ERGONOMIC INJURIES IN AUTOMOTIVE INDUSTRY

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Abstract

The purpose of this study is to identify the ergonomic injuries in automotive industry in Malaysia. In the industrial workplace, manual material control has bad impact on employee. A lot of people are injured while working in automotive workshop. There are some reports of the effect and cause of injuries in the automotive industry. About 50% reported that poor workplace design contributes the source of the injury, while 41.7% reported the use of hand tools. Second, the physical factor identified were awkward posture from working with the hand above the shoulder, neck bending, the back forward, repeated bending, reaching, squatting and kneeling on the hand surface (Rashdan, 2010). Besides that, this research objective is the scientific study of people at work. The goal of ergonomics is to reduce stress and eliminate injuries and disorders associated with the overuse of muscles, bad posture, and repeated tasks. This is accomplished by designing tasks, work spaces, controls, displays, tools, lighting, and equipment to fit the employee´s physical capabilities and limitations.From the observations, this research purpose is to reduce back pain when working. To make sure that employee use safety first when working and using the right method to handle the equipment and can enhance the productivity. The scope of study for this research limitation is at Proton Parts Centre (PPC) Shah Alam in Inventory Section. This research uses a questionnaire instrument and interview to collect the data. Lastly, the conclusion from this research is find a worker that has experienced back pain due to lifting things manually. Therefore, special equipment is necessary to assist employee to lift heavy objects manually. The recommendation for this research is to propose to make special device that lift heavy objects in automotive industry which is a trolley for cylinder block. Throughout conducting process forced raise cylinder block manually to be inserted into vehicles which will impact employee to experience back pain. Therefore, the research output are to create a trolley to facilitate employee to lift the cylinder block.

Keywords : *Ergonomic Injury,Automotive Industry, Backpain .*

1.0 Introduction

In the industrial workplace, manual material control has bad impact on employee. A lot of people were injured while working in automotive workshop. In particular, the application of Rapid Entire Body Assessment (REBA) is used to assess exposure to postures, forces and muscles activities that have been presented to contribute to Musculoskeletal Disorder (MSDs). According to [1] from 152 questionnaires distributed to Automotive companies, the result indicates that musculoskeletal symptoms or pain ranged from 1.3% to 49.3 % for different body parts. It is found that 76.97% of the workers have symptoms or pain in any part of the body. The prevalence of musculoskeletal symptoms is highest for the neck (49.3%), followed by hand/wrist (48.0%), shoulder (46.7%), upper back (33.6%), lower back (21.7%), knee (15.8%), thigh/hip (14.5%), elbow 8.7%) and ankle (1.3%). Most of physical risk factor identified were awkward posture from working with the hand above the shoulder, neck bending, bending the back forward, repeated bending, reaching, squatting and contribute to the ergonomic physical risk factor[1-2].

Therefore something is needed to change which propelled direction better to solve this problem. Musculoskeletal disorders (MSDs) affect the muscles, nerves and tendons. Work related MSDs (including those of the neck, upper extremities and low back) are one of the leading causes of lost workday injury and illness. Workers in many different industries and occupations can be exposed to risk factors at work, such as lifting heavy items, bending, reaching overhead, pushing and pulling heavy loads, working in awkward body postures and performing the same or similar tasks repetitively. Exposure to these known risk factors for MSDs increases a worker's risk of injury. Impact of MSDs in the Workplace, work related MSDs are among the most frequently reported causes of lost or restricted work time. In 2011, the Bureau of Labour Statistics (BLS) reported that industries with the highest MSD* rates include health care, transportation and warehousing, retail and wholesale trade and construction [3]. According to BLS, the 387,820 MSD cases accounted for 33% of all worker injury and illness cases in 2011. A Process for Protecting Workers, employers are responsible for providing a safe and healthful workplace for their workers [3]. In the workplace, the number and severity of MSDs resulting from physical overexertion, as well as their associated costs, can be substantially reduced by applying ergonomic principals. Implementing an ergonomic process has been shown to be effective in reducing the risk of developing MSDs in industries as diverse as construction, food processing, office jobs, healthcare, beverage delivery and warehousing [3]. The following are important elements of an ergonomic process, first Provide Management Support, a strong commitment by management are critical to the overall success of an ergonomic process. Management should define clear goals and objectives for the ergonomic process, discuss them with their workers, assign responsibilities to designated staff members, and communicate clearly with the workforce. Second Involve Workers, a participatory ergonomic approach, where workers are directly involved in worksite assessments, solution development and implementation is the essence of a successful ergonomic process. Workers can Identify and provide important information about hazards in their workplaces and assist in the ergonomic process by voicing their concerns and suggestions for reducing exposure to risk factors and by evaluating the changes made as a result of an ergonomic assessment [4-5].

