ABSTRACT

MARJES, RIENAND PAUL R. and MOJICA, IAN PAUL C. Identification and Analysis of Ergonomic Risk Factors in Coffee Harvesting Associated to Musculoskeletal Disorders. Undergraduate Thesis. Bachelor of Science in Industrial Engineering. Cavite State University, Indang, Cavite. April 2014. Adviser: Engineer Willie C. Buclatin.

The study was conducted to identify the ergonomic risk factors present in coffee harvesting associated to musculoskeletal disorders for both male and female coffee harvesters. The personal attributes such as age, BMI and hereditary disease/s and job related attributes such as working condition, types of activities perform and working postures were tested with the frequency and severity of the symptoms to identify the risk factors that contribute to the occurrence of musculoskeletal disorders and other related illness to coffee harvesting. The participants of the study were one hundred ninety nine (199) male coffee harvesters and sixty four (64) female coffee harvesters with age ranging from 18 to 50 years old and were residing at General Emilio Aguinaldo, Cavite. Coffee harvesting process was considered in the study, which involved picking of coffee, lifting of bags of coffee, and drying of the coffee under the sun.

Through validated questionnaires, ergonomic risk factors in coffee harvesting were then identified. Personal attributes, job related attributes and frequency and severity of musculoskeletal disorders symptoms were also obtained. Somer's D technique was used for correlation analysis between variables such as bivariate analysis that describe the joint contribution of the variables in the study. Rapid Upper Limb Assessment was utilized to determine risk factors associated to work related musculoskeletal disorder triggered by the awkward working positions and poor work practices.

The result of correlation analysis showed that personal attributes for male and female participants such as age, BMI and hereditary disease/s were associated to musculoskeletal disorder symptoms. On the other hand, job related attributes of male and female participants such as number of working hours per day, average number of lifts per day, average weight of load lift per day and average distance of lift per day that categorized as work characteristics; picking frequency, lifting frequency, lifting duration, sun drying frequency and sun drying duration that categorized as types of activities perform; and standing frequency, standing duration, bending or stooping while standing frequency, bending or stooping while standing duration, walking frequency, walking duration, bending or stooping while walking frequency and bending or stooping while walking duration that categorized as working posture were also associated to musculoskeletal disorder symptoms. All parts of the body that were considered to the study were significantly affected by musculoskeletal disorders symptoms such as strain, muscle pain, nerve tension, cramps and swelling which caused by ergonomic risk factors. RULA analysis indicated that coffee harvesting for both male and female participants are exposed to activities that fallout in a high frequency of work-related musculoskeletal disorders caused by posture, activities performed and working conditions.

Male coffee harvesters were more prone in the occurrence of significant ergonomics risk factors than female coffee harvesters due to several factors that affected their genders' differences.

Recommendations were made in order to alleviate the ergonomics risk factors present in coffee harvesting. Recommendation was categorized based on the following: to the coffee harvesters, they should practice job rotation, team work and establish work

practice; to the owner of the coffee farm, they should provide mechanization process for the harvesters i.e. picking devices, load transfer devices and self-propelled individual charts and provide personal protective equipment for the harvesters like gloves, shoes and boots, and long sleeves and long trousers; and to the future researchers, for further analysis of this study, they can widen the scope of the study by covering all work shifts, if possible.