

Research Article

Trends in Abortion and Post-Abortion Contraception in a Low Resource Urban Setting

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Abstract: Trends in abortion care in the United States are changing quickly, affected by many epidemiological factors as well as a varying political climate. Surgical abortions are the more common method of conducting abortion care. Recent CDC National Surveillance Data has shown an increase in second-trimester abortion, correlating to an increased need for providers experienced in surgical abortions and cervical preparation agents, such as misoprostol, mifepristone, and laminaria. Furthermore, recent studies have shown an increase in long-acting reversible contraceptive options including post-abortion contraceptive use. We hoped to compare the trends in abortion of pregnancy in our low-resource urban environment against the national trends to better understand what demographic factors might influence decision-making. We identified a need for studies on trends in abortions of pregnancy in a low-resource urban setting which can become applicable across similar neighborhoods, some of which might not participate in CDC abortion surveillance reports. Our study shows an increase in dilation and evacuation procedures, correlating with an increase in the use of misoprostol and laminaria for cervical preparation as well as digoxin for induction of fetal demise, both of which would occur at higher frequency in the second trimester. We also found a preference towards no contraception after abortion, which slightly differs from national trends in recent years. Our study aims to evaluate these trends and identify the need for further quality assurance and improvement in this care.

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1. Introduction

The landscape of abortion care in the US has changed significantly over the past decade. According to the 2018 CDC Abortion Surveillance Report, while the total number of abortions in the US has decreased, the number of second-trimester abortions has increased [1]. However, it is important to consider that the data is incomplete, as many states do not mandate reporting of abortion data. This disparity further highlights the need for identification of nationally generalizable community-based trends. While the rate of medication abortions has increased over the years, surgical abortions remain the more popular choice in the US [1]. It is estimated that in 2018, surgical abortions accounted for 60% of total abortions, with medication abortions making up the other 40% [1]. Misoprostol, whether alone or in combination with mifepristone, has emerged as standard of care for medication abortions [2, 3]. Misoprostol is an especially popular choice for second trimester abortion cervical preparation, when the risk of complications due to manual dilation of the cervix during a surgical abortion is higher. The recent increase in proportion of second trimester abortions may have contributed in part to the rise of misoprostol use [4, 5].

Contraceptive use has also changed significantly in the last decade, heavily influencing abortion care. While the overall rates have not changed significantly since 2008, studies have shown an increase in the use of long-acting reversible contraception (LARC) with a corresponding decrease in other methods [6]. This may be partially attributed to the

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greater efficacy of LARC in preventing unintended pregnancies compared to other contraceptive methods [7].

While some focused analyses of abortion trends in the past decade exist, there are significant gaps in the literature on abortion trends in medically underserved communities. Considering these changes, a demographic analysis of surgical abortion cases in Newark, NJ may help understand past trends and inform future care. The aim of this study was to compare surgical abortion demographic data from 2004-2007 and 2018-2019 for abortions performed at a low-resource urban setting public university hospital.

2. Materials and Methods

The data collected was de-identified at time of collection and therefore did not require approval by the Rutgers University Institutional Review Board. The data was collected by attendings of the Department of Obstetrics, Gynecology, and Reproductive Health who themselves were conducting surgical abortion of pregnancies between 2004 and 2007 and then 2018 and 2019. The forms used among the years remained the same, keeping data collection consistent among the cohorts. Patients who received medication abortions were excluded from data collection.

The data was manually collected at time of abortion and included demographics like the age of the patient, weight in pounds, and BMI of the patient. Dating of the pregnancy was determined by patient-reported dates based on their last menstrual period. It was documented if the termination was a second-trimester abortion, classified as occurring after 13 weeks and 6 days. Other medical information was collected, such as history of abnormal pap smears, tobacco use, and prior sexually transmitted infections. Abortion methods were noted: whether the patient received a dilation and curettage (D&C), dilation and evacuation (D&E), misoprostol during the abortion, laminaria prior to the abortion, or digoxin for induction of fetal demise. Of note, the data did not distinguish between pre- and peri-procedure misoprostol.

