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Inequalities in Infertility Service Utilization: A Comparison of Latina and Caucasian Women with Impaired Fecundity Who Seek and Do Not Seek Care

Abstract

Purpose: To compare racial differences in accessing infertility services, and to characterize socioeconomic, cultural and social factors that influence the propensity to seek care.

Materials and Methods: Using data from the 2002 and 2006-2010 rounds of the National Survey of Family Growth, bivariate analyses and multiple logistic regressions were performed to determine the associations between individual patient characteristics and health seeking practices, stratified by ethnicity.

Results: Factors that were significantly associated with seeking infertility services included Latina ethnicity, age, country of birth, more than high school education, being born in the United States, placing importance on religion, >200% federal poverty level, not having medical insurance for the past 12 months, and stating "Yes" to the question "Do you want a baby?".

Conclusions: Latinas are more likely to seek infertility services compared with Caucasian women. A number of demographic, cultural, social, and socioeconomic factors are significantly related to propensity to seek infertility care. This study shows that infertility service utilization is a multifaceted issue and further qualitative research is needed to better understand factors contributing to service utilization.

Keywords: Infertility; Access to care; Health disparity; Inequalities

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Inequalities in Infertility Service Utilization: A Comparison of Latina and Caucasian Women with Impaired Fecundity Who Seek and Do Not Seek Care

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ABSTRACT

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Conclusions: Latinas are more likely to seek infertility services compared with Caucasian women. A number of demographic, cultural, social, and socioeconomic factors are significantly related to propensity to seek infertility care. This study shows that infertility service utilization is a multifaceted issue and further qualitative research is needed to better understand factors contributing to service utilization.

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INTRODUCTION

The Latino population in the United States is rapidly growing, increasing from 22.4 million to 35.3 million between 1990 and 2000, making Latinos the fastest growing ethnic group in the country (United States Census Bureau, 2000). Equally as significant, Latinos are projected to comprise more than 50% of the California population by 2042 (May, 2007). With this growing number of Latinas, it has become increasingly apparent that there is a healthcare disparity in terms of health service utilization when Latinas are compared to Caucasian women. Many

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studies have shown that minorities, specifically Latinas, have an equal or even higher likelihood of having infertility, however there continues to be a paradoxically lower number of Latinas utilizing assisted infertility services when compared to Caucasian women (Chandra et. al., 2005; Chandra et. al, 1998; Feinberg et al., 2007). Infertility is defined as the inability to conceive after 12 or more consecutive months of unprotected intercourse (Chandra et al., 2005). Nationally, 12% of 62 million Americans are currently infertile, and while a number of studies have shown that Latinas have equal if not higher rates of infertility when compared to Caucasian women Chandra & Stephen found that only 9.1% of Latinas and 75.6% of Caucasians with self-reported impaired fecundity accessed infertility services (Chandra et. al., 2005; Chandra et. al., 1998; Feinberg et al., 2007).

Factors such as symptom recognition, gender roles, education level, language barriers, level of infertility knowledge, socioeconomic status, insurance status, and alternative medicine use have all been attributed to the health care disparity between minorities and Caucasians in infertility service utilization (Becker et al., 2006; Chandra et al., 2005; Chandra et al., 1998; Feinberg, 2007; Jenkins, 2005; White et al., 2006; White et al., 2006). Nachtigall et. al. conducted a qualitative analysis of Latino couples' experiences in seeking infertility treatment. They identified four major challenges in providing infertility services to the population which included communication, continuity of care, bureaucracy, and accessibility (Nachtigall et al., 2009). Language barriers caused patients to not understand their diagnosis and treatment and also made it difficult for patients to pose questions, concerns, and experiences to their physicians (Nachtigall et al., 2009). Many patients reported being mistreated by their healthcare provider and some reported feeling embarrassed or apprehensive about asking questions for fear of appearing ignorant or being stigmatized for being from another country (Nachtigall et al., 2009). These feelings of mistreatment and stigma often caused patients to not follow up with their care (Nachtigall et al., 2009). Furthermore, some respondents saw physician's communication of poor prognosis as uncaring noting that doctors give negative news and never positive news (Nachtigall et al., 2009). This study emphasizes that patient barriers as well as physician barriers exist that make it difficult for Latina patients to access infertility care. Moreover, Morales et. al. reported that Latinos who respond in Spanish to survey questions were significantly more dissatisfied compared to Latinos responding in English and non-Latino whites responding in English when asked about whether medical staff listened to what they had to say, answered their question about prescribed medications or medical procedures and test results, and reassurance and support from their doctors and medical staff (Morales et al., 1999)**.** As indicated by Nachtigall et. al., dissatisfaction with physician interaction may cause the patient to not follow up (Nachtigall, 2009). Additionally, Latinas traditionally are seen by clinicians to be more culturally influenced than their non-Latina counterparts. In a study by Hunt et. al. clinicians' views on amniocentesis and Latina patients' views on amniocentesis were compared, and it was found that clinicians were more likely to say that Latinas were more likely to refuse amniocentesis because they are religious, fatalistic, male-dominated, family-centered, and superstitious. However, the study found that Latinas underwent amniocentesis equally as often as their Caucasian counterparts and that clinicians were providing less complete information to Latina patients in their efforts to be culturally sensitive (Hunt & de Voogd, 2005). As a result of these preconceived notions of Latina health practices, physicians may be less likely to offer certain types of treatment due to their presumed patient's views on religion, family, and alternative medicine.

