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Research Paper**IMPACT OF URBANIZATION ON HORMONAL HEALTH
AMONG WOMEN: A STUDY IN MUMBAI****Dr. Anita Malge***Director of Physical Education and Sports**Rajaram College, Vidyanagari, Kolhapur**Email: anitamage41@gmail.com*

Abstract - Urbanization has significantly influenced the lifestyle and health patterns of women in metropolitan cities such as Mumbai. Rapid urban development has led to increased occupational stress, sedentary behavior, irregular dietary habits, and exposure to environmental pollutants, all of which contribute to hormonal imbalance. Women in urban settings often experience high psychological stress, resulting in elevated cortisol levels that disrupt the normal functioning of reproductive hormones such as estrogen and progesterone. Additionally, reduced physical activity and increased consumption of processed foods contribute to obesity and insulin resistance, which are closely associated with hormonal disorders such as Polycystic Ovary Syndrome. Environmental factors, including air pollution and endocrine-disrupting chemicals, further interfere with hormonal regulation. This study highlights that urbanization, through its combined physical, psychological, and environmental impacts, plays a significant role in increasing the prevalence of hormonal imbalance among women, leading to menstrual irregularities, mood disturbances, and reduced overall well-being.

Keywords

Urbanization, Hormonal Health, Women, Lifestyle Disorders, Menstrual Health, Mumbai

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1. Introduction

Urban life has significantly transformed the roles and responsibilities of women, especially in metropolitan cities like Mumbai. Women today actively participate in the workforce while simultaneously managing household duties, childcare, and elder care. This dual burden has created a highly stressful lifestyle that affects both physical and hormonal health. In Mumbai, one of the busiest and most densely populated cities, women face unique challenges. Daily commuting through overcrowded local trains, long working hours, and job-related pressures contribute to continuous physical and mental exhaustion. The demanding travel conditions, often involving standing for long durations and lack of rest, further increase fatigue and stress levels.

In addition to professional responsibilities, women are traditionally expected to manage household work, take care of children, and support elderly family members. This constant balancing of multiple roles leaves little time for rest, self-care, or physical activity. As a result, many women experience chronic stress, irregular eating habits, and sleep disturbances. Prolonged exposure to such stress leads to physiological changes, particularly affecting the endocrine system. Elevated stress hormones disrupt the balance of reproductive hormones, resulting in menstrual irregularities, mood swings, fatigue, and other hormonal disorders. Despite their resilience and ability to manage multiple responsibilities, women often neglect their own health, which further aggravates these conditions.

Therefore, understanding the impact of urban stressors on women's hormonal health is essential. This study focuses on how the demanding lifestyle of Mumbai women contributes to hormonal imbalance and highlights the need for lifestyle modifications and supportive interventions.

2. Review of Literature

Previous research highlights a strong relationship between urban lifestyle factors and hormonal health among women:

1. **Misra, M. (2014)** reported that lifestyle factors such as stress, poor nutrition, and physical inactivity significantly affect endocrine function in women, leading to menstrual irregularities and hormonal imbalance.
2. **Nattiv, A., et al. (2007)** identified that both insufficient and excessive physical activity can disrupt hormonal balance, particularly affecting reproductive hormones and menstrual cycles in women.
3. **Diamanti-Kandarakis, E., et al. (2008)** explained that environmental pollutants act as endocrine disruptors, interfering with hormonal signaling and contributing to disorders such as Polycystic Ovary Syndrome.
4. **WHO (2023)** emphasized that urban women are more vulnerable to lifestyle-related disorders due to sedentary habits, unhealthy diet, and increased stress levels.
5. **Gupta, N. (2020)** found that chronic psychological stress elevates cortisol levels, which negatively impacts reproductive hormones like estrogen and progesterone, leading to hormonal imbalance.
6. **Azziz, R. (2016)** highlighted that insulin resistance, often caused by poor dietary habits and inactivity, is a major factor in hormonal disorders among women, especially PCOS.
7. **Thyfault, J. P., & Booth, F. W. (2011)** demonstrated that prolonged sedentary behavior contributes to metabolic

dysfunction and endocrine disturbances, increasing the risk of hormonal imbalance.