Post-abortion contraceptive methods were noted among the cohorts and separated broadly into four categories: none/barrier methods (including no contraceptive methods, male/female condoms, and diaphragms), LARC (intrauterine devices [IUDs] and implants), short-acting reversible contraception (including oral contraceptive pills, patch, ring, or injection), and emergency contraception.

Data was transferred from handwritten documents to an electronic database. Verification of entry was confirmed via spot-checking to ensure accuracy. In the cases of missing data or when the patient decided to reschedule or cancel the abortion, the data was excluded from analysis. The data was analyzed using SAS University Edition for Mac. Significance was set at $p < 0.05$. Independent student t-test and Chi-squared analysis were conducted where appropriate.

3. Results

3.1. Demographics and Sexual History

The mean age of patients receiving abortion across 2004 and 2019 was 26.10 (Table 1). Patients, on average, were 11 weeks pregnant at the time of abortion (Table 1). 38.4% of the cohort received abortion in the second trimester, which is defined as occurring at 14 weeks or greater (Table 1). The average BMI was 29.5 (Table 1). Of note, 46.7% of the population in 2018 to 2019 was morbidly obese, a jump from 21.8% in 2004 to 2007 ($p < 0.001$, Table 1). The overweight population also increased from 2004 to 2007 at 14.3% to 39.4% in 2018 and 2019 ($p < 0.001$, Table 1). 29.7% of the total population receiving abortions had a history of smoking, and 5.4% of the population had a prior abnormal pap smear (Table 1). Overall, prior sexually transmitted infections declined over time, from 15.4% in 2004-2007 to 9.8% in 2018 and 2019 ($p < 0.001$, Table 2). The most diagnosed sexually transmitted infections included chlamydia, gonorrhea, HIV, and HSV.

Table 1. Demographics

	N	Mean ± StDev	
Age (years)	1170	26.10±6.55	
Weight (lbs)	1069	170.24±55.00	
BMI	1219	29.50±8.68	
Dating	1045	11.35±3.89	
2nd trimester			
	Yes	No	
N (%)	418 (38.4%)	439 (40.4%)	
Abnormal Pap			
	Yes	No	
N (%)	65 (5.4%)	1135 (94.1%)	
Smoking Status			
	Yes	No	
N (%)	365 (29.7%)	866 (70.4%)	
Morbid Obesity			
	No	Yes	Chi-Square
	N (%)	N (%)	
2004-2007	450 (56.3%)	174 (21.8%)	p<0.001
2018-2019	55 (13.1%)	196 (46.7%)	
Overweight			
	No	Yes	Chi-Square
	N (%)	N (%)	
2004-2007	383 (48.1%)	114 (14.3%)	p<0.001
2018-2019	13 (3.09%)	166 (39.4%)	

Table 2. STD History

STD			
	2004-2007	2018-2019	Chi-Square
	N (%)	N (%)	p<0.001
None	670 (84.6%)	432 (90.2%)	
Chlamydia	50 (6.3%)	15 (3.3%)	
Gonorrhea	19 (2.4%)	2 (0.4%)	
Hep B/Hep C	7 (0.9%)	1 (0.2%)	
HIV	11 (1.4%)	6 (1.3%)	
HSV	4 (0.5%)	18 (3.8%)	
Trichomonas	12 (1.5%)	0 (0%)	
HPV	5 (0.6%)	1 (0.2%)	
Candida	5 (0.6%)	2 (0.4%)	
Unknown	7 (0.9%)	0 (0%)	
More than one	2 (0.3%)	1 (0.2%)	

3.2. Abortion methods and post-abortion contraceptive methods

Between 2004 and 2007, 58.5% of women received a D&C for abortion while 21.4% of women received a D&E. Misoprostol was used in 31% of cases to soften and dilate the cervix. 16.5% of cases used laminaria as osmotic dilators to prepare the cervix. Only 17.3% of cases used digoxin in this time period for pre-operative intracardiac fetal demise (Table 3). In comparison, between 2018 and 2019, rates of D&C decreased to 56.5% and rates of D&E increased to 43.7% (D&C, p<0.001, D&E p<0.001, Table 3). The use of misoprostol during abortion increased to 81.5% from 31.0% (p<0.001, Table 3). It also became more common to use laminaria and digoxin in abortion procedures (laminaria 41.3%, p<0.001; digoxin 9.3%, p<0.001, Table 3).