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Although a number of studies have been conducted to illuminate minority health seeking practices and how they may contribute to healthcare disparities few have concentrated on the Latino subgroup and none have compared those who have sought care and those who have not. It is especially important to compare these two subgroups because we may be able to identify certain characteristics that put Latinas, who are already at risk of not seeking care, at an even higher risk of not accessing infertility services. Latinas have traditionally been seen as a dynamic group in terms of infertility service utilization because their decisions to pursue treatment have been shown to be impacted by not only socioeconomic status but also social factors like gender roles, religion, and the use of alternative medicine (Becker et al., 2006). However, other studies suggested that their socio-cultural factors may not have as much influence on health seeking practices as initially thought and furthermore, may contribute to practitioner prejudice. To date there are no studies that compare the infertile Latino population that seeks care to the population that does not seek care. Such comparisons can help reveal influencing factors that would make Latinas more likely to seek infertility treatment. This study will fill in that gap by examining the differences and similarities, if any, between these two populations. By identifying specific factors contributing to a woman's likelihood to seek infertility care, healthcare providers can better incorporate such knowledge into how they approach their minority patients with impaired fecundity and therefore encourage equal access to infertility services for Latinas.

METHODS

We combined the female respondent data from the 2002 and 2006-2010 National Survey of Family Growth. Based on a multistage probability sample of households, the National Survey of Family Growth is a continuous enrollment survey of U.S. men and women aged 15-44 that yields nationally representative data on fertility and reproductive health. The most recent survey cycle is still being collected and includes survey cycles from 2011-2015; the data from this cycle is not yet available and thus was not included in this analysis. A total of 14,752 women were interviewed from the 2002 and 2006-2010 National Survey of Family Growth rounds. Our specific study population was selected by the requirements outlined by Ronald Andersen's Health Utilization Model (Committee on Gynecologic Practice of American College of Obstetricians and Gynecologists, 2008). Variables and their response coding were matched between cycles 2002 and 2006-2010 and were combined accordingly. To examine the difference between Caucasian women and Latinas with impaired fecundity, they were stratified by the receipt of medical help in relation to a number of variables that were selected according to Andersen's Individual Determinants from his Health Utilization Model (White et al., 2006).

First, we compiled the data of all female participants from the 2002 to 2010 survey cycles. From this population, we determined the infertility rates in Caucasians and Latinas, and excluded subjects who did not report any type of infertility problem. From those subjects who reported infertility problems, we narrowed down the data to include only those who responded to the question, "Have you ever sought care for your infertility?" Using these criteria, 1,666 participants were selected for the study and further subdivided into Latina and Caucasian women (Figure 1).

Using SAS statistical software, the descriptive results were weighted counts and percentages, using a post-stratified weight adjustment for non-response and sample design, of women aged 15-44 with impaired fecundity. Statistical significance was determined by P-values (<0.05) for values obtained from bivariate analysis.

