

## ORIGINAL ARTICLE

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## KNOWLEDGE AND USAGE OF BODY MECHANICS AMONG CLASS IV WORKERS

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## ABSTRACT

**Background:** Body mechanics is the term used to describe the efficient, coordinated, and safe use of the body to move objects and carry out the activities of daily living.

**Methods:** A descriptive co relational survey was conducted among 100 class IV workers of a tertiary hospital. The convenience sampling technique was used to select subjects. Baseline Proforma, a knowledge questionnaire on body mechanics, and a self-reported tool were used to collect the data.

**Results:** Revealed that 64% of the subject had poor knowledge of body mechanics, 74% of Class IV worker's Usage of Body Mechanics during the work found to be poor, and a weak positive correlation was found between knowledge and usage ( $r = .091$ ) of Body Mechanics among Class IV workers.

**Conclusion:** The class IV workers are also considered an essential member of the health care team. The management's responsibility, including nurses, is to teach them how to use these techniques to prevent musculoskeletal injuries.

**Keywords:** Body Mechanics, Class IV workers, Knowledge, Practice, Usage, Ergonomics and occupational health hazards.

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## INTRODUCTION

The Combined efforts of all the health team members are essential to managing the stress-free environment in the hospital setting while caring for the clients. Class IV staffs play an essential role as a member of the team. They tend to have poor socioeconomic status, low education levels, and long, erratic working shifts. The health issues of this group of employees are neglected by the administrative authorities worldwide. Body mechanic is very much essential for health care professionals, especially to class IV workers. These staff ensure the area's basic cleanliness and involve heavy work, like lifting, bending, and transferring things from one area to another [1].

The balance of a person while moving depends upon the gravitational force and the base of the support. Good body mechanic techniques prevent potential falls, injury, and protect the person and equipment [2]. The harmonious coordination of the musculoskeletal and nervous systems is the foundation for body mechanics [3]. The proper implementation of balance, posture, and body alignment during lifting, bending, moving, and performing activities of daily living reduce the risk of injury to the musculoskeletal system, allowing physical mobility without muscle strain and excessive use of muscle energy [4,9].

The actions of walking, turning, lifting, and carrying are core components of inpatient care. These activities require physical exertion. Good awareness and practice of proper body mechanics, including factors involved in the coordination of body movement, and familiarity with the skeletal and muscular systems' safeguard the patient and health care personnel [4,5]. Proper body alignment techniques seem unnatural at first, but they will easily become routine in our daily tasks if we keep at it [6,7]. Today, the health industry works as a team; there is a need for extended and intensive research in practice and industrial workers' attitudes regarding body mechanics. Hence, the investigators were interested in knowing the knowledge and usage of class IV workers' body mechanics.

## MATERIALS AND METHODS

Descriptive Co relational design was used, convenient sampling technique applied to choose the participants from the different wards of a tertiary hospital in Mangalore. The sample size was calculated based on the sample size determination table. According to this table for population size 150 at the 95% confidence interval and margin of error 5.0%, the total maximum sample required was 108. The sample size remained at the end of data collection was 100. Class IV workers who have undergone spine and hip surgery and those who had work experience less than one year were excluded from the study.

**Development of the study tool:** The research instruments used were baseline variables, a knowledge questionnaire that included 14 multiple choice questions, and a self-reported practice tool with 19 items. The tool was translated into the Kannada language. Nine experts did the content validity of the Kannada and English tool. The pretesting of

the tool was done with ten subjects. The split-half method was used to measure the internal consistency of the tool. Cronbach's alpha was used to find reliability ( $r=0.8$ ).

## Data collection process

The primary study data was collected from 1/12/2017 to 5/5/2018. Formal written permission was obtained from the ethics committee (FMMC/FMIEC/24212015). The investigators collected the data from 100 Class IV workers working in the different wards of the hospital. After selecting the subjects who met the study's criteria, the purpose of the study was explained to them, and confidentiality of the data was assured. Informed written consent was obtained from subjects. The participants were made to sit comfortably in a classroom. At the beginning baseline variables, a structured knowledge questionnaire followed by a self-reported checklist was administered to the participants. The average time taken by the participants to complete the tool was 25 to 30 minutes. The data was analyzed using SPSS 21 version.

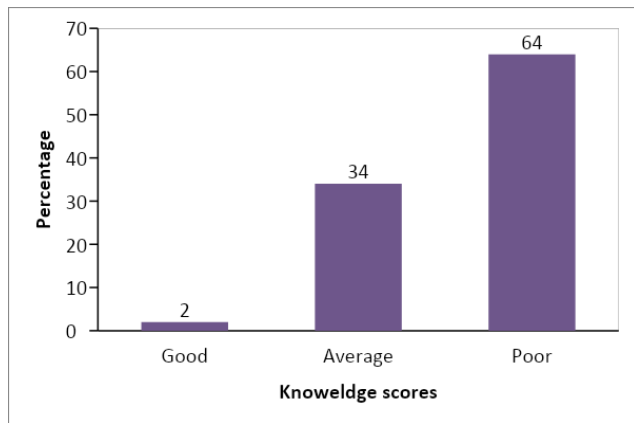
## RESULTS

**Table 1:** Distribution of subjects according to their baseline variables N=100

Baseline Variable	f	%
<b>Age</b>		
≤24	2	2
25-35	19	19
36-45	41	41
46-55	38	38
<b>Gender</b>		
Male	26	26
Female	74	74
<b>Qualification</b>		
Primary	22	22
High School	74	74
PUC And Above	4	4
<b>Years of experience</b>		
1- 5years	24	24
6-10 yrs	41	41
11-15 yrs	22	22
16-20yrs	9	9
21 and above	4	4
<b>Previous knowledge</b>		
Yes	21	21
No	79	79

