

Assessing the Occupational Health Safety Practices and their impact on Healthcare Workers' Well-being in Sindh

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Abstract

Background: Healthcare workers are exposed to multiple occupational hazards that can affect their physical health, psychological well-being, job satisfaction, and quality of care. In resource-limited public healthcare settings, weak occupational health and safety systems may increase stress, burnout, and workplace dissatisfaction.

Objective: This study aimed to assess occupational health and safety practices and their impact on healthcare workers' well-being in public healthcare facilities in Hyderabad, Sindh.

Methods: A descriptive cross-sectional study was conducted among 79 healthcare workers from primary, secondary, and tertiary public healthcare facilities in Hyderabad from 9 May to 8 November 2025. Participants were selected through stratified random sampling. Data were collected using structured and semi-structured questionnaires. Occupational health and safety practices were assessed using an Occupational Health and Safety Questionnaire, burnout was measured using the Maslach Burnout Inventory–Human Services Survey, and perceived stress was assessed using the Perceived Stress Scale. Data were analyzed using SPSS version 28. Descriptive statistics, chi-square tests, and Pearson's correlation were applied, with $p < 0.05$ considered statistically significant.

Results: The majority of respondents were aged 26–35 years (43.0%) and female (59.5%). The most common occupational hazards were exposure to hazardous substances (65.8%), awkward or bent postures (57.0%), and high noise levels (39.2%). Tertiary facilities reported better occupational health and safety practices (68.1%) than primary (43.8%) and secondary facilities (50.0%). Good occupational health and safety practices were significantly associated with lower perceived stress ($p = 0.004$), lower emotional exhaustion ($p = 0.002$), and higher job satisfaction ($p = 0.002$). Correlation analysis showed negative associations between occupational health and safety practices and perceived stress ($r = -0.46$) and emotional exhaustion ($r = -0.51$), and a positive association with personal accomplishment ($r = 0.33$).

Conclusion: Strong occupational health and safety practices were associated with better well-being, lower stress, reduced burnout, and higher job satisfaction among healthcare workers. Strengthening safety systems across all public healthcare facility levels is essential.

Keywords: Occupational health and safety; healthcare workers; stress; burnout; job satisfaction; Sindh.

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Introduction

The healthcare sector is one of the most vital and demanding work environments globally, playing a central role in protecting population health and ensuring the survival and well-being of communities.¹ Healthcare workers, including doctors, nurses, midwives, public health specialists, laboratory personnel, technicians, and community health workers, are among the most valuable resources of any health system.² Their knowledge, skills, motivation, and well-being directly influence the quality, safety, and continuity of patient care. Therefore, protecting healthcare workers through safe and healthy workplace conditions is not only an occupational health priority but also a core requirement for effective healthcare delivery.

Healthcare workers are routinely exposed to multiple occupational hazards in hospitals, clinics, emergency units, laboratories, and community health settings. According to the International Standard Classification of Occupations, individuals working in healthcare and health support roles face a wide range of occupational risks during routine service provision.^{1,3} These include biological hazards such as exposure to infectious diseases, physical hazards such as long working hours and heavy lifting, chemical hazards from disinfectants and drugs, ergonomic hazards from repetitive or awkward postures, and psychosocial hazards such as stress, emotional fatigue, bullying, harassment, and workplace violence. These risks can negatively affect workers' physical health, psychological well-being, job satisfaction, and overall performance.⁴

Occupational health and safety services are designed to identify, prevent, and control workplace hazards and to create safer environments for healthcare workers and patients. In healthcare facilities, potential risks may arise from infection transmission, unsafe handling of hazardous substances, inadequate protective equipment, fire risks, poor infrastructure, disaster-related damage, and high-pressure working conditions.^{4,5} Without effective safety systems, such hazards may lead to injuries, illness, psychological distress, absenteeism, burnout, and reduced quality of care. Therefore, occupational health and safety practices are essential for maintaining both worker protection and patient safety.

