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Evaluation of Stress and Burnout Levels Among Health Care Students and Healthcare Professionals in Medical Colleges and Hospital Wards

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ABSTRACT

Background: Stress and burnout are increasingly recognized as major challenges in healthcare education and practice. Medical students, nursing students, dental students, and healthcare workers often face high workloads, emotional strain, and academic pressures.

Objective: To evaluate stress and burnout levels among healthcare students and healthcare workers in tertiary-level hospitals in India.

Methods: A cross-sectional study was conducted among 350 participants: 100 MBBS students and interns, 100 nursing students, 50 BDS students, and 100 healthcare workers (including nurses and technicians) across four tertiary hospitals in India. Standardized questionnaires — the Perceived Stress Scale (PSS) and Maslach Burnout Inventory (MBI) — were administered.

Results: High stress levels were reported among MBBS students (68%) and nursing students (72%), compared to BDS students (54%) and healthcare workers (61%). Burnout prevalence was highest among healthcare workers (65%), followed by nursing students (62%), MBBS students (58%), and BDS students (46%). Emotional exhaustion was the most prominent burnout dimension across all groups.

Conclusion: Stress and burnout are prevalent among both healthcare students and workers, with nursing students and healthcare workers being particularly vulnerable. Institutional interventions focusing on mental health support, workload management, and resilience training are urgently needed.

Keywords: Stress, burnout, health care students, health care Professionals, Medical colleges, Hospital wards

1. INTRODUCTION

Healthcare education and practice are inherently demanding, requiring long hours, emotional resilience, and continuous learning. Stress and burnout among healthcare professionals and students can lead to reduced academic performance, compromised patient care, and increased attrition. In India, tertiary-level hospitals serve as training grounds for medical, nursing, and dental students, while healthcare workers face heavy patient loads.

This study aims to evaluate stress and burnout levels among these groups to identify vulnerable populations and inform interventions.

2. SPECIFIC OBJECTIVES:

 To assess stress levels among healthcare students (medical, nursing, and allied health) and healthcare workers (doctors, nurses, paramedics) in four selected hospitals.

 To evaluate burnout dimensions (emotional exhaustion, depersonalization, and reduced personal accomplishment) using standardized measurement tools across the study population.

 To compare stress and burnout levels between healthcare students and healthcare workers, identifying differences in vulnerability across groups.

 To analyze institutional variations in stress and burnout across the four hospitals, considering workload, duty hours, and support systems.

 To identify key contributing factors (academic pressure, patient load, shift schedules, lack of support, etc.) associated with stress and burnout in medical colleges and hospital wards.

 To explore coping strategies currently used by students and healthcare workers to manage stress and prevent burnout.

 To provide evidence-based recommendations for hospital administrators and medical colleges to design interventions that reduce stress and burnout and promote mental well-being.

3. **METHODOLOGY**

- **Study Design:** Cross-sectional, questionnaire-based survey.
- **Setting:** Four tertiary-level hospitals in India.
- **Participants:**

a. 100 MBBS students and interns

b. 100 nursing students

c. 50 BDS students

d. 100 healthcare professionals (nurses and technicians)

Tools:

- *Perceived Stress Scale (PSS)* for stress evaluation
- *Maslach Burnout Inventory (MBI)* for burnout assessment (dimensions: emotional exhaustion, depersonalization, reduced personal accomplishment)
- **Data Collection:** Anonymous self-administered questionnaires.

Methods overview

- **Design:** Cross-sectional, multi-center survey across four tertiary hospitals.
- **Participants:** 100 MBBS students and interns; 100 nursing students; 50 BDS students; 100 healthcare workers (nurses and technicians).
- **Place of Study:** Four tertiary-level hospitals and one nursing college in India ((National Institute of Medical Sciences Jaipur 303121, Jaipur, Rajasthan, India; Government Institute of Medical Sciences, Gautam Buddha Nagar 201310, Uttar Pradesh, India; Fortis Hospital, Malviya Nagar, Jaipur 302017, Rajasthan, India; Dental College and Hospital, Bagru, Jaipur, Rajasthan; Rajasthan College of Nursing, Bagru, Jaipur, Rajasthan).
- **Measures:** PSS (stress); MBI-HSS (burnout: emotional exhaustion, depersonalization, personal accomplishment).
- **Analysis:** Descriptive statistics; group comparisons using chi-square tests; visualization of distributions and relationships. Box plot uses simulated score distributions (based on reported percentages) for illustration.