The above table shows that 41 %of Class IV workers belong to the age group of 36 to 45 years, 74 % of them were females, 41 %of the subjects had work experience within 6 to 10years, the 74 % of the subjects were educated up to high school, and 79 % of subjects did not have previous information on Body Mechanics.

**Figure 1:** Knowledge grading of subjects regarding body Mechanics.



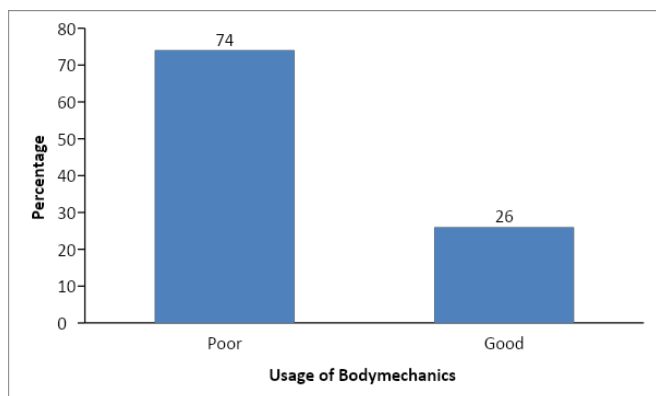
As shown in figure 1, 64% of subject's knowledge on body mechanics was poor, 34% fell under the category of average and only 2% of subjects were with good knowledge of the body mechanics.

**Table 2:** Mean, SD, and Mean percentage N = 100

Area	Mean±SD	Mean Percentage
Knowledge scores	4.96±2.078	35.42
Usage of Body Mechanics	1.26±.44	7.875

Data presented in table 2 highlights the Mean and SD 4.96±2.078 and 1.26±.44 of knowledge and Usage of **Body Mechanics** scores respectively.

**Figure 2:** Distribution of Class IV workers according to the grading of the usage of Body Mechanics.

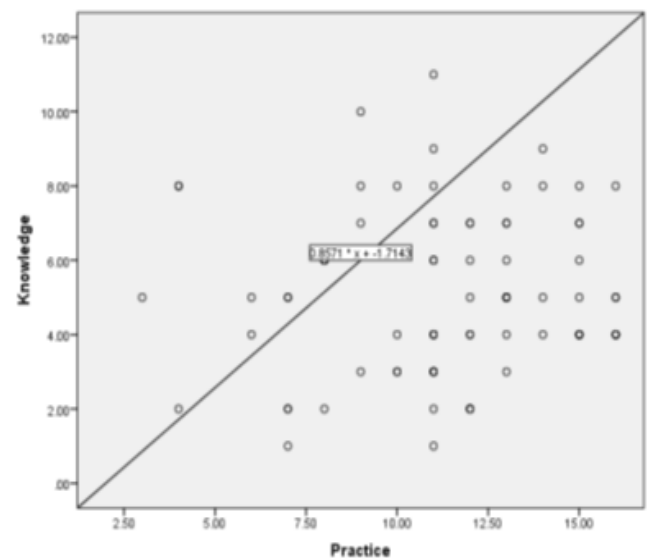


This figure reveals that 74 % of subjects poorly used body mechanics at the workplace, and the rest of the 26 % were using proper techniques.

**Table 3:** Relationship between knowledge and usage of body Mechanics N=100

Areas	Mean +SD	r value
Knowledge	4.96±2.07	.091
Usage	7.65±3.22	

**Figure 3:** Relationship between knowledge and usage of body Mechanics



The table 3 and figure 3 reveals a weak positive correlation between knowledge and usage of Body Mechanics ( $r = .091$ ) among Class IV workers. Hence, the research hypothesis is accepted, and the null hypothesis is partially rejected.

**Table 4:** Association of knowledge score with baseline variables of class IV workers

Variable	Knowledge grades			P-value
	Poor	Average	Good	
Age				.490 (Fisher Exact)
≤24	2	0	0	
25-35	15	04	0	
36-45	26	14	1	
46-55	0	16	1	
Gender				.319 (Fisher Exact)
Male	14	11	1	
Female	50	23	1	
Qualification				.008 (Fisher Exact)
Primary	16	6	0	
High school	48	25	0	
PUC and above	0	3	1	
Years of experience				.653 (Fisher Exact)
1yr- 5years	54	28	2	
6-10 yrs	10	5	0	
16-20yrs	0	1	0	
Previous knowledge				.150 (Fisher Exact)
Yes	16	4	1	
No	48	30	1	

Data presented in the above table shows that there is no association of baseline variables with the Knowledge scores of Class IV workers. Hence, the research hypothesis was rejected, and the null hypothesis is accepted.

