

EFFECT OF BACK CARE PROGRAM IN PREVENTING BACK INJURIES AMOUNG NURSING STUDENTS

- AN EXPERIMENTAL STUDY

Dissertation submitted to The Tamil Nadu Dr. M.G.R. Medical University
towards partial fulfilment of the requirements of **Master of Physiotherapy**
[Advanced PT in Orthopaedics] Degree Programme.



KMCH COLLEGE OF PHYSIOTHERAPY

[A Unit of Kovai Medical Center Research & Educational Trust]

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CERTIFICATE

This is to certify that research work entitled **“EFFECT OF BACK CARE PROGRAM IN PREVENTING BACK INJURIES AMONG NURSING STUDENTS”** was carried out by the candidate bearing the Register No: **27091602**, KMCH College of Physiotherapy towards partial fulfillment of the requirements of the **Master of Physiotherapy (*Advanced PT in Orthopaedics*)** of The Tamil Nadu Dr. M.G.R. Medical University, Chennai-32

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1. ABSTRACT

AIM:

To study the effect of back care program in preventing back injuries among nursing students.

METHODS AND MEASURES:

Pre-test Cornell musculoskeletal discomfort questionnaire were taken for students, subjects who scored more than 7 were selected according to the questionnaire scores.

Nursing students were given education about proper lifting technique, to avoid the repetitive movements, postural corrections and diva like back care program.

Post test Cornell musculoskeletal discomfort questionnaire is given to the students and asked to fulfill the questionnaire and to evaluate the effect of back care program.

Cornell musculoskeletal discomfort questionnaire is taken as a measurement tool.

RESULTS:

Statistical analysis was done using paired 't' test. The study showed a significant reduction in the incidence of back pain with the back care program.

CONCLUSION:

From this study it is concluded that the back care program given to the nurses significantly reduced the occurrence of back injury and thereby reducing incidence of back pain.

2. INTRODUCTION

Musculoskeletal disorders include a wide range of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, peripheral nerves and supporting blood vessels.

These include clinical syndromes such as tendon inflammations and related conditions (tenosynovitis, epicondylitis, bursitis), nerve compression disorders (carpal tunnel syndromes, sciatica) and osteoarthritis, as well as less well standardised conditions such as myalgia, low back pain and other regional pain syndromes.

Body regions most commonly involved are the low back, neck, shoulder, forearm and hand. Nevertheless, musculoskeletal disorders are the single largest category of work related illness.

Work absenteeism or disability are caused due to musculoskeletal disorders than any other group of disease.. Musculoskeletal disorders occur in certain industries and occupations with rates up to 3 or 4 times higher than overall frequency.

High risk sectors include nursing, nursing aides and other patient care workers. Work related musculoskeletal disorders and in particular low back pain pose a major health and socio economic problem in modern society. It has been shown that 60-80% of general population suffers from back pain. Among nurses the life time prevalence was found to be slightly higher, varying between 56% and 90%.

However, Abenhain and colleagues found that 67% of the total numbers of episodes reported by nurses with in a three year follow up were recurrences.

In clinical context, chronic low back pain is defined as low back pain lasting more than three months. However, it is not known whether low back pain takes a

progressive aggravating course and recurrence or persistent nature may be assumed.

There are several important consequences of high nursing work load which lead to low back pain. Nursing students are expected to perform non professional activity such as delivering and retrieving food trays, housekeeping duties; transporting patients and ordering, coordinating or performing ancillary activities.

Physical job features that are frequently cited as a risk factor for musculoskeletal disorders based on both experimental science and epidemiologic investigations, include rapid work pace and repetitive motion patterns; insufficient recovery times; heavy lifting and forceful manual exertions; non neutral body postures; mechanical pressure concentrations and any of these in combination with each other or with undesirable features of psychological work environment like high demands and low degree of control over one's own work.

Back injury prevention training seems to play an important role in reducing the incidence of injury. A combination of the appropriate equipment (mechanical lifts), proper work practices with proper work postures and exercise programs can be effective in preventing injuries.

2.1 NEED FOR THE STUDY

Nursing tasks can be redesigned to improve care giver and patient safety using the new patient handling techniques and work practice controls. Still physical stress and other work related factors affect their health, furthermore, low back pain is primarily responsible for the loss of ability to perform social roles at work because of physical limitations, which leads to higher rate of sick leave.

Reducing musculoskeletal injuries and other back problems during patient care demands more than a “quick fix” or singular solution such as more training or simply placing life on a unit. Promoters of back injury preventing program need to:

- The extent and cost of injuries are to be determined in their organization
- Determine a reasonable goal for their organization
- Develop a plan of action to prevent injuries

Hence the purpose of the study is to find out the effect of back care program in preventing back injuries in nursing students

3. REVIEW OF LITERATURE

In a study on the journal “**A Business Case for Patient Care Ergonomic Interventions**” (2005). Six of the top 10 professions such as nurse's aides, licensed practical nurses, registered nurses, health aides, radiology technicians, and physical therapists at greatest risk for back injury are. One third of injuries of back among nurses are attributed to handling patients and the frequency with which they are required to manually move patients. From a worldwide perspective, back injuries to nurses have prevalence of approximately 17 percent, an annual prevalence of 40-50 percent and a lifetime prevalence of 35-80 percent.

