

A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge Regarding Body Mechanics in Reducing Low Back Pain Among Staff Nurse at Selected Department of Sharda Hospital of Greater Noida, Uttar Pradesh

¹Kalpna Bhandari

MSc. Nursing Student,
Sharda School of Nursing Science
and Research, Sharda University,
Knowledge Park-III,
Greater Noida, Uttar Pradesh-201306

²Kiran Sharma

Professor, Medical Surgical Nursing
Sharda School of Nursing Science
and Research, Sharda University,
Knowledge Park-III,
Greater Noida, Uttar Pradesh-201306

³Divya Upreti

Assistant Professor
Sharda School of Nursing Science
and Research, Sharda University,
Knowledge Park-III, Greater Noida,
Uttar Pradesh-201306

Corresponding Author: Kiran Sharma

Abstract:-

A major medical condition and one of the main contributors to disability, low back pain (LBP) affects many people. Nursing is a profession with a greater risk for the development of low back pain. Body Mechanics means use of the muscles of the body and the skeletal system in such a way as to avoid injury or strain when assisting in the movement, positioning and transfer of a client. Using bodily mechanics low back pain can be reduced.

A research study entitled “A Study to Assess the Effectiveness of Structured Teaching Programme On Knowledge Regarding Body Mechanics in Reducing Low Back Pain Among Staff Nurse at Selected Department Of Sharda Hospital Of Greater Noida, Uttar Pradesh” was conducted by Ms. Kalpna Bhandari in the Partial fulfillment of requirement for the award of Master of Science in Nursing at Sharda university, Greater Noida UP.

➤ Objectives:

Objectives of the study were to assess the level of knowledge regarding Body mechanics among staff nurse, to assess the effectiveness of structured teaching programme on knowledge regarding body mechanics in reducing low back pain among staff nurses at selected department of Sharda Hospital and to find the association between the pretest and posttest knowledge score of staff nurses with selected demographic variables.

➤ Materials and methods:

A Pre-experimental research design was used in this study, Purposive Sampling technique was adopted for the selection of sample. The target population for the study was staff nurse working in ICU, Casualty and

Ortho ward of Sharda Hospital. The sample size for the study was 40. The tool includes a knowledge questionnaire and demographic data to assess the knowledge regarding body mechanics. The tool's dependability was determined using the split-half method. Before using the tool, each participant provided their written informed consent, which was obtained from the ethics council of Sharda University. The conceptual framework of this study was founded on Ernestine Wiedenbach's “Helping art of clinical nursing theory.

➤ Results:

The data collected was analyzed using descriptive and inferential statistics. The significance of difference in the pretest and posttest was found using paired ‘t’ test. The vast majority (65%) of the participants were in the age group of 21-25 years, most (70%) of them were female, majority (75%) of them were single, most (65%) of the participants had education of GNM, in relation of experience majority (50%) had 1-5year of experience, most (65%) of the participant had no training courses for body mechanics, majority (82.5%) of the participants had working hours of 5-8hours per day and majority (75%) of them were working in critical care unit. The mean pre-test score was 11.7. The mean post test score was 12.89. It indicates that in the pretest those who had poor knowledge score were increased. This shows the efficiency of STP for knowledge gain. One-way ANOVA was computed to find the significant association between pretest & posttest knowledge scores with selected demographic characteristics of the staff nurses. It revealed that there was no statistically significant association ($p>0.05$) found between pretest & posttest knowledge scores with selected demographic characteristics of the staff nurses.

➤ **Conclusions:**

The finding shows that the study was effective to increase the knowledge regarding body mechanics to reduce low back pain.

Keywords:- Assess, Knowledge, Effectiveness, Structure Teaching Programme on Body Mechanics

I. INTRODUCTION

A basic human right is the right to health. Each and every individual has the right to the best possible level of health. WHO defines health is a state of complete physical, mental, social and spiritual wellbeing, not merely an absence of disease or infirmity.

