

## Breastfeeding as a Primary Diabetes Prevention Strategy Among Low-Income Latina Women

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### Abstract

Type 2 diabetes is a serious illness affecting more than 20 million Americans; if left untreated it can lead to life threatening complications such as heart disease, stroke, and kidney disease. Efforts to prevent the onset or delay the complications of diabetes are urgently needed particularly among Mexican Americans who are 1.7 times more likely to develop diabetes. Medical professionals agree that diabetes may be prevented through proper diet and exercise. A growing body of evidence suggest that the risk of diabetes may also be reduced among women who breastfeed. New research shows that women who breastfeed exclusively are less likely to develop diabetes. However, despite the many known benefits of breastfeeding, rates are declining particularly among low- income Latina women. Focus groups were conducted with low-income women participating in the Women Infants and Children Program (WIC) to assess their knowledge and perceptions of breastfeeding. It was found that all focus group participants would be more likely to breastfeed if they knew it reduced their risk of diabetes. As a result of this study, an educational handout was then developed to promote breastfeeding as a diabetes prevention strategy among low-income Latina women.

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### Introduction

Diabetes is a growing public health concern with many serious health consequences. If left untreated, diabetes can lead to other health problems such as heart disease, stroke, high blood pressure, blindness, kidney disease, nervous system disease, and amputations (Engelgau et al., 2004). Diabetes is a metabolic disorder characterized by hyperglycemia or high blood sugar resulting from the body's inability to use blood glucose for energy. (Engelgau et al., 2004). There are three major types of diabetes, Type 1, Type 2, and Gestational Diabetes Mellitus (GDM). Type 1 diabetes usually accounts for 5-10% of all diagnosed cases whereas Type 2 diabetes accounts for 90-95% of all diagnosed cases (American Diabetes Association, 2006). Gestational diabetes is the most common medical complication during pregnancy; it usually disappears post partum but it can develop into Type 2 diabetes over time (Rosenberg, Garbers, Lipkind, & Chaisson, 2005).

Recurrence of GDM in subsequent pregnancies range from 35% in white populations and 50% in non-white populations. Women who experience GDM and do not breastfeed their baby from that pregnancy are twice as likely to develop Type 2 diabetes (Engelgau et al., 2004). Breastfeeding helps lose weight between pregnancies and aids in controlling glucose levels (Stuebe, Rich-Edwards, Willet, Mason, & Michels, 2005). The ongoing metabolism of glucose into galactose and lactose during milk synthesis reduces the amount of insulin needed by lactating mothers by 27-50%. Both human studies and animals studies have demonstrated improved insulin sensitivity and glucose tolerance during lactation compared to non-lactating mothers (Stuebe et al., 2005).

Stuebe et al. (2005) analyzed data from two sets of nurses' health studies to evaluate the association between lactation history and incidence of Type 2 diabetes. The nurses' health studies consisted of large cohorts enrolled in

prospective longitudinal studies of women's health. Participants in both cohorts were asked to report total lifetime duration of lactation for all pregnancies as a categorical variable. Women completed health questionnaires every two years, when women reported the diagnosis of diabetes, diagnosis was confirmed by supplemental questionnaire. Lifetime duration of breastfeeding history among women was stratified into six groups, more than zero to three months, more than three months to six months, more than six months to 11 months, more than 11 months to 23 months, and more than 23 months. Researchers utilized a cox proportional hazards model, to compare Type 2 diabetes to lactation history. This study found that women who breastfed for longer periods of time were less likely to have diabetes. For each additional year of lactation, women had a 15% decreased risk of developing diabetes (Stuebe et al., 2005).

Research conducted by Malcova et al. (2005) also suggests breastfeeding can be protective against Type 1 diabetes. Their case control study indicates that the absence of breastfeeding can be associated with the risk of Type 1 diabetes. A case control dataset was analyzed consisting of 868 diabetic children and 1466 non diabetic children. After a univariate analysis, the associations were analyzed using a multiple logistic regression adjusted for confounders such as year of birth. The data revealed that the risk of Type 1 diabetes decreased with increasing duration of breast-feeding while no breastfeeding was associated with an increased risk of Type 1 diabetes; breastfeeding for more than 12 months was associated with a protective effect against diabetes (Malcova et al., 2005).

