

Influence of Socio-Demographic Factors on Depression and Sleep Quality among Working Women: A Cross-Sectional Study

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ABSTRACT

The present study examined the association between socio-demographic factors, depression, and sleep quality among working women in higher education institutions. A cross-sectional survey design was employed, and data were collected from 300 female faculty members using the Beck Depression Inventory (BDI) and the Pittsburgh Sleep Quality Index (PSQI). Descriptive statistics, chi-square tests, and multiple regression analyses were conducted to examine relationships between socio-demographic variables and mental health outcomes. Chi-square analyses revealed that educational qualification and type of appointment were significantly associated with levels of depression, while sleep quality was significantly associated with age, educational qualification, designation, teaching experience, type of appointment, marital status, and socio-economic status. Multiple regression analysis indicated that educational qualification and socio-economic status significantly predicted depression, accounting for a modest proportion of variance. In contrast, the regression model predicting sleep quality was statistically significant, explaining over half of the variance, with educational qualification, type of appointment, marital status, and socio-economic status emerging as significant predictors. The findings highlight the differential impact of socio-demographic and occupational factors on depression and sleep quality among working women. Interventions focusing on employment stability, workload management, and psychosocial support may be critical in promoting mental health and sleep well-being in academic work settings.

Introduction

The increasing participation of women in the workforce has substantially transformed social and economic structures; however, it has simultaneously introduced new challenges to women's mental health and overall well-being. Working women often juggle multiple and competing roles related to professional responsibilities, family obligations, and societal expectations. This cumulative role burden has been shown to heighten vulnerability to psychological distress and sleep disturbances (Arber et al., 2021; Kim & von dem Knesebeck, 2023). Depression remains a leading contributor to global disability and is reported more frequently among women than men, particularly during

mid-adulthood when occupational and family demands tend to peak (World Health Organization [WHO], 2023).

Poor sleep quality has emerged as a critical public health concern closely linked to mental health outcomes. Empirical evidence consistently demonstrates that inadequate or disturbed sleep is associated with increased depressive symptomatology, emotional dysregulation, impaired cognitive functioning, and reduced occupational performance (Baglioni et al., 2020; Grandner, 2021). Among working women, sleep disturbances are often exacerbated by work-related stress, extended working hours, and challenges in achieving work-life balance (Huang et al., 2021).

Socio-demographic characteristics such as age, educational attainment, employment conditions, marital status, and socio-economic status play a pivotal role in shaping both mental health and sleep patterns. Employment insecurity, contractual appointments, and limited opportunities for career advancement have been linked to heightened stress levels, depressive symptoms, and poor sleep quality among women (Benach et al., 2020; Vives et al., 2021). Additionally, socio-economic constraints may intensify psychological distress by restricting access to material resources, social support networks, and mental healthcare services (Lorant et al., 2021).

Women employed in higher education institutions represent a unique occupational group exposed to high academic workloads, performance evaluation pressures, administrative responsibilities, and role conflict. Recent studies indicate that academic women experience

disproportionately higher levels of stress and sleep disturbances compared to their male counterparts, particularly in contexts characterized by job insecurity and gendered role expectations (García-González et al., 2021; Winefield et al., 2019). Despite the increasing representation of women in higher education in India, empirical research examining the combined influence of socio-demographic factors on both depression and sleep quality in this population remains limited. Addressing this gap, the present study aims to examine the associations between selected socio-demographic variables and levels of depression and sleep quality among working women faculty members using a cross-sectional design.

Method

Research Design

A cross-sectional survey design was employed to assess depression and sleep quality among working women.

Participants

The sample consisted of 300 female faculty members drawn from higher education institutions. Only women who consented to participate and completed all study measures were included in the final analysis.

Instruments

Pittsburgh Sleep Quality Index (PSQI). The Pittsburgh Sleep Quality Index (Buysse et al., 1989) is a 19-item self-report measure designed to assess sleep quality and

disturbances over the previous month. It yields a global score ranging from 0 to 21, with higher scores indicating poorer sleep quality. The PSQI demonstrates good psychometric properties, including internal consistency ($\alpha = .83$), test-retest reliability (.85), sensitivity of 89.6%, and specificity of 86.5%.