The objective of this study is to reduce Ergonomic Disorders (EDS) when lifting heavy object manually to enhance productivity. A modified Standardised Nordic Questionnaire was used to assess low back pain problem, to obtain personal and psychosocial risk factors information. The prevalence of low back pain showed increment in the point prevalence of 57.9%, 49.5%, and 35.1 % for 12 months, one month, and of 7 days respectively. Working hour, frequency of overtime, stress at work, work pace, and faster movement were found to be significantly associated with the 12 months prevalence for low back pain. This finding indicates that psychosocial risk factors are associated to the occurrence of low back pain.

2.0 Methodology

This study is prepared based on primary data as well as secondary data. The primary data has been collected from Proton Part Centre, Shah Alam. Total of 100 respondents were collected.

2.1 Data Collection Procedure

Data collection methods for the assessment of the effects vary along a continuum. At one end of this continuity is the method quantitative and at the other end is a continuation of qualitative methods for data collection. Data collection procedure is the most systematic gathering of data for a particular purpose from various sources including such as sampling technique, population, instrument, several of chart, and theoretical framework. All the data collection can be proven to the research project.

2.2 Sampling Technique

Sampling technique has been used in this study by using survey respondent. Questionnaires distributed among Inventory Section in Proton Parts Centre where they have experienced back pain due to inappropriate method lifting heavy objects.

2.3 Technique of Data Analysis

This research use pie chart for analysis technique data.

3.0 Result And Discussion

Data Analysis

In the questionnaire there are seven questions that need to be answered by Proton Parts Centre employees. The response was good and 100% feedback was attained.

1. Gender

   Number of respondents in this study according to gender was collected and has been divided into male and female. The results were 64 males and 37 females.

Table 1.0: *Respondent's Profile by Gender*

Gender	Frequency	Percent
Male	63	63
Female	37	37
Total	100	100

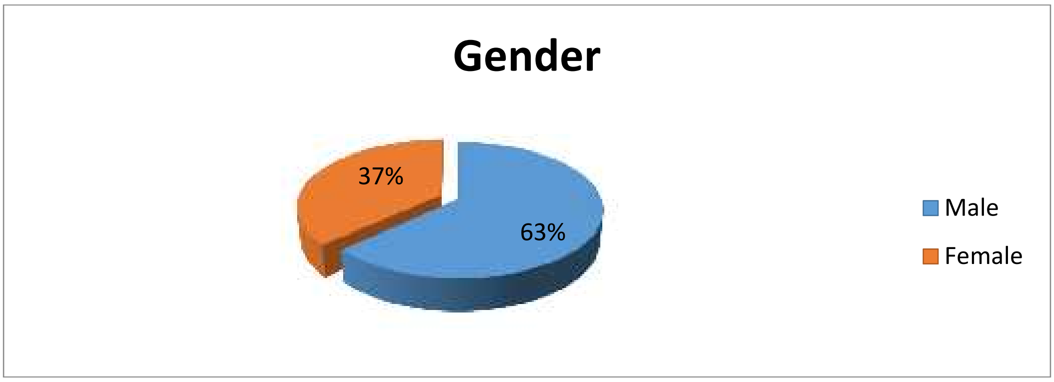

Figure 1: Gender analysis

2. Status

   Numbers of respondents in this study according to status were collected and have been divided into single and married where the results are 41 single and 59 married.

