

# The Impact of Environmental Factors and Emotional Disorders on Occupational Health Issues

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## ABSTRACT

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**Introduction:** This study investigates the relationship between factors such as age, gender (specifically male workers), alcohol and drug addiction, occupational risks, emotional disorders, and occupational health issues in the workplace.

**Methods:** Data was collected through an online survey using convenience sampling from factory workers in Thailand (n=385). Descriptive analysis and Partial Least Squares Structural Equation Modeling (PLS-SEM) were employed to analyze the relationships among the variables.

**Results:** The results indicate that emotional disorders significantly mediate the impact of alcohol and drug addiction, increasing age, occupational risks, and gender (male workers) on occupational health issues. Additionally, increasing age, alcohol and drug addiction, and occupational risks have a direct and significant effect on occupational illness or injuries in the workplace. However, the direct effect of gender (male workers) on occupational illness or injuries was not significant.

**Conclusions:** Addressing emotional disorders, addiction, and occupational risks could help reduce occupational illnesses and injuries. Qualitative research should be implemented to gain deeper insights into these relationships.

**Keywords:** Occupational illness; Occupational injuries; Emotional disorders; Workplace, Risk factors

## Introduction

The workplace has emerged as a central risk factor for the mental health of workers across the globe [1]. Factors such as organizational change, evolving technology, and complex personnel needs can harm employees' physical and emotional well-being [2, 3]. Workplace characteristics, including health and safety practices, work design, and ergonomics, can also pose significant risks to workers' health [4]. Furthermore, the increasing interdependence of work and health highlights the need for workplaces to be better prepared to address these challenges. One of the key risk factors for occupational illness and injuries is the prevalence of emotional disorders in the workplace. Stress from work combined with the stress of everyday life can lead to physical and emotional outcomes due to the excess demands placed on the human body and mind. Exposure to physical hazards in the workplace, such as unsafe working conditions or hazardous materials, can also be associated with anxiety that drives experiencing work-related stress [5].

In Thailand, the significant impact of emotional disorders on occupational health in Thailand. Among Thai farmers, both occupational and non-occupational stressors contribute to elevated levels of stress, depression, and anxiety [6]. In the healthcare sector, approximately 7.4% of physicians and 10.3% of nurses report poor mental health, with about half experiencing job-related stress [7]. Additionally, during the COVID-19 pandemic, Thai healthcare workers have faced an increased prevalence of burnout, anxiety, depression, and post-traumatic stress disorders. These findings underscore the critical need for targeted interventions to address emotional well-being in the Thai workforce [8].

The study of the impact of environmental factors and emotional disorders on occupational health was executed to understand how workplace conditions and mental health influence worker well-being and help identify key risk factors, improve workplace safety and mental health support, reduce health-related

productivity losses, and guide policies for healthier and more sustainable work environments.

## Methods

An online survey was conducted via Google Forms in the form of closed-ended questionnaires with a Likert's Rating Scale provided. The study used a random sampling method to select participants. Measurement tools were tested to ensure they were reliable and valid, providing accurate and consistent results [9].

In this study, the primary variables were assessed using a Likert scale with five response options, ranging from 5 (strongly agree) to 1 (strongly disagree). The use of this scale enabled the researchers to quantitatively measure participants' attitudes, perceptions, and agreement levels regarding the study's key constructs. Participants were surveyed from various regions across Thailand to ensure a representative sample, capturing a diverse range of demographics. The selection of demographic characteristics, including age, gender, and geographic location, was informed by previous research studies [9, 10], which provided a framework for understanding the relevant population. The questionnaire employed to measure risk factors, emotional disorders, and occupational illnesses and injuries was adapted from earlier studies [11], ensuring consistency and reliability in assessing these variables.

