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Safe Work, Sustainable Future: Bridging Research and Practice in OSH

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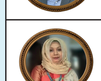
SPEAKER & PAPER TITLE	ABSTRACT			
	BACKGROUND	METHODS	RESULTS	CONCLUSION
N.H.M. Kamrujjaman Serker, PhD Professor Department of Civil Engineering Rajshahi University of Engineering & Technology (RUET) **Workplace Safety Assessment in Building Construction: A Case Study in Rajshahi City**	The construction sector of Bangladesh is one of the least safe sectors, with building construction responsible for the majority of workplace accidents and fatalities. According to the current reports, number of accidents at the construction sites is increasing day by day. These accidents not only cause serious injuries but also take several lives. Among different types of construction, building construction causes the most injuries and death.	This study focuses on the safety issues in building construction sites in Rajshahi City, an emerging urban area. Even though Rajshahi is an emerging urban area, it hasn't gone through proper construction safety assessments. Building construction was chosen because it causes many preventable injuries and deaths, and it is important for city growth and the economy. 31 construction sites were selected for assessment, however, complete data from some construction sites could not be gathered due to access issues. Data were collected through field surveys of the construction sites, structured interviews with workers as well as from expert opinions.	The findings reveal that only 8% of sites are considered safe, while the majority are classified as unsafe or very unsafe. Major hazards include falls from height, electrocution, and being struck by falling objects. Most accidents are attributed to a lack of safety awareness, poor use of personal protective equipment (PPE), insufficient supervision, and inadequate safety training. Alarmingly, most workers are unaware of national building codes and labor laws, and PPE usage is extremely low.	The study highlights the urgent need for regular safety training, strict enforcement of regulations, proper PPE provision and usage, and continuous on-site supervision to improve safety and reduce the number of accidents in Bangladesh's building construction sector.
Lim Yin Cheng, DrPH Medical Lecturer and Occupational and Public Health Physician Department of Social and Preventive Medicine Faculty of Medicine, University of Malaya, Malaysia **Development of Respirator Fit Test Panel Representing the Population of Malaysia**	Effective respiratory protection depends critically on the proper fit of respirators to users' facial features. Existing fit test panels, such as those developed in the United States, China, and Taiwan, do not accurately represent the craniofacial dimensions of the Malaysian population, thus potentially compromising the protective efficacy of respirators used locally. This study aimed to (1) evaluate the reliability and accuracy of 2D photogrammetry compared to direct anthropometric measurement; (2) develop a national database of head and facial morphological dimensions; and (3) construct population-specific facial panels for Malaysia using both bivariate and principal component analysis (PCA) approaches.	A cross-sectional survey was conducted using multistage random sampling based on the National Census 2020, encompassing 3,324 participants across Malaysia. Measurements included ten key craniofacial dimensions. Findings showed that 2D photogrammetry had poor reliability for certain parameters, notably bigonial, bizygomatic, and head breadths, indicating limitations for clinical or occupational applications.	The study revealed significant craniofacial variation by sex, ethnicity, and birthplace. Compared to U.S. and Chinese populations, Malaysians exhibited notably wider interpupillary and nasal breadths but smaller bigonial and frontal widths. The resulting Malaysian bivariate and PCA facial panels demonstrated superior coverage—95.0% and 95.6%, respectively—compared to foreign panels.	This is the first nationally representative study on Malaysian facial anthropometry and has important implications for local respirator manufacturing, occupational safety, and public health preparedness, particularly in airborne infectious disease control.
