

Family planning behavior before and during the COVID-19 pandemic

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Abstract

Objective: Contraception use and follow-up visit data from before and in two periods during the coronavirus disease-2019 (COVID-19) pandemic were compared to investigate change in behavior.

Material and Methods: A retrospective study of women aged 18-49 years from New York City during three one-year time periods: pre-COVID-19 pandemic [(COV-PRE); n=4,261], early COVID-19 pandemic when the COVID-19 vaccine was not available [(COV-VACNO); n=3,365], and later COVID-19 pandemic when the COVID-19 vaccine was available [(COV-VACAV); n=4,170].

Results: There were higher odds of implant use [odds ratio (OR): 1.42, 95% confidence interval (CI): 1.05, 1.93, p=0.02] during COV-VACNO. There were lower odds for any contraception (OR: 0.88, 95% CI: 0.79, 0.98, p<0.001) or intrauterine device (IUD) (OR: 0.73, 95% CI: 0.61, 0.86, p<0.001) use during COV-VACAV. No differences occurred for bilateral tubal ligation, pill, patch, injection, medical elective abortion, or surgical elective abortion. There was a greater percentage of follow-up visits for any contraception (p=0.02) and IUD (p=0.02) use during COV-VACNO and COV-VACAV than COV-PRE.

Conclusion: When COVID-19 vaccines were unavailable, there were higher odds for use of implants. Once COVID-19 vaccines were available, there were lower odds for any contraception and IUD use. These findings highlight changes in behavior in terms of contraceptive concerns and preferences during a public health crisis that should be planned for by healthcare providers. (J Turk Ger Gynecol Assoc. 2024; 25: 200-6)

Keywords: Contraception, family planning services, COVID-19

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Introduction

In the United States (US) at the beginning of the coronavirus disease-2019 (COVID-19) pandemic, there were delays or cancellations of sexual and reproductive healthcare visits and decreased access to birth control for 33% of women (1). Women had increased levels of fear, stress, and anxiety regarding pregnancy due to concerns about the potential negative risks of COVID-19 on maternal and fetal health (2). The COVID-19

pandemic affected family planning and contraception access due to lockdown measures, overwhelmed healthcare systems, and restricted access to contraceptive services. This led to delays or cancellations of appointments, reduced availability of certain contraceptive methods, and limited access to essential sexual and reproductive health services (3).

A nationwide US study compared the time periods from before the COVID-19 pandemic and the first year of the COVID-19



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pandemic and found that contraception visits declined for the first year of the COVID-19 pandemic for tubal ligations, long-acting reversible contraception, pills, patches, rings, and injectables (4). A review on the impact of COVID-19 mitigation measures on sexual and reproductive health in low- and middle-income countries found that there was an overall reduction in the uptake and delivery of services, including family planning clinics, health facility deliveries, and post-abortion care services (5). A study from the southwest US found that during the beginning of the COVID-19 pandemic that there was a greater desire to become pregnant during the first few months which then changed to a greater desire to not become pregnant over the next few months (6).

Regarding contraception receipt and use, one study from California, US found that there was a lower percentage for planned use of top-tier contraception, of either sterilization, an intrauterine device (IUD), or an implant at admission for delivering a baby during the first few months of the COVID-19 pandemic compared to pre-COVID-19 pandemic (7). One study from Massachusetts, US found that at the beginning of the COVID-19 pandemic there was an increase compared to the pre-COVID-19 period in terms of receiving postpartum progesterone-only pills, combined oral contraceptives, rings, patches, and injections while receipt of IUDs, implants, and sterilization were similar (8). However, another study from Massachusetts found that at the beginning of the COVID-19 pandemic there was an increase in use of immediate postpartum long-acting reversible contraception, while overall contraception use at 10 weeks postpartum did not change (9). There are a number of studies that compare family planning approaches between the initial period or first year of the COVID-19 pandemic to the pre-COVID-19 pandemic period (4,7-9). The first year of the COVID-19 pandemic was a time when COVID-19 vaccines were unavailable. It is possible that once COVID-19 vaccines were available, family planning approaches may have changed even though the COVID-19 pandemic was still negatively impacting health. We are unaware of any studies comparing family planning approaches during the years of the COVID-19 pandemic when vaccines were and were not available. Thus, this study was designed to compare family planning approaches and follow-up visits for family planning between three different time periods: one year before the COVID-19 pandemic; the first year of the COVID-19 pandemic when vaccines were unavailable; and the second year of the COVID-19 pandemic when vaccines were available.