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To assess the role of key covariates, weighted multivariate regressions were performed to estimate the impact of the variables in relation to ethnicity. In these logistic regressions, the odds of being classified with impaired fecundity and the odds of being a certain ethnicity were assessed based on the women's characteristics as described by the variables selected. Therefore, no statements can be made about causality, rather, these models control for potentially confounding variables and portray any changes over time in the net associations between the outcome variables and their key correlates measured at the time of the interview.
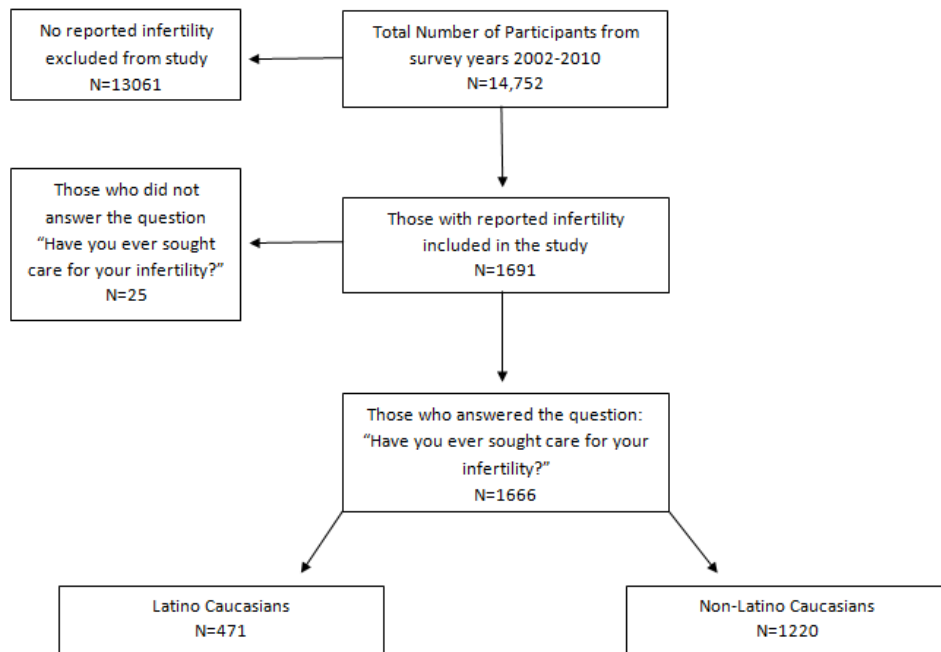

Figure 1. Study population flow chart

RESULTS

Analysis of the pooled data from National Survey of Family Growth cycles 2002-2010 revealed that infertility rates among Latinas was 10.23% and Caucasian women was 11.78% (P=0.01). Of all National Survey of Family Growth respondents between 2002-2010, the average age of Caucasians was 30.1 years and of Latinas was 28.9 (P=<0.05).

Data from Latinas and Caucasians who seek and those that do not seek care was compiled (Table 1). Compared to Latinas who do seek care, Latinas who did not seek care for their impaired fecundity were significantly more likely to be born outside the US (P=0.0001), have less than a high school diploma (P=0.0005), be <200% the poverty level (P=0.0002), have gone without insurance within the last 12 months (P=0.0042), have not had a pap smear within the last 12 months (P=0.005), and not want a baby (P=0.0053) (Table 1).

A comparison of Caucasians who seek care to Caucasians who do not seek care showed that there was no difference in the likelihood of being born outside the US, believing in gender roles, and having gone without a pap smear within the last 12 months (P=>0.05). However, Caucasians who did not seek care were more likely to have less than a high school diploma (P=<0.0001), not place importance on religion (P=0.0001), be <200% the federal poverty level

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(P=<0.0001), have gone without insurance within the past 12 months (P=<0.0001) and not want another baby (P=0.0308).

A comparison of Caucasians who seek care to Latinas who did not seek care (Table 1) showed that Latinas who did not seek care are more likely to be born outside the US (P=<0.0001), have less than a high school diploma (P=<0.0001), be <200% poverty level (P=<0.0001), believe (strongly) in gender roles (P=<0.0001), gone without insurance within last 12 months (P=<0.0001), and not had a pap smear within the last 12 months (P=0.0001).

