International Journal of Science and Research (IJSR)
ISSN: 2319-7064
SJIF (2022): 7.942

# A Study to Assess the Effectiveness of Structured Teaching Programme on Knowledge and Practice regarding Prevention of Work Related Low Back Pain among Nursing Students in a selected Nursing Institute, Guwahati, Assam

**Ringpal Roel[1], Anita Sonowal[2], Priyadarshini Waikhom[3]**

M.Sc. Nursing, Rahman Institute of Nursing and Paramedical Sciences, Guwahati, Assam, India

**Abstract:** ***Background of the study: The study aims to find the effectiveness of structured teaching programme on knowledge and practice regarding prevention of work related low back pain among nursing students in a selected nursing Institute, Guwahati, Assam. Objectives: 1. To assess and compare on knowledge and practice regarding prevention of work related low back pain among nursing students before and after administration of structured teaching programme.2.To determine the relationship between knowledge and practice regarding prevention of work related low back pain among nursing students. 3. To find out association between knowledge and practice regarding prevention of work related low back pain with selected demographic variables and factors related to clinical duty. Methods: A quantitative approach with pre-experimental one group pre-test post- test design was conducted for 131 GNM nursing students who were studying in Rahman Institute of Nursing and Paramedical Sciences, Guwahati, Assam by using a purposive sampling technique. Results: The findings of the study showed that majority 70 (53.43%) of the GNM nursing students belonged to the age group ≤ 20 years of age, majority 119 (80.84%) of the GNM nursing students were female, 92 (70.23%) of the GNM nursing students were having normal BMI, 126(91.18%) of the students were unmarried, 46 (35.11%) GNM nursing students belonged to Muslim caste, 72(54.96%) get information regarding about low back pain from the health care profession., all of the GNM students 131 (100 %) had a clinical duty 6 hours per day, 96 (73.28 %) of GNM nursing students does not have any history of accidents involving lower back pain, 66 (50.38 %) 0f GNM nursing students were involved in changing the patient position during patient care 1- 3 times daily, 73 (55.72 %) of GNM nursing students did not had any triggering factors causing low back pain, 74(56.49 %) of GNM nursing students were sometimes involved in patient care, 123(93.89%) of nursing students had low back pain sometimes. Conclusion: The study concluded that the structured teaching programme was effective in increasing the knowledge and practice regarding prevention of work related low back pain among nursing students.***

**Keywords:** Assess, Knowledge, practice, effectiveness, work related low back pain, nursing students

## 1. Introduction

***"It is the health that is real wealth and not pieces of gold or silver."***

***-Mahatma Gandhi***

Musculoskeletal disorder are impairment of the back and leading health problems and cause of disability [1]. They are also known for injuries or disorder of the muscles, nerves, tendons, joints, cartilages and spinal discs [2]. Work related musculoskeletal disorders are important occupational health issues and health among health care workers [3].

Pain is an unpleasant emotional state felt in the mind, in other words it is a subjective sensation which is identifiable when it is arising in a parts of the body. Low back pain is lumbago and lumbosacral pain occurs below the 12th rib and above the gluteal folds [4].

Low back pain is a symptoms and not a disease and can result from several different known or unknown abnormalities or diseases. It is defined by the location of pain, typically between the lower ribs margins and the buttock creases. It is known as a major health problems throughout the world- largely because of the ageing and increasing population [5].

Low back pain is the leading cause of disability. It is a common disorder involving muscles, nerves and bones of the back It may be classified based on its duration such as acute back pain that last less than 6 weeks, sub- acute back pain that last six to 12 weeks and chronic low back pain resulting from pain more than 12 weeks. Common symptoms of low back pain problems involve dull and aching pain, pain felt as sharp, stinging, numb sensation that goes down the legs [6].

Low back pain is often due to a musculoskeletal problems and it is the second to headache as he most common complains. Low back pain is experienced as localized or diffuse. In localized pain, patient feels soreness or discomfort when a specific area is pressed and diffuse pain occurs over a larger areas and comes from deep tissues. It is a common problem because the lumbar region bears most of the spinal column and contains nerves and roots and are also risk for injury or disease [7].
Low back pain is the most frequent type of musculoskeletal disorders. Approximately more than half of the general population will search for care for LBP at some point in

their lives. Worldwide, the prevalence of LBP among the general population ranges between 15 and 45% [8].

## 2. Review of Literature

Review of literature involves systemic identification, location, scrutiny and summary of written materials that contains information in a problem. Review of literature helps selecting the appropriate methodology, developing tools, analysing the related findings from study to another so as to establish knowledge in a professional discipline from which valid and pertinent theories may be developed [29].

**Section I:** Studies related to prevalence of work related low back pain
**Section II:** Studies related to knowledge regarding prevention of work related low back pain.
**Section III:** Studies related to practice regarding prevention of work related low back pain.
**Section IV:** Studies related to structured teaching programme regarding prevention of work related low back pain.

