

LIFESTYLE AND PSYCHOSOCIAL CORRELATES OF OBESITY, HYPERTENSION AND PCOS: A HEALTH PSYCHOLOGY STUDY IN URBAN INDIAN ADULTS

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Abstract

Rapid urbanization in India is driving a "nutrition transition" linked to rising metabolic and psychological distress. This study examined behavioural–psychological profiles and psychosocial correlates of obesity, hypertension, and Polycystic Ovary Syndrome (PCOS) in 205 urban adults (120 women, 85 men) from Mumbai, Kolkata, and Bangalore. Results indicate that 48.78% had an abnormal Body Mass Index (BMI) and 38.53% reported hypertension. Psychological distress was prevalent, with 14.1% reporting depression and 16.6% reporting anxiety. Notably, 43.95% of those reporting distress also presented with an irregular BMI. Short sleep duration (<7 hours) and frequent fast-food consumption were common, particularly among younger participants. Among women, PCOS prevalence was 15%. These findings suggest that obesity, hypertension, and PCOS in urban India are embedded in interrelated behavioural-psychological patterns involving distress, disrupted sleep, and dietary habits. Integrated interventions combining sleep hygiene, nutrition, and psychological support are suggested.

Keywords: *Obesity, sleep, psychological distress, health psychology, India.*

1. Introduction and literature background

The rising global prevalence of metabolic and reproductive health issues, including obesity, hypertension, and Polycystic Ovary Syndrome (PCOS), necessitates etiological models rooted in health psychology (Zheng et al., 2024; Ghafari et al., 2025). This perspective emphasizes that chronic health conditions are not merely biological malfunctions but are intertwined with stress management, emotion regulation, and daily behaviours such as diet, sleep, and physical activity (Dakanalis et al., 2023; Jurek & Maruda, 2024; Lei et al., 2025). Understanding the co-occurrence of these variables is vital for identifying at-risk subgroups in rapidly urbanizing regions like India (Ganie et al., 2024).

Chronic psychological stress activates the hypothalamic–pituitary–adrenal (HPA) axis, linked to central fat accumulation and hedonic reward pathways (Lei et al., 2025; Jurek & Maruda, 2024). This often manifests as emotional eating, where individuals consume energy-dense “comfort foods” to manage negative affect, contributing to weight gain and hypertension (Dakanalis et al., 2023; Jurek & Maruda, 2024). Urban India’s “nutrition transition” has shifted diets toward ultra-processed foods, descriptively linked to higher rates of depression and anxiety (Lopes Cortes et al., 2021; Ejtahed et al., 2024; Ganie et al., 2024).

Sleep health is a critical mediator where psychological and physiological patterns intersect (Delrosso, 2025; McHill, Hull, & Klerman, 2022). Inadequate sleep disrupts nutrient metabolism and appetite hormones—specifically increasing ghrelin and decreasing leptin—leading to increased caloric intake (Mchill et al., 2022). Sleep deprivation also impairs executive functions such as inhibitory control, influencing dietary choices during periods of psychological distress (Mchill et al., 2022). Furthermore, a short interval between the last meal and sleep is a reported factor in metabolic dysregulation (Ni et al., 2019; Mchill et al., 2022).

Gender-specific pathways indicate that women are more likely to report psychological distress in the context of weight gain (Ernst et al., 2021; Miranda et al., 2020). PCOS represents a systemic condition in which reproductive, metabolic, and psychological pathways intersect, often involving insulin resistance and hyperandrogenism (Ghafari et al., 2025; Zheng et al., 2024). Women with PCOS have a significantly higher probability of reporting clinically relevant depressive and anxiety symptoms compared to those without the condition (Li et al., 2024; Wang, Liu, & Lei, 2023). Within urban India, the convergence of

rapid urbanization and lifestyle shifts makes it essential to descriptively map how these factors co-occur (Ganie et al., 2024).

2. Methodology

A cross-sectional observational study was conducted among 205 adults (120 women, 85 men; aged 15 to >70 years) residing in Mumbai, Kolkata, and Bangalore. Participants provided self-reported data via a structured questionnaire.

Behavioural and Psychological Variables:

- Dietary Habits: Frequency of fast-food consumption and dietary preference.
- Hydration: Habitual daily water intake.
- Sleep: Duration (<7 vs. ≥7 hours) and meal-to-sleep interval.
- Activity: Regular engagement in walking, gym-based exercise, or yoga.
- Psychological Health: Prior diagnoses of depression and anxiety.

Outcome Variables:

- Obesity: BMI calculated as $(\text{BMI} = \text{weight} / \text{height}^2)$ and categorized (normal, overweight, obese).
- Hypertension/PCOS: Based on self-reported physician diagnosis.

Analysis was strictly descriptive, using frequencies and percentages to identify patterns of co-occurrence. Ethical approval and informed consent were secured for all participants.