Psychological stress among healthcare workers is a major concern, particularly in demanding healthcare environments. Long working hours, insufficient rest, emotional exposure to patient suffering, and high workload can contribute to chronic fatigue, reduced concentration, and increased risk of errors. Over time, these pressures may lead to burnout, characterized by emotional exhaustion, reduced motivation, detachment from work, and difficulty meeting job demands.⁶ Burnout among healthcare workers has serious consequences for health systems, including reduced productivity, absenteeism, high turnover, and compromised service quality. In severe cases, prolonged occupational stress may contribute to depression, maladaptive coping behaviours, and suicidal ideation among healthcare professionals.^{6,7}

Because healthcare workers' emotional and psychological well-being directly affects the quality of care they provide, identifying sources of stress and developing effective management strategies are essential. Occupational health and safety initiatives may include workplace redesign, training and retraining programmes, regular health screening, functional capacity assessment, provision of protective equipment, and systems for reporting and responding to hazards. These strategies can reduce workplace risks, improve employee satisfaction, and strengthen healthcare workforce resilience.⁸

In Pakistan, as in many developing countries, implementation of comprehensive occupational health and safety practices remains challenging. Limited financial resources, inadequate infrastructure, weak enforcement, and low awareness of occupational safety protocols continue to restrict progress. International Labour Organization assessments have identified inadequate occupational health and safety practices as contributors to decent work deficits, affecting safety, productivity, and worker protection in both formal and informal sectors.^{9,10,11} In Sindh, healthcare workers also face challenges related to workload, deadlines, poor planning, limited career prospects, delayed promotions, and weak workplace

support systems.^{12,13} Compared with public sector facilities, private healthcare institutions may offer better salaries, promotion systems, benefits, communication, and appreciation, which can influence morale, retention, and workplace satisfaction.¹⁴

The rationale for this study was based on the need to examine how occupational health and safety practices influence the well-being of healthcare workers in Sindh. Healthcare workers are central to health system performance, yet their safety and well-being are often neglected, particularly in resource-constrained public facilities. Understanding the relationship between workplace safety practices, stress, burnout, and job satisfaction can provide evidence for improving staff health and strengthening service quality.

This study aimed to evaluate the impact of occupational health and safety practices on the health and well-being of healthcare workers across different levels of public healthcare facilities in Hyderabad, Sindh. Specifically, it sought to identify existing occupational health and safety practices, assess health outcomes and well-being of healthcare workers, identify common occupational hazards, and determine the relationship between safety practices, stress, job satisfaction, and burnout.

Methods

This descriptive cross-sectional study was conducted by the Institute of Health Management and Research Sciences, Liaquat University of Medical and Health Sciences, Jamshoro. Respondents were selected from primary, secondary, and tertiary public healthcare facilities in District Hyderabad, Sindh. The study population consisted of healthcare workers deployed in selected healthcare facilities, including doctors, nurses, paramedics, and other healthcare staff directly involved in patient care. The study was conducted over six months, from 9 May to 8 November 2025, after approval of the synopsis.

The sample size was calculated using a 95% confidence interval, a 10% margin of error, and a reported 71.0% prevalence of non-availability of occupational safety measures, resulting in a final sample size of 79 healthcare workers. Health facilities were selected through simple random sampling. A total of two Basic Health Units, two Rural Health Centers, and one tertiary healthcare facility were included. To ensure proportional representation from each level of healthcare facility, stratified random sampling was applied. Accordingly, 16 employees were selected from Basic Health Units, 16 from Rural Health Centers, and 47 from the tertiary care facility.

Healthcare workers of any age and gender were included if they were employed in the selected facilities, directly involved in patient care, had at least six months of experience in their current role, were present at the time of interview, and were willing to

participate. Workers not directly related to patient care or healthcare operations, including janitorial and security staff, contractual employees, interns, healthcare workers diagnosed with mental health issues or severe chronic illness, and individuals unwilling to participate were excluded.

