Differences in fertility treatments, demographics, and pregnancy characteristics between women in same-sex and different-sex marriages

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Abstract:

Little is known about the fertility experiences of women in same-sex relationships although pathways to fertility differ from those in different-sex relationships. No research we are aware of use population-level administrative data to look at fertility treatments and technologies within legally recognized same-sex marriages. We use all Massachusetts birth certificate records with linked hospital records in 2012 to 2016 to examine fertility services used in each pregnancy, demographics, and pregnancy characteristics for women in same-sex and different-sex married couples. Among pregnancies to women in same-sex marriages (n=1439), 34 percent resulted from in-vitro fertilization (IVF), compared to 4 percent of pregnancies to women in different-sex marriages (n=233,158), respectively. Given the increased risks and costs associated with many fertility treatments, more research is needed to understand the unique fertility experiences of women in same-sex couples.

Introduction

Little is known about the fertility experiences of sexual minorities,[1-3] and even less is known about a particular sub-group, women in same-sex marriages.[4] Using the National Survey Family Growth 2006-2015, Everett et al. found no statistically significant differences by sexual orientation in use of fertility services among women with prior pregnancies.[1] For women in same-sex couples who want to get pregnant, there are no population-level data on which fertility services are most commonly used or their population-specific cost-effectiveness.

Access to fertility services can be cost-prohibitive and emotionally taxing.[5,6] An average cost for one cycle of in-vitro fertilization is $12,000 and cost per-live-birth is between 41-61 thousand.[7] Findings on the cost-effectiveness of various treatments show that intrauterine insemination with ovarian stimulation is more cost-effective than in-vitro fertilization,[8] particularly when using sperm with high motility.[9] Yet, the population of women in these studies are likely to be different than women in same-sex couples. Many women in same-sex couples often have no history of infertility, and many face an additional $1100 per cycle in donor sperm. Thus little is known about the cost-effectiveness of various fertility treatments for women in same-sex couples.

The median adjusted gross income for women in married same-sex couples is $90,531 compared to $79,966 for different-sex married couples, and 28% of these couples have a child in the household compared to 48% of different-sex married couples.[10] Thus, women in same-sex married couples might have slightly more disposable income to spend on fertility services. In addition, women in same-sex couples might face different health insurance coverage for fertility services if the provider lacks culturally competency about fertility behaviors of women in same-sex couples. Little is known about how use of fertility services differs among same-sex couples based on age, education, and other characteristics. Fertility clinics and other healthcare providers could better counsel women in same-sex couples about fertility options if they had access to this research.

Methods

We used birth certificate data from Massachusetts for all live births from 2012 to 2016 (n=361,415). Same-sex married female couples were identified for couples where each parent

had the sex of female. Different-sex married couples were identified where the birth parent was female and the non-birth parent was male. We excluded all births that did not have two legally married parents on the birth certificate.

Use of fertility services was identified from two sources, the birth certificate and hospital records. Parents are asked to fill out questions about their fertility service use on their birth certificate worksheet. This includes use of anonymous donor sperm, any fertility treatment, in-vitro insemination, and use of fertility-enhancing drugs. In addition, we used hospital data completed by clinicians which includes whether the pregnancy resulted from any fertility treatment, in-vitro insemination, intrauterine insemination, intracervical insemination, and use of fertility enhancing drugs.

Mother characteristics from the birth certificate include mother's education, age, race/ethnicity, pre-pregnancy body mass index, and use of WIC (Supplemental Nutrition Program for Women, Infants, and Children) as a proxy for socio-economic status. Additional characteristics include whether the pregnancy was a singleton (or multiple births), first pregnancy, and first pregnancy resulting in a live birth.

