# Unraveling the Dynamics of Occupational Health and Safety: Strategies for a Resilient Workforce

Vimala Venugopal Muthuswamy*

School of Business, Department of Management, King Faisal University, Saudi Arabia.

*Correspondence: fmuthuswamy@kfu.edu.sa

## Abstract

This research aims to explore the existing relationship among the organizational occupational health and safety (OHS) management, OHS courses, employee health, medication awareness, and knowledge of pharmacist availability in organizations. The basic aim of this research was to test the direct relationship of organizational occupational health and safety (OHS) management and employee health. Whereas this study used OHS courses as mediator in this relation and medication awareness, and knowledge of pharmacist availability in organizations as moderators to explore the phenomenon in depth. To achieve the objective of this research, this study has collected the data from the 266 employees working in oil refineries of Kingdom of Saudi Arabia. Moreover, this research employed STATA-SEM modeling to test aimed relationships. The results of this research have shown a significant relationship among the direct path of this research. Moreover, results revealed that the offered OHS courses in organizations significantly mediates this relationship. The findings of this study further explained that the medication awareness, and knowledge of pharmacist availability in organization also moderates this direct relationship. The results emphasize the breadth of OHS initiatives and instructional initiatives. The unique contribution of the study is elucidating the ways in which occupational health and safety (OHS) courses and employee knowledge and awareness interact and moderate one another. Businesses can utilize this information to create safer and healthier work environments, especially in high-risk industries like oil refineries.

**Keywords**: Occupational Health and Safety, Employee Health, Structural Equation Modeling, Oil Refineries, Workplace Safety.

## Introduction

Occupational health and safety (OHS) management is essential to ensuring worker wellbeing and maintaining a safe workplace across a range of industries. The concept encompasses a wide range of strategies intended to prevent work-related illnesses, mishaps, and injuries, improving workers' physical and mental

health (Alqassab et al., 2024). Due to organizational pressure to prioritize employee health and safety as well as legal responsibilities, OHS management has grown in importance in recent years (Munir, Khan, & Khan, 2024). According to Niv and Tal (2024), efficient OHS management systems are essential for reducing workplace hazards and boosting employee morale and productivity. Robust OHS protocols are critical to the competitiveness and sustainability of an organization as well as worker safety (Adamopoulos, Bardavouras, & Syrou, 2023).

Previous empirical studies in the realm of OHS have shed important light on the causes and consequences of OHS management strategies. according to research like Nairat et al. (2023) and Rendrayani et al. (2023), comprehensive OHS programs have been shown to reduce workplace accidents and improve employee health outcomes. In addition, studies conducted by Virhia et al. (2023) and Allabi et al. (2023) have highlighted how leadership and company culture impact OHS management systems performances. The importance of using a holistic approach that considers organizational, managerial, and individual issues is shown by these findings, which combined highlight the varied character of OHS management (Olkiewicz, 2023). Empirical research has shown a complex link between OHS practices and employee well-being (Anjalee et al., 2024). A systematic review of the literature discovered that improved occupational health and safety management benefits worker health (Adamopoulos et al., 2023). These findings suggest that companies must take proactive safety safeguards. They prioritize workplace safety in order to follow rules and achieve strategic objectives. Nairat et al. (2023) investigated how healthcare accessibility influences occupational health. This study extends the area by looking into the moderating impacts of employee knowledge on pharmacist availability, medical awareness, and workplace health and safety training. This study will look into how educational programs, organizational policies, and healthcare accessibility influence worker health. The findings may benefit Saudi occupational health and safety practitioners and legislators.

Although a lot of research has been done on occupational health and safety, there are still some gaps in the knowledge (Wong, Ram, & Scahill, 2023; World

Health Organization, 2022). The processes by which OHS management practices affect employee health appear to be less known, according to the literature (Rendrayani et al., 2023). The literature on OHS management and employee health outcomes (Virhia et al., 2023) establishes the foundation for recognizing the importance of safety measures in organizations. However, the intricate processes by which OHS programs and other educational activities influence OHS management and worker health remain unexplored (Khobrani et al., 2023). It is also uncertain how medical knowledge and healthcare accessibility influence worker health and safety management and occupational health (Allabi et al., 2023). Much of current research has concentrated on Western organizational environments, thus our understanding of these processes across other cultural and regulatory frameworks, particularly Saudi Arabia's, is limited (Olkiewicz, 2023). The literature generally lacks specifics about contextual elements that may affect OHS program implementation and performance across industries and organizational settings (Isenhardt & Hostettler, 2020). According to Virhia et al. (2023), employee knowledge and awareness should be studied more deeply to promote workplace safety and health.

Social Ecological Model (SEM) and Health Belief Model (HBM) theoretical frameworks help in explaining the proposed complicated relationship (Nairat et al., 2023; Olkiewicz, 2023) between organizational occupational health and safety (OHS) management, OHS courses, employee health, medication awareness, and knowledge of pharmacist availability in organizations. Based on these theoretical foundations, this research examines the relationships between organizational OHS management practices, OHS courses, employee knowledge and awareness about pharmacist availability and medicines, and employee health outcomes in Saudi oil refineries. This study seeks to identify the direct and mediated mechanisms by which these factors affect employee health and identify moderators that may increase or mitigate these impacts. This research aims to augment the literature by offering empirical evidence and practical insights for optimizing OHS management practices and promoting employee health in high-risk industrial environments.

## Literature Review

Research in the healthcare field has highlighted the importance of proactive safety measures in promoting a healthy work environment, specifically in relation to organizational occupational health and safety (OHS) management and employee health (Jacobson et al., 2022). The impact of occupational health and safety programs on worker health and safety was investigated across various businesses and industries (Yawson et al., 2022). The study established a favorable association and highlighted various occupational health and safety management factors that predicted health outcomes. Staff training, risk assessments, and safety measures were used. A solid safety framework reduces work-related health difficulties in employees whose employers took a more holistic approach to occupational health and safety (Thirunavukkarasu et al., 2022). Chisholm, Swart, and Blockman (2022) longitudinal study revealed OHS management's long-term effects on employees' well-being. The study indicated that long-term organizational initiatives reduced workplace illnesses and injuries. This perspective stressed the long-term benefits of OHS measures, saying that continuous safety precautions led to a healthier workforce (Wilcox, 2021). A mediator between worker health and safety management and occupational health and safety, organizational culture was also examined in the study. An employee-supportive safety culture may boost health outcomes (Huang et al., 2021). These studies agree: investing in occupational health and safety management can increase employee health. This is a long-term improvement for all employees, not a temporary fix.