Joint Commission on Accreditation of Healthcare Organizations.

Fragala, G (1996) Concluded that the risk factors that workers in nursing homes face include:

- Force here refers to the amount of physical effort required to perform a task (such as heavy lifting) or to maintain control of equipment or tools;
- Repetition – it is performing the same motion or series of motions continually or frequently.

- Awkward postures are positions that place stress on the body, such as reaching above shoulder height, kneeling, squatting, leaning over a bed, or twisting the torso while lifting.

Everett C Hills in his article on mechanical back pain and pathomechanics of back pain stated that biomechanically, the movements of the lumbar spine consist of the cumulative motions of the vertebrae, with 80-90% of the lumbar flexion/extension occurring at the L4-L5 and L5-S1 intervertebral disks. The most risky positions for the lumbar spine for producing low back pain is forward flexion (bent forward), rotation (trunk twisted), and attempting to lift a heavy object with out-stretched hands. Annular collagen fibers resist axial loading for a short duration in the disk. Increased pressure to the annulus fibrosus and endplates are created by axial loading for a long duration. The loading forces can be adequately resisted if the annulus and the end plates are intact. Both, compressive muscular and loading forces increase the intra discal pressure that exceeds the strength of the annular fibers.

Annular tear and internal disk disruption is caused by the repetitive compressive loading of the discs in flexion (eg. Lifting).

Torsional forces on the disks produces shear force that may induce annular tears.

The nucleus pulposus may leak through tears in the annulus fibrosis. Early tears may not be painful because the central fibers of the disc are pain free.

Occupational Safety and Health Administration summaries the causes of back injuries as

Organizational causes: Many factors which causes back injuries among healthcare personnel: an aging workforce, sicker patients, staffing shortages, obesity in both patients and employees, gender, and stress due to organizational change.

Individual causes: The causes of back pain and other work-related musculoskeletal injuries are:

- A single traumatic event, such as a slip .
- Other factors, for musculoskeletal injuries are genetics; age (older populations experience an increase in arthritis and disc degeneration); being out of shape or overweight; having poor posture; bending, standing, sitting,

or improper lifting; tension, emotional problems; pregnancy; tobacco smoking; poor physical condition; and sports or hobbies.

- Cumulative trauma to the spine and related structures.

Cumulative trauma disorders

Most work-related musculoskeletal injuries result from cumulative injuries, and are therefore called "cumulative trauma disorders" (CTDs). For example, exerting the spine – like lifting improperly or lifting patients that are too heavy for the worker's back to support - may cause micro-tears in the spinal disks. Small injuries do not cause pain, so the employee is usually not aware the disk has been damaged. If the injury is not allowed to heal, the damage may build up and result in a bulging or ruptured disk, creating a cumulative injury marked by pain.

3.1. WORK RELATED MUSCULOSKELETAL DISORDERS:

Van Nostrand Reinhold-Work related musculoskeletal disorders are sometime called repetitive strain injuries, cumulative trauma disorders and overuse injuries, which affects neck, upper back, shoulder, elbow, wrist, low back, knees and ankle.¹⁰

Canadian centre for occupational health and safety Work related musculoskeletal disorders are a group of painful disorders of muscle, tendons and nerves. Work activities which are frequent and repetitive are activities with awkward posture cause these disorders which may be painful during work or at rest.⁶

Laura Punnett-

“Musculoskeletal disorders” includes a range of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, peripheral nerves and supporting blood vessels. Clinical syndromes such as inflammations of tendons and related conditions [tenosynovitis, epicondylitis, bursitis] , nerve compression disorders [carpal tunnel syndrome, sciatica] and osteoarthritis as well as standardized conditions such as myalgia, low back pain and other regional pain syndromes not attributable to known pathology.²³

3.2. WORK RELATED MUSCULOSKELETAL DISORDERS IN HEALTH CARE WORKERS

Byron E Bork and Thomas M Cook did a study on “work related musculoskeletal disorders among physiotherapist” said that increasing evidence of musculoskeletal disorders are common in workers in the health care industry.⁵

Stellman J M in their study titled “safety in the health care industry” said that the health care industry as an employee has injury rate that is higher than that of other service industries.⁴⁰

Shamshad Hussain in his book titled “current orthopaedics” musculoskeletal injuries occur frequently, result in significant disability, and consume a major portion of health care resources.³⁴

Hrudey WP-

Musculoskeletal problems in general and back pain in particular were major problems in health care industrialized society and were associated with significant costs.¹⁵

Needleman J.,Kovner C and Floods.S-

They examined the relationship between nursing staff levels and quality of care in hospital and have concluded that a higher percentage of nursing care hours were correlated with better patient outcomes,including fewer medical errors.¹⁸

Jane Lipscomb-

He found the prevalence of reported neck, shoulder and back musculoskeletal disorder cases among the health care workers population with 20%, 17% and 29% respectively.¹⁸

Barbara Brady –

This study examined the association between health care system changes and nurses health in musculoskeletal disorders.¹⁸

