

Factors associated with the practice of breastfeeding for mothers in Santo Domingo, Dominican Republic



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Research Article
Published July 31, 2019

Abstract

Optimally breastfed children are 14 times more likely to survive than those who are not breastfed [1]. Across the world, 40% of mothers breastfeed exclusively for the first six months. However, in the Dominican Republic, this number plummets to only 4.6%. The objective of this study was to describe the factors that limit or favor the practice of breastfeeding for mothers in Santo Domingo, Dominican Republic. A cross-sectional, descriptive, and observational study with a random sampling method was used to select 60 Dominican mothers over the age of 17 who live in Santo Domingo and who attended the Robert Reid Cabral Children's Hospital. Data was collected using a semi-structured interview questionnaire. Qualitative and quantitative data was analyzed using SPSSv22. For this data set, the average length of exclusive breastfeeding was 2.34 months and the average length of partial breastfeeding was 7.36 months. Factors that negatively influenced the likelihood of exclusive breastfeeding for more than 2 months included working full time (OR=5.7, $p=.012$), a lack of correct information regarding breastfeeding (nutritional value of breast milk, OR=10.86, $p=.0008$), and a lack of community support (87% of mothers stated that they did not receive any breastfeeding support). Based on the results of this study, these three factors should be the targets of future breastfeeding interventions in Santo Domingo, Dominican Republic.

Background

A substantial body of research has established that breastfeeding provides numerous health benefits to mothers and infants [1]. Breastfeeding in the first six months of life promotes an infants' immune system and helps protect them from acute respiratory infections and diarrhea [1]. Current data estimates that suboptimal optimum breastfeeding accounts for 800,000 annual deaths among children under the age 5, or approximately 13% of all child deaths [2]. The World Health Organization (WHO) recommends that children are exclusive breastfed until they are six months of age and are partial breastfed (breastfeeding paired with complementary feeding) for at least the first two years of life [3,4].

Rates of breastfeeding in the Dominican Republic (DR) continue to plummet (Figure 1). The rate of exclusive breastfeeding among those aged 0 to six months in Latin America is 37.9 % [5]. In the DR, the exclusive breastfeeding rate for the same group was 18.8% in 1996, 8.0% in 2010, and just 4.7 % in 2014[6]. In Latin America, mothers breastfeed (exclusively and partially) for a median

length of 13.4 months while, in the DR, the median length of time is only 7.1 months [7]. Rates of breastfeeding in the DR have remained low despite the entrance of programs, such as UNICEF's Baby Friendly Initiative, introduced to improve rates. Since 2008, 13.3% of deliveries occurred in facilities that are Baby Friendly Hospital Initiative Certified [8]. Further, reproductive health protocols at several hospitals include kangaroo care which promotes breastfeeding [9].

Research that addresses the low rates of exclusive breastfeeding in the Dominican Republic is limited, especially qualitative research measures. The Dominican Ministry of Public Health collected information about breastfeeding practices and the discrepancies that exist across various regions and resident zones (364 urban zones and 160 rural zones) in 2014[10]. The World Breastfeeding Trends Initiative published an assessment of the breastfeeding policies and programs of 40 countries. Out of those 40 countries, the Dominican Republic ranked 35th [11]. These examples included quantitative research methodology and did not include measures of qualitative investigation such as interviews with mothers. There is

great need for improved research methodology that is better equipped to understand the low rates of breastfeeding in the Dominican Republic.

The objective of this study is to identify and describe factors associated with breastfeeding outcomes by conducting interviews with mothers who visit outpatient services (consulta externa) at the Dr. Robert Reid Cabral Children's Hospital in Santo Domingo, DR.

