

Evaluate the effectiveness of selected nursing intervention on management of back pain among employees working in a selected company, Bangalore.



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“Evaluate the Effectiveness of Selected Nursing Intervention on Management of Back Pain among Employees working in a Selected Company, Bangalore”.

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REVIEW OF LITERATURE

CHAPTER-III

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The most common usage of the term 'review of literature' refer to the section of research study in which the researcher describes the linkage between previously existing knowledge and the current study. It helps in relating the findings from one study to the next to establish a comprehensive body of scientific knowledge in a professional discipline from which valid and pertinent findings might be established.

The review of literature was done on the following aspects:

1. **Studies related to prevalence of back pain among employees working in companies.**
2. **Studies related to nursing interventions to reduce back pain**

1. STUDIES RELATED TO PREVALENCE OF BACK PAIN AMONG EMPLOYEES WORKING IN COMPANIES

A cross sectional study was conducted at Coimbatore city among the Information technology professionals. The objective of the study was to rule out Work Related Musculoskeletal Disorders among employees of IT companies. Professionals working at two IT companies were selected for this study. Cornell Musculoskeletal Discomfort Questionnaire was administered to the professionals to rule out the factors pertaining to the occurrence of Low Back Pain (LBP). The means between the groups with and without Back Pain were tested using Independent t- test. The results showed 54% male employees and 42% female employees reported LBP. The mean percentage of employees with LBP was 51%. The study thus concluded that the Low Back Pain is the major Work Related Musculoskeletal Disorder among the IT Professionals.⁵¹

A cross-sectional observational study was done on bank employees in Kuwait. The aim of the study was to assess the pattern of musculoskeletal disorders. A self-administered questionnaire which included the Nordic musculoskeletal questionnaire and 12-item general health questionnaire (GHQ12) were distributed to employees. The results revealed 80% employees suffered at least 1 episode of MSD during the previous year and 42% suffered at least 1 disabling episode. The conclusion stated that lower back disorder contribute 51.1% among the subjects.⁵²

A study was conducted in Mauritius with an objective to assess reporting of occupational overuse syndrome. Study was conducted by using a questionnaire based survey among 362 computer users in Mauritius. The study showed symptoms such as eye problems and lower back, neck and shoulder pain were common among computer users, severity of pain increases with number of hours of computer use at work. It also added that employees need to be educated and trained regarding occupational overuse syndrome.⁵³ Computer profession is also found to be associated with visual and musculoskeletal problems.⁵⁴

A study reported occurrence of musculoskeletal discomfort including neck or shoulder stiffness, neck or shoulder pain, tingling/numbness in hands, hand and wrist pain, backache, headache, leg cramps, numbness in ankles and feet, etc. by the employees. The prevalence of self-reported symptoms related to musculoskeletal discomfort ranged from 0.7-34.8% overall prevalence of musculoskeletal discomfort and prevalence of 25-76% among video display unit operators. The study suggested musculoskeletal discomfort a common problem among intensive computer users.⁵⁵

A study was conducted among employees working in Gurgaon College of Engineering and Gurgaon Institute of Management and Technology. The study was done with an objective of studying computer related health problems and the role of ergonomic factors, likely to be associated with computer related health problems. To assess the musculoskeletal problems a standardized Nordic Questionnaire was administered. The depression was measured using Zung's self-rating scale. Statistical analysis was done by using chi – square test. From the data obtained with the help of questionnaire it was observed that the employees face problem related to eyes and back more severely. The results showed the main factors of the cause of problems of the employees at workplace were “Sitting in same posture for continuous long hours” (50%) and Awkward and poor posture (42.5%).⁵⁶

A study was conducted with an objective to assess the work related musculoskeletal disorders among IT professionals in India. Results showed 59% of the IT professionals had experienced some form of WRMSDs in the past 12 months. Among the problems generated at work like neck pain, hand pain, wrist pain; low back pain contributed 25% of the subjects. The study concluded that the WRMSDs are widely reported among the IT professionals working in the IT industries in India and an appropriate prevention strategy needs to be carried out in order to enable them to work comfortably.⁵⁷