A comparison of Latinas who seek care to Caucasians who did not seek care (Table 1) showed that Latinas who did seek care were more likely to be born outside of the Unites States (P=0.0001), have less than a high school diploma (P=0.02), place more importance on religion (P=0.002), agree with gender roles (P=0.03), and want another baby (P=<0.0001).

A comparison of Latinas with Caucasian women who seek care (Table 1) showed that Latinas were more likely to have a longer delay in seeking treatment (28.48 months vs. 19.78 months, P=<.0001), and multivariate regression analysis showed that Latinas had a higher odds ratio (OR (95% Confidence Interval) (1.72 (1.15-2.56) of utilizing services than Caucasians. Multiple logistic regressions of specific factors in relation to their association with seeking infertility services were conducted (Table 2). Factors that were significantly associated with infertility service utilization included being Latina, age, being born in the Unites States, having a high school diploma or more education, placing a strong importance on religion, being >200% the federal poverty level, and wanting a baby. Factors not associated with infertility service utilization included history of pelvic infection treatment, history of diabetes, belief in gender roles, not having been without insurance for the past 12 months, and having had a pap smear in the past 12 months.

Despite the fact that Latinas were more likely to report utilizing infertility services, Caucasians were more likely to use specific types of services (Table 3). Caucasians were significantly more likely to seek advice from their physicians, undergo testing to determine cause of infertility, utilize medical help for ovulation induction, and utilize Assisted Reproductive Technologies (ART) (i.e. in vitro fertilization and artificial insemination).

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Table 1 Characteristics By Race[a]										
Characteristic	Latinas		Caucasians		P-values					
	Seek %	No Seek%	Seek%	No Seek%	LS vs. LN	CS vs. CN	CS vs. LN	LS vs. CN	LS vs. CS	LN vs. CN
Born outside US					**0.0001**	0.18	**<0.0001**	**<0.0001**	**<0.0001**	**<0.0001**
Yes	35.0	61.0	2.6	4.4						
No	64.0	39.0	97.4	95.6						
PID					0.37	0.26	0.27	0.34	0.77	0.99
Yes	10.9	7.5	9.7	7.5						
No	89.1	92.5	90.3	92.5						
≥ High school diploma					**0.0005**	**<0.0001**	**<0.0001**	**0.02**	**<0.0001**	**<0.0001**
Yes	77.1	57.9	95.4	86.2						
No	22.9	42.1	4.6	13.8						
Importance of religion					0.61	**0.0001**	0.45	**0.002**	0.56	**0.004**
Very Important	64.3	65.2	61.1	50.4						
Somewhat important	33.5	30.7	35.6	40.4						
Not important	2.1	4.0	3.2	9.3						
Gender roles					0.26	0.41	**<0.0001**	**0.03**	**0.005**	**<0.0001**
Strongly agree	13.1	15.6	8.6	6.6						
Agree	33.0	35.6	21.5	25.4						
Disagree	32.9	30.4	45.6	43.4						
Strongly disagree	20.4	14.6	21.3	23.1						
Neither	0.5	3.8	3.0	1.5						
Poverty <200%					**0.0002**	**<0.0001**	**<0.0001**	0.88	**<0.0001**	**<0.0001**
Yes	44.4	70.2	20.9	43.5						
No	55.6	29.8	79.1	56.5						
≤12mo no insurance					**0.0042**	**<0.0001**	**<0.0001**	0.59	**<0.0001**	**<0.0001**
Yes	31.3	49.8	15.2	28.6						
No	68.7	50.2	84.8	71.4						
Want a baby?					**0.0053**	**0.0308**	0.2657	**<0.0001**	**0.01**	0.4419
Yes	76.8	59.93	65.4	56.7						
No	23.2	40.07	34.6	43.3						
≤12mo last pap					**0.005**	0.10	**0.0001**	0.24	0.89	**0.03**
Yes	76.3	60.7	75.7	70.1						
No	23.7	39.3	24.3	29.9						

[a]Where LS=Latinas who seek care, LN= Latinas who do not seek care, CS=Caucasians who seek care, CN=Caucasians who do not seek care. Significant comparisons are bolded