There is no cure for diabetes, however diabetes can be prevented or delayed through proper diet and exercise (Fisher et al., 2002). Recent studies suggest that a longer duration of breastfeeding is associated with reduced incidence of Type 2 diabetes among women who breastfeed. (Stuebe et al., 2005). Breastfeeding provides many benefits to mother and baby. One of the benefits of breastfeeding is that it helps women lose weight between pregnancies. Breastfeeding also aids in controlling glucose levels; hypothetically

this regulatory effect is what helps reduce the risk of diabetes (Stuebe et al., 2005).

Despite the numerous benefits of breastfeeding, rates are declining particularly among low income Latina women (Wood, Sasnoff, & Beal, 1998). The decline of breastfeeding is due in part to; restricted freedom, embarrassment, lack of time, social constraints, and perceived lack of social support (Knox-Stewart, Gardiner, & Wright, 2003; Mira, Hoary, Caruthers, & Fritch, 2003;). Numerous studies have been conducted on ways to increase breastfeeding rates among low-income women. One study found that women who know about the advantages of breastfeeding are more likely to breastfeed (USDA Food and Nutrition Service and Hoyer & Horvat, 2000). A study conducted by Kaufman et al. (2001) suggests that in order to have successful breastfeeding outcomes, it is imperative to offer simple breastfeeding educational materials. It is important to educate women on the relationship between breastfeeding and diabetes as it can potentially increase both the incidence and duration of breastfeeding.

Complications attributed to diabetes account for \$1 out of every \$10 spent on health care in the US (Stuebe et al., 2005). The diabetic epidemic has taken an extraordinary toll on the US population, particularly the Mexican-American population who are at twice the risk of getting diabetes. Low breastfeeding rates are another public health concern among the Mexican-American population, particularly among those participating in the supplemental food program Women Infants and Children (WIC). Less than 25% of WIC participants are breastfeeding exclusively and less than 15% do so after four months of birth (California WIC Association March, 2006).

The purpose of this project is to assess breastfeeding knowledge among Latina women and develop an educational handout to promote breastfeeding as a diabetes prevention strategy.

## **Methods**

Three focus groups were conducted with English and Spanish speaking Latina women participating in the WIC program. A focus group facilitator, videographer and note taker were present during each of the focus group sessions. The following procedures were utilized for all focus groups.

Each focus group was scheduled individually, one focus group was in English and two were in Spanish. Data were collected by video taping participants throughout the duration of the focus group.

### **Recruitment**

Before participants were recruited, an application for use of human subjects in research was submitted and approved by the College's Institutional Review Board (IRB). Participants were recruited through a flyer posted at the check in counter and the classroom at the WIC clinics. Flyers were posted for each individual focus group, three to four weeks prior to the focus group. Focus group flyers posted were written in English and in Spanish. Additionally, women were invited to participate in the breastfeeding focus groups during their nutrition counseling session at their WIC site. To be able to participate in the focus groups participants had to be between the ages of 18 to 35 and they had to have a child between the ages of zero to five years old. It was not necessary to be breastfeeding at the time of enrollment. Women who were pregnant were excluded from the focus groups. Women who participated in the focus group were compensated for their time with a \$25 gift card for any Target store.

Women who were interested were given an informed consent, the informed consent outlined the purpose of the focus group, procedures, contact information, benefits for participating, confidentiality, and it stated that they would be video taped. Participants either signed the informed consent at the clinic or signed it prior to the start of the focus group. Participants were screened over the phone with a demographic questionnaire. They were asked questions pertaining to their age, ethnicity, how long they lived in the US, preferred language, highest

grade completed, if they were currently working, number of children, and their breastfeeding history. At least 15 women were recruited to ensure attendance for the focus groups.

Once participants were screened they were sent an invite by mail reminding them of the time and date of the focus group. If the participant was going to participate in the English focus group, they were sent an English invitation and if they were going to participate in the Spanish group, the invitation was in Spanish. The invitation also served to remind participants to arrange for child care. This would help reduce the amount of noise and distractions during the video taping of the focus groups. Participants were also called one day before the focus group to confirm their attendance and to address any concerns. Coloring books and reading books were provided for women who could not arrange for child care during the focus group.

