A Study to Assess the Effectiveness of Back Strengthening Exercise on Low Back Pain Among Women Of 35-60 Years in Selected Areas of Rayamangalam Panchayath, Ernakulum District, Kerala State, India.

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Abstract:

Low back pain is a very common problem and has anubiquitous distribution[1]. Back strengthening exercise is one of the most important treatment.

Objectives

- Assess the level of pain and disability among women with back pain between 35-60 years.
- Determine the effect of back strengthening exercise on low back pain and related disabilities among women between the ages of 35-60 years.

Method: Quantitative research approach was used and the design used for the study was Pre-test post-test one group design. The data was collected by using numerical pain rating scale.

Result:30% were between the age group of 51 – 55 years and 66.6% experience back pain during activities. 34% of samples had mild pain and 33.3% had minimum disability where they had moderate pain and disability during pre– test. 10% of samples had severe pain and disability reduced to moderate pain and disability ($t=3.66<0.001$) There is a significant difference in the pretest and posttest level of pain and disability.

Keywords: Effectiveness, back strengthening exercise, low back pain.

INTRODUCTION

Vertebral column forms the central axis of the body. It consists of a number of vertebrae joined to each other by a series of articulations. It is a flexible but strong pillar that supports the skull, trunkand limbs. It transmits body weight to the lower extremity through the sacroiliac joints. It provides a large site for attachment of the muscles of posture and locomotion. Correct poster and locomotion has an important role in maintaining the function of the vertebral column [2].

Women are engaged in various house hold activities including lifting children, washing clothes, cleaning utensilsetc.They may not be able to maintain proper body posture,which can lead to lower back pain[3].

Back strengthening exercise is the exercise performing of physical exertion for improvement of health and reduction of the lower back pain. Itsaim is to increase strength of bones, ligaments and muscles. It also improves nutrition to joint cartilage

including intervertebral disk, enhance oxidizing capacity of skeletal muscles, improve neuro motor control and co-ordination, stabilize hypermobile structure, improve posture, decrease pain, improve mobility and flexibility, improve fitness level to prevent the recurrence[3].

Need and significance of the study- Musculoskeletal disorders have become increasingly common worldwide during past decades and are the major causes of disability among women [4].

According to American academy report 1982, the incidence of low back pain has lately reached epidemic proportions. Various population studies have reported the prevalence of low back pain as high as 2-5%. As much as 80% of the industrial population and 60% of general population experience acute musculoskeletal low back pain at some point of time in this life.

Sigh and Rupali (2008) reported that occurrence ofback pain is also alarming .Nearly 60% of the people of India have signs of back pain at some time or other time. The highest rate of back pain occurs among 45-65 years age group .The incidence of back pain is greater among women [6].

A study conducted by health care welfare society reveals that in Kerala itself 80% of populations are affected with low back pain. Impairments of back and spine are ranked as the most frequent cause of limitations of activity in people younger than 45 years .About 78% of men and 89% of women are affected with low back pain[7].Brown (2003) reports that the most common cause of back pain among nurses includes activities such as improper lifting technique, poor posture and prolonged standing. This in turn leads to loss of independence and diminished quality of life. They can use effective strategies like exercise that strengthen abdomen and back muscles, can reduce like hood of back pain and protect against injury and improper posture [4].
Cochrane studies and reviews conducted by Brenett (2005)Pretrotsky (2008) and Riscnetal (1993) also support the fact that exercise therapy is effective in reducing back pain and improving posture[4].The researcher herself experienced the effect of back strengthening exercise on low back pain.

The recent study is designed to evaluate the effectiveness of back strengthening exercises on low back pain among 35-60 years old women.

Statement of the problem - A study to assess the effectiveness of back strengthening exercise on low back pain among women of 35-60 years in selected areas of RayamangalamPanchayath, Ernakulum District, Kerala State, India.

Objectives

- Assess the level of pain among women with back pain between the age of 35-60 years.
- Assess the level of disability among women with back pain between 35-60 years.
- Determine the effect of back strengthening exercise on low back pain and related disabilities among women between the age of 35-60 years.

Research Approach and Design

The quantitative research approach was used and the design used for the study was pre -test post- test one group design.

- **Variables**

Independent variable - back strengthening exercises

Dependent variable -women with low back pain

- **Setting of the study**

The study conducted in selected areas of RayamangalamPanchayath, Ernakulum district, Kerala State, India.