Data were collected after obtaining ethical approval and informed consent from participants. A semi-structured written questionnaire was used to collect socio-demographic information. Occupational health and safety practices were assessed using an Occupational Health and Safety Questionnaire, while burnout was measured using the Maslach Burnout Inventory–Human Services Survey. Perceived stress was assessed using the Perceived Stress Scale developed by Sheldon Cohen, consisting of 10 Likert-scale questions scored from 0 to 4, where 0 indicated “never” and 4 indicated “very often.”

Data were analyzed using SPSS version 28. Descriptive statistics were used to summarize quantitative variables as means and standard deviations and qualitative variables as frequencies and percentages. Chi-square tests and Pearson’s correlation were applied to determine the relationship between occupational health and safety practices and stress levels, job satisfaction, and burnout. A p-value of less than 0.05 was considered statistically significant. Ethical approval was obtained from the Research Ethics Committee of Liaquat University of Medical and Health Sciences. Confidentiality and anonymity of participants were maintained, and records were used strictly for research purposes.

Results

A total of 79 healthcare workers from primary, secondary, and tertiary public healthcare facilities in Hyderabad, Sindh, participated in the study. The majority of respondents were aged 26–35 years (43.0%), followed by those aged ≤25 years (22.8%) and 36–45 years (21.5%). Female participants constituted 59.5% of the sample, while males represented 40.5%. Most respondents were married (63.3%), and the largest ethnic group was Sindhi (51.9%). Nurses formed the largest professional group (35.4%), followed by medical doctors (27.8%) and paramedical staff (26.6%). Most respondents were employed in tertiary healthcare facilities (59.5%), while primary and secondary facilities each contributed 20.3%. Nearly half of the participants had worked at their current facility for 1–5 years (48.1%).

Table 1. Socio-demographic and occupational characteristics of respondents (n = 79)

Variable	Category	Frequency	Percentage
Age group	≤25 years	18	22.8

	26–35 years	34	43.0
	36–45 years	17	21.5
	>45 years	10	12.7
Gender	Male	32	40.5
	Female	47	59.5
Marital status	Single	29	36.7
	Married	50	63.3
Ethnicity	Sindhi	41	51.9
	Urdu	18	22.8
	Punjabi	13	16.5
	Other	7	8.9
Designation	Medical doctor	22	27.8
	Nurse	28	35.4
	Paramedical staff	21	26.6
	Others	8	10.1
Facility type	Primary	16	20.3
	Secondary	16	20.3
	Tertiary	47	59.5
Duration of employment	<1 year	14	17.7
	1–5 years	38	48.1
	>5 years	27	34.2

Workplace hazard exposure was common among healthcare workers. The most frequently reported occupational hazard was working with hazardous substances such as chemicals and gases (65.8%), followed by awkward or bent postures (57.0%) and exposure to high noise levels (39.2%). More than one-third of participants reported performing unfamiliar tasks or methods (35.4%), while 32.9% experienced bullying or harassment at work. Regarding occupational health and safety policies, 64.6% agreed that health and safety were considered as important as production and quality, and 58.2% reported receiving necessary health and safety training. However, only 41.8% reported the presence of an active and effective health and safety committee or representative, and 46.8% agreed that incidents and accidents were investigated quickly to improve safety. Awareness of safety practices was generally higher than formal system implementation, with 73.4% knowing necessary precautions and 69.6% knowing how to perform their job safely.