### **Coding for Confidentiality**

When participants agreed to participate in the focus group their name and phone number was written on a participant list. To protect confidentiality participants were assigned a two letter and two number code to protect confidentiality. Name tags were printed with these codes and given to participants upon arriving to the focus group. Participants wore name tags on their shirts where they can be visible by the note taker. This was done to help the note taker keep track of who was speaking.

### **Setting**

In order to facilitate participation, focus groups were held at the WIC clinic classrooms. Classrooms are typically large enough to accommodate 15-20 participants. Tables were arranged at the center of the classroom. Participants were seated around the table where they were able to face each other. The facilitator of the focus group was seated at the head of the table facing the participants. The video camera was placed on a tripod at the center of the classroom where it was able to capture all participants.

### **Focus Group Facilitation**

When participants arrived at the focus group session they were offered fresh fruit, crackers, and water while they waited for the focus group to begin. On average, focus groups started 20 minutes after the time they were originally scheduled to wait for participants. At the beginning of the focus group session, participants were invited to participate in an ice breaker activity. The ice breaker consisted of tossing a beach ball imprinted with pictures of physical activity. They were asked to look at the picture and tell the group if the activity was something they currently engage in or would like to engage in. To facilitate the ice breaker the facilitator started the ice breaker with an example. Once everyone had a turn with the beach ball participants were asked to take a seat to begin the focus group.

Participants were then informed of the discussion topics. They were told what they would be talking about, some of the benefits of breastfeeding, some of the disadvantages of breastfeeding, what is necessary to breastfeed for a longer period of time, why chose to breastfeed or not breastfeed your baby, and the relationship between breastfeeding and some chronic illness like diabetes and cancer. At this point, they were reminded that all their comments would be kept confidential. They were also told that at the end of the study, the video would be destroyed and were encouraged to feel comfortable with providing honest answers.

Once participants were informed of the discussion topics the facilitator began with the first question. Focus group questions are listed in [Appendix A](#). When participants did not respond to questions the facilitator would probe questions to encourage more participation. In order to facilitate transcription of the data, facilitator would pause between questions. When answers were vague the facilitator asked participants to elaborate. If participants were soft spoken the facilitator would reiterate what was stated by participant to ensure the conversation was captured by the camera.

### **Data Transcription**

The focus group conversations were captured with a DVD video camera. Video clips were then easily transferred into a computer file. Once all three focus groups were completed data was transcribed by listening to the video clips numerous times. As a backup method a research assistant on the project took notes using a laptop.

### **Data Organization**

Data gathered from the focus group conversation was collected and categorized into trends. For example for the first question “What have you heard about the benefits of breastfeeding?” if at least two women mentioned a response like “breastfeeding helps prevent illness” this was noted as a trend. The table also looked at similarities between groups. For instance, if at least one person from each group mentioned tooth decay was a disadvantage for breastfeeding it was noted that all three groups noted that disadvantage or two groups noted that disadvantage. Please see [Appendix B](#) for observed trends. Common trends were highlighted upon review of the data and were used to help develop brochure. Data gathered from the participant demographic questionnaire is listed in [Appendix C](#).

### **Results**

A total of 29 women participated in this study. The first focus group consisted of nine participants, the second group 10 participants and the third group 10 participants. The focus groups revealed that all Latina women participating in WIC programs know that breastfeeding is good for their babies (see [Appendix B](#)). All three focus groups identified breastfeeding as having nutritional, immunological, and developmental benefits. Some other benefits of breastfeeding mentioned were: that it is convenient, it lowers the risk of developing breast cancer, it serves to bond with the infant, and it provides added benefits to mother such as weight loss. When they were asked where they learned about this information all groups mentioned three specific places, the media, doctors, and WIC. WIC was mentioned as one of the number one places where they receive useful information about many health topics. It was mentioned by one Spanish-

speaking participant if it wasn't for WIC she would not have breastfed. Nonetheless breastfeeding rates among WIC participants are still low.

When the disadvantages of breastfeeding were discussed many myths were mentioned that discouraged women from breastfeeding. For example, all the focus groups mentioned that when the mother is angry she should not breastfeed because the baby will absorb her anger. The women in the focus groups felt that their milk supply would be affected by their nutrition. Tooth decay was a common concern among three of the participant in the first group. All groups felt that pain was one disadvantage of breastfeeding. All groups agreed that when a mother is sick, she should not breastfeed because she will transmit her illness to her infant. Two groups, one English-speaking and the other Spanish-speaking, felt that embarrassment is a disadvantage to breastfeeding.