**Section I: Studies related to prevalence of work related low back pain**

**Nair RS, Aithala PJ (2019)** conducted a pilot study for finding out prevalence and risk factors associated with low back pain among 84 nurses in a tertiary care hospital in South India. In the study 84 Nurses working in a tertiary care teaching hospital were included in the study and data was collected using a validated backache assessment questionnaire and severity of backache was assessed by Oswestry disability index (ODI). The finding implies prevalence of low back pain is high among nurses. Standing for long duration of time, lifting patients, moving of trolley, sitting for long duration in high height chair for file work, and activities that involves bending or twisting are associated with increased prevalence of low back pain.[30]

**Ibrahim A, Nabil JA, Mona A, Suleiman A, Abdulaziz A, Almohannad A et al (2019)** conducted a study on the prevalence and factors associated with low back pain among 740 health care workers in Southern Saudi Arabia. A cross-sectional study using a self-administered questionnaire was conducted among HCWs providing primary, secondary and tertiary health care services in the Aseer region, south western Saudi Arabia. The study shows that out of 740 participants, the overall prevalence of LBP in the past 12 months amounted to73.9% (95% CI: 70.7–77.0). The prevalence of LBP with neurological symptoms reached 50.0%. The prevalence of LBP necessitating medications and or physiotherapy was 40.5%, while the prevalence of low back pain requiring medical consultation was 20%. LBP is a common problem among HCWs.[31]

**Section II: Studies related to knowledge regarding prevention of work related low back pain.**

Jagadesan GS, Mala VS (2020) conducted a study on stop on knowledge regarding body mechanics and selected nursing procedures and prevention of back pain among 30 Staff Nurses in Fortis Hospital. The design adopted for this study was pre- experimental one group pre-test post-test design; Sample of 30 staff nurses were selected by Non-probability convenient sampling technique. Data was collected by using self administered knowledge questionnaire before and after the implementation of Video Assisted Teaching Program. Hence teaching programme regarding Body Mechanics on selected Nursing Procedures and prevention of back pain followed by pre test was effective. The result shows that the Video Assisted Teaching Program is significantly effective in improving the knowledge scores of staff nurses regarding of Body Mechanics on selected nursing procedure and prevention of back pain among Staff Nurses.[35]

**Morimoto HC, Jones A, Natour J (2018)** conducted a study on assessment of gesture behaviour and knowledge on low back pain among 120 nurses. The aim of the present study was to evaluate gesture behaviour and knowledge on low back pain among nurses with and without low back pain and correlate these factors with pain, physical functioning and quality of life. An observational, controlled, cross-sectional study was carried out in 120 female nurses: 60 with LBP and 60 without low back pain. The measures used for the evaluation were the Gesture Behaviour Test, LBP Knowledge Questionnaire, and Numerical Pain Scale for LBP, Roland Morris Disability Questionnaire and the Short Form-36 (SF-36) to assess quality of life. Results shows that nurse with back pain do not show differences in behaviour or in gestural knowledge about back pain when compared to nurses without low back pain. However, nurses with low back pain show less quality of life.[36]

**Section III: Studies related to practice regarding prevention of work related low back pain**

**Contractor G (2019)** conducted a cross sectional survey on knowledge and practice of body mechanics techniques among 347 nursing students and nursing staff out of them 185 were students and 162 were Nursing staff the Nurses. The purpose of the study was to assess the knowledge and practice of nurses regarding body mechanics and to find out correlation between the knowledge and practice of nurses regarding body mechanics. Cross Sectional Survey study was conducted with probablity Purposive Sampling at various government and non government hospital's Operation theaters, ICUs, ICCUs and general and Special wards and colleges of Gandhinagar and Ahmedabad. The result showed that the extent of knowledge in 301 nurses are, 56.4%-Good, 41.4%-Moderate and 2.1% are having poor knowledge; 3.6%-Good, 62.9%-Average and 33.6% are doing Poor practice. There was a weak positive correlation between knowledge and practice of body mechanics, that was r=0.270. Correlation was significant at 0.001 the level. So, the study concluded that though the nurses were having knowledge about body mechanic but less practicing it. Nurses need to be more educated about body mechanic technique and they should be emphasized to practice it in performing nursing procedure.[40]

**Bibbin P (2018)** conducted a study on knowledge and practice regarding body mechanics in caring helpless patient among 50 nursing students from a selected college in Bhilai. A quasi experimental study was carried out to assess the effectiveness of video assisted demonstration program regarding body mechanics in caring helpless patient. One group pre test, post test was used for the study. The result shows that video assisted demonstration program on knowledge and practice of body mechanics was effective in caring helpless patients.[41]

**Section IV: Studies related to structured teaching programme regarding prevention of work related low back pain**.

**Kaur M, Kaur A, Singh J, Kaur K, Kaurs K, Kaur K, Verma P et al ( 2018)** conducted a study on pre-experimental study to assess the effectiveness of structured teaching programme on the level of knowledge regarding body mechanics among the students GNM 2nd year and b. S c(n) 2nd year of S.K.S.S. College of Nursing Sarabha, Ludhiana, Punjab. The purpose of the study is to assess the effectiveness of structured teaching programme on the level of knowledge regarding body mechanics. A pre-experimental research approach was used for this study. Sixty students were selected by convenient sampling technique and data were collected in the month of April 2018. The data were collected through self-structured questionnaire tool and structured teaching programme is given to the students .The findings of the study concluded that there is effectiveness of structured teaching programme on the level of knowledge regarding body mechanics.[45]

**Sharma R (2016)** conducted a survey on effectiveness of Educational and Selected Exercise Programme to Reduce Back Pain in Staff Nurses from a selected hospital of Mysore district. The aim of the study was to evaluate effectiveness of educational & selected exercise programme regarding back pain in staff nurses in Mysore District. The study involves all the staff nurses from selected hospital of Mysore District and were surveyed for 3 days to explore the incidence rate. Staff nurses those who were suffering from back pain were included in the study. The intervention programme involved educational component on knowledge and practice regarding back pain emphasizing on the causes, symptoms and preventive aspects such as ergonomics, followed by selected exercise programme for 15 days in the morning time for 30 to 40 minutes of duration. The study shows that planned teaching and selected exercise programme is an effective strategy which can help nurses to increase their knowledge and practice regarding prevention and management of back pain.[46]

## 3. Methodology

The objective is to assess and compare on knowledge and practice regarding prevention of work related low back pain among nursing students before and after administration of structured teaching programme, to determine the relationship between knowledge and practice regarding prevention of work related low back pain among nursing students and to find out association between knowledge and practice regarding prevention of work related low back pain with selected demographic variables and factors related to clinical duty.