3. Results

The present analysis utilizes data from 205 urban Indian adults to present findings aligned with the core objectives of this health psychology and lifestyle study. Consistent with the goal of foregrounding psychological and behavioural factors, results are organized around general lifestyle–health associations, the specific descriptive patterns of sleep timing and duration, and the women specific PCOS pathway.

3.1. General lifestyle-health associations

In the study cohort, 48.78% of participants had an abnormal BMI (overweight or obesity), with 12.68% classified as obese; obesity was more common in females (14.16%) than males (10.58%). Females also exhibited a higher prevalence of self-reported mental and physical health conditions, including anxiety (21.66% of women vs. 11.76% of men) and depression (16.66% of women vs. 10.58% of men). A notable descriptive overlap existed between psychological indicators and chronic health outcomes. Hypertension was the most prevalent condition overall (38.53%), with a significant gender difference (44.16% in women vs. 30.58% in men). Among those reporting anxiety and/or depression, 43.95% also had an irregular BMI. Lifestyle analysis revealed that 53.65% of participants walked for at least 30 minutes, though structured activities like gym or yoga were less frequent. Dietary patterns showed high fast-food consumption and low daily water intake. Professional dietary guidance was sought by 22.92% of individuals, with a higher rate among women (26.66%) than men (17.64%).

3.2. Sleep duration and meal-sleep interval effects

Descriptive results showed a notable prevalence of limited sleep duration. Overall, 63.9% of the population reported sleeping over 7 hours daily, while 17.07% reported sleep deprivation (less than 7 hours). This lack of sleep was notably more frequently reported among younger participants (aged 15–35). The co-occurrence of sleep deficiency and chronic conditions was observed, particularly among women. Inadequate sleep was frequently reported alongside a diagnosis of hypertension or other self-reported endocrine conditions in younger women (15–35 years old). Furthermore, narrow meal–sleep gaps co-occurred with higher BMI and metabolic health challenges in this age group.

3.3. Women-specific PCOS pathway

PCOS was identified as a significant health challenge within the female cohort. The study found that 15% of all women participants reported a diagnosis of PCOS. This condition was more common in the subset of women who were overweight or obese, where 19.14% reported a PCOS diagnosis.

Women reporting PCOS also reported psychological distress, and endocrine conditions were present in the cohort, suggesting a multi-system health burden. Among women aged 15 to 50 years, those reporting PCOS frequently showed co-occurrence with metabolic markers and other self-reported endocrine conditions. These descriptive patterns highlight the intersection of reproductive health, weight

status, and the behavioural habits investigated in this study, such as the co-occurrence of poor sleep duration and endocrine-related distress.

Table 1. Descriptive Characteristics of Lifestyle, Psychological, and Health Indicators in the Study Cohort (N = 205).

Metric	Total Cohort (%)	Female (n=120)	Male (n=85)
Normal BMI	51.2	—	—
Abnormal BMI (Overweight/Obese)	48.78	—	—
Obesity	12.6	14.16	10.58
Hypertension	38.53	44.16	30.58
Anxiety	16.6	21.66	11.76
Depression	14.1	16.66	10.58
Distress + Irregular BMI Overlap	43.95	—	—
Short Sleep (<7 hours)	17.07	—	—
PCOS (Women only)	—	15.0	—
Walking (30 min/day)	53.65	—	—
Professional Diet Guidance	22.92	26.66	17.64

4. Discussions

This discussion examines obesity, hypertension, and PCOS among urban Indian adults through a health psychology framework, emphasizing descriptive co-occurrence rather than causal inference. Rather than treating these conditions as isolated physiological disorders, the findings are interpreted as embedded within interrelated behavioral and psychological patterns involving diet, sleep, physical activity, and emotional distress. In the context of rapid urbanization in India, these patterns reflect broader lifestyle transitions that intersect with mental and metabolic health (Ganie et al., 2024; Dakanalis et al., 2023).

4.1. General lifestyle-health associations

The present findings indicate a substantial burden of metabolic and psychological challenges within the sample, with nearly half of participants exhibiting an abnormal BMI and over one-third reporting hypertension. These conditions frequently co-occurred with self-reported anxiety and depression, consistent with prior literature documenting strong associations between metabolic dysregulation and psychological distress (Ejtahed et al., 2024; Dakanalis et al., 2023). Notably, a significant proportion of individuals reporting anxiety or depression also exhibited irregular BMI, reinforcing health psychology models that emphasize emotional regulation as a key mechanism linking distress to weight-related outcomes.