**H1.** *Occupational health and safety management at organizations significantly influences the employee's health.*

Exploring the effects of organizational health and safety (OHS) courses on worker health has enhanced the association between training programs and well-being (Daniel, 2021). An innovative study by Hasan et al. (2021) examined the effectiveness of occupational health and safety (OHS) courses offered by diverse businesses. Mixed-methods research combined qualitative worker interviews with quantitative health outcomes measures (Alhumaid et al., 2021). The study found that OHS classes enhanced employees' health. Significant OHS training

increased employee safety, reduced occupational injuries, and helped them understand the risks (Abdiwali, 2021). This study showed the benefits of firm-provided occupational health and safety (OHS) courses and the necessity to tailor training to workplace needs and risks (Aleanizy & Alqahtani, 2021). Accordingly, Barchitta et al. (2021) investigated how employees' health and safety habits changed over time as a result of company-funded OHS training. In follow-up investigations, the training improved health outcomes (Riascos, Ensslin, & Merino, 2021). Programs in Occupational Health Studies (OHS) encouraged employees to take greater ownership of their health and adhere to safety regulations. The research states that continuous training in occupational health and safety is necessary (Almohammed et al., 2021). A company's ongoing training programs are crucial to promoting a workplace that prioritizes safety (Roy et al., 2020). These findings show that companies can enhance their employees' health in the long run by offering them OHS training courses, which will ultimately boost safety awareness and behavior.

**H2.** *Occupational health and safety courses provided by the organization significantly influence the employee's health.*

Organizational OHS courses have been extensively studied for their function in bridging employee wellbeing and OHS management (Tripathi et al., 2020). Asghar et al. (2020) conducted a detailed analysis on occupational health and safety courses as a mediator between firm safety policies and employee health outcomes. (Rahma et al., 2020) identified a mediation mechanism for occupational health and safety training, demonstrating their importance. Comprehensive occupational health and safety education and management systems improved worker health, the study found. According to the Yu (2020), using workers' skills and abilities reduced occupational health risks and hazards. Continuous safety warnings while the course helped. Workers reduced health risks and job hazards by applying their knowledge and skills. It was because of the safety messages throughout the training. Niv and Tal (2024) examined the temporal mediation process to determine how organizational OHS management affects employee health over time. Management and OHS training were introduced to staff in waves (Adamopoulos et al., 2023). The results showed that staff

safety initiatives relied on occupational health and safety training. The study also indicated that frequent OHS training boosted the positive effects of organizational OHS management on staff well-being (Rendrayani et al., 2023). These studies suggest that organizationally delivered OHS training mitigate the connection between OHS management practices and worker health. They discuss how training might improve workplace safety.

**H3.** *Occupational health and safety courses provided by the organization significantly mediates the relationship of occupational health and safety management at the organization and employee health.*

Empirical study has examined how workers' awareness and knowledge of pharmacist availability may affect the complex interaction between worker health and organizational OHS management (Allabi et al., 2023). Tamers et al. (2020) examined how pharmacist service expertise affects employee health promotion through OHS management to illuminate this complex relationship. A cross-sectional poll of different organizations found that employees' views of their pharmacy staff boosted their views of the company's health services (Virhia et al., 2023). The study demonstrated that awareness of pharmaceutical service accessibility moderated the health benefits of excellent OHS management practices. Employee understanding of health and safety activities is crucial for business benefits. This set up Olkiewicz (2023) longitudinal study on employee knowledge and awareness's moderating effect on OHS management and worker health. Multiple reviews revealed that pharmacist availability improved OHS management practices and employee health (Thirunavukkarasu et al., 2022). The findings emphasize pharmacist education and occupational health and safety management (Daniel, 2021). These empirical investigations demonstrate that pharmacist availability knowledge and awareness affect corporate OHS management and employee health (Aleanizy & Alqahtani, 2021). This example shows how health and safety measures and informed employee participation work together.

**H4:** *Knowledge and awareness of employees about pharmacist availability significantly moderates the relationship of occupational health and safety management at organization and employee health.*

More study has been conducted to determine how medical competence moderates the relationship between workplace OHS management and employee well-being (Almohammed et al., 2021). Tripathi et al. (2020) study into this complicated connection was noteworthy. Researchers discovered that employees' comprehension of accessible medications influences organizational OHS management's health protection (Chisholm et al., 2022). Wong et al. (2023) also conducted a longitudinal study on how medicine awareness affects employee health in OHS management. The study found that preserving and increasing awareness of easily available medications improved OHS management practices' short-term benefits and employee health outcomes over time through a battery of health tests and longitudinal questionnaires (Almohammed et al., 2021). The study advises companies to aggressively market and educate employees about medication availability and benefits and develop good occupational health and safety management practices. These empirical studies suggest that medical knowledge alters the relationship between workplace safety and health management and employee health (Tripathi et al., 2020). They also show the benefits of comprehensive health and safety regulations and educated employee participation in medical resource use.

**H5.** *Medicine awareness significantly moderates the relationship of occupational health and safety management at organization and employee health.*

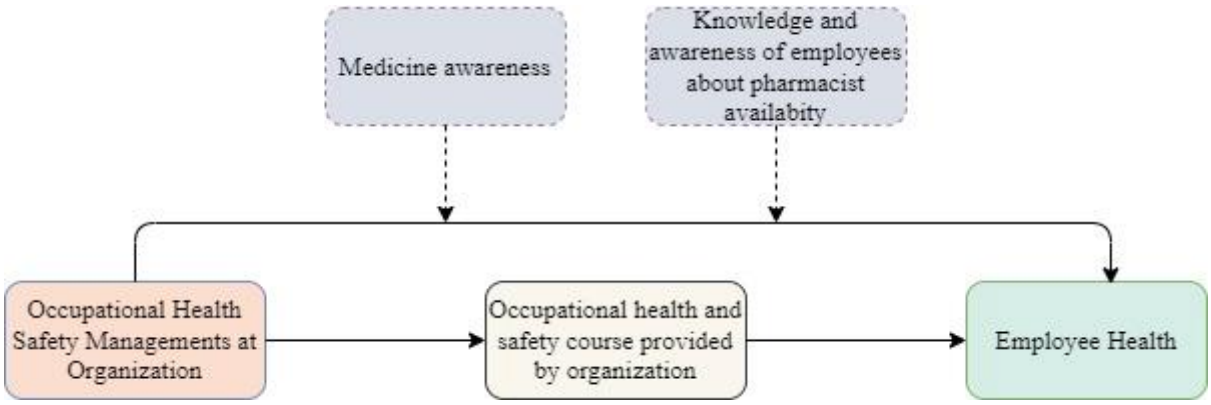


Figure 1: Conceptual Model.