Stefano Bruno-

He investigated the occurrence of musculoskeletal disorders in health care workers in many countries.Among physical therapist, MSDs were shown to be a common problem. Particularly in Italy, the investigation showed high prevalence rates of musculoskeletal complaints have been described in various health care professional groups.²

3.3. WORK RELATED MUSCULOSKELETAL DISORDERS IN NURSES

Daraiseh N et al conducted a study titled “musculoskeletal outcomes in multiple body regions and work effects among nurses: the effects of stressful and stimulating working conditions” said that nurses experience high rates of musculoskeletal disorders.⁹

Smith D R et al -musculoskeletal disorders begin in nursing school, with exposure to patient care activities that require lifting heavy load, sustaining awkward posture, and repeating stressful movements.³⁸

I Maul and T Laubli in their work entitled “course of low back pain among nurses: A longitudinal study across eight years” concluded that work related musculoskeletal disorders and in particular low back pain, pose a major health and socioeconomic problem among nurses.¹⁷

Wilkinson W E in their study on “A study of health care workers at a northwestern health science centre and hospital” concluded that the disorders of the musculoskeletal system are common among health care workers, with the nursing population at particularly at high risk.⁴⁵

Videman T and Tola S -work related musculoskeletal disorders are common among health care workers with the nursing population that constitutes about 33% of the hospital work force at particularly high risk and accounting for 60% of the reported occupational injuries.⁴⁴

Kilbom A- work related musculoskeletal disorders among nurses cause lost work time or absenteeism, increase work restriction, transfer to another job are disability than any other group of disease.²¹

Silverstein et al in their study “occupational factors and carpal tunnel syndrome” reported that repetitive movements, awkward posture and high force levels as the three primary risk factors that have been associated with work related musculoskeletal disorders.³⁵

Trinkoff A M et al -6%, 8% and 11% of registered nurses reported even changing jobs for neck, shoulder and back problems respectively.⁴²

Carol A.Sedak-

In a health care environment, increasing demands were placed on nurses due to aging of orthopaedic nurse work force. Hence, promotion of nurse safety in the prevention of musculoskeletal injuries must be a priority.⁷

Colligan MJ-

He reported that Danish nurses working rotating shifts were found to have significantly more clinic visits related to sprains and strains than nurses working other shifts.⁸

3.4. INCIDENCE OF LOW BACK PAIN AMONG NURSES

Smedley in his manual on handling activities and risk of low back pain in nurses said that lifting patients in bed, transferring patients out of bed, and lifting patients from the floor where the job activities most commonly reported as source of back pain among nurses.³⁶

Alan Hedge -bed making also increases the risk of back injury because of the bending and stretching involved in putting sheets onto a bed.²²

Buckle P in his study titled “epidemiological aspects of back pain within the nursing profession” suggested that health care workers especially nurse have been examined how physical stress and other work related factors may affect their health. This study mainly focused in the first instance of low back pain.⁴

Knibbe J J and Friele R D conducted a survey of back pain prevalence and physical work demands by giving a questionnaire compared nurses working in institutional care with nurses working in patients private home and results showed high prevalence among community nurses.²²

Tinubu B M conducted a study on “work related musculoskeletal disorders in Ibadan, south west Nigeria: A cross sectional survey” said that a high proportion of nurses reported work related musculoskeletal disorders at somebody site in their occupational lives with the low back being injured most often.⁴¹

D Smith in their study titled “musculoskeletal disorders self reported by female nursing students in central Japan : A complete cross sectional survey” musculoskeletal disorder represents one of the most frequently occurring and costly occupational issues in nursing.⁴³

Edgar Vieira in his study said that nurses suffer from work related low back pain more often than workers in the other profession.¹¹

Gropelli T M, Corle K in their study “Nurses and therapists experience with occupational musculoskeletal injuries” occupational musculoskeletal injuries are costly to the health care industry and also estimated that 12% of nurses leave the profession annually because of back injuries.¹⁴

Richard F Edlich M D PhD Kathryn L Winters in their study “prevention of disabling back injuries in nurses by the use of patient lift systems” concluded that among health care personnel, nurses have the highest rate of back pain, with an annual prevalence of 40-50% and a life time prevalence of 35-80%.³²

Jensen R in his study “disabling back injury among nursing professional; research needs and justification” said that nurses have the highest incidence rate of workers compensation claims for back injuries.¹⁹

Garg A, Qwen B D conducted a study on “an ergonomic evaluation of nursing assistance job in a nursing home” he concluded that the occupational back pain in nurses is a greater problem, because nurses perceive back pain as an inevitable part of nursing practice.¹²

Nationale institute for occupational safety and health (NIOSH) concluded that “1 worker in 200 experience an over exertion injury and that over exertion is the cause of 60% of low back injury reports”⁴³

S Moretz reported that 1 in every 5 disabling work related injuries/illness is a back injury and ¼ th of all workers compensation claims are for back injuries.³³

Kerri L Lawrence in their study of your aging back; a look at back strain in the work place; job safety and health concluded that back strain due to over exertion represents one of the largest segments of employee injuries in the work place.²⁰

Mayo clinic staff said that many occupations such as nursing, construction and factory work may place significant demands on your back. Even the normal office work can worsen back pain if you fall into risky habits.²⁷

