International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

Assess The Effectiveness of Windmill Back Strengthening Exercise on Low Back Pain Among Post Menopausal Women in Selected Villages of Dadra and Nagar Haveli

Anita Mahla[1], Sejal Patel[2]

[1]M.Sc. Nursing, Department of community health nursing, Shri Vinoba Bhave College of Nursing, Silvassa
[2]Assistant Professor, Department of community health Nursing, Shri Vinoba Bhave College of Nursing, Silvassa

ABSTRACT

INTRODUCTION: Assess the Effectiveness of windmill back strengthening exercise on low back pain among post-menopausal women in selected villages of Dadra and Nagar Haveli. Menopause usually occurs between the ages of 45 to 60 years, marking the end of the adulthood period.

BACKGROUND OF THE STUDY: According to national family health survey 2019 to 2021 (NFHS-5) 29.26% women having low back pain. The most remarkable demographic change observed in the new millennium is the increased life expectancy of women in India. Dadra Nagar Haveli daman and Diu 19% of women has back pain over the age group 45 to 60 year.

METHOD: Quasi experimental quantitative research design used for the study. The sample for the study 60 post-menopausal women with low back pain selected by using non-probability consecutive sampling technique.

RESULT: The result show that, in control group, pretest mean score was (4.2 ± SD 1.24) and post-test mean score was (4.13± SD 1.25). in experimental group, pretest mean score was (4.2 ± SD 1.24) and post-test mean score was (1.77± SD 0.63). The post-menopausal women after giving the intervention of experimental group. samples had moderate pain were control group pre test 21(70%) and post-test 20(66.7%). In experimental group pre-test 24(80%) and 30(100%) mild pain. Therefore, was inferred that since there was reduction in the number of samples with moderate to mild pain, the intensity of low back pain decreases the pain after intervention.

CONC LUSION: The study concluded that windmill back strengthening exercise was effective in the post-menopausal with low back pain.

Keywords: Effectiveness, windmill back strengthening exercise, low back pain, post-menopausal women.

INTRODUCTION

Menopause is a part of a women's natural ageing process when her ovaries produce lower level of the oestrogen and progesterone and when she no longer able to become pregnant.

Menopause means permanent cessation of menstruation at the end of reproductive life due to loss of ovarian follicular activity. It is the point of time when last and final menstruation occurs. Menopause is the stage of a woman's life, typically between the ages of 45 and 60, when she stops having menstrual periods.

World Health Organization estimated that by the end of 2020, there will be 130 million elderly women in India, necessitating substantial amount of care. By 2025, the number of post-menopausal women is expected to go up to 1.1 billion. Life expectancy for women worldwide is 65 years. Recent survey conducted by the Institute for Social and Economic Change (ISEC) in Bangalore has reported as nearly 4% of Indian women has already entered menopause within the age of 29-34 years and 8% at 30 years. According to the report of World Health Organization 60% of the post-menopausal women has mild post-menopausal symptoms, 20% of them severe post-menopausal symptoms and 20% of them no post-menopausal symptoms. Most of the women (62%) reported positive attitudes towards the menopause. In another study, most women view menopause as inconsequential. The community-based study reported that 10% of pre and post-menopausal women reported feelings of despair, irritability or fatigue during the menopause.

Exercises help in building and maintaining the bone density and mass. The exercise program for post-menopausal women should include endurance exercise, strengthening exercise and balancing exercise. Out of these, exercise weight bearing, and resistance exercises are effective in increasing the bone mineral density of the spine in post-menopausal women.

Women can enjoy a good quality of life after menopause even without the support of hormones. Research indicates that post-menopausal women, who engaged in the comprehensive exercise program, get benefit and enjoy a good quality life.

The International Menopause Society (IMS), a non-profit association, was created in 1978 in Jerusalem during the second Menopause Congress and it currently has members in 62 countries. IMS has designated October 18 as World Menopause Day. The main objective of IMS is to conduct many research related to menopause and to improve the awareness regarding the menopausal symptoms

STATEMENT OF THE STUDY

"Assess the effectiveness of windmill back strengthening exercise on low back pain among post-menopausal women in selected villages of Dadra and Nagar haveli"

OBJECTIVES OF THE STUDY TO:

- Assess the level of low back pain among the post-menopausal women.
- Evaluate the effectiveness of windmill back strengthening exercises on low back pain among the post-menopausal women in experimental group.
- Determine the association between pre-test level of low back pain among post-menopausal women with their selected demographic variables in experimental and control group.

