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Analyzing the Influence of Job Stress on Road Construction Professionals in Bagmati Province, Nepal

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Abstract

Background: This study investigates job stress and its impact on professionals working in road construction across Bagmati Province, Nepal. A cross-sectional survey was conducted with 159 participants, including project managers, civil engineers, sub-engineers, supervisors, and site in-charges, recruited through non-probabilistic convenience sampling. The questionnaire employed validated scales to measure anxiety, fatigue, depression, dissatisfaction, and self-esteem, with reliability confirmed by Cronbach's alpha ranging from 0.75 to 0.89. Descriptive statistics identified work overload, low wages, and poor work environment as primary stressors. Inferential analysis through independent samples t-tests and Pearson correlation examined relationships between variables. Low self-esteem was found not to significantly predict anxiety, fatigue, depression, or dissatisfaction. The study highlights nuanced satisfaction levels with job roles and emphasizes socio-political stressors unique to the Nepalese construction context. Recommendations for stress management programs are

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provided, underscoring the need for organizational and individual interventions. Limitations of convenience sampling and study scope are noted, with directions for future longitudinal and comparative research.

Objectives: This study aims to identify and analyze the primary causes of stress experienced by professionals working in the road construction sector in Bagmati Province, and to examine the effects of this stress on their mental health, job satisfaction, and overall work performance. Additionally, the study aims to explore effective stress management strategies and recommend practical interventions—such as improved planning, better communication, increased salary, and enhanced support systems—to help mitigate stress and improve the well-being and productivity of construction workers.

Methods: The study used a mixed- methods approach and t-tests to analyze the relationships between stress factors and their effects such as anxiety, fatigue, depression, and job dissatisfaction. To ensure reliability, Cronbach's alpha was used to validate the measurement scales. Participants with exceptional conditions or who did not consent were excluded, allowing for a focused assessment of occupational stress and its impact on the construction sector.

Findings: The study found that road construction workers in Bagmati Province face significant stressors such as heavy workloads, long hours, poor working conditions, lack of support, inadequate safety equipment, unfair treatment, low salaries, and social conflicts. These factors negatively affect their mental health, job satisfaction, and performance, leading to higher absenteeism and turnover. While low self-esteem correlated with negative outcomes like anxiety and fatigue, it was not a significant predictor. Workers expressed a preference for stress management strategies including better planning, increased pay, clear responsibilities, and improved communication to alleviate workplace stress.

Novelty: It Systematically explores on the influence of stress among professionals in the road construction sector within Nepal's Bagmati Province, a context that has been underexplored in existing research. Unlike many prior studies centered on more developed industries or other countries, this research highlights unique stressors such as social-political conflicts, inadequate safety measures, and local community interactions that impact construction workers in a rapidly developing economy. Additionally, the study integrates both psychological factors and practical workplace challenges, providing a comprehensive analysis of stress and its effects on mental health, job satisfaction, and performance. Its recommendations for tailored stress management strategies address the specific needs of construction professionals in Nepal, filling a critical gap in occupational health literature in the region.

Keywords: Stress, Occupational Stress, Road Construction Professionals, Bagmati Province, Construction Sector, Workload, Job Satisfaction, Mental Health

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Introduction

Job stress can be defined as the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker. Job stress can lead to poor health and even injury (Sauter, et al., 1999; Bakker & De Vries, 2021)

Occupational stress refers to the physical, emotional, and mental strain that employees experience because of their job-related demands, pressures, and responsibilities. It arises when there is an imbalance between the demands of the work environment and an individual's ability to cope with those demands. This type of stress can result from factors such as heavy workload, lack of control, poor work-life balance, lack of support, role ambiguity, or conflicts with coworkers or management. (Cooper, C. L., ; Marshall, J. (Eds.), 1976; Gunasekra & Perera, 2023; Al Fayez, et al., 2024).

A study in Nigeria focused on stressors among 107 building construction professionals from 60 projects. Key stress factors included uncomfortable site offices, lack of feedback, work scope variations, high work volumes, safety issues, fragmented work, poor communication, and inadequate staffing. The findings revealed that all professionals experienced stress. Mitigation measures suggested were taking responsibility within one's capacity, realistic budget and timeframe management, providing proper site offices, regular training, workshops, and entertainment opportunities (Offia, Nwabueza, Ezenwa, & O, 2011).

