
Abstracts of the 2025 Global Health Workforce Barcelona.

13th ICOH Joint Conference on Occupational Health for Health Workers

The Scientific Committee for Abstract Submission of the 13th ICOH Joint Conference on Occupational Health for Health Workers, held in Barcelona as part of the Global Health Workforce Barcelona, was chaired by Dr. Gwen Brachman (University of Medicine and Dentistry of New Jersey, Newark, USA). The review process was conducted by four additional committee members: Dr. William G. Buchta (Division of Preventive, Occupational, and Aerospace Medicine, Mayo Clinic, Rochester, USA), Dr. Claudia De Hoyos (University of Buenos Aires, Argentina), Dr. Albert Nienhaus (University Medical Center Hamburg-Eppendorf, Germany), and Dr. Acran Salmen-Navarro (Bellevue/NYU Occupational and Environmental Medicine Clinic, USA).

All abstract submissions underwent a rigorous, blinded peer-review process. Each reviewer independently assessed the abstracts and assigned a score from 0 to 5, with 0 representing the lowest and 5 the highest rating, accompanied by qualitative comments. Following individual evaluations, the scores were consolidated to obtain an average rating and a synthesis of reviewers' comments. Based on these results, abstracts were recommended for oral presentations (higher scores) or poster presentations (lower scores). Abstracts that did not meet the scientific objectives of the committees or the overarching aims of the conference were not included.

This systematic and transparent selection process ensured that the scientific content presented at the Barcelona conference reflects both academic rigor and practical relevance to the challenges faced by the global health workforce. The conference, organized within the framework of the Global Health Workforce Barcelona, continues the initiative launched in New York to promote international collaboration aimed at improving the working conditions, health, and well-being of healthcare professionals worldwide.

Furthermore, the 2025 edition in Barcelona integrates a gender perspective and builds upon the collaboration among ICOH Scientific Committees, including the Scientific Committee on Occupational Health for Health Workers, Women and Work Committee, the Industrial Hygiene Committee, and the Biological Risk Committee and Women in Global Health. Together, these efforts reaffirm a shared commitment to sustainable health systems, gender equity, and the advancement of leadership in occupational health.

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Healthy Workers, Gender Equity, and New Leaderships**

Factors influencing the course of post-COVID-19 symptoms - cohort study among health and welfare workers in Germany

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Introduction: Healthcare workers have a comparatively high risk of infection with SARS-CoV-2 and therefore also an increased risk of persistent symptoms (post-COVID-19). The presence of post-COVID-19 symptoms can lead to a reduced quality of life and occupational disability. Due to the increased risk of infection and post-COVID-19, as well as the caregiver role in society, healthcare workers have a special role to play. Prevalence estimates of post-COVID-19 in healthcare workers are characterised by cross-sectional studies and small samples. The aim of this study was to investigate the prevalence and course of persistent symptoms after COVID-19 in health and welfare care workers and to determine influencing factors.

Method: The exploratory, mixed retro- and prospective cohort study was conducted among insured persons of the German Social Accident Insurance Institution for the health and welfare services who had reported an occupational SARS-CoV-2 infection in 2020. The baseline survey in February 2021 was followed by three follow-up surveys after 8, 13 and 26 months. Demographic and occupational data, information on the acute illness and persistent symptoms were recorded. Kaplan-Meier curves were created to visualise the course of recovery. Factors influencing the time to recovery were analysed using multivariate Cox regressions.

Results: Of the 4,325 people contacted, 2,053 took part in the baseline survey (response rate: 47%). A total of 1,809 people were included in the longitudinal analysis. The most common persistent symptoms at all three survey points were fatigue, concentration and memory problems and shortness of breath. After three months, the proportion with persistent symptoms (cumulative survival rate) was 76%, after 12 months 69%. Significant risk factors for persistent symptoms were female gender (HR: 0.8; 95% CI: 0.63-0.93), age over 50 years (HR: 0.6; 95% CI: 0.51-0.76), a higher number of previous illnesses and a higher number of severe acute symptoms. Pre-existing cardiovascular, respiratory and hormonal diseases as well as severe symptoms during the acute illness (shortness of breath, cough, fatigue, memory or concentration problems) also reduced the likelihood of recovery. Compared to other professions, working as a doctor had a protective effect (HR: 1.5; 95% CI: 1.12-1.86).

Conclusion: One year after contracting COVID-19, two thirds of the healthcare professionals surveyed reported persistent symptoms. People with pre-existing conditions and severe acute symptoms should be identified as a risk group for post-COVID in the acute phase of the disease and optimally cared for accordingly.

Mental stress among employees in the health and welfare services at the end of the COVID-19 pandemic in Germany

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Introduction: The impact of the COVID-19 pandemic on mental health can have different causes. In addition to the actual illness of SARS-COV-2 or post-COVID-syndrome (PCS), the fear of the disease, of pandemic-related negative professional or social changes, can also influence people's mental health. The aim of the present study is to assess the extent to which the mental stress is not due to PCS, but to the general situation caused by the pandemic.