Disease is defined as a change in how the body functions, which might lead to the replication of abilities or a reduction in the average life duration. Humans are able to take interest in and adapt to their surroundings thanks to their capacity for complicated and precise motions. Such movements are made possible by the musculoskeletal system operating properly. The musculo-skeletal system, which includes cartilage, ligaments, tendons, fascia, bursae, muscles, joints, and bones, is the biggest organ system in the human body. As multifactorial "work-related" diseases are frequently more prevalent than occupational diseases, the health services must provide them the attention that required. One of the illnesses associated with the workplace is low back pain (LBP), which needs special attention. In western developed countries, LBP has become a serious public health problem with a significant socioeconomic consequence. On average, work-related factors are the source of 37% of LBP cases. Between 12 and 38 percent of women and between 31 and 45 percent of males are experiencing changes in this area. Even though LBP is not a leading cause of mortality, it has a high incidence and places a significant burden on society.

The movements we do every day when engaging in routine activities, Body mechanics include motions including sitting, standing, lifting, pulling, and walking. Good body mechanics will help treat current back problems and stop the development of new ones, whereas poor body mechanics cause back difficulties and other muscle and bone issues. Poor body mechanics, which can be both helpful and harmful, can directly cause back discomfort.

Our spine's health depends critically on good body mechanics. And applying these principles to our daily lives is simple. Although it could seem uncomfortable at first, if we continue, they will gradually become usual, and our backs will praise us. Using the best and most effective techniques for lifting and moving patients or large objects is a sign of good body mechanics.

Strength is not as vital as efficiency. Most people are aware that they should bend their knees whenever lifting something. While bending from the knees, the position of the spine also needs to be taken into consideration. Care must be made to ensure the neutral spine to reduce the risk of injury, either at the time of moving something or, more likely, over time as a result of poor body mechanics.

Sadly, nursing is among the occupations with some of the greatest incidence of musculoskeletal injuries, assuming that one of its major purposes is always to heal the ill. The career of a nurse could be impacted by a musculoskeletal injury. Due to an accident, a lot of nurses who would have preferred to give direct patient care have been forced to leave nursing or the field of nursing they would have preferred.

The nurse must apply knowledge and skills in clinical nursing practice. Many nursing tasks involve using your muscles. The nurse must be aware of and use the right body mechanics when transferring a client in order to lower the chance of injury to themselves. The nurse must realize how the musculoskeletal system and neural system work together to allow for coordinated body movement.

Ten nurses are forced to leave their careers every day because of back injuries. The majority of time missing work is due to back injuries. Patient handling, lifting, and moving placed greater stress on nurses' backs than any other aspect of their daily work.

One in ten serious work-related back injuries are sustained by nursing staff, and back problems cause 12 percent of nurses to abandon their profession. However, if nurses take precautions, they can avoid some injuries since they are preventable.

In fact, among all forms of non-fatal work-related injuries, nursing has the second-highest incidence, ranking it the high risky occupation in the United States for back injuries.

According to a Bureau of Labor Statistics survey from 1998, over 12% of nurses working in hospitals and 17.3% of nurses working in nursing homes report work-related musculoskeletal problems, including back injuries. This is roughly twice as common as it is across all other industries.

"Prevention is better than cure". Particularly in high-risk wards like the intensive care unit, orthopaedic, casualty, and Operation Theater, an in-service programme providing knowledge about body mechanics i.e. while lifting, transferring, and healthy lifestyles can lower the risk of back injury and disability. The student researcher concluded that nurses are at a significant risk for back injuries due to incorrect body mechanics during patient care from her experience working with staff nurses. In context of the above, the research intends to employ a structured teaching module to evaluate staff nurses' body mechanics knowledge and experience.

