A Study to Assess the Effectiveness of Information Booklet on Knowledge and Attitude Regarding Body Mechanics Among Staff Nurses Working in Selected Hospitals of The City: Pre- Experimental Study

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***Abstract*—Body mechanics refers to the manner in which individuals move during daily activities, such as sitting, standing, lifting, carrying, bending, and sleeping. Incorrect movement patterns can place excessive strain on the spine, leading to long-term complications such as disc degeneration, joint problems, injuries, and unnecessary wear and tear. To prevent these complications, it is essential to understand and apply proper body mechanics during the procedure. Maintaining correct posture helps keep the spine in a neutral position, avoiding excessive forward rounding or backward arching. Adopting these principles in everyday routines is a simple yet effective way to support spinal health and prevent musculoskeletal problems. When studying body mechanics, ergonomics provides the theoretical foundation for safe and efficient human movement. Ergonomics is defined as the scientific discipline concerned with analyzing human interactions with various components of a system, applying theories, principles, and methodologies to optimize human wellbeing and system performance. In healthcare, ergonomics emphasizes aligning workplace design and body mechanics to reduce physical strain, prevent musculoskeletal injuries, and enhance efficiency in patient care. By integrating ergonomic principles, nurses can maintain proper posture, balance, and alignment while performing routine tasks such as lifting, transferring, or positioning patients. This not only safeguards their own health but also ensures safer and more effective delivery of care. Nursing is a physically demanding profession, and improper body mechanics remain a major contributor to musculoskeletal disorders among staff nurses. A recent study published in Indian Association of Preventive and Social Medicine Journal reported that nearly 62% of nurses demonstrated inadequate knowledge and only 48% practiced correct body mechanics during patient handling, highlighting a significant gap between awareness and safe practice. Such deficiencies not only increase the risk of back injuries and occupational strain but also compromise patient safety during transfers and positioning. Evidence shows that structured educational interventions, such as information booklets, can effectively improve knowledge retention and foster positive attitudes toward safe practices. Given the high prevalence of work-related musculoskeletal problems among nurses and the limited emphasis on ergonomics in routine training, there is a pressing need to assess the effectiveness of simple, accessible educational tools. This study aims to bridge that gap by evaluating whether an information booklet can enhance both knowledge and attitude regarding body mechanics among staff nurses in hospital settings. Objectives Of the Study To access the effectiveness of an information booklet in enhancing the knowledge and attitude regarding body mechanics among staff nurses working in selected hospitals of the city. To assess the pre-test knowledge and attitude score regarding body mechanics among staff nurses working in selected hospitals of the city. To assess the post-test knowledge and attitude score regarding body mechanics among staff nurses working in the selected hospitals of the city. To associate posttest knowledge and attitude score with selected demographic variables. Methodology In the present study, the quantitative research approach was adopted. This approach was considered suitable as the objective was to assess the effectiveness of an information booklet on body mechanics in improving the knowledge and attitude of staff nurses working in selected hospitals. Quantitative research approach has been adopted in the present study to objectively measure the changes in knowledge and attitude of staff nurses regarding body mechanics. A pre-test was administered on day 1 using a Self-structured questionnaire and standardized attitude scale, depicted**

as O1, to assess baseline knowledge and attitude. On the same day, the intervention in the form of an information booklet on body mechanics was provided, depicted as X. A post-test was conducted on day 7 using the same Self structured knowledge questionnaire and standardized attitude assessment scale, depicted as O2, to measure the improvement in knowledge and attitude. In the present study, the setting comprised selected hospitals of the city, where staff nurses were working in oncology department. Sample size is 60. 17 experts from the fields of Medical-Surgical Nursing, Physiotherapist, Doctors of medicine and Nursing director. Out of these, 14 validated responses were received with valuable suggestions and comments. The experts recommended modifications to improve clarity, relevance, and comprehensiveness of the items. Based on their feedback, certain questions were rephrased and refined to ensure better understanding. In the study, the reliability of the Self structured knowledge questionnaire and standardized attitude scale was established using Cronbach's Alpha method. The obtained reliability coefficient was Cronbach's Alpha based on standardized items = 0.923 r = 0. 923.Result findings demonstrate a clear improvement in both knowledge and attitude following the intervention. The paired t-test analysis demonstrates a statistically significant improvement in both knowledge and attitude scores following the intervention. For knowledge, the mean pre-test score was 10.97 ± 2.50, which increased to a mean post-test score of 19.82 ± 1.38. This difference was found to be highly significant, with a t value of –23.943 at 59 degrees of freedom and a p-value < 0.01, indicating a substantial gain in knowledge after the intervention.

I. INTRODUCTION

"Body mechanics in nursing is not just about posture; it's about protecting the hands that heal."