Method: In April 2023, participants from a cohort of insured persons of the German Social Accident Insurance Institution for the health and welfare services (BGW) who reported an occupational SARS-COV-2 infection in 2020 were surveyed using a paper-pencil questionnaire (N=1075, response rate 50%). At the same time, a randomised sample of insured persons of the BGW without reporting an occupational SARS-COV-2 infection was drawn (n=593, response rate: 20%). The questionnaire collected demographic information as well as information on PCS, fatigue and psychological stress (Patient Health Questionnaire, PHQ-4).

Results: A total of 1668 data records were analysed. Insured persons without notification of a SARS-COV-2 infection were on average younger than insured persons with notification (49.4 vs. 53.8, $p<0.001$) and had a higher proportion of women (89% vs. 82%, $p<0.001$). They also stated more frequently that they had a medically diagnosed pre-existing condition (74% vs. 65%, $p<0.001$), had PCS less frequently (22% vs. 68%, $p<0.001$) and stated more often that they perceived a high level of psychological stress at work than insured persons with notification (64% vs. 48%, $p<0.001$). The multivariate analysis shows that insured persons without notification had a 2.9-fold higher risk (OR: 2.9 95%-CI: 2.22-3.80, $p<0.001$) of fatigue symptoms than their counterparts. In terms of psychological distress (PHQ-4), people without notification also had a 70% higher risk (OR: 1.7 95%-CI: 1.21-2.41, $p=0.002$) than those with notification of an occupational SARS-COV-2 infection.

Conclusion: The results show that mental stress has been present in health and welfare workers due to the effects of the pandemic situation, controlling for long COVID status and other influencing factors. The comparison of the two groups shows that a pandemic situation can have at least as unfavourable, if not more unfavourable, an impact on the human psyche in people with a lower incidence of infection-related illness.

Occupational Health Protection for Healthcare Workers in China: Analysis of 20 Years of National Program Progress from a Timeline Perspective

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Introduction: Healthcare settings have been recognized worldwide as complex environments with multiple occupational hazards for health workers (HW). A national program on occupational health for HWs has been initiated in China since 2003, with close collaboration of WHO/ILO. The analysis focuses on the program progress over a 20-year timeline.

Method: We summarized the milestone activities alongside the program, and reviewed the evidence generated by studies. Furthermore, we used an interpretive approach to share the policy advocacy and the outcomes.

Results: (1) Activities: We led the drafting of the national standard on occupational exposure to bloodborne pathogens among HWs (2003); advocated the national occupational bloodborne pathogens exposure guidelines (2010); applied ILO/WHO HealthWISE (2016); organized ten HealthWISE Training-for-Trainer workshops covering more than 260 hospitals across China (2015-2022); developed national professional networks in two NGOs (2017-2019). (2) Studies: We conducted more than ten qualitative and quantitative studies, resulting in the publication of 44 articles and 5 books, and formulated the Model of Hospital Initiative on Systematic Occupational Health based on pilot experience (2016). (3) Policies: The National Occupational Health Standards Committee issued the Guideline for the Prevention and Control of Occupational Exposure to Bloodborne Pathogens (2009), which was drafted by our team. Our studies provided evidence based information for policy-making. In the early stage of the COVID-19 outbreak, we published an article in BMJ Opinion on February 14, 2020, calling for comprehensive occupational health for HWs. During the fight against COVID-19 in China, we contributed to comprehensive occupational health protection measures for HWs, summarized as the "6P-approach". (4) Legislation: We provided technical support to the national legislation for four laws, including the Law of the People's Republic of China on Basic Medicare and Health Promotion (2019), China Civil Code (2020), the Law of the People's Republic of China on Medical Doctors (2021), and the Law of the People's Republic of China on the Protection of Women's Rights and Interests (2022). (5) International guidelines: Prof Zhang was invited to contribute in the developing of the WHO/ILO Interim guidance-COVID-19: Occupational health and safety for health workers, and WHO/ILO guide-Caring for those who care.

Conclusion: The national program has been sustainably implemented. Comprehensive measures have been taken for HWs alongside the occupational health protection before and after COVID-19. After implementing the comprehensive Occupational Safety and Health Management System, studies demonstrated a significant improvement in workplace risks, for instance, workplace violence (psychological violence, verbal abuse, and bullying/mobbing). However, further actions are necessary to address the challenges and problems, such as fragmentation among various policies and laws from the perspective of a long-term mechanism, underdevelopment of Occupational Safety and Health Management System in the health sector, and the lack of work-life balance among HWs. China is home to more than 11 million HWs, who play critical roles in safeguarding the well-being of the whole population and maintain the resilience of health system. In the post-COVID-19 pandemic era, the national program on occupational health for HWs should be scaled up to ensure that robust occupational health measures for HWs become paramount.