The research approach adopted for this study was quantitative approach with pre-experimental one group pre-test post-test design. The study was conducted at Rahman Institute of nursing and paramedical sciences, Radhanagar, Guwahati for a period of one month. A total number of 131 GNM nursing students were selected using a purposive sampling technique. The data was collected using a demographic variables, factors related to clinical duty, structured knowledge questionnaire regarding prevention of work related low back pain and a checklist to assess the practice in performing body mechanics and also a checklist in performing flexion and extension exercises among the GNM nursing students

Formal permission was obtained from the concerned authorities of Rahman Institute of nursing and paramedical sciences The data were collected for one month from 131 GNM nursing students. The samples were selected using purposive sampling technique. The purpose of the study was explained to the GNM nursing students and was encourage also ascertaining the willingness of the nursing students to participate in the study with informed consent being obtained. The GNM nursing students were given structured knowledge questionnaire regarding prevention of work related low back pain at a given time period of 20 – 30 minutes. Observational checklist of the GNM nursing students was also done to assess the practice in performing body mechanics and flexion and extension exercise regarding prevention of work related low back pain for a time period of 10 minutes. On the same day structured teaching programme was administered using lecture cum discussion and demonstration was given to the sample (10). On the 8th day, reassessment of the knowledge and practice using structured knowledge question and observational checklist respectively to assess the knowledge and practice regarding prevention of work related low back pain. After one month of practice, the nursing students are assessed for low back pain by leg raising test.

**Plan for data analysis: (1) Descriptive statistics:** Data collected will be analyzed by using descriptive statistics such as frequency and percentage, mean, standard deviation. **(2) Inferential statistics:** The effectiveness of selected educational programme on knowledge and practice on prevention of low back pain among nursing students was tested by paired‘t’ test. The correlation between knowledge score and practice score regarding prevention of low back pain among nursing students was tested using Karl Pearson’s coefficient of correlation and the association between knowledge and selected demographic variables was tested by $X^2$ test. The result was presented by frequency table, diagrams and graphs.

## 4. Results

**Section A (I):** Description of frequency and percentage distribution of demographic variables of nursing students.

**Table 1:** Frequency and percentage distribution of demographic variables of GNM nursing students, (n=131)

| *Sample Characteristics* | *Group* | *Frequency (f)* | *Percentage (%)* |
|---|---|---|---|
| Age in year | ≤20 Years | 70 | 53.43 % |
| | 21-25 Years | 57 | 43.51% |
| | > 25 Years | 4 | 3.05 % |
| Gender | Male | 12 | 9.16 % |
| | Female | 119 | 90.84% |
| BMI | Underweight | 2 | 1.53% |
| | Normal | 92 | 70.23% |
| | Overweight | 31 | 23.66% |
| | Obese | 6 | 4.58% |
| Marital Status | Single | 126 | 96.18% |
| | Married | 5 | 3.82 % |
| Religion | Hindu | 43 | 32.82% |
| | Christian | 37 | 28.24 % |
| | Muslim | 46 | 35.11% |
| | Budhism | 5 | 3.82% |
| Source of Information of Low Back Pain | Newspaper | 16 | 12.21% |
| | Instituition | 28 | 21.37% |
| | Mass media | 15 | 11.45% |
| | Health care profession | 72 | 54.96% |

The data in the table 1 shows that majority 70 (53.43%) of GNM nursing students belongs to the group of age ≤ 20 years. In the gender, majority 119 (90.84%) belong to female nursing students. Under the BMI of nursing students, majority 92 (70.23%) had a normal BMI. In the marital status majority 126 (96.18%) were unmarried . In terms of religion, of GNM nursing students majority 46 (35.11%) belong to Muslim religion. Regarding about the source of information of low back pain, majority 72 (54.96 %) gained information from health care professional.

**Section A (II):** Description of frequency and percentage distribution of factors related to clinical duty.

**Table 2:** Frequency and percentage distribution of factors related to clinical duty of GNM nursing students, n = 131

| *Factors Related To Clinical Duty* | *Group* | *Frequency (f)* | *Percentage (%)* |
|---|---|---|---|
| Total number of clinical duty hours per day | 6 hours/day | 131 | 100 % |
| Any history of accidents involving lower back | Yes | 35 | 26.72 % |
| | No | 96 | 73.28 % |
| Frequencies of changing patient position during clinical hours per day | 1 – 3 times | 66 | 50.38 % |
| | 3 – 4 times | 32 | 24.43 % |
| | More than 5 times | 33 | 25.19 % |
| Any triggering factors causing lower back pain | No | 73 | 55.72 % |
| | Yes | 58 | 44.27 % |
| How frequently are you involve in patient care | Sometimes | 74 | 56.49 % |
| | Daily | 57 | 43.51 % |
| How often do you have low back pain | Sometimes | 123 | 93.89 % |
| | Daily | 8 | 6.11 % |