Results

There were 1,439 pregnancies resulting in live births among women in same-sex marriages, and 233,158 pregnancies resulting in live births among women in different-sex marriages from 2012 to 2016. Women in same-sex couples used far more fertility treatments than women in different-sex couples; 73 percent of same-sex and 6 percent of different-sex used any type of fertility treatment for their pregnancy, 26 percent of same-sex and 3 percent of different-sex used fertility-enhancing drugs, 34 percent of same-sex and 4 percent of different-

sex used assisted reproductive technology (in-vitro fertilization), 10 percent of same-sex and 0.3 percent of different-sex used intrauterine insemination, 22 percent of same-sex and 0.5 percent of different-sex used intracervical insemination, and 60 percent of same-sex and 0.1 percent of different-sex used an anonymous donor sperm.

First, comparing women irrespective of their fertility treatments, we find women in same-sex couples to be older (55% vs 29%), more non-Hispanic white (87% vs 73%), more graduate degree attaining (54% vs 32%), less likely to use WIC (10% vs 16%), and more obese (23% vs 17%) compared to women in DSMC. Among same and different sex couples, women who used fertility treatments were older, more non-Hispanic white, more educated, and less likely to use WIC.

Pregnancy characteristics across groups were striking. While 9 percent of women in same-sex couples had a multiple birth compared to 2 percent of women in different-sex couples, this difference was driven by the higher usage of fertility services. Notably, women in SSMC who used fertility services had a lower rate of multiple births compared to women in DSMC (14 vs 18), while women in SSMC without fertility services had a higher rate of multiple births. Finally, a higher proportion of women in SSMC had a first pregnancy and first birth compared to women in DSMC. However, women who used fertility treatments had a much higher rate of first pregnancy and birth among different-sex couples, first pregnancies were similar among women in same-sex couples between those who used fertility treatments and those who did not.

Discussion

These findings present a novel snapshot of how fertility treatment use, demographic, and pregnancy characteristics differ between women in same-sex and different-sex married couples. Unsurprisingly, a majority of married women in same-sex couples used some type of a fertility

treatment. The most common treatment was in-vitro fertilization, followed closely by intracervical insemination, and intrauterine insemination. This is likely largely driven by the infertility mandate in Massachusetts, which has a long history of providing coverage for the diagnosis and treatment of infertility, including in vitro fertilization. Yet, it is likely that some women in same-sex couples had less access to fertility treatments and technologies because health insurance plans provide differential coverage based on presence of a biological male partner. More research is needed in other states with less generous insurance benefits.

These findings should be interpreted with several important caveats. First, our cohort contains only pregnancies that result in live births. Thus, we do not have information on the fertility services use among women who have failed pregnancies or have not achieved pregnancy. Next, our results suggest that the data on fertility treatments, and particularly among women in same-sex couples is likely misclassified, as it is improbable that women in SSMC without fertility treatments had naturally higher rates of multiple births. Finally, it is likely that the hospital records undercounts the rate of intracervical insemination among women in SSMC. It is probable that women in SSMC who did not report using any infertility treatments conceived using intracervical insemination at home – yet do not consider it to be a fertility treatment –rather than had intercourse with a male partner. More research is needed to understand methods outside of the healthcare system that women in same-sex married couples use as ways to conceive within the context of their marriage to a same-sex partner.

Next, our study found that 60 percent of pregnancies of women in SSMC resulted from anonymous donor sperm. In fact, a vast majority of all pregnancies resulting from anonymous donor sperm were to women in same-sex married couples. Some insurance companies provide coverage of donor sperm in Massachusetts, although some restrict these benefits to women with

male partners. This high usage of anonymous donor sperm has several implications. First, sperm banks should provide culturally competent customer service to their patients, many of whom are in same-sex couples. Next, given that the effectiveness of various fertility treatments varies based on the sperm motility and the minimum motility of sperm purchased from cryobank often exceeds 10 million, research on fertility treatments with use of donor sperm might differ from those with non-donor sperm which might have more variation. Finally, more research is needed to understand couples decision-making process of selecting to use an anonymous donor compared to a known donor, and the role of cost in this decision.

