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Departamento de Ciencias Humanas
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Determine the risk level of occupational hazards among laboratories staffs in Makkah

Nayef Shabbab Almutairi1[2], Shamsul Bahri Bin Md Tamrin[*,1], Ng Yee Guan[1], Vivien How[1]

[1]Department Environmental and Occupational Health, Faculty Medicine & Health Sciences, University Putra Malaysia (UPM), 43400, Serdang, Selangor, Malaysia

[2]HYPERLINK "https://uqu.edu.sa/en/lcms"Department Public Health ,Al-lith College of Health Sciences, Umm Al-Qura University, P.O. Box 3712, Mecca, Saudi Arabia

shamsul_bahri@upm.edu.my

Abstract

This study aimed to determine the risk level of occupational hazards (chemical, physical, biological, ergonomic) among laboratories staffs in Makkah via hazard identification risk assessment and risk control (HIRARC). These results indicated that the severity of risk and control measures related to chemical hazards showed that only 53.3% had a low risk while 46.7 were at a moderate level. As a conclusion, the majority of laboratories staff were in the high level of risk related to occupational hazards and it shows the need for control of this issue and finds a practical way to solve this problem.

Keywords: Hospital, Occupational, Hazards, HIRARC.

Determinar el nivel de riesgos laborales entre el personal de los laboratorios en Makkah

Resumen

Este estudio tuvo como objetivo determinar el nivel de los riesgos laborales (químicos, físicos, biológicos, ergonómicos) entre el personal de los laboratorios en Makkah mediante la evaluación de riesgos y el control de riesgos (HIRARC). Estos resultados indicaron que la gravedad de los riesgos y las medidas de control relacionadas con los peligros químicos mostraron que solo el 53.3% tenía un riesgo

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bajo, mientras que 46.7 estaban en un nivel moderado. Como conclusión, la mayoría del personal de los laboratorios se encontraba en un alto nivel de riesgo relacionado con los riesgos laborales, lo que demuestra la necesidad de controlar este problema y encuentra una manera práctica de resolverlo.

Palabras clave: Hospital, Ocupacional, Peligros, HIRARC.

1. INTRODUCTION

In recent years, rate of accidents and hazards in public places are growing so fast. There are some reports about high level of risks and hazards among different types of occupations (Joshua et al., 2017). Occupational health and safety risks are high in organizations providing health care, particularly in hospitals Gaba (2000) where the staff use electronic devices, carry heavy weights, are exposed to chemicals, use radioactive material and equipment, are exposed to biological material that carry risk of infection, and regularly use sharp tools (Carraro et al., 2016). Health care staffs face the risk of injury from sharp-perforating tools on a daily basis in surgery rooms, beside the patient bed (while providing services like blood collection, injections, small procedures, and resuscitation), in the outpatient setting (while providing small procedures and dressing wounds) and in laboratories (broken test tubes pose a major risk) (Manyele et al., 2008).

The importance of safety in hospitals can be studied from different angles since the hospital is a critical environment for incidents. Assessment of occupational accidents in hospitals can

prevent their recurrence and maintain human and financial resources (Leveson, 2011). In recent years, there were some researches done in developed countries but there is a lack of accurate research based on the observational design in Middle East countries especially in Saudi Arabia. This study aimed to determine the risk level of occupational hazards (chemical, physical, biological, ergonomic) among laboratories staffs in Makkah using HIRARC.

2. METHODOLOGY

This study was conducted by using the observational method in three hospitals, Makkah Saudi Arabia, in the west of Saudi Arabia. This study was approved by the ethics committee for research involving human subjects, University Putra Malaysia (FPSK-P120) in 2017. Totally, 363 potential hazards in three hospitals (Alnoor hospital, Hira hospital, and King Faisal) were identified in this study. The tool used was hazard identification risk assessment and risk control (HIRARC). This tool was used to assess and identify risk level and overcome hazard situation among the laboratory staffs.

3. STATISTICAL ANALYSIS

Data analyzed with SPSS software version 23.0. Descriptive statistics such as mean and standard deviation and also frequency analysis through a qualitative approach related to HIRARC.

4. RESULTS

For risk analysis that uses likelihood and severity in qualitative method Total score for each hazard at each department and hospital were used to calculate the total score and later based on a risk matrix which shows the distribution of the risk throughout a plant and area in a workplace was categorized into three levels. According to the results among all three hospitals, a total of 363 hazards related to occupational hazards for all three hospitals and their risk level were identified. Results showed that only 19.3% (n=70) had a low risk while 78.2% (n=284) were at a moderate level and 2.5 %(n=9) of risk level related to occupational hazards had a high level (Figure 1).