Body mechanics refers to the manner in which individuals move during daily activities, such as sitting, standing, lifting, carrying, bending, and sleeping. Incorrect movement patterns can place excessive strain on the spine, leading to long-term complications such as disc degeneration, joint problems, injuries, and unnecessary wear and tear. To prevent these complications, it is essential to understand and apply proper body mechanics during the procedure. Maintaining correct posture helps keep the spine in a neutral position, avoiding excessive forward rounding or backward arching. Adopting these principles in everyday routines is a simple yet effective way to support spinal health and prevent musculoskeletal problems. The National Accreditation Board for Hospitals and Healthcare Providers, through its Accreditation Standards for Hospitals, emphasizes quality, safety, and continuous improvement in healthcare delivery. These standards mandate workplace safety measures, staff training, and occupational health protocols to minimize risks such as musculoskeletal disorders. National Accreditation Board for Hospitals promotes a culture of safety and ergonomics in Indian hospitals, aligning with global occupational health priorities identified by World Health Organization and Occupational Safety and Health Administration. This is particularly significant in the Indian context, where empirical evidence shows musculoskeletal disorder prevalence rates of 60–70% among staff nurses, with low back pain being the most common complaint. Unsafe body mechanics, poor posture, and inadequate ergonomic awareness have been consistently linked to these high rates of morbidity. By integrating workplace safety into accreditation requirements, the National Accreditation Board for Hospitals provides a regulatory framework that supports safe body mechanics and occupational health practices. Therefore, there is an urgent need for structured educational interventions, such as information booklets, to improve knowledge and practice among staff nurses, which this study aims to address. Nursing is a physically demanding profession, and improper body mechanics remain a major contributor to musculoskeletal disorders among staff nurses. A recent study published in Indian Association of Preventive and Social Medicine Journal reported that nearly 62% of nurses demonstrated inadequate knowledge and only 48% practiced correct body mechanics during patient handling, highlighting a significant gap between awareness and safe practice. Such deficiencies not only increase the risk of back injuries and occupational strain but also compromise patient safety during transfers and positioning. Evidence shows that structured educational interventions, such as information booklets, can effectively improve knowledge retention and foster positive attitudes toward safe practices. Given the high prevalence of workrelated musculoskeletal problems among nurses and the limited emphasis on ergonomics in routine training, there is a pressing need to assess the effectiveness of simple, accessible educational tools. This study aims to bridge that gap by evaluating

whether an information booklet can enhance both knowledge and attitude regarding body mechanics among staff nurses in hospital settings.

II. OBJECTIVES OF THE STUDY:

Primary Objectives

"To access the effectiveness of an information booklet in enhancing the knowledge and attitude regarding body mechanics among staff nurses working in selected hospitals of the city."

Secondary Objectives

1. To assess the pre-test knowledge and attitude score regarding body mechanics among staff nurses working in selected hospitals of the city.
2. To assess the post-test knowledge and attitude score regarding body mechanics among staff nurses working in the selected hospitals of the city.
3. To associate posttest knowledge and attitude score with selected demographic variables

III. MATERIAL AND METHODS

In the present study, the quantitative research approach was adopted. This approach was considered suitable as the objective was to assess the effectiveness of an information booklet on body mechanics in improving the knowledge and attitude of staff nurses working in selected hospitals.A pre-test was administered on day 1 using a Self-structured questionnaire and standardized attitude scale, depicted as O1, to assess baseline knowledge and attitude. On the same day, the intervention in the form of an information booklet on body mechanics was provided, depicted as X. A post-test was conducted on day 7 using the same Self structured knowledge questionnaire and standardized attitude assessment scale, depicted as O2, to measure the improvement in knowledge and attitude. the setting comprised selected hospitals of the city, where staff nurses were working in oncology department. These hospitals provided a natural field setting, appropriate for assessing the effectiveness of an educational intervention (information booklet) on body mechanics. Sample size is 60. 17 experts from the fields of Medical-Surgical Nursing, Physiotherapist, Doctors of medicine and Nursing director. Out of these, 14 validated responses were received with valuable suggestions and comments. The experts recommended modifications to improve clarity, relevance, and comprehensiveness of the items. Based on their feedback, certain questions were rephrased and refined to ensure better understanding. In the study, the reliability of the Self structured knowledge questionnaire and standardized attitude scale was established using Cronbach's Alpha method. The obtained reliability coefficient was Cronbach's Alpha based on standardized items = 0.923 r = 0.923.