The data in the table 2 showed that majority 131 (100 %) has attained a 6 hours per days total number of clinical duty. In terms of any history of accidents involving low back pain, majority 96 (73.28 %) had no history of accidents involving lower back pain. Next in the frequencies of changing patient position during clinical hours per day among nursing students, majority 66 (50.38%), were involve in 2 to 3 times in changing position of the patient. Coming to any triggering factors causing low back pain among nursing students, majority 73 (55.72 %) had reported that there was no triggering factors causing low back pain, majority 74 (56.49 %) of nursing students were sometimes involved in patient care and majority 123 (93.89 %) of nursing had sometimes experience low back pain.

**Section B (I):** Comparison between pre-test and post test knowledge score of nursing students regarding prevention of work related low back pain.

**Table 3:** Frequency and Percentage Distribution of Pre-test and Post-test level of knowledge score of nursing students regarding prevention of work related low back pain, n = 131

| Sl No. | Level of Knowledge | Score | Pre Test | | Post Test | |
|---|---|---|---|---|---|---|
| | | | Frequency | Percentage | Frequency | Percentage |
| 1 | Inadequate | 0 - 16 | 113 | 86.26 % | 2 | 1.53% |
| 2 | Moderate | 17– 23 | 18 | 13.74% | 13 | 9.92% |
| 3 | Adequate | 24 - 30 | 0 | 0 | 116 | 88.55% |
| | TOTAL | 30 | 131 | 100 | 131 | 100 |

The data in the table 3 indicated that majority 113(86.26%) had inadequate knowledge, 18(13.74 %) had moderate knowledge among the nursing students and none of the nursing students had adequate knowledge in the pre test knowledge whereas after the post – test majority 116 (88.55 %) of nursing students had adequate knowledge, 13 (9.92 %) had moderate knowledge and 2 (1.53 %) of nursing students had inadequate knowledge.

**Table 4:** Comparison between mean, median, standard deviation and standard difference of pre-test and post-test knowledge score of nursing students regarding prevention of work related low back pain, **n = 131**

| Knowledge score | Range | Mean | Median | Standard deviation | SD difference |
|---|---|---|---|---|---|
| Pre test knowledge | 6-19 | 10.50 | 10 | 3.69 | 2.34 |
| Post test knowledge | 16-30 | 26 | 26 | 2.95 | |

The data presented in the table 4 indicates that the mean post-test knowledge score of nursing students regarding prevention of low back pain (26) was higher than the mean pre-test knowledge score of nursing students regarding prevention of work related low back pain (10.50).The median post -test knowledge score of nursing students regarding prevention of work related low back pain (26) was higher than the median pre-test knowledge score of nursing students regarding prevention of low back pain (10).

**Section B (II):-** Comparison between pre-test and post-test practice score of nursing students regarding prevention of work related low back pain.

**Table 5:** Frequency and Percentage Distribution of pre test and post test practice score of performing body mechanics of nursing students regarding prevention of work related low back pain, n = 131

| S No. | Level of Practice | Score | Pre Test | | Post Test | |
|---|---|---|---|---|---|---|
| | | | Frequency | Percentage | Frequency | Percentage |
| 1 | Low | 0 - 16 | 118 | 90.07% | 3 | 2.29 % |
| 2 | Average | 17– 23 | 13 | 9.92% | 9 | 6.87% |
| 3 | Good | 24 - 30 | 0 | 0% | 119 | 90.84% |
| | TOTAL | 30 | 131 | 100 | 131 | 100 |

The data in the table 5 indicates that majority 118 (90.07%) of GNM nursing students had low practices in performing body mechanics, 13( (9.92 % ) had average practices in performing body mechanics and none of the nursing students had good practices in performing body mechanics in the pre test knowledge whereas after the post – test majority 119 (90.84%) of GNM nursing students had good practice, 9 (6.87%) had average practice and 3 (2.29%) of GNM nursing students had low practice in performing body mechanics.

**Table 6:** Comparison between mean, median, standard deviation and standard deviation difference of pre-test and post-test practice score of performing body mechanics of nursing students regarding prevention of work related low back pain, n = 131

| Practice score | Range | Mean | Median | Standard deviation | SD difference |
|---|---|---|---|---|---|
| Pre test practice | 8-21 | 13.19 | 13 | 2.71 | 2.12 |
| Post test practice | 16-30 | 26.95 | 27 | 2.95 | |

The data presented in the table 6. indicates that the mean post-test practice score of nursing students performing body mechanics regarding prevention of work related low back pain (26.95) was higher than the mean pre -test practice score of nursing students performing body mechanics regarding prevention of low back pain (13.19).The median pre -test practice score of nursing students performing body mechanics regarding prevention of work related low back pain (13) was lower than the median post -test practice score of nursing students performing body mechanics regarding prevention of work related low back pain (27). The standard deviation difference between pre- test and post test practice of performing body mechanics of nursing students regarding prevention of work related low back pain was 2.12.

**Section B (II):** Frequency and Percentage Distribution of pre test and post test practice score of performing flexion and extension exercises of nursing students regarding prevention of work related low back pain.