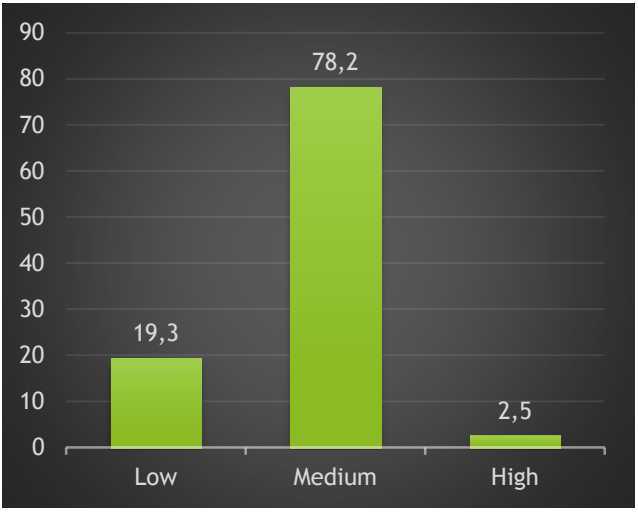

Figure 1: Risk level related to occupational hazards

Since there were four main risks of occupational hazards including chemical, physical, biological, ergonomic, therefore the risk

level of occupational hazards was evaluated for each category separately. According to the severity of risk for biological hazard was at a moderate level for all indicators. These results indicated that the risk level related to chemical hazards showed that only 53.3% had a low risk while 46.7 were at a moderate level. For ergonomic hazard the risk level indicated that 27.3%of indicators were at low level, 63.6% at moderate and 9.1% were at high level.

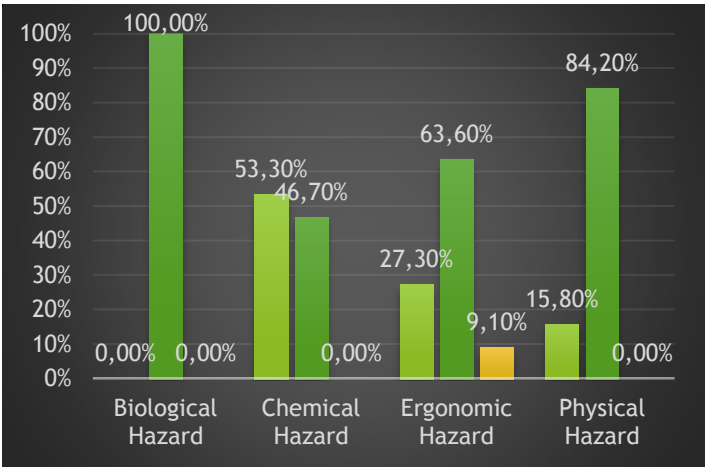

Figure 2: Risk level of occupational hazards for each category separately

5. DISCUSSION

This study aimed to determine the risk level of occupational hazards (chemical, physical, biological, ergonomic) among laboratories staffs in Makkah using HIRARC. The results of this study confirmed that there was a moderate to high level of risk of

occupational hazards among laboratories staff in selected hospitals. It should be noted that only 19.3% (n=70) had a low risk and the majority of staffs had a moderate to high level of risk and control measures related to occupational hazards. Most occupational accidents are preventable; otherwise, they can result in disability, loss of income, and changes in life quality for staffs and their families. Also, they can impact on the countries productions and economies (Breslin & Smith, 2005). The importance of safety in a hospital can be studied from various angles. Hospital is a critical environment for the incidence of accidents. The presence of flammable materials, medical gases, ionizing radiations, and chemicals demand serious ongoing care for the safety of patients, staff, and the public.

It is interesting to know that, in 2015, Raeissi et al., revealed that among staff, most of the occupational accidents were related to skin contact with blood or other body fluids and least of them belonged to toxicity with solvents. Moreover, the results showed significant differences regarding occupational accidents between different groups of gender, years of work experience, organizational position, shift type, and age. In regional studies conducted in 175 countries, it was found that unfortunately, the system of recording occupational accidents in developing countries is not accurate and thus future occupational costs and necessary preventive planning cannot be predicted and implemented for the different related regions and countries (Hämäläinen et al., 2006: Zare & Rajaeepur, 2013).

Before this, there were different studies in Asian countries about ergonomic hazards among office workers or the workers in a farm (Green et al., 2018), but there was a lack of focus on laboratories staff in a hospital. Laboratory technicians are exposed to a large pool of specimens from patients suffering from infections such as HBV and HIV (Izegbu et al., 2006). There should be a rule in all microbiological laboratories that all accidents causing personal injury involving infectious agents or not should be reported to the supervisor or safety officer (Kimman et al., 2008). This study had some limitations such as the sample size and the locations of sampling and it is suggested for researchers to conduct the same research in a bigger society. In addition, based on the findings of this study, it was shown that there is a high level of risk among laboratories staff and there is a need to find a practical solution to solve this issue.

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