Raju Ahmed Assistant Inspector General, DIFE; (Currently on deputation) PhD student, Department of Occupational and Environmental Health, University of Iowa, Iowa, USA **Potential Use of Personal Ionizers to Reduce Occupational Exposure**	Airborne particulate matter (PM), especially fine and ultrafine particles, continues to pose health risks in many workplace environments. While traditional controls like ventilation and personal protective equipment (PPE) is essential, they may fall short in enclosed or low-airflow settings. This study evaluated four commercially available wearable air ionizers, AirTamer, Twinkle, Air Supply, and Timage, to explore their effectiveness as supplemental tools for reducing particle exposure.	Experiments were conducted in both small and large controlled chambers to simulate real-world conditions. The AirTamer consistently showed the strongest performance, cleaned 99.9% particles in 4 minutes, with a particle decay rate of 2.80% per second and a steady-state suppression rate of about 10%. In contrast, the other devices delivered minimal or no improvement, and some failed to perform anywhere near their manufacturer-stated ion outputs.	Ion emission levels varied widely among the devices, and in several cases, fluctuated more than the average, indicating unstable ion generation. These inconsistencies likely played a role in their poor performance . Even the best-performing ionizer achieved only around a 10% reduction in particle levels, well below the commonly recommended 80% suppression threshold. Overall, the findings suggest that while high-output ionizers like the AirTamer can help lower airborne particle concentrations in controlled environments, wearable ionizers should be seen as limited, short-range tools. They are not a substitute for primary exposure controls like ventilation or filtration systems.	Future research should focus on improving ionizer design, stabilizing performance, and establishing standardized testing methods to help employers and users make informed choice
Afrin Nur B. Pharm student, Department of Pharmacy Southeast University **Prevalence of Work-Related Diseases and Injuries among Informal Workers in Tejgaon**	Prevalence of Work-Related Diseases and Injuries among Informal Workers in Tejgaon: A Situation Assessment Background: In Dhaka, informal workers face unsafe working conditions while living in poor conditions. They have limited access to healthcare provisions and labor protections. Current programs, legal measures and policies leave large gaps in occupational safety and health among this working population that urgently need to be addressed. This study focuses on identifying the prevalence of work-related diseases and injuries among Tejgaon Industrial Area's working population to explore gaps in the current policy so that recommendations can be made to improve workplace health, safety and the rights of these vulnerable workers.	To get occupationally diverse worker samples, this study adapted a stratified sampling technique. Key areas in Tejgaon where informal workers reside and work were identified, and then data were collected through interviews from different occupation groups, who live in these slums-Kunipara, Sattola, and Korail and some on footpaths (floating) near the Tejgaon Industrial Area. In-person interviews were held at both their homes and workplaces as convenient to obtain information on their demographics, employment types, and daily health and safety challenges. The questionnaire included both closed-ended and open-ended questions. The survey included questions about demographics, living conditions, Use of PPE, Prevalence of injury and disease, prevalence of mental health problem, how their work can be improved and so on.	Among the 200 participants, 17.9% were rickshaw pullers, and 16.8% were garment workers. Another 12.2% worked in hotels or tea shops, 9% in automobile shops and 6.1% were sanitation workers, respectively. Others included drivers, day laborers, domestic workers, and street vendors. Among informal workers, 83% faced prolonged hours of sitting or standing, 70% suffered from heat stress, 66.5% experienced cuts, 62.5% faced muscle strain, 49.5% worked in unhealthy environments. In terms of diseases, 79.5% reported fatigue, 47% reported headache, 42.5% reported dysuria, 41.5% reported dizziness, and 41% suffered from allergy. Among 200 participants, 141 were male and 59 were female. Among male workers 79.43% reported problems from prolonged sitting or standing, 75.18% faced heat exposure, and 63.12% experienced injuries. In female workers 74.58% reported cuts, 52.54% muscle strain, 28.82% reported burns.	This study provided a situation analysis of the health conditions, prevailing occupational hazards by occupations in a major urban industrial area's informal working population of Bangladesh.
