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Original Research Article

A Cross-Sectional Study on Job Stress and Associated Risks Among Teachers in Rural Schools

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Abstract:

Background: Teaching is an emotionally and physically exhausting profession and factors such as rurality add to the stress of the occupation. Even though they are essential, rural school teachers across the United States, as well as other regions of the world, experience many occupational and psychosocial stressors that remain under-researched.

Objective: This study examines stress levels and determine associated risk factors among teachers in rural schools.

Methods: A cross-sectional descriptive study was carried out August 2023 through December 2024 in three rural schools in Hazaribagh, Jharkhand. A total of 94 full-time teachers met the inclusion criteria and agreed to participate in this study. Data was collected via a validated semi-structured questionnaire which asked background information, job stress, musculoskeletal disorders (MSDs), and job satisfaction. Statistical analysis was conducted in SPSS v25 with significance set at $p < 0.05$.

Results: The sample of 94 respondents was comprised of 70.2% females and 66% permanent teachers. The following factors were associated with responding with job stress: Male ($p = 0.038$), more than five classes a day ($p < 0.01$), unequal workload ($p = 0.02$), work pressure ($p < 0.01$), large classes ($p < 0.01$) travel time over 30 minutes ($p = 0.02$). Those with lower job satisfaction reported significantly higher stress scores.

Conclusion: There are a number of organizational and workload related workplace stressors impacting rural school teachers rather than teacher demographic factors. Any future interventions to address the harmful effects of workplace stress for rural school teachers should focus on managing workload, fairly distributing tasks and responsibilities, and increasing supportive workplace mechanisms to alleviate stress and improve educational quality and teacher well-being.

Keywords: Job Stress, Rural Teachers, Occupational Health, Workload, Musculoskeletal Disorders, Job Satisfaction, Cross-Sectional Study.

Introduction

Teaching is the only profession that is accepted and recognized by all as one of the most noble and most important professions, constituting not only the academic but also the moral and social fabric of society. With the pivotal role being played by the teachers in the nation-building and human development process, teachers themselves are confronted with a plethora of occupational problems, the main among which is work-related stress. Work-related stress was first proposed by Smith and Milstein in 1930 [1]. The term has since become the focal point in occupational health.

Stress, as defined by the World Health Organization (WHO), is "a pattern of reactions which occurs when the workers are confronted with work demands not matched to their knowledge, skills or abilities and which challenge their ability to cope" [2]. It was in 1993 that the World Labour Report came out with a report of occupational stress as one of the most significant health issues of the twentieth century, a condition that would then be referred to by the WHO as a "Worldwide Epidemic" [3]. This global acknowledgment is a testament to the seriousness and pervasiveness of stress issues in many professions, particularly among teachers.

Teachers are more likely to encounter occupational stress than a number of other professionals. Research has confirmed that teachers had 1.6 times the level of augmented risk of impairment of work ability when compared to office workers [4]. One of the main reasons for the same is the continually high workload, which not only adds to the workload of the teachers but also results in early retirement due to illness and other health issues due to stress [5]. Teaching is an emotionally, mentally, as well as physically demanding vocation. Aside from their intellectual workload, teachers are usually expected to maintain discipline, conduct classes, and even address problems that arise from the family or personal history of the students—all of which are likely to add to work-related pressures.

The physical demands of teaching cannot be overstated. Teachers must repeat themselves throughout the day, and this leads to voice strain and vocal fatigue. Standing for extensive periods of time teaching or supervising can lead to musculoskeletal disorders, especially in the lower back, limbs, knees, and feet. Some other common reported ailments among teachers are varicose veins, contact dermatitis due to excessive chalk handling, increased susceptibility to respiratory infections, and neck and shoulder pains due to poor posture during teaching and administrative duties. Poor workplace accommodations—e.g., dirty or poorly maintained bathroom facilities—can increase the risk of urinary tract infections [6,7] ,.

In addition to physical health, some psychosocial determinants also cause stress among teachers. These include workload, organizational relationships at the workplace, family stress, years of teaching, class size, number of subjects taught, distance and travel time to school, working conditions, low level of remuneration, and comorbid clinical conditions such as hypertension and diabetes mellitus [8]. It not only affects teachers' health if left untreated but also reduces their teaching performance, which further affects student achievement.

Teachers in a National Foundation for Educational Research (NFER) paper are reported to experience much greater job-related stress than other professionals [9]. This stress is normally compounded in rural settings, where schools lack resources, are geographically remote, and lack basic infrastructural and administrative services. Teachers in such rural schools may also have to contend with multi-grade classes, distances to travel, and in regions where professional development options and mental health services are not available.

Despite seeming challenges, there is a significant lack of focused research on determinants and prevalence of occupational stress among Indian teachers in rural areas. The rural context poses new stressors and risk factors that may well significantly diverge from those that emerge in city or better-resourced school contexts. Determination of these factors is critical to effective intervention, policy, and support frameworks for improving teacher well-being and job satisfaction in rural areas.