Beck Depression Inventory (BDI). The Beck Depression Inventory (Beck et al., 1961) is a widely used 21-item self-report measure assessing the severity of depressive symptoms. Each item is rated on a 4-point scale ranging from 0 to 3, yielding total scores between 0 and 63, with higher scores indicating greater severity of depression. The BDI demonstrates strong reliability, with reported alpha coefficients of .86 for psychiatric populations and .81 for non- psychiatric populations (Beck et al., 1988).

Procedure

After obtaining institutional permission, informed consent was obtained from all participants. The questionnaires were administered individually, and participants were assured of confidentiality and anonymity. The complete dataset of 300 participants was utilized for the final statistical analysis.

Statistical Analysis

Data were analyzed using the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were used to summarize socio-demographic characteristics and study variables. Chi- square tests were conducted to examine associations between socio-demographic variables and categorical levels of depression and sleep quality. Multiple regression analyses were performed to identify significant socio-demographic predictors of depression and sleep quality. Statistical significance was evaluated at the .05 level.

Results and Discussion

Results

Association Between Socio-Demographic Factors and Depression and Sleep Quality

Chi-square tests of independence were conducted to examine the association between socio- demographic variables and levels of depression and sleep quality among working women (N= 300).

Table 1. Chi-Square Analysis of Socio-Demographic Factors and Levels of Depression

Variable	χ^2	df	p
Age	2.60	3	.457
Educational Qualification	32.27	6	< .001***
Designation	2.70	3	.441
Teaching Experience	7.66	3	.054
Variable	χ^2	df	p
Type of Appointment	20.37	6	.002**
Marital Status	3.06	3	.383
Socio-Economic Status	11.85	6	.065

As shown in Table 2, educational qualification was significantly associated with levels of depression, $\chi^2 (6, N = 300) = 32.27, p < .001$, indicating that women with lower academic qualifications reported higher depressive symptoms. Similarly, type of appointment demonstrated a significant association with depression, $\chi^2 (6, N = 300) = 20.37, p = .002$, with temporary and contractual employees reporting higher levels of depression compared to those in permanent positions.

No significant associations were observed between depression and age, designation, marital status, or socio-economic status ($p > .05$). The relationship between teaching experience and depression approached statistical significance, $\chi^2 (3, N = 300) = 7.66, p = .054$, suggesting a possible trend toward higher depressive symptoms among women with fewer years of experience.

Table 2. Chi-Square Analysis of Socio-Demographic Factors and Sleep Quality

Variable	χ^2	df	p
Age	12.60	1	< .001***
Educational Qualification	79.94	2	< .001***
Designation	23.26	1	< .001***
Teaching Experience	105.85	1	< .001***
Type of Appointment	112.46	2	< .001***
Marital Status	4.13	1	.042*
Socio-Economic Status	33.52	2	< .001***

Note. $N = 300$. $P < .05^*$, $p < .01^{**}$, $p < .001^{***}$.

Table 2 indicates that sleep quality was significantly associated with most socio-demographic variables. A significant association was observed between age and sleep quality, $\chi^2 (1, N = 300) = 12.60, p < .001$, with poorer sleep reported more frequently among women in middle adulthood.

Educational qualification showed a strong association with sleep quality, $\chi^2 (2, N = 300) = 79.94, p < .001$, indicating poorer sleep among women with lower qualifications. Significant associations were also found for designation, $\chi^2 (1, N = 300) = 23.26, p < .001$, and teaching experience, $\chi^2 (1, N = 300) = 105.85, p < .001$, suggesting that seniority and prolonged work exposure adversely affected sleep quality.

Type of appointment emerged as a highly significant factor, $\chi^2 (2, N = 300) = 112.46, p < .001$, with poor sleep quality most prevalent among women in temporary and permanent positions. Marital status was also significantly related to sleep quality, $\chi^2 (1, N = 300) = 4.13, p = .042$, with married women reporting poorer sleep.

