EFFECTIVENESS OF PILATES EXERCISES ON NON-SPECIFIC LOW BACK PAIN IN NURSING STUDENTS AND STAFF OF A TERTIARY CARE TEACHING HOSPITAL AND NURSING COLLEGE

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ABSTRACT

Introduction: Low back pain is the one of the common musculoskeletal disorder faced by people in today's generation. It is more common in health-care workers especially nursing students and staff. Pilates is a new and innovative technique that focuses on the back and core of the body. Hence, this study is carried out to determine the effectiveness of Pilates techniques to treat and prevent the chances of low back pain. **Materials and methods:** Subjects were received the Pilates protocol for exercises. They were asked to fill the Oswestry Low Back Pain Disability Questionnaire before and after giving the Pilates protocol. The pain was assessed by Numerical Pain Rating Scale (NPRS), both at rest and on movement before and after giving the Pilates. **Results**: The P value in Numerical Pain Rating Scale (NPRS) and Oswestry Low Back Pain Disability Questionnaire before and After the Pilates and was 0.000 which shows that there is significant difference between the two groups. **Conclusion**: The study concluded that Pilates exercises were efficient in treating non-specific low back pain.

KEYWORDS: Non-specific low back pain; Low back pain; Nursing staff; Pilates exercises.

INTRODUCTION

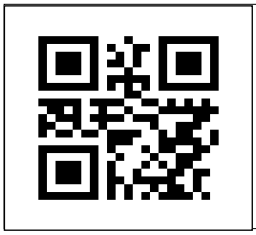
Low Back Pain is a common disorder involving muscles, nerves and bones of the back. Low back pain may be classified by duration as acute (pain lasting less than 6 weeks), sub-chronic (6 to 12 weeks), or chronic (more than 12 weeks). The symptoms of low back pain usually improve within a few weeks from the time they start, with 40-90% of people completely recovered by six weeks1.

Low back pain can be broadly classified into four main categories:

Musculoskeletal - mechanical (including muscle strain, muscle spasm, or osteoarthritis).

Inflammatory - including ankylosing spondylitis, reactive arthritis, psoriatic arthritis, and inflammatory bowel disease.

Malignancy - bone metastasis from lung, breast, prostate, and thyroid.



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Infectious - osteomyelitis; abscess lately better by six weeks.

LBP is a common cause of morbidity in health care workers. Nurses are among the occupational groups within the health service that are vulnerable to LBP. According to Cesena et al1, mechanical hazards in the hospitals include LBP from manual lifting (patients in particular) which makes nursing one of the occupations most affected by LBP.

Common Symptoms of Lower Back Problems:

Dull, aching pain: Pain that remains within the low back and is usually described as dull and aching pain.

Pain that travels to the buttocks, legs, and feet: Sometimes low back pain includes a sharp, stinging, tingling or numb sensation that moves down the thighs and into the low legs and feet, also called sciatica.

Pain that is worse after prolonged sitting: Sitting puts pressure on the discs, causing low back pain to worsen after sitting for long periods of time.

Pain that feels better when changing positions: Depending on the underlying cause of pain, some positions will be more comfortable than others.

Pain that is worse after waking up and better after moving around: Pain in the morning is due to stiffness caused by long periods of rest, decreased blood flow

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with sleep [2].

Pilates is a physical fitness system that was developed in the early 20th century by Joseph Pilates. Pilates classes build strength, flexibility and lean muscle tone with an emphasis on lengthening the body and aligning the spine, rather than on bulking and shortening the muscles [3]. Pilates is a popular exercise choice for those with low back pain. There are particular Pilates exercises that should be prioritized when working with those with LBP. These include mobilizing the spine; strengthening the back extensors and deep abdominals; and stretching the back extensors, hip flexors and hamstrings [4].

There are two basic forms of Pilates are:

Mat-based Pilates – this is a series of exercises performed on the floor using gravity and our own body weight to provide resistance. Equipment-based Pilates – this includes specific equipment that works against spring-loaded resistance. Some forms of Pilates include weights (such as dumbbells) and other types of small equipment that offer resistance to the muscles [5].

MATERIALS AND METHODS

Study design: An Interventional study

Ethics approval: Study was approved by the IEC of our institute and informed consent was taken from the participants

Study location: Study was conducted in Vikhe Patil Hospital and Nursing College, Ahmednagar

Study duration: 3 months November 2017- January 2018.

Sample size: A total of 20 subjects were randomly selected based on inclusion and exclusion criteria.

Inclusive criteria: Subjects aged between 18-35 years of age, who are having low back pain.