**Table 7:** frequency and percentage distribution of pre-test and post test practice score of performing flexion and extension exercises of nursing students regarding prevention of work related low back pain, n= 131

| Sl No. | Level of Practice | Score | Pre Test | | Post Test | |
|---|---|---|---|---|---|---|
| | | | Frequency | Percentage | Frequency | Percentage |
| 1 | Low | ≤10 | 114 | 87.02% | 0 | 0 |
| 2 | Average | 11–15 | 17 | 12.98 % | 14 | 10.69 % |
| 3 | Good | 16 - 20 | 0 | 0 | 117 | 89.31% |
| | Total | 100% | 131 | 100 | 131 | 100 |

The data in the table 7 of section B (II ) indicates that majority 114 ( 87.02 % ) of nursing students had low practice in performing flexion and extension exercise, 17 (12.98%) had average practice and none of the nursing students had good practice in the pre test score in performing flexion and extension exercise whereas after the post – test majority 117 ( 89.31 % ) of nursing students had good practice, 14(10 .69 %) had average practice and none of nursing students had low practice in performing flexion and extension exercise.

**Table 8:** Comparison between mean, median, standard deviation and standard deviation difference of pre-test and post-test practice score of flexion and extension exercises of nursing students regarding prevention of work related low back pain, n = 131

| Practice score | Range | Mean | Median | Standard deviation | SD difference |
|---|---|---|---|---|---|
| Pre test practice | 6-15 | 8.64 | 8 | 1.91 | 1.34 |
| Post test practice | 14-20 | 18.10 | 18 | 1.84 | |

The data presented in the table 8 indicates that the mean post-test practice score of flexion and extension exercises

of nursing students regarding prevention of work related low back pain (18.10) was higher than the mean pre -test practice score of flexion and extension exercises of nursing students regarding prevention of work related low back pain (8.64 ). The median pre -test practice score of flexion and extension exercises of nursing students regarding prevention of low back pain (8) was lower than the median post -test practice score of flexion and extension exercises of nursing students regarding prevention of low back pain (18). The standard deviation difference between pre- test and post test practice of performing flexion and extension exercise of nursing students regarding prevention of work related low back pain was 1.34.

**Section B (III):** Effectiveness of structured teaching programme on knowledge and practice regarding prevention of work related low back pain among nursing students.

**Table 9:** t –test table of pre-test and post-test knowledge score of nursing students regarding prevention of work related lower back pain by using frequency and percentage, n = 131

| Knowledge score | Mean | 't' value | df | p-value |
|---|---|---|---|---|
| Pre test knowledge score | 10.50 | 75.75 | 130 | <.001*** |
| Post test knowledge score | 26 | | | |

***Significant at P<0.05

The data in the table 9 showed that the calculated't' value was 75.75 which was more than the tabulated value 1.96 (df=130) at <0.05. Hence the null hypothesis was rejected and research hypothesis was accepted which shows that the structured teaching programme regarding prevention of low back pain among nursing students was highly effective.

**Table 10:** t –test table of pre-test and post-test practice score of performing body mechanics of nursing students regarding prevention of work related low back pain, n = 131

| Practice score | Mean | 't' value | df | p-value |
|---|---|---|---|---|
| Pre test | 13.19 | 74.14 | 130 | <.001*** |
| Post test | 26.95 | | | |

******Significant at P<0.05***

The data in the table 10 showed the calculated 't' value was 74.14 which was more than the tabulated value 1.96 (df=130) at <0.05. Hence the null hypothesis was rejected and research hypothesis was accepted which shows that the structured teaching programme was highly effective in performing body mechanics of nursing students regarding prevention of work related low back pain.

**Table 11:** t –test table of pre-test and post-test practice score of performing flexion and extension exercises of nursing students regarding prevention of low back pain, n = 131

| Practice score | Mean | 't' value | df | p-value |
|---|---|---|---|---|
| Pre test | 8.64 | 80.60 | 130 | <.001*** |
| Post test | 18.10 | | | |

******Significant at P<0.05***

The data in the table 11 showed the calculated't' value was 80.60 which was more than the tabulated value 1.96 (df =130) at < 0.05. Hence the null hypothesis was rejected and research hypothesis was accepted which shows that the structured teaching programme was highly effective in performing flexion and extension exercise regarding prevention of low back pain among nursing students.

**Section C:** Correlation between knowledge and practice regarding prevention of work related low back pain of nursing students:

**Table 12**: Correlation between pre-test knowledge and practice of body mechanics regarding prevention of work related lower back pain, n=131

| Pre- Test Score | Mean | Standard deviation | r | P – value |
|---|---|---|---|---|
| Knowledge | 10.50 | 3.69 | 0.79 | <.001*** |
| Practice | 13.19 | 2.71 | | |

***Significance at P < 0.05

The data in the table 12 depicts that there was highly significant positive correlation between pre-test Knowledge and practice score of body mechanics regarding prevention of low back pain (r= 0.79). This was statistically significant at 0.05 level of significance. Thus, research hypothesis was accepted and null hypothesis was rejected.

**Table 13:** Correlation between pre-test knowledge and practice of flexion and extension exercise regarding prevention of work related lower back pain, n=131

| Pre- Test Score | Mean | Standard deviation | r | P – value |
|---|---|---|---|---|
| Knowledge | 10.50 | 3.69 | 0.80 | <.001*** |
| Practice | 8.64 | 1.91 | | |

***Significance at P < 0.05

The data in the table 13 depicts that there was highly significant positive correlation between pre-test Knowledge and practice of flexion and extension exercise regarding prevention of lower back pain (r= 0.80). This was statistically significant at 0.05 level of significance. Thus, research hypothesis was accepted and null hypothesis was rejected.

