

# A Case Study on Manual Load Lifting Tasks in Lapu-Lapu Water Refilling Station

Delfa G. Castilla<sup>1\*</sup>, Angela Christine Basilgo<sup>2</sup>, Nikki Ceballos<sup>3</sup>, Eunizelle Dianne Feria<sup>4</sup>,  
Carl Michael Madjus<sup>5</sup>, Kent Laurence Pardo<sup>6</sup>

<sup>1</sup>Instructor, Department of Industrial Engineering, College of Engineering, Cebu Technological University-Danao Campus, Danao City, Cebu, Philippines

<sup>2,3,4,5,6</sup>College of Engineering, Cebu Technological University-Danao Campus, Danao City, Cebu, Philippines

**Abstract:** Manual handling of loads can cause pain among the workers of a water refilling station. This study intends to know the body discomfort and consistency of the workers in performing their task. This study employed a qualitative design with the use of survey checklist through a body discomfort chart. Back pain and arms are the common discomfort of the workers. Despite the pain, majority of the workers can still reliably perform consistently in executing quality services throughout the day.

**Keywords:** body discomfort, body pain, consistency in performing tasks, quality, reliability, services.

## 1. Introduction

Manual material handling is the method of moving or supporting an object by physical force. Pushing, pulling, lifting and carrying are all samples of manual handling tasks. These tasks are often found in each workplace, whether or not you're in an office, on a construction project, a ranch or anyplace in between. Manual Material Handling poses many risks to staff (Moses, 2022). Manual material handling is a high-risk task, which could lead to musculoskeletal injuries (Moradi, 2020). Manual handling is defined as any activity that requires a person to use force to push, pull, lift, lower, carries, or holds an object (Salehi, 2018). Improving ergonomics has become a major focus for organizations around the world to mitigate the rising healthcare and compensation costs associated with preventable work-related musculoskeletal disorders (Ravindra, 2021).

Even in this day and age of automation and digitization, Manual Material Handling (MMH) is the most common industrial operation (Jari, 2022). The human body is subjected to a variety of working conditions and techniques while at work. Back, shoulder, arm, wrist, head, and neck pain, as well as accidents among the workers, could arise from this. To reduce workload and consequently the drop out of workers due to these complaints, companies should adapt the work place, provide tools and/or give training (Hermans, 2018).

The working environment and methods may develop pain and injuries among the workers. Carrying of water containers is considered as manual handling. Manual handling of loads (MHL) refers to any of the following activities performed by

one or more workers: lifting, holding, putting down, carrying, or transporting a weight. There are a number of risk factors that make manual load handling dangerous and raise the chance of pain and injury.

The purpose of this study was to know how consistent the workers in providing quality service despite of the body discomfort felt during their specific task.

This study focused on the workers of two (2) water refilling station in Masulog Road, Basak Lapu-Lapu. Water refilling station usually offers door to door delivery sessions with their customers. In order to satisfy the owner and customers, the employees at the water refilling station used their physical strength.

The result of the study would provide benefits to the workers who experience body discomfort while doing their task specifically in manual lifting of loads.

## 2. Materials and Methods

### A. Materials

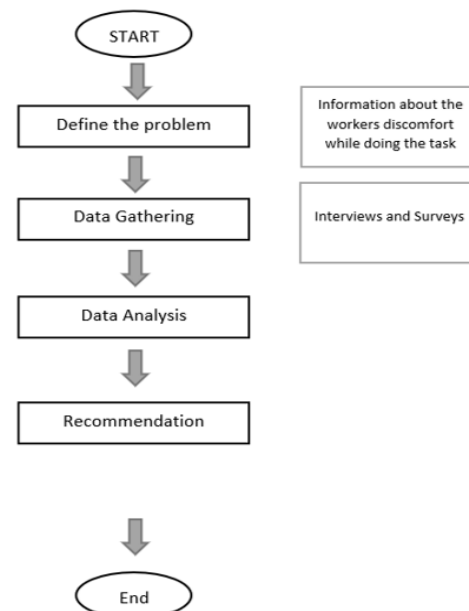


Fig. 1. General process flowchart

\*Corresponding author: [delfa.castilla@ctu.edu.ph](mailto:delfa.castilla@ctu.edu.ph)

Body Part Discomfort Chart by Lazar Tosic (2022) was the guide used in assessing the body discomfort of the respondents.

Respondents rated perceived body part discomfort using the Body Part Discomfort Scale that indicate pain location in manual lifting of loads. An adapted 5-scale was used to access the subjective discomfort on each body parts. A rating was given for each of ten (10) regions of the body parts including neck, shoulder, middle back, arms, low back, buttocks, thighs, knees and feet.

Figure 1 shows the general process of the study. The researchers selected Physical Ergonomics as their field of study out of the seven potential topics in ergonomics. Physical Ergonomics is all about the manual works being done in the industry. Water delivery personnel are the chosen target of the study to assess their performance at work.

