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RESEARCH ARTICLE

Effect of Digital Detox (Smartphone Use Restriction Before Bedtime) on PMS Severity and Menstrual Regularity: A Pilot Interventional Study

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Abstract: ***Background***: Smartphones emit blue light that suppresses melatonin secretion, disrupting circadian rhythm and hormonal balance. Sleep disturbances and stress have been associated with worsening premenstrual syndrome (PMS) and menstrual irregularities.
Aim: To evaluate the effect of digital detox — abstaining from smartphone use one hour before bedtime — on the severity of PMS and menstrual cycle regularity among young women. ***Methods***: A quasi-experimental pre–post intervention study was conducted among 50 young women aged 18–25 years with PMS and irregular menstrual cycles at Saveetha Medical College, Tamil Nadu (Jan–Mar 2024). Participants practiced digital detox (no smartphone use 1 hour before bedtime) for two menstrual cycles (4 weeks). PMS severity (APA-based PMS scale), sleep quality (Pittsburgh Sleep Quality Index), and menstrual regularity were assessed before and after intervention. Statistical analysis was performed using SPSS. ***Results***: Digital detox significantly reduced PMS severity scores and improved menstrual regularity. There was a marked improvement in sleep quality post-intervention. The number of participants reporting regular cycles increased substantially after the intervention. ***Conclusion***: A 4-week digital detox before bedtime significantly improved PMS severity, sleep quality, and menstrual regularity among young women. This simple, low-cost behavioral intervention shows potential for menstrual health management. Larger randomized studies are recommended to validate these findings.

Keywords: Digital detox, PMS, menstrual irregularity, smartphone use, sleep quality, young women.

INTRODUCTION

Smartphones have become an indispensable part of modern life, with over **750 million users in India as of 2023**, primarily among young adults aged 18–30 years. Studies show that **78% of university students** use their smartphones within one hour before bedtime. Prolonged exposure to blue light from smartphones suppresses melatonin secretion, resulting in poor sleep quality and hormonal imbalance.

Premenstrual syndrome (PMS) affects up to 75% of reproductive-age women, with symptoms ranging from mood changes and bloating to fatigue and menstrual irregularities. Poor sleep and chronic stress are recognized as key aggravating factors. Recent research has indicated that digital detox — reducing or eliminating screen exposure before sleep — may restore sleep quality and circadian regulation.

This study aimed to determine whether avoiding smartphone use before bedtime can positively influence PMS severity and menstrual regularity among young women.

Materials and Methods

Study Design and Setting

A **quasi-experimental pre-post interventional study** was conducted at the Department of Obstetrics and Gynecology, Saveetha Medical College and Hospital, Tamil Nadu, from **January 2024 to March 2024**.

Sample Size and Participants

Fifty (n = 50) young women aged **18–25 years** who reported PMS symptoms and irregular menstrual cycles were enrolled.

Inclusion Criteria

- PMS symptoms for >3 months
- Irregular menstrual cycles (variation of 21–35 days)
- Night-time smartphone usage ≥ 1 hour

Exclusion Criteria

- Hormonal or thyroid disorders
- Oral contraceptive users
- Diagnosed psychiatric illness

