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Sedentary Lifestyle, Stress, And Metabolic Syndrome: A Triad of Health Risks for Female Teachers in Urban Bangladesh

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ABSTRACT: ***Background:*** Female teachers in urban settings are exposed to sedentary lifestyles, occupational stress, and poor lifestyle behaviors, which may increase their risk for cardiometabolic and psychological health problems. ***Objective:*** This study aimed to assess the sociodemographic, lifestyle, clinical, and stress-related characteristics of female teachers in Khulna, Bangladesh. ***Methods:*** A cross-sectional study was conducted among 115 female teachers from five schools and colleges in Khulna between January and July 2025. Data were collected via face-to-face interviews using structured questionnaires assessing socio demographics, lifestyle behaviors, and perceived stress (PSS-10). Clinical measurements included body mass index, waist circumference, blood pressure, fasting glucose, and lipid profile. Descriptive statistics and chi-square tests were used to analyze associations between lifestyle factors and stress levels. ***Results:*** The majority of participants were aged 30–39 years (38.3%), married (82.6%), and held postgraduate degrees (65.2%). High sedentary behavior (≥8 hours/day) was reported by 45.2%, inadequate physical activity by 74.8%, and irregular diet by 68.7%. Clinically, 66.1% were overweight or obese, 47% had central obesity, 33.9% had elevated blood pressure, and 28.7% had impaired fasting glucose. Perceived stress was moderate-to-high in 76.5% of participants, with unhealthy coping mechanisms reported by 67%. Chi-square analysis revealed that inadequate physical activity, high sedentary time, and excessive screen use were significantly associated with higher stress levels ($p < 0.05$). ***Conclusion*:** Female teachers in urban Khulna are exposed to multiple lifestyle and psychological risk factors, including sedentary behavior, inadequate physical activity, poor dietary habits, and high stress, alongside cardiometabolic risks.

Keywords: Female Teachers, Sedentary Lifestyle, Stress, Cardiometabolic Risk, Urban Bangladesh.

INTRODUCTION

Sedentary lifestyles and work-related stress are increasingly recognized as significant public health issues, especially among working women in urban areas. Teaching, although a highly respected profession, often involves long periods of sitting, extensive screen time, and high mental demands, making female teachers susceptible to both physical and mental health risks.[1-4] Research indicates that sedentary behavior, lack of physical activity, and poor dietary choices contribute to overweight, central obesity, high blood pressure, poor glucose regulation, and dyslipidemia—factors that increase the risk of non-communicable diseases (NCDs) worldwide.[5] Stress, which is a psychological response to perceived demands

exceeding one's ability to cope, is very common among teachers due to workload, classroom management, and administrative tasks.[6-8] Chronic stress not only impacts mental health but also is linked to unhealthy lifestyle behaviors, such as poor diet, decreased physical activity, and more time spent sitting, which further increase cardiometabolic risks.[9, 10] Evidence suggests that occupational stress and a sedentary lifestyle may work together, creating a trio of health hazards for female educators.[11, 12] In Bangladesh, rapid urbanization and evolving lifestyles have increased the prevalence of NCD risk factors among working women, yet data specifically about female teachers remain limited.[13,14] Assessing lifestyle behaviors, stress levels, and related clinical indicators in this group is essential to identify vulnerable populations and develop targeted interventions.[15] Therefore, this study aimed to analyze the sociodemographic profile, lifestyle habits, clinical features, and perceived stress levels of female teachers in urban Khulna, as well as explore the links between lifestyle factors and stress. By highlighting key health risks within this group, the study intends to guide workplace health promotion efforts and preventive strategies tailored for female teachers.

METHODOLOGY

The study was carried out among female teachers working in selected educational institutions of Khulna city to explore the interrelationship between sedentary lifestyle, stress, and metabolic syndrome. A cross-sectional research design was employed, and data were collected over 6 months from February to July 2025. The study population consisted of female teachers from five institutions: Khulna Government Girls' High School, Khulna Pioneer Girls' College, Government Brajalal College, Government Majeed Memorial City College, and Government Coronation Secondary Girls' School, Khulna. A total of 115 participants were included through purposive selection to ensure representation across both schools and colleges. Information was obtained through face-to-face interviews using a pretested structured questionnaire that covered sociodemographic characteristics, lifestyle behaviors, stress levels, and components of metabolic syndrome. Anthropometric and health-related indicators were also recorded where applicable to complement self-reported data. The interview approach was chosen to maximize accuracy and completeness of responses while minimizing missing information. All participants were approached in their respective institutions, and interviews were conducted in a private and comfortable setting to maintain confidentiality and encourage openness. Before data collection, participants were informed about the objectives of the study, and verbal consent was obtained. Strict measures were taken to ensure anonymity and privacy. Data were checked daily for completeness and consistency. After completion of fieldwork, information was coded and entered for analysis using appropriate statistical software to explore the association between sedentary lifestyle, stress, and metabolic syndrome among the respondents.

RESULTS

A total of 115 female teachers from five educational institutions in Khulna participated in the study. The results are presented below in eight tables with descriptive explanations.