## Methodology

The data for this research was collected from 266 employees of various petrochemical facilities in Saudi Arabia. This research focuses on oil refineries due to the industry's inherent hazards and the crucial relevance of OSHA compliance. When selecting participants, we made certain that managers, supervisors, and frontline workers from all levels of the refinery's workforce were represented. Before any data was gathered, all subjects provided informed consent, and the relevant institutional review board granted ethical approval. The study's primary factors were assessed using scales from previously validated instruments. The study assessed four primary constructs: employees' knowledge with and understanding of pharmacist availability, organizational OHS management, company-provided OHS training, and medication awareness. Previous research has shown that validated scales are valid and reliable, and these components were assessed using items from these scales. Using known tools, the study was able to improve its methodological rigor and make relevant comparisons to current literature (see appendix 1). Occupational health and safety course provided by organization was measure on eleven items scale in this study (Olcay, Temur, & Sakalli, 2021). Occupational health and safety management at organization was measure on eight items scale of (Bansal & Yadav, 2016). To measure the medicine awareness, a five items scale of Rehman et al. (2020) was used in this research. This research has used the scale of Parasuraman et al. (2014) to measure the knowledge and awareness of employees about pharmacist availability; the scale was comprised of total seven items. Employee health was measure in this research based on twelve items scale of El-Metwally et al. (2018).

Data was collected through a structured survey. A full evaluation was achieved by surveying the study's primary constructs. To understand participation, a demographic survey was done. Anonymous participants gave better answers. Electronically sending the questionnaire gave participants time to complete it, improving data collection. Survey data was analyzed with Stata-SEM. Because it can explore complex latent component-observable stimulus correlations, SEM was chosen. The measurement model was tested using CFA, while structural equation modeling (SEM) assessed the hypothesized study variables' correlations. These

research revealed how organizational OHS management, training, staff pharmacist availability, medication awareness, and employee health interact. Select respondents received the survey questionnaire following informed consent and ethics approval. To guarantee consistency, participants were told to respond honestly and carefully. The data was cleaned and prepared for analysis. Stata-SEM scales provide precise association analysis. The study's intricacy was comprehended by thorough data analysis, including measurement model validation and structural equation modeling.

## Results

Table 1's Cronbach's Alpha coefficients for several variables indicate the research's measures' validity and internal consistency. The variable "Medicine awareness" has a Cronbach's Alpha of 0.780, indicating strong internal consistency when assessing employees' knowledge of business pharmaceuticals. The construct "Knowledge and awareness of employees about pharmacist availability" has a Cronbach's Alpha of 0.816, indicating that it accurately measures employees' comprehension of pharmacist availability. "Occupational health and safety management at organization" and "Occupational health and safety course provided by organization" have excellent internal consistency, with Cronbach's Alphas of 0.855 and 0.843, respectively. The above results demonstrate the reliability of indicators used to assess company occupational health and safety efforts. Finally, with a Cronbach's Alpha of 0.887, "Employee health" shows good internal consistency, indicating that the composite measure accurately covers employee health's many elements. Strong Cronbach's Alpha coefficients across all variables in the table indicated the study's measurement apparatus was dependable. This prepares the data for analysis and interpretation.

Table 1: Cronbach's Alpha.

| Variable | Cronbach's Alpha |
|---|---|
| Medicine awareness | 0.780 |
| Knowledge and awareness of employees about pharmacist availability | 0.816 |
| Occupational health and safety course provided by organization | 0.855 |
| Occupational health and safety management at organization | 0.843 |
| Employee health | 0.887 |

Table 2 validates research variables' validity and reliability using Composite Reliability (CR) and Average Variance Extracted (AVE). "Medicine awareness" has 0.746 Composite Reliability, suggesting internal consistency. The construct captures substantially more variance than the threshold, demonstrating its convergent validity with an AVE of 0.618. The item "Knowledge and awareness of employees about pharmacist availability" has strong convergent validity and internal consistency with an AVE of 0.560 and CR of 0.877. "Occupational health and safety management at organization" and "Occupational health and safety course provided by organization" have Composite Reliability (CR) ratings of 0.818 and 0.807, demonstrating internal consistency. AVE values of 0.541 and 0.568 suggest good convergence. Its Composite Reliability (CR) of 0.849 and Average Variance Extracted (AVE) of 0.536 demonstrate "Employee health"'s convergent validity and reliability. These findings prove the measuring model's durability and validate the study variables for further investigation.

