The Association Between Postpartum Healthcare Encounters and Contraceptive Use among Rhode Island Mothers, 2012–2015

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BACKGROUND

Unintended pregnancies account for nearly 50% of all pregnancies[1]. Compared to those conceived intentionally, children born of unintended pregnancies have worse outcomes in nutrition, abuse, and overall mortality[2]. Mothers with unintended pregnancies report lower levels of happiness-[3]health, and mother-child relationships. We hypothesize that unwanted childbearing affects mother-child relationships in part because of the physical and mental health consequences of unwanted childbearing. Impaired mental health hampers women's interaction with their infants, and these poor neonatal relationships translate into poor mother-adult child relationships. Using the Intergenerational Panel Study of Mothers and Children – a 31-year longitudinal survey of a probability sample of 1,113 mother-child pairs begun in 1961 – we demonstrate that mothers with unwanted births have lower quality relationships with their children from late adolescence (age 18 and higher rates of anxiety[4]. Thus, postpartum contraception is important in preventing these harms. Contraceptive-specific counseling by healthcare workers increases both general contraception use and use of highly effective contraception[5], raising the question as to which encounters offer opportune times to discuss postpartum contraception. To date, the literature has indicated that home visits during pregnancy[6] and postpartum check-ups[7,8] are associated with increased postpartum contraception use.

The purpose of this study was to examine the association between encounters with health care workers after pregnancy and the use of any postpartum contraception method and, specifically, highly effective methods in Rhode Island.

METHODS

We analyzed data from the 2012–2015 Rhode Island Pregnancy Risk Assessment Monitoring System (RI-PRAMS; n=4,687). PRAMS is a collaborative surveillance project of the Centers for Disease Control and Prevention (CDC) and state health departments, which collects state-specific, population-based data from mothers with a recent live birth[9]. PRAMS surveys are conducted through a mail or telephone survey 2–6 months postpartum. Mothers who participate in PRAMS self-report behaviors and experiences before, during, and shortly after pregnancy; this data is linked to birth certificate data and weighted to represent all women delivering live infants.

Postpartum healthcare encounters were defined as mothers having a postpartum checkup and having a home visitor service after delivery. Postpartum contraception use was determined using the following questions: "Are you or your husband or partner doing anything *now* to keep from getting pregnant?" and "What kind of birth control are you or your husband or partner using *now* to keep from getting pregnant?" We defined highly effective forms of contraception as female or male sterilization, IUDs, and implants. To identify disparities, socio-demographic characteristics and other pregnancy-related experiences were included in our analyses.

Analyses were performed using STATA 14.2 (STATACorp, LLC.)[10], which accounts for the complex survey design of RI-PRAMS. We assessed the healthcare encounter exposures and the included covariates' association with a) the use of any contraception method versus use of no method (Model 1) and b) the use of highly effective methods versus other or no methods (Model 2). We used backward stepwise logistic regression with an inclusion threshold set at a p-value ≤.1. Model 1 had 4,254 observations in the final sample (with 8.6% of observations excluded due to missing information) and Model 2 had 4,214 observations in the final sample (with 10.1% of eligible observations excluded due to missing information). Unadjusted and adjusted odds ratios (AOR) based on population-level characteristics are presented with 95% confidence intervals (CI).

RESULTS

Demographic characteristics are presented in **Table 1**. During 2012–2015, 84% of Rhode Island mothers used any method of postpartum contraception, and 34% of mothers used highly effective methods.

Use of Any Postpartum Contraception Method

Stepwise regression produced a model with the following covariates: age, marital status, Hispanic identity, age of infant, parity, WIC (the special supplemental nutrition program for women, infants, and children) program participation, and current breastfeeding status. Results from this model are presented in **Table 2**.