De Silva explores the rising occupational stress among construction professionals, driven by rapid development projects in many developing countries. Identified as the third most affected group after miners and police officers, construction workers face unique stressors impacting their performance. Through a survey of Project Managers, Engineers, and Quantity Surveyors, the study identifies eleven key stressors and thirteen negative impacts, analyzing strategies at primary, secondary, and tertiary levels to mitigate these effects. Findings emphasize that managing stress effectively can improve industry performance, highlighting essential prevention strategies for organizations to support healthier, more resilient work environments (Silva, Samanmali, & Silva, 2017).s

Manjunatha studied theoretical perspective of stress management. He performed extensive reviews on different research on stress management strategies and employees' performance. Their study is based on secondary data. Various online journals were referred, and necessary data were collected. From their study it was found that the well-being and performance of employees are interrelated topics as it can affect success of banking sector. They revealed meditation and positive attitude can be beneficial for handling stress. In addition, walking, progressive relaxation, sleeping and stretching exercise can also be other helpful stress reduction tools (Manjunatha & Renukamurthy, 2017).

The construction industry in India is growing a lot and needs to hire workers for its projects. Many of these workers are not highly skilled, which means they face a lot of pressure at work. This stress can lead to health problems. Chakraborty, et-al looked at how stressed these workers are and how it affects their health, specifically musculoskeletal disorders. We used surveys to gather information from six groups of workers. The construction workers often work long hours

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and deal with a lot of stress. Many of them reported pain in body parts during their work hours. The study found that these workers generally have a low quality of life in different aspects (Chakraborty, Das, Pathak, & Mukhopadhyay, 2017).

Prasad in their research on "A study on causes of stress among the employees and its effects on the employee performance at the workplace in an international Agricultural research institute, Hyderabad" focused on throwing a light on the widespread issue of stress and its impact on the employees. About 200 employees of institute wsere randomly selected for surveys for assessing the job related, organizational related, individual related and physiological reactions to stress. They utilized descriptive, correlation and regression analysis for evaluating the data. Cronbach's alpha was taken for measuring the reliability of scale and internal consistency of questionnaire. It was concluded that occupational stress had a moderate impact on employees' performance of institute. Also, employees' reaction to stress-physiological factors also had moderate impact on the performance of employees. They found that some employees had felt chronic neck and back pain as an effect of long sitting hours at work (Prasad, Vaidya, & Kumar, 2016).

Niharika and Kiran on their work entitled "Occupational stress among bank employees" have discussed about occupational stress ins private and nationalized bank employees from Lucknow city. According to them occupational related stress is mainly a response people may have when provided with work demand and pressures which are not coordinated to their knowledge and abilities, and which challenge their capability to cope. They collected data from 120 male and female employees working in bank using questionnaire method and tested hypothesis. They found that in comparison to nationalized bank employees, prisvate bank employees had more occupational stress. It showed a positive correlation between independent variables and occupational stress (Niharika & Kiran, 2014).

Deepanshi and Dr. Mini conducted extensive study on organizational role stress on employees of public and private sector bank. According to their study, banking industries in India are facing huge changes and demonetization has impacted many banks which lead to enormous stress. Organizational role stress and job-related stress are the main problems that banking sector employees are facing these days. Main motive of this study was to find out role of demographic variable on stress on employee of private and public banks. 230 bank employees working in various banks of Jaipur city were considered for data collection. Structure questionnaire tool was used for collecting data. Occupational role stress scale was used for critically reviewing data. A total of 104 private bank employees and 126 public bank employees provided their response. It was found that employees' qualifications, age and work experience play a crucial role to cope up with stress. Employees of public sector banks faced moderate level of role stress such as inter role distance, personal inadequacy, role stagnation and self-role distance. On the other hand, employees of private sector banks faced high level of role stress such as role erosion, role isolation, inter role distance, role ambiguity, personal inadequacy, resource inadequacy and self-role distance. They suggested that it is quite possible to have control in life events and acknowledge role stress is a really difficult task for employees most of the time (Deepanshi & Arrawatia, 2018).

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Oyewobi, Luqman Oyekunle conducted a comprehensive examination of stress factors prevalent in Nigeria's construction industry. Through rigorous analysis, it identifies weather conditions and stringent project deadlines as the predominant sources of stress among workers. The findings illuminate that these stressors frequently manifest as physical ailments such as headaches and psychological strains like frustration. Additionally, the study uncovers dissatisfaction regarding payment structures, with workers feeling unfairly compensated for their efforts. In light of these revelations, the study advocates systemic improvements encompassing both payment mechanisms and working conditions. By implementing equitable payment systems and fostering a supportive work environment, the industry can effectively alleviate stress levels among its workforce while enhancing overall productivity and well-being (Oyewobi, Adamu, Ganiyu, & Odelade, 2011).