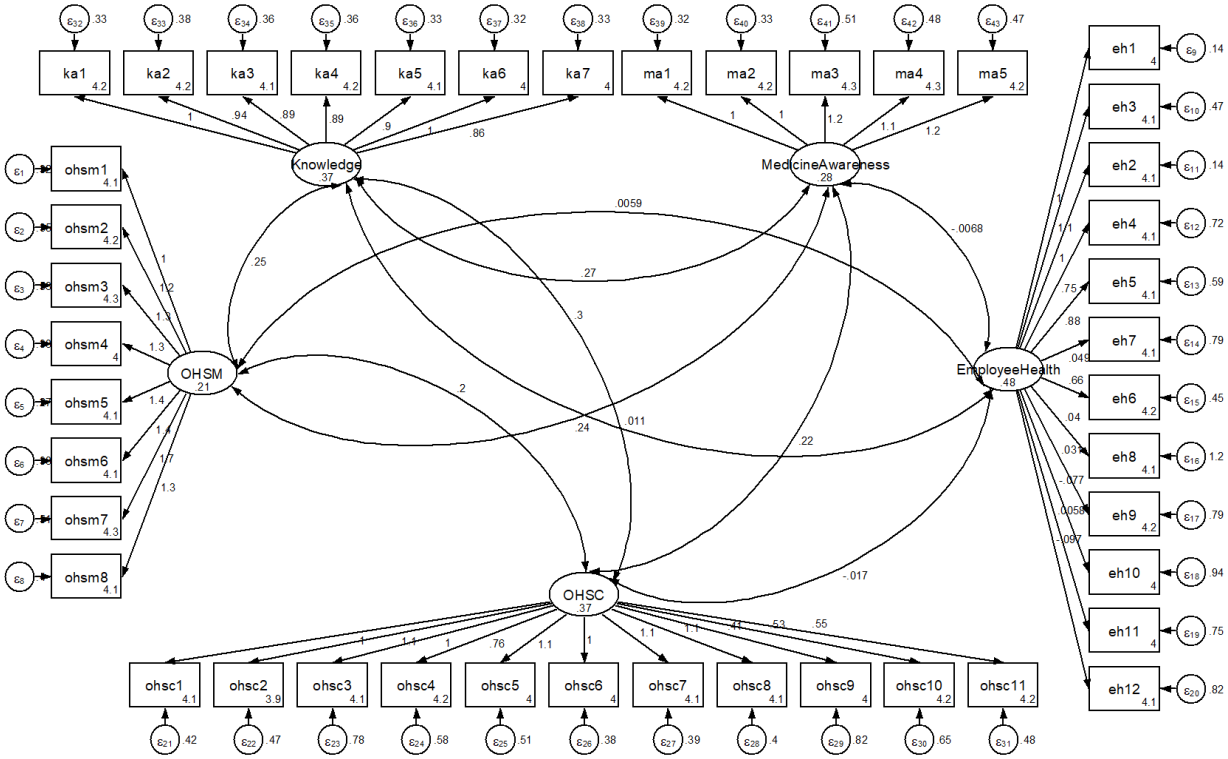


Figure 2: Estimated Model.

Additionally, concept discriminant validity is shown in Table 2. The square root of AVE for every variable is greater than its correlations with other constructs,

indicating discriminant validity. This demonstrates that the variables evaluate different characteristics and have no discernible relationship, which supports the measurement model. The study's foundation is strengthened by Table 2's reliability and validity confirmation, which also increases confidence in the precision and accuracy of the measurement tools and makes it possible to conduct pertinent and trustworthy analyses of the proposed correlations.

Table 2: Validity and Reliability Confirmation.

| Variable | Composite Reliability | Average Variance Extracted (AVE) |
|---|---|---|
| Medicine awareness | 0.746 | 0.618 |
| Knowledge and awareness of employees about pharmacist availability | 0.877 | 0.560 |
| Occupational health and safety course provided by organization | 0.818 | 0.541 |
| Occupational health and safety management at organization | 0.807 | 0.568 |
| Employee health | 0.849 | 0.536 |

Table 3 shows confirmation factor analysis (CFA) results on measurement model fit and latent variable-indicator relationships. While Standard Errors, Z-scores, and p-values indicate the importance of these interactions, standardized path coefficients (OIM Coef.) indicate their strength and direction. For instance, all five indicators (MA1 to MA5) in the "Medicine awareness" construct had significant positive relationships with the latent variable to quantify organization medical awareness. With MA1's narrow path as a reference, the other signals are stronger. "Knowledge and awareness of employees about pharmacist availability," "Occupational health and safety course provided by organization," "Occupational health and safety management at organization," and "Employee health." show similar trends. Standardized route coefficients confirm positive connections between latent variables and indicators. The measurement model's reliability is shown by these associations' low p-values. The CFA results in Table 3 thoroughly analyze the relationships between latent constructs and their indicators, proving the measuring model's validity and coherence in capturing the study variables' desired qualities.

Table 3: Confirmatory Factor Analysis.

| Measurement | OIM Coef. | Std. Err. | z | P>\|z\| | [95% Conf. | Interval] |
|---|---|---|---|---|---|---|
| MA1 | 1 | (constrained) | | | | |
| MA2 | 0.770 | 0.071 | 10.959 | 0.000 | 0.630 | 0.909 |
| MA3 | 0.566 | 0.063 | 9.038 | 0.000 | 0.442 | 0.690 |
| MA4 | 0.741 | 0.067 | 10.664 | 0.000 | 0.609 | 0.873 |
| MA5 | 0.901 | 0.082 | 11.050 | 0.000 | 0.739 | 0.860 |
| KA1 | 1 | (constrained) | | | | |
| KA2 | 0.330 | 0.066 | 5.075 | 0.000 | 0.201 | 0.459 |
| KA3 | 0.660 | 0.069 | 9.726 | 0.000 | 0.525 | 0.794 |
| KA4 | 0.877 | 0.082 | 12.374 | 0.002 | 0.722 | 0.890 |
| KA5 | 0.616 | 0.065 | 9.523 | 0.000 | 0.488 | 0.744 |
| KA6 | 0.731 | 0.085 | 8.654 | 0.000 | 0.563 | 0.898 |
| KA7 | 0.816 | 0.066 | 12.465 | 0.000 | 0.686 | 0.945 |
| OHC1 | 1 | (constrained) | | | | |
| OHC2 | 0.900 | 0.071 | 12.910 | 0.000 | 0.762 | 0.836 |
| OHC3 | 0.921 | 0.072 | 12.920 | 0.000 | 0.780 | 0.860 |
| OHC4 | 0.903 | 0.059 | 15.529 | 0.000 | 0.788 | 0.816 |
| OHC5 | 0.782 | 0.063 | 11.953 | 0.000 | 0.658 | 0.906 |
| OHC6 | 0.857 | 0.060 | 13.737 | 0.000 | 0.738 | 0.781 |
| OHC7 | 0.758 | 0.072 | 14.251 | 0.000 | 0.713 | 0.917 |
| OHC8 | 0.619 | 0.072 | 10.312 | 0.005 | 0.516 | 0.850 |
| OHC9 | 0.804 | 0.066 | 11.798 | 0.000 | 0.674 | 0.933 |
| OHC10 | 0.780 | 0.067 | 11.333 | 0.000 | 0.649 | 0.911 |
| OHC11 | 0.883 | 0.069 | 12.390 | 0.000 | 0.748 | 0.825 |
| OHM1 | 1 | (constrained) | | | | |
| OHM2 | 0.813 | 0.067 | 11.760 | 0.000 | 0.682 | 0.945 |
| OHM3 | 0.842 | 0.066 | 12.283 | 0.000 | 0.712 | 0.779 |
| OHM4 | 0.834 | 0.065 | 12.351 | 0.000 | 0.705 | 0.962 |
| OHM5 | 0.699 | 0.060 | 11.252 | 0.000 | 0.582 | 0.816 |
| OHM6 | 0.843 | 0.071 | 11.454 | 0.000 | 0.500 | 0.755 |
| OHM7 | 0.892 | 0.066 | 13.088 | 0.000 | 0.764 | 0.828 |
| OHM8 | 0.807 | 0.066 | 11.665 | 0.000 | 0.677 | 0.937 |
| EH1 | 1 | (constrained) | | | | |
| EH2 | 0.843 | 0.071 | 11.454 | 0.000 | 0.705 | 0.790 |
| EH3 | 0.770 | 0.063 | 11.790 | 0.000 | 0.647 | 0.893 |
| EH4 | 0.851 | 0.065 | 12.598 | 0.000 | 0.723 | 0.786 |
| EH5 | 0.878 | 0.064 | 13.204 | 0.000 | 0.753 | 0.811 |
| EH6 | 0.713 | 0.061 | 11.184 | 0.000 | 0.593 | 0.833 |
| EH7 | 0.857 | 0.078 | 10.511 | 0.000 | 0.703 | 0.818 |
| EH8 | 0.628 | 0.065 | 9.251 | 0.000 | 0.500 | 0.755 |
| EH9 | 0.314 | 0.063 | 4.828 | 0.000 | 0.191 | 0.436 |
| EH10 | 0.589 | 0.069 | 9.809 | 0.005 | 0.490 | 0.808 |
| EH11 | 0.834 | 0.078 | 11.771 | 0.002 | 0.687 | 0.847 |
| EH12 | 0.708 | 0.071 | 10.049 | 0.000 | 0.569 | 0.848 |