Material and Methods

Setting

This was a retrospective study of all women of reproductive age (18-49 years) seen at the obstetrics and gynecology department

at a New York City State Hospital. This hospital typically serves patients of lower socioeconomic status. We compared three different time periods: before the COVID-19 pandemic impacted New York City (March 2019-February 2020; COV-PRE); initial phase of the COVID-19 pandemic when COVID-19 vaccine access was not readily available (March 2020-February 2021; COV-VACNO); and a phase of the COVID-19 pandemic when COVID-19 vaccine access was typically available (March 2021-February 2022; COV-VACAV). The study was ethically conducted, received New York City Health + Hospitals Institutional Review Board approval [approval number: BRANY IRB File # 23-12-003-378(HHC), date: 01.10.2023], and was conducted in accordance with the Helsinki Declaration. A waiver for informed consent was obtained due to the retrospective nature of the study.

Variables

Demographic variables consisted of age (years), race/ethnicity (white, black, Hispanic, Asian, other), and preferred language (English vs. non-English). Other data items collected included body mass index [(BMI) in kg/m²], current cigarette smoking status, and parity. Medical history variables consisted of type 1/type 2 diabetes mellitus (DM), gestational diabetes mellitus (GDM), hypertension, thrombophilia, thyroid issue, uterine anomaly, and gonorrhea/chlamydia, all measured as no versus yes. Use of prenatal care and telehealth visits were recorded.

The primary outcome was overall contraception use including bilateral tubal ligation (BTL), oral contraceptive pill, patch, IUD, injection, and/or implant during the three different time periods. The secondary outcomes were use of each of the above individual contraception approaches, medical elective abortion, or surgical elective abortion. Another secondary outcome compared attending a follow-up visit during the three different time periods of three months for BTL and 12 months for pill, patch, IUD, injection, or implant. Follow-up visits for any contraception use summarized content from any of the above six contraception types.

Statistical analysis

The continuous variables are presented as mean and standard deviation and these were compared using analysis of variance (ANOVA) tests. Categorical variables are presented as frequency and percentage and these were compared using the Pearson chi square test. Variables that differed significantly between the time periods were included as covariates in the multivariate logistic regression analyses. Missing BMI values were entered using the sample mean value of 28.392. All p-values were two-sided with alpha level for significance at $p < 0.05$. IBM SPSS, version 29 was used for all analyses (IBM Corporation, Armonk, NY, USA).

Results

The sample consisted of 4,261 patients in COV-PRE, 3,365 patients in COV-VACNO, and 4,170 patients in COV-VACAV. Table 1 shows the sample characteristics of the three time periods. Many variables significantly differed between the time periods. Mean age ($p < 0.001$), and percentages for non-English language ($p < 0.001$), receipt of prenatal care ($p < 0.001$), and telehealth visit ($p < 0.001$) had the highest values in the COV-PRE period. Race/ethnicity ($p < 0.001$) had the greatest percentage of Hispanics in COV-VACAV. Mean BMI ($p < 0.001$) had the highest values during COV-VACNO and COV-VACAV. DM ($p < 0.001$), GDM ($p = 0.002$), and gonorrhea/chlamydia ($p = 0.03$) had the highest percentages during COV-VACNO. Hypertension ($p = 0.003$) had the highest percentage in the COV-VACAV period.