- **Population**

Population in this study includes women in the age group of 35-60 years old in selected areas of RayamangalamPanchayath.

- **Sample and sampling technique**

Sample consist of women in the age group of 35 -60 years, who full fill the inclusion criteria .Purposive sampling technique was used.

- **Sample size**

Sample size was 30.

- **Sampling criteria*** Inclusion criteria -Women with low back pain in the age group of 35-60 years.

-women who are able to communicate Malayalam.

-women who are willing.

*Exclusion criteria-women who are not willing to be part of the study.

-women with low back pain associated with other masculo skeletal disorders.

-women who are unconscious

-women suffering from acute disc prolapse, posterior pelvic tilt, patient with osteoporosis,after prolonged rest, when the disc is hyper hydrated, presence of lateral trunk shift.

Development of the tool - A tool or instrument of research is a device used to measure the concept

of interest in a research project that the researcher used to collect the data [9].

The tool that are used for data collection in this study are:

Tool 1: Demographic Performa

Tool 2: Numerical pain scale

Tool 3:ModifiedOswestry Low Back Pain disability questionnaire

Description of tool

Tool 1: Demographic Performa

It contain demographic variables such as age , educational status, annual income, occupation,

experience back pain, duration of pain in one attack, history of pain, any remedial measures adopted, age of menopause and weight.

Tool 2: Numerical pain scale

A numerical pain scale requires the samples to rate pain on a line scale of 0 – 10. The scale
work best when assessing samples pain intensity before and after doing back strengthening exercises.

Content validity: To assess the content validity the tool were given to experts in this field
including medical surgical specialists. Modifications were done according to their suggestion.

Data collection process: The main study was conducted in selected areas of
Rayamangalam panchayath, Ernakulum district, from 14-6-2014 to 30-6-2014, after obtaining
a formal permission from the concerned authority.Confidentiality of the sample was assured.
30 samples were collected by purposive sampling technique. A pretest was conducted with help
of demographic Performa. Numerical pain rating scale,modified oswestry low back pain disability
questionnaire, video assisted teaching programme and leaflet of low back strengthening exercise
were given to the sample.Sample were made to do exercise in the presence of investigator for
5 days.Thereafter,they have done it by themselves and on the 15th day post test was conducted1.

ANALYSIS AND INTERPRETATION

The data collected were organized, tabulated and later subjected to descriptive and inferential statistics. The result of study are presented under following headings:

Section 1: Demographic data were analyzed and presented in terms of percentage distribution.

Section 2:Pre interventional pain scale score and modified oswestry low

Backpain disability score were analyzed in terms of frequency and percentage.

Section 3:The level of low back pain analyzed in terms of mean and standard deviation.Paired‘t’ test was used to test the significant differencebetween the pain scale score and disability score in the pretest and posttest.

DISTRIBUTION OF SAMPLE BASED ONEXPERIENCE OF BACK PAIN

n= 30

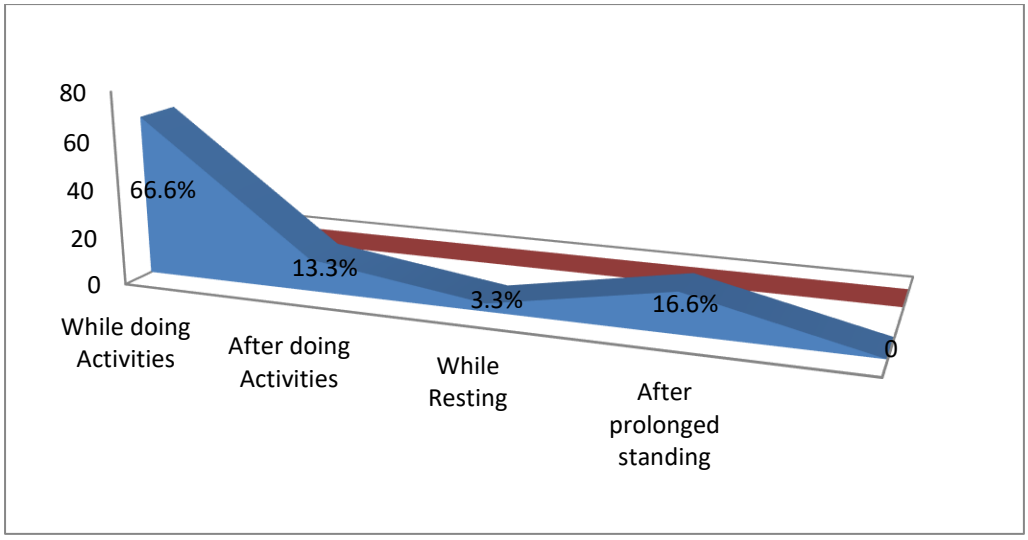

FIGURE 1:***Area diagram showing distribution of sample based on experience of back pain.***

The above figure shows that the majority of samples, 66.6% were experiencing back pain while doing activities.