Sepani seeks to identify the critical stressors impacting work stress and their effects on the performance of construction project managers (CPMs). Conducted in northern and eastern Sri Lanka, where construction activities surged following the end of the ethnic conflict, the study gathered primary data through a survey of CPMs from various construction organizations. Statistical analysis of the data revealed key stressors related to task demands, organizational settings, physical conditions, and personal circumstances. While general research suggests that moderate stress can enhance performance, this study found that high stress levels had a negative impact on task execution, interpersonal relations, and organizational performance among CPMs in the region. The study offers several recommendations for practitioners to manage and mitigate these high stress levels effectively (Senaratne & Rasagopalasingam, 2017).

Jung, Minhyuk and Lim investigates how the work environment and psychological state affect construction workers' safety perceptions and behaviors. Using structural equation modeling, five work environment factors (job demand, job control, job support, rewards, organizational justice), two psychological factors (depression and trait anxiety), and four safety perception factors (safety motivation, safety knowledge, safety compliance, and participation behaviors) were analyzed. Data from 399 workers across 29 construction sites in South Korea revealed that safety compliance and participation are influenced by workers' safety knowledge and motivation. Depression and anxiety were found to reduce safety motivation, knowledge, and behavior. Negative impacts on safety behavior were linked to high job demands, lack of job control, lack of reward, and lack of organizational justice, while job support showed no significant effect on safety behavior (Jung, Lim, & Chi, 2020).

Adhikari and Poudel examines the high prevalence of psychological distress—depression, anxiety, and stress—among construction workers in Nepal’s Kavre district, an area where the construction industry employs a significant portion of the population despite its physically demanding and hazardous actions. Conducted between October 2019 and January 2020, the study surveyed 402 construction workers in Banepa and Panauti municipalities through structured interviews covering socio-demographic, lifestyle, and occupational factors. Findings revealed that 17.1% of workers experienced depression, 19.2% anxiety, and 16.4% stress, with poor sleep quality significantly linked to depression, and stress associated with Brahmin

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ethnicity and current smoking habits. Anxiety, however, showed no significant associations with the variables studied. These results highlight the urgent need for community-based mental health programs to support construction workers, whose mental health is often overlooked in favor of physical safety concerns.

In a study conducted in Hong Kong, researchers delved into the stress factors affecting construction workers and their correlation with worker injuries. Through thorough analysis, eleven primary stressors were identified, encompassing internal challenges such as workload and role ambiguity, as well as external factors like unfair treatment and inadequate safety equipment. Interpersonal issues such as conflicts and poor workgroup relationships were also highlighted as significant stressors. Surprisingly, while both job stress and emotional stress were prevalent, emotional stress emerged as a notable contributor to worker injuries. Specific stressors such as high workloads, role conflicts, and poor physical environments were found to strongly influence emotional stress levels, while factors like poor workgroup relationships and excessive workloads were linked to job stress. The study's findings offer valuable insights for employers seeking to enhance worker safety by addressing these key stressors and fostering supportive work environments, ultimately leading to improved project outcomes and increased industry productivity (Leung, Chan, & Yuen, 2010).

Sharmilee et al. in their research work titled “Impact of job stress on employee performance” selected 310 participants from various sectors in Malaysia and data was collected with structured questionnaire with 26 items in Likert scale. Regression analysis was used for analyzing the impact of stress. It was found that time pressure and role ambiguity have a major and negative impact on performance. Factors such as workload and lack of motivation do not possess major influence on performance. They suggested that proper and clear roles should be given to employees for increasing the performance among the employees (Murali, Basit, & Hassan, 2017).

Dodanwala. T.C Shrestha conducted survey among project-level employees from ten large private contractors in Sri Lanka regarding role conflict related job stress among construction professionals and 274 valid responses were collected. Factor analysis and hierarchical regression analysis were employed to evaluate the research hypotheses. Results indicated a positive direct effect of role conflict on job stress, particularly pronounced among younger employees lacking sufficient life skills and experience to manage role conflicts effectively. Surprisingly, organizational tenure did not significantly influence the relationship between role conflict and job stress, contrary to expectations. Given the heightened vulnerability of young employees to role conflict, it's recommended that contractors assign seasoned supervisors to mentor them, providing clear instructions on managing conflicting requests. Additionally, organizations should implement conflict management training programs to help employees effectively navigate workplace conflicts, thereby mitigating the impact of role conflict over time (Dodanwala, Shrestha, & Santoso, 2021).