China Criteria for the Diagnosis and Prevention of Occupational Diseases: Progress and Suggestions from Health Sector

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Introduction: The Law of the People Republic of China on the Prevention and Control of Occupational Diseases (the China OD Law) is the core and cornerstone of the entire regulatory system for occupational health. Under the China OD Law, occupational health management largely depends on the OD Categories and List (the China OD List), the technical standard issued by the National Health Commission.

Method: Based on our research experience on occupational health(OH) in China, we analyzed the evidence and data from two main sources: desk research and field research. Moreover, we provide suggestions from the perspective of international standards comparison.

Results: From 2003 to 2018, the Chinese OD Law was amended four times in response to administrative reforms, changes in enforcement practices, and public concerns. The China OD List laid the basis and criteria for OH surveillance, OH standards, OD diagnosis, OD reporting and notification. In 2018, Vice Premier Sun Chunlan convened the expert consultation meeting on OD prevention and control. Prof Min Zhang gave a presentation as one of the six expert representatives, proposing suggestions for improving China's OH legal system in line with international trends for OH legislation. Based on multi-disciplinary studies, we led the drafting of nine national OH standards which were issued by the national health authority. These include the Guideline for Employers for the Prevention and Control of Occupational Diseases (GBZ/T225-2010), and the Guideline for the Prevention and Control of Occupational Exposure to Bloodborne Pathogens (code: GBZ/T213-2008). With the technical support of the Guideline (code: GBZ/T213-2008), occupational- caused AIDS occurred among health workforce and policemen was formally included the China OD List as a new type of OD in 2012.

Conclusion: In 2022, the International Labour Conference decided to include “a safe and healthy working environment” in the ILO’S framework of fundamental principles and rights at work, and to designate the Occupational Safety and Health Convention, 1981 (No. 155) and the Promotional Framework for Occupational Safety and Health Convention, 2006 (No. 187) as fundamental Conventions. As a global milestone, ILO published the Diagnostic and Exposure Criteria for Occupational Diseases - Guidance Notes for Diagnosis and Prevention of the Diseases in the ILO List of Occupational Diseases (revised 2010) in 2020. This publication is the result of the work of more than 40 internationally recognized experts over a span of ten years. As one of the core experts, Prof. Min Zhang engaged into the whole process and contributed to the output. Compared to international political commitments and standards, China is facing OD challenges during the process of modernization. For example, the Convention (No. 187) has not been ratified in China, the China OD List lags behind the needs of social- economic development, and compensation-centered work-related injury insurance undermines employers’ responsibilities. A healthy workforce is fundamental for China to pursue its Healthy China 2030 strategy and the UN SDGs. The China OD Law and the China OD List should be updated accordingly, so that they can play the active role in leading OD prevention and control.

Management strategies of health effects of work-related stress in the healthcare setting: a scoping review

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Introduction: Work-related stress is highly topical in the healthcare setting. Literature data estimates that between 30% and 50% of healthcare workers reported issues related to occupational stress or burnout in the previous three years. Occupational physicians represent one of the key actors in the early identification of health effects related to the phenomenon, as well as their appropriate management to ensure that workers maintain and promote their health and work capacity. A review was conducted to survey the evidence about preventive and management strategies for work-related stress and its health effects among healthcare workers to obtain up-to-date information on the different strategies applied in the healthcare setting.

Method: A scoping review was conducted in accordance with the PRISMA-ScR and JBI guidelines. A search was conducted on PubMed/MEDLINE, Scopus, SciVerse ScienceDirect, and Web of Science. Articles were selected according to Population/Concept/Context (PCC) framework and evaluated by three expert reviewers. In this study were included origi-

nal peer-reviewed articles describing preventive and management strategies for work-related stress health effects in a population of healthcare workers.

Results: The search yielded 196 articles that were included in the final review. Most of the studies were conducted in Europe, Asia, and North America. Overall, about two-thirds of the articles were published in the past four years. Fifty studies investigated the impact of COVID-19 pandemic on the dimensions of study. A total of 65,176 healthcare professionals were included in the review, with the female gender ratio ranging from 15.2 to 100.0% among the studies. The average age ranged from 21.3 to 55.7 years. The most represented professional category was nurses (147; 75.0%). Sixty-eight (34.7%) studies investigated the dimension of work-related stress, 74 (37.8%) the dimension of burnout. Most observational studies were survey-based and mainly investigated the dimension of coping strategies. Interventional studies, on the other hand, investigated the effect of multiple coping pathways and management strategies for work-related stress and burnout, mostly represented by Mindfulness-based Stress Reduction Therapy (25.9%), Yoga (13.8%) and Cognitive- Behavioral Therapy (10.3%). Analysis of the studies demonstrates that literature evidence mainly focuses on specific occupational groups, such as nursing staff. Occupational groups such as paramedical and emergency medical services personnel were found to be less represented.