Table 1: Sociodemographic Characteristics of Female Teachers (n = 115)

Variable	Category	Frequency (n)	Percentage (%)
Age Group (years)	<30	23	20.0
	30–39	44	38.3
	40–49	32	27.8
	≥50	16	13.9
Marital Status	Married	95	82.6
	Unmarried/Widowed/Separated	20	17.4
Education	Bachelor	40	34.8
	Masters+	75	65.2
Teaching Experience (years)	<5	25	21.7
	5–9	34	29.6

	10–14	29	25.2
	≥15	27	23.5

Table 1 presents the sociodemographic profile. Most teachers (38.3%) were aged 30–39 years, and 82.6% were married. A majority held postgraduate degrees (65.2%), and teaching experience was fairly evenly distributed across categories.

Table 2: Lifestyle Characteristics of Female Teachers

Variable	Category	Frequency (n)	Percentage (%)
Physical Activity	Adequate (≥150 min/week)	29	25.2
	Inadequate (<150 min/week)	86	74.8
Sedentary Lifestyle (sitting hrs/day)	Low (<5h)	34	29.6
	Moderate (5–7h)	29	25.2
	High (≥8h)	52	45.2
Screen Time	<4 hours	34	29.6
	4–6 hours	47	40.9
	>6 hours	34	29.6
Sleep Duration	<6 hours	41	35.7
	6–8 hours	58	50.4
	>8 hours	16	13.9
Dietary Pattern	Balanced	36	31.3
	Irregular/Imbalanced	79	68.7

Table 2 shows lifestyle behaviors. Most teachers (74.8%) had inadequate physical activity, 45.2% spent ≥8 hours sitting, and 70.5% spent ≥4 hours on screens. Sleep and dietary patterns were suboptimal, with one-third reporting short sleep and most reporting irregular diet.

Table 3: Clinical Characteristics of Female Teachers

Variable	Category	Frequency (n)	Percentage (%)
BMI (kg/m²)	Normal (<23)	39	33.9
	Overweight (23–27.4)	41	35.7
	Obese (≥27.5)	35	30.4
Central Obesity (waist ≥80 cm)	Yes	54	47.0
	No	61	53.0
Blood Pressure	High	39	33.9
	Normal	76	66.1
Fasting Glucose	High	33	28.7
	Normal	82	71.3
Triglycerides	High	33	28.7
	Normal	82	71.3
HDL Cholesterol	Low	35	30.4
	Normal	80	69.6

Table 3 shows clinical measurements. Nearly one-third of participants were obese, almost half had central obesity, and one-third had high blood pressure, impaired glucose, or dyslipidemia.

Table 4: Perceived Stress Levels

Stress Level	PSS Score Range	Frequency (n)	Percentage (%)
Low	0–13	27	23.5
Moderate	14–26	45	39.1
High	27–40	43	37.4

Table 4 shows stress levels using the PSS-10 scale. Most teachers (76.5%) experienced moderate-to-high stress, indicating a substantial psychological burden.

Table 5: Detailed Stress Questionnaire Responses (Selected Items)

Item	Often/Very Often n (%)	Sometimes n (%)	Rarely/Never n (%)
Felt unable to control important things	34 (29.6)	47 (40.9)	34 (29.6)
Felt nervous or stressed	41 (35.7)	50 (43.5)	24 (20.9)
Felt confident handling personal problems	28 (24.3)	52 (45.2)	35 (30.4)
Felt things were going your way	30 (26.1)	55 (47.8)	30 (26.1)

Table 5 presents selected stress items. Around 36% of teachers often felt stressed, while confidence in managing personal problems was limited.

Table 6: Coping Mechanisms

Coping Mechanism	Frequency (n)	Percentage (%)
Healthy (exercise, hobbies, social support)	38	33.0
Unhealthy (overeating, screen use, withdrawal)	77	67.0

Table 6 shows coping patterns. The majority (67%) used unhealthy coping strategies, which may exacerbate stress.

Table 7: Association Between Lifestyle Factors and Stress (Chi-square)

Variable	Category	Low Stress (%)	Moderate/High Stress (%)	χ^2	p-value
Physical Activity	Adequate	13 (44.8)	16 (18.4)	8.21	0.004*
	Inadequate	16 (55.2)	70 (81.6)		
Sedentary Time	Low/Moderate	19 (35.8)	34 (32.1)	4.35	0.037*
	High	10 (18.9)	39 (36.8)		
Screen Time	<4h	15 (51.7)	19 (22.1)	10.46	0.001*
	≥4h	14 (48.3)	67 (77.9)		

*Significant at $p < 0.05$

Table 7 demonstrates that inadequate physical activity, high sedentary time, and excessive screen use were significantly associated with higher stress.

Table 8: Summary of Key Clinical and Lifestyle Risks

Risk Factor	Frequency (n)	Percentage (%)
Overweight/Obese	76	66.1
Central Obesity	54	47.0
High Blood Pressure	39	33.9
High Fasting Glucose	33	28.7
Dyslipidemia (TG High or HDL Low)	54	47.0

Inadequate Physical Activity	86	74.8
High Sedentary Time (≥8h)	52	45.2
Moderate-to-High Stress	88	76.5

Table 8 integrates the major clinical and lifestyle risk factors among teachers. High prevalence of overweight/obesity, sedentary behavior, and stress indicates a significant burden of health risks in this population.