Snook S H in his study titled “work related low back pain: secondary intervention”; said that Non specific low back pain is basically an age related disorder that is affected by differences by occupation, genetics and personal behavior.³⁹

I Maul and T Laubli-

They insisted Low back pain as a persistent problem among nurses. More than half of the nurses indicated the same intensity of low back pain over an 8 year period. This supports a recurrent rather than a progressive nature of LBP.¹⁷

Leamon-

He stated that low back trouble (LBT) is often the most expensive work related injury. Nursing has one of the highest prevalence rates for back pain in comparison to other professions.²⁴

Wunderlich.GS, Sloan FA-

They insisted that inadequate staffing also has been associated with back injuries among nurses.¹⁸

Antonio Lorusso-

He suggested that female gender, physical factors and psycho-social factors were important LBP risk factors with prevalence rates 33% to 86%.²

3.5 PREVENTION OF LOW BACK PAIN

According to Ohio university study by **Marras** “patient handling was found to be an extremely hazardous job that had substantial risk of causing a low back injury whether with one or two patient handlers.²⁵

Marras also evaluated lifting techniques and suggested for one person hug, two person hook and toss, two person transfer using a gait belt, manual one person hook method, manual two person hook method, a manual two person draw sheet, manual two person lifting under thigh and shoulders.²⁵

American nurses association- patient handling tasks are recognized as the primary cause for musculoskeletal disorders among the nursing work force of primary concern are back injuries and shoulder strains which can both be severely debilitating.³⁰

Owen B D 20% transfer to a different unit, position or employment because of lower back pain, 12 percent considering leaving profession.³⁰

Mary Mincer Hansen R N PhD the evidence based solutions include use of patient handling equipment/ devices, patient care ergonomic assessment protocols, no lift policies, patient lift teams.³⁶

Chidozie E M Bada and Fabunmi-

In an effort to reduce the rate of occupational hazards and also to promote efficiency in patient care, education programme on preventing and coping strategies for musculoskeletal disorders were recommended for nurses.³

Geiger-Brown J-

This study suggested that preventing musculoskeletal disorder requires system-level approaches to scheduling that reduce the time of exposure to demanding work conditions and promote health work- rest patterns.¹³

A.K. Burton and T.L. Symonds-

They proposed that ergonomic intervention among nurses alone may be sub-optimal in controlling musculoskeletal problems. Also, the additional provision of psycho-social information to challenge misconceptions and encourage self-management was proposed.¹

4. AIM AND OBJECTIVE

Aim:

To find out the effect of back care program in preventing back injuries among nursing students

Objective:

- Find out the effect back care prevention program in reducing back pain

5. MATERIALS AND METHODOLOGY

5.1. STUDY DESIGN:

Pre test and post test experimental study design

5.2. STUDY SETTING:

KMCH College of nursing, Kovai medical centre and hospital, Coimbatore-
14.

5.3. SAMPLING TECHNIQUE:

Random sampling technique.

5.4. STUDY POPULATION:

40 subjects (nursing students)

5.5. STUDY DURATION:

30 days

5.6. CRITERIA:

5.6.1. INCLUSION CRITERIA:

Age 20-25 years

Sex female

Nursing students who go for postings

5.6.2. EXCLUSION CRITERIA:

Musculoskeletal deformities

Recent trauma

Any surgeries

5.7. HYPOTHESES:

5.7.1. NULL HYPOTHESIS:

H_{01} - There is no significant effect of back care program in preventing low back pain among nursing students

5.7.2. ALTERNATE HYPOTHESIS:

H_{a1} -There is a significant effect of back care program in preventing low back pain among nursing students

5.8. STUDY METHOD:

Back care program

- lifting technique
- avoidance of repetitive movements
- postural correction
- diva like back care

5.9. PROCEDURE:

The Cornell musculoskeletal discomfort questionnaires were given to 150 nursing students, who fulfilled the inclusion criteria. Subjects who scored a score of more than 7 were taken for the study. All of them who were a part of the research signed the consent form.

Initially the students were given education about proper lifting technique, to avoid the repetitive movements, postural correction and diva like back care program. They were asked to follow the back care program everyday including work places and in hostels.

THE BACK CARE PROGRAM INCLUDES:

Lifting technique:

The students are advised with series of principles to be followed in training programs, which include the following

- Think before you lift
- Lift patients close to your waist
- Adjust bed height according to your waist level
- Adopt a proper and a stable position
- Ensure a good hold on the patient

- At the start of the lift, don't stoop or squat
- Don't flex your spine any further while lifting patient
- Avoid twisting of trunk or leaning side ways
- Create a lifting teams: many hospitals have a lift teams in place. In acute care setting, have more than one nurse lift, shift and/or transfer a patient can reduce injury. This also includes, were possible, the use of lifting equipment.

Avoid repetitive movements:

Repetitive movements occur while moving patients laterally and turning patients everyday is repetitive and that there is no real way to stop patient care. It is important for nursing staff to somehow be able to take rest periods after doing these repetitive motions within a short period of time. Coffee breaks are great time to relax and rest the back, but when not on a break, if a nurse has pain in her back, she should be able to find relief from other staff if at all possible.