**Section D:** Association between knowledge, practice regarding prevention of work related low back pain with selected demographic variables.

**Table 14:** Chi square test showing the association of pre-test knowledge score regarding prevention of work related low back pain with selected demographic variables, n=131

| *Demographic variables* | *Groups* | *Pre knowledge* | | Chi Square | df | *P value* |
|---|---|---|---|---|---|---|
| | | *Inadequate* | *Moderate* | | | |
| Age | ≤ 20 Years | 60 | 10 | 0.66 | 2 | .72$^{NS}$ |
| | 21-25 Years | 49 | 8 | | | |
| | > 25 Years | 4 | 0 | | | |
| Gender | Male | 12 | 0 | 0.22 | 1 | .86$^{NS}$ |
| | Female | 117 | 2 | | | |
| BMI | Underweight | 1 | 1 | 2.66 | 3 | .45$^{NS}$ |
| | Normal | 81 | 11 | | | |
| | Overweight | 26 | 5 | | | |
| | Obese | 5 | 1 | | | |
| Marital status | Single | 108 | 18 | 0.83 | 1 | .36$^{NS}$ |
| | Married | 5 | 0 | | | |
| Source of Information of Low Back Pain | Newspaper | 13 | 3 | 2.52 | 3 | .47$^{NS}$ |
| | Institution | 26 | 2 | | | |
| | Mass media | 14 | 1 | | | |
| | Health care profession | 60 | 12 | | | |

NS -Not significance at 0.05 level of significance

The data presented on the above table 14 showed that there was no significance association of pre-test knowledge score regarding prevention of work related low back pain with selected demographic variables with respect to age, gender, BMI, source of information of low back pain at 0.05 level of significance. Hence the research hypothesis was rejected and null hypothesis was accepted. Therefore it can be said that the pre- test knowledge score was independent with their demographic variables.

**Table 15:** Chi square test showing the association of pre-test knowledge score regarding prevention of work related low back pain with selected factors related to clinical duty of nursing students, n=131

| *Demographic variables* | *Groups* | *Pre knowledge* | | *Chi Square* | *df* | *P value* |
|---|---|---|---|---|---|---|
| | | *Inadequate* | *Moderate* | | | |
| Any history of accidents involving lower back? | Yes | 30 | 5 | 0.01 | 1 | .91$^{NS}$ |
| | No | 83 | 13 | | | |
| Frequencies of changing patient position during clinical hours per day. | 1 – 3 times | 59 | 7 | 4.13 | 2 | .13$^{NS}$ |
| | 3 – 4 times | 29 | 3 | | | |
| | More than 4 times | 25 | 8 | | | |
| Any triggering factors causing lower back pain? | No | 65 | 8 | 1.08 | 1 | .30$^{NS}$ |
| | Yes | 48 | 10 | | | |
| How frequently are you involve in patient care? | Sometimes | 65 | 9 | 0.36 | 1 | .55$^{NS}$ |
| | Daily | 48 | 9 | | | |
| How often do you have low back pain? | Sometimes | 107 | 16 | 0.91 | 1 | .34$^{NS}$ |
| | Daily | 6 | 2 | | | |

NS– Not significance at 0.05 level of significance

The data presented on the above table 15 showed that there was no significance association of pre-test knowledge score regarding prevention of work related low back pain related to any factors related to clinical duty with respect to any history of accidents involving low back pain frequencies of changing patient position during clinical hours per day, any triggering factors causing low back pain , how frequently are you involve in patient care at 0.05 level of significance. Hence the research hypothesis was rejected and null hypothesis was accepted. Therefore it can be said that the pre- test score was independent with factors related to clinical duty.

**Table 16:** Chi square test showing the association of pre-test practice score in performing body mechanics regarding prevention of work related low back pain with selected demographic variables, n=131

| *Demographic variables* | *Groups* | *Pre-practice score of Body mechanics* | | *Chi Square* | *df* | *P value* |
|---|---|---|---|---|---|---|
| | | *Low* | *Average* | | | |
| Age | ≤ 20 Years | 64 | 6 | 0.94 | 2 | .63$^{NS}$ |
| | 21-25 Years | 50 | 7 | | | |
| | >25 Years | 4 | 0 | | | |
| Gender | Male | 12 | 0 | O.08 | 1 | .78$^{NS}$ |
| | Female | 115 | 4 | | | |
| BMI | Underweight | 1 | 1 | 4.77 | 3 | .19$^{NS}$ |
| | Normal | 82 | 10 | | | |
| | Overweight | 29 | 2 | | | |
| | Obese | 6 | 0 | | | |
| Marital status | Single | 113 | 13 | 0.57 | 1 | .45$^{NS}$ |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Married | 5 | 0 | | | |
| Source Of Information Of Low Back Pain | Newspaper | 15 | 1 | 2.45 | 3 | .48$^{NS}$ |
| | Institutions | 25 | 3 | | | |
| | Mass media | 15 | 0 | | | |
| | Health care profession | 63 | 9 | | | |

NS – Not significance at 0.05 level of significance

The data presented on the above table 16 showed that there was no significance association of pre-test practice score in performing body mechanics regarding prevention of work related low back pain with selected demographic variables with respect to age, gender, BMI, marital status, source of information of low back at 0.05 level of significance. Hence the research hypothesis was rejected and null hypothesis was accepted. Therefore it can be said that the pre- test practice score was independent with their demographic variables.

