

## Assessment of effectiveness of spinal exercises and body mechanics on low back pain among post menopausal women

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### Abstract

**Aim:** To assessment of effectiveness of spinal exercises and body mechanics on low back pain among post menopausal women.

**Participants and setting:** A quasi experimental non equivalent control group pretest post test design was adapted. The study was conducted in the urban area of suryapet. 40 post menopausal women who fulfilled the inclusion criteria were selected by non-probability purposive sampling technique.

**Intervention:** The intervention such as spinal exercises and body mechanics were performed to overcome the level of low back pain among post menopausal women. The pre and post assessment was done by using a combined numerical and categorical pain scale.

**Measurement and findings:** The women completed the demographic and obstetrical information and pain was measured by 0- 10 Modified combined numerical categorical pain intensity scale. This study revealed that there was high significant difference found in low back pain at  $p < 0.001$  level between study group.

**Conclusion:** The overall findings in the present study revealed that the spinal exercises and body mechanics was effective and had brought about significant change in the reduction of low back pain among post menopausal women compared to pre test level of low back pain.

**Keywords:** Low back pain. Menopausal women, spinal exercise, effectiveness.

### 1. Introduction

Today's world is filled with heavy workload. We don't have enough time to stand and steer, think about how much we move around and bend during a normal day. The lower back is probably the most using part of the spine which likely to account for the fact of Low Back Pain. Over our lifetime, eight out of ten people will experience back pain. Most back injuries are painful, debilitating and life changing. Normal bone remodeling in the adults results in increased bone mass until about 35 years of age.

Especially women between the age of 55 and 65 years are identified as a high – risk group for postmenopausal osteoporosis with low back pain. Many researchers believe that this is related to the loss of the hormone estrogen. According to Healthy people 2010, regular physical activity helps to

prevent certain chronic diseases such as hypertension, type 2 diabetes, cardiovascular disease, obesity, and osteoporosis (U.S Department of Health and Human Services, 2000). Vigorous physical activity is not always needed to achieve positive results. Studies have shown that moderate physical activity can be beneficial when incorporated into daily routines[1].

Promoting exercise and emphasizing body mechanics are challenging opportunities for nurses. Nurses are committed to assist and support the patients to make lifestyle changes that improve the patient's health and well – being. As researchers focus on the potential of regular exercise activities to slow the aging process, nurses should intervene to prevent the deleterious effects associated with decreased physical activity. Some patients may find it difficult to adhere to a program of prescribed

exercises for a long period. These patients are encouraged to improve their posture how to stand, sit, lie and lift properly which increases muscle effectiveness, reduces fatigue and helps to avoid repetitive strain injuries. Therefore nurses should be aware that women are more likely to suffer from osteoporosis than men. Nurses have the responsibility to teach health habits related to the life style believed to assist in the prevention of osteoporosis. The target group is menopausal women and all women, a teaching plan should cover the importance of a well balanced diet, high in calcium, regular exercise and good posture[2].

Back pain may have a mechanical cause located at the articulation of one vertebra with another and involving degeneration of the inter vertebral disc. The interaction of the diseased disc with surrounding tissues gives rise to the pain. This may be by pressing on a nerve root or involvement of surrounding ligaments and joint facets, non mechanical causes include bad posture, poor lifting technique, unequal leg length, and lack of exercises and other degenerative disease of the spine [3].

Early treatment in primary care should focus on pain relief with the use of simple analgesia and NSAIDS, maintaining activity and physiotherapy. Chronic disability due to back pain is usually associated with serious psychological and socio economic problems, so it is essential to try to maintain a positive approach on the part of the patient. Therefore it is well understood that postmenopausal women has been suffering from osteoporosis associated with low back pain and there is a need to overcome this unsatisfied life events. The investigator had the opportunity to visit the community area, and noted the post menopausal women suffering with low back pain. There were few published papers in India on low back pain among postmenopausal women. Hence it has stimulated the investigator to conduct the study on effectiveness of spinal exercises and body mechanics on low back pain among postmenopausal women with a special emphasis on positive well-being and primary prevention. [2].

**2. Materials and Methods**

The investigator had an opportunity to visit the community area suryapet and noticed the post menopausal women with the low back pain and this has motivated the investigator to conduct study. A formal consent was obtained from Medical Officer of Urban Health Centre and Counsellor of that respective area to conduct study. The post menopausal women with low back pain who fulfilled the inclusion criteria were selected by purposive