Posture to be maintained during work:

Bending to bathe the patients, pick up equipment and so on is part of everyday. Whenever possible, squat down keeping the back straight, and lift up using the legs. This will help prevent strain on the lower back.

Avoid prolonged fixed positions:

Other factor in nursing is, holding a patient or a piece of equipment in one place. This can put tremendous strain on the neck, shoulders, and back. If in a position like this, a nurse should, if possible, should ask for relief from another nurse if possible. While sitting for a long time, make sure your back is maintained straight or a pillow can be used in the lumbar area to support the back. If standing for a long time, place a stool in front of you to rest your legs alternatively.

Avoid twisting by turning your body:

When you have to pick up something heavy, whether it be equipment or even patient, plant your feet firmly on the ground for support. But as you turn, make sure you turn your feet and your entire body. Lifting combined with twisting can lead to back injury.

Practice “diva like back care”:

Some tips to take care of your back:

- Regular rest – take time to rest your back when you are not working
- Don’t be a hero – if you realize a patient lift is too much for you, ask for assistance.

5.10 STATISTICAL ANALYSIS

PAIRED 't' TEST (within groups)

$$t = \frac{\bar{d}\sqrt{n}}{S}$$

Where,

$$S = \sqrt{\frac{\sum d^2 - [\bar{d}]^2 \times n}{n-1}}$$

S=combined standard deviation

d_1 & d_2 = difference between initial and final readings in group 1
& group 2 respectively.

n_1 & n_2 = number of patients in group 1 and group 2 respectively.

\bar{X}_1 & \bar{X}_2 = Mean of group 1 and group 2 respectively.

6. DATA PRESENTATION AND RESULTS

6.1. TABULATION

Table 1:

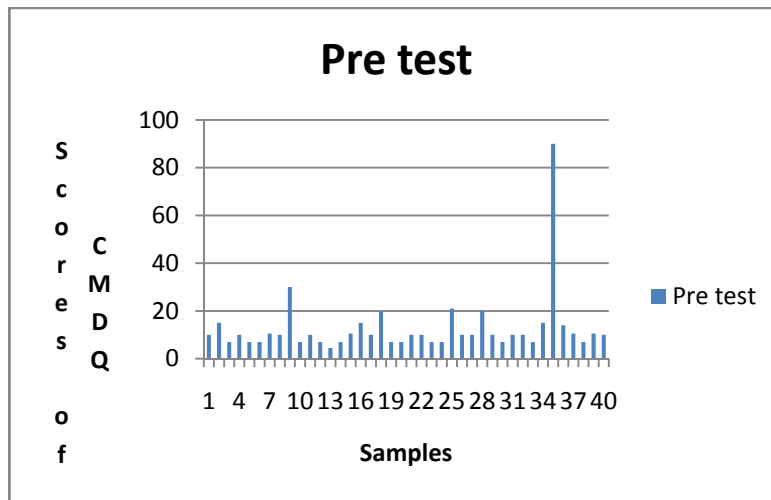
Paired Samples Statistics				
	Mean	N	Standard Deviation	Standard Error Mean
Pre test	12.3378	37	13.70070	2.25238
Post test	2.9730	37	4.30753	.70815

Table 2

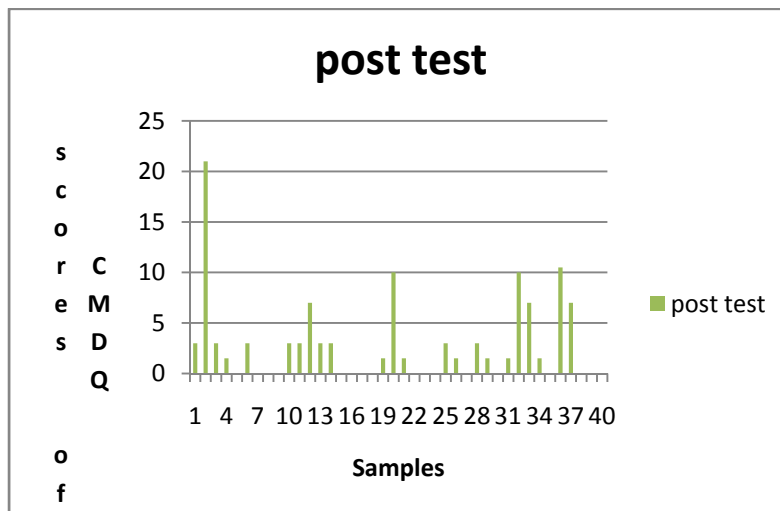
Paired 't' test: Cornell musculoskeletal discomfort questionnaire

	Paired Differences Mean	Standard Deviation	Standard Error Mean	t	df	Significance (2 tailed)
Pre-test and Post-test	9.3649	13.07545	2.14959	4.357	36	0