IV. RESULT

Section- A

Distribution Of Staff Nurses with Regards to Their Demographic Veriables

Frequency and Percentage Distribution of Staff Nurses According to Age

		Frequency	Percent
Age	21- 25 years	25	41.7
	26 – 30 years	20	33.3
	31 – 35 years	7	11.7
	36 – 40 years	3	5.0
	41 years and above	5	8.3
	Total	60	100.0

Frequency and Percentage Distribution of Staff Nurses According to Gender

		Frequency	Percent
Gender	Male	4	6.7
	Female	56	93.3
	Total	60	100.0

Frequency and Percentage Distribution of Staff Nurses According to Educational Qualification

		Frequency	Percent
Educational Qualification	Diploma in Nursing	44	73.3
	B.Sc Nursing / Post-Basic BSc Nursing	16	26.7
	Total	60	100.0

Frequency and Percentage Distribution of Staff Nurses According to Years of Experience

		Frequency	Percent
Years of Experience	Less than 1 year	5	8.3
	1-3 years	30	50.0
	4-6 years	12	20.0
	7-9 years	4	6.7
	10 years and above	9	15.0
	Total	60	100.0

Frequency and Percentage Distribution of Staff Nurses According to Marital Status.

		Frequency	Percent
Marital Status	Married	22	36.7
	Unmarried	38	63.3
	Total	60	100.0

Section --B

Description Of Pre - Test & Post-Test Knowledge and Attitude Scores of Staff Nurses Regarding Body Mechanics.

Comparison of Pre-test and Post-test Knowledge Levels of Staff Nurses Regarding Body Mechanics (N = 60)

Knowledge Category	Pre-test Frequency (%)	Post-test Frequency (%)
Poor (<10)	15 (25.0%)	0 (0.0%)
Average (10–15)	42 (70.0%)	0 (0.0%)
Good (16–20)	3 (5.0%)	40 (66.7%)
Excellent (21–25)	0 (0.0%)	20 (33.3%)
Total	60 (100%)	60 (100%)

Comparison of Pre-test and Post-test Attitude Levels of Staff Nurses Regarding Body Mechanics (N = 60)

Attitude Category	Pre-test Frequency (%)	Post-test Frequency (%)
Negative Attitude	30 (50.0%)	0 (0.0%)
Neutral Attitude	28 (46.7%)	0 (0.0%)
Positive Attitude	2 (3.3%)	60 (100%)
Total	60 (100%)	60 (100%)

Descriptive Statistics of Pre-test Knowledge and Attitude Scores

	N	Minimum	Maximum	Mean	Std.Deviation
Pre Knowledge	60	4.00	17.00	10.9667	2.49723
Pre Attitude	60	27.00	61.00	36.7667	6.58289

Descriptive Statistics of Post-test Knowledge and Attitude Scores

	N	Minimum	Maximum	Mean	Std. Deviation
Post Knowledge	60	16.00	22.00	19.8167	1.38383
Post Attitude	60	56.00	73.00	65.3167	3.64293

Section --C

Description Of Effectiveness of Information Booklet on Knowledge and Attitude Regarding Body Mechanics Using Paired T-Test

Comparision of pretest and posttest knowledge and attitude score using paired t - test

		Mean	N	Std. Deviation	Std. Error Mean	df	T-test	P-Value
Knowledge	Pre	10.9667	60	2.49723	0.32239	59	-23.943	<0.01
	Post	19.8167	60	1.38383	0.17865			
Attitude	Pre	36.7667	60	6.58289	0.84985	59	-31.55	<0.01
	Post	65.3167	60	3.64293	0.47030			

Section-- D

Association Of Post Test Knowledge and Attitude Score with Selected Demographic Variables.

Association between Years of Experience and Level of Knowledge among Staff Nurses

			Knowledge Category		Total	Chi Sq	P-value
			Good	Excellent			
Years of experience	Less than 1 year	Freq.	4	1	5	0.952	0.917
		%	10.3%	4.8%	8.3%		
	1 – 3 years	Freq.	19	11	30		
		%	48.7%	52.4%	50.0%		
	4 – 6 years	Freq.	7	5	12		
		%	17.9%	23.8%	20.0%		
	7 – 9 years	Freq.	3	1	4		
		%	7.7%	4.8%	6.7%		
	10 years and above	Freq.	6	3	9		
		%	15.4%	14.3%	15.0%		
Total		Freq.	39	21	60		
		%	100.0%	100.0%	100.0%		

Association between Marital Status and Level of Knowledge among Staff Nurses.