Hayatun Nabi, PhD Assistant Professor, Department of Public Health, North South University **Low back pain among professional bus drivers: a cross-sectional study from Bangladesh**	Low back pain (LBP) is a common condition contributing to impaired quality of life among professional vehicle drivers. Our study aimed to assess LBP prevalence and associated factors among professional bus drivers in Bangladesh.	A cross-sectional study was conducted among 368 professional bus drivers using a semi-structured questionnaire. A Nordic Musculoskeletal Questionnaire (NMQ) subscale was used to measure LBP. Multivariable logistic regression analysis was used to identify the factors associated with LBP.	In the last month, 127 (34.51%) participants reported experiencing pain or discomfort in the lower backside. Multivariable logistic regression analysis showed that age of more than 40 years (adjusted odds ratio (aOR): 2.07, 95% confidence interval (CI): 1.14 to 3.75), the income of more than 15,000 BDT per month (aOR: 1.91, 95% CI: 1.11 to 3.26), work duration more than ten years (aOR: 2.53, 95% CI: 1.12 to 5.70), working more than 15 days per month (aOR: 1.93, 95% CI: 1.02 to 3.65), working more than 10 h per day (aOR: 2.46, 95% CI: 1.05 to 5.75), poor condition of the driving seat (aOR: 1.80, 95% CI: 1.08 to 3.02), current smoking habit (aOR: 9.71, 95% CI: 1.25 to 75.15), illicit substances use (aOR: 1.97, 95% CI: 1.11 to 3.48), and four hours or less sleeping time per day (aOR: 1.83, 95% CI: 1.09 to 3.06) were positively associated with LBP.	The high burden of LBP among the participants calls for a focus on this vulnerable group's occupational health and safety, with particular emphasis on implementing standard measures.
Mohammad Delwer Hossain Hawlader, PhD Associate Professor, Director, NSU Global Health Institute, North South University **Occupational factors associated with low back pain among Bangladeshi online professionals**	Low back pain (LBP) is a common chronic condition among many occupations, including sedentary workers, that causes long-term productivity loss. Our study aimed to identify the relationships between occupational factors and LBP among Bangladeshi online professionals.	This was a cross-sectional study that included 468 full-time online professionals who used to work in a sitting position. The musculoskeletal subscale of subjective health complaints was used to measure one-month LBP complaints. A chi-square test measured associations between categorical predictors and LBP, and multivariable logistic regression analysis was conducted to confirm the variables significantly associated with LBP.	LBP within the last month was reported by 65.6% of participants. Multivariable logistic regression analysis indicated that age >30 years [aOR, 95% confidence interval = 0.40 (0.23 - 0.70)] and being married [aOR, 95% CI = 0.59 (0.36 - 0.97)] had significant negative associations with LBP. Significant positive associations were found for spending >50 hours per week on average working in a sitting position [aOR, 95% CI = 1.61 (1.05 - 2.49)], being overweight and obese [aOR, 95% CI = 1.87 (1.16 - 2.99)], sleeping on a soft mattress (aOR, 2.01; 95% CI, 1.06 to 3.80), and history of smoking (aOR, 3.33; 95% CI, 1.41 to 7.87).	LBP among full-time online professionals was found to be very high. Long working hours in a sitting position, history of smoking, higher body mass index, and sleeping position should also be considered while considering solutions for LBP prevalence among online professionals.
Abdul Kaium Deputy Inspector General (Admin) NOSHTRI, DIFE **Safety climate and stakeholders' engagement: An exploratory analysis from the apparel industry**	This research aimed to evaluate the safety climate in Bangladesh's ready-made garment (RMG) sector and identify the main stakeholders and their roles in enhancing the safety climate within the industry.	Primary data was collected through a questionnair e survey. Factor analysis and ordinary least squares (OLS) regression were used to analyze the data. The factor analysis revealed that the safety climate in the RMG sector is dependent on three key factors: employee involvement and safety management, the safety priorities of management, including competency and fairness, and worker trust and safety communication.	The OLS analysis indicated that respondents' education levels negatively influenced perceptions of the overall safety climate. Surprisingly, managers perceived the safety climate more negatively than workers, suggesting that management tends to overlook or deprioritize the importance of safety issues within the organization. The stakeholder analysis highlighted the employer and worker groups are the primary stakeholder s who must demonstrate greater commitment to workplace safety. The study also identified a significant lack of understanding and dedication to ensuring worker safety, which poses a critical challenge for improving the safety environment in Bangladesh's RMG sector.	This study found that a positive safety climate is present in the three chosen export-oriented apparel factories. Future research could concentrate on a larger sample that reflects the entire apparel industry. Stakeholder analysis indicates that enhancing DIFE's institutional authority and operational capacity is essential for fostering a positive and sustainable safety climate.