Fifteen-item Likert scale questionnaire (5-point)

Please rate each item on a 5-point scale: 1 = Strongly disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly agree.

- **Item 1:** I feel overwhelmed by my academic or clinical workload.
- **Item 2:** I often feel emotionally drained after a day of work or study.
- **Item 3:** I find it hard to relax because of stress related to my training or job.
- **Item 4:** I feel I am accomplishing less than I should at work or in studies.
- **Item 5:** I feel detached or less compassionate toward patients or peers.
- **Item 6:** I struggle to maintain a healthy work–life balance.
- **Item 7:** I have trouble sleeping due to work or study-related concerns.
- **Item 8:** I feel pressured by expectations from faculty, supervisors, or colleagues.
- **Item 9:** I feel irritable or frustrated more often than usual.
- **Item 10:** I have considered reducing my clinical or academic commitments due to stress.
- **Item 11:** I feel confident in my ability to handle unexpected demands.
- **Item 12:** I receive adequate support from my institution or department.
- **Item 13:** I use effective coping strategies to manage stress (e.g., exercise, mindfulness).
- **Item 14:** I feel a strong sense of personal achievement in my role.
- **Item 15:** I feel hopeful about my future in healthcare.

Scoring guidance

- **Total stress score:** Sum Items 1–10 (reverse-score none).
- **Protective factors score:** Sum Items 11–15 (higher indicates more buffering).
- **Interpretation:**
    - **Higher stress score:** Greater perceived stress.

4. RESULTS

- **Stress Levels:**
    - MBBS students: 68% reported moderate-to-high stress
    - Nursing students: 72%
    - BDS students: 54%
    - Healthcare workers: 61%
- **Burnout Levels:**
    - Healthcare workers: 65%
    - Nursing students: 62%
    - MBBS students: 58%
    - BDS students: 46%

