Study: "The Global Pandemic and Changes in Women's Reproductive Health: An Observational Study"

Journal

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Aim of the Study

- There is ample evidence that stress affects the female menstrual cycle. The primary endpoint of this observational study was to answer the question: How have objectively measurable markers such as menstrual cycle length and menstrual duration changed since the onset of the COVID-19 pandemic?

- To analyze the extent to which women perceived the pandemic as psychosocially stressful, participants were asked in the second part of the study to answer a questionnaire about themselves and their personal situation, during and before the pandemic.

- The last part of the study deals with whether there is a relationship between subjectively experienced stress (question-naire) and objectively measured markers such as cycle length and duration of menstruationt.

Scientific partners

This study was developed in collaboration with international experts under the leadership of Professor Joaquin Calaf Alsin, MD (Barcelona, Spain).

About Daysy

Daysy is a fertility tracker that determines fertile and infertile days based on the Fertility Tracker Method (FTM) and thus can be applied for conception and cycle monitoring.

Why analyze the relationship between the pandemic and the menstrual cycle?

Studies consistently indicate that ovulation and the female cycle as a whole are influenced by lifestyle factors such as stress, diet, or extensive exercise. There has been extensive international reporting on why the pandemic was or is particularly stressful for women of reproductive age. Increased domestic violence, financial insecurity, threatened or actual job loss, multiple workloads from home office and in-home child care affected many younger women.

Unsurprisingly, therefore, initial studies as early as 2020 indicated that the pandemic may impact key fertility markers. However, no consistent pattern was evident.
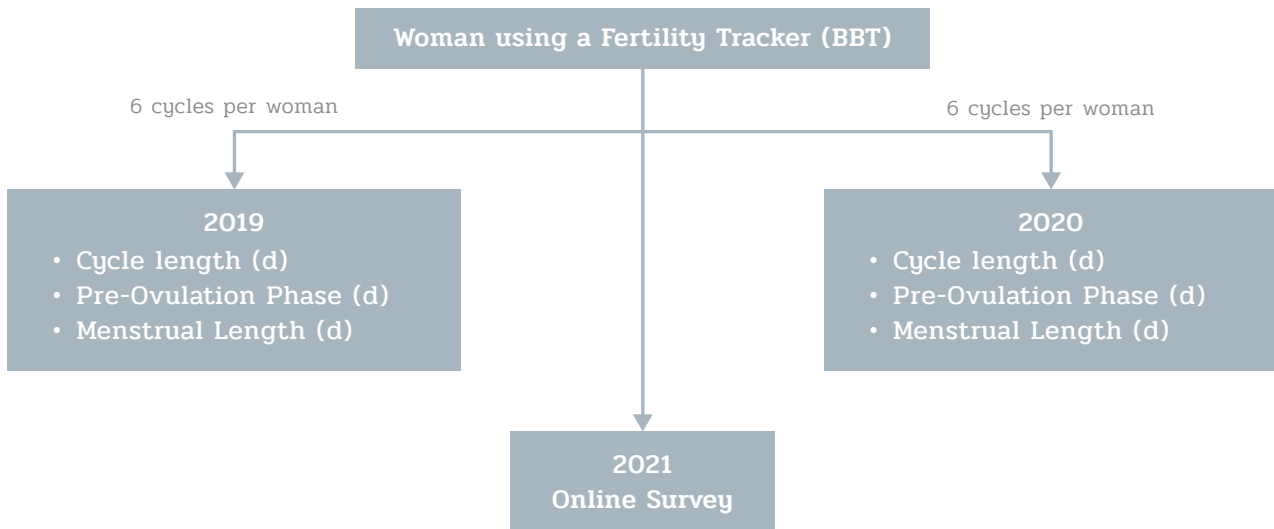
Only a very few studies did not rely on participants' memories alone, but evaluated objectively collected data. A similar approach, only with a uniform cycle tracker and therefore directly comparable measurement results, was taken in the study discussed here.

Study Design

Real-time data from the periods January 1st to June 30th, 2019, and January 1st to June 30th, 2020, were included in the analysis. 1,159 users who had used their device reliably for at least three months and for at least 80% of each cycle were randomly selected; their data were included anonymously in the analysis. In addition, in the summer of 2021, users received invitations to complete the survey, which included questions about their menstrual cycle as well as individual stressors and how they felt during the pandemic. 268 women (23.1% of those invited) participated in this survey by July 2021.