Table 2 shows the univariate comparisons for the time periods and family planning behavior. Any contraception use differed significantly ($p = 0.01$) with the greatest percentage for COV-VACNO. IUD use significantly differed ($p < 0.001$) with the greatest percentage for COV-PRE. Injection significantly differed ($p = 0.03$) with the greatest percentage for COV-VACAV. Implant significantly differed ($p = 0.002$) with the greatest percentage for

COV-VACNO. BTL, pill, patch, medical elective abortion, and surgical elective abortion did not significantly differ between the time periods.

Table 3 shows the multivariate analyses for any contraception and IUD. For any contraception, COV-VACAV significantly differed ($p = 0.02$) with lower odds than COV-PRE. COV-VACNO did not significantly differ from COV-PRE. For IUD, COV-VACAV significantly differed ($p < 0.001$) with lower odds than COV-PRE while COV-VACNO did not differ from COV-PRE. Table 4 shows the multivariate analyses for injection and implant. For injection, there were no significant differences between the time periods. For implant, COV-VACNO exhibited significantly higher odds ($p = 0.02$) than COV-PRE, while COV-VACAV did not differ from COV-PRE.

There were significant findings for the covariates from the multivariate analyses (Tables 3, 4). Increased age was significantly associated with lower odds for any contraception, IUD, injection, and implant. Black and Hispanic race/ethnicity significantly differed from whites with higher odds for any contraception, lower odds for IUD, higher odds for injection, and higher odds for implant. BMI significantly differed with increased values significantly associated with lower odds for

Table 1. Sample characteristics of the three time periods

Variable	COV-PRE, mean (SD) or n (%) (n=4,261)	COV-VACNO, mean (SD) or n (%) (n=3,365)	COV-VACAV, mean (SD) or n (%) (n=4,170)	p-value
Age (years) (mean)	36.0 (7.29)	35.5 (7.44)	35.1 (7.69)	<0.001
Race/ethnicity				
White	1,065 (25.0)	773 (23.0)	864 (20.7)	<0.001
Black	486 (11.4)	428 (12.7)	535 (12.8)	
Hispanic	1,423 (33.4)	1,235 (36.7)	1,801 (43.2)	
Asian	405 (9.5)	311 (9.2)	366 (8.8)	
Other	882 (20.7)	618 (18.4)	604 (14.5)	
Body mass index (kg/m ²) (mean)	28.0 (5.85)	28.6 (5.77)	28.6 (5.92)	<0.001
Language (non-English)	2,499 (58.6)	1,809 (53.8)	2,357 (56.5)	<0.001
Smoking	238 (5.6)	189 (5.6)	210 (5.0)	0.43
Parity (mean)	2.1 (1.49)	2.0 (1.51)	2.0 (1.50)	0.15
Diabetes mellitus	489 (11.5)	503 (14.9)	580 (13.9)	<0.001
Gestational diabetes mellitus	323 (7.6)	302 (9.0)	283 (6.8)	0.002
Hypertension	160 (3.8)	154 (4.6)	221 (5.3)	0.003
Thrombophilia	13 (0.3)	11 (0.3)	14 (0.3)	0.97
Thyroid issue	306 (7.2)	238 (7.1)	253 (6.1)	0.09
Uterine anomaly	11 (0.3)	9 (0.3)	7 (0.3)	1.00
Gonorrhea/chlamydia	107 (2.5)	118 (3.5)	138 (3.3)	0.03
Prenatal care	1,292 (30.3)	910 (27.0)	1,059 (25.4)	<0.001
Telehealth visit	206 (4.8)	50 (1.5)	99 (2.4)	<0.001

COV-PRE: Pre-COVID-19 pandemic, COV-VACNO: Initial phase of COVID-19 pandemic when no COVID-19 vaccines were available, COV-VACAV: During COVID-19 pandemic when COVID-19 vaccines were available, SD: Standard deviation

Table 2. Univariate comparisons for the time periods and family planning behavior