Chronic psychological distress is known to activate the hypothalamic–pituitary–adrenal (HPA) axis, promoting cortisol dysregulation and increased preference for energy-dense foods as a coping strategy (Jurek & Maruda, 2024; Lei et al., 2025). This pattern of emotional or “comfort” eating has been shown to temporarily alleviate negative affect while simultaneously contributing to weight gain and cardiometabolic risk (Dakanalis et al., 2023). Within this urban Indian cohort, the descriptive overlap between frequent fast-food consumption, psychological distress, and abnormal BMI aligns with broader evidence linking ultra-processed food intake to poorer mental health outcomes (Lopes Cortes et al., 2021; Ejtahed et al., 2024).

Gender differences observed in the sample further support this interpretation. Women reported higher rates of anxiety, depression, and hypertension than men, consistent with research demonstrating that women are more likely to experience internalizing symptoms and to engage in emotional eating in response to stress (Ernst et al., 2021; Miranda et al., 2020). Sociocultural pressures related to body image and weight may amplify psychological distress among women, reinforcing cycles of emotional eating and reduced physical activity (Wang, Liu, & Lei, 2023). Although over half of participants reported engaging in daily walking, engagement in structured physical activity was limited, suggesting a lifestyle profile in which moderate activity may be insufficient to offset the combined effects of poor diet, stress, and sleep disruption (Dakanalis et al., 2023; Ejtahed et al., 2024).

4.2. Sleep duration and meal-sleep interval effects

Sleep emerged as a central behavioral domain in which psychological and metabolic processes converge. A substantial proportion of participants reported sleep durations below recommended levels, particularly among younger adults. Short sleep duration has been consistently associated with increased appetite, impaired glucose metabolism, and heightened cardiometabolic risk (Delrosso, 2025). These effects are mediated by hormonal alterations, including increased ghrelin and reduced leptin, which promote hunger and preference for high-calorie foods (McHill, Hull, & Klerman, 2022). Additionally, sleep deprivation impairs executive functioning and inhibitory control, increasing vulnerability to maladaptive dietary choices during periods of psychological distress (McHill et al., 2022).

The co-occurrence of short sleep duration with higher BMI and hypertension observed in this study aligns with these mechanisms and highlights sleep as a key modifiable factor in urban health. Meal timing further contributed to these patterns. Short intervals between the final meal and sleep were descriptively associated with metabolic challenges, consistent with evidence that late-night eating disrupts circadian alignment and metabolic efficiency (Ni et al., 2019; McHill et al., 2022). In the urban Indian context, late work hours and delayed evening meals may normalize such patterns, particularly among younger adults, thereby amplifying metabolic risk when combined with psychological stress and irregular sleep schedules (Ganie et al., 2024).

Sleep also plays a bidirectional role in psychological well-being. Poor sleep quality and duration are associated with increased anxiety, reduced emotional regulation capacity, and heightened stress reactivity (Delrosso, 2025). These relationships may further exacerbate behavioral patterns such as emotional eating and late-night snacking, reinforcing cycles of distress and metabolic strain.

4.3. Women-specific PCOS pathway

PCOS represents a particularly salient example of the intersection between metabolic, reproductive, and psychological health. The prevalence of PCOS observed in this cohort, particularly among overweight and obese women, aligns with existing evidence linking excess adiposity to insulin resistance and hyperandrogenism (Zheng et al., 2024; Ghafari et al., 2025). These physiological processes create feedback loops that complicate weight management and increase metabolic conditions such as hypertension.

The descriptive co-occurrence of PCOS with psychological distress observed is consistent with literature indicating elevated rates of depression and anxiety among women with PCOS (Li et al., 2024; Wang et al., 2023). Distressing physical symptoms, including weight gain and dermatological changes, may negatively impact body image and self-esteem, further contributing to emotional distress and maladaptive coping behaviors. Sleep disruption appears to be an additional compounding factor, as women with PCOS are more susceptible to sleep disorders and insomnia, which may worsen insulin resistance and inflammatory processes (Li et al., 2024; Zheng et al., 2024).

Taken together, these findings support a holistic health psychology interpretation in which metabolic, reproductive, and psychological conditions among urban Indian women are embedded within overlapping behavioral patterns involving sleep disruption, dietary habits, and emotional distress. This integrated profile reflects a broader syndemic framework in which psychological vulnerability and metabolic disease reinforce one another within the context of rapid urbanization and lifestyle transition (Ganie et al., 2024; Dakanalis et al., 2023).

5. Conclusion

This study provides a comprehensive descriptive analysis of the co-occurrence of lifestyle, psychological health, and metabolic conditions in urban India. The findings support a health-psychology view where obesity, hypertension, and PCOS are embedded in behavioral-psychological patterns, particularly regarding diet and sleep. Sleep duration and timing emerged as critical factors linked to both mental and physical outcomes. Recognizing these interdependencies is essential for developing holistic, culturally relevant health strategies to address the rising burden of non-communicable diseases and psychological distress in contemporary urban India.

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