Original Research Article

STRESS INDUCED MENSTRUAL CYCLE IRREGULARITIES AMIDST THE PANDEMIC

ABSTRACT

BACKGROUND

The coronavirus disease 2019 (COVID-19) pandemic has introduced acute and persistent psychosocial stressors for many individuals, particularly women. The elevated stress may have unintended consequences for women's overall health and well-being, including disruptions to reproductive function and menstrual cycle irregularities.

OBJECTIVE

To determine if and how stress (emanating from the COVID-19 pandemic) has impacted women's menstrual cyclicity.

METHODOLOGY

This descriptive, cross-sectional study was conducted from Sept 2020 to August 2021 upon a randomly selected sample of 1450 Pakistani women (aged 18 to 40 years). The data was collected using an online questionnaire containing enquiries pertaining to basic biodata, sociodemographic details, lifestyle patterns, medical & reproductive history, and stress score measured via the COVID-19 Stress Scales (CSS). The data obtained, was analyzed using SPSS v. 21.0.

RESULTS

Among the females, 741 reported regular menstrual cycles, while the remaining 709 reported a disturbed menstrual cyclicityand. Most commonly reported changes included cycle starting early or late (227), stronger symptoms during menstruation (e.g. low back pain, cramping, discharge changes) (205), and heavier bleeding during periods (188). Respondents reporting menstrual

cycle or symptom changes tended to score higher on average on the CSS compared to those who did not report any changes ($p < 0.05$).

CONCLUSION

After careful consideration of the results, it can be concluded that a significant association exists between the stress (emanating from the COVID-19 pandemic) and menstrual irregularity ($p < 0.05$). Stress relief may help alleviate menstrual irregularities in the current scenario.

KEYWORDS

Coronavirus Disease 2019, COVID-19 Stress Scale, Menstrual Cyclicity, Pandemic & Stress.

INTRODUCTION

Regular menstrual cycle is an indicator of the normally functioning hypothalamic–pituitary–gonadal (HPG) axis and a vital sign of women's health and well-being. [1] Menstrual cycle irregularities include the changes in a menstrual pattern in terms of frequency, regularity, duration, or intensity and intermenstrual bleeding. [2] Women with irregular menses tend to be at higher risk of developing cardiovascular disease, diabetes mellitus, chronic renal failure and, also infertility, premature menopause, breast, and ovarian cancer later in life. [3 - 5]

The global prevalence of irregular menstruation varies between 5% and 34% during reproductive years and menstruation-related problems constitute one of the most common reasons for admission to a gynecologist. [6, 7] Menstrual patterns can be affected by a variety of factors, including structural entities, coagulopathy, ovulatory dysfunction, medication use, and modifiable factors (sudden weight loss, over-exercising, obesity, smoking, psychological problems). [8, 9] Menstrual cycle irregularities are not only related to future chronic health problems but also adversely affect the quality of life, work productivity and add a financial burden on health systems. [10]

In December 2019 severe acute respiratory tract infection, the coronavirus disease 19 (COVID-19) originating at Wuhan city of China, rapidly spread all over the world and led to a global risk to public health. World Health Organization declared the COVID-19 outbreak as a pandemic on March 11, 2020. [11] To date, 1.46 million cases have been reported in Pakistan and an estimated 29,478 deaths have occurred. [12] Widespread epidemics are not only associated with physical health concerns but also pose a significant threat to mental health. [13] The reported prevalence of stress, anxiety, and depression in the general population during the COVID-19 pandemic are 29.6%, 31.9%, and 33.7%, respectively. [14]

The relation between psychological distress and menstrual cycle irregularities or the effect of the pandemic on mental health conditions of the general population has been seldom discussed. This research shall determine if and how stress (emanating from the COVID-19 pandemic) has impacted women's menstrual cyclicity.

METHODOLOGY

This descriptive, cross-sectional study was conducted from Sept 2020 to August 2021 upon a randomly selected sample of 1450 Pakistani women (aged 18 to 40 years). Ethical approval before starting the study and informed written consent was taken from each participant. The data was collected using an online questionnaire containing enquiries pertaining to basic biodata, sociodemographic details, lifestyle patterns, medical & reproductive history, and stress score measured via the COVID-19 Stress Scales (CSS). The data obtained, was analyzed using SPSS v. 21.0. T-Test was used to find difference in mean scores of Covid'19 Stress Scale between women with regular and irregular cycles.

