Menstruation Irregularities among Reproductive-Age Women During the COVID-19 Pandemic

Emily M. Cherenack[1], Ana S. Salazar [1], Patricia Raccamarich[1], Violeta J. Rodriguez[2], Alejandro M. Mantero[1], Sophia Gerard[1], Marissa Maddalon[1], Deborah L. Jones[1], Nichole R. Klatt[3], Maria L. Alcaide[1]
[1]University of Miami Miller School of Medicine, Miami, FL, USA, [2]University of Georgia, Athens, GA, USA, [3]University of Minnesota, Minneapolis, MN, USA

00644

BACKGROUND

- Menstrual irregularities have been reported among cisgender women during the COVID-19 pandemic.
- Menstrual irregularities may result in suboptimal pregnancy planning and unintended pregnancies.
- It is not known if menstrual irregularities are related to psychological factors during the pandemic, SARS-CoV-2 infection, and/or COVID-19 vaccination.

OBJECTIVES

- To explore the prevalence of menstrual irregularities among women at high risk for unintended pregnancy during the COVID-19 pandemic.
- To examine the factors (psychosocial or COVID-19 related) associated with menstrual irregularities among reproductive age women during the COVID-19 pandemic.

METHODS

- **Design:** Cross-sectional study
- **Date**: January 2019 – September 2021
- **Sample:** *N*=182 cisgender women 18-45 years old
- **Setting:** Miami, FL
- **Inclusion criteria:** no contraceptive use or recent pregnancy, sexually active in the previous month, no active malignancy, no immunosuppression, no HIV infection
- **Surveys:** Sociodemographic, sexual behaviors, menstrual irregularities in the previous 3 months, perceived stress, depression, loneliness, history of COVID-19 vaccination, condomless intercourse in the previous month, intentions to conceive in the next 6 months
- **SARS-CoV-2 Antibody assay:** EUA rapid test assay using whole blood to measure SARS-CoV-2 IgG antibodies
- **Analysis:** Chi-square tests compared proportion of participants with menstrual irregularities and SARS-CoV-2 IgG antibody status (detectable/undetectable). Fishers' exact test examined the proportion of menstrual irregularities by antibody status among participants unvaccinated for COVID-19. Logistic regressions examined SARS-CoV-2 IgG antibody status and menstrual irregularities when controlling for age and stress, depression, and loneliness in separate models.

Having detectable SARS-CoV-2 IgG antibodies is associated with higher odds of menstrual irregularities.

RESULTS

- **Sample:** N=73 women had antibody assay completed; N=37 responded to the question regarding history of COVID-19 vaccination. 59% Black, 34% Hispanic, 9% non-Hispanic white.
- Of N=73, 18% had menstrual irregularities, 49% had SARS-CoV-2 IgG antibodies. Of *N*=37, 6 received COVID-19 vaccination.
- A higher proportion of participants with detectable SARS-CoV-2 IgG antibodies (vs. undetectable) had menstrual irregularities (31% detectable/5% undetectable) (Fig 1).
- Among 31 participants who have not received a COVID-19 vaccine, a higher proportion of participants with SARS-CoV-2 IgG antibodies (vs. undetectable) had menstrual irregularities (35% detectable/0% undetectable) (Fig 2).
- Using logistic regression, the odds of menstrual irregularities was 7.3 (95% CI [1.47, 36.49]) times higher among women with SARS-CoV-2 IgG antibodies (vs. undetectable) when controlling for age, $p = 0.013$.
- There were no relationships between recruitment date, age, stress, depression, or loneliness and menstrual irregularities.
- Among 52 participants with no intentions to conceive, 35 (67%) had condomless intercourse. Among these 35 participants, 6 (17%) had menstrual irregularities.

Detectable SARS-CoV-2 IgG Antibody

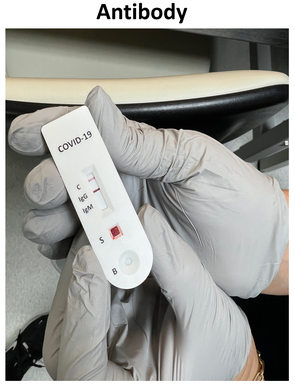


Fig 1. SARS-CoV-2 IgG Antibodies and Menstrual Irregularities (n = 73)

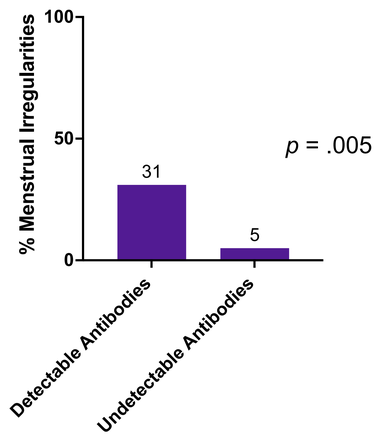
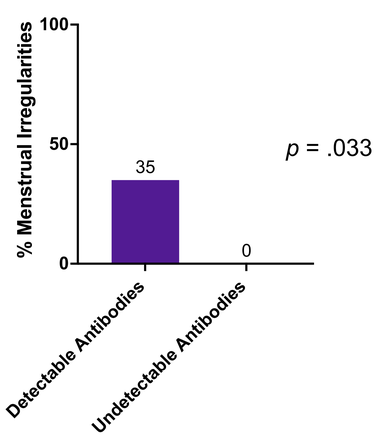


Fig 2. Unvaccinated Only: SARS-CoV-2 IgG Antibodies and Menstrual Irregularities (n = 31)



CONCLUSIONS

- Menstrual irregularities have been common among women of reproductive age since the beginning of the COVID-19 pandemic.
- Menstrual irregularities occurred in almost one fifth of women who did not intend to become pregnant and were having condomless intercourse.
- Detection of SARS-CoV-2 antibodies (likely indicating previous infection and less likely COVID-19 vaccination) are associated with menstrual irregularities.
- Women with menstrual irregularities who do not intend to conceive may benefit from increasing condom use or having regular pregnancy testing during the COVID-19 pandemic.

ADDITIONAL KEY INFORMATION

Funding: NIAID (R01AI138718); the Miami CFAR by NIH (P30AI1073961); the University of Miami Developmental HIV/AIDS Mental Health Research Center, funded by the NIMH of the NIH (P30MH116867). EMC's work was supported by NIAID (1F32AI162229). VJR's work was supported by a Ford Foundation Fellowship, administered by the National Academies of Science, a PEO Scholar Award from the PEO Sisterhood, and the NIMH (R36MH127838). The funding agencies did not participate in the study design, data collection, analysis, or decision to publish.