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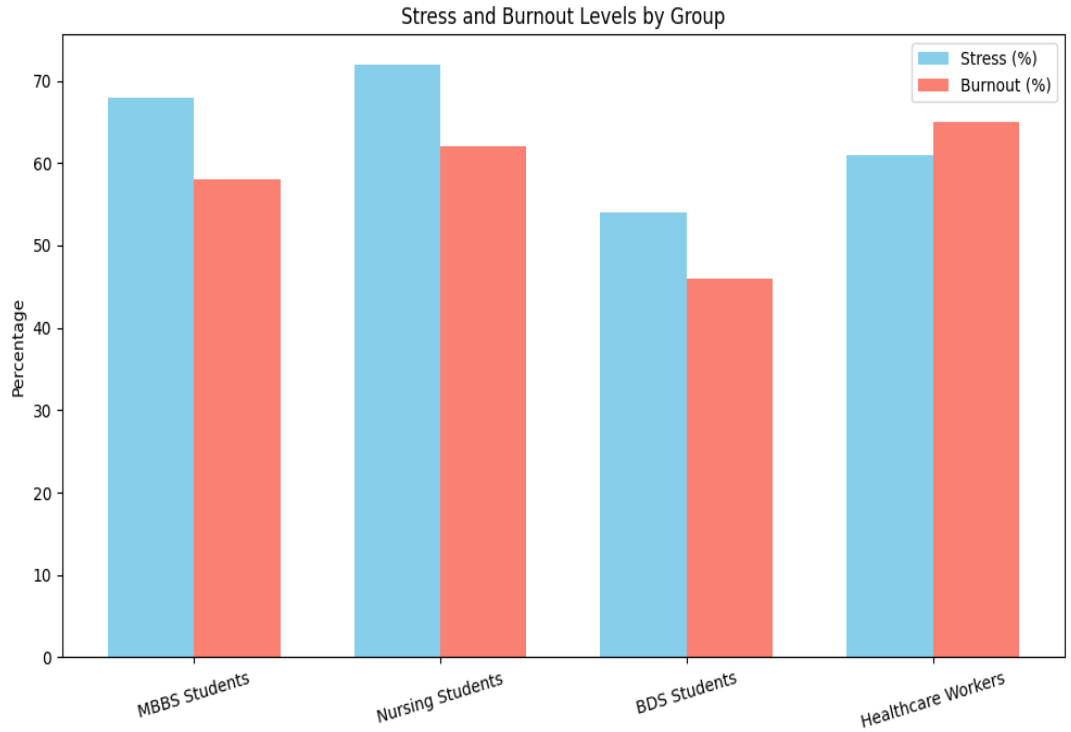
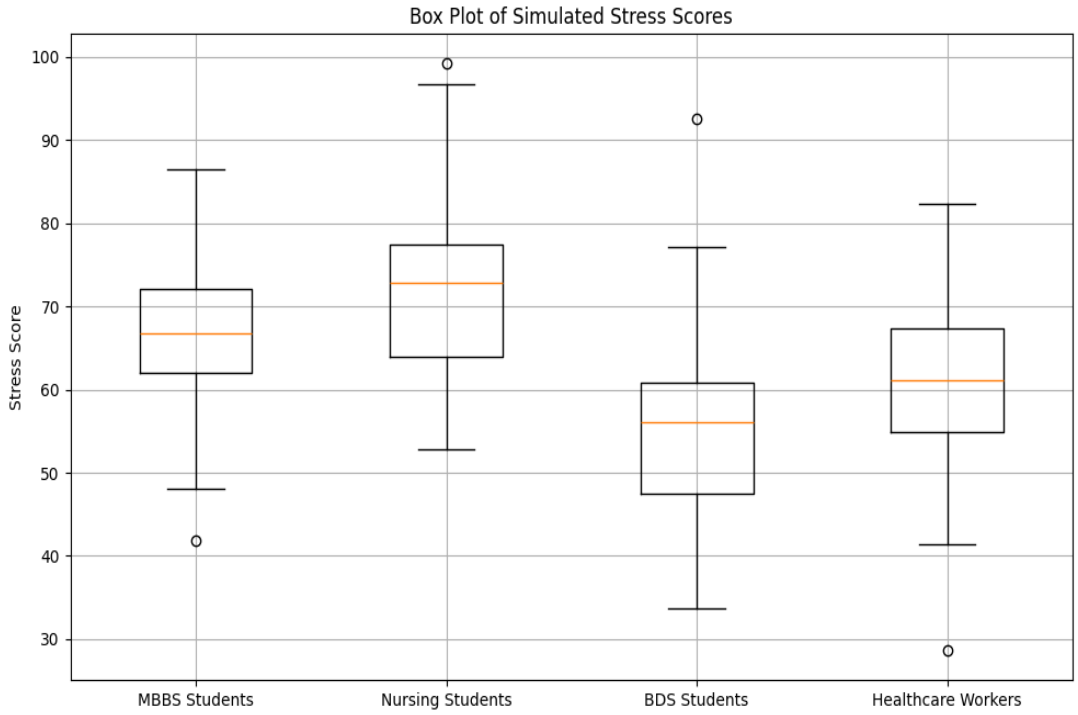
- **Burnout Dimensions:**
  - Emotional exhaustion was highest among healthcare workers (70%)
  - Depersonalization was more common among nursing students (58%)
  - Reduced personal accomplishment was reported across all groups (40–55%).