After controlling for all covariates in the model, mothers who had a postpartum checkup, compared with mothers who did not have a postpartum checkup, had increased

Table 1. Characteristics of Study Population

Characteristics	Weighted % (Unweighted n)
Age	
14-19	5.7% (236)
20-29	46.1% (1,975)
30 and Over	48.2% (2,331)
Education	
Less than 12 years	12.2% (464)
12 years	24.8% (955)
More than 12 years	63.0% (2,691)
Race	
White	64.9% (2,828)
Black	7.1% (339)
Other	28.0% (1,265)
Ethnicity	
Hispanic	24.1% (1,079)
Non-Hispanic	75.9% (3,395)
Infant Age	
Two or three months old	43.7% (2,056)
Four months or older	56.3% (2,485)
Parity	
First Child	42.0% (1,929)
Second Child or More	58.0% (2,551)
Marital Status	
Married	55.1% (2,666)
Unmarried	44.9% (1,876)
WIC Program Participation	
Yes	47.1% (2,058)
No	52.9% (2,469)
Current Breastfeeding	
Yes	46.1% (2,012)
No	53.9% (2,391)
Pregnancy Intention	
Intended	58.1% (2,741)
Unintended	41.9% (1,891)
Postpartum Depression	
Yes	11.8% (562)
No	88.2% (3,948
Insurance Coverage During Pregnancy	
Private	59.9% (2,610)
Public	40.1% (1,609)
Postpartum Home Visitor	
Yes	36.4% (1,860)
No	63.6% (2,595)
Postpartum Checkup	
Yes	92.9% (4,239)
No	7.1% (296)
Used Any Postpartum Contraception	
Yes	83.9% (3,779)
No	16.1% (763)
Used Highly Effective Method of Postpartum Contraception	
Yes	33.6% (1,504)
No	66.4% (3,038)

Table 2. Unadjusted and adjusted odds ratios of any postpartum contraception use among Rhode Island mothers with a recent live birth, RI PRAMS 2012–2015

	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
Postpartum Home Visitor		
Yes	1.31 (1.09, 1.58)	1.21 (.982, 1.48)
No	1.00 (ref)	1.00 (ref)
Postpartum Checkup		
Yes	1.63 (1.21, 2.20)	1.88 (1.35, 2.62)
No	1.00 (ref)	1.00 (ref)
Age		
14-19	1.36 (.904, 2.05)	1.57 (.956, 2.58)
20-29	1.35 (1.13, 1.61)	1.40 (1.13, 1.73)
30 and Over	1.00 (ref)	1.00 (ref)
Ethnicity		
Hispanic	1.91 (1.51, 2.40)	1.52 (1.17, 1.98)
Non-Hispanic	1.00 (ref)	1.00 (ref)
Infant Age		
Two or three months old	1.00 (ref)	1.00 (ref)
Four months or older	.956 (.806, 1.13)	.826 (.686, .995)
Parity		
First Child	1.00 (ref)	1.00 (ref)
Second Child or More	1.44 (1.21, 1.71)	1.50 (1.22, 1.83)
Marital Status		
Married	.906 (.761, 1.08)	1.31 (1.05, 1.64)
Unmarried	1.00 (ref)	1.00 (ref)
WIC Program Participation		
Yes	1.59 (1.33, 1.90)	1.34 (1.06, 1.69)
No	1.00 (ref)	1.00 (ref)
Current Breastfeeding		
Yes	.761 (.640, .906)	.806 (.667, .973)
No	1.00 (ref)	1.00 (ref)

odds of using any postpartum contraception method (AOR=1.88, 95% CI=1.35-2.62). Having a postpartum home visitor was not associated with increased odds of using postpartum contraception (AOR=1.21, 95% CI=.982-1.48). Mothers who were Hispanic, were married, were 20-29 years old, or participated in the WIC program had higher odds of using postpartum contraception compared to their reference groups, while mothers who were currently breastfeeding or had infants four months or older had lower odds of using postpartum contraception compared to their reference groups.

Use of Highly Effective Methods

The stepwise regression with inclusion set at pproduced a model with the following covariates: previous pregnancy intention, Hispanic identity, age of infant, parity, WIC program participation, and current breastfeeding status. Results from this model are presented in **Table 3**.

