criteria

Eligibility for participation in this study for postpartum mothers was determined by means

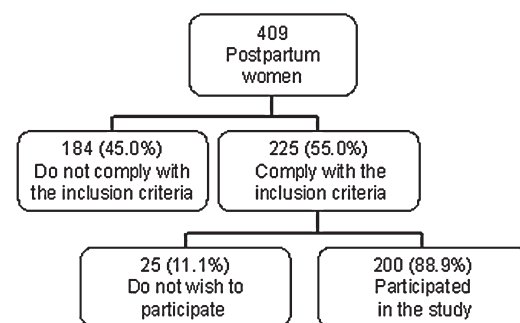


FIG. 1. Diagram for selection of participants.

of the following inclusion criteria: mothers over 21 years of age who delivered a full-or post-term baby (37 weeks gestation), postpartum period of 24 to 48 hours, with a healthy baby (i.e., those who did not require admission to the neonatal intensive care unit).

Data collection procedure

Data were gathered by means of a semi-structured questionnaire that included closed- and open-ended questions in the Spanish language. The questionnaire was designed from previous instruments used by the authors' research team in this type of community and other researchers in the breastfeeding field.

Several scales were included in the questionnaire:

- *Scale Concerning Baby Friendly Hospitals.* This scale is comprised of 19 premises and three alternative answers offered by the World Alliance for Breastfeeding Action (WABA). This instrument is a guide for self-assessment on the level of compliance with the Ten Steps recommended by the Baby Friendly Hospital Initiative.
- *Knowledge Scale on Breastfeeding.* This scale is comprised of 17 premises regarding breastfeeding.¹¹ This instrument showed a Cronbach alpha of 0.83.
- *Scale of Attitudes Toward Breastfeeding.* This scale is comprised of 19 premises with a Likert-type scale of 12. This scale has been used in several studies in Puerto Rico and has maintained internal consistency between 0.82 and 0.92.

The interviews were carried out by one interviewer. The data gathered by means of the interview included data related to: (1) the sociodemographic characteristics of the mother (e.g., age, income, parity); (2) breastfeeding (e.g., knowledge and attitudes toward breastfeeding, previous experience); (3) the hospital (e.g., mothers' report of compliance with the BFHI Ten Steps); (4) the birth (e.g., type of delivery, complications of delivery, medical practices); and (5) characteristics of the baby (birth weight) and type of breastfeeding (as defined by Labbok and Krasovec).¹³

Each interview session was 20 to 30 minutes long. The completed questionnaire was revised by the principal investigator before being entered into the computerized database. Double entry of data was carried out to minimize data entry errors.

VARIABLES

Dependent variables

The type of feeding selected was defined as per Labbok and Krasovec.¹³ Because of the small sample size, however, bivariate and multivariate analyses were carried out constructing a dependent variable with three categories: (1) full breastfeeding; (2) partial breastfeeding; and (3) artificial feeding.

Independent variables

The maternal sociodemographic characteristics included age, parity (1 = multipara, 0 = primipara), civil status (1 = married/consensual, 2 = single/separated), family income (1 = \$0-\$2000, 2 = \$2001-\$3000, 3 = \$3001-\$4000, and 4 = >\$4001), and education (1 ≤ high school, 2 ≤ vocational/associate degrees, 3 = some college level, 4 = bachelors degree, and 5 = masters/doctorate, 6 = maternity leave; 1 = yes, 0 = no).

Factors related to breastfeeding included previous experience with breastfeeding (0 = no, 1 = yes), knowledge about breastfeeding (0 ≤ 69% correct questions, 1 ≥ 70% correct questions), attitudes toward breastfeeding (0 ≤ 62 points defined negative attitudes, 1 ≥ 63 points defined positive attitudes), decision to breastfeed (1 = before pregnancy, 2 = during pregnancy, 3 = during hospital stay), and support from the baby's father and maternal grandmother (1 = none, 2 = little support, 3 = some support, 4 = much support).