INCLUSION CRITERIA

1. Women aged 18 to 40 years
2. Women with regular menstrual cycles for more than 1 year prior to the pandemic

EXCLUSION CRITERIA

1. Women who are pregnant, post-partum or breastfeeding
2. Women on hormone medication or medication affecting menstrual patterns
3. Women with intrauterine device
4. Women with bleeding disorders
5. Women with thyroid disease or hyperprolactinemia
6. Women who have undergone hysterectomy and/or oophorectomy
7. Women with major psychiatric disorders

RESULTS

The mean age of the sample stood at 31 ± 4 years (range: 18 to 40) with a predominance of urban diaspora and a middle socioeconomic status. A summary of the descriptive statistics is tabulated below:

Table 01 – Descriptive Statistics

Variable	Statistic	
	n	(%)

Mean Age (Years)		31 ± 4	
Residential Status	Urban	909	62.7%
	Rural	541	37.3%
Socioeconomic Status	Lower	614	42.4%
	Middle	629	43.4%
	Upper	207	14.2%
Marital Status	Single	488	33.7%
	Married	853	58.8%
	Separated	109	07.5%
Parity	0	227	15.6%
	1	380	26.2%
	2 or more	843	58.2%

Table 1: The descriptive statistics show that a majority of the sample population is comprised of married middle aged women hailing from an urban background and belonging to a middle socioeconomic class of the society.

Among the females, 741 reported regular menstrual cycles, while the remaining 709 reported a disturbed menstrual cyclicity.

Table 02 – Menstrual Cyclicity

Variable		Statistic	
		n	**%**
Menstrual Cyclicity	Regular	741	51.1%
	Irregular	709	48.9%

Table 2: The menstrual cyclicity of nearly half of the sample population was disturbed.

Most commonly reported changes included cycle starting early or late (227), stronger symptoms during menstruation (e.g. low back pain, cramping, discharge changes) (205), and heavier bleeding during periods (277).

Variable		**Statistic**	
		n	**%**
Symptoms	Untimely Cycles	227	32.02%
	Low Back Pain	105	14.81%
	Cramping	94	13.26%
	Discolored Discharge	06	0.85%
	Heavy Discharge	277	39.1%

Respondents reporting menstrual cycle or symptom changes tended to score higher on average on the CSS compared to those who did not report any changes ($p < 0.05$).

Variable		Mean CSS Score	P Value
Menstrual Cyclicity	Regular	71 ± 04	< 0.05
	Irregular	106 ± 13	

DISCUSSION

Although it is well understood that increased psychosocial stress can result in menstrual cycle irregularities, this is one of the first studies to assess menstrual cycle irregularities in the context of the COVID-19 pandemic, and the first to associate such alterations with covid related stress. Our data are consistent with study by Phelan et al., which found that 46% of women self-reported an increase in menstrual cycle irregularities during the COVID-19 pandemic. [15]

Given the unprecedented nature of the COVID-19 pandemic and its psychosocial impact, it is unsurprising that women may experience disruptions in menstrual cyclicity similar to other acute life stressors or natural disasters. [16] Previous investigations into the relationship between stress and menstrual cyclicity found that high perceived stress scores were associated with menstrual irregularity [17] and heavy menstrual bleeding. [18]

In this study, we find that women with high CSS scores are more likely to experience significant disruptions to their menstrual cycle including changes in the duration of menses and heavier menstrual bleeding. Almost half of the women in this study reported some change in their menstrual cycle during the COVID-19 pandemic, regardless of CSS score. This suggests that even among women who did not report significant stress related to the COVID-19 pandemic, alterations in menstrual cyclicity were common.

Psychosocial stress and other mental health disorders have been associated with changes in the duration, corresponding to the number of days of menstrual bleeding, and quantity of menses that is reflected in heavier or lighter bleeding patterns. Women with self-perceived high stress jobs have reported both longer and shorter durations of menses, [19, 20] whereas women who suffer from depression have separately reported longer durations of menses. [21] In this study, we find that COVID-19-related stressors may also be a contributing factor in menstrual cycle changes, as more than half of all women with higher CSS scores reported a change in the duration of menses.

In addition, respondents noted significant changes in menstrual bleeding during the COVID-19 pandemic. Previous studies have linked abnormal bleeding patterns and other menstrual irregularities to stress in adolescent and young adult populations, and it is reasonable to assume that stress may be contributing to alterations in menstrual bleeding patterns among adult populations as well. [21, 22]

Grieger et al. found that menstrual cycle variation is not significant between women in their 20s and early 30s, but is more common among women aged 35 years and older. [23] Although this

study population ranged in age from 18 to 40 years, the average respondent was 31 years old and the effect of age on reporting outcomes would likely be minimal.

CONCLUSION

The findings concluded that a significant association exists among the women with irregular menstrual cycles and Stress due to Covid'19 ($p < 0.05$). Stress relief may help alleviate menstrual irregularities in the current scenario. To better understand the underlying impact of the COVID-19 pandemic on menstrual cyclicity, and more broadly on women's reproductive health, further investigation is needed. Our study identifies and highlights a critical need to assess the long-term reproductive implications of the COVID-19 pandemic.

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