Variable	COV-PRE, n (%) (n=4,261)	COV-VACNO, n (%) (n=3,365)	COV-VACAV, n (%) (n=4,170)	p-value
Any contraception	1,011 (23.7)	875 (26.0)	959 (23.0)	0.01
Bilateral tubal ligation	92 (2.2)	67 (2.0)	66 (1.6)	0.14
Intrauterine device	356 (8.4)	272 (8.1)	256 (6.1)	<0.001
Pill	308 (7.2)	292 (8.7)	340 (8.2)	0.06
Patch	70 (1.6)	49 (1.5)	67 (1.6)	0.80
Injection	241 (5.7)	227 (6.7)	293 (7.0)	0.03
Implant	80 (1.9)	90 (2.9)	79 (1.9)	0.002
Abortion: medical	12 (0.3)	13 (0.4)	20 (0.5)	0.34
Abortion: surgical	89 (2.1)	73 (2.2)	75 (1.8)	0.47

COV-PRE: Pre-COVID-19 pandemic, COV-VACNO: initial phase of COVID-19 pandemic when no COVID-19 vaccines were available, COV-VACAV: during COVID-19 pandemic when COVID-19 vaccines were available

Table 3. Multivariate logistic regression analysis for any contraception and intrauterine device

Variable	Any contraception, OR (95% CI)	p-value	IUD, OR (95% CI)	p-value
Time period				
COV-PRE	1.00		1.00	
COV-VACNO	1.09 (0.98, 1.21)	0.13	0.97 (0.82, 1.14)	0.69
COV-VACAV	0.88 (0.79, 0.98)	0.02	0.73 (0.61, 0.86)	<0.001
Age (years)	0.947 (0.941, 0.953)	<0.001	0.97 (0.96, 0.98)	<0.001
Race/ethnicity				
White	1.00		1.00	
Black	1.23 (1.03, 1.45)	0.02	0.38 (0.28, 0.52)	<0.001
Hispanic	1.76 (1.56, 1.99)	<0.001	0.59 (0.49, 0.71)	<0.001
Asian	1.15 (0.97, 1.37)	0.11	1.13 (0.90, 1.42)	0.29
Other	1.23 (1.06, 1.41)	0.01	0.73 (0.59, 0.89)	0.002
Body mass index (kg/m ²)	0.991 (0.984, 0.999)	0.03	1.01 (1.002, 1.03)	0.03
Language (non-English)	1.10 (1.00, 1.21)	0.06	1.07 (0.92, 1.24)	0.42
Diabetes mellitus	0.73 (0.62, 0.88)	<0.001	0.85 (0.65, 1.12)	0.26
Gestational diabetes mellitus	2.80 (2.28, 3.43)	<0.001	1.64 (1.20, 2.24)	0.002
Hypertension	1.47 (1.19, 1.83)	<0.001	1.70 (1.23, 2.35)	0.001
Gonorrhea/chlamydia	1.35 (1.08, 1.69)	0.01	0.78 (0.49, 1.22)	0.27
Prenatal care	0.80 (0.72, 0.89)	<0.001	0.91 (0.77, 1.07)	0.23
Telehealth visit	1.38 (1.09, 1.75)	0.01	1.21 (0.83, 1.75)	0.32

COV-PRE: Pre-COVID-19 pandemic, COV-VACNO: Initial phase of COVID-19 pandemic when no COVID-19 vaccines were available, COV-VACAV: During COVID-19 pandemic when COVID-19 vaccines were available, IUD: Intrauterine device, OR: Odds ratio, CI: Confidence interval. Nagelkerke R square: Any contraception=0.07, IUD=0.03. Analysis of variance inflation factor values indicated no multicollinearity concerns

any contraception and injection and slightly higher odds for IUD. Non-English language was significantly associated with higher odds for injection and higher odds for implant. DM was significantly associated with lower odds for any contraception. GDM was significantly associated with higher odds for any contraception, IUD, injection, and implant. Hypertension was significantly associated with higher odds for any contraception, IUD, and injection. Gonorrhea/chlamydia was significantly associated with higher odds for any contraception. Prenatal care was significantly associated with lower odds for any