Conclusion: There is a need for further targeted investigations, particularly among lesser-studied areas and health professional categories, in order to obtain a comprehensive analysis of this evolving phenomenon and to improve the understanding and management of work-related stress in the healthcare settings.

Violence targeting healthcare workers in Nigeria: A call for evidence-informed policy action

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Introduction: Violence against healthcare workers (HCWs) has increased in recent years, exacerbated by the COVID-19 pandemic. Threats to the lives and wellbeing of HCWs significantly impact their job motivation and service provision further worsening the dire global HCW crisis. While the literature focuses on violence against HCWs perpetrated by patients within healthcare facilities in the global north, there is now increasing concern about the systemic targeting of HCWs more widely. Nigeria is the source of the highest numbers of emigrating health workers in Africa and insecurity is a known leading push factor for this HCW emigration. Research Questions: What is the pattern of violence against healthcare workers in Nigeria between 2016 and 2024?

Method: We conducted an exploratory descriptive analysis of data from Insecurity Insight (II), a humanitarian organization that provides publicly available evidence on violence against HCWs. Data were sourced from publicly available sources, other databases, and aid agency partners. Data on HCWs in Nigeria from 2016-2024 are described in this study, including that from North-east Nigeria, which is a designated conflict area.

Results: The 169 recorded cases of violence against HCWs occurred in 33 of the 36 Nigerian States, with northern states of Kaduna, Borno, and Katsina most affected. The prevalence of violence against HCWs in the South (Cross-River, Rivers, Delta, and Oyo States) has also been increasing. A total of 62 HCWs were killed within the period. The prevalence of reported violence against HCWs was highest in 2021 and 2022 (21.9%). The majority (66.9%) were kidnap cases, perpetrated by unidentified armed actors (52.1%) with firearms used in 81.7% of cases. Doctors were the most targeted (38.5%), however, other HCWs (such as vaccinators and administrative staff?) were also targeted. The commonest sites where HCWs experienced violence were whilst commuting, in health facilities, and while at home.

Conclusion: Using available evidence to engage key policymakers on addressing these drastic forms of violence experienced by HCWs in Nigeria can potentially contribute to reducing HCW shortages and promoting health systems responsiveness. More research is needed to understand the drivers and policy responses to this phenomenon. Violence against HCWs in Nigeria, including non-workplace attacks, has expanded to non-conflict areas whilst taking drastic forms such as kidnapping and murder, impacting physical and psychosocial health, and contributing to health service unavailability, health inequity, and non-responsive health systems.

The Relationship Between Workplace Violence and Post-Traumatic Stress Disorder Symptoms: A Cross-Sectional Study

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Introduction: Workplace violence can have numerous adverse consequences for healthcare workers, such as post-traumatic stress disorder (PTSD). However, the factors influencing the relationship between workplace violence and PTSD remain unclear. To study the relationship between workplace violence and PTSD among healthcare workers.

Method: This cross-sectional study focused on healthcare workers in several medical institutions (two primary hospitals, one secondary hospital, and one tertiary hospital) in South China who had experienced workplace violence in the past year. The primary assessment tool was the Workplace Violence in Healthcare Sector National Case Study Tool—Survey Questionnaire, which included four items related to PTSD symptoms. Each question item was rated on a 5-point Likert scale, with scores above 2 considered indicative of the presence of the symptom.

Results: A total of 428 incidents of workplace violence occurred over the past year. Correlations among symptom scores were significant ($P < 0.001$). Detection rates for symptoms included flashbacks (52.6%), avoidance symptom1 (51.4%), hypervigilance (56.1%), and avoidance symptom2 (47.9%). Detection rates varied by type of violence, gender, the level of concern about violence, investigation involvement, and satisfaction with handling of incidents ($P < 0.05$). Among types of violence, verbal abuse was associated with a lower PTSD symptom detection rate compared to other types. For female workers, high satisfaction with

incident handling was a protective factor against PTSD symptoms (flashbacks: OR=0.158, 95%CI 0.158 to 0.473; avoidance symptom1: OR=0.161, 95% CI 0.053 to 0.490; hypervigilance: OR=0.151, 95% CI 0.048 to 0.472; avoidance symptom2: OR=0.096, 95% CI 0.030 to 0.302). In contrast, high level of concern about violence (flashbacks: OR=6.571, 95% CI 2.320 to 18.613; avoidance symptom1: OR=6.618, 95% CI 2.318 to 18.898; hypervigilance: OR=10.013, 95% CI 3.357 to 29.868; avoidance symptom2: OR=6.619, 95%CI 2.242 to 19.540) and involvement in investigations (flashbacks: OR=2.569, 95% CI 1.415 to 4.662; avoidance symptom1: OR=2.352, 95% CI 1.302 to 2.244; hypervigilance: OR=2.652, 95% CI 1.417 to 4.965; avoidance symptom2: OR=2.272, 95% CI 1.266 to 4.077) were risk factors. Physical violence specifically affected the occurrence of two avoidance symptoms (avoidance symptom1: OR=3.781, 95% CI 1.295 to 11.038; avoidance symptom2: OR=2.912, 95% CI 1.037 to 8.177). Involvement in investigations was associated with lower satisfaction with the handling of violent incidents (OR=0.096, 95% CI 0.030 to 0.302). Among male HCWs, investigation involvement was a risk factor only for avoidance (OR=4.282, 95%CI 1.212 to 15.132), while higher fear of violence was a risk factor only for fatigue (OR=25.128 95% CI 2.025 to 311.735).