Factors related to the hospital included opinion of level of compliance with the Ten Steps of BFHI (0 = 0-10 points deficient compliance, 1 = 11-13 points some compliance, 2 = 14-16 good compliance, 3 ≥ 17 points excellent compliance). Factors related to the birth included type of birth (0 = Cesarean section, 1 = vaginal birth), complications during labor and delivery

(1 = had complications, 1 = no complications), use of medications (1 = medicated labor, 0 = nonmedicated labor), and episiotomy (1 = done, and 0 = not done).

Factors related to the baby included birth weight (0 = 2499 g, 1 \leq 2500–3000 g, 3 \geq 3001 g).

STATISTICAL ANALYSIS

All data were entered and analyzed by means of SPSS for Windows 14. Chi-square analysis (Pearson, Fisher, and Cramer) was used to examine bivariate association between type of feeding chosen and the previously defined independent variables.

Multivariate analysis was first carried out by simple logistical regression analysis between the dependent variable (type of feeding) and each one of the independent variables. Those variables that showed a p -value \leq 0.10 in the simple logistical regression model were later entered into a model of multiple logistical regression. Odds ratios (ORs) and 95% CIs are reported in this article for the independent variables. The accepted significance level for all final statistical analyses was \leq 0.05.

RESULTS

Sociodemographic characteristics related to the mother included the following. Thirty percent (30%) of participants were between 21 and 26 years of age. Fifty-one percent (51%) were primiparas and 89% were legally married or living consensually. Monthly family incomes with the highest frequencies were \$0 to \$2000 and \$2001 to \$3000, respectively.

Likewise, 40% of the participants had completed a college degree, and 67.5% had a full-time job. Among those working full time, 93.3% had maternity leave, whereas of those working part-time, only 40.0% had this benefit.

Factors related to breastfeeding included the following. Fifty-nine percent (59%) of the participants had prior experience with breastfeeding. It was found that 73.3% had a positive attitude toward breastfeeding. Likewise, 82% of the participants had an adequate level of

knowledge (\geq 70% correct questions) about breastfeeding.

Fifty-two percent (52%) of the participants made the decision to breastfeed their child before becoming pregnant. It is noteworthy that only 4% made the decision to breastfeed during their hospital stay. Likewise, 62.5% and 61% of the participants stated that they received support from the newborn's father and the maternal grandmother to breastfeed, respectively.

Factors related to the hospital included the following. Fifty-two percent (52%) of the participants perceived the hospital as deficient in compliance with the Ten Steps, and only 5.5% perceived excellent compliance by the hospital with the Ten Steps of the Baby Friendly Hospital Initiative. Likewise, 80% of the mothers stated they had not attended the hospital's prenatal conference. Nevertheless, 81.5% held as useful the information provided by the hospital on breastfeeding during their postpartum hospital stay. On the other hand, 82% reported having received prior information on breastfeeding from other sources not related to the hospital being evaluated.

Factors related to the birth, characteristics of the baby, and type of feeding included the following. Fifty percent (50%) of the mothers had a vaginal delivery, whereas 50% had a Cesarean section. Nevertheless, 73.5% reported no complications during the labor process. Medications were administered to the mother during labor in 86.5% of the deliveries, the most frequent being Demerol (51.9%) followed by spinal anesthesia (49.4%), and epidural anesthesia (24.0%). Thirty-seven percent (37%) of the mothers had an induced labor, and 82% of those who delivered vaginally had an episiotomy (Table 1).

The birth weight was the only characteristic associated with the baby evaluated in this study. The mean weight was 7 pounds, and the median was 6.8 pounds. In general, 56% of the babies had weights equal to or greater than the mean. Regarding the type of feeding, it was found that 53% chose combined breastfeeding/artificial milk for their newborns, whereas 43.5% chose breastfeeding (see Table 2). For inferential analysis the variable was classified as type of breastfeeding, and it was found that