6.2 GRAPHICAL REPRESENTATION

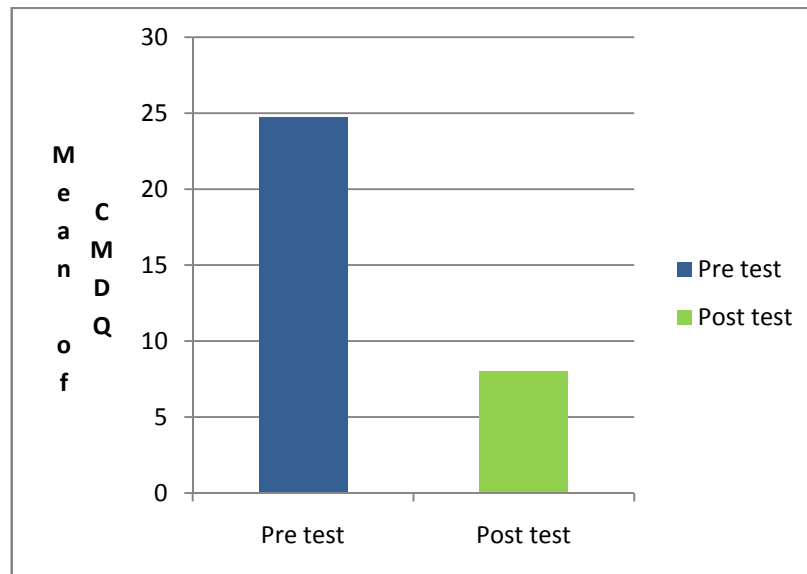


This graph shows the pre test values of the Cornell musculoskeletal disorder questionnaire



This graph shows the post test values of the same questionnaire

Graph showing the mean values between the pre test and the post test



The table 't' value for 36 degrees of freedom is 1.645 and the calculated 't' value is 4.375. Since the calculated 't' value is greater than table 't' value there is a significant reduction of back pain among nursing students. Hence null hypothesis is rejected and it is concluded that there is a statistical significant improvement in reducing incidences of back pain among nursing students by back care programme.

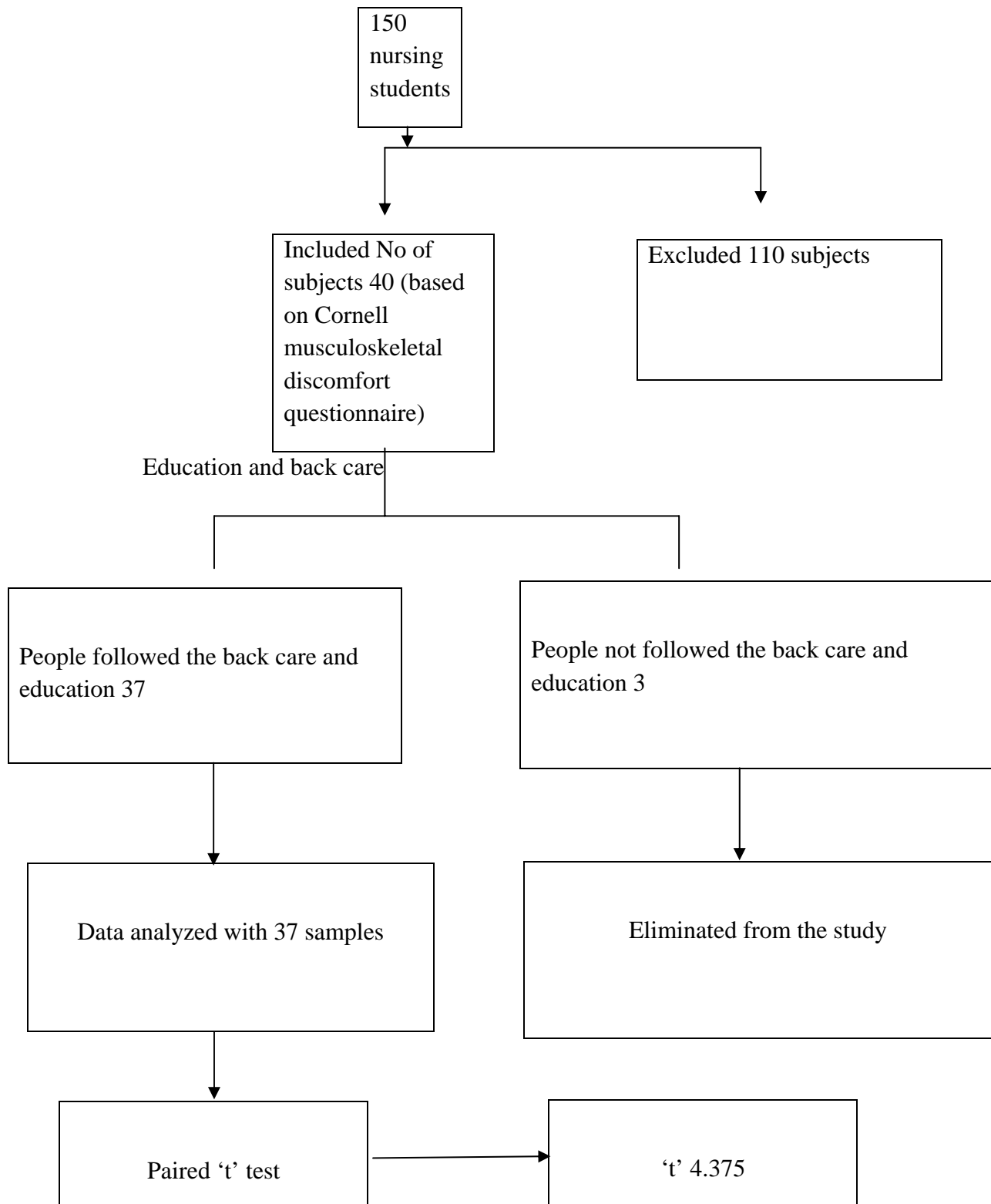
6.3 DATA ANALYSIS AND RESULTS

The questionnaire had three components; the first part included the frequency of aches and pains during the last work week. The second part assessed how uncomfortable they felt due to the aches and pains. The third part assessed how the aches, pain and discomfort interfered in their work.

