Appendix 1.

Table A1. Characteristics of participants who completed the survey compared to those who left survey incomplete

Characteristic	Complete (n=899)	Incomplete (n=87)	p value
Age[‡]			
Mean	32.6 ± 7.06	32.4 ± 7.0	0.737
Median	33	33	
Range	18-45	19-45	
Race			
American Indian/Alaska Native	17 (1.90%)	2 (2.27%)	**0.025**
Asian	86 (9.60%)	3 (3.41%)	
Black	76 (8.48%)	7 (8.95%)	
Native Hawaiin/ Pacific Islander	2 (0.22%)	1 (1.14%)	
White	680 (75.9%)	66 (75.0%)	
Other	35 (3.91%)	9 (10.2%)	
Ethnicity			
Hispanic	122 (13.8%)	19 (22.6%)	**0.029**
Non-Hispanic	761 (86.2%)	65 (77.4%)	
Number of children			
Mean	1.12 ± 1.32	1.06 ± 1.18	0.796
Median	1	1	
Range	0-11	0-4	
Current marital status			
Single	256 (28.5%)	21 (23.9%)	0.401
In relationship, but not married	179 (20.0%)	24 (27.3%)	
Married	421 (47.0%)	40 (45.5%)	
Divorced/Separated/Widowed/ Other	40 (4.5%)	3 (3.4%)	

Educational attainment [¥¥‡]			
Less than or equal to High School	310 (34.6%)	33 (37.9%)	0.742
Technical/ Associate's/ Bachelor's Degree	373 (41.6%)	36 (41.4%)	
Master's or other Advanced Degrees	214 (23.9%)	18 (20.7%)	

Table A2. Prevalence of reported menstrual change amongst naturally-cycling participants included in analysis

Presence of Menstrual Change	Number of Participants (n=374)
Any Menstrual Change	**191**
One parameter	66 (34.55%)
Two parameters	41 (21.47%)
Three parameters	61 (31.94%)
Four parameters	23 (12.04%)
No Menstrual Change	**180**
Missing	**3**

We created a composite outcome variable of whether ANY change in any of the following: LENGTH or DURATION or FLOW or SPOTTING. That is, if you have experienced change in at least one of these 4 categories, then you are considered as having experienced change. **191 women experienced *some* change and 180 did not.**Out of the 191 women who reported *some* change, 34.55% reported only 1 change, 21.5% reported 2 changes, 31.94% reported 3 changes, and **12.04% reported changes in all 4 parameters of their menstrual function.**

Table A3. Comparing participants who indicated no menstrual change to those who reported menstrual changes on key variables, to identify covariates to adjust for in multivariable analyses (note this is amongst naturally cycling women who met 2nd set of eligibility criteria)

Characteristic	No Menstrual Change	Menstrual Change	p value
Age (n= 369) [‡]			0.211
Mean	33.0 ± 7.3	32.0 ± 7.5	
Median	34	32	
Range	18-45	18-45	
Race (n=370)			0.493
American Indian/Alaska Native	2 (1.1)	7 (3.7)	
Asian	18 (10.1)	14 (7.3)	
Black/ African American	17 (9.5)	22 (11.5)	
Native Hawaiian/Pacific Islander	1 (0.6)	1 (0.5)	
White	130 (72.6)	139 (72.8)	
Other	11 (6.2)	8 (4.2)	
Ethnicity (n=364)			0.507
Hispanic	22 (12.5)	28 (14.9)	
Non-Hispanic	154 (87.5)	160 (85.1)	
Number of children (n=345)			0.384
Mean	0.83 ± 1.1	1.0 ± 1.4	
Median	0	1	
Range	0-4	0-11	
Current relationship status (n=369)			0.241
Single	65 (36.3)	63 (33.2)	
In relationship, but not married	33 (18.4)	52 (27.4)	
Married	72 (40.2)	67 (35.3)	
Divorced/Separated/Widowed/ Other	9 (5.0)	8 (4.2)	
Partner gender (n=180)			0.837
Male partner	82 (95.4)	89 (94.7)	
Female partner	4 (4.7)	5 (5.3)	
Educational attainment (n=368) [¥¥][‡]			0.012
Less than or equal to High School	69 (38.8)	94 (49.5)	
Technical/ Associate's/ Bachelor's Degree	73 (41.0)	77 (40.5)	
Master's or other Advanced Degrees	36 (20.2)	19 (10.0)	
Smoking Status (n=369) [‡]			0.954
Long term tobacco user, even before pandemic	49 (27.4)	54 (38.4)	

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The authors provided this information as a supplement to their article.