II. DATA ANALYSIS AND INTERPRETATION

Table 1 Frequency and Percentage Distribution of Sample Characteristics, N (40)

Demographic variables	N	%
1. Age in Years		
i. 21-25	26	65
ii. 26-30	14	35
2. Gender		
i. Male	12	30
ii. Female	28	70
3. Marital status		
i. Single	30	75
ii. Married	10	25
4. Professional Qualification		
i. GNM	26	65
ii. B.S.C	12	30
iii. PBBSC	2	5
5. Professional Experience		
i. <1year	16	40
ii. 1-5year	20	50
iii. 6-10year	4	10
6. Training Course		
i. Yes	14	35
ii. No	26	65
7. Hours of working per day		
i. 5-8hours	33	82.5
ii. 9-12hour	7	17.5
8. Area of work		
i. Critical Unit	30	75
ii. Non-Critical Unit	10	25

Table 2 Frequency & Percentage Distribution of Sample Based on Level of Knowledge Regarding Body Mechanics Among Staff Nurse in Pre-Test

Knowledge level	Category scores	Respondents	
		Frequency (n)	Percentage (%)
Poor	Less than 11	23	57.5
Average	11-20	13	32.5
Good	20 and above	4	10
Total		40	100

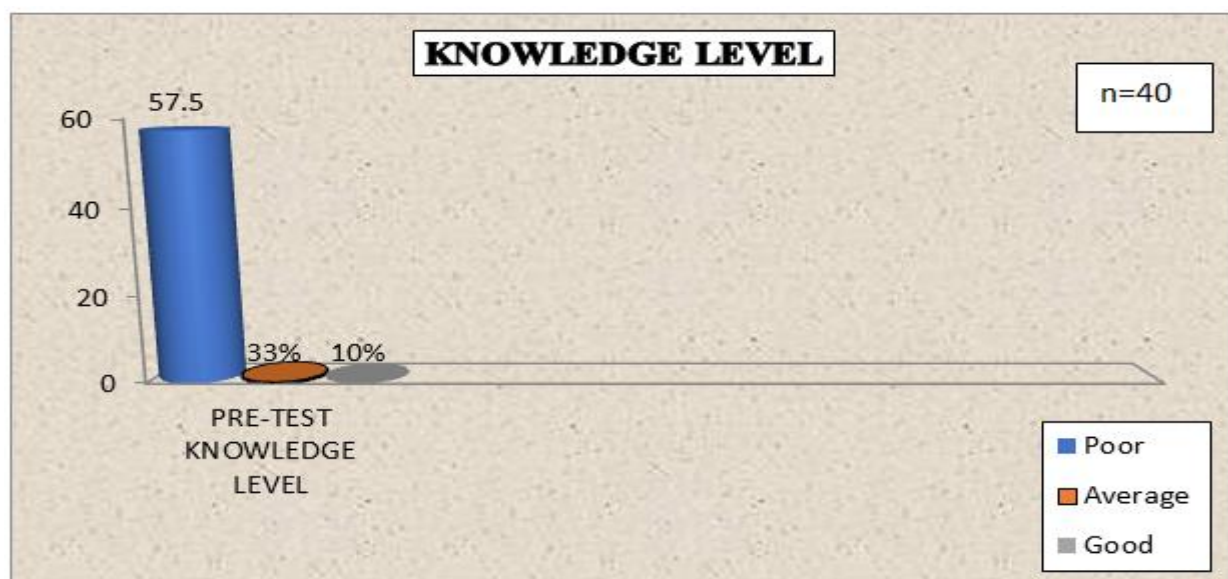


Fig 1 Pre-Test Knowledge Level

Table 3 Frequency & Percentage Distribution of Sample Based on Level of Knowledge Regarding Body Mechanics Among Staff Nurse in Post-Test

Knowledge level	Category scores	Respondents	
		Frequency (n)	Percentage (%)
Poor	Less than 11	1	2.5
Average	11-20	9	22.5
Good	20 and above	30	70
Total		40	100