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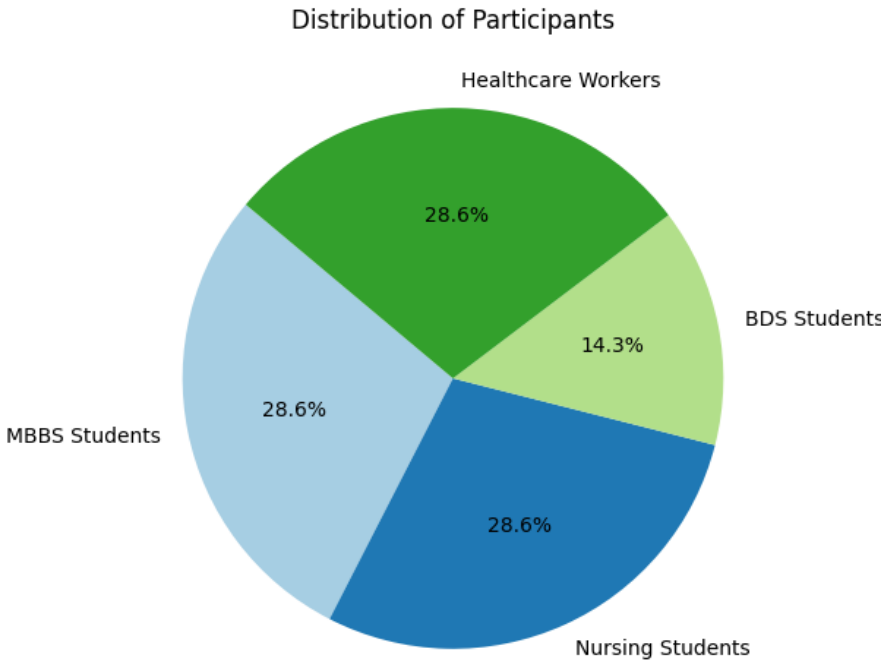