Our results were consistent with prior research showing that older, more educated, and wealthier people were more likely to receive medical help for infertility.[11] These patterns persisted in both same-sex and different-sex couples. On average, women in same-sex couples were more non-Hispanic white, more highly educated, and older than women in different-sex couples. This could be because the underlying population of same-sex married women might be more socioeconomically privileged, although evidence on married same-sex tax payers suggests otherwise. It is more likely that it reflects the accessory, necessary resources needed (e.g. lower levels of perceived and actual discrimination, health insurance, knowledge of fertility tracking and how to access treatments, community support, etc) for women in same-sex marriages to achieve a birth. Future research should aim to unpack the role of these resources further.

Next, a higher proportion of pregnancies among SSMC represented their first birth. This could be because women in SSMC are having smaller family sizes due to more barriers to achieving pregnancy, or due to higher prevalence of high education and older age. Alternatively, it is possible that each woman in a SSMC plan to be the gestational parent. More research is needed to understand couple decision making around gestational parenthood.

Finally, there were few differences in whether women in SSMC had a first pregnancy by use of fertility services, while women in DSMC who did not use fertility services had higher rates of prior pregnancies. This suggests that while women in different-sex couples turn to fertility services as a back-up plan after facing trouble getting pregnant from intercourse, women in same-sex relationships might seek fertility services as a first measure, and for reasons other than failed attempts at pregnancy, such as perceived cost-effectiveness.

Limitations notwithstanding, this research dismantles the heteronormative paradigm for pathways to pregnancy to highlight the unique challenges for women in same-sex couples.

References

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Table 1. Pregnancies of Females in Same-Sex and Different-Sex Marriages Resulting in Live Births, 2012-2016

	Same-Sex	Different-Sex
	% (No.)	% (No.)
Any fertility treatment [a, b]	73.1 (1052)	5.9 (13,810)
Fertility-enhancing drugs [a]	26.1 (375)	2.9 (6,809)
Assisted reproductive technology [a, c]	34.1 (492)	4.1 (9,463)
Intrauterine insemination [d]	9.7 (140)	0.3 (580)
Intracervical insemination [d]	21.5 (309)	0.5 (1,092)
Anonymous sperm donor [e]	60.4 (869)	0.1 (206)
N	1,439	233,158

a. Identified on either birth certificate worksheet or hospital worksheet
b. Affirmative to "did you take any fertility drugs or receive any medical procedures from a doctor, nurse, or other healthcare worker to help you get pregnant with this current pregnancy?" or "did this pregnancy result from an infertility treatment?"
c. Includes in-vitro fertilization (IVF), gamete intrafallopian transfer (GIFT), zygote intrafallopian transfer (ZIFT), intracytoplasmic sperm injection (ICSI), frozen embryo transfer, or donor embryo transfer.
d. Identified on the hospital worksheet only
e. Identified on the birth certificate worksheet only

Table 2. Pregnancies of Females in Same-Sex and Different-Sex Marriages

	Same-Sex			Different-Sex		
	All	Fertility	No Fertility	All	Fertility	No Fertility
Mothers characteristics						
Age 35+	54.5	63.7	46.7	29.0	51.8	27.6
Non-Hispanic White	87.2	93.2	81.9	73.2	83.2	72.6
Less than Bachelors	20.2	10.6	28.5	34.9	18.4	36.0
Bachelors	25.5	26.6	24.5	32.8	36.1	32.6
Masters/Doctorate	54.3	62.8	47.0	32.3	45.4	31.4
WIC	9.6	2.6	15.7	18.8	4.9	18.7
Obese (pre-pregnancy)	23.1	23.2	23.0	16.8	17.9	16.7
Pregnancy characteristics						
Singleton	91.5	86.2	95.9	97.6	81.9	98.5
First pregnancy (gravidity<=1)	58.5	59.2	57.9	35.1	41.7	34.7
First birth	69.6	73.4	66.4	43.5	60.5	42.5
N	1439	658	781	233,158	13,063	220,095

Note: Fertility is defined as used fertility-enhancing drugs or IVF in either the hospital records or birth certificate worksheet