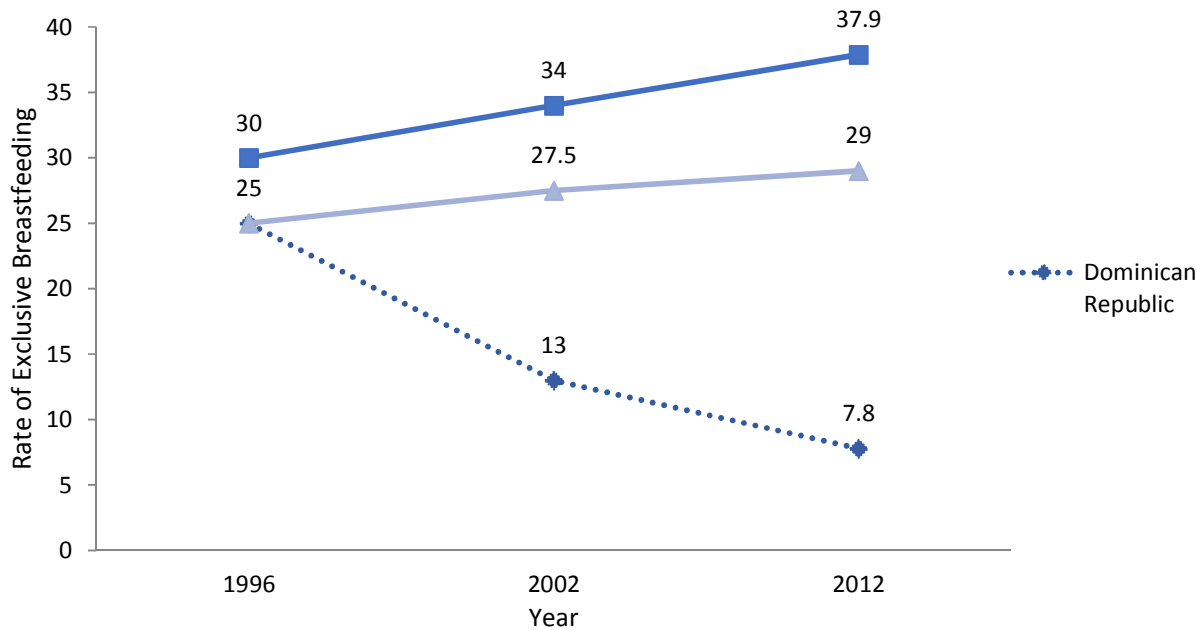


Figure 1. Rates of Exclusive Breastfeeding (<6 months).

Methods

Study Design

This observational, descriptive, and cross-sectional study included data from 60 mothers and was conducted from July to August of 2014 [12]. The study was conducted at the Dr. Robert Reid Cabral Children's Hospital, the largest referral children's hospital in the Dominican Republic.

Every third woman waiting in the outpatient area (walk in, non-emergency visits) was invited to participate in the study. Mothers were eligible for the study if they were over 17 years of age, were of Dominican nationality, resided in Santo Domingo, had a child that was one to three years of age, and provided written informed consent to participate. Mothers did not need to have breastfeeding experience to be eligible for the study. These criteria were used to reduce the potential for confounding factors such as immigration status and cultural differences that may exist due to urban and rural differences. For mothers who had more than one child, only their most recently birthed child was considered for the interview. Half of the interviews occurred in the morning and half occurred in the afternoon in an attempt

to reduce biases that could result from demographic factors. For example, employed mothers were more likely to come in the morning instead of the afternoon.

Additionally, five experts in the field were invited to give their perspectives on breastfeeding practices and offer recommendations for promoting breastfeeding in the Dominican Republic. Their responses were recorded and coded.

This study was approved by O&M Medical School and the Dr. Robert Reid Cabral Children's Hospital Institutional Review Board. All participants were informed of the study design, anticipated benefits and risks, intended use, optional participation, and their ability to withdraw from the interview at any time. All interview questions were optional.

Each participant was interviewed with a standardized data collection form which included a socio-demographic data form. A semi-structured guide was used to collect information regarding each participant's experiences and perspectives on breastfeeding. The first author conducted all interviews and each interview lasted approximately 30 minutes.

Data Analysis

The primary outcomes of the study were the length of time in which exclusive and partial breastfeeding were practiced. Variables included: employment status, age, breastfeeding knowledge, civil status, and parity (number of births). Other factors included whether their doctor discussed breastfeeding with them, whether they had been breastfed as an infant, and whether they had seen promotional materials about breastfeeding.

Statistical analysis was performed using SPSSv22 and odds ratios were calculated for quantitative data. A confidence interval of 95% was used and alpha level of 0.05 was used to assess significance. For each quantitative variable, two odds ratios were completed: one comparing those mothers who breastfed partially for greater or less than six months and the other comparing those mothers who breastfed exclusively for greater or less than two months. These values were chosen because they were the average data points in our sample.

Responses were coded, categorized, and synthesized into major themes in accordance with the grounded theory methods of Corbin and Strauss. Their constant comparison method was utilized where concepts were continually compared to other data, categories were developed, and patterns were examined and refined to develop theory [13].