Md Matiur Rahaman Joint Inspector General Department of Inspection for Factories and Establishments **Occupational Hazards in Lead-acid Battery Factories in Bangladesh: Assessing Excess Heat, Noise, Chemical Exposures, and Health Impacts on Workers**	Lead-acid battery (LAB) manufacturing is growing in Bangladesh because of the expanding automotive industry and low lead prices. Although these factories employ a big workforce, the working environment has led to concerns about the possible health risks for employees. This study aimed to address this issue by investigating workplace chemical and physical hazards in three LAB industries and evaluating health outcomes among workers.	A cross-sectional study was conducted among 72 LAB factory workers, and participants were recruited by simple random sampling. A validated questionnaire was used to collect information on self reported exposures to physical and chemical risks and related health effects. Data analysis was performed by using statistical software SPSS version 25.	The age and work experience (Mean _ SD) of the participants were 34.2 _ 7.7 and 10.0 _ 5.7 years, respectively. High workplace temperature and noise from machinery, chemical odors, and skin exposure to acid (H2SO4) were reported by 52.8%, 51.4%, and 20.8% of workers, respectively. Insomnia (25.0%), abdominal pain (18.1%), joint pain (38.9%), memory loss (19.4%), headache (15.3%), low back pain (47.2%), eyesight problem (19.4%), physical weakness (47.2%), and hypertension (19.4%) were all common symptoms among the workers.	Our study findings indicate that workers in LAB factories in Bangladesh are exposed to extreme temperatures, hazardous materials, and uncomfortable levels of noise, which can lead to serious health risks. To ensure the safety and well-being of employees, the LAB manufacturing sector in Bangladesh requires the immediate implementation of proper occupational health and safety standards.
Hasnat M Alamgir, PhD Professor and Director, Institute of Research and Training, Southeast University **Worker empowerment in Bangladesh: The European and North American initiatives for the garment industry.**	After a series of garment factory disasters that had taken place in Bangladesh, the Alliance for Bangladesh Worker Safety (Alliance) was formed by 29 large North American retail companies to improve worker safety in Bangladesh and the large retailers mostly from Europe formed the Accord on Fire and Building Safety in Bangladesh (Accord) in 2013 to advance occupational health and safety in the Bangladesh garment industry and one of their mission was to empower the workers. This report focuses on Alliance's Worker Empowerment initiative—Worker Helpline and examines the types, contents and volume of calls received by it and to investigate the impact of Accord's programs on improving safety and quality of the working environment in the garment sector.	All published reports of Alliance that are available online were retrieved. Data from each quarter (Q) in 2017, 2019, and 2019 were extracted in terms of (1) Total calls (2) Substantive calls, and (3) Safety calls (Urgent and Non-urgent). All reports of Accord published and made available for the public were accessed and analyzed. Data were gathered and presented on 1) number of Safety Committees formed 2) Safety Training Programs conducted and 3) Safety and Health Complaints received.	By 2019, Q3 Helpline covered 1.5 million workers in 1091 factories. In Q1 2017, there was 1 call made per 73 workers and 20 calls made per a factory whereas in Q3 2019 there was 1 call per 171 workers and 8 calls coming from a factory. In terms of safety calls, there was 0.59 calls/factory in Q1 2017 but went down to 0.17 calls/factory in Q3 2019. Helpline in 2019 Q3 received 1283 substantive calls; of that 189 were safety calls which included 18 urgent and 171 non-urgent calls. In Q1 of 2017, 32% factories did not make any calls and in Q3 2019, 62% of factories did not make any calls at all. By 2021, a total of 1581 factories and 1.8 million workers were covered by Accord. By May, 2021, Accord formed Safety Committees and completed training sessions on these in 1022 factories (65% of the target). By 2020, the average number of total complaints received per factory was around two and the number of occupational health and safety (OSH) complaints -which was deemed to be dealt directly by Accord- was less than one per factory. The numbers of OSH complaints were less than two per 1000 workers and non-OSH complaints made up almost one third (25-35%) of all complaints during 2016 to 2019; however, in 2020 and 2021, non-OSH complaints constituted half (50%) of all complaints.	The worker empowerment initiative- Helpline-in Bangladesh initiated by the North American companies remained underutilized. Accord's worker empowerment mission could not form Safety Committees or deliver training sessions in all its factories and the number and relevance of complaints received appeared to be low given the number of factories and workers it covered.