Recently started smoking since the pandemic	6 (3.4)	7 (3.7)	
Recently stopped smoking	18 (10.1)	16 (8.4)	
Has never used tobacco	106 (59.2)	113 (49.5)	
Pre-pandemic menstrual functioning (n=365)			0.659
Amenorrhea (0-3 periods/ year)	11 (6.3)	16 (8.5)	
Oligomenorrhea (4-7 periods/ year)	14 (8.0)	15 (7.9)	
Normal cycle (8-14 periods/ year)	142 (80.7)	144 (76.2)	
Polymenorrhea (15 or more periods/ year)	9 (5.1)	14 (7.4)	
COVID-19 vaccination status (n= 367)			0.824
Vaccinated	63 (35.4)	69 (36.5)	
Not Vaccinated	115 (64.6)	120 (63.5)	
Reproductive/gynecologic comorbidity (n=369)			0.296
Yes	19 (10.6)	27 (14.2)	
No	160 (89.4)	163 (85.8)	
Thyroid comorbidity (n= 369)			0.384
Yes	10 (5.6)	7 (3.7)	
No	169 (94.4)	183 (96.3)	
Obesity Status (n= 369) ‡			0.591
Obese	20 (11.2)	18 (9.5)	
Not obese	159 (88.8)	172 (90.5)	
Mental health comorbidity (n= 369) ¥¥‡ **			<0.0001
Yes	56 (31.3)	104 (54.7)	
No	123 (68.7)	86 (45.3)	
Sexually Transmitted Infection (n=369)			0.585
Yes	4 (2.2)	6 (3.2)	
No	175 (97.8)	184 (96.8)	

Menstrual change refers to at least one reported change in any of the four menstrual parameters: cycle length, period duration, menstrual flow or intermenstrual spotting.

Data are n (%) unless otherwise specified.

*Reproductive/ gynecologic diagnoses included endometriosis, fibroids/myomas, polycystic ovarian syndrome (PCOS), and uterine polyps

**Mental health diagnoses included anorexia, anxiety, depression and other mood disorders

Table A4. Select characteristics of excluded non-natural cyclers vs. Included naturally-cycling participants

Characteristic	Excluded (n=569, non-natural cyclers)	Included (n=374, naturally-cycling)	p value
Age ‡			
Mean	32.6 ± 6.7	32.5 ± 7.4	0.790
Median	32	33	
Race			
Black	36 (6.9%)	40 (10.7%)	0.076
White	405 (78.2%)	270 (72.4%)	
Other	77 (14.9%)	63 (16.9%)	
Ethnicity			
Hispanic	71 (13.9%)	51 (13.8%)	0.960
Non-Hispanic	438 (86.1%)	318 (86.2%)	
Current marital status			
Single	146 (28.1%)	164 (44.0%)	<0.001
In relationship, but not married	94 (18.1%)	85 (22.7%)	
Married	277 (53.5%)	140 (37.4%)	
Divorced/Separated/Widowed/ Other	23 (4.4%)	17 (4.5%)	
Educational attainment ¥¥‡			
Less than or equal to High School	146 (28.1%)	164 (44.0%)	<0.001
Technical/ Associate's/ Bachelor's Degree	221 (42.6%)	152 (40.8%)	
Master's or other Advanced Degrees	152 (29.3)	57 (15.3%)	
Smoking Status (n=833) ‡			

Long term tobacco user, even before pandemic	187 (36.7%)	104 (27.8%)	<0.001
Recently started smoking since the pandemic	55 (10.8%)	13 (3.5%)	
Recently stopped smoking	52 (10.2%)	35 (9.4%)	
Has never used tobacco	216 (42.4%)	222 (59.4%)	

Pre-pandemic menstrual functioning
(Only asked of those not using non-hormonal birth control)

Amenorrhea (0-3 periods/ year)	0 (0.0%)	28 (7.6%)	0.20
Oligomenorrhea (4-7 periods/ year)	1 (50.0%)	30 (8.1%)	
Normal cycle (8-14 periods/ year)	1 (50.0%)	288 (78.0%)	
Polymenorrhea (15 or more periods/ year)	0 (0.0%)	23 (6.2%)	

COVID-19 vaccination status

Vaccinated	280 (54.9%)	134 (36.0%)	<0.001
Not Vaccinated	230(45.1%)	238 (64.0%)	

Reproductive/gynecologic comorbidity

Yes	134 (23.6%)	46 (12.3%)	<0.001
No	435 (76.4%)	328 (87.7%)	

Thyroid comorbidity

Yes	47 (8.3%)	17 (4.5%)	0.027
No	522 (91.7%)	357 (95.5%)	

Obesity Status[‡]

Obese	80 (14.1%)	38 (10.2%)	0.077
Not obese	489 (85.9%)	336 (89.8%)	

Mental health comorbidity [¥¥‡**]

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Yes	290 (51.0%)	162 (43.3%)	0.021
No	279 (49.0%)	212 (56.7%)	
Sexually Transmitted Infection			
Yes	43 (7.6%)	10 (2.7%)	0.001
No	526 (92.4%)	364 (97.3%)	

There were no age, race or ethnicity differences between the groups. However, the excluded participants were more likely to be married (p <0.001), have greater educational attainment (p<0.001), have a history of tobacco use (p<0.001), and not surprisingly, have a history of thyroid (p=0.027) and/or reproductive issues (p<0.001) that may have necessitated gynecological intervention (e.g., hormonal birth control, surgical methods) to control. Of utmost relevance to the study's aims, was the fact that vaccination rates were lower in the natural cyclers than the non-natural cyclers; meaning that menstrual changes reported by the cohort of natural cyclers in our analyses (Tables 3 and 4) was less attributable to the COVID vaccine.