Table 2. Workplace hazards, OHS policy perception, and OHS awareness among respondents (n = 79)

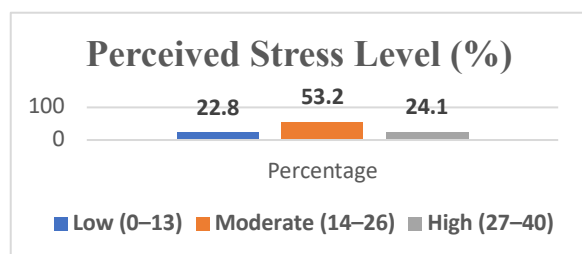
Domain	Indicator	Frequency	Percentage
Workplace hazards	Working with hazardous substances	52	65.8
	Working in awkward/bent postures	45	57.0
	Exposure to high noise levels	31	39.2
	Working at heights ≥ 2 meters	14	17.7
	Performing unfamiliar tasks/methods	28	35.4
	Bullying or harassment at work	26	32.9
OHS policy perception: agree/strongly agree	Necessary health and safety training received	46	58.2
	Regular communication about safety issues	42	53.2
	Systems identify, prevent, and deal with hazards	39	49.4
	Health and safety prioritized	51	64.6
	Active safety committee/representative present	33	41.8
	Incidents investigated quickly	37	46.8
	Safety procedures communicated clearly	44	55.7
	Clear about employer rights/responsibilities	48	60.8
OHS awareness: agree/strongly agree	Know how to perform job safely	55	69.6

	Know whom to report hazards to	50	63.3
	Knowledge to assist with safety concerns	43	54.4
	Know necessary precautions while working	58	73.4

The findings showed a notable burden of stress and burnout among healthcare workers. Job satisfaction was reported by 45.6% of respondents, while 25.3% were neutral and 29.1% were dissatisfied. Perceived stress levels showed that 53.2% of respondents had moderate stress and 24.1% had high stress, while only 22.8% had low stress. Burnout assessment showed that 73.4% had moderate to high emotional exhaustion, including 31.6% with high emotional exhaustion. Depersonalization was high among 21.5% of respondents, while 25.3% had low personal accomplishment, indicating a substantial burden of burnout symptoms.

Table 3. Job satisfaction, perceived stress, and burnout levels among healthcare workers (n = 79)

Variable	Category	Frequency	Percentage
Work satisfaction	Satisfied	36	45.6
	Neutral	20	25.3
	Dissatisfied	23	29.1
Perceived stress level	Low	18	22.8
	Moderate	42	53.2
	High	19	24.1
Emotional exhaustion	Low	21	26.6
	Moderate	33	41.8
	High	25	31.6
Depersonalization	Low	34	43.0
	Moderate	28	35.4
	High	17	21.5
Personal accomplishment	High/low burnout	29	36.7
	Moderate	30	38.0
	Low/high burnout	20	25.3



Association analysis showed that tertiary facilities had the highest proportion of good OHS practices (68.1%) compared with primary (43.8%) and secondary facilities (50.0%), although this association was not statistically significant ($p = 0.094$). OHS practices were significantly associated with perceived stress, emotional exhaustion, and job satisfaction. Among respondents with poor OHS practices, 40.6% reported high stress compared with 12.8% among those with good OHS practices ($p = 0.004$). Similarly, high emotional exhaustion was more common among respondents with poor OHS practices (50.0%) than those with good practices (19.1%), and the association was statistically significant ($p = 0.002$). Job satisfaction was also significantly associated with OHS practices; 59.6% of respondents with good OHS practices were satisfied, compared with 25.0% among those with poor OHS practices ($p = 0.002$).

Table 4. Association between OHS practices, facility type, stress, burnout, and job satisfaction (n = 79)

Association	Categories	Good OHS n (%)	Poor OHS n (%)	p-value
Facility type and OHS practices	Primary	7 (43.8)	9 (56.2)	0.094
	Secondary	8 (50.0)	8 (50.0)	
	Tertiary	32 (68.1)	15 (31.9)	
OHS practices and perceived stress	Good OHS: low/moderate/high stress	15 (31.9) / 26 (55.3) / 6 (12.8)	—	0.004