The factor loadings for measurement items within each variable in the Original Sample are displayed in Table 4, providing insight into their fitness. The strength of each indicator's relationship to its underlying variable is displayed by these factor loadings. The factor loadings for the five "Medicine awareness" indicators (MA1 to MA5) range from 0.714 to 0.830, indicating their significant contribution to the measurement of medicine awareness. The "Knowledge and awareness of employees about pharmacist availability" construct has several indicators with substantial factor loadings; however, three indicators stand out in particular, with values of 0.880, 0.841, and 0.870: KA2, KA4, and KA5. The efficacy of the "Occupational health and safety management at organization" and "Occupational health and safety course provided by organization" constructs in evaluating the intended dimensions is further demonstrated by the constant and significant factor loadings across their indicators. Lastly, indicators EH2, EH3, EH6, EH7, EH10, and EH12 exhibit significant factor loadings in the "Employee health" construct, indicating their significance in capturing different elements of employee health. Assessment items are resilient and constructions dependable in evaluating the intended aspects of the study when they have high factor loadings.

Table 4: Measurement Items Fitness Statistics.

| Variable | Indicator | Original Sample |
|---|---|---|
| Medicine awareness | MA1 | 0.811 |
| | MA2 | 0.801 |
| | MA3 | 0.714 |
| | MA4 | 0.771 |
| | MA5 | 0.830 |
| Knowledge and awareness of employees about pharmacist availability | KA1 | 0.855 |
| | KA2 | 0.880 |
| | KA3 | 0.792 |
| | KA4 | 0.841 |
| | KA5 | 0.870 |
| | KA6 | 0.585 |
| | KA7 | 0.714 |
| Occupational health and safety course provided by organization | OHC1 | 0.822 |
| | OHC2 | 0.867 |
| | OHC3 | 0.901 |

| | | |
|---|---|---|
| | OHC4 | 0.852 |
| | OHC5 | 0.819 |
| | OHC6 | 0.677 |
| | OHC7 | 0.617 |
| | OHC8 | 0.736 |
| | OHC9 | 0.791 |
| | OHC10 | 0.833 |
| | OHC11 | 0.856 |
| Occupational health and safety management at organization | OHM1 | 0.775 |
| | OHM2 | 0.662 |
| | OHM3 | 0.654 |
| | OHM4 | 0.581 |
| | OHM5 | 0.568 |
| | OHM6 | 0.602 |
| | OHM7 | 0.883 |
| | OHM8 | 0.778 |
| Employee health | EH1 | 0.772 |
| | EH2 | 0.804 |
| | EH3 | 0.821 |
| | EH4 | 0.669 |
| | EH5 | 0.646 |
| | EH6 | 0.855 |
| | EH7 | 0.880 |
| | EH8 | 0.792 |
| | EH9 | 0.741 |
| | EH10 | 0.870 |
| | EH11 | 0.585 |
| | EH12 | 0.887 |

The model's Chi-square fit statistics, displayed in Table 5, illustrate how well the recommended model matches the saturated model. The likelihood ratio chi-square value of 12971.839 compared to the saturated model indicates model fit. The model and saturated model differ significantly, as seen by the 0.000 p-value, suggesting areas for fit improvement. Compared to the saturated model, the baseline model's chi-square value is 11093.552, with a p-value of 0.000. Due to a statistically substantial difference between the saturated model and the baseline model, the given model may not correctly replicate the observed data. Even though Chi-square fit statistics provide useful information about model fit, the Comparative Fit Index (CFI) and Root Mean Square Error of Approximation (RMSEA) should be considered for a more complete assessment of the model's ability to explain the observed data.

Table 5: Chi-square Fit Statistics.

| Fit Statistic | Value | Description |
|---|---|---|
| Likelihood ratio | 12971.839 | model vs. saturated |
| p > chi2 | 0.000 | |
| chi2_bs(2356) | 11093.552 | baseline vs. saturated |
| p > chi2 | 0.000 | |

Table 6 presents goodness of fit statistics for the estimated and saturated models, with a focus on the Standardized Root Mean Square Residual. Model fit is indicated by SRMR values, where lower values correspond to better fit. While the predicted model's SRMR is 0.076, the saturated model's is 0.057. Although there appears to be a difference between the two models based on the SRMR values, SRMR values less than 0.08 are often considered adequate. The calculated model's SRMR is acceptable in spite of the little discrepancy. For a more thorough evaluation of the model's capacity to explain observed data, two additional metrics are advised: the Comparative Fit Index (CFI) and the Root Mean Square Error of Approximation (RMSEA).

Table 6: Model Goodness of Fit Statistics.

| | Saturated Model | Estimated Model |
|---|---|---|
| SRMR | 0.057 | 0.076 |

Table 7 shows the R-square values for each variable, revealing the model's latent constructs' variance share. This study employed R-square values to determine how much latent component variability explains observed variable variability. For "Medicine awareness," the R-square score of 0.373 suggests that the latent component explains 37.3% of the variance. "Knowledge and awareness of employees about pharmacist availability" has a higher R-square value (0.499), indicating that the latent variable accounts for 49.9% of the construct's variability. Even more strongly, the variable "Occupational health and safety course provided by organization" has an R-square value of 0.589, indicating that the latent construct explains almost 58.9% of the variance in occupational health and safety course variables. For "Occupational health

and safety management at organization", the R-square value is 0.224, indicating that the latent construct explains for 22.4% of the variability in observed variables related to organizational OHS management. These R-square values reveal how well the model's latent components explain the study variables' variability.