Conclusion: This study employed a standardized WPV questionnaire for credibility, filling gaps by focusing on medical-consortium HCWs and examining gender differences in WPV and PTSD. However, its cross-sectional, retrospective nature limits causal inference and risks bias. The sample was small, only one consortium was studied, and the PTSD tool is not diagnostic—limiting generalizability. The prevalence of PTSD symptoms is high among healthcare workers who experience workplace violence, with particular vulnerability observed among female healthcare staff. Hospitals should enhance violence incident management strategies to improve worker satisfaction and mitigate the adverse effects of workplace violence on healthcare staff.

Health Literacy, Health Behavior and Health Status of German Nursing Trainees: Changes Over One Year

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Introduction: Health literacy is considered a determinant of several health-related behaviors and outcomes. Health literacy can be seen as a particularly relevant resource for health maintenance and promotion for young adults at the beginning of their challenging vocational training in nursing. Facing a significant global shortage of nursing staff it is of high importance to maintain the health status of nursing trainees and prevent diseases, especially work-related illnesses. Research Questions: How is the health status, health behavior and

health literacy of nursing trainees and students developing over the course of one year?; Do we see correlations between health literacy and health status?

Method: In this prospective cohort study, German trainees and students in nursing filled in paper-pencil- and online-questionnaires at the beginning of their job training (baseline) and one year later (follow-up). Demographic data, information on health literacy (HLS-EU-Q16) and indicators for health behavior and health status were collected.

Results: The findings showed a small improvement of health literacy (x (SD): 12,6 (2,8) vs. 12,8 (3,0), $p = 0,459$) within the cohort between measurements, while self-reported health status deteriorated and BMI increased significantly. We identified that the participants' development of health literacy was heterogeneous: a group of trainees increased their HL level, while another group of approximately the same size showed reduced HL levels at follow up and some trainees maintained HL levels. Concerning health behavior, a raise in smoking prevalence (29,6% vs. 33,3%, $p = 0,021$) and elevated levels of physical activity were observed. Predictor analyses showed no significant associations between health literacy at baseline and indicators of health status or health behavior at follow-up.

Conclusion: The Health Status of trainees deteriorated within the first year of job training in this cohort, while most indicators of health behavior were rather stable. The development of health literacy is very heterogeneous in this cohort and there were no significant associations found between health literacy at baseline and health status or health behavior after one year. In this study, we did not observe significant associations between health literacy and the measured health related outcomes. Furthermore, health literacy development was very diverse and did not show the expected upward trend. These developments and relationships will be followed up in the further course of the study.

Comparative Study of Bloodborne Pathogen Protection Knowledge in Medical Students and Practicing Healthcare Workers in China

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Introduction: Occupational exposure to bloodborne pathogens (BBP) is a primary hazard to healthcare workers, and preventing percutaneous injuries and blood contact is crucial. Comprehensive training in protective measures is essential for healthcare workers, and medical students must also receive thorough training and vaccination before clinical practice. This study aims to compare the knowledge of BBP occupational protection between medical students and healthcare workers, assessing the effectiveness of current educational programs. Research Questions: What are the differences in knowledge of BBP protection between medical students and healthcare workers?

Method: A questionnaire on occupational protection against BBP was administered, consisting of three sections: basic knowledge (35%), general protection (35%), and standard precautions (30%). It included 20 true/false items. Participants were recruited via convenience sampling, including 569 first- and second-year medical students from Peking Union

Medical College and 157 healthcare workers from various Chinese hospital. Descriptive statistics and t-tests were used to analyze score distributions and group differences, with SPSS employed for data analysis.

Results: The Results are shown in the Table. Both groups scored lowest in basic knowledge. T-tests indicated that medical students outperformed healthcare workers in overall and sectional scores. The three questions with the lowest correct response rates pertained to the placement of sharps containers (C18), the management of contaminated skin or mucous membranes (A6), and the hierarchy of controls for risk management (A3).