contraception. Telehealth visit was significantly associated with higher odds for any contraception and injection. The Figure 1 shows univariate comparisons for follow-up visits. Any contraception significantly differed (p=0.02) with COV-VACNO and COV-VACAV having greater percentages than COV-PRE. IUD significantly differed (p=0.02) with COV-VACNO and COV-VACAV having greater percentages than COV-PRE. Follow-up for all time periods did not approach 100%. Injection had the highest percentage of follow-up for the time periods, ranging from 53.9-60.4%.

Table 4. Multivariate logistic regression analysis for injection and implant

Variable	Injection, OR (95% CI)	p-value	Implant, OR (95% CI)	p-value
Time period				
COV-PRE	1.00		1.00	
COV-VACNO	1.14 (0.94, 1.38)	0.17	1.42 (1.05, 1.93)	0.02
COV-VACAV	1.09 (0.91, 1.30)	0.36	0.79 (0.57, 1.09)	0.14
Age (years)	0.94 (0.93, 0.95)	<0.001	0.91 (0.89, 0.93)	<0.001
Race/ethnicity				
White	1.00		1.00	
Black	2.56 (1.90, 3.44)	<0.001	3.86 (2.11, 7.08)	<0.001
Hispanic	2.57 (2.03, 3.24)	<0.001	4.96 (3.04, 8.09)	<0.001
Asian	0.89 (0.61, 1.30)	0.56	0.66 (0.26, 1.66)	0.37
Other	1.09 (1.82, 1.47)	0.55	2.30 (1.32, 4.01)	0.003
Body mass index (kg/m ²)	0.98 (0.97, 0.997)	0.02	1.01 (0.99, 1.03)	0.35
Language (non-English)	1.43 (1.20, 1.72)	<0.001	1.89 (1.38, 2.58)	<0.001
Diabetes mellitus	0.80 (0.59, 1.08)	0.14	0.77 (0.46, 1.28)	0.31
Gestational diabetes mellitus	2.27 (1.60, 3.21)	<0.001	3.34 (1.91, 5.83)	<0.001
Hypertension	2.13 (1.54, 2.95)	<0.001	1.45 (0.77, 2.74)	0.26
Gonorrhea/chlamydia	1.33 (0.96, 1.86)	0.09	0.80 (0.44, 1.46)	0.47
Prenatal care	0.84 (0.70, 1.01)	0.06	0.74 (0.54, 1.00)	0.053
Telehealth visit	1.46 (1.002, 2.13)	0.049	1.09 (0.54, 2.17)	0.82

COV-PRE: Pre-COVID-19 pandemic, COV-VACNO: Initial phase of COVID-19 pandemic when no COVID-19 vaccines were available, COV-VACAV: During COVID-19 pandemic when COVID-19 vaccines were available, IUD: Intrauterine device, OR: Odds ratio, CI: Confidence interval. Nagelkerke R square: Injection=0.07, Implant=0.11. Analysis of variance inflation factor values indicated no multicollinearity concerns

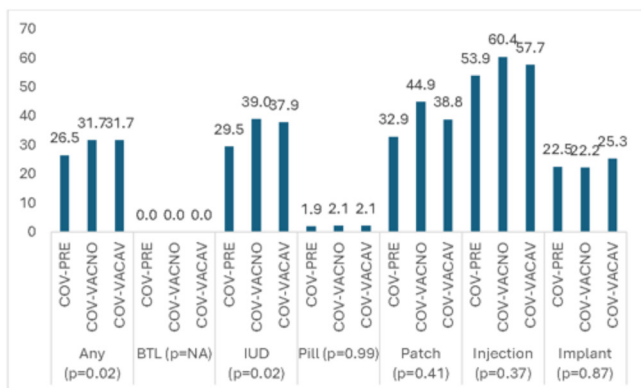


Figure 1. Univariate percentage comparisons for the time periods for contraception follow-up visits
COV-PRE: Pre-COVID-19 pandemic, COV-VACNO: Initial phase of COVID-19 pandemic when no COVID-19 vaccines were available, COV-VACAV: During COVID-19 pandemic when COVID-19 vaccines were available, BTL: Bilateral tubal ligation, IUD: Intrauterine device