## Population and sampling

The population in this study consists of factory workers in Thailand. The formula for the population, which was unknown, was used to establish the size of the sample [10]. The sample size was calculated using the following formula:

$$n = [Z^2_{\alpha/2} PQ] / e^2$$

Where:

$n$  = Sample size

$Z$  = The desired level of confidence at 95% value = 1.96

$P$  = This is the proportion of correction. According to the population parameter, the researchers determined that value would make  $Q$  (1- $P$ ) as large as possible

$e$  = Margin of Error = 0.05

$$n = \frac{(1.96)^2 (0.5)(0.5)}{(0.05)^2}, n = 385$$

The inclusion criteria for the survey were as follows: participants were Thai nationals aged 18 or older and residents of various regions across Thailand. Gathering a minimum of 385 instances at a significant

level of  $P = 0.5$  through a non-probability sampling method is required to achieve a sample error rate of 5.0% at a confidence level of 95.0%. Three hundred and eighty-five individuals participated in this research study, and individuals participated, and this number aligns with the calculated sample size ( $n=385$ ).

## Data collection

Questionnaires were completed online and self-administered. One key criterion for a self-administered questionnaire was that the respondent is responsible for completing the survey without the direct involvement of a researcher or interviewer. This means that the respondent must have the necessary instructions and resources to independently fill out the questionnaire without the need for any guidance or assistance from the researcher. The study's goal was communicated to the respondents before the online questionnaire was distributed so that they would engage in the study. Data were collected between October 2023 and December 2023.

## Data analysis

The descriptive statistics (frequency and percentage) were utilized to analyze the respondents' demographic information. The factor loadings were used to conduct the validity test, and the value of 0.5 was chosen for the test. A partial least square structural equation modeling (PLS-SEM: ADANCO 2.3.2) was utilized to analyze the finished data to formulate hypotheses because it is well-suited for exploratory research with smaller sample sizes and does not require strict normality assumptions, making it more flexible for analyzing complex models with latent variables.

## Ethics considerations

The Nakhon Ratchasima College Ethics Research Committee for Human Research, Thailand, granted IRB approval (NMCEC number 0008/2566) on August 10, 2023, and renewed it annually for the study because the renewal process allows for an evaluation of the study's progress, ensuring it aligns with the original ethical framework and objectives.

## Results

Three hundred eighty-five (385) participated in the study: the majority were female (52.0%), single (52.5 %), aged 40 years old or younger (61.8%), worked as employees or staff (72.2 %), had education level bachelor's degree (62.6%), earned a salary of more than 30,000 baht (52.5 %), and living central and eastern in Thailand (70.1%). The results of this study found that Cronbach's Alphas are between 0.72 and 0.85 (over 0.7). The means are between 0.54 and 0.87 (the interpretations are strongly agreed). The standard deviations are between 0.69 and 0.91 (less than 1) (Table 1).