Results

The final sample included 60 mothers who met the inclusion criteria. The average length of exclusive breastfeeding was 2.3 (SD 3.1) months, the average length of partial breastfeeding was 8.7 (SD 9.4) months, and 93% (56/60) of mothers initiated breastfeeding. 20% (12/60) of mothers breastfed exclusively for at least six months and 8% (5/60) of mothers breastfed partially for at least two years. In this sample, 30% (18/60) of mothers had one child, 32% (19/60) had two children, and 38% (23/60) had three or more children. With regard to work status, 8% (5/60) of mothers worked full-time, 15% (9/60) worked part-time, 40% (24/60) were students, and 37% (22/60) did not work.

The only socio-demographic variable that was found to be significantly correlated with breastfeeding outcomes was work status. Mothers who worked full-time were less likely to breastfeed partially for more than six months compared to mothers who did not work (OR:5.7, 95% CI:1.56, 20.87, $p=0.007$). Parity, age, and civil status were

not significantly associated with higher or lower likelihood of breastfeeding.

To assess knowledge of breastfeeding, several true or false questions were asked. Accurate knowledge of breastfeeding-related information corresponded to better breastfeeding outcomes (breastfed longer than average). Mothers who responded correctly to the question 'breastfeeding provides all the nutrients that infants need during the first 6 months' (answer is true) were more likely to have breastfed partially for more than six months (RR: 0.490, 95% CI:0.37, 0.64, $p=0.03$). Mothers who correctly responded to the question 'after nine months, human milk has no nutritional value' (correct answer is false) were found to have higher odds of breastfeeding exclusively for more than two months (OR: 10.86, 95% CI: 2.64,44.57, $p=.0008$). While not statistically significant, 43% (26/60) of mothers said that formula was a complete substitute for breastmilk. The odds ratio results are shown in Tables I and II.

Only 13% (8/60) of the mothers received community support with breastfeeding. 87% (7/8) of mothers who received support breastfed for six months partially and/or two months exclusively. The eighth mother was unable to breastfeed due to medical reasons.

The reasons given for deciding not to breastfeed or to stop breastfeeding included seven main themes. These reasons were: (1) the child did not want the human milk (2) the mother experienced insufficient milk production (3) infant was hungry more often than the mother felt she could provide (4) breastfeeding was too painful for the mother (5) the mother was sick or taking medicine (6) the mother was working and did not have time (7) the mother did not want to breastfeed. The most common responses were that the infant was hungry more often than the mother felt she could provide and insufficient milk production. Mothers were also asked how long they were told to breastfeed and the most common response was six months in total. No mothers reported hearing the full WHO recommendation to breastfeed for 6 months exclusively and 2 or more years partially.

Responses highlighted during discussions with mothers included a belief that breastfeeding is bad for a woman's figure, a lack of generational knowledge regarding breastfeeding, and a lack of resources for breastfeeding support. For example, a participant asked the interviewer how to get her child to breastfeed because the child "did not want the (human) milk." After the interviewer recommended that she ask a health provider, the mothers

explained that she had asked, however they were unable to help. The mother noted that none of the health professionals she encountered were able to help her with breastfeeding.

Cultural and structural aspects of breastfeeding mentioned in expert interviews include lack of cooperation between the private and public sector regarding breastfeeding strategies, the belief that, in some cases, it is the father's responsibility to purchase formula, aggressive formula marketing, and the existence of a stigma associated with breastfeeding. Other concerns included a lack of resources for larger campaigns, a lack of societal and provider knowledge regarding the importance of breastfeeding for all mothers, a lack of post-natal support, and inadequate enforcement of existing laws regarding breastfeeding.

Discussion

This study aimed to understand the maternal reported factors associated with breastfeeding outcomes for mothers who attended the Dr. Robert Reid Cabral Children's Hospital in Santo Domingo, DR. Factors including breastfeeding support, correct information regarding breastfeeding, and work status were found to be significantly associated with the occurrence of exclusive breastfeeding.

There is limited and outdated field research on breastfeeding practices in the DR. A study in Santo Domingo conducted in 1997 found that early termination of breastfeeding was typically due to "child-driven" reasons such as not enough milk production or the child not wanting the human milk (14). Similarly, the most common reasons for early breastfeeding termination in our study were the child not wanting the human milk and insufficient milk production. Conversely, the third most common reason given for breastfeeding termination in our sample was that the mother needed to work and did not have time to breastfeed. We also found that mothers who worked full-time were more likely to terminate breastfeeding earlier than those who did not work. These issues may be addressed with pre and post-natal breastfeeding support [15].