sampling technique. Based on the selection criteria the subjects were assigned for the experimental and control group. A brief introduction about self and study was explained. The data related to the variables were collected. Written consent was taken from samples and confidentiality of the response was assured. Pre test was done for the post menopausal women on the level of low back pain in both the groups by using the Combined Numerical Categorical Pain Scale. On the same day, the investigator gathered post menopausal women into 2 groups of each 10 members in both experimental and control group. In experimental group for each member, a brief introduction about osteoporosis was given. Their doubts were clarified and then demonstrated spinal exercises and body mechanics to be followed in standing, sitting, lifting and lying. In front of investigator, each group performed spinal exercise in a calm and quiet environment in a common place. In an empty stomach at a slow pace for 1 – 5 repetitions twice a day in the early morning (8.00 a.m) and in the late evening (7.00 p.m) and they were asked to gradually increase to do 10 repetitions for 7 days then post test was done on 5<sup>th</sup> day, for each individual by pointing out the same tool. Whereas in the control group; each member were instructed to follow the daily routine. The post test was done for each individual on 5<sup>th</sup> day by pointing out the same tool. Descriptive and inferential statistics were used to analyze the data Analysis of demographic variables in terms of frequency and percentage distribution, mean and standard deviation was used to compute the pre and post test level of low back pain among post menopausal women in experimental and control group. Paired’t’ test was used to evaluate the effectiveness of spinal exercises and body mechanics on low back pain among post menopausal women.[4]

**2.1. Description of tool**

The tool consists of two parts.

**Section I:** It deals with the demographic variables such as age, type of family, religion, monthly income, education, BMI, occupation and type of delivery.

**Section II:** Modified combined numerical categorical pain intensity scale, which is a modified pain scale selected for the assessment of the low back pain. The scale is grouped into five categories.

0	-	No pain
1 – 3	-	Mild pain
4 – 6	-	Moderate pain
7 – 9	-	Severe pain
10	-	Excruciating pain

### 3. Results

**Table 1: Comparison of mean scores between pre and post test level of low back pain among post menopausal women in experimental group N=20**

Session	Experimental Group				't' value
	Pre assessment		Post assessment		
	Mean	S.D	Mean	S.D	
Session I	8.05	0.82	5.62	1.08	8.014*** (S)
Session II	6.85	0.451	3.61	0.718	17.089*** (S)

\*\*\*P<0.001, S – Significant

The above table 1 shows that the 't' values in session I and session II were 8.014 and 17.089 which was significant at p<0.001 level respectively. So there is a significant decrease in the level of low back pain among post menopausal women after spinal exercises and body mechanics.

**Table 2: Comparison of mean scores between pre and posttest in the level of low back pain among post menopausal women in control group N = 20**

Domine	Pretest		Post test		't' value
	Mean	S.D	Mean	S.D	
Control group	6.2	0.8	6.5	0.9	1.114

N.S – Not Significant

Table 2 depicts the mean scores between pre and post test in the level of low back pain among post menopausal women. In control group the value of pretest mean and S.D was (6.2, 0.8) and the value of post test mean and S.D was (6.5, 0.9). The 't' value was 1.114 (N.S). So there is no significant decrease in the level of low back pain among post menopausal women without spinal exercises and body mechanics.

**Table 3: Comparison of mean difference of pain score among post menopausal women with low back pain between experimental and control group N = 40**

Domine	Experimental Group		Control Group		't' value
	Mean	S.D	Mean	S.D	
Level of pain	5.53	0.59	1.9	0.82	16.070*** (S)

\*\*\*p<0.001, S – Significant

Table 3 depicts that the mean and S.D on the level of low back pain among postmenopausal women in experimental group which were 5.53 and 0.59 respectively. In control group the value of mean and S.D on the level of low back pain among post menopausal women was 1.9 and 0.82 respectively. The 't' value is 16.070 (p<0.001).

### 4. Discussion

The above table 1 shows that the 't' values in session I and session II were 8.014 and 17.089 which

was significant at p<0.001 level respectively. So there is a significant decrease in the level of low back pain among post menopausal women after spinal exercises and body mechanics.

Table 2 depicts the mean scores between pre and post test in the level of low back pain among post menopausal women. In control group the value of pretest mean and S.D was (6.2, 0.8) and the value of post test mean and S.D was (6.5, 0.9). The 't' value was 1.114 (N.S). So there is no significant decrease in the level of low back pain among post menopausal women without spinal exercises and body mechanics.

The analysis also depicts that the 't' value was 16.070 (P<0.001) between experimental and control group which denotes that spinal exercises and body mechanics had a significant effect in reducing low back pain. Hence the research hypothesis H<sub>1</sub> that states that there will be a significant difference in the level of low back pain between those who receive spinal exercises and body mechanics and those who do not receive was accepted.

### 5. Conclusion

The overall findings in the present study revealed that the spinal exercises and body mechanics was effective and had brought about significant change in the reduction of low back pain among post menopausal women compared to pre test level of low back pain. Therefore the research hypothesis RH<sub>1</sub> that states that there will be a significant difference in the level of low back pain between those who received spinal exercises and body mechanics and those who do not receive was accepted and the RH<sub>2</sub> that states that there will be a significant difference in the level of low back pain with their demographic variables was partially accepted.

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