**Table 17:** Chi square test showing the association of pre-test practice score in performing body mechanics regarding prevention of low back pain with selected factors related to clinical duty of nursing students, n=131

| Demographic variables | Groups | Pre practice score of body mechanics | | Chi Square | df | P value |
|---|---|---|---|---|---|---|
| | | Low | Average | | | |
| Any history of accidents involving lower back? | Yes | 31 | 4 | 0.12 | 1 | .73$^{NS}$ |
| | No | 87 | 9 | | | |
| Frequencies of changing patient position during clinical hours per day? | 1 – 3 times | 59 | 7 | 2.70 | 2 | .26$^{NS}$ |
| | 3 – 4 times | 31 | 1 | | | |
| | More than 4 times | 28 | 5 | | | |
| Any triggering factors causing lower back pain? | Yes | 51 | 7 | 0.54 | 1 | .46NS |
| | No | 67 | 6 | | | |
| How frequently are you involve in patient care? | Sometimes | 68 | 6 | 0.63 | 1 | .43$^{NS}$ |
| | Daily | 50 | 7 | | | |
| How often do you have back pain ? | Sometimes | 111 | 12 | 0.06 | 1 | .80NS |
| | Daily | 7 | 1 | | | |

NS – Not significance at 0.05 level of significance

The data presented on the above table 17 showed that there was no significance association of pre-test practice score in performing body mechanics regarding prevention of work related low back pain with selected factors related to clinical duty with respect to any history of accidents involving lower back pain, frequencies of changing patient position during clinical hours per day ,any history of accidents involving back, frequencies of changing patient position during clinical hours per day, any triggering factors causing low back pain , and how often do you have back pain at 0.05 level of significance. Hence the research hypothesis was rejected and null hypothesis was accepted. Therefore it can be said that the pre- test score was independent with their factors related to clinical duty.

**Table 18:** Chi square test showing the association of pre-test practice score in performing flexion and extension exercises regarding prevention of work related low back pain with selected demographic variable, n=131

| *Demographic variables* | *Groups* | *Pre- test practice score of flexion and extension exercise* | | *Chi Square* | *df* | *P value* |
|---|---|---|---|---|---|---|
| | | *Low* | *Average* | | | |
| Age | ≤ 20 Years | 63 | 7 | 2.20 | 2 | .33$^{NS}$ |
| | 21-25 Years | 47 | 10 | | | |
| | >25 Years | 4 | 0 | | | |
| Gender | Male | 12 | 0 | 0.2 | 1 | .25$^{NS}$ |
| | Female | 117 | 2 | | | |
| BMI | Underweight | 0 | 2 | 13.85 | 3 | .003*** |
| | Normal | 82 | 10 | | | |
| | Overweight | 27 | 4 | | | |
| | Obese | 5 | 1 | | | |
| Marital status | Single | 109 | 17 | 0.78 | 1 | .38$^{NS}$ |
| | Married | 5 | 0 | | | |
| Source Of Information Of Low Back Pain | Newspaper | 12 | 4 | 2.91 | 3 | .41$^{NS}$ |
| | Institutions | 26 | 2 | | | |
| | Mass media | 13 | 2 | | | |
| | Health care profession | 63 | 9 | | | |

NS – Not significance at 0.05 level of significance, *** - significance at 0.05 level of significance

The data presented on the above table 18 showed that there was no significance the association of pre-test practice score in performing flexion and extension exercises with selected demographic variables with respect to age, gender, marital status, source of information of low back pain but there was significant association of pre-test practice score in performing flexion and extension exercises with selected demographic variables with respect to BMI at 0.05 level of

significance. Hence the research hypothesis was rejected and null hypothesis was accepted. Therefore is can be said that the pre- test score was independent with their demographic variables.

**Table 19:** Chi square test showing the association of pre-test practice score in performing flexion and extension exercises regarding prevention of work related low back pain with selected factors related to clinical duty of nursing students, n=131

| Demographic variables | Groups | Pre-test practice score in performing flexion and extension exercises | | Chi Square | df | P value |
|---|---|---|---|---|---|---|
| | | Low | Average | | | |
| Any history of accidents involving lower back | Yes | 32 | 3 | 0.82 | 1 | .36$^{NS}$ |
| | No | 82 | 14 | | | |
| Frequencies of changing patient position during clinical hours per day | 1 – 3 times | 57 | 9 | 2.10 | 2 | .35$^{NS}$ |
| | 3 – 4 times | 30 | 2 | | | |
| | More than 4 times | 27 | 6 | | | |
| Any triggering factors causing lower back pain | Yes | 51 | 7 | 0.08 | 1 | .78$^{NS}$ |
| | No | 63 | 10 | | | |
| How frequently are you involve in patient care | Sometimes | 63 | 11 | 0.54 | 1 | .46$^{NS}$ |
| | Daily | 51 | 6 | | | |
| How often do you have low back pain | Sometimes | 108 | 15 | 1.09 | 1 | .30$^{NS}$ |
| | Daily | 6 | 2 | | | |

NS – Not significance at 0.05 level of significance

The data presented on the above table 19 showed that there was no significance association pre-test practice score in performing flexion and extension exercises regarding prevention of low back pain with selected factors related to clinical duty with respect to any history of accidents involving lower back pain, frequencies of changing patient position during clinical hours per day, any history of accidents involving back, frequencies of changing patient position during clinical hours per day, any triggering factors causing low back pain , and how often do you have back pain at 0.05 level of significance. Hence the research hypothesis was rejected and null hypothesis was accepted. Therefore it can be said that the pre- test practice score was independent with factors related to clinical duty.

