



# Effects of Noise Hazards towards Physiology Especially Heart Rate Performance among Worker in Manufacturing Industry and Their Prevention Strategies: A Systematic Review

*Mohd Azrin Mohd Said*<sup>1,2</sup>, *Zinnirah Wellun*<sup>1</sup>, *\*Nor Kamaliana Khamis*<sup>1</sup>

1. Department of Mechanical and Manufacturing Engineering, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, 43600 Bandar Baru Bangi, Selangor, Malaysia
2. Department of Mechanical and Manufacturing Engineering, Faculty of Engineering, Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak, Malaysia

\*Corresponding Author: Email: kamaliana@ukm.edu.my

(Received 15 Aug 2021; accepted 21 Oct 2021)

## Abstract

**Background:** Occupational noise exposure is one of the environmental factors that pose safety and health risks among workers in factories. This systematic review focuses on the activities that cause noise hazards toward workers' heart rate, other physiological conditions, and strategies to prevent noise exposure in the manufacturing industry.

**Methods:** Through a comprehensive literature review, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) and the Cochrane method were used. The appraisal of quality was conducted by using the Critical Appraisal Skills Programme (CASP) to fulfil the selected keywords.

**Results:** Occupational noise exposure not only affects the workers' most common issues, such as heart rate, but also other physiological factors, such as blood pressure. The outcome showed that different level of continuous noise exposure with high intensity decibels affects the heart rate of the workers. Source, path, receiver was recommended strategies for basic noise prevention in engineering control.

**Conclusion:** Therefore, noise give significant effects towards human workers in related industry. Study related to noise effects towards heart rate performance led to future prevention and innovation.

**Keywords:** Sound; Heart rate; Factory; Safety; Environment

## Introduction

Noise can be defined as any unwanted sound that irritates or distracts people, which can cause an adverse psychological or physiological effect on humans (1). Noise implies harmful effects toward people and the environment if left uncontrolled (1). Moreover, it is one of the environmental problems related to human factors in daily life. High

noise level or noise pollution can lead to safety and health problems. It can also cause hearing loss and increase heart rates. Noise pollution has been recognized as a crucial worldwide challenge that impacts the quality of life in urban areas (2). Continuous noise of approximately 85–90 dBA leads to loss of hearing in industrial environments (3).