	Poor OHS: low/moderate/high stress	—	3 (9.4) / 16 (50.0) / 13 (40.6)	
OHS practices and emotional exhaustion	Good OHS: low/moderate/high burnout	17 (36.2) / 21 (44.7) / 9 (19.1)	—	0.002
	Poor OHS: low/moderate/high burnout	—	4 (12.5) / 12 (37.5) / 16 (50.0)	
OHS practices and job satisfaction	Good OHS: satisfied/neutral/dissatisfied	28 (59.6) / 11 (23.4) / 8 (17.0)	—	0.002
	Poor OHS: satisfied/neutral/dissatisfied	—	8 (25.0) / 9 (28.1) / 15 (46.9)	

Correlation analysis further supported these associations. OHS practices were negatively correlated with perceived stress ($r = -0.46$) and emotional exhaustion ($r = -0.51$), indicating that better

safety practices were associated with lower stress and lower burnout. OHS practices were also negatively correlated with depersonalization ($r = -0.38$) and positively correlated with personal accomplishment ($r = 0.33$). Perceived stress was positively correlated with emotional exhaustion ($r = 0.59$) and depersonalization ($r = 0.42$), showing that higher stress was linked with greater burnout symptoms.

Largely, the findings demonstrated that healthcare workers in public healthcare facilities in Hyderabad were exposed to multiple occupational hazards and experienced considerable stress and burnout. Stronger occupational health and safety practices were significantly associated with lower stress, lower emotional exhaustion, and higher job satisfaction, highlighting the importance of workplace safety systems for healthcare worker well-being.

Discussion

This study assessed occupational health and safety practices and their impact on healthcare workers' well-being across public healthcare facilities in Hyderabad, Sindh. The findings showed that healthcare workers were exposed to multiple occupational hazards, with hazardous substances being the most frequently reported exposure (65.8%), followed by awkward or bent postures (57.0%) and high noise levels (39.2%). A considerable proportion also reported performing unfamiliar tasks or methods (35.4%) and experiencing bullying or harassment at work (32.9%). These findings indicate that occupational risk among healthcare workers was multidimensional, involving chemical, ergonomic, environmental, and psychosocial hazards. This pattern aligns with existing literature showing that healthcare settings expose workers to biological, chemical, physical, ergonomic, and psychological risks, especially where structured safety systems are weak or inconsistently implemented.^{15, 16}

The study also found variation in occupational health and safety implementation across facility levels. Tertiary healthcare facilities reported better OHS practices (68.1%) compared with primary (43.8%) and secondary facilities (50.0%). Although the association between facility type and OHS practices was not statistically significant ($\chi^2 = 4.72$, $p = 0.094$), the trend suggests that higher-level facilities may have better safety infrastructure, training systems, and administrative capacity than primary and secondary facilities. This finding is consistent with literature from low-resource healthcare settings, where smaller and lower-level facilities often face greater shortages of protective equipment, safety committees, reporting systems, and structured training opportunities.^{17, 18}

Occupational health and safety awareness among respondents was relatively better than formal safety system implementation. Most healthcare workers

reported knowing necessary precautions while performing their duties (73.4%) and knowing how to perform their job safely (69.6%). However, lower proportions reported the presence of an active safety committee or representative (41.8%) and timely investigation of incidents or accidents (46.8%). This gap suggests that individual awareness may exist, but institutional mechanisms for safety governance, hazard reporting, and follow-up remain insufficient. Existing literature supports this concern, emphasizing that awareness alone is not enough unless supported by functional safety systems, regular training, participatory reporting mechanisms, and management accountability.¹⁹

A major finding of this study was the substantial burden of stress among healthcare workers. More than half of respondents reported moderate stress (53.2%), while 24.1% had high stress. This indicates that nearly three-quarters of the workforce experienced at least moderate psychological strain. The findings are consistent with international evidence showing that healthcare workers frequently experience stress due to high workload, occupational hazards, emotional demands, staff shortages, and limited organizational support.²⁰ In this study, stress was not simply an individual-level issue; it was clearly linked with workplace safety conditions.

