Prevalence and risk factors of work-related health problems among stone saw workers in West Bank- Palestine.

Thesis

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Dedication

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This work is also dedicated and to **all marginalized and forgotten stone saws workers in Palestine** who devoted their life to stone industry.

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Abstract

Introduction: For years stone quarrying especially stone saw workshops have been known as highly hazardous work, whereby workers are affected by many debilitating occupational health hazards and diseases.

Objectives: The purpose of this study is to determine the prevalence of work related health problems among Palestinian stone cutting workers, and to investigate the association of the work conditions and risk factors to specific outcomes, which are work-related diseases like noise induced hearing loss (NIHL), pulmonary function impairment (PFI), dermatoses and musculoskeletal disorders as well as injuries.

Method: During April-June 2012, analytical cross-sectional study of 259 male workers, who were available at all stone-saw workshops (n=42)located around the valley between Nablus and Tulkarm in the northern part of West Bank, Palestine, were evaluated through interviews structured questionnaire, detailed history and clinical examination: occupational audiometry, spirometry, skin inspection and musculoskeletal disorders were performed. Environmental measurements were performed in form of noise level meter and air sampling.

Results: The respondents were all male, mean age group was 36.85 years and mean duration of service is 13.36 years. The prevalence of NIHL was 45.2%, PFI 21.6%, work injuries 35.9%, musculoskeletal 26.6% and dermatosis 11.6%. A significant associations ($p<0.05$) were identified from multivariate analysis between these health problems and the variables of work type, noise, dust, duration of work, educational level, periodic health appraisal, using personal protective equipment, smoking and residence.

Noise level was found to be between 93-123 dB. Air samples analysis showed that the average particulate matter (PM) PM 2.5 (mg/ m^3) was 1.4 while for PM10 was 3.9. And heavy metal analysis by Atomic absorption showed that Lead and chromium were absent on filter paper, while iron showed the highest concentration (0.05) (mg/ m^3), followed by copper (0.02),which was higher than recommended.

Conclusion: The findings of this study highlighted the high prevalence of health problems among these workers. Manual stone-saw workers are at constant risk of NIHL, LFI, dermatoses and musculoskeletal disorders as well as injuries. Certain factors like non usage of personal protective equipments increase the risk for developing these health effects.

Recommendations: Screening and follow up for hearing loss and lung function are recommended for people working in stone cutting workshops. Prevention programs and legislation which already exist should be implemented and enforced.

Keywords: Pulmonary function, hearing loss, stone-saw workers, Palestine

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List of Abbreviations

ALO	Arab Labor Organization
BOHS	Basic Occupational Health Services
FEV1	Forced Expiratory Volume first second
FVC	Forced Vital Capacity
GDP	Gross Domestic Product
GNP	Gross National Product
HEPA	High-efficiency particulate arrestance
ILO	International Labor Organization
LFI	Lung Function Impairment
MoH	Ministry of Health
MoL	Ministry of Labor
MSK	Musculoskeletal
NIHL	Noise Induced Hearing Loss
NIOSH	National Institute of Occupational Safety and Health
OH	Occupational health
OHS	Occupational health services
OPT	Occupied Palestinian territories
OSHA	Occupational safety and Health Administration
PCBS	Palestinian Central Berea of statistics
PAPR	Powered Air Purifying Respirators
PFT	Pulmonary Function Test
PM	Particulate Matter
PPE	Personal Protective Equipment
SD	Slandered Deviation
USAID	United States Agency for International Development
USD	United State Dollar
USMP	Union of Stones and Marble in Palestine
WHA	Workers' Health: Global Plan of Action
WHO	World Health Organization

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