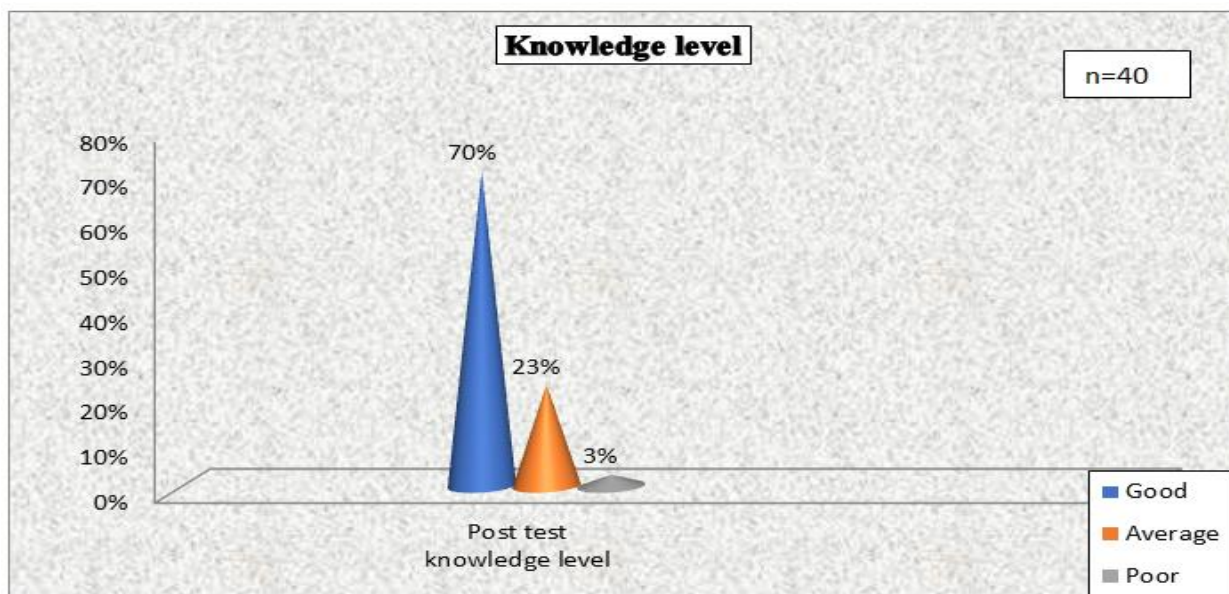


Fig 2 Post – Test Knowledge Level

Table 4 Comparison of Knowledge Scores of Staff Nurses Regarding Body Mechanics between Pre-Test and Post-Test , (N=40)

Knowledge	Mean	Standard Deviation	Mean difference	Paired t-test	P value
Pre-test	11.78	4.969	11.100	12.314	0.000 (S)
Post-test	12.88	5.085			

(p<0.05 significant level) S- Significant, NS- non significant

Table 5 Association between Pre-Test Knowledge Score and Demographic Variables of the Participants, (N=40)

S.No	Demographic Characteristics	Pre-score			F value One way Anova	p-value
		N	Mean	SD		
1.	Age in Years	26	11.96	5.250	0.10	0.75 (NS)
	i. 21-25					
	ii. 26-30	15	11.43	4.569		
2.	Gender	12	11.17	5.27	0.25	0.62 (NS)
	i. Male					
	ii. Female	28	12.04	4.91		
3.	Marital status	30	11.77	5.029	0.00	0.986 (NS)
	i. Single					
	ii. Married	10	11.80	5.051		
4.	Professional Qualification				1.81	0.98 (NS)
	i. GNM	28	11.00	4.79		
	ii. B.S.C	12	13.92	5.23		
	iii. PBBSC	2	9.00	1.41		
5.	Professional Experience				3.29	0.04 (S)
	i. <1year	16	13.94	5.24		
	ii. 1-5year	20	10.75	4.44		
	iii. 6-10year	4	8.25	3.09		
6.	Training Course				4.30	0.04 (S)
	i. Yes	14	9.64	3.15		
	ii. No	26	12.92	5.42		

7.	Hours of working per day				1.34	0.716 (NS)
	i. 5-8hours	33	11.91	4.97		
	ii. 9-12hour	7	11.14	5.30		
8.	Area of work				0.36	0.55 (NS)
	i. Critical Unit	30	11.50	4.400		
	ii. Non-Critical Unit	10	12.60	3.203		

(p<0.05 significant level) S- Significant and NS-Non Significant)

Table 6 Association between Post-Test Knowledge Score and Demographic Variables (N=40)