A study was conducted among bank employees in Punjab to assess the prevalence of musculoskeletal disorders. The Objective of the study was to examine the prevalence of musculoskeletal disorder among Computer User bank employees. A self-designed questionnaire based on Nordic musculoskeletal disorder was distributed to sixty employees of state bank of India district Nawanshahr Punjab. Results reported 40.4% contribution of lower back pain among the employees during the past 12 months .other associated problems were upper back pain (39.5), Neck pain (38.6%), hand/wrist pain (36.8%) and shoulder pain (15.2%). The study showed a high prevalence of LBP. It was recommended that proper work posture; healthy working conditions must be provided which can make the work easier and more relaxed.⁵⁸

A Study on Occurrence of Musculoskeletal Discomfort among Computer Operators was conducted in two Talukas of Anand district namely, Anand and Petlad - from May 2004 to January 2006. The sample size was 440 selected randomly, and pre-tested questionnaire was given. Musculoskeletal discomfort (MSD) was considered when one or more of the following symptoms were reported by the respondents such as neck or shoulder stiffness, neck or shoulder pain, tingling/numbness in hands, thumbs or fingers during work or many hours after stopping work, hand and wrist pain, backache, headache, leg cramps, leg stiffness, numbness and swelling in ankles and feet, reduction in strength of hand and difficulty in grasping objects. The age ranges from 18-55 years. Three-fourths of the subjects were young (18-25 years). Majority (65.4%) of the respondents started using computers at a young age (16-20 years), and 236 (56.3%) individuals had been using computers for less than 5 years. About 41% of the respondents used to work on computers for about 21 to 40 hours in a week. The study revealed that prevalence of symptoms related to MSD was higher among the young age (16-20).⁵⁹

A cross-sectional study was conducted in 2013 in Lebanese population to evaluate the prevalence of low back pain in the middle-aged office workers .In this study 250 office workers aged between 20 and 64 years from different Lebanese companies and banks were provided a questionnaire containing various predictor individual and occupational factors. The results showed that 112 (44.8%) of the employees suffered from back pain. Females were the most affected (68%) versus males (32%). Thus the study concluded that LBP had an important prevalence among office worker in Lebanon .⁶⁰

A cross-sectional study was conducted in a Nigerian hospital among nurses to determine the work related prevalence and risk factors of LBP. Enquiry was conducted in each department by using self-structured valid and reliable questionnaire. The total 408 employees were checked out among which 148 males (36.27%) and 260 females (63.73%) participated in the study. The results showed the past 12 months prevalence of LBP was 300 (73.53%) and the LBP was more prevalent among female nurses (68%) than the male nurses (32%). It was also associated with occupational hazard and poor knowledge of back care ergonomics.⁶¹

An analytical cross-sectional study was conducted among female nursing staff in all public hospitals of Sana's city, Yemen with an aim to rule out the potential risks associated with LBP. The data was collected by face to face interview method using a structured questionnaire that was available in English as well as Arabic language. The results of the study showed 3 out of every 10 nurses with LBP had sick leaves because of LBP in the past 12 months and prevalence rate of LBP in the past 12 months was 59.8% and past one week was 36.2%. Although sharing the same working conditions, Indian nurses were less likely to report LBP, which highlight the importance of cultural differences in willingness to report LBP. Factors which showed significant association with LBP were age, nationality, menstrual disorders and stress levels at work.⁶²