As part of an initiative to fill this research gap, the present study was designed with the primary objectives of estimating the prevalence of occupational stress and risk factors among rural school teachers. In addition, the study aims to examine the correlation of occupational stress, musculoskeletal pain, and job satisfaction among rural teachers. Identification of the specific health risks and stressors among rural teachers will not only contribute to the existing body of academic literature but will also help policymakers and school administrators to implement targeted interventions, enhance work environments, and promote teachers' well-being and retention in rural schools.

Methodology

Study Design: This research was conducted as a cross-sectional descriptive study aimed at assessing job-related stress and its associated risk factors among school teachers working in rural areas.

Study Area: The study was undertaken in three selected rural schools under the jurisdiction of the Department of Community Medicine, Sheikh Bhikhari Medical College, Hazaribagh, Jharkhand, India. Of these, two were government-aided institutions, and one was a privately managed rural school.

Study Duration: The data collection and overall study were carried out between August 2023 and December 2024.

Study Population: The population for this study comprised teachers employed in the selected rural schools. Only academic teaching staff present during the data collection period were considered for inclusion.

Sample Size: A total of 94 teachers who met the inclusion criteria and gave informed consent were included in the final sample.

Inclusion Criteria

- Teachers who had been working for more than one year in the current school.
- Teachers who provided written informed consent.
- Full-time academic teaching staff.

Exclusion Criteria

- Teachers on leave or absent during data collection.
- Part-time teaching staff.
- Non-academic or physical education staff.

Data Collection: Data was obtained from a pre-tested, semi-structured, and face-validated questionnaire. The instrument was designed to comprehensively assess the sociodemographic characteristics, job stress, musculoskeletal disorders, and job satisfaction of teachers. The questionnaire consisted of four sections: subsection one covered personal and professional background: age, gender, years of experience, number of classes per day, and access of basic facilities; subsection two assessed factors contributing to job stress that was scored via points; two points for a 'yes' answer to the item, and one point for a 'no' answer item, that provided with a cumulative stress score ranging from 8 to 16; subsection three investigated the last 12 months and last 7 days of musculoskeletal disorders through the Nordic Musculoskeletal Questionnaire; and lastly, subsection four addressed job satisfaction through a standardized job satisfaction scale.

Procedure: Prior to starting data collection, permission was secured from the headmasters or principals of the participating schools. Individual teachers were approached by the research team and the nature of the study was outlined in detail. Written informed consent was gained from all respondents. Data were collected as part of a face-to-face interview in a private and confidential setting to ensure comfort and substitution of honest accounts. Teachers were taken through the questionnaire in order to clarify any misunderstanding and ensure full and complete data were provided. Where possible, participation was voluntary and included no payments or incentives.

Statistical Analysis: After data collection, responses were entered into Microsoft Excel and analyzed with SPSS version 25. Descriptive statistics to summarize numerical variables were reported with mean, median and standard deviation. Inferential statistical tests, with the primary test being the independent t-test, were performed to compare groups and look for associations between variables. A p-value < 0.05 was statistically significant. The analysis was conducted according to standard biostatistical procedures to ensure validity and reliability of study findings.

Result

"Table 1 presents the socio-demographic characteristics of the 94 teachers included in the study. The majority of participants were female (70.2%), while males constituted 29.8%. Most teachers were in the age group of 22–31 years (34%), followed by 32–41 years (27.7%), 42–51 years (23.4%), 52–61 years (11.7%), and only 3.2% were above 62 years. In terms of educational qualification, 59.6% had a B.Ed degree, 36.2% held both B.Ed and M.Ed, and only 4.3% had a PhD. Regarding marital status, a large proportion were married (75.5%), while 24.5% were single. A majority had more than 5 years of teaching experience (71.3%), while 16% had 1–3 years and 12.8% had 3–5 years of experience. Considering highest educational attainment, 43.6% had B.Ed/B.PEd, 19.1% had M.Ed/M.PEd, 16% had post-graduation in other fields, and 14.9% had completed graduation in other subjects. A very small percentage held only higher secondary (1.1%) or senior teaching certificates (4.3%). In terms of employment status, 66% of the teachers were permanent employees, whereas 34% were temporary.

