

Title: Characterizing Pregnancy Scares and Their Association with Perceived Infertility

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ABSTRACT (150 Word Max)

Purpose: We test the hypothesis that as women have an increasing number of pregnancy scares, they are more likely to believe they are infertile. We also document the reasons why women had their first pregnancy scare and how women resolved that pregnancy scare.

Methods: We study a national sample of 242 women aged 18-44 recruited using Amazon Mechanical Turk. Using logistic regression, we predict perceived infertility using the number of past pregnancy scares, controlling for sociodemographic factors and confounding variables.

Results: In our sample, 54% of women had ever experienced a pregnancy scare and 55% reported being at least slightly suspicious that they are infertile. As women's numbers of scares increased, they were significantly ($p < 0.001$) less likely to suspect they were infertile.

Conclusions: Pregnancy scares are a common event in women's lives that are associated with significantly reduced odds of perceived infertility, which is a risk factor for unplanned pregnancies.

Researchers have found many reasons why women might have unprotected sex while not desiring pregnancy [1, 2]. One key reason is that some women doubt that they will get pregnant if they have unprotected sex because they believe they are infertile [1, 3]. Incorrectly suspected infertility is relatively common: while CDC estimated that in 2013 about 6.1% of US married women are infertile [4], between 14.6%-21.5% of women aged 15-29 have reported, in both large nationally representative surveys [5, 6] and single-state surveys [7, 8], thinking that it is very likely that they are infertile. Women who believe they are infertile often attribute their belief to a history of unprotected sex that did not lead to pregnancy [1, 3]. This is similar to a pregnancy scare: when a woman suspects she is experiencing an unplanned pregnancy but later discovers she is not. Teens who have pregnancy scares have been found to be more likely to believe they are infertile, are less or no more likely to use effective contraception, and are more likely to experience unintended pregnancies [9-13]. However, the association between pregnancy scares and perceived infertility has not been studied in adults. We hypothesize that as women of reproductive age (18-44) have more pregnancy scares, they are increasingly likely to suspect they are infertile. This study also adds to the literature on pregnancy scares by providing the first estimate of the percentage of women of reproductive age who have ever had a pregnancy scare, and by exploring the reasons why women have and how they resolve pregnancy scares.

Methods

Data Source

We used an online survey for which respondents were recruited through Amazon Mechanical Turk (MTurk). MTurk is an online service where individuals can post small, simple jobs to be completed for a small amount of money [14]. The MTurk page linked to a Qualtrics survey for eligible women to complete. To be eligible, women had to be of reproductive age (18-44). We included women who have not had sex because previous research has found that they sometimes experience pregnancy scares [11]. MTurk data are generalizable to US internet users and are as reliable as data from other sources [15, 16]. In the US 99% of 18-29 year olds and 96% of 30-45 year olds use the internet [17]. Study compensation was \$1.20, and the University of North Carolina at Chapel Hill IRB approved this study (IRB record #17-0204).

Measures

The dependent variable is perceived infertility. We used a modified version of Kaye, Suellentrop, and Sloup's measure [6], asking: "Some people are unable to become pregnant, even if they want to. How likely or unlikely do you think it is that you will be unable to get pregnant?" In analysis, we collapsed this into a binary variable: 0 if women reported that they were not at all likely to be infertile, and 1 if they reported that they were at least slightly likely to be infertile. For descriptive purposes, we also asked women why they suspected that they were infertile. Options included medical and non-medical reasons to suspect infertility, and women could select all that applied.

The independent variable is the number of pregnancy scares a woman has had. To measure whether a woman has had any pregnancy scares, we asked: "Have you ever had a pregnancy scare; that is, thought you were pregnant when you didn't want to be, but later discovered that you weren't pregnant after all?" For the number of pregnancy scares,

we asked, “How many pregnancy scares have you had? We are interested in your best guess.” The categories for number of pregnancy scares are 0, 1, 2, 3, 4, and 5 or more.