Table 7: R-Square Statistics.

| Variable | R Square |
|---|---|
| Medicine awareness | 0.373 |
| Knowledge and awareness of employees about pharmacist availability | 0.499 |
| Occupational health and safety course provided by organization | 0.589 |
| Occupational health and safety management at organization | 0.224 |

Table 8 shows how organizational OHS management, OHS courses, and employee health are associated through direct and mediated route analysis. Organizational OHS management significantly affects employee health (OIM Coef. = 0.276, $p < 0.001$). This reinforces studies indicating efficient OHS management promotes employee health. Each unit improvement in organizational OHS management boosts employee health by 0.276 units, demonstrating the value of robust OHS management systems.

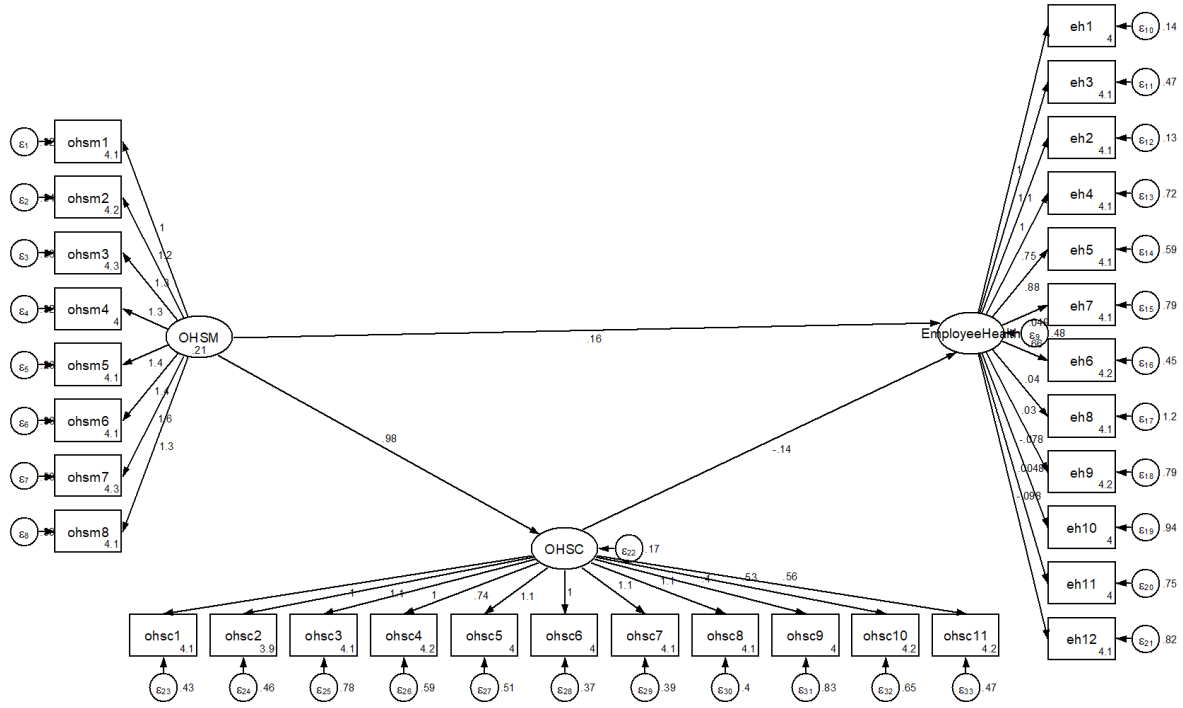


Figure 3: Structural Model for Direct and Mediated Path Analysis.

On the second path, OHS courses significantly affect employee health (OIM Coef. = 0.888, $p < 0.001$). Companies that provide thorough OHS education increase employee health. OHS training improve employee health by 0.888 units per unit. Staff health and safety education is crucial. The third path demonstrates that organizational OHS courses significantly mediates the relationship of OHS management and employee health (OIM Coef. = 0.611, $p = 0.005$). OHS courses may improve employee health through OHS management. The mediated impact of educational interventions on organizational OHS management practices improves employee health. These data demonstrate the mediation effect by showing the complicated relationships between corporate OHS management, OHS courses, and employee health.

Table 8: Direct and Mediated Path Analysis.

| | **OIM Coef.** | **Std. Err.** | **z** | **P>\|z\|** | **[95% Conf. Interval]** | |
|---|---|---|---|---|---|---|
| Occupational health and safety management at organizations significantly influences the employee health. | 0.276 | 0.100 | 2.754 | 0.001 | 0.080 | 0.472 |
| Occupational health and safety courses provided by the organization significantly influences the employee health. | 0.888 | 0.495 | 1.786 | 0.000 | 0.680 | 0.861 |
| Occupational health and safety courses provided by the organization significantly mediates the relationship of occupational health and safety management at the organization and employee health. | 0.611 | 0.071 | 2.178 | 0.005 | 0.509 | 0.839 |

Table 9 indicates how employee knowledge and awareness of pharmacist availability and medicine awareness moderates the relationship of organizational OHS management and employee health. First, pharmacist availability knowledge moderates the link between organizational OHS management and employee health (OIM Coef. = 0.210, $p = 0.008$). How well individuals know the organization's

pharmacists affects OHS management techniques' impact on employee health. The positive coefficient suggests that pharmacist availability knowledge and awareness improve organizational OHS management and employee health, emphasizing the need of knowledgeable staff in optimizing OHS practices.

