# Sustaining Occupational Health in Healthcare: An Integrated Approach

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Case Reports

## Background

Christian Medical College (CMC) Vellore, a leading tertiary care hospital with over 12,000 staff and students, prioritizes occupational health. Recognizing the significant impact of workplace hazards on employee well-being and productivity, CMC has established a comprehensive program on Occupational Health. This program, led by a multidisciplinary team, focuses on identifying and mitigating risks, including physical, chemical, ergonomic, and psychosocial hazards.

Recognizing the significance of workplace health, CMC Vellore implemented a comprehensive occupational health program in 2011. The occupational health program at CMC Vellore has significant implications and importance in the hospital context. By addressing various hazards such as physical, chemical, ergonomic, and psychosocial risks, the program ensures a safer and healthier environment for all staff members & patients. This proactive approach not only protects employees but also enhances their overall well-being and job satisfaction. The program's emphasis on continuous health surveillance, hazard identification, and risk management sets a benchmark for other healthcare institutions. Overall, the program fosters a culture of safety and well-being, making CMC Vellore a model institution in occupational health.

## Distinctiveness of the Practice

CMC Vellore's occupational health program stands out for its comprehensive and proactive approach. The practice had different approaches:

- Led by a multidisciplinary team, it emphasizes continuous surveillance, hazard identification, and risk management.
- Unlike traditional models, which often focus on immediate concerns, CMC Vellore incorporates pre-medical checkups, vaccination policies, and regular audits to address diverse hazards.
- The formation of 5 teams, each focusing on a specific hazard category (Physical, Chemical, Biological, Ergonomical, Psychological), demonstrated a structured and comprehensive approach to risk assessment.
- Strong interdepartmental collaboration, uniting doctors, nurses, technicians, and other professionals through regular meetings and data-driven assessments, ensures continuous improvement.
- Active sharing of its model with other healthcare institutions through conferences and collaborations, contributing significantly to the advancement of occupational health practices in the country.
- Risk Assessment: The initial phase consisted of surveys and audits conducted across departments to understand and map the hazards in every department. This data informed the development of an Occupational Health module integrated into the mandatory training for all new staff, including MBBS, OT/PT, and MSc nursing students.

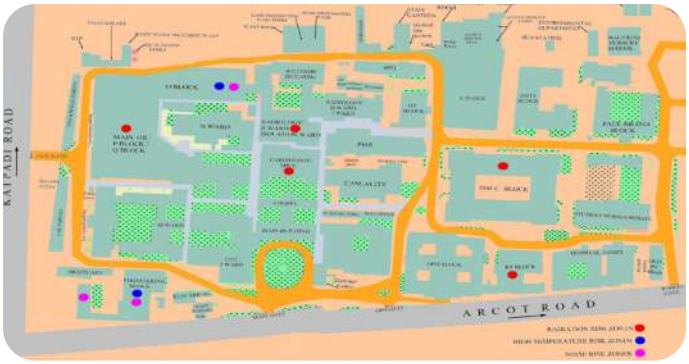
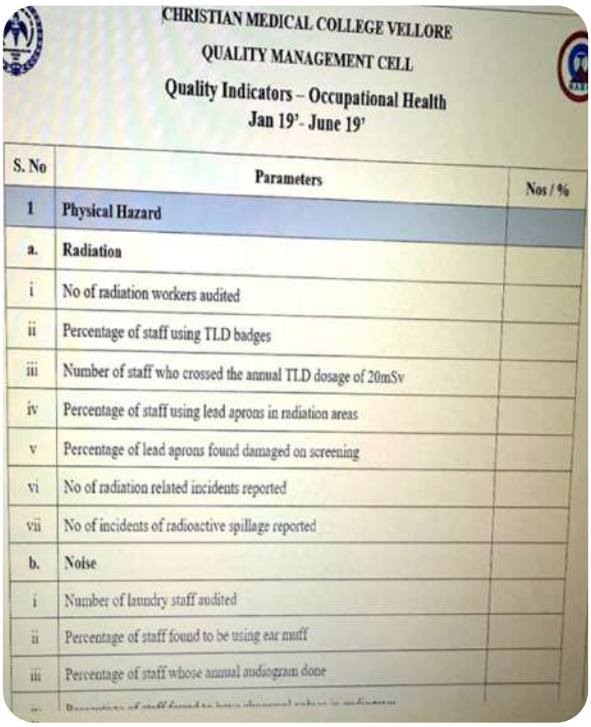



**Fig. 1 Hazard mapping**

- Development of a Structured Framework: An Occupational Health manual was created for employee reference. To raise awareness, an annual "Occupational Health Week" is observed, culminating in "World Day for Safety and Health at Work" on April 28th, every year.
- Continuous Surveillance: Through pre-medical checkups, vaccinations, and regular audits.
- Quality Indicators such as the number of radiation workers audited, percentage of worker noticed to be wearing ear muff to protect against loud noise etc. were used to track progress and guide interventions through a measurable and structured approach.