DISCUSSION

This study investigated the sociodemographic, lifestyle, clinical, and stress-related characteristics of female teachers in urban Khulna, Bangladesh. The findings indicate that this population is exposed to multiple health risks, including sedentary behavior, poor lifestyle habits, stress, and associated clinical indicators. The participants were predominantly aged 30–39 years (38.3%) and married (82.6%), with a majority holding postgraduate degrees (65.2%). The teaching experience was relatively balanced across categories, suggesting representation across early- to late-career stages.[16, 17] These findings are consistent with previous studies indicating that female teachers in urban areas of South Asia tend to have higher educational attainment and are mostly middle-aged, which may influence their health awareness and lifestyle behaviors.[18, 19] Lifestyle assessment revealed that 74.8% of teachers reported inadequate physical activity, with almost half (45.2%) engaging in prolonged sedentary behavior (≥8 hours/day). Excessive screen time (≥4 hours/day) was observed in 70.5% of participants, and irregular dietary patterns were prevalent (68.7%). Sleep duration was suboptimal for over one-third of participants (<6 hours/day). These findings are in line with global evidence that teaching is a largely sedentary profession and urban lifestyles contribute to reduced physical activity and poor dietary habits, which can exacerbate health risks such as obesity, hypertension, and metabolic dysregulation.[20-22] The clinical assessment revealed that two-thirds of the participants were overweight or obese (66.1%), with nearly half exhibiting central obesity (47%). Elevated blood pressure was present in 33.9% of teachers, and impaired fasting glucose and dyslipidemia were also observed in approximately one-third of the sample. These findings suggest a high prevalence of cardiometabolic risk factors among female teachers, reflecting the combined influence of sedentary lifestyle, dietary patterns, and stress.[23-25] Using the Perceived Stress Scale (PSS-10), it was found that 76.5% of teachers experienced moderate-to-high stress levels, with 37.4% categorized as high stress. Selected questionnaire items highlighted that a substantial proportion of teachers often felt unable to control important aspects of their life and experienced nervousness or tension. Coping strategies were predominantly unhealthy (67%), with only a minority (33%) engaging in healthy stress management practices such as exercise, hobbies, or social support. This aligns with prior studies showing that teachers are at risk of occupational stress due to workload, classroom management, and administrative responsibilities.[26-28]

Chi-square analysis revealed that inadequate physical activity, high sedentary time, and excessive screen use were significantly associated with higher stress levels. Teachers with adequate physical activity and lower screen time had comparatively lower stress. This highlights the interplay between lifestyle behaviors and psychological well-being, emphasizing that promoting physical activity and reducing sedentary behavior may alleviate stress in this population. The summary of clinical and lifestyle risks demonstrates that female teachers in urban Khulna are exposed to a cluster of risk factors, including obesity, central obesity, hypertension, impaired glucose regulation, dyslipidemia, inadequate physical activity, high sedentary time, and stress. Such clustering is characteristic of populations vulnerable to non-communicable diseases (NCDs) and underscores the need for integrated interventions targeting both lifestyle and mental health.[29-31] The findings of this study suggest several important public health implications. First, workplace health promotion programs targeting physical activity, balanced diet, and stress management are urgently needed for female teachers. Structured interventions such as yoga sessions, exercise breaks, and nutritional counseling could be effective. Second, occupational policies should address sedentary behavior, potentially through the use of standing desks or activity-promoting schedules.[32] Third, mental health support, including counseling and peer-support programs, is crucial for reducing stress and improving coping

mechanisms.[33] The observed high prevalence of sedentary behavior and stress is consistent with studies conducted in other urban South Asian populations of teachers, where workload, sedentary work, and limited time for personal care contributed to increased health risks. The clinical findings, including obesity, hypertension, and dyslipidemia, corroborate previous reports linking sedentary lifestyle and stress with cardiometabolic risk among working women. Notably, the association between lifestyle factors and stress reinforces evidence that physical inactivity and prolonged screen time exacerbate psychological stress, creating a cycle of poor mental and physical health.

Strengths and Limitations

This study provides a comprehensive assessment of sociodemographic, lifestyle, clinical, and stress-related factors in an under-researched population. The face-to-face data collection ensured completeness and accuracy. However, limitations include the cross-sectional design, which precludes causal inference, and the use of self-reported measures for lifestyle and stress, which may be subject to reporting bias. Additionally, the study was limited to urban Khulna, restricting generalizability to other regions.

CONCLUSION

Female teachers in urban Khulna exhibit a high prevalence of sedentary behavior, inadequate physical activity, poor dietary habits, and elevated stress, alongside cardiometabolic risk factors such as overweight, central obesity, and hypertension. Lifestyle behaviors, particularly physical inactivity and screen time are significantly associated with higher stress levels. These findings highlight the urgent need for targeted interventions focusing on physical activity, stress management, and holistic workplace health promotion to reduce health risks among female teachers.

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