Table 2 Multiple Logistic Regressions of Factors Associated with Impaired Fecundity and Seeking Infertility Services		
Variables	Odds Ratio (95% CI)	p-value
Ethnicity		
Hispanic	1.56 (1.05-2.33)	
Non-Hispanic	Reference	0.0295
Age	1.09 (1.06-1.12)	<0.0001
Born out of US		
Yes	Reference	
No	2.75 (1.51-5.02)	0.0010
Treated for Pelvic Infection		
Yes	Reference	
No	0.71 (0.42-1.22)	0.2184
Education		
<High school	0.56 (0.36-0.88)	
≥High school	Reference	0.0107
Diabetes		
Yes	1.06 (0.60-1.85)	
No	Reference	0.8489
Importance of Religion		
Very Important	2.97 (1.52-5.84)	0.0015
Somewhat Important	2.51 (1.31-4.82)	0.0056
Not Important	Reference	
Man earns living and woman takes care of home		
Strongly Agree	0.73 (0.19-2.85)	0.9519
Agree	0.64 (0.18-2.30)	0.5574
Disagree	0.66 (0.19-2.28)	0.6062
Strongly Agree	0.62 (0.17-2.28)	0.4523
No Opinion	Reference	
Insurance		
Yes	Reference	
No	1.43 (0.95-2.14)	0.0878
Pap smear within 12 months		
Yes	1.15 (0.81-1.3)	0.4414
No	Reference	
Wants Baby Sometime		
Yes	2.81 (1.84-4.31)	<0.0001
No		

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Table 3 Multiple Logistic Regressions of Use of Infertility Services		
Variables	**Odds Ratio (95% CI)**	**p-value**
Drugs to improve ovulation vs. Race/ethnicity		
Hispanic	0.38 (0.21-0.65)	
Non-Hispanic	Reference	0.0005
Surgery to correct blocked tubes vs. Race/ethnicity		
Hispanic	0.48 (0.19-1.18)	
Non-Hispanic	Reference	0.1098
Infertility testing vs. Race/ethnicity		
Hispanic	0.27 (0.15-0.49)	
Non-Hispanic	Reference	<0.0001
Partner/Husband Infertility Testing vs. Race/ethnicity		
Hispanic	0.47 (0.31-0.72)	
Non-Hispanic	Reference	0.0005
Sought Advice From Physician vs. Race/ethnicity		
Hispanic	0.45 (0.27-0.74)	
Non-Hispanic	Reference	0.0017
Artificial insemination vs. Race/ethnicity		
Hispanic	0.39 (0.21-0.75)	
Non-Hispanic	Reference	0.0044
In vitro fertilization or other assisted reproduction vs. Race/ethnicity		
Hispanic	0.29 (0.13-0.62)	
Non-Hispanic	Reference	0.0015
Surgery or drug treatment for endometriosis vs. Race/ethnicity		
Hispanic	1.04 (0.48-2.22)	
Non-Hispanic	Reference	0.9274
Surgery for uterine fibroids vs. Race/ethnicity		
Hispanic	0.83 (0.26-2.65)	
Non-Hispanic	Reference	0.7491

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DISCUSSION

The data presented indicates that contrary to other studies, Latinas with impaired fecundity have higher odds of reporting accessing infertility services than Caucasians with impaired fecundity, but less likely to report the use of specific treatment options such as asking healthcare practitioners for advice and receiving infertility testing and services. Furthermore, there are differences in demographic and belief systems between Latinas and Caucasians, and those who seek infertility care and those who do not.

This study also revealed that contrary to other reports that showed equal or even higher rates of infertility, Latinas had lower rates of infertility than Caucasian women (Chandra et al., 2005; Chandra & Stephen, 1998). This could be due to the fact that the average age of all Caucasian respondents, which includes those with and without reported infertility, was 30.1 years whereas the average age of the Latina counterpart was 28.9. As a result, Caucasians in our study had higher rates of infertility since the recognition of infertility is most likely age-dependent (Jenkins, 2005; White et al., 2006). This is to be expected since those who are older and have been trying for a longer time to have a family would naturally be more likely to acknowledge infertility problems and report themselves as infertile, and could explain why the younger Latina group had a lower rate of reported infertility (Andersen & Newman, 1973; Bitler & Schmidt, 2006; White et al., 2006).