CHRISTIAN MEDICAL COLLEGE VELLORE
QUALITY MANAGEMENT CELL
Quality Indicators – Occupational Health
Jan 19'- June 19'

| S. No | Parameters | Nos / % |
|---|---|---|
| 1 | Physical Hazard | |
| a. | Radiation | |
| i | No of radiation workers audited | |
| ii | Percentage of staff using TLD badges | |
| iii | Number of staff who crossed the annual TLD dosage of 20mSv | |
| iv | Percentage of staff using lead aprons in radiation areas | |
| v | Percentage of lead aprons found damaged on screening | |
| vi | No of radiation related incidents reported | |
| vii | No of incidents of radioactive spillage reported | |
| b. | Noise | |
| i | Number of laundry staff audited | |
| ii | Percentage of staff found to be using ear muff | |
| iii | Percentage of staff whose annual audiogram done | |

**Fig. 2 Quality indicator tool**

- Health Promotion Programs: Including smoking cessation and substance abuse counseling, were integral to the program's holistic approach to employee well-being.

## Measuring Effects

The measurable outcomes were achieved through quality indicators while the felt outcomes were the indirect benefit achieved through the practice.

- Improved Staff Awareness: The occupational health program effectively raised staff awareness, as demonstrated by a significant increase in occupational health knowledge scores from 2/10 to 9/10 among all staff levels, from students to senior clinicians, following an awareness program assessed by a semi-structured questionnaire.
- Targeted Training and Interventions: The program had effectively identified and addressed specific occupational health concerns in different departments, such as ergonomic issues for microscope users, violence and stress in the psychiatry department, and manual handling issues in rehabilitation.
- Multidisciplinary Collaboration: The establishment of a multidisciplinary team, involving doctors, nurses, physiotherapists, engineers, and other relevant personnel, had fostered collaboration and a comprehensive approach to occupational health.
- Data-Driven Approach: The use of surveys, audits, and hazard mapping had allowed for data-driven decision-making and the identification of specific areas for intervention.
- Research and Publication: The program had generated valuable research, such as studies on TB risk in nursing students, neck pain among clerical staff, and accidents in the emergency department, contributing to the broader field of occupational health.
- Increased Staff Engagement: Growing staff participation in programs and activities, such as exercise programs and awareness campaigns, indicates increased

engagement and interest.

- Improved Staff Morale and Well-being: Anecdotal evidence suggested that initiatives like exercise programs have positively impacted staff morale and well-being.
- Positive Feedback from Staff: The positive feedback received from staff on various programs and initiatives indicates their value and effectiveness.

Overall, the program had demonstrated a positive impact on staff health and well-being, contributing to a safer and more productive work environment.

## Challenges

One of the primary challenges in ensuring occupational health and safety in a hospital setting was the lack of awareness and prioritization of occupational hazards among healthcare workers and administrators. Recognizing this issue, CMC Vellore undertook targeted initiatives to improve awareness and foster a culture of safety within the institution. To address this challenge, CMC Vellore implemented structured awareness programs and training sessions tailored for hospital staff, students, and faculty members. These initiatives covered a wide range of occupational hazards, including exposure to infectious diseases, needle-stick injuries, musculoskeletal disorders, and mental health stressors. Through interactive workshops, simulation exercises, and expert-led discussions, healthcare professionals were educated on preventive measures, safe handling practices, and the importance of adhering to standard operating procedures.

CME ON RADIATION SAFETY AND QUALITY ASSURANCE IN RADIOLOGY

A CME on *'Radiation Safety and Quality Assurance in Radiology'* was organised by the Department of Radiology on February 8, 2014. The programme began with a talk in the Quality circle on *'Radiation safety : Are you aware of your protection?'* by Dr.Guru Prasad S, Emeritus Professor, Department of Medical Physics, North Shore University Health System, Chicago. The CME was inaugurated by the Director, Dr. Sunil Chandy. Dr. Shyamkumar N.K., Head of Radiology welcomed the gathering. Scientific sessions were addressed by Mr. Senthil Kumar, Scientific Officer, Atomic Energy Regulatory Board (AERB), Mrs. Anudhavalli, Associate Professor, Annamalai University, Dr. Rabi Raja Singh, Department of Radiotherapy, and Dr. Roshan S Livingstone, Organizing Secretary. Sessions on Quality Assurance for CT, Fluoroscopy and Radiographic units were addressed by Dr. Guru Prasad. The CME aimed to create awareness on basic radiation protection and dose reduction strategies in interventional procedures, insight into AERB requirements and guidelines in diagnostic radiology and educate the students and technologists to carry out quality control tests for all diagnostic equipments in the Department to enhance patient care. A total of 130 participants attended the CME.