Table 1: Socio-demographic details of the teachers (N = 94)

Characteristics	Number	%
Gender		
Female	66	70.2
Male	28	29.8
Age		
22–31	32	34
32–41	26	27.7
42–51	22	23.4
52–61	11	11.7
>62	3	3.2
Education		
PhD	4	4.3
B.Ed + M.Ed	34	36.2
B.Ed	56	59.6
Marital Status		
Married	71	75.5
Single	23	24.5
Years of Experience		
More than 5 years	67	71.3
3 – 5 years	12	12.8
1 – 3 years	15	16

Highest Education		
Higher Secondary	1	1.1
Senior Teaching Cert.	4	4.3
B.Ed / B.PEd	41	43.6
M.Ed / M.PEd	18	19.1
Graduation (Others)	14	14.9
Post-Graduation (Others)	15	16
Other	1	1.1
Nature of Employment		
Permanent	62	66
Temporary	32	34

Table 2 shows the association between socio-demographic factors and musculoskeletal disorders (MSDs) with occupational stress among the 94 teachers. A statistically significant difference was observed based on gender, where male teachers had a higher mean stress score (11.1 ± 1.0) compared to females (10.6 ± 0.9) with a p-value of 0.038, indicating gender as a contributing factor to stress. Other factors, including marital status, education level, work experience, nature of employment, and presence of MSDs in the last 12 months or 7 days, did not show statistically significant associations with stress ($p > 0.05$). Although slight variations in mean stress scores were noted—for instance, teachers with a B.Ed had slightly higher stress (10.9 ± 1.0) compared to those with an M.Ed (10.5 ± 0.8)—these differences were not significant. Overall, gender appeared to be the only socio-demographic variable significantly associated with job stress in this study.

Table 2: Association between Socio-demographic details and MSD with Stress (N = 94)

Factors	**Variables**	**Mean ± SD**	**p value***
Gender	Male	11.1 ± 1.0	0.038
	Female	10.6 ± 0.9	
Marital Status	Single	10.7 ± 0.9	0.59
	Married	10.8 ± 0.9	
Education	B.Ed	10.9 ± 1.0	0.07
	M.Ed	10.5 ± 0.8	
Work Experience	< 5 years	10.7 ± 1.0	0.92
	> 5 years	10.8 ± 0.9	
Nature of Employment	Temporary	11.0 ± 0.9	0.57
	Permanent	10.7 ± 0.9	
MSD in last 12 months	Yes	11.0 ± 0.8	0.38
	No	10.7 ± 0.9	
MSD in last 7 days	Yes	11.0 ± 0.8	0.2
	No	10.7 ± 1.0	

Table 3 illustrates the relationship between job satisfaction levels and occupational stress among the 94 teachers. Teachers who rated their job satisfaction as "Okay" experienced the highest level of stress, with a mean score of 12.5 ± 0.7 and a wide 95% confidence interval of 6.1 to 18.8. In comparison, those who rated their job as "Good" had a lower mean stress score of 10.6 ± 0.9 (CI: 10.0 – 11.1), and those who considered their job "Great" reported a mean score of 10.8 ± 0.9 (CI: 10.6 – 11.0). This suggests that lower job satisfaction is associated with higher stress levels, while higher job satisfaction corresponds with reduced stress, indicating an inverse relationship between the two variables.

Table 3: Association between Job Satisfaction and Stress (N = 94)

Occupational Stress	**95% Confidence Interval**	**p value***
Okay Job	12.5 ± 0.7	6.1 – 18.8
Good Job	10.6 ± 0.9	10.0 – 11.1
Great Job	10.8 ± 0.9	10.6 – 11.0

Table 4 examines various work-related and personal factors associated with stress among the 94 teachers. Statistically significant higher stress levels were observed in teachers who had more than 5 classes per day (11.2 ± 0.7, $p < 0.01$), experienced unequal work distribution (11.5 ± 0.9, $p = 0.02$), were under work pressure (11.6 ± 0.8, $p < 0.01$), handled classes with more than 30 students (11.3 ± 0.9, $p < 0.01$), and traveled for more than 30 minutes to reach school (11.4 ± 0.8, $p = 0.02$). These findings indicate that

workload, classroom size, commuting time, and perceived fairness in task distribution significantly contribute to occupational stress. In contrast, variables like interpersonal relations, remuneration satisfaction, and presence of comorbidities showed no significant association with stress, although slight differences in mean scores were observed. Overall, the results highlight that excessive workload and demanding work conditions are key contributors to job stress among rural teachers.

Table 4: Associated Factors for Stress (N = 94)

Factors	Variables	Mean ± SD	p value*
Classes per day	< 5	10.5 ± 0.9	< 0.01
	> 5	11.2 ± 0.7	
Work distribution	Unequal	11.5 ± 0.9	0.02
	Equal	10.7 ± 0.9	
Interpersonal relation	Good	10.8 ± 0.9	0.24
	Bad	10.5 ± 0.8	
Work pressure	Absent	10.4 ± 0.7	< 0.01
	Present	11.6 ± 0.8	
Strength of class	< 30 students	10.5 ± 0.8	< 0.01
	> 30 students	11.3 ± 0.9	
Travel duration	< 30 minutes	10.6 ± 0.9	0.02
	> 30 minutes	11.4 ± 0.8	
Remuneration	Satisfied	10.6 ± 0.9	0.14
	Unsatisfied	10.9 ± 0.9	
Comorbidities	Absent	10.9 ± 0.9	0.15
	Present	11.4 ± 1.1	