			Knowledge Category		Total	Chi Sq	P-value
			Good	Excellent			
Marital status	Married	Freq.	13	9	22	0.533	0.465
		%	33.3%	42.9%	36.7%		
	Unmarried	Freq.	26	12	38		
		%	66.7%	57.1%	63.3%		
Total		Freq.	39	21	60		
		%	100.0%	100.0%	100.0%		

Association between Age and Attitude Category of Participants (N = 60)

			Attitude Category			Total
			Negative	Moderate	Positive	
AGE	21-25 years	Freq.	0	0	25	25
		%	0.00%	0.00%	41.7%	41.7%
	26-30years	Freq.	0	0	20	20
		%	0.00%	0.00%	33.3%	33.3%
	31-35 years	Freq.	0	0	7	7
		%	0.00%	0.00%	11.7%	11.7%
	36-40 years	Freq.	0	0	3	3
		%	0.00%	0.00%	5.0%	5.0%
	41 years and Above	Freq.	0	0	5	5
		%	0.00%	0.00%	8.3%	8.3%
Total		Freq.	0	0	60	60
		%	0.00%	0.00%	100.0%	100.0%

Association between Gender and Attitude Category of Participants (N = 60)

			Attitude Category			Total
			Negative	Moderate	Positive	
Educational Qualification	Diploma in Nursing	Freq.	0	0	44	44
		%	0.00%	0.00%	73.3%	73.3%
	B.Sc Nursing / Post-Basic BSc Nursing	Freq.	0	0	16	16
		%	0.00%	0.00%	26.7%	26.7%
Total		Freq.	0	0	60	60
		%	0.00%	0.00%	100.0%	100.0%

Association between Educational Qualification and Attitude Category of Participants (N = 60)

			Attitude Category			Total
			Negative	Moderate	Positive	
GENDER	Male	Freq.	0	0	4	4
		%	0.00%	0.00%	6.7%	6.7%
	Female	Freq.	0	0	56	56
		%	0.00%	0.00%	93.3%	93.3%
Total		Freq.	0	0	60	60
		%	0.00%	0.00%	100.0%	100.0%

Association between Year of Experience and Attitude Category of Participants (N = 60)

			Attitude Category			Total
			Negative	Moderate	Positive	
	Less than 1 year	Freq.	0	0	5	5

YEARS OF EXPERIENCE		%	0.00%	0.00%	8.3%	8.3%
	1 – 3 years	Freq.	0	0	30	30
		%	0.00%	0.00%	50.0%	50.0%
	4 – 6 years	Freq.	0	0	12	12
		%	0.00%	0.00%	20.0%	20.0%
	7 – 9 years	Freq.	0	0	4	4
		%	0.00%	0.00%	6.7%	6.7%
	10 years and above	Freq.	0	0	9	9
		%	0.00%	0.00%	15.0%	15.0%
Total		Freq.	0	0	60	60
		%	0.00%	0.00%	100.0%	100.0%

Association between Marital Status and Attitude Category of Participants (N = 60)

			Attitude Category			Total
			Negative	Moderate	Positive	
MARITAL STATUS	Married	Freq.	0	0	22	22
		%	0.00%	0.00%	36.7%	36.7%
	Unmarried	Freq.	0	0	38	38
		%	0.00%	0.00%	63.3%	63.3%
Total		Freq.	0	0	60	60
		%	0.00%	0.00%	100.0%	100.0%

V. CONCLUSION

The descriptive statistics of the pre-test scores indicate that the pre-knowledge score among the 60 participants ranged from a minimum of 4.00 to a maximum of 17.00, with a mean score of 10.97 and a standard deviation of 2.49, reflecting a moderate level of baseline knowledge with some variability among participants. In contrast, the pre-attitude score showed a wider range, with values varying from 27.00 to 61.00, a mean score of 36.77, and a standard deviation of 6.58, indicating greater dispersion in attitude levels before the intervention. Overall, the findings suggest moderate baseline knowledge and comparatively variable attitudes among the study participants prior to the intervention. The post-test assessment revealed a marked improvement in both knowledge and attitude scores among the participants. The post-knowledge scores ranged from 16.00 to 22.00, with a mean score of 19.82 and a standard deviation of 1.38, indicating a high level of knowledge with minimal variability after the intervention. Similarly, the post-attitude scores showed a substantial increase, ranging from 56.00 to 73.00, with a mean score of 65.32 and a standard deviation of 3.64, reflecting a generally positive attitude and consistent responses among participants. Overall, these findings demonstrate a clear improvement in both knowledge and attitude following the intervention.The paired t-test analysis demonstrates a statistically significant improvement in both knowledge and attitude scores following the intervention. For knowledge, the mean pre-test score was 10.97 ± 2.50, which increased to a mean post-test score of 19.82 ± 1.38. This difference was found to be highly significant, with a t value of –23.943 at 59 degrees of freedom and a p-value < 0.01, indicating a substantial gain in knowledge after the intervention. Similarly, for attitude, the mean pre-test score of 36.77 ± 6.58 showed a marked increase to 65.32 ± 3.64 in the post-test assessment. This improvement was also statistically highly significant, as evidenced by a t value of –31.55 at 59 degrees of freedom with a p-value< 0.01. Overall, the results confirm that the intervention was effective in significantly enhancing both the knowledge and attitude of the study participants.

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