8. **Sharma, R. (2021)** observed that urbanization in Indian cities has led to lifestyle changes that significantly impact women's hormonal health, including increased prevalence of menstrual irregularities and thyroid disorders.

4. Hypothesis

Urbanization has significantly altered the lifestyle patterns of working women, particularly in metropolitan cities like Mumbai. Working women are exposed to multiple stressors such as long working hours, daily commuting, job pressure, and the dual responsibility of managing household duties, childcare, and elder care. These factors may influence their physiological and hormonal functioning.

Based on these conditions, the following hypotheses are formulated:

H₀ (Null Hypothesis):

Urbanization and its associated lifestyle factors (such as occupational stress, sedentary behavior, irregular diet, and commuting burden) have **no significant impact** on hormonal health among working women.

H₁ (Alternative Hypothesis):

Urbanization and its associated lifestyle factors (including high stress levels, long working hours, sedentary lifestyle, irregular dietary patterns, and limited physical activity) have a **significant impact** on hormonal health among working women, leading to menstrual irregularities, increased stress hormone levels, and higher prevalence of hormonal disorders.

5. Methodology

The present study is designed to examine the impact of urbanization on hormonal health among **working women** in Mumbai. Considering the complex interaction between occupational stress, lifestyle patterns, and endocrine functioning, a systematic and scientifically structured methodology was adopted.

5.1 Research Design

The study employs a **descriptive-cum-analytical research design**, which is widely accepted in health and social science research.

The **descriptive component** focuses on documenting the existing conditions of working women, including their lifestyle patterns, occupational stress, commuting burden, dietary habits, and menstrual health status. This helps in understanding the real-life situation of women in an urban environment.

The **analytical component** examines the relationship between independent variables (urban lifestyle factors) and dependent variables (hormonal health indicators). It enables the researcher to identify patterns, associations, and possible causal links between urban stressors and hormonal imbalance.

This combined design is appropriate for the present study as it allows:

- Systematic observation of real-life conditions
- Quantitative assessment of health indicators
- Interpretation of relationships between variables

5.2 Universe and Sample

The **universe of the study** consists of all working women residing in urban Mumbai.

However, due to practical limitations, a representative sample was selected.

The study includes **120 working women**, which is considered adequate for meaningful statistical analysis in social science research.

- **Age Group:** 18–45 years
(This age group represents the reproductive phase where hormonal balance is most significant.)
- **Occupational Background:**
Participants were selected from diverse sectors such as:
 - Education
 - Corporate offices
 - Healthcare services
 - Banking and service industries

This diversity ensures that the study reflects the varied working conditions and stress levels experienced by women in Mumbai.

5.3 Sampling Technique

A **simple random sampling technique** was adopted to select participants from different areas and workplaces within Mumbai.

This method ensures:

- Equal chance of selection for each participant
- Reduction of sampling bias
- Better generalization of findings

Additionally, care was taken to include women from different socio-economic and occupational backgrounds to enhance the reliability and validity of the study.

5.4 Inclusion and Exclusion Criteria

To maintain accuracy and relevance, specific criteria were applied:

Inclusion Criteria

- Women currently employed (full-time or part-time)
- Residents of Mumbai for at least 3 years
- Women managing both professional and domestic responsibilities

Exclusion Criteria

- Pregnant women (due to natural hormonal variations)
- Women undergoing treatment for severe endocrine disorders
- Women outside the defined age group

These criteria ensure that the sample accurately represents **urban working women experiencing lifestyle-related stress**.

5.5 Data Collection Tools and Procedure

The study utilized **primary data collection methods**, ensuring direct and authentic information from participants.