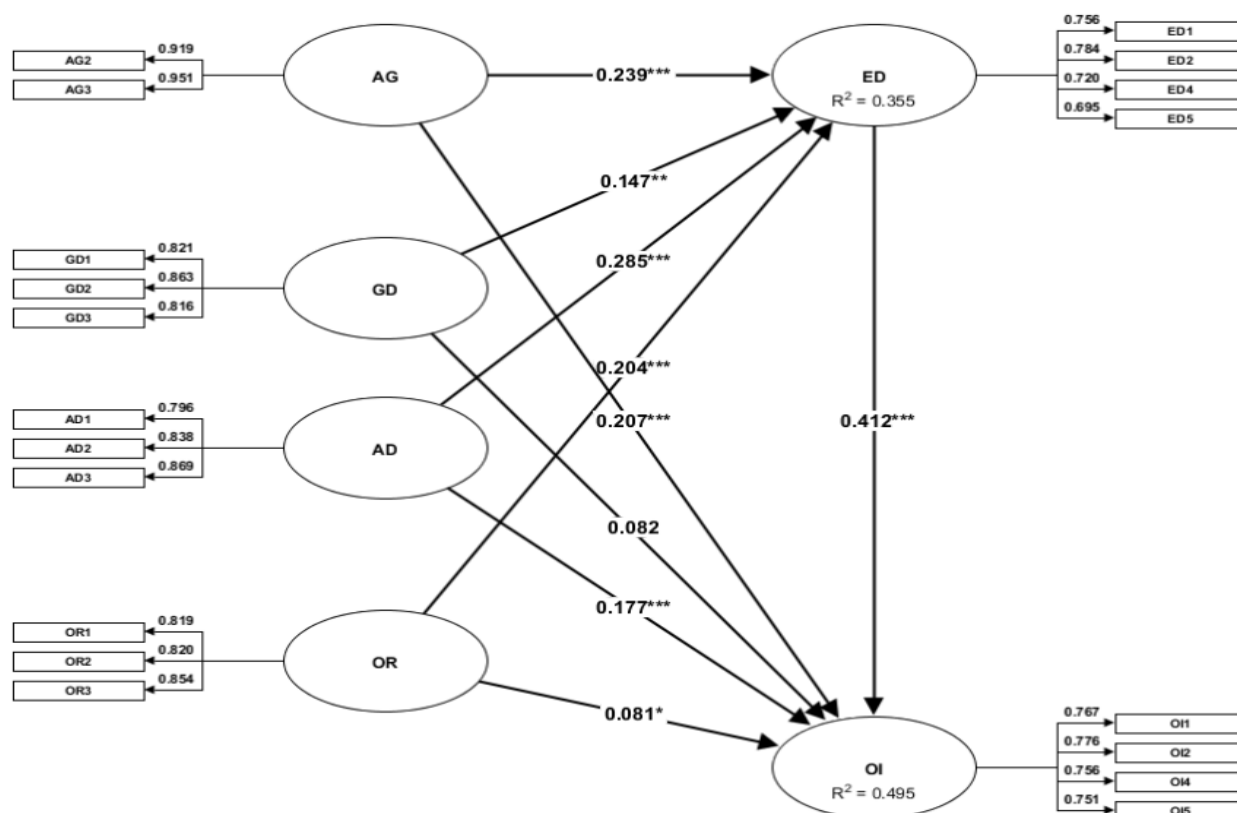
**Table 1** Demographic characteristics of those who participated in the survey (n=385)

Demographics		n	%
<b>Gender</b>	Male	185	48.0
	Female	200	52.0
<b>Age</b>	40 years old or younger	238	61.8
	41-45 years old	92	23.9
	46 years old or over	55	14.3
<b>Marital Status</b>	Single	202	52.5
	Married	182	47.3
<b>Education</b>	Below bachelor's degree	69	17.9
	Bachelor's degree	241	62.6
	Master's degree or over	75	19.5
<b>Salary</b>	Less than THB 10,000	13	3.4
	THB 10,001- 20,000	80	20.8
	THB 20,001- 30,000	90	23.4
	More than THB 30,000	202	52.5
<b>Region of Thailand</b>	Northern	58	15.1
	Central and Eastern	270	70.1
	Northeastern	34	8.8
	Southern and Western	23	6.0
<b>Working Position</b>	Manager Level	107	27.8
	Employee/ Staff	278	72.2
<b>Total</b>		<b>385</b>	<b>100.0</b>

The most significant factor contributing to occupational illnesses or injuries is emotional disorders ( $\beta = 0.41$ ,  $p$ -value  $< 0.001$ ), followed by alcohol and drug use ( $\beta = 0.28$ ,  $p$ -value  $< 0.001$ ) and increasing age ( $\beta = 0.24$ ,  $p$ -value  $< 0.001$ ), respectively. The impact of environmental factors and emotional disorders on occupational health issues can be well explained by emotional disorders, alcohol and drug use, and increasing age, accounting for approximately 35.0% and 49.0%, respectively (Table 2).

**Table 2** Construct coefficient of determination and adjusted R-square

Construct	Coefficient of Determination ( $R^2$ )	Adjusted $R^2$
Emotional Disorder	0.35	0.34
Occupational Illness or Injuries	0.49	0.48



**Figure 1** PLS-Structural Equation Model of the study (SRMR=0.0766)

AG=Increasing Age; GD=Male Workers; AD=Alcohol & Drug Addiction; OR=Occupational Risks; ED=Emotional Disorders; OI= Occupational Illness or Injuries