Conclusion: Medical students demonstrated superior knowledge with a higher average score compared to healthcare workers. This suggests that the current educational programs for medical students are effective. However, both groups scored lowest in the “basic knowledge” section. The results underscore the need to enhance occupational health training in both academic and continuing education programs. In September 2009, China implemented the “Guidelines for the Prevention of Occupational Exposure to Bloodborne Pathogens”, standardizing management among healthcare personnel. An average score of around 80% among both groups indicates effective dissemination of the guidelines and increased self-protection awareness. The results suggest that current school-based training may be more systematic and comprehensive compared to the past, whereas practicing healthcare workers may lack continuous post-employment education. Both groups scored lower in basic knowledge, but showed better understanding of universal precautions. This implies that healthcare professionals may rely more on experience than theoretical knowledge. The findings offer practical guidance for future education, and further research is needed to evaluate whether acquired knowledge leads to safer clinical practices.

Situation of latent tuberculosis infection amongst health workers in a large. tertiary hospital; 7 years study

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Introduction: Healthcare workers (HWs) are at increased risk of tuberculosis (TB) due to occupational exposure. In Thailand, data on latent tuberculosis infection (LTBI) among HWs remain limited. This study assessed LTBI prevalence and exposure risk following a seven-year surveillance program in a tertiary hospital. Research question: What is the preva-

lence and epidemiological profile of latent tuberculosis infection (LTBI) among healthcare workers in a Thai tertiary hospital

Method: From 2016 to 2022, A LTBI surveillance was conducted in a large tertiary hospital, using Interferon Gamma Release Assays (IGRAs), adapted from CDC guidelines. Screening was carried out through three approaches: 1) pre-placement examinations, 2) post-exposure surveillance, and 3) annual screening of high-risk personnel during 2021 - 2022. Secondary data on demographics, exposure history, and outcomes were collected and analyzed using descriptive statistics, chi-square tests, and logistic regression ($p < 0.05$).

Results: Between 2016 and 2020, a total of 202 out of 1,823 HWs were diagnosed with LTBI, yielding a prevalence of 11.1% (95% CI: 9.7–12.6). Pre-placement examination identified 98 of 1,230 HWs (8.0%, 95% CI: 7.1–10.5) with LTBI, while post-exposure surveillance detected 105 of 706 cases (14.9%, 95% CI: 12.4–17.7). During annual high-risk surveillance (2021–2022), 10 of 416 HWs (2.4%, 95% CI: 1.3–4.4) were diagnosed with LTBI, with 13.5% representing recent IGRA conversions following known exposure. Across all surveillance phases, 41.8% of LTBI cases were initiated on preventive treatment. No significant associations were found between LTBI and specific exposures, including aerosol-generating procedures (OR: 1.11; 95% CI: 0.71–1.79) or prolonged close contact (OR: 0.97; 95% CI: 0.62–3.33), likely due to selection bias and limited the statistical power for comparative exposure analysis.

Conclusion: Findings from this seven-year surveillance reveal a persistent LTBI burden among healthcare workers, with an overall prevalence of 11.1%, including 8.0% from pre-placement screening and 14.9% from post-exposure surveillance. Despite higher rates in high-risk groups, no specific occupational risk factors showed significant association. Despite Thailand's high TB burden, these rates were lower than regional and global estimates, suggesting the impact of sustained TB control efforts. The findings support systematic LTBI screening and timely preventive treatment as effective strategies for reducing occupational TB transmission, particularly in high-risk healthcare settings.

Investigation on Workplace Violence Prevention among Healthcare Workers in an Infectious Disease Hospital: A Mixed-Methods Study from the Perspectives of Physicians and Patients

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Introduction: Workplace violence (WPV) is a serious issue in healthcare, where stress and communication challenges are common. WPV affects the safety and well-being of healthcare workers (HCWs) and disrupts patient care. Gaining insights from both healthcare workers and patients is essential to understand the causes and effects of WPV and to develop effective strategies for prevention. Research Questions: To investigate WPV prevalence, causes, and impacts in an infectious disease hospital using mixed methods, providing insights of HCWs and patients for prevention strategies.

Method: A mixed-methods approach was employed, combining a quantitative survey of 675 HCWs to assess the prevalence, types, and risk factors of WPV, along with in-depth qualitative interviews with 28 HCWs and 17 patients or family members. The qualitative interviews explored the differing perspectives on the causes of WPV, personal coping strategies, and opinions on the effectiveness of violence prevention measures. Quantitative data was analyzed using SPSS, and qualitative data was thematically analyzed using NVivo.

Results: Quantitative findings revealed that 2.22% of HCWs experienced physical violence, while 34.07% reported psychological violence, with verbal abuse being the most prevalent (32.59%). The qualitative findings revealed differences between HCWs and patients in terms of perceived causes and prevention of WPV. HCWs identified emotional instability in patients and inadequate hospital staffing as primary causes, whereas patients emphasized long waiting times and communication barriers as key factors. Regarding prevention, HCWs prioritized improved safety protocols and staff training, while patients focused more on better medical procedure.