Even though there were perceived disadvantages, the women said they were asked if they were more likely to breastfeed for a longer period of time if they knew breastfeeding would reduce their risk of diabetes. When they were asked to give reasons why they would be more likely to breastfeed knowing this information all groups commented on the health benefits. One English-speaking woman in the second group is diabetic and she mentioned that breastfeeding has helped her with her diabetes by controlling her glucose levels. She was the only one of the 29 participants that was diabetic. One woman commented that she would breastfeed to prevent diabetes in another pregnancy; this woman was the only woman who had a history of gestational diabetes. All groups mentioned that because diabetes is

common among Latinos it is important for them to know of ways to help prevent diabetes.

When women were asked what they needed to breastfeed for six months or more, all groups mentioned that they would need support. The English-speaking group gave more technical answers such as drink milk, calcium, and vitamins. The first Spanish-speaking group emphasized education, and they mentioned that young women were in particular need of receiving education necessary to be successful in breastfeeding. According to this group, women need to know about the benefits and what to expect when they breastfeed so they don't give up.

WIC participants are constantly bombarded with brochures, handouts, and information on many health topics. The information they receive is simple and applicable. However they receive so much information on similar topics such as nutrition and breastfeeding that they often disregard the content. WIC women and other low-income women need to learn about health topics affecting them. The focus groups revealed that if women knew about the protective effect breastfeeding has against diabetes they would be more likely to breastfeed.

The educational handout developed for this study ([PDF](#)) is intended to promote breastfeeding as primary diabetes prevention strategy. The brochure focuses on the prevalence of diabetes among Latinos and how breastfeeding can help reduce the risk of developing diabetes in both mother and infant. The brochure is geared towards Latina women to increase their awareness of diabetes and educate them on how breastfeeding can help prevent diabetes.

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## Appendix A

### Focus Group Questions

1. What are some good things about breastfeeding?
  - a) Where did you hear about these good things?
2. What are some bad things about breastfeeding?
  - a) Where did you hear about these bad things?
3. If you decided to breastfeed your baby for more than 6 months, what would you need to help you do this? (Probe question: would you need support from your family?)
4. For those of you who Breastfed or currently breastfeed your baby/babies, why did you decide to breastfeed?
5. For those of you who bottle fed or currently bottle feed your baby/babies, why did you decide to bottle-feed?
6. If you knew breastfeeding for more than 6 months would reduce your risk of getting diabetes in the future would you be more likely to breastfeed for a longer period of time?
  - a) If yes why?
  - b) If no why not?
7. If you knew breastfeeding for more than 6 months would reduce your risk and your baby's risk of being overweight would you be more likely to breastfeed for a longer period of time?
  - a) If yes why?
  - b) If no why not?
8. Have you heard about any relationship between breastfeeding and cancer?

## Appendix B

### Benefits and Barriers to Breastfeeding as Noted by Participants

<b>Benefits</b>	<b>Stated by</b>	<b>Acquired Knowledge</b>	<b>Stated by</b>	<b>Disadvantages</b>	<b>Stated by</b>	<b>Acquired Knowledge</b>	<b>Stated by</b>	<b>BF for 6 Months</b>	<b>Stated by</b>
Nutritional	All Groups	Experience	3	Transmission of illness	3	Personal Experience	2	Support	All groups
Immunological benefits	All Groups	Media	All groups	Baby absorbs anger or fear through breast milk when mom is scared or angry. This can produce colic.	3	Family	3	Proper nutrition	1, 3
Developmental	All Groups	WIC	All groups	Nutritional intake can affect breast milk	3			Desire to BF	1
Practical/Convenient	2, 3	Hospital	1, 3	Tooth decay	1			Not feel like baby is dependent on mom	1
Lower risk of developing breast-cancer in BF mothers	3	Doctor	All groups	Work				Drink milk, calcium, and vitamins	3
Bond between mother and baby	2, 3	Moms	1, 3	Engorgement/sore nipples	All groups			Drink plenty of fluids	2, 3
Healthier for mother	3	Friends/family	2	Embarrassment	1, 3			help and support from partner	3
Weight loss for BF mother	1, 3	TV & Magazines	3	Not enough milk				support from nurses	3
								Use a breast pump	All groups
								education	1