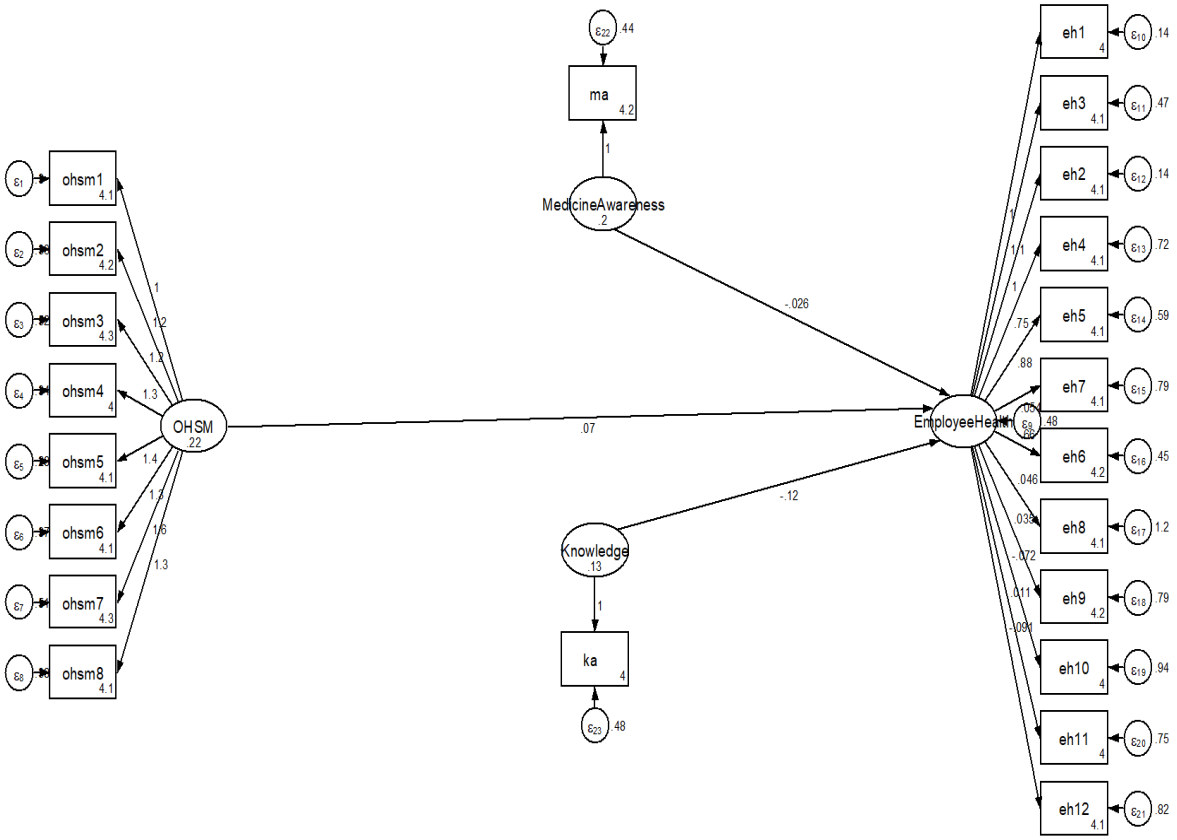


Figure 4: Structural Model for Moderating Path Analysis.

The second moderating path highlights the impact of medicine awareness on the connection between OHS management and employee health (OIM Coef. = 0.875, $p < 0.001$). The positive correlation shows that organizational OHS management improves employee health when employees are aware of available treatments. This shows that a well-informed workforce about medical options improves OHS management practices for employee health. These findings highlight the role of employee knowledge and awareness of pharmacist availability and medicines in modulating the association between organizational OHS management and workforce health. Organizations seeking to maximize OHS impact through tailored awareness campaigns and resources might benefit from this nuanced understanding.

Table 9: Moderating Path Analysis.

| | OIM Coef. | Std. Err. | z | P>\|z\| | [95% Conf. Interval] | |
|---|---|---|---|---|---|---|
| Knowledge and awareness of employees about pharmacist availability significantly moderates the relationship of occupational health and safety management at organization and employee health. | 0.210 | 0.101 | 2.066 | 0.008 | 0.408 | 0.314 |
| Medicine awareness significantly moderates the relationship of occupational health and safety management at organization and employee health. | 0.875 | 0.073 | 2.884 | 0.000 | 0.518 | 0.784 |

## Discussion

Numerous empirical studies in occupational health and safety (OHS) have contributed to a better understanding of the complex association among worker well-being and organizational practices. However, this research adds to the earlier studies, emphasizes the critical role of OHS management plays which it plays in developing a healthy workforce. This research findings reinforce the favorable relationship between OHS practices and employee health while also exploring new areas, based on research by Alqassab et al. (2024). This study adds subtle insights to the existing body of literature in the field and broadens the discussion by investigating the moderating impacts of employee's awareness about pharmacist availability, medicine awareness, and the mediating influence of OHS courses. The findings of the research has highlighted that management of occupational health and safety (OHS) is a critical factor which has a substantial impact on an organization's operations. It is commonly acknowledged that OHS management has a substantial impact on workers' health, emphasizing the need of preventive safety measures in ensuring a healthy workforce. Prioritizing OHS allows businesses to better meet legal standards while also improving the welfare and overall health of their employees. This acceptance lends credence to the notion that providing a safe and healthy work environment is both a smart use of human resources and a legal requirement.

As the occupational health and safety (OHS) courses become more widely known, training programs become even more important in promoting safety and health compensation. Workplace safety is increased by educating employees about safety procedures, potential hazards, and preventative measures. Niv and Tal (2024) findings demonstrate how employee behavior and safety consciousness are significantly impacted by OHS training and skill development. According to the mediation hypothesis, the relationship between OHS management and employee health is mediated by the company provided OHS training. The impact of OHS management on employee health is mitigated by the company's educational initiatives. The hypothesis highlights the necessity for an integrated approach to occupational health and safety by demonstrating the relationship between OHS management practices and educational initiatives. The notion that pharmacist awareness among employees mitigates the problem adds even more complexity, even outside the purview of OHS regulations. It emphasizes how crucial healthcare is to businesses. The presence of medical personnel on the premises may incentivize staff members to seek emergency care. Health problems can be resolved efficiently and promptly. The idea that easily available healthcare resources and preventative actions are essential to employee health plans is supported by this moderating impact.

The current study advances our understanding of occupational safety and health. They have their roots in earlier empirical research. Research has demonstrated that effective OHS administration enhances worker health, highlighting the need of preventive safety measures (Adamopoulos et al., 2023). By analyzing the moderating influence of corporate OHS training, our present study validates previous findings. This advanced understanding is in line with the findings of Virhia et al. (2023), which show that employee safety-related behavior is greatly impacted by educational interventions. The study's mediation hypothesis, therefore, validates Williams and Jones' theoretical framework and advances our knowledge of how OHS regulations impact worker health. The study highlights the moderating effect of staff knowledge on pharmacist availability, which further supports Wilcox (2021) study of healthcare accessibility and worker health outcomes. The two studies corroborate each other and emphasize how

important it is to have easy access to healthcare services in order to promptly and efficiently handle health-related difficulties in the workplace. This study builds on this notion by assessing medications and the moderating effect of medical awareness. The significance of drug-related concerns in workplace health programs is emphasized by Abdiwali (2021).

Because of the way that medical knowledge alters the relationship between OHS management and employee health, the problem is believed to be pharmacological in nature. The knowledge and application of remedies that are readily available by staff members may determine how much OHS policies lower health hazards. The results show that companies should place equal emphasis on worker awareness of treatment choices and preventative initiatives. As a result, workers will be more resilient and healthy.