DISTRIBUTION OF SAMPLE BASED ON DURATION OF PAIN IN ONE ATTACK

n= 30

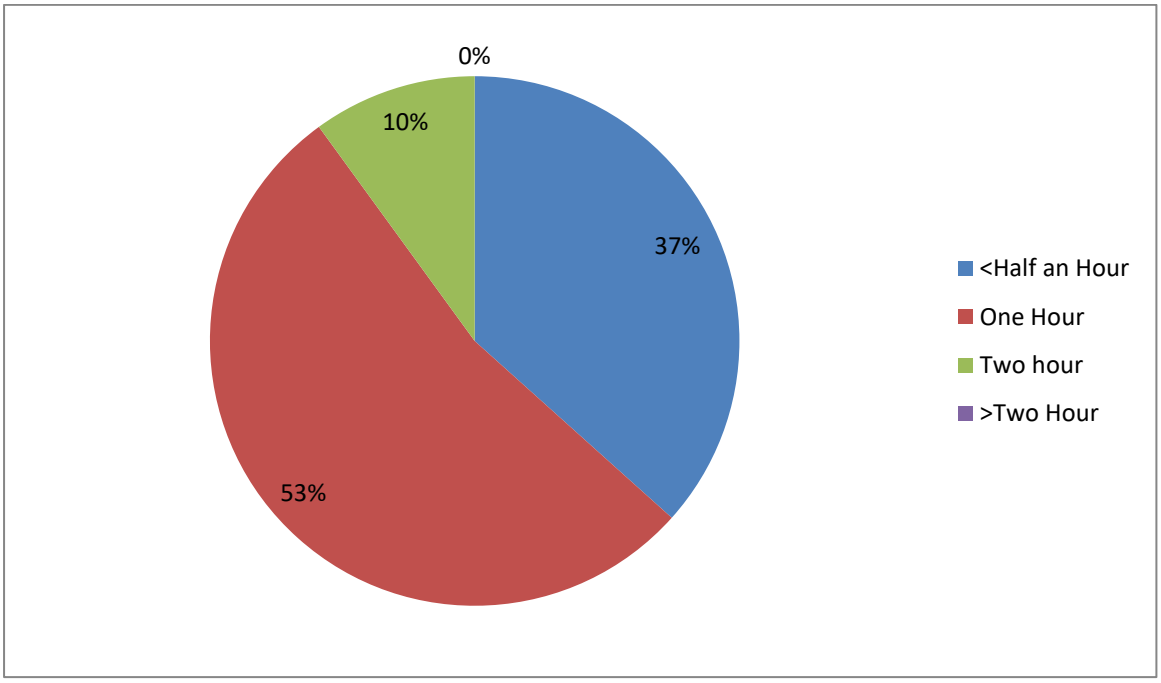

FIGURE 2***: Pie diagram showing distribution of sample based on duration of pain in one attack.***

The above figure shows that in majority of samples(53%) the duration of pain in one attack is one hour.

