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### EFFECT OF BACK STRENGTHENING EXERCISES ON LOW BACK PAIN AMONG STAFF NURSES

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#### Key words:

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#### ABSTRACT

The present study assessed the effect of back strengthening exercises in reducing low back pain among staff nurses in Government Hospital, Namakkal. The objectives were to assess the pre test level of low back pain among staff nurses using numeric pain rating scale, to assess the post test level of low back pain among staff nurses using numeric pain rating scale, to evaluate the effect of back strengthening exercises in terms of reduction in the intensity of low back pain using numeric pain rating scale and to find the association between the pre test level of low back pain among staff nurses with selected demographic variables. The conceptual framework used was Ludwig Von Bertalanffy's general system theory. The study was conducted using one group pretest-posttest design. A General questionnaire related to subjective experience of back pain was given to all staff nurses who fulfilled the inclusion criteria. 50 staff nurses who experience low back pain were selected as sample by purposive sampling technique. The demographic data was collected and the Numeric pain rating scale was given to the sample to assess the intensity of back pain. Back strengthening exercises was demonstrated and taught to the subjects as two groups with 25 samples in each group. The exercises were practiced by the samples for 30 minutes daily for a period of 15 days. Post assessment of pain level was assessed using numerical pain rating scale on 15<sup>th</sup> day. The data were analyzed by both descriptive and inferential statistics which revealed a significant reduction in the level of back pain among the staff nurses. ( $Z = 25.11$  at  $p < 0.05$  level (1.96)).

#### INTRODUCTION

Back pain is an extremely common problem affecting the human race across the globe cutting the geographical boundaries, race, and culture. About 80-90% of human population suffers from some form of backache, mild or severe in their lifetime.

Many episodes of back pain are disabling, thus making it one of the costly occupational health problem. However, in the workplace, occupational risk factors such as forceful exertions during manual materials handling,

Awkward trunk postures and whole body vibration are often associated with development of back pain. From a worldwide perspective, back injuries among nurses have an annual prevalence of 40-50%. National healthcare statistics reports that back disorders account for over 24% of all occupational injuries [1-3].

Researcher's report that most common causes of low back pain among nurses include activities such as improper lifting techniques, poor posture and prolonged standing. A cross sectional survey was undertaken among nurses employed by the Auckland Area Health Board (New Zealand). The prevalence of back pain was 74.4%. The prevalence of nursing-related back pain was 62.3%. The prevalence was higher among those working on

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geriatric, medical, orthopedic and rehabilitation wards compared with other nursing environments. This study found a high prevalence of back pain among nurses, and in particular, nurses working in four specific work environments were identified as having greatest risk.

Back pain among nurses affects the quality of nursing care. Exercise therapy is effective in reducing back pain and in improving the functional performances among nurses [4].

### Statement of the problem

A study to evaluate the effectiveness of back strengthening exercises on low back pain among staff nurses at selected Hospital, Namakkal District, Tamil Nadu.

### Objectives

1. To assess the pretest level of low back pain among staff nurses before back strengthening exercise
2. To assess the posttest level of low back pain among staff nurses after back strengthening exercise.
3. To evaluate the effect of back strengthening exercises in terms of pain reduction among staff nurses.
4. To find the association between pre test level of low back pain among staff nurses with selected demographic variables.

### Operational definitions

**Effectiveness:** Effectiveness refers to significant reduction in back pain.

**Low Back pain:** low back pain refers to the pain expressed by staff nurse in the lumbar area during their work and while doing their daily patient care involving turning, lifting, shifting of patients.

**Staff nurses:** in this study it refers to registered RNRN Nurses working in selected hospital of Namakkal District.

**Back strengthening exercises:** Back strengthening exercises refers to those physical activities that the samples in the study have to perform twice a day to strengthen their back and to reduce the pain at the back. It includes Pelvic Tilt; Sit up, Knee chest, Double knee and Straight leg raise.

**Pelvic tilt:** lying supine, the patient tightens the stomach muscles and then rocks the pelvis, flattening the low back.

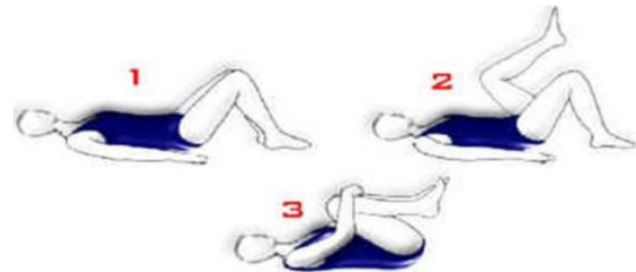


**Sit up:** Lying supine with the abdominal muscle

tightened, the patient raises their head and shoulder and reaches towards the knees holding the position for a count of 5.



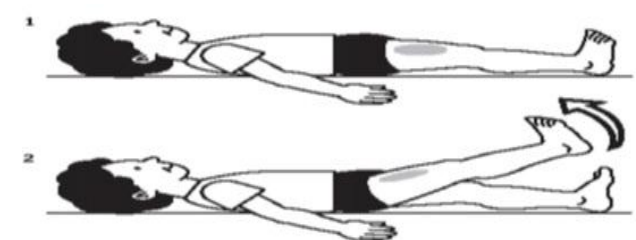
**Knee-chest:** Lying supine with the abdominal muscles tightened, the patient raises their head and shoulder and brings one knee up toward the nose holding the position for a count of 5.