Conclusion: This study addresses a critical gap by integrating HCW and patient perspectives, revealing that WPV perceptions and prevention needs vary due to differing expectations and experiences. The findings offer an innovative, dual-perspective approach to WPV prevention, suggesting that a holistic strategy incorporating enhanced communication, targeted training, and culturally sensitive policies is essential for fostering a safer healthcare context. This study highlights a critical disconnect between healthcare workers (HCWs) and patients on the causes of workplace violence (WPV). While HCWs attribute WPV to patient emotions and understaffing, patients cite long wait times and poor communication. This perceptual gap reveals that prevention strategies cannot solely focus on security and staff training, as preferred by HCWs. Instead, a holistic approach is necessary, integrating improved medical procedures and communication to address patient frustrations proactively. Such a dual-perspective strategy is essential for creating a truly safer healthcare environment.

Workplace Violence Prevention in Health Care: Legislative Insights from the United States and Implications for China

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Introduction: Workplace violence (WPV) constitutes a critical global public health issue, particularly prevalent in healthcare settings, where it endangers healthcare workers' (HCWs) physical and mental well-being. The ILO's 2019 Violence and Harassment Convention and Recommendation established a universal international legal framework, affirming the right to a work environment free from violence. The U.S. has advanced federal legislation process through the Workplace Violence Prevention for Health Care and Social Service Workers Act (the Act), mandating standards and requirements for employer-centered prevention. China's legal framework has partially mitigated WPV in health care sector. Research Questions: 1.

What are the key provisions of the Act for healthcare WPV prevention?, 2. How does China's current legal framework address healthcare WPV, and what gaps exist?, 3. What insights can China draw from U.S. legislation to enhance the prevention of WPV?

Method: The study employs systematic review and comparative legal analysis, examining U.S. Act and China's legal system for proposing lessons on prevention of WPV against HCWs.

Results: The U.S. Act describes clear legal definitions, obligations, and prevention measures against WPV in healthcare. Notably, in this Act employers shall develop their own comprehensive prevention plans containing procedures of risk assessment, hazards correction, violent incident investigation, emergency response, etc. China's legal framework incorporates a multi-layered but fragmented system comprising laws, administrative regulations, and departmental rules etc. that protects HCWs from WPV. Such right derives from three dimensions: fundamental protection of safety and dignity, occupational protection of workers, specific safeguards of medical practitioners and is entitled by the Civil Code, Labor Law, Law on Prevention and Control of Occupational Diseases, Law on Basic Medical and Health Care and the Promotion of Health, and other related provisions. Notably, China currently lacks specialized legislation targeting WPV prevention in healthcare.

Conclusion: Adapting U.S. insights to China's context, it requires paradigm shifts—from single incident to occupational hazard, from reactive punishment to proactive prevention, and from fragmented to sector-specific for safety and health in the healthcare sectors. The comparative analysis reveals fundamentally distinct legislative philosophies. The U.S. model's strength lies in its occupational safety and health focus and clear employer obligations, defining the WPV as an occupational hazard which will be addressed by holistic preventive measures. Conversely, China's framework primarily conceptualizes WPV as external security breaches perpetrated by third parties, emphasizing public order maintenance over systemic occupational risk management. Thus, the prevention measures are limited to post-incident and order-centered punishment. This regulatory gap persists despite growing recognition of healthcare workplace violence as a distinct occupational hazard requiring targeted interventions.

The Association of Working Hours with Burnout and Stress in Health Care Workers: A Cross-Sectional Study Based on a Medical Consortium

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Introduction: Long working hours and overtime significantly increase healthcare workers; risk of burnout, chronic stress, and fatigue, leading to impaired health and higher error rates. In high-stress medical settings, these risks are intensified, underscoring the need to address the impacts of extended work hours on healthcare staff. Research Questions: To evaluate the relationship between working hours and burnout and stress risk among healthcare workers and identify high-risk groups.

Method: A cross-sectional study was conducted among 983 healthcare workers within a medical consortium in Nanning, South China, including a tertiary public hospital and its affiliated institutions (two primary hospitals and one secondary psychiatric hospital). Working hours were categorized into four groups (35–40, 41–48, 49–54, and ≥55 hours per week) based on WHO/ILO standards, with weekend overtime, night shifts, and shift schedules also considered. Burnout and stress were assessed using COPSQ III, with analyses conducted via univariate analysis and logistic regression in R, adjusting for demographic factors.

Results: Burnout and stress increased significantly with longer working hours, peaking in workers with ≥55 hours weekly. Those working 49~54 hours had higher burnout risk ($\beta=5.18$, 95% CI: 0.70~9.66, $p=0.024$), while those working ≥55 hours showed elevated stress ($\beta=5.43$, 95% CI: 1.77~9.09, $p=0.004$). Older workers and those with frequent weekend shifts had higher burnout and stress, with women and shift workers at particular risk.