6 complete cycles each of 2019 and 2020 were analyzed:

• Cycle length (days)

• Pre-ovulation phase (before ovulation)

• The length of menstruation

Woman using a Fertility Tracker (BBT)

6 cycles per woman

6 cycles per woman

2019
• Cycle length (d)
• Pre-Ovulation Phase (d)
• Menstrual Length (d)

2020
• Cycle length (d)
• Pre-Ovulation Phase (d)
• Menstrual Length (d)

2021
Online Survey

Study results

For the scientific study, 13194 cycles of 1159 women from 15 different countries were analyzed. 268 women answered the questionnaire around COVID-19 and their cycle.

- The largest proportion of women participating were between 25-39 years old (81%), and most women were married (38%) or in a relationship longer than 3 months (48%).

- The largest proportion of women had no children (88%).

- Overall, 65% of women, before the pandemic, were employed full-time and 16% worked part-time.

- During the pandemic, 64% were also employed full-time and 19% worked part-time.

Characteristic	Categories	% (n=268)
Age (years)	18-24	10.4%
	25-29	36.9%
	30-34	31.7%
	35-39	13.1%
	40-45	5.6%
	Older than 45	2.2%
Relationship Status	Married	38.1%
	Separated	3.0%
	Single (without a Partner)	8.6%
	Long Term relationship (> 3 Month)	48.1%
	Short Term relationship (< 3 Month)	1.5%
	Dating but not in a relationship	0.7%
Kids	Yes	12.3%
	No	87.7%
Working Status **before** the Pandemic	Full Time	64.9
	Half Time	16.0
	Unemployed	2.6
	Student	12.7
	No information	3.8
Working Status **during** the Pandemic	Full Time	64.2
	Half Time	19.4
	Unemployed	6.3
	Student	9.7
	No information	0.4

Analysis of cycles

1. **Primary outcome**: How have objectively measurable markers such as cycle length and duration of menstruation changed since the onset of the COVID-19 pandemic?

Analysis of Daysy data from 13,194 cycles and 1,159 women, respectively, showed that average cycle length decreased significantly during the first six months of the pandemic.

- In the first half of 2019, the average cycle lasted 29.8 days; in the first half of 2020, it lasted only 28.7.

- The follicular phase (before ovulation) shortened from an average of 17.12 days to 16.2.

- The menstrual period lengthened slightly from an average of 3.90 days to an average of 3.92 days.

2. **Secondary outcome**: In order to analyze to what extent women perceived the pandemic as psychosocially stressful, participants were asked in the second part of the study to answer a question-naire (summer 2021) about themselves and their personal situation, during and before the pandemic.

The questionnaire was answered completely by 23% of the total participants.

- 44.4% of participants reported that they had noticed a change in their menstrual cycle, temperature curve, or menstruation in the past 12 months. Among women who had experienced COVID-19 themselves or in their family member(s), the rate was higher (53.9%).

- 69% reported a change in quality of life during the previous 12 calendar months. 41% of these women perceived this change as an improvement.

- Among the 102 women who themselves or their family member had experienced COVID-19 disease (38% of all respondents overall), many perceived the changes as negative instead. 46% of respondents reported that their quality of life had worsened during the past 12 months.

Effects of the pandemic	
Reduced professional activity	23.1%
Self-employment at risk	20.2%
Job loss	11.5%
Move to home office	27.0%
Childcare at home necessary	37.2%
Limited social contacts	79.5%
Abandonment of a hobby necessary	46.8%

3. **Secondary outcome**: The final part of the study addresses whether there is a link between subjectively experienced distress (women who reported in the questionnaire that their quality of life had deteriorated) and objectively measured markers such as cycle length and menstrual duration.

- Analysis of data from a total of 100 participants who spoke of decreased quality of life revealed significantly shortened menstrual cycles: from 30.0 days in 2019, the average cycle length decreased to 29.2, and menstrual duration increased from an average of 3.87 to 4.00.

- 57.4% of participants reported that the pandemic had a direct impact on their lives and those of their family. The following areas were affected; multiple responses were common.

- 66.4% of respondents reported sometimes or always feeling stressed as a result of the pandemic. The menstrual cycles of these women also shortened significantly during the first months of the pandemic. Their average cycle length decreased from 30.3 days to 29.6 from 2019 to 2020, and the duration of menstruation increased from 3.88 to 4.06 days.

Summary

Cycle data from 2019 and 2020 provide an objective overview of changes in the cycles of cycle computer users. They support the hypothesis that stress affects the cycle and fertility overall. The authors* emphasize that future studies should focus on cycle changes during the most stressful phases of the pandemic to provide more precise information about the relationships. When comparative analyses from 2020 and 2021 are possible, it will become visible how the most emotionally stressful times of the pandemic, with lock-downs, short-time work, homeschooling, etc., influenced the female cycle – and possibly fertility.

#pandemiclife #reproductivehealth #menstrualhealth #stress #menstruationmatters