DISTRIBUTION OF SAMPLE BASED ON HISTORY OF PAIN

n=30

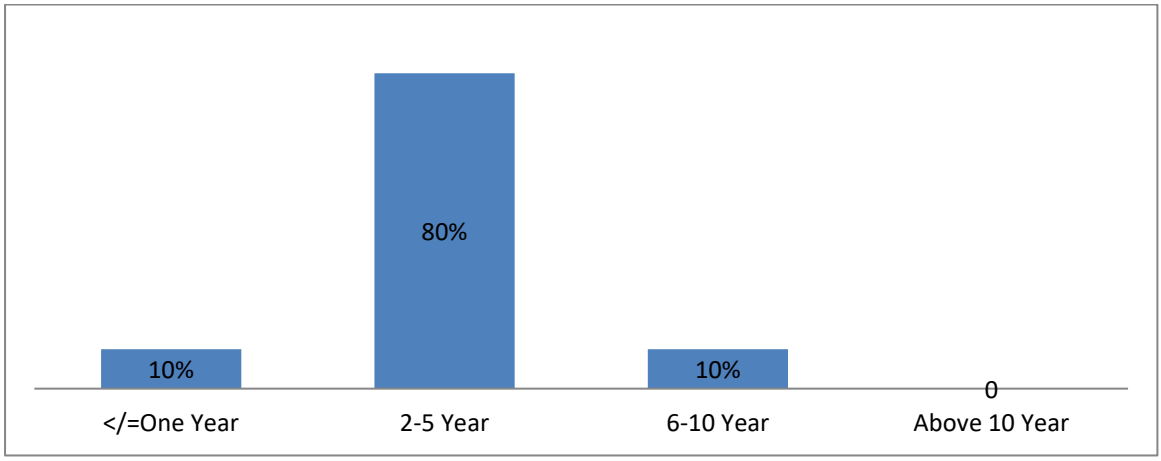

FIGURE 3***:Bar diagram showing distribution of sample based on history of pain.***

The above figure shows that majority of samples , 80% had history of pain since 2 -5 years.

SECTION 2

DESCRIPTION OF PRE INTRRVENTIONAL LEVEL OF PAIN AND DISABILITY

Table 1: Pretest level of lower back pain using numerical pain scale.

n=30

Level of pain	Frequency	Percentage
Mild	3	10%
Moderate	16	53%
Severe	11	37%
Total	30	100%

Table 1 shows that 53% of sample suffering from moderate back pain and 37% with severe and 10% of the samples suffering from mild low back pain.

Table 2: Pretest level of disability using modified Oswestry low back pain disability questionnaire.

n = 30

Level of disability	Frequency	Percentage
Minimal	11	37%
Moderate	16	53%

Severe	3	10%
Crippled	0	0
Bed bound	0	0
Total	30	100%

Table 2 shows that 53% of samples have moderate level of disability, 37% of samples have minimal and 10% of samples have severe level of disabilities.

SECTION 3

EFFECT OF BACK STRENGTHENING EXERCISES ON LOW BACK PAIN AND RELATED DISABILITIES

Table 3: Comparison of pretest and posttest level of low back pain.

n = 30

Pain	**mean**	**SD**	**SEdf**	**t value**	**table value**
Pretest	4.36	1.57			
0.633 29	6.364	3.66(0.001)			
Posttest2.6	1.22				

The table shows that the posttest mean score of pain (2.6+/-1.22) was lower than pretest score of pain (4.36+/-1.57). The calculated‘t’ value (6.364) was higher than table value (3.66) at .1% level of significance. Hence research hypothesis is accepted. That is the back strengthening exercises is effective in reducing lower back pain.

Table 4: Comparison of pre test and post test level of disability.

n = 30

Disability	**mean**	**SD**	**SEdf**	**t value**	**table value**
Pre test	12.2	6.82	0.132	29	13.242 3.66(0.001)
Post test	8	5.07			

The table shows that the post test mean score of disability (8+/-5.07) was lower than the pre test score of disability (12.2+/-6.82).The calculated ‘t’ value (13.242) was higher than the table value (3.66) at .1% level of significance.Hence research

hypothesis is accepted.That is the back strengthening exercises is effective in reducing disability.

Results of the studyDistribution of demographic variable

- Majority of samples 30%were in the age group of 51-55 years.
- About 40% of people were in the educational status of degree level.
- About 30% of samples had annual income between Rs.7001-9000 /-.
- About 50% samples were housewives.
- About 66.6% of women experienced back pain while doing activities.
- Majority of samples 53.3% were having duration of pain one hour during one attack.
- About 80% of women had history of pain since 2 -5 year.
- Majority of samples 46.6% were adopted pain killer as a remedial measure.
- 23.3% of samples were attain menopause at the age of 46 -50 years where as 73.4% do not attained menopause.
- About 53.3% of samples have weight between 46 -55 kg.

➢ **Description of pretest level of lower back pain and disability.**

- In the pretest 10% of samples suffering from mild,53% have moderate and 37% suffering from severe low back pain and 37% have minimal,53% have moderate and 10% suffering from severe disabilities.
- Back strengthening exercises are effective in reducing back pain and related disability.