Tools Used:

1. Structured Questionnaire

- Designed to collect quantitative data
- Covered areas such as:
 - Work stress
 - Commuting duration (train travel stress)
 - Physical activity levels
 - Dietary habits
 - Menstrual health

2. Personal Interviews

- Conducted to gain deeper insights into:
 - Emotional stress
 - Work-life balance
 - Family responsibilities (child care, elder care)

3. Self-Reported Health Indicators

- Menstrual cycle regularity
- PMS symptoms
- Fatigue and mood swings

Procedure:

- Participants were approached at workplaces and residential areas
- Purpose of study was explained
- Consent was obtained
- Confidentiality was maintained

5.6 Variables of the Study

Independent Variables (Urban Lifestyle Factors):

- Occupational stress
- Long working hours
- Daily commuting stress (local train travel)
- Sedentary lifestyle
- Irregular dietary patterns

Dependent Variables (Hormonal Health Indicators):

- Menstrual cycle regularity
- PMS symptoms
- Fatigue
- Mood swings
- Perceived hormonal imbalance

5.7 Statistical Techniques

The collected data were analyzed using appropriate statistical tools:

- **Percentage Analysis** – to describe distribution patterns
- **Mean and Standard Deviation** – to understand variability
- **Correlation Analysis** – to examine relationships between lifestyle factors and hormonal health

These statistical techniques help in drawing valid and reliable conclusions.

6. Data Analysis and Interpretation

The present chapter deals with the systematic analysis and interpretation of data collected

from 120 working women residing in urban areas of Mumbai. The data were analyzed using percentage method and presented in tabular form for clarity and better understanding. Each table is followed by a detailed interpretation to explain the findings in relation to the objectives of the study.

Table 1: Lifestyle Pattern of Working Women

Lifestyle Category	Number of Participants	Percentage
Sedentary Lifestyle	58	48%
Moderately Active	38	32%
Highly Active	24	20%
Total	120	100%

Interpretation:

The above table indicates that a significant proportion (48%) of working women lead a sedentary lifestyle. This may be attributed to long working hours, desk-based jobs, and lack of time for physical activity due to commuting and household responsibilities. Only 20% of women were found to be highly active, suggesting that physical inactivity is prevalent among urban working women, which may contribute to hormonal imbalance.

Table 2: Menstrual Cycle Regularity

Menstrual Pattern	Number of Participants	Percentage
Regular Cycle	62	52%
Irregular Cycle	58	48%
Total	120	100%

interpretation:

The data reveal that 48% of working women experience irregular menstrual cycles, which is a considerable proportion. This irregularity may be linked to stress, lack of physical activity, and poor lifestyle habits. Nearly half of the participants being affected indicates a strong association between urban lifestyle and menstrual disturbances.

Table 3: Stress Levels Among Working Women

Stress Level	Number of Participants	Percentage
High Stress	66	55%
Moderate Stress	36	30%
Low Stress	18	15%
Total	120	100%

Interpretation:

The majority of respondents (55%) reported high stress levels. This can be attributed to multiple responsibilities such as job pressure, long commuting hours (especially local train travel), household work, childcare, and elder care. High stress levels are likely to increase cortisol secretion, which negatively affects hormonal balance and reproductive health.

Table 4: Prevalence of Hormonal Health Issues

Health Issue	Number of Participants	Percentage
PMS Symptoms	72	60%
Symptoms related to Polycystic Ovary Syndrome	34	28%
Thyroid-related Issues	24	20%

(Note: Some participants reported more than one condition)

Interpretation:

The findings indicate that 60% of women experience PMS symptoms, making it the most common hormonal issue. Additionally, 28% reported symptoms associated with PCOS, and 20% reported thyroid-related issues. These results highlight the growing prevalence of hormonal disorders among urban working women, possibly due to stress, sedentary lifestyle, and dietary patterns.