**Fig. 3 Awareness and health promotion activities at CMC Vellore**

Another major challenge was the limited availability of scientific evidence on occupational hazards specific to the hospital environment. Without robust data, it was difficult to implement evidence-based interventions and policy changes. To bridge this gap, CMC Vellore conducted internal studies and assessments to identify prevalent occupational risks among healthcare workers. These studies included surveys, observational assessments, and incident reporting mechanisms to gather empirical data on workplace hazards. The findings from these studies informed the development of targeted interventions, policy revisions, and the introduction of safety measures tailored to the hospital's needs.

## Lessons Learned

Several lessons merge from CMC Vellore's practice of occupational health program & demonstrate the strategies that worked well. The takeaways from the safe workplace environment at CMC Vellore were:

- Targeted education and awareness campaigns were essential first steps.
- Creating a "friendly forum" where mistakes can be reported and addressed without blame was key.
- Teaching staff about occupational health hazards and their potential impact is empowering. Highlighting the risks, even in seemingly safe environments like hospitals, often motivates action.
- Identifying and engaging individuals with a genuine interest & passion in occupational

health was essential to ensure its long-term success.

- Bringing together diverse professionals (doctors, nurses, technicians, etc.) from different departments allowed for a comprehensive understanding.
- Conducting internal studies and assessments to gather data was crucial for understanding specific hazards and developing effective interventions.
- Sharing knowledge and expertise with other institutions was a valuable contribution to the broader field of occupational health to help disseminate best practices and improve worker safety across the healthcare sector.

## Sustainability of Practice

CMC Vellore's occupational health program was designed for long-term sustainability through strong administrative integration and structured processes. Embedded within the HR directorate, it secured consistent resources and leadership support. A structured handover process and team orientation ensured continuity, while "grassroots ownership" empowered passionate individuals to lead specific areas like chemical hazards and radiation safety. Integrating program activities into routine responsibilities made participation seamless, and tri-monthly HR-led meetings ensured continuous monitoring. Beyond administration, various initiatives reinforced integration. Occupational health was incorporated into medical and nursing curricula, fostering early awareness. Resources such as an occupational health manual and relaxation exercise videos were made available via the intranet, while annual "OH Week" celebrations promoted engagement. Continuous surveillance, hazard identification, audits, and mapping were integral to the program. Training programs and a multidisciplinary team addressed low awareness. Internal studies generated data to guide interventions. The program also shared best practices through conferences, workshops, and consultations to improve worker safety across the healthcare sector.

## Conclusion

CMC Vellore's occupational health program demonstrated a sustainable and well-integrated approach to workplace safety in healthcare. By embedding the program within the HR directorate, ensuring leadership continuity, and fostering grassroots ownership, it successfully addressed occupational hazards. Educational initiatives, continuous surveillance, and internal research strengthened its impact, while health promotion programs enhanced employee well-being. The program's structured framework not only improved hospital safety but also served as a model for other institutions. By sharing knowledge through conferences and collaborations, CMC Vellore contributed to the broader field of occupational health, reinforcing the importance of proactive, evidence-based interventions in healthcare settings.

# Sustaining Occupational Health in Healthcare: Practicing an Integrated Approach

### 1 Target Population

Healthcare workers, students, and staff, who are exposed to occupational hazards in a high-risk hospital environment.

### 2 Phenomenon of Interest

Implementation of a comprehensive occupational health program to identify, mitigate, and manage workplace hazards through risk assessment, training, surveillance, and policy interventions.

### 3 Context

CMC Vellore, a leading tertiary care hospital with over 12,000 staff and students, integrated a structured and sustainable occupational health program.

## Conclusion

CMC Vellore's occupational health program successfully enhanced workplace safety, staff well-being, and institutional efficiency, ensuring sustainable healthcare occupational health management.

## Key Findings

### 1 Multidisciplinary and Data-Driven Approach Strengthened Risk Management

Hazard mapping, targeted training, and quality indicators enabled effective risk identification and intervention across different hospital departments.

### 2 Improved Occupational Health Awareness and Compliance

The occupational health knowledge scores among staff increased from 2/10 to 9/10, reflecting enhanced awareness and proactive engagement in workplace safety.

### 3 Sustainable and Scalable Occupational Health Model

The integration of occupational health into HR policies, continuous monitoring, and structured handover processes ensured long-term sustainability and adaptability for other healthcare institutions.