Ahmed Hossain, PhD Professor, University of Sharjah, United Arab Emirates **Telephone Telemedicine for Improving Hypertension Follow-up in Working-Age Adults: Implications for Occupational Health Programs**	Hypertension remains a critical occupational health concern, with poor follow-up adherence contributing to uncontrolled blood pressure, increased cardiovascular risk, and workplace productivity losses. This study evaluates whether telephone telemedicine—an accessible, low-cost intervention—can improve follow-up rates among non-adherent hypertensive patients, with implications for workplace health initiatives.	We conducted a cross-sectional study of 887 working-age hypertensive patients (mean age 47.7 ±11.2 years; 52.8% male) who missed scheduled follow-up appointments at a hypertension specialty center in 2023. After exclusions, 678 participants were surveyed via phone regarding their reasons for non-attendance and willingness to engage in telemedicine follow-ups.	Key findings revealed that while 47.9% (n=325) of patients expressed treatment satisfaction and intent to attend future visits, 23.1% (n=157) discontinued follow-up due to feeling asymptomatic, and 28.9% (n=196) sought alternative care. Multivariable analysis identified significant disparities: female workers had 58% lower follow-up likelihood than males (RRR=0.42, 95% CI=0.21-0.83), and employees aged ≥60 years showed 52% lower adherence than younger counterparts (RRR=0.48, 95% CI=0.25-0.92). Notably, employed individuals demonstrated better engagement, suggesting workplace health programs could leverage this trend.	These findings demonstrate telephone telemedicine's potential to improve hypertension management in occupational settings, particularly for high-risk groups (women, older workers) and urban employees facing access barriers. The results advocate for employer-sponsored telemedicine interventions to sustain workforce cardiovascular health and productivity. Further research should evaluate telemedicine's cost-effectiveness in workplace health programs.
 **Bilkis Banu,** PhD Associate Professor, Department of Public Health Independent University, Bangladesh **Exploring Occupational Behaviors and Influencing Factors Among Sanitation Workers in Bangladesh: A Cross-Sectional Study Using a Mixed-Methods Approach**	Sanitation workers in Dhaka face significant hazards and are under-researched. This study aimed to describe their occupational safety practices and identify key factors influencing these behaviors.	A cross-sectional mixed-methods study involved 300 sanitation workers and 10 administrators in Dhaka, utilizing surveys and interviews, analyzed with descriptive statistics, logistic regressi on, and thematic analysis.	Only 46% of workers showed good safety practices. Access to PPE, higher job satisfaction, and better hazard knowledge were significantly associated with safer behaviors (p<0.05). Qualitative data revealed PPE was often unused due to discomfort and lack of training, and stigma and low morale undermined safety practices.	Over half of Dhaka's sanitation workers exhibit poor safety practices. Interventions such as ergonomic PPE, interactive training, and stigma reduction are needed to safeguard worker health.

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