S.No.	Demographic Characteristics	Post-score			F value One way Anova	p-value
		N	Mean	SD		
1.	Age in Years				0.03	0.86 (NS)
	i. 21-25	26	22.77	5.41		
	ii. 26-30	15	23.07	4.59		
2.	Gender				0.33	0.57 (NS)
	i. Male	12	22.17	5.41		
	ii. Female	28	23.18	5.01		
3.	Marital status				0.23	0.63 (NS)
	i. Single	30	23.10	4.76		
	ii. Married	10	22.20	6.18		
4.	Professional Qualification				0.56	0.57 (NS)
	i. GNM	26	22.38	5.24		
	ii. B.S.C	12	24.17	4.91		
	iii. PBBSC	2	21.50	4.95		
5.	Professional Experience				2.19	0.12 (NS)
	i. <1year	16	24.88	4.11		
	ii. 1-5year	20	21.60	5.29		
	iii. 6-10year	4	21.26	6.24		
6.	Training Course				4.85	0.03 (S)
	i. Yes	14	20.57	5.66		
	ii. No	26	24.12	4.36		
7.	Hours of working per day				1.95	0.17 (NS)
	i. 5-8hours	33	22.36	5.42		
	ii. 9-12hour	7	25.29	1.70		
8.	Area of work				5.23	0.02 (S)
	i. Critical Unit	30	21.87	5.38		
	ii. Non-Critical Unit	10	25.90	2.28		

(p<0.05 significant level) S- Significant and NS-Non Significant)

III. DISCUSSION

The research study is briefly summarized in this chapter, along with discussion of the study's conclusions, implications for nursing practice, study limitations, and suggestions for future research investigations.

The purpose of this study was to assess the success of a planned teaching course in improving the staff nurses' understanding of body mechanics. The study's objectives guided the collecting and analysis of the data.

IV. MAJOR FINDINGS OF THE STUDY

➤ *Sample characteristics:*

About 65% of staff nurse were in age group of 21-25years. 70% of staff nurse were female and 65% were having the education level GNM. In relation to experience half of them were having 1-5year experience. 65% of the

staff nurses were having no body mechanics training and most of them 82.5% were doing 5-8hours work and most of them i.e. 75% were doing work in critical care unit.

First objective of the study was to assess the level of knowledge regarding Body mechanics among staff nurse.

The pretest knowledge of the study revealed that (n=23) 57.5% of them were having poor knowledge, (n=13) 32.5% of them were having average knowledge and (n=4) 10% of them were having good knowledge.

The study results are corroborated by research findings of Paul Lissa et. al (1995) conducted on “Assessment of knowledge on importance of body mechanics in preventing back ache among trained nurses working at ESI hospital Ayanavaram”. The study revealed that 17 (34%) had inadequate knowledge, 12 (24%) had moderately adequate knowledge, 21 (42%) had adequate knowledge.

Hence it was necessary to improve the subject's knowledge by giving specific teaching on a few nursing interventions that consider body mechanics.

The study's second goal was to determine how well a systematic instruction course on body mechanics knowledge reduced low back pain among staff nurses in a particular Sharda Hospital department.

When staff nurses' knowledge and practise of body mechanics were compared before and after specific nursing interventions, it was found that the overall knowledge improvement mean was 11.1 with a standard deviation of 0.11. The paired 't' test result was 12.31, which is highly significant at the p 0.00 level of significance.

The null hypothesis Ho1 was thus rejected, and it was reiterated that there was a substantial change in staff nurses' understanding and practice of body mechanics in certain nursing interventions between the pretest and posttest. The fact that there was a considerable improvement in knowledge scores suggests that the structured instruction strategy was successful.

Finding the relationship between the staff nurses' knowledge score on the pretest and posttest and particular demographic characteristics is one of the study's third aims.

Using the ANOVA test, it was determined whether the knowledge level at the beginning of the test and the knowledge level at the end of the test were related in any way. The significant correlation between pretest and posttest knowledge scores and a few staff nurses' demographic features was determined using one-way ANOVA.

It was discovered that, with the exception of professional experience and training course, there was no statistically significant association between pretest knowledge scores and any of the staff nurses' demographic variables ($p > 0.05$). The researcher thus agreed with the null hypothesis H02.

It was discovered that, with the exception of the training programme and working environments, there was no statistically significant association between post knowledge scores and any of the staff nurses' demographic variables ($p > 0.05$). The researcher thus agreed with the null hypothesis H02.