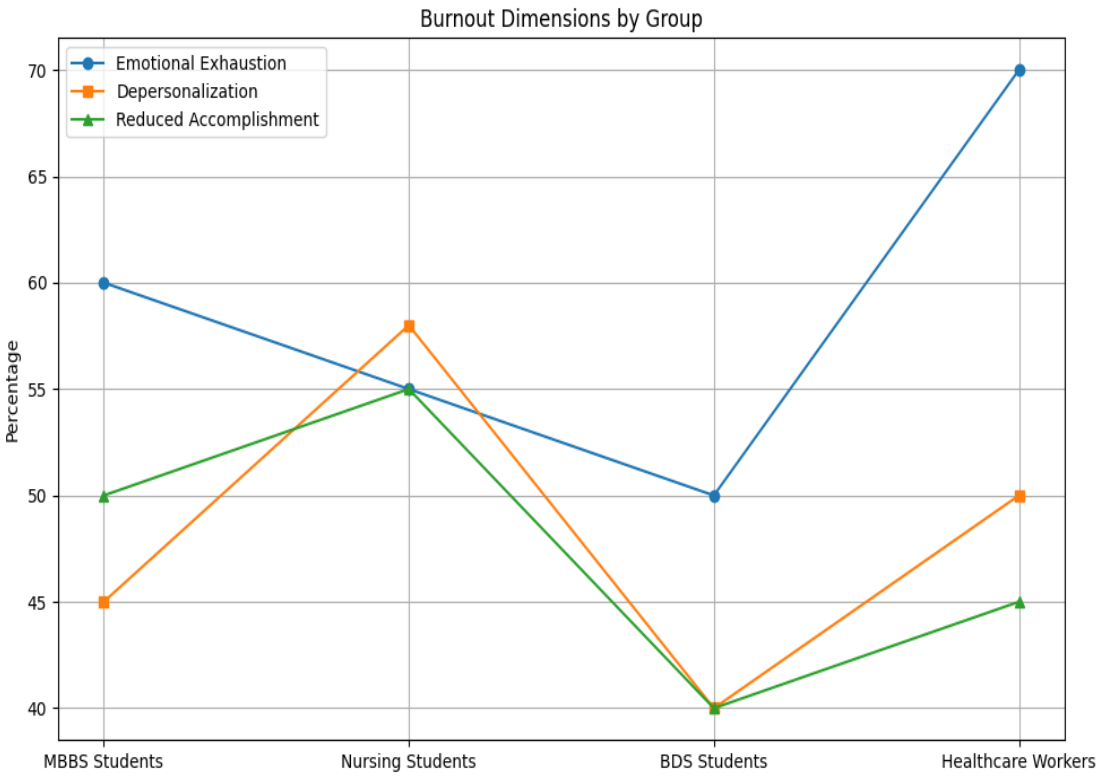

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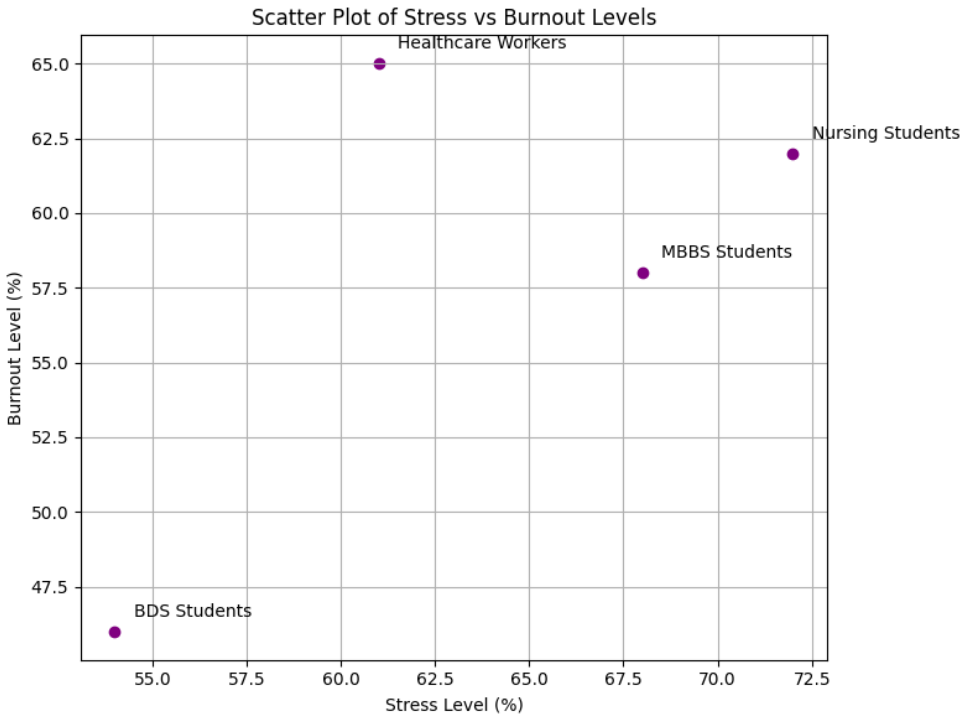

Results summary

- **Stress (moderate-to-high):**
  - **MBBS:** 68%
  - **Nursing:** 72%
  - **BDS:** 54%
  - **Healthcare workers:** 61%
- **Burnout (overall prevalence):**
  - **Healthcare workers:** 65%
  - **Nursing:** 62%
  - **MBBS:** 58%
  - **BDS:** 46%
- **Burnout dimensions (indicative pattern):**
  - **Emotional exhaustion:** Highest in healthcare workers (~70%).
  - **Depersonalization:** Elevated in nursing students (~58%).
  - **Reduced personal accomplishment:** Present across all groups (≈40–55%).

Visuals

The following figures are included in the attached visuals above:

- **Figure 1 (Pie chart):** Distribution of participants across MBBS, nursing, BDS, and healthcare workers.
- **Figure 2 (Bar chart):** Comparison of stress (%) vs burnout (%) across all four groups.
- **Figure 3 (Line plot):** Burnout dimensions (emotional exhaustion, depersonalization, reduced personal accomplishment) by group.