**Double knee:** The same as knee chest except that the patient brings both knees up at the same time.



**Straight leg raise:** The patient lies supine with one knee bent and held to their chest with their hands. The patient then lifts the other leg keeping the knee straight and the ankle flexed.



### Hypothesis

H1: There will be a significant reduction in the level of low back pain among staff nurses after practicing back strengthening exercises.

H2: There will be a significant association between the pre-test level of low back pain among staff nurses with selected demographic variables [5,6].



### Conceptual framework

The general system theory with the concepts of input, throughput, output and feedback was first introduced by Ludwig Von Bertalanffy in 1968. It offers a perspective for looking at man and nature as interacting whole with integrated sets of proportion and relationship. All living systems are open to exchange of matter and information. The model based on this theory is used by the investigator in the present research study.

### METHODOLOGY

**Research Approach:** Evaluative approach.

**Research Design:** One group pretest posttest only design.

#### Variables

**Independent Variable:** Back strengthening exercises

**Dependent Variable:** Low back pain

**Setting of the study:** Namakkal government hospital, Namakkal District

#### Population:

Target population: Staff nurses.

Accessible Population: Staff nurses who are working in selected hospital of Namakkal district.

#### Sample and sampling technique:

Sample: 50 staff nurses working at selected hospital at Namakkal district who fulfilled the inclusion criteria.

Sampling Technique: Purposive sampling technique.

#### Criteria for sample selection

##### Inclusion Criteria

1. Staff nurses with back pain.
2. Those belonging to age group between 25 and 45 yrs.
3. Nurses with more than 2 years of experience.
4. Those who were willing to co-operate with the study.

### ANALYSIS AND INTERPRETATION

**Table 1. Frequency and percentage distribution of demographic variables of staff nurses.**

(n=50)

Demographic variable		f	%
Age	a) 25-30 yrs	32	64
	b) 31-35 yrs	17	34
	c) 36-40 yrs	1	2
	d) 41-45 yrs	0	0
Gender	a) Male	10	20
	b) Female	40	80
Marital Status	a) Married	28	56
	b) Single	21	42
	c) Divorced	1	2
Area of work	a) ICU	5	10
	b) General wards	38	76

### Exclusion Criteria

1. Nurses with other musculoskeletal disorders in which back strengthening exercises are contraindicated.

### Description of the Tool

Tool 1: Demographic profile which includes age, gender, religion, educational qualification, marital status, area of work, years of experience, body mass index, number of children, type of family, monthly family income.

Tool 2: Numeric pain rating scale intended to assess the existence and severity of back pain.

**Content validity:** Content validity of the instruments was obtained from 5 experts in Medical Surgical Nursing and Orthopedics.

**Reliability of the tool:** Test - retest method was used to find out the reliability  $r = 0.75$ . Thus the tool was found to be reliable.

### Data Collection Process

Phase 1: 50 staff nurses who experience low back pain were selected by purposive sampling method. The demographic data was collected and The Numeric pain rating scale was given to the samples to assess the intensity of back pain.

Phase 2: Back strengthening exercises was demonstrated and taught to the subjects as two groups with 25 samples in each group. The exercises was practiced by the samples for 30 minutes daily for a period of 15 days. These exercises were practiced half an hour before getting on to clinical duty. With the help of an observation checklist the researcher assessed the techniques followed by the staff nurses [7].

Phase 3: After 15 days, post test pain level was assessed using the same numeric pain rating scale.



	c) Operation theatre	4	8
	d) Casualty	3	6
Educational qualification	a) Degree in nursing	22	44
	b) Diploma in Nursing	28	56
Years of experience	a) <5 yrs	26	52
	b) 5-10 yrs	23	46
	c) 11-15 yrs	1	2

**Table 2. Comparison of Pre-test level and post-test level of low back pain among staff nurses (n=50)**

Pain Score	Total score	Range of score	Mean	SD	Z-test
Pre-test level of low back pain	10	2-8	4.46	1.12	25.11**
Post-test level of low back pain	10	0-5	1.22	2.283	

\*\* Highly significant at 0.01 level of significance

It is inferred that there was significant reduction in the level of low back pain among staff nurses after the practice of back strengthening exercises. There is no association between any of the selected socio demographic variables and low back pain among staff nurses.

#### Nursing implications:

##### Nursing practice

Being a primary care provider, nurses have a vital role in patient care which includes frequent shifting, turning and lifting of patients while they are giving care to bedridden patients. Incorrect body mechanics and prolonged standing during their working hours can lead to back pain in staff nurses thereby affecting the quality of care delivered by them.

The knowledge and awareness of nurses regarding the proper body mechanic and care of back can help the patients also as, this information can be passed on to the patients through health education.

#### Limitations

Investigator found it difficult to get the staff nurses for a long time at the same time because of their change in duty shifts.

The investigator was not able to control the extraneous variables like unexpected leave of staff nurses due to sickness and other personal reasons [8].

#### Recommendations

1. Follow up study can be conducted to assess the level of back pain in those who are practicing it.
2. Similar study can be replicated with large sample size and greater duration in different settings.
3. It can be conducted in other areas other than medical field where there is a need for back strengthening exercises.
4. The study can be conducted as an exploratory study to find out the risk factors of mechanical low back pain among staff nurses.
5. The study can be conducted among other professionals.

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