Conclusion: Long working hours and overtime are strong predictors of burnout and stress in healthcare workers, especially among women and shift workers. Reducing excessive hours and optimizing shift schedules are essential for safeguarding mental health, particularly in vulnerable groups. This study offers essential insights into extended working hours in China's healthcare system, providing a evidence for promoting tailored national work-hour standards in line with international. This study confirms that long working hours are strong predictors of burnout and stress among healthcare workers. A clear dose-response relationship was found, with risks significantly increasing for those working over 49 hours weekly. The research identifies women and shift workers as particularly vulnerable subgroups, requiring targeted interventions. The findings strongly suggest that individual coping strategies are insufficient. Systemic changes, such as reducing excessive hours and optimizing schedules, are essential to protect healthcare workers' mental health and ensure patient safety.

Epidemiology of smoking habits among healthcare workers employed in a regional reference teaching hospital in Northern Italy: a cross-sectional study

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Introduction: Tobacco consumption is one of the most significant avoidable health risk and cause of premature death globally. Smoking in the workplace represents a potential combination of health risks due to the interactions of tobacco use and professional exposure. Occupational Health Professionals can aid in health promotion of workers and improvement of workplace environment. This study aims to analyze the prevalence of smoking and its determinants among healthcare workers (HCWs) and equated subjects at the Ospedale Policlinico San Martino IRCCS of Genoa, Italy.

Method: An observational, cross-sectional study was performed using demographic and clinical data. It involved a total workforce of 1561 HCWs, medical residents and healthcare students. This population routinely undergoes occupational health surveillance programs performed by the Occupational Health Service (OHS) in accordance with Italian Law. We focused on the medical visits performed from July 1st to December 31st, 2023. All statistical analyses were performed using SPSS statistical software vers. 26.0 (IBM Corp.).

Results: In the study population, 24.7% of participants reported being current smokers. The univariate analysis showed an association between smoking and several demographic and occupational variables such as different professional categories and occupational risks. At the multivariate analysis physicians (OR 0.39, 95CI 0.24-0.61, $p < 0.001$) and professions with exposure to chemical hazards (OR 0.26, 95CI 0.09-0.80, $p = 0.018$) showed reduced odds of smoking, whereas increases in alcohol consumption were associated with increased probability of smoking (OR 1.79, 95CI 1.19-2.71, $p = 0.006$).

Conclusion: These results highlight a concerning prevalence of smokers among HCWs. An up-to-date epidemiological picture on health habits and behaviors may provide a baseline on which targeted interventions can be implemented, considering not only modifiable lifestyle factors but also work-related risk factors to effectively tackle the magnitude of the phenomenon. This preventive approach, from a Total Worker Health perspective, can bring together occupational health and public health goals, paving the way for a Global Health evidence-based practice.

"A Novel Approach to Addressing the Health and Wellness Needs of Vulnerable Staff"

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Introduction: The sudden cardiac-related death of an employee on our campus prompted a system-wide evaluation of staff vulnerabilities, particularly among those in lower pay bands. This tragic event underscored the need to address disparities in access to care and overall wellness among our workforce. Research Questions: What are the key health and social vulnerabilities affecting employees in lower pay bands?, How can a multidisciplinary approach improve access to care and wellness resources for these employees?

Method: We analyzed employee health, human resources, and benefits data, focusing on healthcare utilization and social determinants of health. A multidisciplinary committee was formed, including representatives from employee health, wellness, human resources, and clinical services. The committee developed targeted interventions and outreach strategies.

Results: The Vulnerable Employees Health and Wellness Committee has implemented system-wide initiatives including rounding, early intervention, and resource mapping. These efforts have led to increased engagement with health equity services, improved access to food and financial support, and better integration of new hires into wellness programs.

Conclusion: A system-level, multidisciplinary approach can effectively address health disparities among vulnerable employee populations. The committee's work has positively impacted both new and long-standing staff, fostering a culture of equity and wellness. Stake-

holders from senior leadership, employee health, human resources, and others collaborated to investigate and strategize how best to improve the health disparities issues among employees and individuals new to the health system. Employee Health Services plays a pivotal role in identifying and addressing social determinants of health as the first point of contact for many employees. This service line serves as a gateway to broader health equity initiatives. The development of message map by an interdisciplinary committee, to support managers helping their staff navigate complex social issues that impact them at work was also a key intervention. Finally, the rounding in departments where vulnerable employees work, understanding their needs and providing timely resources has proven to be an beneficial engagement strategy. Looking ahead the committee continues to explore ways to engage others in this process including involving primary care residents to enhance educational opportunities, connecting our community health team with those involved in the utilization of benefits to understand opportunities to address disparities. Together, these coordinated efforts reflect a growing commitment to embedding equity into the fabric of our health system, ensuring that every employee has the support and resources needed to thrive both personally and professionally