V. CONCLUSION

“Prevention is better than cure”. Ironically, nursing as a profession exists to help the ill get better., nurses should be fit to provide care. So, in order to provide quality care nurse should have adequate knowledge regarding body mechanics. Through in-service education & other education method can be apply to increase the knowledge regarding body mechanics.

RECOMMENDATIONS

According to the study's findings, the following suggestions have been made:

- The research can be repeated with a bigger sample size to further generalize the results.
- A comparable investigation might be carried out in a different environment.
- An exploratory study might be carried out to determine the elements that influence maintaining appropriate body mechanics.
- To determine the efficiency of the proposed teaching course and SIM on the same subject, a comparative research may be carried out.
- It is possible to undertake a longitudinal study to determine how knowledge affects practice.

REFERENCE

- [1]. Berman A, Snyder S, Frandsen G. Kozier & Erb's fundamentals of nursing: concepts, process, and practice. Tenth edition. Boston: Pearson; 2016. 1486 p.
- [2]. Lewis SM, Collier IC, editors. Medical-surgical nursing: assessment and management of clinical problems. 3rd ed. St. Louis: Mosby Year Book; 1992. 1879 p.
- [3]. International Labour Office, editor. Guidelines on occupational safety and health: ILO-OSH 2001. Geneva, Switzerland: International Labour Office; 2001. 27 p.
- [4]. The world health report. 2002: Reducing risks, promoting healthy life. 2002. 248 p.
- [5]. Uysal Toraman A, Ardahan M, Er kin Balyacı Ö. The effect of the body mechanic behaviors on the low back pain. Nurs Pract Today. 2014; 1(2): 107-115
- [6]. Jensen RC. Disabling back injuries among nursing personal: research needs and justification. Res Nurs Health 1999 Feb; 10(1): 29-38
- [7]. Perry G. potter A. Fundamentals of Nursing. 2nd ed. St Louis: The C.V Mosby Company; 1989; P. 1185
- [8]. Ali, Omebrahiem. (2018). The Effect of Body Mechanics Training Program for Intensive Care Nurses in Reducing Low Back Pain.
- [9]. Gold Smith Connie. “Watch your Back” Nursing personnel can prevent work place injuries before they happen. National Association of orthopedic Nurses Journal 2001 Jan 8
- [10]. Karahan A, Bayraktar N. Determination of the usage of body mechanics in clinical settings and the occurrence of low back pain in nurses. Int J Nurs Stud. 2004 Jan;41(1):67-75.
- [11]. Dash Bijayalaskhmi, Jaypee Brothers (Jaypeedigital). Essentials of Nursing Research & Biostatistics. Jaypee Brothers Medical Publisher (P) Ltd.; 2017.
- [12]. Polit,D.F.,andHungler(1999).NursingResearch.LippincottWilliamsAndWilkins.
- [13]. Kumar.S.NursingResearch and Statistics. 3rdedition, Pageno. 116