Another study conducted in 1997 did not find significant differences between mothers who were working versus those who were not working [16]. The same was true for this study when part-time and full-time workers were combined into one group. However, when separated into full-time, part-time, and not working, significant

differences in partial breastfeeding duration were found. It is possible that mothers who worked part-time were able to partially breastfeed as they spent more time at home, but mothers who worked full-time found it more difficult to breastfeed at all as they spent more time at work. According to our expert interviews, separation from child, lack of equipment to pump human milk, and lack of storage or stable electricity to store human milk may be contributing factors to breastfeeding rates. These results highlight the importance of the social determinants of health (e.g., economic stability, physical environment, social context) in the discussion of breastfeeding tendencies[17].

The World Breastfeeding Trends Initiative scored the "state of mother support and community outreach" in the DR as three out of ten (ranked 36th out of 40 countries) [7]. Again, this score did not include interviews with mothers. 87% (52/60) of the mothers in this sample did not receive technical breastfeeding support (through a lactation consultant, nurse, doctor, or other clinic staff). Out of the eight mothers who received support while they breastfed, seven breastfeed their children longer than average. The mother who received support but did not breastfeed was unable to do so for medical reasons. This finding shows the need for an increase in breastfeeding support efforts.

We found that mothers who had more accurate knowledge regarding the benefits of breastfeeding were more likely to breastfeed for a longer amount of time. True or false questions were asked in an attempt to better understand whether certain types of knowledge were significantly associated with longer duration of breastfeeding. Mothers who knew that breastfeeding provided all the nutrients an infant need during the first six months were more likely to breastfeed partially for more than six months. Mothers who thought that human milk has nutritional value after nine months were more likely to breastfeed exclusively for more than two months. While not statistically significant, 46.6% of mothers thought that formula was a complete substitute for human milk. Data from other authors shows that the influence and promotion of formula may contribute to incorrect knowledge regarding formula [7]. We recommend the inclusion of information that we found to be associated with a longer duration of breastfeeding (breastfeeding provides all nutrients a child needs in the first six months and the nutritional value of human milk spans beyond six months) in promotional materials for patients, providers, and community members.

Mothers were most often told to breastfeed for six months in total. No mothers said that they were told to breastfeed for two years or more. These findings may be due to a common pattern of where mothers are told to breastfeed in total for 6 months (the length of time recommended to breastfeed exclusively) and not the total amount of time the WHO and Dominican Ministry of Health recommends breastfeeding partially (two or more years) [3]. This information emphasizes a need for both maternal and provider education regarding the length of time to both exclusively and partially breastfeed.

Limitations

This study has several limitations. As each question was optional, the response rate for certain qualitative questions may have been lower than a questionnaire that required responses. With this being said, the questions were answered by more than 95% of respondents. The sample size (n=60) reduces the generalizability of this study, yet it allowed us to capture in-depth qualitative data that was missing from the literature. Recall bias may have influenced data as a mother who recently saw a doctor might have had a better ability to recall information when compared to a mother who saw a doctor less recently. We limited this effect by interviewing only those mothers who had a child one to three years of age.

Further studies are needed to understand the factors associated with early breastfeeding initiation in the DR including type of breastfeeding support received, work conditions, premature birth, and conflict between doctor and family recommendations. We call for the development of other research designs that could expand our knowledge on specific determinants related to breastfeeding practices in developing countries such as the DR. Future research on interventions could include culturally sensitive breastfeeding support by providing early pre-natal support, information about the benefits of breastfeeding, recommendations of breastfeeding duration, and post-natal support to help address breastfeeding challenges.

This study identified several maternal reported factors associated with early termination of breastfeeding including a lack of accurate knowledge regarding the benefits and recommended duration of breastfeeding as well as a lack of support for breastfeeding mothers. These factors could be addressed in pre and post-natal lactation interventions. Breastfeeding promotion efforts should consider targeting these factors in order to improve breastfeeding rates.

Acknowledgements

We would like to acknowledge the contributions of Hilda Tavarez, Dr. Quezada, and the patient families from the Dr. Robert Reid Cabral Children's Hospital in Santo Domingo, Dominican Republic.