The association between OHS practices and perceived stress was statistically significant ($\chi^2 = 11.24$, $p = 0.004$). Among workers exposed to good OHS practices, only 12.8% reported high stress, compared with 40.6% among those with poor OHS practices. Conversely, low stress was more common among workers with good OHS practices (31.9%) than those with poor OHS practices (9.4%). This finding shows that safer workplace environments may reduce uncertainty, perceived risk, and psychological strain among healthcare workers. The result aligns with literature describing strong organizational safety systems as protective factors against workplace stress, particularly in high-demand healthcare settings.²¹

Burnout was also an important outcome. Emotional exhaustion was moderate among 41.8% and high among 31.6% of respondents, while depersonalization was high among 21.5%. Low personal accomplishment, indicating higher burnout, was reported by 25.3% of healthcare workers. OHS practices were significantly associated with emotional exhaustion ($\chi^2 = 12.03$, $p = 0.002$). High emotional exhaustion was reported by 50.0% of respondents with poor OHS practices compared with only 19.1% among those with good OHS practices. This demonstrates that weak safety systems may contribute to emotional fatigue, reduced resilience, and burnout. These findings align with existing literature identifying workplace safety, staffing adequacy, workload control,

and institutional support as major determinants of burnout among healthcare workers.²²

Job satisfaction was also significantly associated with OHS practices ($\chi^2 = 12.81$, $p = 0.002$). Among respondents with good OHS practices, 59.6% were satisfied with their jobs, compared with only 25.0% among those exposed to poor OHS practices. Dissatisfaction was much higher in poor OHS settings (46.9%) than in good OHS settings (17.0%). This indicates that healthcare workers who perceive their workplace as safer are more likely to feel valued, protected, and motivated. Existing evidence similarly shows that safe work environments improve morale, organizational commitment, retention, and overall job satisfaction.²³

Correlation analysis further confirmed the relationship between workplace safety and well-being. OHS practices were negatively correlated with perceived stress ($r = -0.46$) and emotional exhaustion ($r = -0.51$), meaning that better OHS practices were associated with lower stress and lower burnout. OHS practices were also positively correlated with personal accomplishment ($r = 0.33$), suggesting that safer work environments may enhance workers' confidence, motivation, and sense of professional effectiveness. In contrast, perceived stress was positively correlated with emotional exhaustion ($r = 0.59$) and depersonalization ($r = 0.42$), showing that stress and burnout were closely linked. These findings support the conceptual understanding that occupational safety systems influence healthcare worker well-being through both physical protection and psychological reassurance.²⁴

These findings have important implications for public healthcare facilities in Sindh. Strengthening occupational health and safety systems should be treated as a core workforce and service-quality intervention. Priority actions should include regular safety training, improved hazard reporting, active safety committees, timely investigation of incidents, adequate protective equipment, ergonomic support, stress management services, and facility-level monitoring of burnout and job satisfaction. Primary and secondary facilities require particular attention because OHS implementation appeared weaker than in tertiary care settings.

This study had some limitations. Its cross-sectional design limited causal interpretation between OHS practices and well-being outcomes. The sample size was relatively small and limited to selected public healthcare facilities in Hyderabad, which may restrict generalizability to other districts or private facilities. The study also relied on self-reported responses, which may introduce recall or social desirability bias.

Conclusion

This study found that healthcare workers were exposed to multiple occupational hazards, particularly hazardous substances, awkward working postures, noise, unfamiliar tasks, and workplace harassment. Strong occupational health and safety practices were significantly associated with lower stress, reduced emotional exhaustion, and higher job satisfaction. Strengthening safety training, hazard reporting, active safety committees, incident investigation, protective resources, and worker-support systems is essential to protect healthcare workers' well-being and improve healthcare service quality.

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Conflict of Interest

The authors declare that there is no conflict of interest.

Ethical Approval

Ethical approval for this study was obtained from the Research Ethics Committee of Liaquat University of Medical and Health Sciences (LUMHS), Jamshoro.

Informed Consent

Written informed consent was obtained from all study participants before data collection.

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