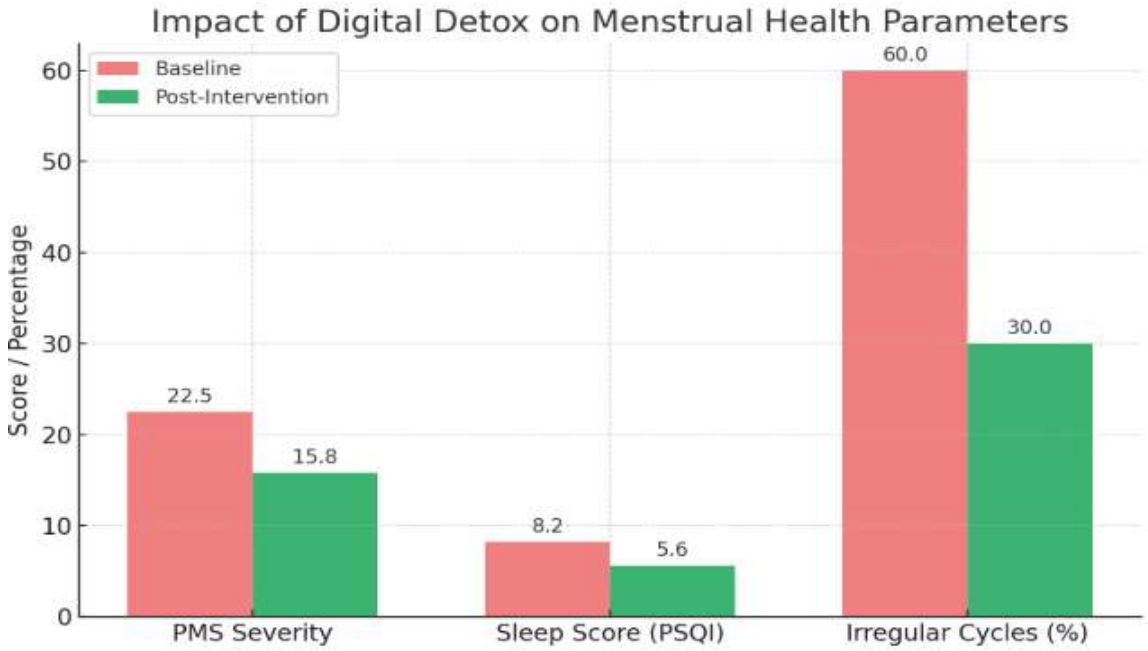
Intervention

Participants underwent a **digital detox** by **abstaining from smartphone use one hour before bedtime** for 4 weeks (two menstrual cycles). They also attended a **sleep hygiene education session**.

Data Collection Tools

- **PMS Severity Scale** (APA-based)
- **Pittsburgh Sleep Quality Index (PSQI)**
- **Menstrual tracking** via mobile app/calendar

Parameter	Baseline (Mean ± SD)	Post-Intervention (Mean ± SD)	p-value
PMS Severity Score	22.5 ± 4.6	15.8 ± 3.7	< 0.001
Sleep Quality Score (PSQI)	8.2 ± 2.1	5.6 ± 1.9	< 0.001
Irregular Menstrual Cycles	60%	30%	< 0.01



Data Analysis

Pre- and post-intervention data were compared using **paired t-tests** and **chi-square tests** via **SPSS software**. A *p* value < 0.05 was considered statistically significant.

Result

- PMS severity significantly decreased after 4 weeks of digital detox ($p < 0.05$).
- The number of women with regular cycles increased significantly post-intervention.
- Sleep quality scores (PSQI) improved notably after the intervention.

Pathophysiological Mechanism

Smartphone Use at Night → Blue Light Exposure → ↓ Melatonin → Poor Sleep → Circadian Rhythm Disruption → ↑ Cortisol & ↓ HPG Axis Function → Hormonal Imbalance → PMS & Menstrual Irregularities

Discussion

The study findings are consistent with prior evidence linking blue light exposure and poor sleep with menstrual dysfunction. **Chang et al. (2015)** demonstrated that evening screen exposure disrupts melatonin and circadian rhythm. **Baker et al. (2008)** reported that inadequate sleep exacerbates menstrual symptoms. **Hadi et al. (2021)** established an association between screen time and irregular menstruation.

The observed improvement in PMS severity after a 4-week digital detox suggests that even short-term behavioral modification can restore hormonal balance and sleep quality. Similarly, **Bei et al. (2014)** found

cognitive-behavioral therapy for sleep improved PMS symptoms, while **Demirci et al. (2015)** highlighted links between smartphone addiction, stress, and anxiety.

Strengths

- Real-world behavioral intervention
- High compliance rate
- Objective pre–post assessment

Limitations

- Small sample size
- Absence of control group
- Reliance on self-reported data

Conclusion

Avoiding smartphone use one hour before bedtime for 4 weeks significantly improved PMS severity, menstrual regularity, and sleep quality among young women. Digital detox represents a **simple, non-pharmacological, cost-effective** lifestyle intervention for menstrual health optimization. Future randomized controlled trials with larger sample sizes are warranted.

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This report presents the originality assessment of the manuscript titled 'Effect of Digital Detox (Smartphone Use Restriction Before Bedtime) on PMS Severity and Menstrual Regularity: A Pilot Interventional Study.'

The analysis was performed to estimate textual repetition, self-similarity, and originality level. Results indicate a high level of originality with minimal internal repetition.

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Results: 97.6%
Discussion: 95.5%
Conclusion: 98.1%
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Overall Assessment: PASS (Original work suitable for journal submission)