TABLE 1. FACTORS RELATED TO THE BIRTH AND CHARACTERISTICS OF THE BABY AND TYPE OF FEEDING

Factors	n	%
Type of birth (<i>n</i> = 200)		
Vaginal	100	50.0
Cesarean	100	50.0
Complications during labor (<i>n</i> = 200)		
Yes	52	26.0
No	147	73.5
Do not know	01	0.5
Use of medications (<i>n</i> = 200)		
Yes	173	86.5
No	26	13.0
Do not know	01	0.5
Labor induction (<i>n</i> = 200)		
Yes	74	37.0
No	126	63.0
Episiotomy (<i>n</i> = 100)		
Yes	82	82.0
No	18	18.0
Birth weight (<i>n</i> = 200)		
Below mean (<7 lb)	88	44.0
Equal or above mean (≥7 lb)	112	56.0
Type of breastfeeding (<i>n</i> = 193)		
Full	87	45.1
Partial	106	54.9

53% practiced partial breastfeeding, 43.5% full breastfeeding, and the remaining 3.5% artificial feeding. This 3.5% (*n* = 7) was not included in the final analysis.

BIVARIATE AND MULTIVARIATE ANALYSIS

Bivariate

Only the statistically significant results linking the independent variables to the dependent variable and type of breastfeeding are presented here. Regarding the characteristics of the mother, only monthly family income was significantly associated with the type of breastfeeding ($X^2 [3, n = 181] = 16.882, p = 0.001$). Mothers who practiced full breastfeeding (71.9%) had a monthly income higher than \$4001, as compared with the 73.6% of mothers practicing partial breastfeeding, who had monthly incomes of ≤\$2000.

The authors observed, on the other hand, that the attitude toward breastfeeding was significantly associated with the type practiced ($t = 2.287, p = 0.023$). Mothers who practiced full breastfeeding showed a more positive attitude toward breastfeeding than those who practiced partial breastfeeding.

An interesting result was that related to the hospital. The level of compliance perceived by the mother regarding the Ten Steps of the Baby Friendly Hospital Initiative was statistically as-

TABLE 2. BIVARIATE AND MULTIVARIATE FINAL MODEL

Variable	β	p	OR	IC 95%	
				Inferior	Superior
Monthly family income					
0–\$2,000	–1.197	0.072**	0.302	0.082	1.112
\$2,001–\$3,000	–0.777	0.201	0.460	0.140	1.514
\$3,001–\$4,000	–1.149	0.049*	0.317	0.101	0.994
>\$4,001*,**	—	—	—	—	—
Education					
≤High school	–1.038	0.320	0.354	0.046	2.736
Vocational/associate degrees	–0.433	0.531	0.649	0.168	2.511
Some college level	–0.214	0.772	0.807	0.190	3.435
Bachelor degree	0.136	0.808	1.145	0.384	3.416
Masters/doctorate*,**	—	—	—	—	—
Attitudes towards breastfeeding	0.015	0.690	1.015	0.943	1.092
Support from the baby’s father					
Much	–7.153	0.755	0.001	0.000	2.38E + 16
Some support	–1.340	0.076*	0.262	0.60	1.148
Little support	–0.615	0.173	0.541	0.223	1.308
None*,**	—	—	—	—	—
Perception of level of compliance with the ten steps of BFHI	0.241	0.000**	1.273	1.135	1.427

* $p \leq 0.05$.
** $p \leq 0.10$.

sociated with the type of breastfeeding ($X^2 [3, n = 193] = 33.742, p = 0.000$). Those mothers who perceived that the hospital had excellent compliance with the Ten Steps chose full breastfeeding (100%, $n = 11$), whereas partial breastfeeding was chosen by 71.1% of mothers who perceived a deficient compliance with the Ten Steps on the hospital's part. A significant association was likewise found between attendance to the hospital breastfeeding orientation lecture and the type of breastfeeding ($X^2 [1, n = 193] = 7.146, p = 0.0081$). Over sixty-four percent (64.1%) of mothers who attended the hospital breastfeeding lecture chose full breastfeeding as compared with 35.9% who did not attend.

Finally, no factor related to the delivery process or the baby was statistically associated with the type of breastfeeding.