In contrast to Chandra & Stephen's analysis of the 1995 National Survey of Family Growth cycle who reported that Latinas had lower rates of infertility service utilization, our study shows that Latinas were more likely to report "Yes" to ever accessing services compared with Caucasian women (Chandra et al., 2005; Chandra & Stephen, 1998). This would suggest a change in the health seeking practices of Latinas in America between 1995 and 2010 possibly secondary to improvements in socioeconomic status, education level and access to healthcare services in the Latina population.

Based on the finding that Latinas had higher odds of infertility service utilization, the expectation would be that they would also be more likely to have higher rates of reporting usage of specific types of infertility services (as measured by responses to whether or not they sought care from a medical provider, got themselves and/or partner tested for infertility, and other treatments like surgery/IVF). However, this was not the case in our study. Despite multiple regression analysis showing Latinas had higher rates of infertility service utilization than Caucasian women; this analysis did not show that the Latina population had higher rates of utilization of specific treatment types (Table 3). Careful examination of the data indicates three possible reasons for this discrepancy: (1) The sample size for specific treatment usage was substantially reduced (from 1,666 subjects to 529); (2) missing values in Latinas were much higher than missing values in Caucasians (77% vs. 65%) (3) language barriers may influence how study participants understand the questions and as a result, influence how they answered the survey questions. For example, patients may understand the question "Have you sought care for your infertility?" but they may not understand the treatment options listed in the survey question. Another possibility worth noting is that Latinas may prefer alternative medicine services such as "sabadoras'" and the idea of taking herbal medicines for their "cold" womb. This thought process may account for why they may have responded "Yes" to ever seeking care although they had lower rates of medical treatment use (Nachtigall et al., 2009).

Multivariate regression and bivariate analyses indicate that there are important distinguishing variables that can help characterize individuals who are less likely to seek

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infertility services. Above all other contributing factors to service utilization, symptom recognition have been found to be the single most important predictor of help-seeking behavior (White et al., 2006). However, because the symptoms of infertility involves the lack of a result rather than the appearance of new and undesired symptoms, the recognition can be delayed as a result of attributing infertility to stress, mistiming of intercourse, aging, or normal variation (White et al., 2006). The more severe the impact is on daily life, the more likely patients are willing to recognize they have a fertility problem (Jenkins, 2005). Severity has been suggested to be measured by strength and immediacy of fertility plans and whether one already has children (Jenkins, 2005). In this study, we measured severity by the response to the question "Do you want another baby?" Regression analysis of the variable "Want another baby" showed that responding "Yes" to the question made a respondent significantly more likely to receive infertility services than responding "No" to the question. Bivariate analyses showed that Latinas who sought care were significantly more likely to report "Yes" to the question "Do you want another baby?" than any other group. This result is consistent with the regression analysis of the same variable and demonstrates that women in clinical practice who are more vocal about their desire to have another baby would have higher rates of infertility service utilization. This shows that a simple question such as "Do you want another baby?" can serve as a screening question to identify those patients who may benefit from further counseling or education and should be adopted by clinicians to help facilitate access to infertility services.

Our study also showed that age is a significant factor in whether or not a patient seeks care. In general, women who are older are significantly more likely to seek care. This finding can be related to the fact that current clinical guidelines encourage older couples to seek care after 6 months of trying to have a baby without success rather than the general rule of 12 months for women under the age of 35 (Committee on Gynecologic Practice of American College of Obstetricians and Gynecologists, 2008). In addition, providers may be more likely to provide counseling and offer treatment for those who are older in age, which is another explanation as to why Latinas reported lower rates of utilization of specific types of services.

Cultural factors particularly among Latinas have been reported as a cause for delay in recognition of infertility. In published literature, Latinas, particularly of lower socioeconomic status and not born in the United States, were more likely to view their infertility as "God's will" and not acknowledge their infertility nor seek care (Becker et al., 2006; Jenkins, 2005). This would indicate that these cultural factors can have strong implications on whether or not a patient seeks care and can help contribute to the help-seeking gap in infertility. Regression analysis of the importance of religion showed that responding that religion is important in any degree makes you more likely to seek infertility services. This could be due to the fact that procreation is seen as a key component of religion. This study shows that religion can have a positive and a negative impact on health seeking practices and suggests that a better understanding of the role of religion in the patient's life can be helpful in determining how women will approach their infertility status.