## 5. Discussion

The title of the study was to assess the effectiveness of the structured Teaching programme on Knowledge and Practice regarding Prevention of Work Related Low Back Pain among Nursing Students in a selected Nursing Institute, Guwahati, Assam.

**Major findings of the study were as follows:**

- The data shows that majority 70 (53.43%) of the GNM nursing students belonged to the age group ≤ 20 years of age.
- Regarding the gender of the nursing students, majority 119 (80.84%) of the GNM nursing students were female.
- Majority 92 (70.23%) of the GNM nursing students were having normal BMI.
- Regarding about marital status, majority 126(91.18%) of the students were unmarried.
- Regarding the caste of the, majority 46 (35.11 %) GNM nursing students belonged to Muslim caste.
- Regarding the source of information, majority 72(54.96%) of the GNM students got information regarding about low back pain from the health care profession.
- All of the GNM students 131 (100 %) had a clinical duty 6 hours per day.
- Majority 96 (73.28 %) of GNM nursing students did not had any history of accidents involving lower back pain.
- Majority 66 (50.38 %) 0f GNM nursing students were involved in changing the patient position during patient care 1- 3 times daily.
- Majority 73 (55.72 %) of GNM nursing students did not had any triggering factors causing low back pain.
- Majority 74(56.49 %) of GNM nursing students were sometimes involved in patient care.
- Majority 123(93.89%) of GNM nursing students had low back pain sometimes.

## 6. Recommendation

On the basis of the findings of the study, the following recommendations have been made.

- The study can be replicated with a control group.
- A similar study can be replicated on a large number of samples in a different setting to have wider generalization of findings.
- A study can also be conducted on the basis of assessing knowledge, practice and attitudes.
- Different sampling technique can be adopted
- Researcher can add and test with more factors associated with lower back pain.
- The researcher can also go for comparative study by comparing with other alternative treatments to the lower back pain.

## 7. Conclusion

Findings from the present study, we concluded that the structured teaching programme was effective in increasing the knowledge and practice regarding prevention of work related low back pain among nursing students

## References

[1] Brunner and Suddarth's textbook of Medical-Surgical Nursing.12th edi. New Delhi: Wolters Khuwer India Pvt Ltd; 2011

[2] Work- related musculoskeletal disorders and ergonometrics [Internet]. [cited 2020 Nov 5]. Available from https://www.cdc.gov.
[3] Ellapen TJ and Narsigan S. Work Related Musculoskeletal Disorders among Nurses: Systematic Review. J Ergonomics. April 2014; 4(01) : 1-6 DOI:10.4172/2165-7556.S4-003
[4] 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.
[5] Clark S, Horton R. Low back pain: a major global challenge. 2018 Jun 9; 391(10137):2302. DOI: 10.1016/S0140-6736(18)30725-6
[6] Jadhav SV, Kadu S, Diwate AD. Effectiveness of pilates exercises on non-specific low back pain in nursing students and staff of a tertiary care teaching hospital and nursing college. 2018 April; 4(2): 35-37. DOI: https://doi.org/10.5455/ijcbr.2018.42.08
[7] Lewis'. Medical Surgical Nursing. 3rd edi. New Delhi: Elsevier India Pvt Ltd; 2018.
[8] Parreira P, Maher C, Steffens D, Hancock M, Ferreira M. Risk factors for low back pain and sciatica: an umbrella review. Spine J. May 2018;18 (9): 1-18. DOI:10.1016/j.spinee.2018.05.018
[9] Polit FD, Beck TC. Nursing Research: generating and assessing evidence for nursing practice. New York: William and Wilkins; 2008.
[10] Dr Nair R S, Dr Aithala P J . Prevalence and risk factors associated with low back pain among nurses in a tertiary care hospital in south India. Int J of Ortho Sc. 2019 Dec;5(1): 301-306 DOI: https://doi.org/10.22271/ortho.2020.v6.i1f.1878
[11] Alnaami I, Awadalla N J , Alkhairy M, Alburidy S , Alqarni A, Alshehri AAR, Amrah B, Alasman M , Ahmed A, Mahfouz. Prevalence and factors associated with low back pain among health care workers in Southern Saudi Arabia.2019;20(56):1-7. DOI: 10.1186/s12891-019-2431-5
[12] Jagadesan GS, MalaV S. Stop on knowledge regarding body mechanics and selected nursing procedures and prevention of back pain among the Staff Nurses. Int J of Surg Nurs. 2020 Aug; 9(2): 57-63. DOI: http..//dx.doi.org-10.21088/ijsn.2277.467X.9220,1
[13] Morimoto HC, Jones A, Natour J. Assessment of gesture behavior and knowledge on low back pain among nurses. 2018 Sep; 58(27): 2-6. DOI: https://doi.org/10.1186/s42358-018-0029-5
[14] Contractor G. Knowledge and Practice of Body Mechanics Techniques among the Nurses. Int J of SC and Research. July 2019; 8(7): 376-378.