Multivariate analysis

In the final multiple logistical regression model the authors only included those variables with a p -value ≤ 0.10 in the simple regression analysis. These were: monthly family income, educational level, attitude toward breastfeeding, support from the baby's father, and perceived level of compliance with the Ten Steps of the Baby Friendly Hospital Initiative. It was found that only monthly family income of \$3001 to \$4000 (OR = 0.317, 95% CI = 0.101–0.994, $p = 0.04$) and perceived level of compliance with the Ten Steps of the Baby Friendly Hospital Initiative (OR = 1.273, 95% CI = 1.135–1.427, $p = 0.000$), were statistically significant (see Table 2). Specifically, participants with a monthly income of \geq \$4001 had 3.1 times the probability of choosing full or exclusive breastfeeding for their babies than mothers with a monthly family income of \$3001 to \$4000. On the other hand, higher perceived levels of compliance with the Ten Steps of the Baby Friendly Hospital Initiative by the mother increased the probability of the mother choosing full or exclusive breastfeeding for her newborn.

DISCUSSION

The level of compliance with the Ten Steps of the Baby Friendly Hospital Initiative as per-

ceived by the postpartum mother was shown to be associated with the type of feeding chosen by the mother for her newborn baby. Naylor⁷ and Phillip et al.¹⁰ have pointed out that implementing the Ten Steps constitutes an effective strategy for hospitals to increase the practice of exclusive breastfeeding among their postpartum mothers. The majority of the mothers in this study perceived the hospital's compliance with the Ten Steps as deficient, and only 25% perceived the compliance as good or excellent. It should be noted that those mothers who perceived the level of compliance as good or excellent chose full (exclusive or near exclusive) breastfeeding for their babies. As the perceived level of compliance with the Ten Steps decreased in this study, partial breastfeeding increased. Studies have demonstrated the importance of promoting full breastfeeding from the early postpartum period, because there is a strong association between partial breastfeeding with artificial milk supplementation in newborns in the maternity service and the duration of this practice after discharge.¹⁵ Adequate initiation of the Ten Steps in the hospital promotes support for the breastfeeding mother. The scientific literature shows that perceived support for breastfeeding as part of hospital practices is a critical component for the postpartum mother who strives for successful breastfeeding.¹⁶ Among the factors associated with a low incidence of initiation and exclusivity of breastfeeding is found a low maternal socioeconomic level.^{17–20} The present study demonstrated that monthly family income was related to the type of infant feeding chosen, and it was observed that there is a greater probability of choosing full breastfeeding among mothers with higher levels of income than among those with lower economic levels. This could be explained by the hospital chosen for this study, which was a private institution with relatively higher income levels in its patient population.

The attitude toward breastfeeding was associated with the type of feeding chosen by participants for their babies. It has been established that the mother's attitude toward breastfeeding has a direct influence over the practice of breastfeeding.^{1,16,21,22} Libbus, in a study with

participants of the WIC Program in the United States, found that 90% of Hispanic pregnant mothers had a generally positive attitude, which compares favorably with other similar research studies.²² On the other hand, the literature points out that a positive attitude toward breastfeeding does not necessarily result in its initiation. A positive attitude was observed in the majority of the participants in this study. The results of the authors' regression analysis revealed that the higher the positive attitude the higher the probability of full breastfeeding. This study presents for the first time the importance of complying with the Ten Steps of the Baby Friendly Hospital Initiative from the perspective of the postpartum mother. It sets the basis for future studies in which more detailed exploration of compliance with the Ten Steps will be carried out as an important variable for choosing the type of feeding for the baby.

CONCLUSIONS

It has been proved that hospital practices are a critical component for the postpartum mother who wishes to be successful in the initiation of breastfeeding. Likewise, a perception by the mother of deficient support for breastfeeding in the hospital could be a barrier against full breastfeeding from the beginning. The present authors agree that the final decision on infant feeding modality should be made by the mother, but we believe that if she perceives a favorable environment in the hospital in favor of exclusive breastfeeding, the probability increases that her decision will favor full or exclusive breastfeeding, and that there will exist a greater probability that breastfeeding will be prolonged after discharge.

The authors recognize the limitations of this study. Hospital charts review was not conducted to compare mothers' opinions with feeding and hospital practices. Other variables that affect the initiation of breastfeeding, such as poor latch-on or sleepy baby, should be included in future studies. The conclusions cannot be generalized to all hospital institutions in Puerto Rico, nor to all postpartum mothers,

because the sample studied was not probabilistic.