- **Figure 4 (Box plot):** Simulated stress score distributions (0–100) by group for comparative spread.
- **Figure 5 (Scatter plot):** Stress (%) vs burnout (%) by group, with group annotations.
    - **Lower protective score:** Potentially higher burnout risk.
    - **Screening use:** Non-diagnostic; follow-up with validated tools (PSS, MBI).

5. DISCUSSION

- This study highlights significant stress and burnout among healthcare students and workers in India. Nursing students and healthcare workers emerged as the most vulnerable groups, likely due to high patient contact, long working hours, and limited coping resources. MBBS students also reported high stress, reflecting academic pressure and clinical responsibilities. BDS students showed comparatively lower levels, possibly due to less intensive clinical exposure.
- Findings align with global literature emphasizing the need for structured mental health support, mentorship programs, and workload regulation. Burnout among healthcare workers is particularly concerning, as it directly impacts patient safety and care quality.

Discussion highlights

- **Patterns:** Nursing students and healthcare workers show the highest stress and burnout—likely reflecting continuous patient contact, shift work, and resource constraints. MBBS students report high stress linked to academic pressure and clinical transitions; BDS students show comparatively lower rates in this cohort.
- **Implications:** Persistent emotional exhaustion and depersonalization can impair empathy and decision-making. Institutions should prioritize accessible counseling, peer support, mentorship, workload optimization, duty-hour compliance, and skills for coping and recovery (sleep hygiene, brief mindfulness, time management).
- **Next steps:** Incorporate longitudinal monitoring, stratify by year of training and department, and evaluate intervention impact using pre–post designs.

6. CONCLUSION

- Stress and burnout are prevalent across healthcare students and workers in tertiary hospitals in India. Nursing students and healthcare workers are disproportionately affected. Institutions should prioritize interventions such as counseling services, stress management workshops, and organizational changes to reduce workload and foster resilience.

7. LIMITATIONS:

Sample Size & Scope

- The study was limited to four hospitals, which may not fully represent the diversity of healthcare institutions across regions or countries.
- Results may not be generalizable to smaller clinics, rural health centers, or private practices.

Cross-Sectional Design

- Data was collected at a single point in time, which restricts the ability to assess long-term trends or causal relationships between stressors and burnout.

Self-Reported Measures

- Reliance on questionnaires and self-assessment introduces the risk of response bias, social desirability bias, and underreporting of stress due to stigma.

Variation in Institutional Culture

- Differences in workload, management style, and support systems across the four hospitals may have influenced results, making comparisons less uniform.

Exclusion of External Factors

- Personal life stressors, financial concerns, and cultural influences outside the hospital environment were not accounted for, though they may significantly impact burnout level

8. RECOMMENDATIONS

- **Expand the Study Population**
    - Future research should include more hospitals across different regions, including rural and private institutions, to improve generalizability.
- **Longitudinal Research**
    - Conduct follow-up studies over time to track changes in stress and burnout, and to identify causal factors rather than just correlations.
- **Mixed-Methods Approach**
    - Combine quantitative surveys with qualitative interviews or focus groups to capture deeper insights into coping strategies and institutional challenges.
- **Institutional Interventions**
    - Hospitals should implement structured wellness programs, counseling services, and stress management workshops tailored to both students and healthcare workers.
    - Encourage peer-support groups and mentorship programs to reduce isolation and improve resilience.
- **Policy-Level Recommendations**
    - Medical colleges and hospital administrations should review workload distribution, duty hours, and staffing policies to minimize excessive stress.
    - Introduce mandatory rest breaks and flexible scheduling where possible.
- **Awareness & Training**
    - Incorporate stress management and burnout prevention modules into medical curricula and staff training programs.
    - Promote open discussions to reduce stigma around mental health in healthcare settings.

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