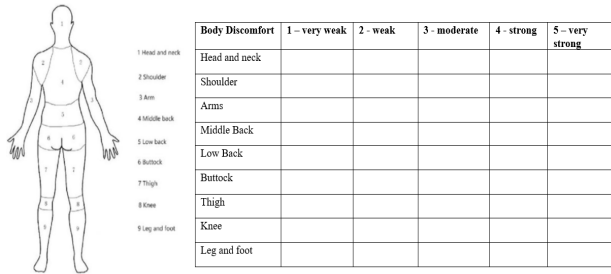


Fig. 2. Body part discomfort scale

**B. Research Environment and Participants**

The research is conducted in two different Water Refilling Station in Basak Lapu-Lapu City Cebu. The respondents of the study were the employees of WVX Abaca Water Refilling Station and the M&N Spring. There are 2 front-liners in each water refilling station responsible for accepting and refilling water containers for walk-in customers, as well as transporting them to delivery vehicles. Additionally, there were 3 deliverymen in each station tasked with delivering the refilled containers to customers' homes on a door-to-door basis. In total, there were 10 respondents from the two water stations located in Masulog Road, Basak, Lapu-Lapu City, Cebu.

**3. Results & Discussion**

This section provides the interpretation of the study's data to determine the workers' consistency in giving great service despite the body discomfort felt throughout their specialized task.

Table 1 shows that most of the respondents experienced weak pain to their head and neck. In arms, most of the respondents experienced strong pain. The respondents also experienced moderate pain to their shoulders and middle back. Low back is where most of the respondents experienced strong to very strong pain. Buttocks and thigh are where most of the respondents experienced moderate pain. In knee, most of the respondents experienced weak pain which indicate low pain in performing the task. Leg and foot are where most of the

Table 1  
Body part discomfort scale

Body Discomfort	1 – very weak	2 – weak	3 - moderate	4 - strong	5 – very strong
Head and neck		<b>R1, R2, R4, R6, R7, R8, R9, R10</b>	R3 and R5		
Shoulder			<b>R1, R2, R3, R5, R9, R10</b>	R4, R6, R7, R8	
Arms		R5		<b>R1, R2, R3, R4, R9, R10</b>	R6, R7, R8
Middle Back			<b>R1, R2, R3, R5, R8</b>	R4, R9, R10	R6, R7
Low Back			R1, R9	<b>R2, R3, R5, R10</b>	<b>R4, R6, R7, R8</b>
Buttock			<b>R1, R2, R3, R5, R9, R10</b>		R4, R6, R7, R8
Thigh			<b>R2, R3, R4, R5, R6, R7, R8, R9, R10</b>	R1	
Knee	R1, R2, R3,	<b>R5, R6, R9, R10</b>	R4, R7, R8		
Leg and foot	<b>R1, R3, R5, R6, R7, R9, R10</b>	R2, R4, R8			

Table 2  
Consistency in performing tasks

	1	2	3	4	5
	Fails to maintain a consistent approach to the task	Shows occasional consistency in task execution	Generally reliable in performing the task consistently	Highly reliable and consistently perform the task.	Exemplary consistency in performing the task
Can provide quality services on the customers even if despite the body discomfort felt.		<b>R2, R6</b>	<b>R1, R3, R4, R5, R7, R8, R9, R10</b>		
Can perform quality services in rush hours when experiencing body discomfort.		<b>R1, R4, R5, R8</b>		<b>R2, R3, R6, R9, R10</b>	<b>R7</b>
Can still perform heavy lifting tasks throughout the day even there is body discomfort		<b>R4, R6, R9, R10</b>	<b>R1, R2, R3, R5, R8</b>	<b>R7</b>	
Can find ways to adapt the work routine at workstation to minimize the impact of body discomfort		<b>R2, R10</b>	<b>R1, R3, R5, R6, R7, R8, R9</b>	<b>R4</b>	

respondents experienced very weak pain which indicates they have less likely to notice the pain.

Table 2 show that most of the respondents are generally reliable in providing quality services even if they are experiencing body discomfort. In performing quality services during rush hours some of the respondents are having issues in consistently executing tasks but majority of the respondents are highly reliable and can consistently perform the task. Most of the respondents are generally reliable in performing heavy lifting throughout the day consistently. Lastly, most of the respondents are reliable in adapting the work routine at workstation to minimize the impact of body discomfort. In overall rating, respondents can generally perform reliable in executing their tasks.

#### 4. Conclusion

From the data gathered and discussion results, it shows that the workers of a water refilling station in Masulog Basak, Lapu-Lapu experience pain at their arms and low backs. These body parts are highly exposed when performing their assigned tasks. Majority can perform generally reliable in performing the task consistently despite the pain they experience in their arms and low backs. To avoid cumulative ailments caused by gradual and cumulative degradation of the musculoskeletal system among workers owing to constant lifting and handling activities, the

use of mechanical equipment such as trolley is highly suggested.

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