Finally, socio-economic status demonstrated a significant association with sleep quality, $\chi^2 (2, N = 300) = 33.52, p < .001$, indicating that women from middle and high socio-economic backgrounds experienced poorer sleep quality.

Table 3. Multiple Regression Analysis Predicting Depression Scores from Socio-Demographic Variables (N = 300)

Predictor	B	SE	β	t	p
Constant	2.33	11.80	—	0.20	.844
Age	0.06	0.14	.03	0.43	.670
Educational Qualification	4.81	2.25	.18	2.14	.034*
Designation	0.69	2.95	.02	0.23	.816
Teaching Experience (Years)	-0.38	0.30	-.12	-1.28	.203
Type of Appointment	-0.95	1.52	-.04	-0.63	.532
Marital Status	2.32	8.81	.02	0.26	.793
Socio-Economic Status	8.95	3.36	.16	2.67	.008**

Model Summary. R = .20, R² = .04, Adjusted R² = .02 F (7, 292) = 1.78, p = .091

Note. p < .05*, p < .01**.

As shown in Table 3, the overall regression model predicting depression was not statistically significant, F (7, 292) = 1.78, p = .091, accounting for 4.1% of the variance in depression scores. However, educational qualification emerged as a significant positive predictor of depression (β = .18, p = .034), indicating higher depressive symptoms among women with lower academic qualifications. Socio-economic status also significantly predicted depression (β = .16, p = .008). Other socio-demographic variables did not contribute significantly to the model.

Table 4. Multiple Regression Analysis Predicting Sleep Quality Scores from Socio-Demographic Variables (N = 300)

Predictor	B	SE	β	t	p
Constant	-15.24	1.77	—	-8.64	< .001***
Age	0.04	0.02	.09	1.92	.055
Educational Qualification	1.16	0.34	.20	3.44	.001**
Designation	-0.25	0.44	-.03	-0.56	.576
Teaching Experience (Years)	0.07	0.05	.10	1.54	.125
Type of Appointment	1.76	0.23	.35	7.73	< .001***
Marital Status	4.66	1.32	.15	3.54	< .001***
Socio-Economic Status	3.88	0.50	.34	7.73	< .001***

Model Summary. R = .72, R² = .52, Adjusted R² = .51 F (7, 292) = 44.86, p < .001

Note. Higher scores indicate poorer sleep quality. p < .05*, p < .01**, p < .001***.

Table 4 shows that the regression model predicting sleep quality was statistically significant, F (7, 292) = 44.86, p < .001, explaining 51.8% of the variance in sleep quality scores. Educational qualification (β = .20, p = .001), type of appointment (β = .35, p < .001), marital status (β = .15, p < .001), and socio-economic status (β = .34, p < .001) were significant predictors of sleep quality. Women with lower academic qualifications, unstable employment conditions, marital responsibilities, and higher socio-economic pressures reported significantly poorer sleep quality.

Discussion

The present study examined the association between socio-demographic factors, depression, and sleep quality among working women faculty members using chi-square

and multiple regression analyses. The findings underscore the differential influence of educational, occupational, and socio-economic characteristics on psychological well-being and sleep health, offering important insights into the lived experiences of working women in academic settings.

Socio-Demographic Factors and Depression

The chi-square analysis revealed that educational qualification was significantly associated with depression, with women holding lower academic qualifications reporting higher levels of depressive symptoms. This finding aligns with existing literature suggesting that lower educational attainment may limit career progression, professional autonomy, and perceived control at work, thereby increasing vulnerability to depression (Lorant et al., 2021; Patel et al., 2022). In academic environments, women with lower qualifications may experience heightened performance pressure and reduced job security, which can exacerbate psychological distress.

Similarly, type of appointment emerged as a significant correlate of depression, with temporary and contractual employees reporting higher depressive symptoms than those in permanent positions. Employment insecurity has been consistently linked to poorer mental health outcomes, particularly among women, due to uncertainty regarding income stability, career continuity, and work-life balance (Benach et al., 2020; Kim & von dem Knesebeck, 2023). The present findings reinforce the notion that precarious employment conditions represent a key risk factor for depression among working women in higher education.