The table 't' value for 36 degrees of freedom is 1.645 and the calculated 't' value is 4.357. Since the calculated 't' value is greater than table 't' value there is positive correlation. Therefore the null hypothesis is rejected and is concluded that there is a statistical significant improvement in reducing incidences of back pain among nurses by back care programme.

The post test values of the Cornell musculoskeletal discomfort questionnaire showed a significant reduction when compared to the pre test value. This suggest that the back care program had a significant effect in reducing the occurrence of back pain among nurses.

Sampling method: Simple random sampling



As these three subjects did not follow the back care program their pain and discomfort increased to the maximum. So, we eliminated these subjects from our calculation and analysis of data.

7. DISCUSSION

Musculoskeletal disorders includes a vast range of inflammatory and degenerative conditions affecting the muscles, tendons, ligaments, joints, peripheral nerves and supporting blood vessels.

Clinical syndromes such as inflammation of tendons and related conditions (tenosynovitis, epicondylitis, bursitis), nerve compression disorders (carpal tunnel syndromes, sciatica) and osteoarthritis, as well as less well standardized conditions such as myalgia, low back pain and other regional pain syndromes.

High risk sectors which are affected by musculoskeletal disorders and cause more sickness absentism include nursing, nursing aides and other patient care workers. Work related musculoskeletal disorders and in particular low back pain pose a major health and socio economic problem in modern society.

Among nurses the life time prevalence was found to be slightly higher, varying between 56% and 90%.

Physical job features that are frequently cited as a risk factor for musculoskeletal disorders based on both experimental science and epidemiologic investigations, include rapid work pace and repetitive motion patterns; insufficient recovery times; heavy lifting and forceful manual exertions; non neutral body

postures; mechanical pressure concentrations and any of these in combination with each other or with undesirable features of psychological work environment like high demands and low degree of control over one's own work.

Smith D R at al -musculoskeletal disorders begin in nursing school, with exposure to patient care activities that require lifting heavy load, sustaining awkward posture, and repeating stressful movements.³⁸

I Maul and T Laubli -work related musculoskeletal disorders and in particular low back pain, pose a major health and socioeconomic problem among nurses.¹⁷

Back injury prevention training seems to play an important role in reducing the incidence of injury.

According to Ohio university study by **Marras** "patient handling was found to be an extremely hazardous job that had substantial risk of causing a low back injury whether with one or two patient handlers

Marras also evaluated lifting techniques and suggested for one person hug, two person hook and toss, two person transfer using a gait belt, manual one person hook method, manual two person hook method, a manual two person draw sheet, manual two person lifting under thigh and shoulders.²⁵

This study focused on giving a back care program to the nursing students and to find out if the program has any effect in reducing the incidence of back pain among the nursing students.

40 nursing students were inducted into the study based on the inclusion criteria. All of them were given the Cornell musculoskeletal disorder questionnaire. The questionnaire consisted of three items which assessed the frequency pain and discomfort in the past week and if they had pain and discomfort how uncomfortable they felt and also if the pain and discomfort that they experienced interfered in their work, the questionnaire included all the major joints of the upper and lower limbs were included and also the back.

Once the questionnaire was completed the back care program were given education about proper lifting techniques, to avoid repetitive movements, postural correction and diva like back care program. They were asked to follow these instructions for a month. Post test assessment was done after a month's time with the Cornell musculoskeletal discomfort questionnaire.

The results after a month showed a significant reduction in the incidence of back pain and also reduction in the intensity of pain. The reduction in the incidence of pain was attributed to the fact that the back care program given to the patients reduced the incidence of back injury which in turn reduced the incidence of pain among the nursing students.

8. SUMMARY AND CONCLUSION

This study conducted in an effort to find out the effect of back care program in reducing the incidence of back pain among nursing students. The study included 40 nursing students who have regular clinical postings.

This study was a pre and post test experimental study design. The results were analysed using paired t test. The results showed a significant reduction in the occurrence of back pain.

From this study, it is concluded that the back care program given to the nursing students significantly reduced the occurrence of back injury and thereby reducing incidence of back pain.

So it is also recommended to add back care programme in nursing programme of all level.

It is also recommended to have frequent classes on back care with debriefing to ensure all nurses attending the back care programme understand the biomechanics of doing their job safely and with atmost energy conservation.

It is also recommended to stick bills and circulate pamphlets on en back care to nurses and special information can be given in regard to the firm where they work.

9. LIMITATION AND SUGGESTIONS

- Sample taken was too small hence further studies can be done with larger samples.
- Study duration was too small hence further studies with longer study duration can be implied
- Students were taken for this study hence further study with staff can be done.
- Similar studies on different geographical locations can be done.