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REFERENCES

1. Losch M, Dungy CI, Rusell D, et al. Impact of attitudes on maternal decisions regarding infant feeding. *J Pediatr* 1995;126:507–511.
2. Lawrence RA, Lawrence RM. *Breastfeeding: A Guide for the Medical Profession*, 6th edition. Mosby, St. Louis, 2005.
3. Pinelli J, McGovern M, Edward M, et al. Evaluation of breastfeeding protocol. *J Hum Lact* 2001;9:223–230.
4. American Academy of Pediatrics, Section on Breastfeeding. Breastfeeding and the use of human milk. *Pediatrics* 2005;115:496–506.
5. [Public Policy for the Promotion of Breastfeeding in Puerto Rico] 1995. Puerto Rico Department of Health, Assistant Secretary for Preventive Medicine and Family Health, San Juan, Puerto Rico. (Spanish)
6. Parrilla-Rodríguez AM, Carriles-Quirós JA. [Public policy for the promotion of maternal lactation in hospitals]. *PR Health Sci J* 2000;19:259–262. (Spanish)
7. Naylor AJ. Baby-Friendly Hospital Initiative, protecting, promoting, and supporting breastfeeding in the twenty-first century. *Pediatr Clin North Am* 2001;48:475–483.
8. Kovach AC. An assessment tool for evaluating hospital breastfeeding policies and practices. *J Hum Lact* 1996;12:41–42.
9. Parrilla Rodríguez AM, Gorrín Peralta JJ. [Ethical aspects of human lactation and breastfeeding]. *PR Health Sci J* 2000;19:145–151. (Spanish)
10. Phillip BL, Merewodd A, Millar LW, et al. Baby-friendly hospital initiative improves breastfeeding rates in a US hospital setting. *Pediatrics* 2001;108:766–768.
11. Parrilla-Rodríguez AM, Dávila-Torres RR, González-Méndez ME, et al. Knowledge about breastfeeding in mother of infants with gastroesophageal reflux. *PR Health Sci J* 2002;21:25–29.
12. Dávila-Torres RR, Parrilla AM., Gorrín-Peralta JJ. Reliability and validity of a breastfeeding attitudes instruments for nursing staff. *PR Health Sci J* 2000;19:263–267.

13. Labbok M, Krassovec K. Toward consistency in breastfeeding definitions. *Stud Fam Plann* 1990;21:226–230.
14. Statistical Program for Social Sciences version 13 for Windows. SPSS Inc. Headquarters, 233 S. Wacker Drive, 11th floor. Chicago.
15. Riva E, Banderali G, Agostini C, et al. Factors associated with initiation and duration of breastfeeding in Italy. *Acta Paediatr* 1999;88:411–415.
16. Sinusas K, Gagliardi A. Initial management of breastfeeding. *Am Fam Physician* 2001;64:982–988, 991–992. Accessed November 14, 2002. Available at: <http://www.aafp.org/afp/200109115/981.htm>.
17. Ryan AS, Wyson JL, Martinez GA, et al. Duration of breastfeeding pattern establish in the hospital: influencing factor. *Clin Pediatr* 1990;29:99–107.
18. Furman L, Minich N, Hack M. Correlates of lactation in mothers of very low birth weight infants. *Pediatrics* 2002;109:1–7.
19. Williams EL, Pan E. Breastfeeding initiation among low income multiethnic population in Northern California: An exploratory study. *J Hum Lact* 1994;10:245–251.
20. Wright A. The rise of breastfeeding in the United States. *Pediatr Clin North Am* 2001;48:1–12.
21. Forrester IT, Wheelock RD, Warren AP. Assessment for student attitudes toward breastfeeding. *J Hum Lact* 1997;13:33–37.
22. Libbus MK. Breastfeeding attitudes in a sample of Spanish-speaking Hispanic American women. *J Hum Lact* 2000;16:216–220.

Address reprint requests to:

Ana M. Parrilla-Rodríguez, M.D., M.P.H.
Maternal and Child Health Program
University of Puerto Rico,
Medical Sciences Campus
Graduate School of Public Health
Box 365067
San Juan, Puerto Rico 00936-5067

E-mail: aparrilla@rcm.upr.edu