An epidemiological study was conducted among employees working with computer in the public sector of Kaunas county, Lithuania. The study was carried out with the help of Nordic Musculoskeletal Questionnaire and Copenhagen Psychosocial Questionnaire) and direct observation (evaluation of work ergonomics using the Rapid Upper Limb Assessment [RULA]). The study was carried out in three randomly selected public sector companies of Kaunas County. The study sample comprised of 513 office employees. The prevalence of musculoskeletal pain in five anatomical areas of the body (shoulders, elbows, wrists/hands, as well as upper and low back) was evaluated. The results showed highest prevalence rate of LBP (56.1%) among employees. This study confirmed associations between musculoskeletal pain and work ergonomics; therefore, preventive measures at the workplace should be directed to the improvement in ergonomic work environment, education, and workload optimization.⁶³

II. STUDIES RELATED TO THE EFFECT OF EXERCISE ON LOW BACK PAIN.

A study was conducted among the subjects with non-specific low back pain with an aim to assess the effectiveness of core muscle strengthening program in improvement of the outcome after back injury. In this study, two groups of male and female were examined with non-specific low back pain and two groups were free of back pain. Subjects had back pain for at least 1 month. One group with back pain and one group free of back pain did nothing except receive measurements was the controlled group. The other 2 groups, one with back pain and one without, exercised with mini-stability ball following exercise videos 3 days per week at home. The Roland Morris back pain survey was used to obtain information from the subjects. The results showed that without physical therapy, there was a reduction in low back pain (57% on physical movements of the lower back and 54% on the Roland Morris back pain survey), an increase in range of motion before the onset of pain, and increase in core strength in subjects with back pain who exercised. The pain reduced throughout the day and night by 24% and 37% respectively. The active exercise group gained strength during 1 – month period. The other two non – exercise controlled group showed no change in any parameters during one- month period. Thus it was concluded that mini- stability exercise program was very beneficial in increasing movement, reducing pain and increasing the strength.⁶⁴

A survey was conducted among 102 nurses in a selected hospital in Australia with an aim to assess the efficacy of therapeutic exercises in low back pain. The questionnaire survey was used to obtain information from the subjects. The study revealed frequent low back complaints among the nurses and the application of simple physical exercises was proved to be effective. There was a positive correlation between the intensity and frequency of pains, duration of employment, and the range of responsibilities. After completing the prescribed program of exercises, a significant alleviation of back pains was observed in the study group. Thus exercises were recognized as efficacious, uncomplicated, and providing relief.⁶⁵

Randomized controlled single blinded clinical trial was conducted to identify prevalence of thoraco-lumbar dysfunction (back pain). 30 subjects in age group of 25 to 40 years with non-traumatic, chronic mechanical low back pain were identified for study and randomly divided into two groups. Group A: only core stabilization exercises and Group-B altissimo dorsi strengthening and core stabilization exercises. . 42 % of all subjects had back pain. Highly significant improvement in general health ($p < 0.0001$), and significant improvement in disability score ($p = 0.0017$) was observed in the Group B subjects. Re-assessment after 3 and 6-months reflected better scores in Group-B subjects. So in order to conclude the identification of cause of low back pain is recommended in all non-traumatic, chronic, mechanical low back pains. Strengthening of core muscle will relieve mechanical back pain or thoraco lumbar dysfunction.⁶⁶

A single blind randomized controlled trial was conducted among 804 patients with acute low back pain. The study aimed to investigate the effect of physical intervention like bio psychosocial education, manual therapy, and exercise with low back pain. Among 804 patients with low back pain, 102 subjects met the specific admission criteria and were randomly assigned to an "assess/advise/treat" group or an "assess/advise/wait" group. Visual Analogue Scale, the Roland and Morris Disability Questionnaire, Modified Zung Self Rated Depression Score, Modified Somatic Perception Questionnaire, State-Trait Anxiety Inventory, Euroqol, Short Form 36 were assessed to obtain information on reported pain, functional disability, mood, general health, and quality of life at baseline, 6 weeks, 3 months and 6 months. The results showed that at 6 weeks, the assess/advise/treat group demonstrated greater improvements in disability, mood, general health, and quality of life than patients in the assess/advise/wait group ($P < 0.05$). Disability and pain were not significantly different between the groups at long-term follow up ($P > 0.05$). However, mood, general health, and quality of life remained significantly better in the assess/advise/treat group ($P < 0.05$). Thus it was concluded that at short-term, intervention is more effective than advice on staying active, leading to more rapid improvement in function, mood, quality of life, and general health.⁶⁷