## Conclusion

This study of the relationship between occupational health and safety (OHS) in Saudi Arabia ultimately reveals important traits that have implications for local organizational practices and worker wellbeing. The universal acceptance of the significant influence that OHS management and training programs have on employee health, as proved in Saudi Arabia, indicates the need to prioritize workplace safety. The mediation approach offers a fresh viewpoint on these treatments by emphasizing the importance of instructional interventions in modifying the relationship between OHS management and employee health. This has major implications for businesses who are attempting to establish a safe environment, especially in Saudi Arabia where the legal and cultural environments are so dissimilar. Further demonstrating the connections between pharmaceutical concerns, OHS regulations, and healthcare accessibility are the moderating impacts of pharmacist availability and drug awareness knowledge among employees. The study's findings provide useful information to businesses and policymakers that want to improve occupational health programs and, in turn, improve worker well-being in this dynamic environment as Saudi Arabia's economy and industry expand.

**Implications of the study**

In some respects, this work advances organizational OHS theory. According to the study, proactive workplace safety theories are supported by the fact that OHS management improves worker health. By highlighting the mediating role of OHS courses and educational interventions as a conduit for the impacts of management practices on employee health, the mediation hypothesis complicates previous theories. This lends credence to the theories that employee behavior is changed by education and training and that organizational learning makes workers safer. According to theoretical discourse, medication awareness and professional pharmacists address pharmaceutical issues and healthcare access. OHS processes depend on accessing and understanding the company's medical resources. These theoretical advances may improve occupational health models and frameworks due to organization complexity. They illuminate the complex relationship between OHS and worker well-being.

Saudi Arabian firms must carefully assess the practical consequences of occupational health and safety studies. Safety awareness and occupational health and safety management improve worker well-being. This investigation shows that a safety culture, strict standards, and good management are necessary for worker well-being and legal and strategic success. Staff training is essential to fostering a safety-conscious culture. OHS courses' mediating impact encourages companies to start comprehensive training programs for occupational health and safety. Workplace healthcare demands are highlighted by employee knowledge, which moderates pharmacist availability and medication awareness. For a prompt health response, organizations should exchange information about medications and medical professionals. The real-world ramifications show that in order to enhance OHS programs and worker well-being, Saudi Arabian businesses need to implement a comprehensive plan that includes healthcare accessibility, educational opportunities, and preventative measures.

## Limitations and Future Research Directions

The study's external validity may be limited by its focus on Saudi Arabia because of cultural, legal, and organizational distinctions that might not apply to other international situations. Longitudinal studies may be required to gain a deeper understanding of the relationship between occupational health and safety practices and employee health outcomes over time, as the cross-sectional research approach limits causal relationships. Socially acceptable responses might skew self-reported data, which compromises the validity and dependability of the results. Additionally, measurement error may result from the study's assumption that staff members accurately perceive and report pharmacist availability and medication. Lastly, while the study does not look at Saudi Arabia's industries or professions, research in the future may look at OHS practices and how they affect other industries.

To fully understand the study's global applicability, future research in this field should expand its geographical scope to encompass a variety of cultural and organizational contexts. Within the connections this study highlights, longitudinal studies may show how OHS management and educational interventions change over time. Qualitative research techniques, such as focus groups and interviews, can capture the nuanced viewpoints of organizational leaders and employees on the problems and practical implications of putting successful OHS strategies into practice, which can be used to supplement quantitative data. By examining industry-specific nuances and the influence of organizational size and structure on OHS initiatives, future study could enhance practical applicability. Employers seeking to enhance healthcare accessibility in their workplaces might benefit from the actionable information provided by interventions aimed at increasing pharmacist availability awareness and drug knowledge, which can also be conducted and evaluated.

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## Appendix 1

### Occupational Health and Safety Course Provided by Organization

1. The occupational health and safety courses offered by my organization effectively cover relevant topics.
2. The instructors in the occupational health and safety courses are knowledgeable and provide valuable insights.
3. The materials provided in the occupational health and safety courses are clear and easy to understand.
4. The duration of the occupational health and safety courses is sufficient to grasp the key concepts.
5. The practical exercises in the occupational health and safety courses enhance my understanding.
6. The occupational health and safety courses incorporate real-life scenarios relevant to our workplace.
7. The organization adequately communicates the schedule and availability of occupational health and safety courses.
8. The courses provided by my organization have positively impacted my awareness of workplace safety.
9. The occupational health and safety courses contribute to a safer work environment.
10. I feel confident in applying the knowledge gained from these courses to my daily tasks.
11. Overall, I am satisfied with the quality of the occupational health and safety courses provided by my organization.

### Occupational Health and Safety Management at Organization

1. My organization has established clear and comprehensive occupational health and safety policies.
2. There is a designated team responsible for overseeing occupational health and safety at my workplace.

3. Regular safety audits and inspections are conducted to identify and address potential hazards.
4. Employees are provided with adequate training on occupational health and safety procedures.
5. The organization promptly addresses reported safety concerns and incidents.
6. Safety guidelines and procedures are clearly communicated to all employees.
7. Personal protective equipment is readily available and enforced in appropriate work areas.
8. The organization encourages and facilitates open communication regarding safety matters.

**Medicine Awareness**

1. I am aware of the medicines available within my organization.
2. The organization provides clear information about the types and uses of available medicines.
3. There are designated personnel responsible for managing and distributing medicines.
4. Information about the potential side effects of medicines is readily accessible.
5. Overall, I feel well-informed about the medicines available in my workplace.

**Knowledge and Awareness of Employees about Pharmacist Availability**

1. I am aware of the presence of pharmacists in my organization.
2. Information about the role and services provided by pharmacists is clearly communicated.
3. The organization encourages employees to consult pharmacists for health-related inquiries.
4. The availability schedule of pharmacists is well-publicized and accessible.
5. Pharmacists in our organization are approachable and willing to assist employees.
6. I feel comfortable seeking advice or assistance from the pharmacists in my workplace.
7. Overall, I am knowledgeable about the role and availability of pharmacists in my organization.

**Employee Health**

1. I feel physically well and able to perform my job effectively.
2. The organization promotes a healthy work-life balance.
3. Adequate measures are in place to address stress and mental health concerns at work.
4. The workplace environment positively contributes to my overall health.
5. I receive sufficient support and resources for maintaining my physical health.
6. The organization actively promotes preventive health measures among employees.
7. There is open communication regarding health-related policies and resources.
8. I have access to fitness and wellness programs provided by the organization.
9. The organization encourages regular health check-ups and screenings.
10. I feel valued and supported in managing my health at the workplace.
11. The organization effectively addresses and accommodates employees' health needs.
12. Overall, I am satisfied with the efforts of the organization in promoting employee health.