Belief in gender roles can have many implications in terms of seeking care for infertility (Becker et al., 2006; Jenkins, 2005). Studies have shown that among Latinas, issues like machismo and marianismo can influence a couple's likelihood to seek care since parenthood is a strong cultural expectation of Latinos and childless families were viewed as incomplete, which causes both men and women to be stigmatized and their gender identities to be severely undermined (Nachtigall et al., 2009). This set of beliefs will have implications on the couple's

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reproductive success since a husband's masculinity can be questioned if he seeks infertility services, thus preventing him from seeking care, and it is known that male factor infertility contributes to 20-47% of infertility cases (White et al., 2006; World Health Organization, 1987). In addition, the wife's femininity can become a topic of discussion within the family structure and her ability to perform the duties of a wife can also be called into question if she decides to seek infertility services. However, despite this obvious important factor, multivariate analysis of this variable showed that a participant's response on gender roles made no significant difference in whether or not the respondents and their partners accessed infertility services. This may be due to the fact that gender roles, like religion, can have a dual effect on infertility service utilization since both seeking care and also not having children may cause the couple to become stigmatized.

The most common limiting factor that has been studied in infertility service utilization is socioeconomic status which has traditionally been measured by income, social class, education, and occupation (Shavers, 2007). When compared to Caucasians, Latinos have a higher rate of less than high-school education (10.6% vs. 43%) and a significantly lower median income level ($49,061 vs. $33,184) (Shavers, 2007). This inequality will have a substantial impact on a woman's likelihood to access services. It has been reported that the majority of patients accessing infertility services are well educated, Caucasian women with incomes >300% above the poverty level (United States Census Bureau, 2000), and our data is consistent with this finding.

In addition, studies investigating education level have consistently correlated education level with likelihood of accessing infertility services. Multiple studies have found that women with higher education levels (high school diploma or more) are more likely to access infertility services (Becker et al., 2006; Bitler & Schmidt, 2006, Chandra et al., 2005; Chandra & Stephen, 1998; Feinberg et al., 2007). Taking this into account, it would be safely assumed that Latinas who generally have a lower education level would be less likely to access infertility services. However, in a study from the Walter Reed Assisted Reproductive Technology Program of the Department of Defense, a lower-cost, equal-access-to-care setting, Feinberg et al found that despite Latinas in their study having higher levels of education than the national average (6.5% vs. 36.4%), they continued to be underrepresented in the Walter Reed ART program, which would suggest there are a number of other contributing factors influencing the participants' decisions to seek care (Feinberg et al., 2007). Multiple logistic regression of education level in our study is in agreement with the majority of published reports showing that not having at least a high school diploma was associated with respondents being less likely to seek infertility services.

Many studies have shown that minorities are more likely to be uninsured or underinsured compared with their Caucasian counterparts, and thus would be less likely to utilize infertility services that can cost upwards of $44,000-212,000 (Neumann et al., 1994). However, Bitler and Schmidt showed that state mandated insurance did not increase Latina service utilization but quite the contrary, increased the number of highly educated, older Caucasian women utilization, which is consistent with the fact that private insurance coverage is more common in this group (Bitler & Schmidt, 2006). Furthermore, a study by McCarthy et. al. found that a Federal Assisted reproductive technology program resulted in an increased service utilization by African Americans but a decreased infertility service utilization by Hispanic women, which suggests improving access through decreased cost may only increase use by some but not all minority

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groups, and that there are additional factors influencing Latina patients' decision to pursue infertility services (McCarthy et. al., 2001). Interestingly, our study showed that contrary to other studies, insurance status as measured by the variable "Have you gone without insurance within the last 12 months" had no significant association with seeking infertility care. This could be due to the fact that our study was based on cross-sectional data and thus we cannot assume that the period in which our respondents went with or without insurance was the same time as when they sought care or decided to not seek care. However it is still interesting to note that insurance status was a significant factor when comparing Latinas who seek care vs. Latinas who did not seek care and may suggest that insurance status is a significant factor in health seeking practice among Latina but not Caucasian women.