Table 2: *Respondent's Profile by status*

Status	Frequency	Percent
Single	41	41
Married	59	59
Total	100	100

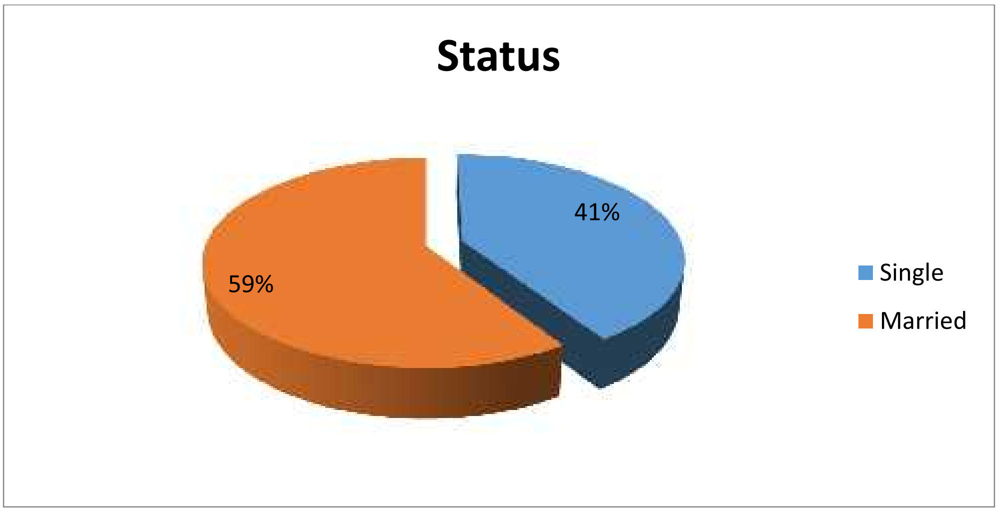

Figure 2: Status analysis

3. Age

Majority respondents were assigned to four age groups reflected in the **Table 3** below.

Table 3: *Respondent's Profile by age*

Age	Frequency	Percent
18 – 25	20	20
26 – 35	34	34
36 – 45	34	34
More than 55 years	12	12
Total	100	100

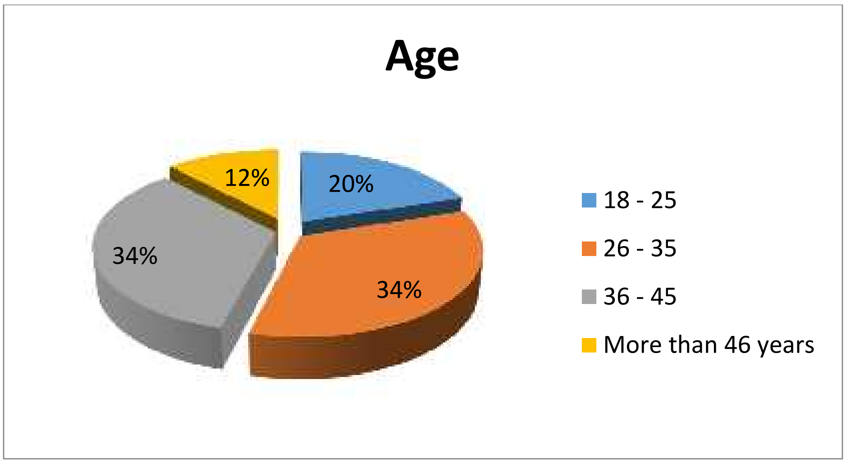

Figure 3: Age analysis

4. Length of service

According to this study, there are four length of service groups which is tabled in **Table 4** below:

Table 4: *Respondent's Profile by length of service*

Length of Service	Frequency	Percent
Less than one year	28	28
1 – 5	43	43
6 – 10	21	21
More than 10 years	8	8
Total	100	100

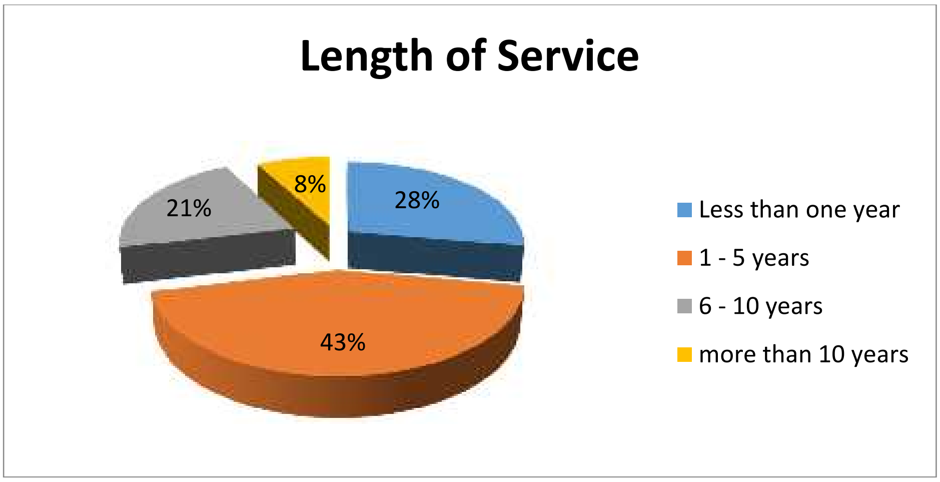

Figure 4: Length of service

5. Manual lifting

Based on the survey, refer **Table 5** to determine the lifting method.

Table 5: *Respondent's Profile by workers have use manual lifting*

Workers have us manual lifting	Frequency	Percent
Yes	54	54
No	46	46
Total	100	100

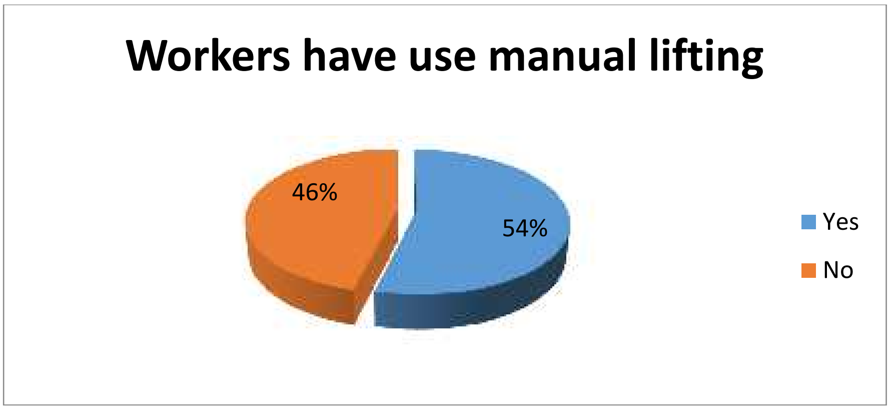

Figure 5: Profile by workers using manual lifting

6. Workers who had experienced back pain and hips

Refer to **Table 6** below to refer to number of workers who experience back pain and hips.