We also measured a number of control variables that might affect the relationship between pregnancy scares and perceived infertility. These included the following socio-demographic controls, selected because they have been shown to be associated with perceived infertility[5]: age, race/ethnicity, family income, insurance type, education, rural/urban residence, and public assistance receipt. We also include control variables that have also been shown to be associated with perceived infertility [5, 8, 9]: time since first sex, previous pregnancies, the number of friends who have had unplanned pregnancies, and whether the woman is currently trying to conceive.

Finally, we asked women questions about their first pregnancy scare: age at the time, what caused it, how she resolved it, and whether she was taking birth control at the time. If she said that she went to a health care provider for a pregnancy test during her first scare, we asked whether the provider talked to her about changing her birth control method. We also asked how long ago her most recent pregnancy scare was.

Analysis

We dropped women who were missing data on any of our analysis variables (N=34). We first conducted bivariate logistic regressions on perceived infertility and each of the other variables. Then we conducted a multivariate logistic regression to predict perceived infertility based on the number of previous pregnancy scares, controlling for all covariates and offsetting by the log of the number of years since first sex to account for exposure. We stratified our results by whether the women had ever been pregnant because this is evidence to her that she was not infertile when she conceived.

Preliminary Results

Descriptive statistics for our study sample can be found in Table 1. We found that 54% of our study sample had ever had a pregnancy scare, and 55% at least slightly suspected they were infertile. Almost a quarter (24%) of women who said they were at least slightly likely to be infertile reported that a pregnancy scare was one reason why.

Table 1: Descriptive Statistics of MTurk Sample of Women Aged 18-44

Variable	N (%)	Variable	N (%)
	Total N=242		Total N=242
Age (Mean, Min, Max)	31.0 (19, 44)	Suspect Infertile	
		Extremely likely	16 (7%)
Age at First Sex (Mean, Min, Max)	17.8 (13, 32)	Quite Likely	46 (19%)
		Slightly likely	72 (30%)
		Not at all likely	108 (45%)
Race		Reason(s) she suspects she is infertile	
White	178 (74%)	<i>Medical Reasons</i>	70 (52%)
Black	28 (12%)	Sterilization procedure	10 (7%)
Hispanic/Latin@	21 (9%)	Menopause	8 (6%)
Other	15 (6%)	Problems with ovulation	32 (24%)
Education		Problems with repro anatomy	31 (23%)
High School Graduate	81 (34%)	Other illnesses	12 (9%)
2-Year College Graduate	37 (15%)	Medical doctor told me	6 (4%)
4-Year College Graduate	99 (41%)	Other medical reason	22 (16%)
Graduate School	24 (10%)		

Income			<i>Non-Medical Reasons</i>	27 (20%)
Under \$20k	27 (11%)		Infertile family member	37 (28%)
\$20k-\$50k	89 (37%)		Tried to get pregnant & couldn't	63 (47%)
\$50k-\$75k	74 (31%)		Unprotected sex	32 (24%)
\$75k-\$100k	30 (13%)		Pregnancy scare	31 (23%)
>\$100k	20 (8%)		Can't know for sure	27 (20%)
			Other reason	
Health Insurance			Number of Pregnancy Scares	
Private	144 (60%)		0	108 (46%)
Medicaid	28 (12%)		1	59 (25%)
Other	24 (10%)		2	35 (15%)
None	45 (19%)		3	21 (9%)
			4	6 (3%)
			5+	7 (3%)
Correctly guessed likelihood of pregnancy for one year of unprotected sex (within ± 15%)			Reason for First Scare	
Yes	85 (35%)		Missed period	101 (79%)
No	157 (65%)		Other pregnancy symptom	59 (46%)
			Unprotected Sex	102 (80%)
			Possible birth control failure	62 (49%)
			Certain birth control failure	28 (22%)
			Other	12 (10%)
Number of Friends Who've Had an Unplanned Pregnancy			Method of Resolving Pregnancy Scare	
0	44 (18%)		Taking emergency contraception	23 (18%)
1-5	177 (73%)		Taking home pregnancy test	96 (76%)
5-10	18 (8%)		Receiving test from provider	28 (22%)
10+	<5		Waiting	89 (70%)
			Other	<5
Public Assistance			Using Birth Control During Scare	
Yes	35 (15%)		Yes	61 (48%)
No	203 (84%)		Maybe	7 (5%)
			No	60 (47%)
Area			Provider discussed changing birth control method during scare	
Rural	51 (21%)		Yes	11 (39%)
Suburban	119 (49%)		No	15 (54%)
Urban	71 (29%)			
Trying to Conceive			Age at First Scare (Mean, Min, Max)	21.4 (14, 39)
Yes	14 (6%)			
No	228 (94%)			
Ever Been Pregnant			How long ago was your most recent pregnancy scare?	
Yes	117 (48%)		Within the past year	24 (35%)
No	125 (52%)		1-3 years ago	19 (28%)
			3-5 years ago	7 (10%)
			5-10 years ago	12 (17%)
			More than 10 years ago	7 (10%)

