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## Original Article

# The effects of hazardous working conditions on burnout in Macau nurses



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## ABSTRACT

**Objective:** To examine the effects of various hazardous factors in working environments on burnout in a cohort of clinical nurses in Macau.

**Methods:** A cross-sectional survey was used to examine specific workplace hazards for burnout in qualified nurses ( $n = 424$ ) in Macau. Structural equation modeling (SEM) was used to analyze relationships between specific hazards and manifestations of burnout.

**Results:** In the final model, workplace hazards accounted for 73% of the variance of burnout with a standardized regression weight of 0.85. The measures of the model fit were acceptable. Bodily hazards, threats of violence, and physical environmental hazards were found to significantly contribute to two major determinants of burnout, emotional exhaustion and depersonalization.

**Conclusions:** Workplace environmental hazards increased the risk of burnout amongst clinical nurses in Macau. Better management of these factors may help to protect nursing staff and reduce the risk of burnout and attrition from the nursing profession.

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## 1. Introduction

Globally, the nursing profession suffers from high levels of attrition and a shortage of trained manpower [1]. These issues are intertwined with the demanding practice environment and the risk of occupational burnout [2]. In the United States, the shortage of registered nurses (RN) may exceed 500,000 by 2025 [3]. Another American study estimated that 30%–50% of

all new RNs elect to leave clinical positions within the first three years of their graduation [4]. The European NEXT study which included more than 28,000 nurses from ten countries revealed that nurses with high burnout scores had three times the risk of leaving their job in half of the countries surveyed [5]. Burnout is also a significant issue for nurses in China [6]. The situation in Macau is no different, where the nurse annual turnover rate was 14% in the largest hospital in Macau [7]. Nurse burnout is an important phenomenon to examine,

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particularly in times of severe nursing shortages, as it has been linked to nurse attrition and observed to ultimately impact the quality of patient care [8].

Burnout is typically characterized by a depletion of emotional resources, diminution of energy, an increase in negative attitudes and feelings as well as insensitivity and a lack of compassion towards service recipients. The absence of a feeling of personal accomplishment is also a manifestation of burnout [9]. Insight into the important factors that impact nurse burnout could help identify potential strategies to protect and to retain nursing staff within the profession.

Around the world, clinical nurses are exposed to a variety of hazardous working conditions [8]. It has been estimated that general hospital employees are exposed to an average of 300 chemicals, including disinfectants, waste gases, and hazardous drugs at their workplace [10]. Additionally, health care workers are at a high risk of encountering physical violence at the workplace. A study of six tertiary teaching hospital emergency nurses revealed that 40.5% of the respondents experienced some form of physical violence [11]. In Australia, it was found that 67% of the health employees ( $n = 400$ ) had been verbally abused, 10.5% had been bullied, and 12% had been assaulted during the course of a year [12]. In the United States, the Bureau of Labor Statistics (BLS) data showed that the occupational injury and illness rate of hospital employees was 7.6 per 100 full-time workers compared with a rate of 3.9 per 100 workers in the private sector [13]. This data also demonstrated that incidence rates for three of the four most prevalent nonfatal illness and injury types (overexertion injuries, falls, and workplace violence) are 65–260% higher in health care than in other areas of private industry [13].

While clinical nurses will always face potential challenges at work, occupational stress resulting from bullying, harassment, or horizontal violence (BHHV, including behaviors of unkindness, discourtesy, sabotage, divisiveness, infighting, lack of cohesiveness, scapegoating, and criticism), as observed in clinical nurses in Hong Kong, is increasing [14]. In fact, between 17% and 76% of professional nurses in other international studies reported experiencing BHHV [15]. Although different methods of study may partially explain for this wide range, BHHV is commonly accepted as a pernicious occupational hazard for nurses globally [16,17]. BHHV has been shown to have detrimental effects on physical and psychosocial health as well as work attrition the recipients [16,17]. Psychological distress symptoms include anxiety, panic, depression, loss of confidence and self-esteem, mood swings, and irritability [15]. One study in Germany revealed that around a third of almost 2000 health care workers felt stressed by the levels of workplace violence that they had experienced [18].

Hazardous working conditions have been previously correlated with professional burnout. However, the effects of BHHV and other work related hazards on burnout have not yet been widely studied in clinical nurses. Here, a survey was performed to examine the extent to which various hazardous work conditions affect burnout in clinical nurses in Macau. These findings may provide practical implications for nurses and nursing administrators to prevent burnout and attrition within the nursing profession.

## 2. Methods

### 2.1. Research Ethics

The study protocol was reviewed and approved by the Research and Ethics Committee of the research institution. Permission to conduct the study was obtained from the Nursing Director of the Hospital. Guarantee of confidentiality and anonymity was included in the invitation letter given to each participant.

### 2.2. Study design

An explorative cross-sectional questionnaire survey was conducted on permanent registered nurses in the larger of two hospitals in Macau, a Special Administrative Region of China. In this hospital, only about 10% of the nursing staff was not permanent.

### 2.3. Study instrument

The study instrument was a questionnaire that consisted of three sections. In the first section, demographic data, including age, gender, marital status, education, and years of work experience was collected. The second section addressed burnout using the Maslach Burnout Inventory (MBI), a reliable instrument widely used to measure burnout [20]. Some terminology in the MBI was slightly rephrased; for example, the word “client” was changed to “patient,” in order to use terminology relevant to the nursing work environment. The instrument consisted of 22 questions with a 7-point Likert scale ranging from 0 (never) to 6 (every day). The MBI has three components: emotional exhaustion (EE), depersonalization (DP), and personal accomplishment (PA), with the former two being the most important determinants of burnout [9]. The EE component measures feelings of being emotionally overextended and exhausted by one's work and a higher EE score represents feeling of exhaustion and tiredness. The DP component assesses the presence of an impersonal response towards a recipient's effort. A higher DP score indicates treating individuals as impersonal objects. Finally, the PA component assesses feelings of competence and successful achievement related to one's work.

The final section of the questionnaire addressed issues associated with hazardous work conditions. In this section, the questions were adapted from the Fourth European Working Conditions Survey [21] as a base. To ensure rigor in this process, three local nursing directors were interviewed to modify the questionnaire in order to make it relevant to the local work environment. After the interviews and minor revision, the questionnaire was pilot tested with ten qualified nurses to assess content validity. Some questions required minor fine-tuning, such as providing examples. Respondents were asked to use a five-point Likert scale (1–5, where 1 = never and 5 = constantly) to indicate how often they had been exposed to various conditions at work in the past month.

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