Post-abortion contraceptive methods were divided broadly into four categories. From 2004 to 2019, the number of women choosing no form of contraception after abortion increased from 9.9% to 44.1% (p<0.001, Table 4). There was an increase in the use of LARC, from 3.0% in 2004 to 9.5% in 2018 (p<0.001, Table 4). Preference for short-acting reversible contraceptives and emergency contraception in the later time period sharply decreased (SARC 2004 47.6% vs 2018 44.1%, p<0.001; EC 2004 10.8% vs 2018 2.4%, p<0.001, Table 4).

Table 3. Abortion Methods

		D&C	D&E	Cytotec	Lams	Digoxin
2004-2007	No			392 (49.1%)	483 (60.8%)	269 (42.2%)
	Yes	470 (58.5%)	160 (21.4%)	248 (31.0%)	131 (16.5%)	11 (1.73%)
2018-2019	No			78 (18.5%)	247 (58.7%)	382 (90.7%)
	Yes	239 (56.5%)	184 (43.7%)	344 (81.5%)	174 (41.3%)	39 (9.3%)
T-test	p-values	p<0.001	p<0.001	p<0.001	p<0.001	p<0.001

Table 4. Post-abortion contraceptive methods

	Contraceptive Method				Chi-Square
	None, Barrier	LARC	SARC	Emergency Contraception	
	N (%)	N (%)	N (%)	N (%)	
2004-2007	80 (9.9%)	24 (3.0%)	618 (76.4%)	87 (10.8%)	p<0.001
2018-2019	186 (44.1%)	40 (9.5%)	186 (44.1%)	10 (2.4%)	

4. Discussion

Our study showed that there was an increase in D&E procedures, indicating an increase in second trimester abortion rates in 2018-2019 compared to 2004-2007. There was a significant increase in the usage of agents such as misoprostol and laminaria to prepare for surgical abortions. Current research affirming the safety and efficacy of misoprostol and laminaria for cervical preparation for first and second term surgical abortions likely contributed to this increase [8, 9]. Misoprostol use is associated with lower rates of morbidity and mortality in abortion care, particularly in the second trimester [8].

In the state of New Jersey, where this study was conducted, it is required that abortion services during the second trimester be performed in a licensed hospital. The study was conducted at a large academic center, and we excluded medical abortions from the study information. Our data remains consistent with a national increase in second-trimester abortions in the United States [1]. While yearly CDC Surveillance Reports have indicated this rise in second-trimester abortions, few studies have offered insight into the driving force behind this increase. Previous studies have indicated that minority and lower-income women are more likely to have a second-trimester abortion, likely due to financial or logistic restraints [10]. However, this fails to mention the increase in the national average and seems simplistic in its nature. Increasing legislative restrictions also limit the access to second-trimester abortions, further complicating the narrative.

Other factors have complicated abortion provision in the past decade. Our analysis showed an increase in abortion patients classified as overweight and obese. This increase reflects the same trend in the US population over the past decade [11]. The steady rise in the average BMI in the US has made reproductive care decisions more complicated. Obesity is associated with increased rates of preeclampsia, gestational diabetes, spontaneous abortions, and other complications during pregnancy [12, 13]. Managing obesity-related complications during abortion care provision is crucial to improving outcomes.

