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Occupational Exposure and Waste Management Practices of Hazardous Chemicals in Base Hospital Warakapola, Sri Lanka**Kalupahana, K.M.A.L., Jayawardhana, H.S., Menike, P.M.L.S., Rajakaruna, M.D.P.G., Gunasekara, B.M.N., Thilagaraj, S.J.* , Thilakarathna, H.M.C.R.K., Senerath, S.N.***Faculty of Nursing, KIU, Battaramulla, Colombo, Sri Lanka***stephanieT@kiu.ac.lk***Abstract**

Healthcare workers routinely handle hazardous chemicals such as disinfectants and laboratory reagents, which pose occupational and environmental risks if managed improperly. Safe handling and adherence to waste management protocols are critical, yet gaps in knowledge and compliance persist among healthcare staff. This study assessed occupational exposure, handling practices, and perceived risks of hazardous chemicals among healthcare workers at Base Hospital Warakapola, Sri Lanka. A descriptive cross-sectional study was conducted among 200 healthcare workers, including nurses, laboratory technologists, pharmacists, supportive staff, and cleaning personnel, selected via stratified random sampling. Data were collected using a pre-tested, structured, self-administered questionnaire adapted from validated tools as WHO Healthcare Waste Management Questionnaire (WHO, 2014) and Occupational Chemical Safety Questionnaire (NIOSH, 2016). The tool contained 35 items across four domains: demographic data, chemical handling, safety practices, and awareness of hazardous waste management. Awareness was assessed using multiple-choice questions and practice components were assessed using a 5-point Likert scale (1=poor to 5=excellent). Composite scores were categorized as inadequate (<60%), moderate (60-79%), and adequate ($\geq 80\%$) levels of knowledge and safe practice. Ethical approval and informed consent were obtained. Data were analysed with SPSS v25, using descriptive statistics and Chi-square tests to examine associations between knowledge and selected factors. Participants were 60.5% female and 39.5% male, mostly aged 21-30 years (33.5%) and 31-40 years (28%). Educational levels included diplomas (45%), degrees (30%), and secondary education (25%). Nurses (32%), laboratory technicians (25%), and housekeeping staff (20%) formed the majority. Most had 1-5 years of experience (35%), while 27% had over 10 years. Findings revealed that 70% (n=140) handled hazardous chemicals, yet only 55% (n=110) demonstrated adequate knowledge of safe segregation and disposal. Although 60% (n=120) reported available waste segregation systems, only 48% (n=96) consistently used color-coded bins, and 42% (n=84) admitted occasional improper disposal. Formal training was reported by 52% (n=104) and was significantly associated with higher knowledge ($\chi^2=9.34$, $p<0.05$). Environmental monitoring was limited, with only 40% (n=80) maintaining disposal records, and 68% (n=136) expressed concern about pollution and occupational risks from inadequate waste management. The study highlights substantial occupational exposure to hazardous chemicals and gaps in safe handling practices among healthcare workers. Enhancing training programs, enforcing compliance with waste management protocols, and implementing regular environmental monitoring are recommended to improve occupational safety and mitigate environmental risks in healthcare settings.

Keywords: *Hazardous chemicals, Occupational exposure, Waste management*