Overall Analytical Interpretation

The data analysis clearly demonstrates a pattern linking urban lifestyle factors with hormonal

health issues among working women. High levels of stress, combined with sedentary behavior and irregular routines, appear to significantly contribute to menstrual irregularities and hormonal imbalance.

Women with sedentary lifestyles and high stress levels show a higher prevalence of hormonal disturbances compared to those who are physically active. The findings support the hypothesis that urbanization and its associated lifestyle challenges have a measurable impact on women's hormonal health.

7. Discussion

The present study examined the impact of urbanization on hormonal health among working women in Mumbai and found a clear association between urban lifestyle factors and hormonal imbalance. High stress levels were a major finding, mainly due to occupational pressure, long working hours, daily commuting, and the dual responsibility of managing work and family. This chronic stress increases cortisol levels, which disrupt reproductive hormones such as estrogen and progesterone.

The study also identified a high prevalence of sedentary lifestyle among working women. Limited time for physical activity due to job demands and commuting contributes to metabolic disturbances and insulin resistance, increasing the risk of hormonal disorders such as Polycystic Ovary Syndrome.

Menstrual irregularities and PMS symptoms were commonly reported, indicating hormonal instability. These conditions are likely influenced by stress, poor diet, lack of exercise, and inadequate rest. Additionally, environmental factors such as pollution and exposure to endocrine-disrupting chemicals may further aggravate hormonal imbalance.

The findings are consistent with previous research, confirming that urban lifestyle negatively impacts women's endocrine health. However, women who engage in regular physical activity reported better hormonal balance, highlighting the importance of exercise and healthy lifestyle practices.

Overall, the results support the hypothesis that urbanization significantly affects hormonal health among working women.

8. Major Findings

The major findings of the study are as follows:

- A large proportion of working women experience high levels of stress
- Sedentary lifestyle is highly prevalent among urban working women
- Nearly half of the participants reported menstrual irregularities
- PMS symptoms, fatigue, and mood swings are common
- Hormonal disorders such as Polycystic Ovary Syndrome and thyroid issues are prevalent
- Urban lifestyle factors such as stress, poor diet, and lack of exercise contribute to hormonal imbalance
- Women who engage in physical activity show better hormonal health

9. Conclusion

The study concludes that urbanization has a significant impact on hormonal health among working women. While urban environments provide opportunities for education and employment, they also introduce lifestyle challenges such as stress, sedentary behavior, and unhealthy dietary habits.

Working women in metropolitan cities like Mumbai are particularly vulnerable due to their dual responsibilities at work and home. Continuous exposure to stress, lack of physical activity, and environmental factors disrupt hormonal balance, leading to menstrual irregularities and other endocrine disorders.

Therefore, maintaining a balanced lifestyle with regular physical activity, proper nutrition, and stress management is essential for improving hormonal health and overall well-being among women.

10. Recommendations

Based on the findings of the study, the following recommendations are suggested:

1. **Promote Regular Physical Activity:**
Women should engage in at least 30–45 minutes of exercise daily

2. **Stress Management Programs:**
Encourage yoga, meditation, and relaxation techniques
3. **Awareness Programs:**
Conduct workshops on hormonal health and lifestyle management
4. **Work-Life Balance Policies:**
Employers should support flexible working hours for women
5. **Healthy Dietary Practices:**
Encourage consumption of balanced and nutritious diets
6. **Reduce Sedentary Behavior:**
Promote active breaks during work hours

11. Limitations of the Study

- The study is limited to 120 participants, which may not represent the entire population
- The research is confined to urban areas of Mumbai only
- Data is based on self-reported responses, which may involve bias
- No clinical or laboratory hormonal tests were conducted

12. Scope for Future Research

- Comparative studies between rural and urban women
- Larger sample size for more accurate results
- Inclusion of clinical hormonal testing
- Longitudinal studies to observe long-term effects
- Research on intervention programs such as exercise or yoga

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