Appendix B *continued*

Why Choose BF	Stated by	Why Chose Bottle	Stated by	Decision to BF & Diabetes	Stated by	Why	Stated by	Decision To BF & Obesity	Stated by	Why	Stated by	Relationship with Breast Cancer	Stated by
Baby was in ICU and Breast milk would help	All groups	Feeling like baby is not getting enough	2, 3	yes	All groups	Health	All groups	yes	All groups	Reduce risk	All groups	No	All groups
Husband encouragement	2	Lack of time due to work	1, 2			Reduce risk of diabetes	All groups	Reduce risk	All groups			Breast-feeding reduces risk of cancer	All groups
Mother encouragement	1, 2	Convenience (mentioned by 3 different people in the group)	2			To prevent diabetes in another pregnancy	1	Lose weight	1				
Better nutrition for baby	all groups	Lack of sleep	2										
Breastfeed continuously	2												
Immunological benefits for baby	1, 2												
Developmental benefits	2												
Practical at night time	3												

Focus Groups # (3 focus groups were conducted). 1 – Spanish Speaking, 2 – English Speaking, 3 – Spanish Speaking.

\* Stated by = Subjects in focus group (1, 2, or 3) stated response

## Appendix C

### Demographic Information of Focus Group Subjects

Subject	Age	Born in US	Years Living in US	Preferred Language*	Highest Grade Completed	Currently Working	Number of Children	Tried to BF	Length of Time BF (MONTHS)	Family History of Diabetes	Gestational Diabetes
<b>Group #1</b>											
AV 06	29	N	4	SP	9	Y	3	Y	9	N	N
CN 03	36	N	5	SP	9	N	2	Y	3	N	N
EC 09	34	N	15	SP	9	N	1	Y	1	N	N
FG11	21	N	5	SP	9	Y	1	Y	6	Y	N
IP 08	23	N	4	SP	8	N	1	Y	22	Y	N
MH 02	34	N	8	SP	9	N	2	Y	24	Y	N
RH 01	35	N	17	SP	8	N	1	Y	8	Y	N
RM 10	24	N	12	SP	13	N	1	Y	12	N	N
SR 07	29	N	8	SP	8	N	4	Y	24	N	N
<b>Group #2</b>											
DH 14	29	N	16	SP	12	N	1	Y	7	N	N
CP 15	24	Y	24	EN	SC	Y	1	Y	1	N	N
AR 16	40	N	23	SP	12	N	4	Y	9	Y	N
MS 19	21	Y	21	EN	13	N	2	Y	6	Y	N
DJ 21	18	Y	18	EN	10	N	1	N	13	Y	N
YM 22	25	Y	25	EN	10	Y	3	Y	10	Y	N
BC 25	31	N	31	EN	SC	N	2	Y	2	Y	Y
MR 26	24	Y	24	EN	8	N	2	N	0	N	N
AC 27	18	Y	18	EN	SC	Y	1	Y	1	Y	N
MV 28	29	Y	29	EN	SC	Y	6	Y	6	Y	N
<b>Group#3</b>											
BR 30	35	N	3.5	SP	6	Y	3	Y	16	Y	N
MA 32	24	N	2	SP	6	N	4	Y	12	N	N
VV 33	33	N	7	SP	SC	N	2	Y	5	Y	N
CS 34	29	N	6	SP	9	N	3	Y	15	N	N
MA 35	32	N	10	SP	8	N	2	Y	6	N	N
MZ 36	36	N	5	SP	11	N	2	Y	4	N	N
MC 38	31	N	5	SP	12	N	2	Y	24	Y	N
MH 40	34	N	23	SP	10	Y	3	Y	4	Y	N
AH 42	23	N	6	SP	9	N	2	Y	10	Y	N
EM 44	37	N	15	SP	12	N	5	Y	12	Y	N

\* EN=English, SP=Spanish



IF YOU HAVE NOT  
THOUGHT ABOUT  
BREASTFEEDING THINK  
AGAIN.

Did You Know  
Breastfeeding  
Can Help  
Prevent  
Diabetes?