The likelihood of infertility service utilization could also be attributed to whether or not the patient has a regular physician. Having a regular physician can increase the doctor-patient interaction that allows an exchange of information and an opportunity for the trained physician to diagnose their patient and refer them for proper care (Becker et al., 2006; Bitler & Schmidt, 2006). Nachtigall et. al. found that patients going to a university-affiliated public teaching hospital felt the constant change in their physician due to rotating residents and medical students was frustrating, decreased their desire to form a meaningful doctor-patient relationship, and made them less likely to return to the hospital for follow up (Nachtigall et al., 2009). Using the variable "Has the respondent had a pap smear within the last 12 months?" as a proxy for regular care, we found that having a recent pap smear is not related to accessing infertility services. However, this is also impacted by the fact that current guidelines recommend pap smears every three years for ages 21-65 (or every five years for those between the ages of 30-65 who get a pap smear and HPV test) and it is possible that that survey period was during a time that pap smears were not warranted in some respondents (American College of Obstetricians and Gynecologists Screening for Cervical Cancer, 2012). Due to the cross-sectional nature of the survey cycles, we were unable to directly determine regular doctor visits and must extrapolate conclusions from pap smears within the last 12 months. This decision was based off of the fact that a majority of clinicians continue to incorporate pap smears into their annual exams and more than 75% of women continue to expect pap smears at their annual exams even if their physician recommend otherwise (Sirovich et al., 2005; Yabroff et al., 2009). In addition, given the increased prevalence of secondary infertility in Latinas, prompt treatment of chlamydial and gonorrheal infections in these populations can lead to decreased tubal factor infertility, which could be diagnosed during regular pap smear visits (Huddleston et al., 2010). However, our study showed that there was no association between having had pelvic inflammatory disease and seeking infertility care.

One issue that is difficult to address through this survey is women's perceptions on how providers treat them and how this may in turn affect their health seeking practices. A qualitative analysis of patient physician interaction and possible sentiments of discrimination due to race and socioeconomic status would be important factors to address in future studies. As asserted by Hunt & de Voogd, clinicians' perceptions of health utilization by Latinas may be influenced by an underlying assumption that is propagated through multiple studies that emphasize the cultural sensitivities of Latinas that may influence their decision to seek care (Hunt & de Voogd, 2005). Our study calls into question previously accepted related factors such as insurance status, having a regular doctor, and gender roles, and emphasizes that more detail is necessary to uncover the real impact of these and other unaddressed factors on health-seeking behavior.

There are a number of limitations to this study. The data analyzed is from a cross-sectional survey and thus only a relation can be inferred. Furthermore, the data is self-reported, which means responses are subject to an individual's interpretation of the questions as well as their own health status (i.e. the self-reporting of their infertility status) in addition to recall bias. This becomes especially apparent when comparing Latinas with Caucasian women since language barriers can be a major factor in reporting survey data because it is dependent upon not only the respondent's accurate understanding and response to the question, but also interpreters' accurate relaying of the questions and answers. In addition, the average age of study participants may be too young to address infertility issues compared with other studies that included older populations. This would make it difficult to compare this study to other studies. Moreover, racial/socioeconomic/cultural factors were extrapolated from preexisting variables and thus were not intended for direct measurement of our specific variables. Due to the cross-sectional nature of this study, it is difficult to explain the influence of these factors on outcomes. It provides only a glimpse of the women at a certain moment of their lives when the impact of certain factors like gender roles and cultural influences cannot be fully explained by a set number of questions. Interestingly, our study indicates that many factors that have long been accepted as influential variables in health seeking practices were not significant in this study. This only emphasizes that more studies exploring these specific factors such as gender roles, insurance status, and having a regular doctor in a qualitative manner is needed to gain more insight into this complicated, multi-faceted issue. In addition, inconsistencies in survey cycles made it difficult to analyze specific variables that have been shown to impact infertility service utilization practices such as a woman's parity, number of partners and marital status, and primary medical doctor (White et al., 2006; White et al., 2006). As a result of these inconsistencies, the study population numbers (N) became too small to accurately analyze these variables and therefore these variables were excluded from our analysis.

This study highlights the multifaceted, complex nature of infertility service utilization practices and the difficulty in accurately characterizing a patient's propensity to seek care. Future directions include expanding the analysis of the NSFG survey results to other ethnicities, males, and additional variables not examined in this study.

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