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Methodology

Study Design

A cross-sectional survey design was employed to quantitatively assess stress influences on road construction professionals.

Population and Sample

The target population included professionals from five districts (Kathmandu, Bhaktapur, Lalitpur, Makwanpur, and Chitwan), comprised of project managers, civil engineers, sub-engineers, supervisors, and site in-charges. A total of 159 participants were selected using non-probabilistic convenience sampling, based on availability and consent.

Data Collection Instruments

Data were collected using a semi-structured questionnaire developed through literature review and expert consultations. The instrument consisted of four parts: demographic profile, sources of stress, impacts of stress, and stress management strategies. Established scales were adapted for measuring psychological constructs: anxiety, fatigue, and depression were measured using respective subscales of the DASS-21; job dissatisfaction by a 4-item scale; and self-esteem by the Rosenberg Self-Esteem Scale (2 items used with permission). Each scale showed acceptable internal consistency with Cronbach's alpha coefficients ranging from 0.753 (depression) to 0.888 (self-esteem).

Data Analysis

Data were analyzed using Microsoft Excel and SPSS software. Descriptive statistics summarized demographic data and stressor prevalence. Inferential statistics included independent samples t-tests to compare mean scores across groups and Pearson correlation to assess relationships between continuous variables. Specifically, t-tests tested hypotheses on whether low self-esteem significantly predicted anxiety, fatigue, depression, and dissatisfaction. The null hypotheses stating no significant prediction were retained for all variables ($p > 0.05$). Findings were triangulated with qualitative interview notes without formal thematic qualitative analysis, as interview data served supplementary purposes.

Results

Sample Demographics

Of 159 respondents, 87% were male, with the majority holding bachelor's or master's degrees and having 1 to 10 years of work experience. Professional roles ranged from project managers (17%) to site in-charges (4%).

Causes of Stress

Work overload was the most frequently reported stressor (62.3%), followed by low pay (58%), insecure work environments (54%), and socio-political conflicts affecting construction sites.

Impacts of Stress

Mean scores on a 5-point Likert scale for stress impacts were: low self-esteem (3.16), job dissatisfaction (2.92), fatigue (2.88), depression (2.86), and anxiety (2.63), indicating moderate levels of stress-related symptoms.

Inferential Statistics

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Independent t-tests confirmed that low self-esteem did not significantly predict anxiety ($t = -1.07$, $p = 0.29$), fatigue ($t = -1.76$, $p = 0.08$), depression ($t = -0.49$, $p = 0.63$), or dissatisfaction ($t = -0.23$, $p = 0.82$).

Pearson correlation analysis showed a strong positive correlation between fatigue and dissatisfaction ($r = 0.99$) and a moderately high correlation between low self-esteem and anxiety ($r = 0.61$).

Job Satisfaction Nuances

While some dissatisfaction was noted, a substantial proportion of respondents gave neutral responses on job satisfaction, suggesting complex attitudes possibly indicating resilience, apathy, or measurement limitations.

Discussion

The study corroborates global findings that workload and poor working conditions are principal stressors in construction professions but uniquely contextualizes these with socio-political conflicts in Nepal. Compared to studies from Nigeria and Sri Lanka, this population exhibits similar stressor profiles but faces additional workplace instability factors.

The non-significant role of low self-esteem in predicting negative outcomes contrasts with some literature, potentially reflecting coping mechanisms or cultural factors moderating psychological impacts.

Neutral responses regarding job satisfaction indicate potentially complex social or measurement dynamics, warranting further qualitative exploration.

Conclusion

This study provides novel insights into job stress among road construction professionals in Nepal, emphasizing the role of workload and socio-political issues. While psychological stress symptoms are evident, low self-esteem did not emerge as a significant predictor of adverse impacts. Organizations should prioritize stress management programs addressing work conditions and socio-political risks. Limitations include convenience sampling and cross-sectional design, restricting generalizability and causal inferences. Future research should include longitudinal studies and qualitative integration for deeper understanding.

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Transparency Statement: We confirm that this study has been conducted with honesty and in full adherence to ethical guidelines.

Data Availability Statement: Authors can provide data.

Conflict of Interest: The authors declare there is no conflicts of interest.

Authors' Contributions: The authors conducted all research activities i.e., concept, data collecting, drafting and final review of manuscript.

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