A randomized control trial was conducted among 39 subjects in a selected hospital in Australia with an aim to assess the effectiveness of exercise therapy in reducing the risk of future episodes of low back pain in patients with acute low back pain. The medical care group received advice on bed rest, absence from work, prescription of medication and advice to resume normal activity as tolerated. The exercise group performed specific localized stabilizing exercise, two sessions per week for four weeks. The recurrence of low back pain was assessed using blinded assessor by telephone at one and three year follow-up. In the one year follow up, 6 out of 20 subjects in the exercise group reported a recurrence of Low back pain in the previous year when compared with 16 out of 19 in the control group. By the three-year follow up, 9 out of 20 of the exercise group had recurrence versus 16 out of 19 in the control group. Thus it was concluded that for patients with acute first episode low back pain (LBP), specific spinal stabilization exercise substantially reduces the risk of recurrence.⁶⁸

A randomized controlled trial was conducted among 165 subjects with an aim to the estimate the effectiveness of soft tissue manipulation, exercise and education, or both treatments combined in

reducing non-specific low back pain and related disability. The Roland-Morris scale and pain rating index of the Mc Gill Pain Questionnaire were used to obtain data from the subjects. All the subjects received the treatment over a month. The results showed at one month follow up the combined therapies group had less pain and disability than the other group. Thus it was concluded that the six sessions of the soft tissue manipulation combined with education and exercise reduced pain and disability for patients with non-specific low back pain.⁶⁹

A true experimental study was conducted among low back pain patients in Florida with an aim to evaluate the effectiveness of isolated lumbar extensor exercise on low back pain. Subjects were randomly assigned to a 10-week exercise program. Demographic and medical history, an exercise Locus of control scale, an activity questionnaire, the west- haven Yale multidimensional pain inventory, the mental health inventory and sickness impact profile were the tool utilized for the study. The result indicated a significant increase in isometric lumbar strength for the treatment group and a significant reduction in pain ($p=0.05$). Thus it was concluded that lumbar extension exercise was beneficial for strengthening the lumbar extensors and reduces the pain among low back pain patients.⁷⁰

A study was conducted to assess the management of low back pain among patients with back pain. The study design was randomized controlled trial. The quorum's guidelines and the Cochrane collaboration on back pain review group were followed. Outcome measures were analysed based on 5 recommended core outcome domains pain, work disability, back- specific function, generic health status and satisfaction with care. Relevant RCTs ($n=56$) score for methodological quality for inclusion, based upon their methodological quality. Advice as an adjunct to exercise was most effective for improving CLBP. Results showed that advice with demonstration of back strengthening exercise was most effective for improving back specific issues.⁷¹

A study was conducted to assess the management of low back pain at the work place. The method used was a systematic literature search based on the inclusion criteria, controlled trial, work setting and assessment of at least one of the four main outcome measures. Results showed that thirty one publications from twenty eight interventions were found to comply with the inclusion criteria. Exercise intervention to prevent low back pain among employ and intervention to treat employ with low back pain have documented and effect on sick leave cost and was episode of low back pain. Multi-disciplinary intervention has documented an effect on the level of pain. The results showed that there is a good reason to be careful when considering intervention for preventing low back pain among employees.⁷²

A study was conducted to assess the effectiveness of exercise on low back pain; Method of study was randomized controlled clinical trials. Results shows that the literature does not support the use of exercise therapy for acute low back pain but it does give qualified support to exercise therapy for chronic low back pain. Such approaches yield effective clinical response in both acute and chronic patients within two weeks with six visits and provided lasting benefits up to three years after intervention.⁷³