Exclusive criteria: Subjects who have/had spinal surgery, Pregnancy or the possibility of pregnancy in the next 6 months, Comorbidities that would prevent exercise, previous participation in a clinical Pilates program or other regular therapeutic back exercise program in the last 6 months

Procedure:

Study procedure explained to the subjects. Subjects were asked to fill the Oswestry Low Back Pain Disability Questionnaire [6]. Subjects were received the Pilates protocol for exercises (i.e. pelvic tilts, chest lifts, supine spinal twists, hamstrings and hip flexor stretches, roll backs, kneeling arm and leg reach, back extensor stretches).The treatment was taken 2-3 sessions per week of half an hour each for 4 weeks [7, 8]. Ergonomic advice was given to the subjects.

Parameters studied: following parameters were studies before and after giving the Pilates:

Numerical Pain Rating Scale (NPRS) at rest

Numerical Pain Rating Scale (NPRS) on movement

Oswestry low back pain disability questionnaire.

Statistical analysis: The data was analyzed by Wilcoxon Matched-Pairs Signed-Ranks Test. It is a non-parametric equivalent of the paired t-test.

RESULTS

Table 1 shows that the score of Numerical Pain Rating Scale on rest decreased from 4.35 (SD=0.933) before the treatment to 2.20 (SD=0.768) after giving the treatment with a Z value of 3.920.Table 2 shows the score of Numerical Pain Rating Scale on movement decreased from 7.20 (SD=0.696) before the treatment to 3.75 (SD=0.716) after giving the treatment with a Z value of 3.956. Table 3 shows the Oswestry Score reduced from 31.15 (SD=5.556) before the treatment to 21.30 (SD=3.827) after giving the treatment with a Z value of 3.927.The P value in every scale was 0.00: which should be less than 0.05, which shows that there is significant difference between the two groups.

Table 1. Comparison between before and after Numerical Pain Rating Scale (NPRS) score at rest

Group	Mean	Standard deviation	Z value	P value
Before	4.35	0.933	3.920	0.000**
After	2.20	0.768		

Table 2. Comparison between before and after Numerical Pain Rating Scale (NPRS) scores on movement

Group	Mean	Standard deviation	Z value	P value
Before	7.20	0.696	3.956	0.000**
After	3.75	0.716		

Table 3. Comparison between before and after OSWESTRY score

Group	Mean	Standard deviation	Z value	P value
Before	31.15	5.556	3.927	0.000**
After	21.30	3.827		

The values of Numerical Pain Rating Scale (NPRS) at rest before and after the Pilates exercises were performed, NPRS on movement scores before and after the Pilates exercises were given and the Oswestry low back pain scores before and after the Pilates exercises were performed.

DISCUSSION

The current study investigated the effectiveness of Pilates exercises on non-specific low back pain in nursing staff of Vikhe Patil Memorial Hospital.

In our study, there was significant reduction of pain intensities before and after the Pilates exercises were given. There was significant decrease in the Oswestry Low Back Pain Disability Questionnaire score before and after the application of Pilates. It was used as the primary outcome measure. The secondary outcome measure was Numerical Pain Rating Scale (NPRS). Reduction in pain scores was observed both at rest as well as on movement after the Pilates were taught.

Our study was supported by the findings of Gisela C. Miyamoto et al, which proved that the modified Pilates were effective in treating chronic low back pain. We found that the p=0.00 which suggested that Pilates were efficient in treatment of non-specific low back pain [9].

Our study also had a positive correlation with the study done by Jamil Natour et al, which showed Pilates improved pain, function and quality of life in patients with chronic low back pain [10].

Our study also correlates with the study done by Henry Wajswelner et al, which was to study the effectiveness of Clinical Pilates versus General Exercise for Chronic Low Back Pain: Randomized Trial, the result showed an individualized clinical Pilates program produced more beneficial effects as a general exercise program in community volunteers with chronic low back pain [11].

The results also coincided with another study done by Rydeard , Leger A and Smith D, which was the use of Pilates-based therapeutic exercise and its effect on subjects with nonspecific chronic low back pain and functional disability [12].

CONCLUSION

The purpose of the study was to find out the effectiveness of Pilates exercises in treating chronic low back pain. The study was encouraging and the attitude of the patients towards staying fit was positive. The study was mainly about health and fitness in order to reduce the occurrence of low back pain and prevent the restriction in doing activities of daily living due to that. It is very important to improve one's physical health and build an attitude to stay healthy, fit and active in their routine lifestyle.

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