Other socio-demographic variables such as age, designation, marital status, and socio-economic status were not significantly associated with depression at the bivariate level. However, teaching experience showed a trend toward significance, suggesting that early-career women faculty may be particularly vulnerable to depressive symptoms. Previous studies have similarly reported elevated psychological distress during the initial years of academic employment, when professional demands and role ambiguity are high (Winefield et al., 2019). The multiple regression analysis further clarified these relationships by identifying educational qualification and socio-economic status as significant predictors of depression. Although the overall model explained a modest proportion of variance, the findings indicate that both academic positioning and economic pressures independently contribute to depressive symptomatology. This supports contemporary models of women's mental health that emphasize the cumulative impact of structural and socio-economic stressors (World Health Organization [WHO], 2023).

Socio-Demographic Factors and Sleep Quality

In contrast to depression, sleep quality was significantly associated with nearly all socio-demographic variables examined. Age emerged as an important factor, with women in middle adulthood reporting poorer sleep quality. This finding is consistent with prior research demonstrating age-related changes in sleep architecture, compounded by occupational stress and family responsibilities during midlife (Baglioni et al., 2020).

Educational qualification demonstrated a strong association with sleep quality, with poorer sleep observed among women with lower academic attainment. This may reflect increased job strain, longer working hours, and reduced autonomy, all of which are known to disrupt sleep patterns (Huang et al., 2021). Additionally, designation and teaching experience were significantly associated with sleep quality, suggesting that prolonged exposure to academic workload, administrative responsibilities, and performance expectations adversely affects restorative sleep. Notably, type of appointment emerged as the strongest socio-demographic factor associated with sleep quality. Women in temporary and permanent positions reported poorer sleep compared to those on contract. While temporary employment is associated with job.

Insecurity, permanent roles may involve greater administrative burden and role overload, which can impair sleep quality (Åkerstedt et al., 2022). This highlights the complex relationship between employment status and sleep health among academic women. Marital status was also significantly related to sleep quality, with married women reporting poorer sleep. This finding is consistent with evidence suggesting that married working women often experience greater domestic responsibilities and caregiving demands, which can interfere with sleep duration and quality (Arber et al., 2021).

Furthermore, socio-economic status was significantly associated with sleep quality, with women from middle and high socio-economic backgrounds reporting poorer sleep. This seemingly paradoxical finding may reflect higher occupational demands, performance pressures, and work–family conflict among women in relatively advantaged socio-economic positions (Garefelt et al., 2020).

The multiple regression analysis confirmed that educational qualification, type of appointment, marital status, and socio-economic status were significant predictors of sleep quality, collectively explaining a substantial proportion of variance. These results suggest that sleep quality among working women is shaped by an interplay of professional, social, and economic factors, supporting bio-psycho-social models of sleep health (Grandner, 2021).

Conclusion

In conclusion, the present study demonstrates that socio-demographic factors exert a differential influence on depression and sleep quality among working women. While depression was primarily associated with educational qualification and socio-economic status, sleep quality was strongly shaped by a broader range of occupational and social factors. These findings underscore the need for comprehensive, gender-sensitive workplace interventions to promote both mental health and sleep well-being among working women.

Implications

The findings of the present study have important practical implications. Institutional policies aimed at enhancing job security, reducing workload imbalance, and providing targeted mental health and sleep hygiene interventions may be particularly beneficial for women faculty members. Tailored support for early-career academics and those in

insecure employment conditions could mitigate risks for both depression and sleep disturbances.

Limitations and Future Directions

Despite its contributions, the study is limited by its cross-sectional design, which precludes causal inferences. Self-report measures may also be subject to response bias. Future research should employ longitudinal designs and include qualitative approaches to capture the nuanced experiences of working women. Expanding the sample beyond higher education institutions would further enhance generalizability.

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