A study was conducted to assess the effectiveness of back strengthening exercise on low back pain among 7347 reproductive women in North Ireland. Study design was selected by randomized controlled trial. The data collected from acute, sub-acute, chronic low back pain patient by using advice and core muscle strengthening exercise therapies. The study finder revealed 15% of acute back pain trials have a positive outcome, compared to 86% and 74% of sub-acute and chronic low back pain trials respectively.⁷⁴

A study was conducted among the subjects with non-specific low back pain with an aim to assess the effectiveness of core muscle strengthening program in improvement of the outcome after back injury. In this study, two groups of male and female were examined with non- specific low back

pain and two groups were free of back pain. Subjects had back pain for at least 1 month. One group with back pain and one group free of back pain did nothing except receive measurements was the controlled group. The other 2 groups, one with back pain and one without, exercised with mini-stability ball following exercise videos 3 days per week at home. The Roland Morris back pain survey was used to obtain information from the subjects. The results showed that without physical therapy, there was a reduction in low back pain (57% on physical movements of the lower back and 54% on the Roland Morris back pain survey), an increase in range of motion before the onset of pain, and increase in core strength in subjects with back pain who exercised. The pain reduced throughout the day and night by 24% and 37% respectively. The active exercise group gained strength during 1 – month period. The other two non – exercise controlled group showed no change in any parameters during one- month period. Thus it was concluded that mini- stability exercise program was very beneficial in increasing movement, reducing pain and increasing the strength.⁷⁵

A study was conducted on back muscle strengthening exercise for reducing CLBP among women with chronic LBP. The Study design was prospective randomized investigation. The study was carried out with the help of Nordic questionnaire. Among 172 women with chronic LBP, 74 participated in the study. The respondents were randomly assigned to either dynamic back strengthening exercise at fitness centre or at a home training program. Result showed that there is a significant improvement at 3rd and 12th month. Home training program was more effective program when compared with training program at fitness center.⁷⁶

A study was conducted on muscle strengthening exercises on reducing Back Pain. Design for study was literature available on MEDLINE. It showed that the people with mild, moderate and chronic back pain revealed no evidence that exercise adds to the risk of back problem or work disability. The study concluded that exercise can be prescribed for patients with back pain as it satisfy 3 goals. The first goal was to improve back muscle flexibility and strength. The second goal was the reduction in the intensity of back pain. The third goal was reducing disabilities related to back pain. From all this it was revealed that exercise is benefited for individual with back pain.⁷⁷

An experimental study was conducted to evaluate the effectiveness of a program designed to reduce back pain. The nursing aides from a university hospital who had suffered episodes of back pain for at least six months were included in the study. Respondents were randomly divided into a control group and an intervention group. The intervention program involved a set of exercises and an educational component stressing the ergonomic aspect, administered twice a week during working hours for four months. All subjects answered a structured questionnaire and the intensity of pain was assessed before and after the program using a visual analogue scale (VAS). Student's t-test and Chi-square test for categorical analysis, was used. Result showed that there was a statistically significant decrease in the frequency of LBP in the last seven days in the intervention group.⁷⁸

A study was conducted in china to investigate the efficacy of exercise as intervention in a population with chronic low back pain. 3p respondents between 20-55 yrs. old with chronic LBP were randomly assigned to a specific training exercise group who participated in a4-weeks exercise program whereas a control group who received the usual care like consultation with the physician and other health care professionals as necessary. The outcomes were measured using The Rolland Morris Disability Questionnaire and average pain intensity using 10 point numerical rating scale. The results showed significantly lower level of functional disability and average pain intensity in the specific exercise training group than in the control group following the intervention period. Thus it was concluded that the individuals in the specific exercise training group reported a significant decrease in LBP and disability which was maintained over a 12 months follow up period.⁷⁹