Discussion

We found that for the category “any contraception” and IUD that COV-VACAV had significantly lower odds for use than COV-PRE while no differences occurred between COV-VACNO and COV-PRE. We found for implants that COV-VACNO had

significantly higher odds than COV-PRE for use while no differences occurred between COV-VACAV and COV-PRE. We did not find any differences among the time periods for BTL, pill, patch, injection, medical elective abortion, and surgical elective abortion. For both “any contraception” and IUD, there were significantly greater percentages for follow-up visits during COV-VACNO and COV-VACAV than COV-PRE.

We found for any contraception use that COV-VACAV had significantly lower odds than COV-PRE while COV-VACNO did not significantly differ from COV-PRE. Previous research into any contraception use found that there were no differences between pre-COVID-19 pandemic and the beginning of the COVID-19 pandemic (9). Our finding for the first year of the COVID-19 pandemic when COVID-19 vaccines were unavailable is similar to this pattern. However, our finding for the second year of the COVID-19 pandemic when COVID-19 vaccines were available differs. We suggest that once COVID-19 vaccines were available, there were lower levels of contraception use since women and their partners felt more comfortable with a pregnancy, which would involve doctor and hospital visits.

We found for IUD use that COV-VACAV had significantly lower odds than COV-PRE while COV-VACNO did not significantly differ from COV-PRE. We found a different pattern for implant use where COV-VACNO significantly differed with higher odds

than COV-PRE while COV-VACAV did not significantly differ from COV-PRE. Previous research for the time period of the first year of the COVID-19 pandemic report variable findings, with some reporting lower percentages of IUD use and implants (7) while others report no differences in use (8,10) when compared to the pre-COVID-19 period. Our findings for IUD use in the first year of the pandemic are similar to those reporting no difference between pre-COVID-19 pandemic and the first year of the COVID-19 pandemic. However, our findings for implants differ from the above studies as we found increased use during the first year of the COVID-19 pandemic. We suggest that during the first year of the COVID-19 pandemic women were uncomfortable becoming pregnant due to concerns about contracting COVID-19 at physician or hospital visits. Women chose implant use because it has a longer active time for contraception impact than pills, patches, and injections which require more regular visits for additional prescriptions. Moreover, more clinicians may have recommended implant use since there would be less requirement for follow-up. Clinicians may also have thought that there may be decreased access to care due to shortages of healthcare providers from possible illness during the COVID-19 pandemic. In addition, once COVID-19 vaccines were available, there was an increased interest in becoming pregnant as the health risks associated with COVID-19 became better understood. This may be a reason for the decreased IUD use during the second year of the COVID-19 pandemic. Furthermore, placing an IUD may be considered invasive and may have been avoided or not preferred once other contraception options were available.

We did not find any differences among the time periods for BTL, pill, patch, injection, medical elective abortion, and surgical elective abortion. Previous research that included many contraception choices found increased use at the beginning of the COVID-19 pandemic as compared to pre-COVID-19 pandemic for pills, patches, and injections while there was no change in use for sterilization (8). Our findings for pills, patches, and injections differ from this pattern. These contraception options require more frequent healthcare visits. Patients at our hospital may have been concerned about contracting COVID-19 by attending such visits and did not choose to increase use of these options during the pandemic.