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Table 1: Exclusive breastfeeding statistics (n=55). *p<0.05, **p<-0.01

Variables	Exclusive breastfeeding for ≥ 2 months				OR (95% CI)	p-value
	Yes (n=26)		No (n=29)			
	n	%	n	%		
Birth order of the child:						
First born	6	37.5	10	62.5	1	
Second and above	20	51.3	19	48.7	.570 (.173,1.88)	
Mothers' employment status:						
Housewife or Not Working	9	50.0	9	50.0	1	
Working Part Time	6	60.0	4	40.0	.67 (.14,3.19)	
Working Full Time	11	40.7	16	59.3	1.46 (.44,4.84)	
Mother's relationship status:						
Single	10	40.0	15	60.0	1	
Relationship	16	53.3	14	46.7	1.71 (.59,5.02)	
Doctor discussed breastfeeding:						
Yes	22	46.8	25	53.2	1	*
No	4	50.0	4	50.0	.88 (.96,3.94)	
Saw breastfeeding promotion:						
Yes	13	41.9	18	58.1	1	
No	13	54.2	11	45.8	.61 (.21,1.79)	

Variables	Exclusive breastfeeding for ≥ 2 months				OR (95% CI)	p-value
	Yes (n=26)		No (n=29)			
	n	%	n	%		
Their mother breastfed them:						
Yes	23	51.1	22	48.9	1	
No	2	28.6	5	71.4	2.61 (.46,14.9)	
Information						
Human milk has all nutrients Child needs first 6 months						
True (Correct)	23	47	25	52.1	1	
False	3	42.9	4	57.1	1.23 (.25,6.08)	
Formula is a good substitute for human milk						
False (Correct Answer)	13	52.0	12	48.0	1	
True	13	43.3	17	56.7	1.42 (.49,4.12)	
After 9 months human milk has no nutritional value						
False (Correct Answer)	23	56.7	12	34.3	1	
True	3	15.0	17	85.0	10.86 (2.64,44.57)	
If the mother has HIV she can breastfeed						
True (Correct Answer)	24	49.0	25	51.0	1	

Variables	Exclusive breastfeeding for ≥ 2 months				OR (95% CI)	p-value
	Yes (n=26)		No (n=29)			
	n	%	n	%		
False	2	233.3	4	66.7	.52 (.09, 3.11)	

Table 2: Exclusive breastfeeding statistics (n=58). *p<0.05, **p<0.01

Variables	Partial breastfeeding for ≥ 6 months				OR (95% CI)	p-value
	Yes (n=26)		No (n=32)			
	n	%	n	%		
Parity						
First born	6	35.3	11	64.7	1.00	
Second and above	21	51.2	20	48.8	1.925 (.59,6.19)	
Mothers' employment status:						
Housewife or Not Working	13	50.0	6	68.4	1	
Working Part Time	5	50.0	5	50.0	2.1667 (.45,10.44)	
Working Full Time	8	27.6	21	72.4	5.7 (1.56,20.87)	**
Mother's relationship status:						
Single	12	38.7	19	61.3	1	
In a Relationship	14	51.9	13	48.1	.59 (.21,1.67)	
Doctor discussed breastfeeding:						
Yes	19	38.0	31	62.0	1	
No	7	87.5	1	12.5	.88 (.01,.79)	*
Saw breastfeeding promotion:						
Yes	11	34.4	21	65.6	1	

No	15	57.7	11	42.5	.38 (.13,1.12)	
Their mother breastfed them:						
Yes	18	37.5	30	62.5	1	
No	6	85.7	1	14.3	.10 (.01,.89)	*

Information

Human milk has all nutrients
Child needs first 6 months

True (Correct)	26	51.0	25	49.0	1	
False	0	0	7	100.0	.490* (.37, .64)	

Formula is a good substitute
for human milk

False (Correct Answer)	13	48.1	14	51.9	1	
True	13	41.9	18	58.1	1.3 (.45,3.60)	

After 9 months human milk has no
nutritional value

False (Correct Answer)	17	47.2	19	52.6	1	
True	9	40.9	13	59.1	1.3 (.44,3.78)	

If the mother has HIV she can
breastfeed

True (Correct Answer)	3	50.0	3	50.0	1	
False	23	44.2	29	55.8	1.26 (.23,6.84)	