Our analysis also showed a decrease in sexually transmitted infections among abortion patients. This is consistent with current nationwide trends which show a decrease in STIs over the past decade [14, 15]. Curiously, our data also indicated an increase solely in HSV between 2004-2007 and 2018-2019 cohorts. While current literature suggests that HSV prevalence too fell in the last decade, we presume it demonstrates differences in HSV prevalence across racial groups as our large academic center is predominantly composed of Black and Hispanic patients. Recent studies have shown a higher prevalence of HSV in Mexican-American people, for example, compared to non-Hispanic White people in the US [16]. Given that our data lacked racial identifiers, it is possible that our observed “increase” in HSV could simply be the result of a different patient cohort composition.

We also observed an increase in patients reporting none/barrier and LARC with a corresponding decrease in SARC and emergency contraception for post-abortion contraception. This is consistent with current trends showing increasing LARC usage. The observed increase in LARC could also be explained in part by the implementation of the Affordable Care Act, as the ACA was found to make LARC more financially accessible for insured women [17]. Despite these trends, SARC remains a more popular choice nationally than LARC as post-abortion contraception, suggesting continued resistance to

LARC adoption. Studies have found that continued barriers to LARC implementation include lack of patient and provider awareness, lack of patient autonomy, and financial accessibility [18-20].

Interestingly, the increase in patients reporting none/barrier for contraception contraindicates national trends showing an increase in contraception uptake over the past decade [6]. While this may partially be due to variance from small sample size, this discrepancy should be further explored. As pregnancy shortly after an abortion is linked to complications for perinatal and maternal health, post-abortion contraceptive counseling is imperative to improve patient care and inform of quick return to fertility after abortion [21]. Previous studies have identified that virtually all abortion clinics discuss contraceptive education, with the most common contraception methods being chosen as oral contraceptives, vaginal rings, and Depo-Provera [22]. Emphasis is greatly placed on post-abortion contraceptive use as a method of preventing further repeat abortions, however few studies have looked at reasons why women choose to use no contraception or barrier methods rather than LARCs. In fact, it was found that three methods post-abortion, over half of women were not using "more effective" contraception despite wide interest to do so [23].

In addition, it is important to consider that insurance requirements often prevent providers from placing LARCs at the time of surgical abortion, leading to an increased number of appointments and an additional barrier to healthcare. Title X funds to provide contraceptive services cannot be combined with abortion care, and some states legally mandate separation of the two. In a survey done by the National Abortion Federation, primarily of reproductive health clinics, it was indicated that the majority of clinics offered did not provide immediate post-abortion LARCs, with the most significant barrier being cost to the patient [24].

One of the main limitations to the study is the method in which data collection occurred. We relied on accurate coding of the variables to make conclusions. Furthermore, data collection was limited in its scope. While our study was conducted in a low-income, medically underserved area, no data on socioeconomic status or race were included. This limits the conclusion able to be drawn from our study, in part because socioeconomic status is a strong predictor of contraceptive usage [25]. Our lack of race and ethnicity data complicates both our analysis of STI prevalence and our understanding of LARC usage, as there is evidence that the recent rates of increase in LARC usage varies among people of different races [26]. This opens avenues for future studies to understand how race and socioeconomic status affects access to abortion care and medical decision-making. Furthermore, our study did not include medication abortion. Larger scale studies considering the difference between first-trimester medication or surgical abortion may help answer questions about trends in abortion care in low-resource neighborhoods.

5. Conclusions

Our study highlights demographic trends in surgical abortions at University Hospital from 2004-2007 and 2018-2019. We observed an increase in the rate of D&C procedures as well as an increase in the use of cervical preparation agents such as misoprostol and laminaria. Our demographic analysis also showed an increase in the mean BMI of patients over the 15-year period. While sexually transmitted illness rates in patients decreased during this time, changes in contraceptive usage were more nuanced. Both the percentage of patients reporting none/barrier contraception and those using LARC increased, but SARC and emergency contraception decreased. Our study indicates that there are differences in trends among the low-resource setting compared to national data, particularly when it comes to contraceptive counseling. This indicates the need for further, large-scale studies to identify and highlight potential racial and socioeconomic barriers to these trends.

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