Table 6: *Respondent's Profile by workers who had experienced back pain and hips*

Workers who had experienced back pain and hips	Frequency	Percent
Yes	41	41
No	59	59
Total	100	100

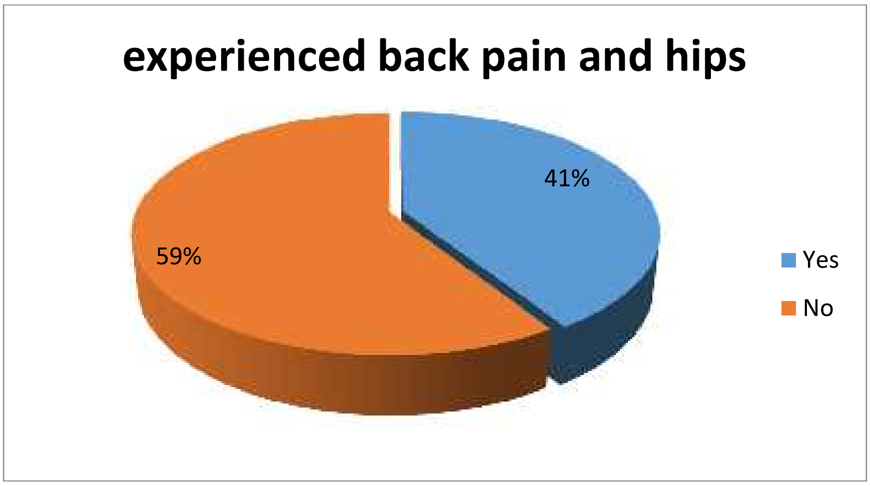

Figure 6: Workers experienced back pain and hips

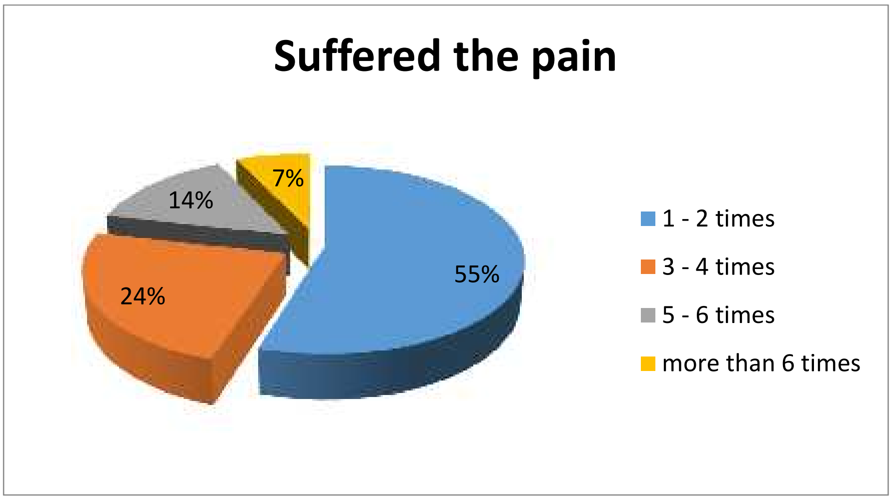

Figure 7: Workers that has suffered pain during the lifting objects.

7. Safety in workplace
   Refer to **Table 7** for Safety.

Table 7: *Respondent's Profile by safety in workplace*

Safety in workplace	Frequency	Percent
Yes	54	54
No	46	46
Total	100	100

Figure 8: Safety in workplace

4.0 Conclusion

It is concluded that from the research the automotive workers use manual lifting in workplace. The effect from the manual lifting will cause back pain and hips pain. Other than that, from this research it is found, worker that experience back pain due to lifting objects manually will experience back pain once or twice a year and even can reach up to three to four times a year. In the business perspective aspect the productivity of the company can be affected if this issue is not solved.

Therefore, special equipment is necessary to assist employee to lift heavy objects manually. The creation made based on case related to ergonomic injuries in automotive industry Proton Parts Center. The former employee informed when proton wants to send cylinder block to Jabatan Pengangkutan Jalan (JPJ) to process stamping engine number. The staff involved in conducting process forced raise cylinder block manually to be entered into vehicles which will bring cylinder block and its impact is employee to experience back pain. Therefore, from research output a trolley is created to facilitate employee to lift the cylinder block.

5.0 Reference

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