For both the categories "any contraception" and IUD, there were significantly greater percentages for follow-up visits during COV-VACNO and COV-VACAV than COV-PRE. Previous research reports that 72.9% attended a follow-up visit for an IUD (11). Our follow-up visit findings for all three time periods are much lower, and ranged from 29.5-39.0%. We suggest that there may have been cultural differences since the earlier study included mostly white race/ethnicity while our sample was mostly from those of non-white race/ethnicity. Regarding

the higher follow-up rates for IUD in our sample during the COVID-19 pandemic as compared to pre-COVID-19 pandemic, we speculate that patients wanted to ensure that their IUD was working properly since they were very concerned about becoming pregnant during the pandemic. The reason for the high rates of follow-up for injections in all three time periods ranging from 53.9-60.4% is likely due to the need for short-term follow-up every 10-12 weeks and this may have been a concern that patients were aware of and did not ignore.

We found that those of black and Hispanic race/ethnicities had significantly higher odds for use of any contraception, injection, and implant than whites. However, those of black and Hispanic race/ethnicities had lower odds of IUD use than whites. Previous research reports that blacks had lower odds for use of any contraception when compared to whites (12). Our study differs from this pattern. A possible reason is that the previous study (12) included all types of contraception ranging from the least effective (e.g., condom), through moderately effective (e.g., injection), to highly effective (e.g., sterilization, IUD) while our study only included moderately and highly effective contraception use. Our study has positive findings in that there were no health disparities for the use of moderately or highly effective contraception among blacks and Hispanics. Instead, blacks and Hispanics choose better contraception use than whites.

DM had significantly decreased odds for any contraception use while no significant association with use of IUD, injection, or implant. GDM had significantly greater odds for use of any contraception, IUD, injection, and implant. Previous research reports no difference in any contraception use (both sterilization and reversible methods) between women with DM and gestational diabetes, while reversible contraception use was higher among those with gestational diabetes as compared to those with DM (13). Our findings differ for any contraception use but are similar for reversible contraception use. We suggest that the complications experienced during pregnancy among those with gestational diabetes are associated with patients being more cautious about becoming pregnant.

Telehealth use was low during all time periods and ranged from 1.5-4.8% and was lower during the COVID-19 pandemic as compared to pre-COVID-19 pandemic. Telehealth visits had a significant association with increased odds for use of any contraception and injection while there was no association with use of IUD or implant. Previous research reports a significant increase in obstetric and gynecologic telehealth visits during the first year of the COVID-19 pandemic as compared to pre-COVID-19 pandemic with negligible use pre-COVID-19 pandemic, ranging from 6.1-11.8%, depending upon the hospital location for the obstetrics and gynecology setting during the first year of the COVID-19 pandemic (14).

Our telehealth use findings differ from this pattern. We suggest that at our hospital healthcare workers during the COVID-19 pandemic focused on acute inpatient care and not on outpatient care, such as telehealth visits. For those telehealth visits that were for contraception, we suggest there were increased odds for injection since this approach required more follow-up visits and patients preferred telehealth to minimize possible contraction of COVID-19 because of in-person visits.

Study limitations

A study strength is the investigation of the time period when the COVID-19 vaccine was available. This study has several limitations due to the retrospective study design. We were unable to determine reasons why people chose a particular family planning method during a particular time period. We were also unable to ask people why they did not attend a follow-up appointment. Future research should study reasons for lower follow-up rates and identify interventions for improved follow-up rates.

Conclusion

We found that during the first year of the COVID-19 pandemic when COVID-19 vaccines were unavailable and the risks of contracting COVID-19 were not clear, there were significantly higher odds for use of implants. However, there was a different pattern during the second year of the pandemic when COVID-19 vaccines were available, with lower odds of any contraception use and IUD use. These findings highlight changes in behavior and preferences in terms of contraceptive concerns in an urban setting during a public health crisis that should be planned for by healthcare providers.

Ethics Committee Approval: *The study was ethically conducted, received New York City Health + Hospitals Institutional Review Board approval [approval number: BRANY IRB File # 23-12-003-378(HHC), date: 01.10.2023].*

Informed Consent: *A waiver for informed consent was obtained due to the retrospective nature of the study.*

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