Our bivariate ordered logistic regressions found that only the number of pregnancy scares ($p=0.000$), ever being pregnant ($p=0.000$), and time since first sex ($p=0.029$) significantly predicted perceived infertility. However, contrary to our hypothesis, we found that for each additional pregnancy scare the woman had, she had 0.65 times the odds of a woman with no pregnancy scare of believing that she was infertile. Results for the multivariate ordered logistic regression can be found in Table 2. Again, contrary to our hypothesis, for each additional pregnancy scare, women were significantly less likely to believe that that were infertile (OR 0.60, 95% CI 0.44-0.80). We also found that being Black and having

non-private insurance were associated with significantly increased odds of perceived infertility. We did not find substantially different results when stratifying by whether the woman had ever been pregnant (results in full paper).

Table 2: Results of Multivariate Ordered Logistic Regression on Perceived Infertility

Variable	Odds Ratios (95% CI)
Number of Pregnancy Scares	0.60** (0.44, 0.80)
Age	0.95 (0.89, 1.02)
Income	0.99 (0.87, 1.13)
Education	0.91 (0.66, 1.26)
Race/Ethnicity	
White	Reference
Black	3.50* (1.20, 10.21)
Hispanic/Latin@	0.35 (0.11, 1.14)
Other	0.44 (0.11, 1.80)
Number of Friends with Unplanned Pregnancies	0.53 (0.27, 1.07)
Ever Been Pregnant	0.11*** (0.05, 0.26)
Trying to Conceive	1.66 (0.37, 7.49)
Residential Area	
Rural	Reference
Urban	1.51 (0.63, 3.65)
Suburban	1.01 (0.38, 2.69)
Public Assistance	2.36 (0.76, 7.39)
Insurance	
Private Insurance	Reference
Medicaid	3.97* (1.02, 15.46)
Other	3.65* (1.02, 13.09)
No Insurance	3.01* (1.18, 7.67)

*p<0.05, **p<0.01, ***p<0.001

tests [11, 12]; however, we found that only 22% of women resolved their first pregnancy scare by receiving a pregnancy test from a healthcare provider. This suggests that research on a clinic sample may not be generalizable to pregnancy scares broadly.

Our regression found that having non-private insurance was associated with significantly increased odds of perceived infertility (OR 3.01-3.97). One possible explanation for this result is that increased access to healthcare or increased healthcare quality might result in more contacts with doctors who can dispel misconceptions about fertility. In the full paper, we will explore the reasons that women with non-private insurance endorse for their perceived infertility, which may shed more light on this result.

From a demographic perspective, these preliminary results suggest that pregnancy scares are a common event in women’s lives. However, while previous research has shown that scares are not associated with improved contraceptive use, our results show that women who have pregnancy scares have significantly lower odds of suspected infertility. This suggests that these women believe they are at risk of pregnancy, but are choosing to continue to engage in risky sexual behavior that puts them at increased risk of unplanned pregnancy. Further research is needed to explain the process underlying this counterintuitive result.

Conclusion

From a public health perspective, these results point to gaps in the public health response to pregnancy scares. Only 18% of women report resolving their pregnancy scare by using emergency contraception despite the fact that 80% and 71% of women say that they experienced their first pregnancy scare because they had unprotected sex and/or a birth control failure, respectively. While emergency contraception has become more available and used by more women in recent years [18], this finding suggests that it may still be underutilized.

Previous research on pregnancy scares has largely focused on clinic samples of women with negative pregnancy

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