Discussion

The current research had 94 rural school teachers with a higher proportion of females (70.2%), as reported by Usha Rani et al. as well, with a high proportion of female participants (70.6%) in their Tamil Nadu state-based study [10]. Most of our study participants were between 22–31 years of age (34%), as the demographic pattern observed by Nigama et al., with the early career teachers constituting the majority of the sample [11]. The proportion of married teachers (75.5%) in our sample was also the majority represented by Usha Rani et al. (76.5%), whereas Nigama et al. reported a lower proportion of married teachers (20%). These demographic patterns reflect the same profile of rural teachers of different regions."

Educationally, the majority of our sample held B.Ed degrees (59.6%), and barely any held PhDs (4.3%). The same trend had also been reported by Usha Rani et al., where 41.2% had completed post-graduation. Additionally, the majority of the subjects in our study had over five years of experience (71.3%), which was consistent with the Tamil Nadu study where 59.8% had the same number of years of work experience. Permanent work status was the most common in both studies, where our study had 66% and Usha Rani et al. had 66.7% [10].

The current study also revealed that male teachers reported slightly higher stress than females, in line with Kumar et al., where the mean stress score was also higher in males (11.1 ± 1) than in females (10.8 ± 0.96) [12]. In our study also, we did not find any statistical correlation between education level, years of experience, or work status and stress, in line with Kumar et al.'s observation that these socio-demographic variables were not statistically associated with stress.

One of the most important findings of our study was identifying work-related stressors. Teachers handling more than five classes per day, having an unequal distribution of workloads, having more than 30 students in a class strength, traveling more than half an hour, or facing chronic work pressure all pointed to extremely high stress levels. These findings are in full agreement with Usha Rani et al., who identified the same stressors to be strong causes of high occupational stress among teachers [10]. These findings once again stress the need for prompt administrative re-organization in rural schools to redistribute workload and increase job satisfaction.

As far as job satisfaction goes, it was evident from our research that teachers who rated their jobs as only "Okay" had significantly higher stress levels than teachers who rated their jobs as "Good" or "Great." Though not statistically contrasted in our research, the trend is comparable to the NFER report, which mentioned that about 41% of teachers were not satisfied with their free time—a likely source of stress. Our results are, however, opposite to the research by Sarah, which found a highly significant negative correlation between job satisfaction and stress among secondary school teachers ($r = -0.8146$, $p < 0.01$), indicating that job satisfaction improves as stress reduces [13]. The disparity can be due to contextual differences in schools or respondents' perceptions.

Although musculoskeletal disorders (MSDs) in our study were not statistically associated with stress, teachers who reported MSDs reported slightly higher levels of stress. This aligns with Usha Rani et al.'s observation of no correlation between MSDs and stress [10]. Interestingly, though Moom reported greater frequencies of pain in the neck, back, and shoulders among teachers (58.6%, 48.4%, and 40.7% respectively) [14], knee pain (31.4%) was most prevalent in our study, followed by lower back pain (26.5%). Solis-Soto et al. also reported the neck as the most affected area (47%) [15], again highlighting regional differences in patterns of MSD among teachers.

In addition, our research indicated a moderate prevalence of varicose veins (18.6%) among female teachers, in line with Abirami et al.'s research, which indicated higher risk among female teachers as a result of long standing [16]. This occupational hazard is also supported by household chores that require women to stand for long periods. Our prevalence of 14.7% of urinary tract infections is the same as Nygaard et al.'s research in the USA (15.8%) [17], once again affirming the international scope of some of the health risks of teachers.

Lastly, while our study did not examine voice fatigue in detail, findings from other studies on comparable topics emphasize its significance. Williams et al. and Roy et al., for instance, both reported voice disorder prevalence of 11% and 15% respectively in Western countries [6,7], not so much more than the 32.4% of teachers in the study by Usha Rani et al. who reported vocal fatigue [10]. These percentages support the necessity for ergonomic and vocal care interventions among teachers.

Conclusion

The study has shown that multiple factors play a key contributory role in job stress experienced by teachers in rural schools, including gender, workload, work distribution, size of classroom, work pressure, and travel time. Teachers who have increased workload, inequitable work distribution, larger class sizes, work pressure and travel time experienced higher levels of stress. Socio demographic variables such as marital status, education level and years of service did not show a statistically significant direct association with stress; differences were noted in terms of gender. Job satisfaction was also associated and significantly below those who rated their job more positively. Collectively, the study suggests that organisational and work environment factors are significant contributors to job stress experienced by teachers in rural schools, this identifies the potential for focused interventions to improve their working conditions and sense of well-being.

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