The study identified several predictors of emotional disorders and occupational illnesses or injuries. Increasing age significantly predicts emotional disorders ( $\beta = 0.23$ ,  $p < 0.001$ ) and occupational illnesses or injuries ( $\beta = 0.20$ ,  $p < 0.001$ ), supporting hypotheses H1 and H2. Male workers are a significant predictor of emotional disorders ( $\beta = 0.14$ ,  $p < 0.010$ ), supporting H3, but not of occupational illnesses or injuries ( $\beta = 0.08$ ,  $p > 0.050$ ), leading to the rejection of H4. Alcohol and drug addiction significantly predict both emotional disorders ( $\beta = 0.28$ ,  $p < 0.001$ ) and occupational illnesses or injuries ( $\beta = 0.17$ ,  $p < 0.001$ ), supporting H5 and H6. Occupational risks significantly predict emotional disorders ( $\beta = 0.20$ ,  $p < 0.001$ ) and occupational illnesses or injuries ( $\beta = 0.08$ ,  $p < 0.05$ ), supporting H7 and H8. Emotional disorders strongly predict occupational illnesses or injuries ( $\beta = 0.41$ ,  $p < 0.001$ ), supporting H9. Additionally, emotional disorders were identified as a significant mediator, explaining 35.5% of the variance in the relationship between risk factors and occupational illnesses or injuries ( $R^2 = 0.355$ ), supporting H10 (Fig 1).

## Discussions

The findings support Concha-Barrientos, et al [12] that Injuries and illnesses on the job can harm health. There is a broad spectrum of harmful effects, including asymptomatic physiological and biochemical changes, signs of illness, clinically recognized disorders, and even death. There is a clear connection between specific risk factors and exposure to sickness. There is a clear comprehension of exposures, which includes occupational contamination. Others, such as injuries sustained on the job, have not been well described or are complicated, but the condition that they produce is evident.

Amissah et al. [13] reported that proximal risk factors, such as age, sex, and income, have been identified as contributors to occupational injuries among frontline construction workers, including age, sex, income, and distal risk factors such as work structure, trade specialization, working hours, job/task location, and monthly off days. Policymakers and occupational health experts evaluate proximal and distal injury prevention and management. Kyung et al. [14] supported that many variables cause underreporting of injury or illness. These include injury type and severity, sociodemographic factors (age, gender, education, race/ethnicity), general health and functioning, worker

reporting knowledge, job and employment characteristics (work hours, job tenure, type of occupation, and physical demand), psychosocial work environment (supervisor support, coworker support, and safety climate), and health care.

The results indicate that emotional disorders significantly mediate occupational illness or injury in the workplace caused by alcohol and drug addiction, increasing age, occupational risks, and male workers, respectively. In addition, increasing age, alcohol and drug addiction, and occupational risks significantly impact occupational illness and injury, but not by male workers. The findings could assist healthcare administrators in developing more effective strategies to prevent emotional disorders, occupational illnesses, and injuries. Occupational diseases and accidents are critical issues for both the workplace and society. The key to avoiding such illnesses is identifying and reducing the risk factors that cause them. Some studies show a significant risk factor for workplace illnesses and injuries is emotional problems. The subject of this paper will investigate how emotional disorders can mediate the link between risk variables and occupational diseases and injuries.

## Conclusions

Occupational health and safety is a crucial issue that includes both physical and mental well-being. Emotional disorders, such as depression and anxiety, play a key role in linking workplace risk factors to illnesses and injuries. Preventive measures, such as ergonomic adjustments, training, and mental health services, can reduce workplace accidents and improve overall employee well-being and productivity. A supportive workplace culture that prioritizes safety and mental health can prevent issues like absenteeism, substance abuse, and lost productivity. Promoting such initiatives benefits individual employees, organizational performance, and workforce morale.

Protecting workers' health and safety is a critical issue that involves promoting physical, mental, and social well-being. Adapting the working environment to meet workers' needs is essential for reducing occupational illnesses and injuries, as mental disorders often mediate the link between risk factors and health outcomes. Employers who prioritize health and safety initiatives can enhance both worker productivity and overall well-being. Rapid industrial and agricultural development, particularly in emerging economies, has globalized occupational health challenges, necessitating collaborative efforts to address the effects of new technologies and production methods. While this quantitative study provides general insights, further qualitative research is recommended to gain a deeper understanding through interviews or group discussions.

## Competing interests

The authors declare that there is no conflict of interest.

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