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APPENDIX I
CONSENT FORM

I voluntarily consent to participate in a research study named **“EFFECT OF BACK CARE PROGRAM IN PREVENTING BACK INJURIES AMONG NURSES”**

The researcher has explained me the treatment approach in brief, risk of the participation and has had answered the question related to the research to my satisfaction.

Signature of the researcher

Signature of the participant

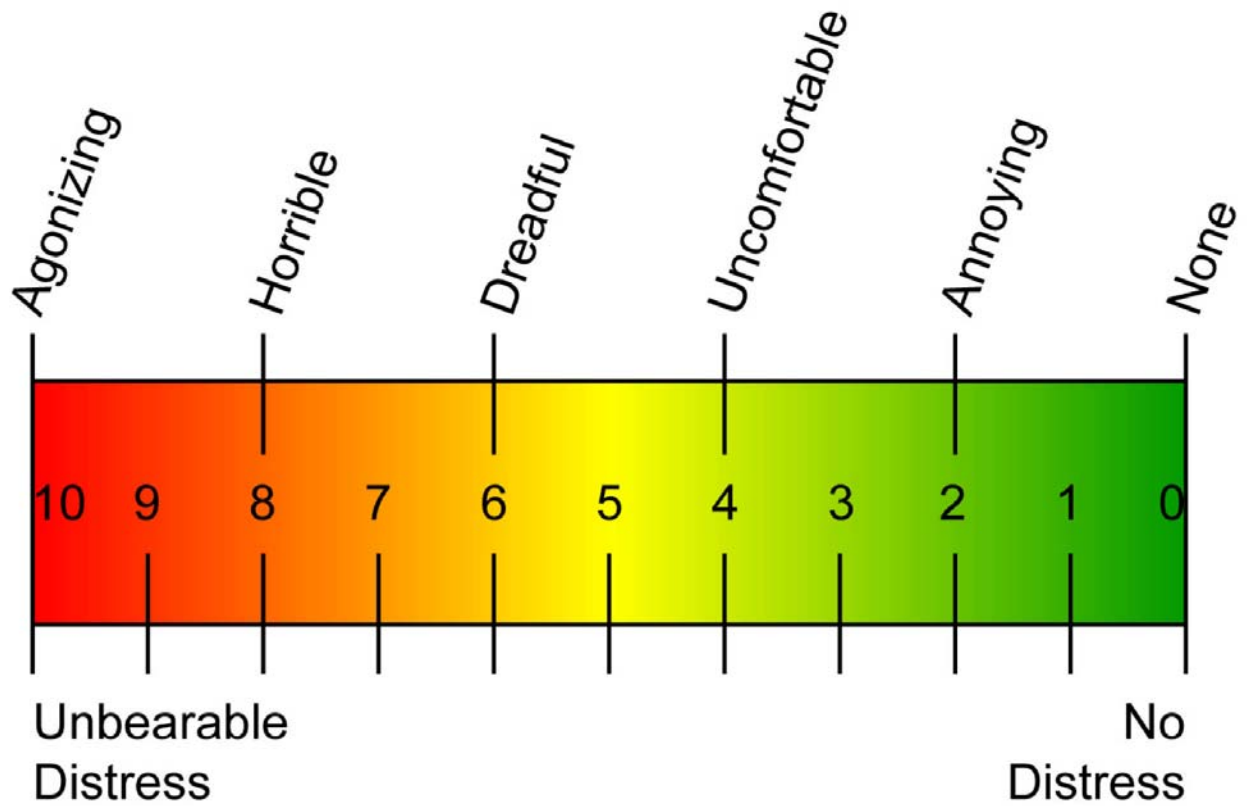
Signature of the witness

Place:

Date:

APPENDIX II

VISUAL ANALOGUE SCALE



Task _____

Date _____ Start _____ End _____

APPENDIX III

Cornell Musculoskeletal Discomfort Questionnaire.

APPENDIX IV

DO'S AND DONT'S

Sitting:

Do's:

- ❖ Sit as little as possible and then only for short periods.
- ❖ Place a supportive towel roll at the belt line of the back especially when sitting for a long time
- ❖ When getting up from sitting, keep the normal curves in your back. Move to the front of the seat and stand up by straightening your legs. Avoid bending forward at the waist.
- ❖ Try to keep the normal curves in your back at all times

Don'ts:

- ❖ Do not place your legs straight out in front of you while sitting

Standing:

Do's:

- ❖ If you must stand for a long period of time, keep one leg up on a foot stool
- ❖ Adapt work heights.

Don'ts:

- ❖ Avoid half bent positions

Lifting:**Do's:**

- ❖ Avoid lifting altogether, if you can.
- ❖ Use the correct lifting technique. Keep your back straight when lifting
- ❖ Stand close to the load, have a firm footing and wide stance.
- ❖ Have a secure grip on the load and lift by straightening your knees.
- ❖ Do a steady lift and do not jerk. Shift your feet to turn and do not twist your back.

Don'ts:

- ❖ Never stoop or bend forward.

Bending:

- ❖ Keep the natural curves of your back by kneeling .e.g. when making a bed