After controlling for all covariates in the model, compared to mothers without a postpartum checkup, mothers with a postpartum checkup had higher odds of using highly effective contraceptive

Table 3. Unadjusted and adjusted odds ratios of highly effective postpartum contraceptive use among Rhode Island mothers with a recent live birth, RI PRAMS 2012–2015

	Unadjusted Odds Ratio (95% CI)	Adjusted Odds Ratio (95% CI)
Postpartum Home Visitor		
Yes	1.29 (1.12, 1.49)	1.09 (.923, 1.28)
No	1.00 (ref)	1.00 (ref)
Postpartum Checkup		
Yes	1.46 (1.10, 1.94)	2.06 (1.48, 2.85)
No	1.00 (ref)	1.00 (ref)
Ethnicity		
Hispanic	2.38 (2.04, 2.77)	1.64 (1.36, 1.97)
Non-Hispanic	1.00 (ref)	1.00 (ref)
Infant Age		
Two or three months old	1.00 (ref)	1.00 (ref)
Four months or older	1.40 (1.22, 1.61)	1.16 (.995, 1.35)
Pregnancy Intention		
Intended	1.00 (ref)	1.00 (ref)
Unintended	1.70 (1.48, 1.95)	1.50 (1.28, 1.75)
Parity		
First Child	1.00 (ref)	1.00 (ref)
Second Child or More	2.27 (1.96, 2.62)	2.24 (1.91, 2.62)
Current Breastfeeding		
Yes	.631 (.549, .725)	.768 (.656, .898)
No	1.00 (ref)	1.00 (ref)
WIC Program Participation?		
Yes	2.31 (2.01, 2.65)	1.55 (1.30, 1.85)
No	1.00 (ref)	1.00 (ref)

method (AOR=2.06, 95% CI=1.48-2.85). Having a home visitor after pregnancy was not associated with the use of highly effective methods (AOR=1.09, 95% CI=.923-1.28). Mothers who were Hispanic, had at least one previous live birth, did not intend to conceive their last pregnancy, or participated in the WIC program had higher odds of using highly effective contraception compared to their reference groups. Mothers who were currently breastfeeding were less likely to use highly effective postpartum contraception compared to their reference group.

LIMITATIONS

There are at least three limitations to this study. First, because PRAMS data are self-reported by mothers 2–6 months postpartum, there may be social desirability or recall bias. Second, even though we combined 4-year data (all Phase 7 years) to increase the sample size, some categories (maternal age 14–19 years, blacks, women without a postpartum checkup, etc.) still have small observations, which may produce less reliable results. Third, we cannot directly determine whether or not mothers received any contraception-related counseling during the healthcare encounters from the survey. Despite these limitations, this study provides important public health implications for the use of postpartum contraception among Rhode Island mothers.

DISCUSSION

A central finding of this study is that having a postpartum checkup was associated with higher use of both any postpartum contraception and highly effective methods, while having a postpartum home visitor was not associated with use of any method of postpartum contraception or use of highly effective methods. Overall, this research reveals a few opportunities to improve postpartum contraception use across the state.

With only 34% of Rhode Island mothers using highly effective methods, many women across the state face a substantial risk of contraception failure. Given the efficacy of counseling on increasing postpartum contraception use[5], integrating counseling components into pregnancy-related programs may help to improve contraceptive-related choices across the state. In particular, home visitor programs after pregnancy can play an increased role in encouraging mothers to use more effective forms of contraception, especially for mothers without postpartum checkups. Given the lack of association between having a postpartum home visitor and use of any method of contraception and use of highly effective methods, there is an opportunity to implement increased education regarding contraception and the efficacy of various contraceptive methods during these visits.

Prompting conversations regarding contraception options that, at the very least, encourage mothers to start considering these choices may help prevent the burden of unintended pregnancies on the mother, newly born child, and future children conceived unintentionally. Rhode Island should consider these options as well as others to reduce the burden of unintended pregnancy throughout the state.

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