➢ **Effect of back strengthening exercise on lower back pain and related disability.**

- In the post test, 53.34% of samples have mild pain and 33.3% of samples have minimal disability where they had moderate pain and disability during pretest.
- In 10% of samples severe pain reduced to moderate pain and in 10% of samples severe disability reduced to moderate disability.
- 36.66% of samples have no change in pain i.e they had mild pain and 57.3% of samples have no change in disability i.e. they had minimal disability.
- The‘t’ test was done. It was found that there is a significant difference in the pre test and posttest level of pain and disability

[$t = 3.66 < 0.001$]. It is interpreted that back strengthening exercises are effective in reducing low back pain and disabilities and thereby improve quality of life.

DISCUSSION, SUMMARY AND CONCLUSION

DiscussionWomen with low back pain pose a growing problem all over the world, the incidence of low back pain is greater among women. Peter (2005) reported that back pain is the most frequent cause of activity limitation in people aged younger than 45 years. Approximately 90% of all people have low back pain at same time and 50.5% of working adult have back pain. Life time recurrence rate of as high as 85% have been documented.

This study shows that most of the women had moderate level of pain and disabilities. These findings are supported by Wong et al (2008), who observed the prevalence of low back pain and disability among women, to the tune of 72%with moderate level and required leave or absence from the work.

However after implementation of back strengthening exercise the women had significant reduction in the level of Pain and disability. Similar findings were observed by Mrs. RejaniRaveendran Nair (2011).They showed that women with low back pain had statistical significance in reducing the severity of pain after the intervention.

Summary: Back pain, which was known as ancient cause, is now known as a modern International epidemic. It is an extremely common malady afflicting the human race across the globe cutting the geographical boundaries, race, culture etc.

The study was conducted to assess the effectiveness of back strengthening exercise on low back pain among 35-60yrs old women in selected areas of Rayamangalampanchayath. Prevalence of low back pain assessed by using verbal act.30 samples were selected for the study.Pre test conducted by using Numerical pain scale and Modified Oswestry Low back pain disability Questionnaires. Post test conducted by using the same questionnaire and pain scale.The low back pain reduced after back strengthening exercise.

ConclusionThe incidence of low back pain is found to be common in housewives. Although not life threatening, low back pain affect the quality of life in middle agers. Low back pain badly influence daily activities of housewives. Everyone is susceptible to low back pain. Almost 80% of person in modern industrial society will experience back pain at some time during their life. Various ways and means are available to prevent low back pain and related health problems.

Back strengthening exercises are effective in reducing low back pain. It is easy to implement and have no side effects. So it is effective in reducing back pain.

Nursing implication: The findings of the present study have its implication to nursing education in women, nursing practice, nursing administration and nursing research.

Nursing service Nurse can provide health education regarding management measures of low back pain.

- Nurse can provide awareness programme about the new modalities of low back pain management.

Nursing administration Organize formal training programme for nurses to know about the other alternative therapies.

- Nurse can arrange for conference in service education, workshop which might be useful for the staff.
- Encouraging the students and staffs to disseminate the findings.

Nursing education Preventive health education for women regarding back pain.

- Nurse can organize and actively involved in the programmes in the community area.

Nursing research: The study can be used as a reference material for further research regarding management of low back pain.

- Research studies in this area will add to the body of knowledge of research. Many nursing research studies can be desired from this topic.

SuggestionsWomen should be aware about the risk factors that leads to back pain and its complications.

- Educational programme should be conducted to the women with 35 -60 years old regarding the effect of back strengthening exercises for the low back pain.

LimitationsThe sample size was only 30, the scope of generalization is limited.

- The period of data collection was limited.
- Purposive sampling technique was used for sample selection which limits the generalization of study.
- The study did not use control group. The investigator had no control over the events that takes place between pre test and post test.
- Women between the age of 35 – 60 yrs were selected.
- Sample collection was limited to one area of community.

RecommendationsThe present study can be replicated with more samples for generalization.

- The study can be done using other measures that helps to reduce pain like yoga, emotional freedom techniques etc.
- Evaluation of pain after giving back strengthening exercises can be compared to the women without low back pain among 35-60 years.
- In the same study the time period should be extended up to 20 -30 days from 15 days for giving back strengthening exercise therapy.

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