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HEARING PROTECTION USE AMONG AIRCRAFT MAINTENANCE TRAINEES IN UNIVERSITY KUALA LUMPUR

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Universiti Utara Malaysia

MASTER OF SCIENCE
(OCCUPATIONAL SAFETY AND HEALTH MANAGEMENT)
UNIVERSITI UTARA MALAYSIA
2018

HEARING PROTECTION USE AMONG AIRCRAFT MAINTENANCE TRAINEE IN UNIVERSITY KUALA LUMPUR

COLLEGE OF BUSINESS
UNIVERSITI UTARA MALAYSIA (UUM)

Universiti Utara Malaysia

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Dissertation submitted to
Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia,
in fulfillment of the requirement for the
Master of Science (Occupational Safety and Health Management)
December 2018

Othman Yeop Abdullah
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ABSTRACT

Aircraft maintenance workers are at high risk of noise induced hearing loss due to noise exposure during work. Hazards generated from workplace noise in aviation industry such as from operated aircraft engines can affect work effectiveness and increase work stress among employees as well as increase accident rate. The research objectives were to examine the relationships between risk perception, knowledge of noise hazards, knowledge of hearing protection and self-efficacy with hearing protection devices (HPDs) used among students during their industrial training. This quantitative study utilized a questionnaire consisting of 26 questions to measure the relationships between safety risk perceptions, knowledge on noise hazard, knowledge of hearing protection and self-efficacy with HPDs use. A total of 132 questionnaires were distributed and 101 were returned yielding a response rate of 76%. Data collection was carried out using stratified random sampling techniques. The Pearson correlation analysis showed that there were positive and significant (p=0.01) relationships where knowledge on hearing protection was high with r = 0.776, self-efficacy was moderate with r = 0.612, knowledge on noise hazards was moderate with r=0.564, and risk perception was low with r=0.403 towards HPDs use. Multiple regression test showed knowledge on hearing protection was the most influential variable towards HPDs use. All independent variables accounted for 67.7% of the variance in HPDs used. Recommendations and suggestions for future research were also discussed.

Keywords: HPDs use, risk perception, self-efficacy, noise hazard, NIHL

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ABSTRAK

Pekerja penyelenggaraan pesawat berisiko tinggi kehilangan pendengaran akibat bunyi bising di tempat kerja. Bahaya kebisingan seperti dari enjin pesawat dapat mempengaruhi keberkesanan kerja dan meningkatkan tekanan kerja di kalangan pekerja. Objektif penyelidikan adalah untuk mengkaji hubungan antara persepsi risiko, pengetahuan tentang bahaya kebisingan, pengetahuan tentang perlindungan pendengaran dan keberkesanan diri terhadap alat perlindungan pendengaran (HPDs) yang digunakan dalam kalangan pelajar semasa latihan industri. Penyelidikan kuantitatif ini menggunakan soalselidik yang terdiri daripada 26 soalan yang mengukur perhubungan antara persepsi risiko keselamatan, pengetahuan tentang bahaya kebisingan, pengetahuan perlindungan pendengaran dan keberkesanan diri dengan penggunaan HPDs. Sebanyak 132 soal selidik diedarkan dan 101 telah dikembalikan memberikan kadar yang dikembalikan sebanyak 76%. Pengumpulan data dilakukan menggunakan teknik pensampelan rawak berstrata. Analisis data menggunakan korelasi Pearson menunjukkan terdapat hubungan yang positif dan signifikan ($p=0.01$) di mana pengetahuan tentang perlindungan pendengaran adalah tinggi dengan $r = 0.776$, efikasi kendiri adalah sederhana dengan $r = 0.612$, pengetahuan tentang bahaya kebisingan adalah sederhana dengan $r = 0.564$ dan persepsi risiko adalah rendah dengan $r = 0.403$ dengan penggunaan HPDs. Ujian regresi berganda menunjukkan pengetahuan mengenai perlindungan pendengaran adalah pemboleh ubah yang paling berpengaruh terhadap penggunaan HPDs. Semua pembolehubah bebas menerangkan 67.7% daripada varians dalam HPDs yang digunakan.

Katakunci: Penggunaan HPDS, persepsi risiko, efikasi kendiri, hazad bunyi, NIHL

ACKNOWLEDGEMENTS

In the name of Allah, the Most Beneficient and the Most Merciful. May His Blessings and Mercy be upon our Prophet Muhammad S.A.W. My greatest thank to the Almighty Allah S.W.T for the path shown to me and the guidance that have brought me here and to what I am today.

I would like to extend my utmost gratitude to my supervisor, Mdm Norizan bt Hj Azizan for her insightful guidance and patience with the research process. My supervisor has inspired me in so much ways by being very helpful and generous in sharing her knowledge and made me inspired to become a better researcher.

I would also like to thank my wife, Nur Hazirah binti Adnan for her endless support and understanding. Next, I would like to convey my heartfelt thanks to my family for always being encouraging and understanding in my studies and throughout this project. Special heartiest thanks are also dedicated to my friends for their kindness and helps in getting this research completed, and not forgotten to the respondents who kindly made available their precious time spent on filling the questionnaire forms. Lastly, to whomever it may concern that has involved directly or indirectly in completing this project. From the bottom of my heart, I sincerely thank you.

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LIST OF ABBREVIATIONS

AMT	Aircraft Maintenance Trainee
ATO	Approved Training Organization
HPDS	Hearing Protection Devices
ICAO	International Civil Aviation Organization
KKLB	Kementerian Kemajuan Luar Bandar
ILO	International Labor Organization
MARA	Majlis Amanah Rakyat
MIAT	Malaysian Institute of Aviation Technology
MRO	Maintenance, Repair and Overhaul
NIHL	Noise Induced Hearing Loss
NRR	Noise Reduction Rating
OSH	Occupational Safety and Health
OSHA	Occupational Safety and Health Act 1994
PEL	Permissible Exposure Limit
PPE	Personal Protective Equipment
TTS	Temporary Threshold Shift
UniKL	Universiti Kuala Lumpur
WHO	World Health Organization

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CHAPTER1

INTRODUCTION

1.0 Introduction

Noise hazards are experienced in aircraft maintenance activities and their surroundings, including airports, aprons, hangars and workshops (Akan, Körpinar, & Tulgar, 2011). In civil aviation industries, aircraft maintenance activities are the noisiest because it deals with many engineering operations such as high pitch sound generated from aircraft engine, auxiliary power unit (APU), traffic movement of ground support vehicles, machines and powered tools (Smedje, Gärtner, Lindgren, Lundén, & Lundgren, 2011).

Some airports have been reported to have experienced level of noise which exceeds the limit of 85dB exposing maintenance workers to high risks of hearing damaged (Anino, Afullo, & Otieno, 2010). 85dB is a permissible exposure limit (PEL) on all workers for 8 hours of noise exposure in one day of work allowed by regulation (Department of Occupational Safety and Health, 2018). The dBA is decibel of sound pressure level used to measure occupational and environmental noise exposures (Neitzel, Fligor, & WHO, 2017).

Besides engineering operations, flight operations also generate noise pollutions during aircraft landing and takeoff. High level of noise disturbs the health as well as efficiency of the workers by increasing the overall work stress of the worker during specific task and performance (Noweir & Zytoon, 2013). Noisy environment also disrupts verbal communication among the workers where communication is one of the key factors in accident prevention.

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