- [14]. Tefera BZ, Zeleke H, Abate A, Abebe H, Mekonnen Z, Sewale Y. Magnitude and associated factors of low back pain among nurses working at intensive care unit of public hospitals in Amhara region, Ethiopia. Abdullah KL, editor. PLoS ONE. 2021 Dec 2;16(12):e0260361.
- [15]. Latina R, Petruzzo A, Vignally P, Cattaruzza MS, Vetri Buratti C, Mitello L, et al. The prevalence of musculoskeletal disorders and low back pain among Italian nurses: An observational study. *Acta Biomed*. 2020 Nov 30;91(12-S):e2020003.
- [16]. Fekadu Mijena G, Geda B, Dheresa M, Fage SG. Low Back Pain Among Nurses Working at Public Hospitals in Eastern Ethiopia. *JPR*. 2020 Jun; Volume 13:1349–57.
- [17]. Kasa AS, Workineh Y, Ayalew E, Temesgen WA. Low back pain among nurses working in clinical settings of Africa: systematic review and meta-analysis of 19 years of studies. *BMC Musculoskelet Disord*. 2020 Dec;21(1):310.
- [18]. Ibrahim MI, Zubair IU, Yaacob NM, Ahmad MI, Shafei MN. Low Back Pain and Its Associated Factors among Nurses in Public Hospitals of Penang, Malaysia. *IJERPH*. 2019 Nov 1;16(21):4254.
- [19]. Ghilan K, Al-Taiar A, Yousfi NA, Zubaidi RA, Awadh I, Al-Obeyed Z. Low back pain among female nurses in Yemen. *Int J Occup Med Environ Health*. 2013 Aug;26(4):605–14.
- [20]. Boughattas W, Maalel OE, Maoua M, Bougmiza I, Kalboussi H, Brahem A, et al. Low Back Pain among Nurses: Prevalence, and Occupational Risk Factors. *ODEM*. 2017;05(01):26–37.
- [21]. Aleku M, Nelson K, Abio A, Lowery Wilson M, Lule H. Lower Back Pain as an Occupational Hazard Among Ugandan Health Workers. *Front Public Health*. 2021 Dec 1;9:761765.
- [22]. Rezaei B, Mousavi E, Heshmati B, Asadi S. Low back pain and its related risk factors in health care providers at hospitals: A systematic review. *Ann Med Surg (Lond)*. 2021 Oct;70:102903.
- [23]. Andersen, Vinstrup, Villadsen, Jay, Jakobsen. Physical and Psychosocial Work Environmental Risk Factors for Back Injury among Healthcare Workers: Prospective Cohort Study. *IJERPH*. 2019 Nov 15;16(22):4528.
- [24]. Yasobant S, Rajkumar P. Work-related musculoskeletal disorders among health care professionals: A cross-sectional assessment of risk factors in a tertiary hospital, India. *Indian J Occup Environ Med*. 2014 May;18(2):75–81.
- [25]. Sikiru L, Hanifa S. Prevalence and risk factors of low back pain among nurses in a typical Nigerian hospital. *Afr Health Sci*. 2010 Mar;10(1):26–30.
- [26]. Rajan J. Effectiveness of Back Strengthening Exercise on Pain and Disability among the Nursing Students with Mechanical Low Back Pain. *Journal of Bioscience and Applied Research*. 2018 Sep 29;4(3):345–60.
- [27]. Dawson AP, McLennan SN, Schiller SD, Jull GA, Hodges PW, Stewart S. Interventions to prevent back pain and back injury in nurses: a systematic review. *Occupational and Environmental Medicine*. 2007 Jan 25;64(10):642–50.
- [28]. Collins JW. An evaluation of a “best practices” musculoskeletal injury prevention program in nursing homes. *Injury Prevention*. 2004 Aug 1;10(4):206–11.
- [29]. Gowri Sayee Jagadesan, Mala V S, Stop on Knowledge Regarding Body Mechanics and Selected Nursing Procedures and Prevention of Back Pain Among the Staff Nurses. *Indian J Surg Nurs*. 2020;9(2):57–63.
- [30]. Iawim R, Dutta B. A study to assess the effectiveness of a planned teaching programme on body mechanics in selected nursing interventions in terms of knowledge and practice among staff nurses working in general ward of selected hospitals, Kolkata and West Bengal. *Int J Health Sci Res*. 2020; 10(4):86-89.
- [31]. Abdollahi T, Pedram Razi S, Pahlevan D, Yekaninejad MS, Amaniyan S, Leibold Sieloff C, et al. Effect of an Ergonomics Educational Program on Musculoskeletal Disorders in Nursing Staff Working in the Operating Room: A Quasi-Randomized Controlled Clinical Trial. *IJERPH*. 2020 Oct 8;17(19):7333.
- [32]. Pradap J. Effectiveness of Planned Teaching Programme on Knowledge Regarding Body Mechanics among Nursing Students in Selected Nursing College of Mangalore Taluk. *Asia Jour Nurs Educ and Rese*. 2015;5(2):217.
- [33]. Denise F. Polit, Cheryl Trtano Beck, Essential of Nursing Research, 7th edition, Page no 337-369
- [34]. “India Vanguris” (2009) Nursing Research and statistics, Second edition, Frontline publication