**Table 5:** Association of usage of body mechanics and baseline variables of class IV workers

Variable	Practice grades		P-value
	Poor	Good	
Age			
≤24	2	0	.317 (Fisher Exact)
25-35	14	5	
36-45	28	13	
46-55	30	7	
Gender			
Male	19	7	.546 (Fisher Exact)
Female	55	19	
Qualification			
Primary	16	6	.865 (Fisher Exact)
High School	54	20	
PUC and above	3		
Years of experience			
1yr- 5years	62	22	.1000 (Fisher Exact)
6-10 yrs	11	4	
16-20yrs	1	0	
Previous knowledge			
Yes	15	6	.783 (Fisher Exact)
No	59	20	

Table 5 illustrates that there is no association between baseline variables and the Usage scores of Body Mechanics. Hence, the research hypothesis is rejected, and the null hypothesis is accepted.

## DISCUSSION

Musculoskeletal disorders are not restricted to a particular workplace; instead, they are concerned with people's positions in their everyday activities [11]. Nevertheless, these occupational health hazards increase as age advances [12]. The present study subjects were working in the wards, lifting and shifting heavy things that lead to musculoskeletal disorders. Understanding the demographical variables is necessary to find the factors responsible for alteration in findings.

In the study, 74% of the subjects were females, and similar results were observed in a study conducted by Swamy PGN.et.al (2017) [14]; 82% of subjects were females. Similarly, the results found in the Hossein Y.et.al (2019) [15] study are also in line with our study outcomes. Se Won Kang et al. (2017) [16] highlighted that 88.6% were females participated in investigating the relations among the use of the body mechanics principle, clinical practice fatigue, and practice satisfaction of nursing students [16].

Concerning years of experience, the current study's findings revealed 41% and 74% of the subjects had work experience for 6 to 10 years and qualified up to the 10<sup>th</sup> standard, respectively. These findings are consistent with that of Sam S.et.al (2020) [13], in which 51% of subjects were with more than five years of experience achieved secondary education. In our study, 41% of participants were between 36 to 45 years, concerning the age group.

However, a contradictory agreement was identified to the

present study in Aditi Rawat et al. (2017) [17], where 53% of participants were between the age group of 21-30years, 79% of them were male, and about 45% of participants were with bachelor education. These upshot of the study illuminate higher education better the knowledge and age are not the factors in developing musculoskeletal injuries.

The organization's progress depends not only on the knowledge and skill; however, the health status of an employee is also a vital component. The present study results depict that 64 % of class IV workers had poor knowledge, and 74 % did not use correct body technique movements. This finding reminds us that the employees are more at paramount to undergo health problems. On the other hand, Patil S et al. (2020) [18] identified around 84% of class IV workers of a tertiary care setting with average body mechanics knowledge. Swamy P. et al. (2017) [14] and Hossein. Y et al. (2019) [15] studied interns and nurses respectively, which made clear about body mechanics' average knowledge among their subjects. This could be possible due to the involvement of body mechanics in the first year of their curriculum. Class IV workers' lack of information and training at the initial stage of the work period and poor socioeconomic conditions and education status contribute immensely to not having adequate information.

Rawa A et al.(2017) [17] mentioned in their study on Knowledge assessment in the use of Body mechanics and Safety measures among ward attendants, the association between level of knowledge with the selected demographic variables, such as age, gender, working experience, education status was not found. Indeed, these facts are matching with our at hand study in which association was not identified. Again, these results are steady with another study done by Sam S et al. (2020) [13] and Sayee G (2020) [10]. Kochitty A.et.al(2015) [4] identified a significant association of critical care nurses' qualifications with their knowledge regarding proper body mechanics. These results are inconsistent with the present study findings.

The current study highlights the weak positive correlation between knowledge and practice. Contractor G (2018) [19] study outcomes are in line with the present study. Besides, they added that poor knowledge contributes to poor clinical settings, which leads to fatigue, burnout, and absenteeism. Se-WonKang et al. (2017) [16] observed a positive relationship between the body mechanics principle and practice satisfaction.

Formulation of policies and guidelines is very much in need to promote an employee's physical and psychological health. Occasional training, meetings, incident reporting recruiting an adequate workforce will reduce the occupational hazards and increase class IV workers' quality of life in any industry [8]. Present-day, technology is a paramount safety at the workplace. The heavy operations like lifting, and shifting have to be carried out by the machines [20].

**Limitation:** The study is limited to class IV workers of a single hospital only.

## CONCLUSION

The health care delivery system is giving more emphasis to prevention rather than curative aspect. It is the responsibility of each individual to take care of their health. Educational programs on the proper use of body mechanics would help health care employees to prevent further complications related to the musculoskeletal system. Furthermore, periodical training, web-based education, and health talks may increase awareness and makes them responsible for their health besides, the use of advanced technology safeguards employees.

At the end of the study, every class IV worker underwent training on body mechanics, and a leaflet was distributed to them

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