HYPOTHESIS

The hypothesis will be tested at 0.05 level of significance.

H1: There is a significant difference in the pre test and post test level of low back pain among the experimental and control group.

H2: There is a significant association between pre test level of low back pain among post-menopausal wo-

men with selected demographic variables in the experimental group and control group.

ASSUMPTION

- Level of low back pain may be reduced with the help of windmill back strengthening exercise on post-menopausal women.

OPERATIONAL DEFINITIONS

- **Assess:** In this study 'assess' refers to identification of difference between pre-test and post-test level of low back pain and it finds the effectiveness of back strengthening exercise on low back pain among post-menopausal.
- **Effectiveness:** In this study 'Effectiveness' refers to is the significant reduction in the level of low back pain among post-menopausal women in experimental group and it can be measured by comparing with control group.
- **Windmill Back strengthening exercises**: In this study 'Windmill Back strengthening exercises' refers to its a type of exercise that may help to reduce low back pain and strengthen the lower back of post-menopausal women which should be done every day for 30 minutes. It can be given 15 minutes in the morning and 15 minutes in the evening.
- **Low back pain:** In this study 'Low back pain' refers to mild and moderate pain in the lumber region as measured by numerical pain rating scale.
- **Post menopausal women**: In this study 'Post menopausal women' refers to are the women whose menstrual cycle has been stopped permanently before 1 year.

RESEARCH METHODOLOGY

Research Approach: Quantitative Research Approach
Research Design: Quasi experimental pretest post-test control group research design
Variables:

- **Independent variable-** windmill back strengthening exercise
- **Dependent variable-** post menopausal women with mild and moderate low back pain.
- **Demographic variables**:

age, education, occupation, monthly income, religion, dietary pattern, have you were birth to the child/children, if yes, specified the number of children, type of delivery, age of menopause and type of menopause, are you taking any multivitamin and calcium supplements.
Research Setting: Selected villages of Dadra and Nagar Haveli.
Population And Sample:
Population: Post menopausal women with mild and moderate low back pain
Sample: 60 (30 for control group and 30 for experimental group) post menopausal women who are having mild and moderate low back pain.
Sampling Technique: Non-probability consecutive sampling technique
Inclusion criteria: In this study inclusion criteria includes;

- Post menopausal women in the age group of 45 to 60 years.
- Post menopausal women who have mild and moderate low back pain
- Post menopausal women who attained menopause naturally and surgically.

- Who are undergoing pharmacological treatment included (vitamin and calcium supplements, hypertension and diabetics)

Exclusion criteria:

- Who are not available at the time of data collection.
- Who are undergoing pharmacological treatment.(Pain killer drugs)
- Who are underwent spinal cord surgery, e.g., laminectomy
- Women suffering from acute disc prolapse, posterior pelvic tilt, patient with osteoporosis, prolonged rest.

DESCRIPTION OF TOOL:

Section I: Socio- Demographic Variables

Structured questionnaires is made to collect the demographic variables such as age, education, occupation, monthly income, religion, dietary pattern, have you were birth to the child/children, if yes, specified the number of children, type of delivery, age of menopause and type of menopause, are you taking any multivitamin and calcium supplements.

PART II: Numerical pain rating scale

0 – no pain
1-3 – mild pain
4-6 – moderate pain
7- 10 – severe pain

RESULT

DATA ANALYSIS AND INTERPRETATION

Section I: Description of sample characteristics

Table 4.1.1: Frequency and percentage distribution of sample based on demographic variables.

Demographic variables	Control group(n=30)		Experimental group(n=30)	
	Frequency	Percentage	Frequency	Percentage
1.Age (in years):				
45-50 years	11	36.7	10	33.3
50-55 ears	10	33.3	14	46.7
>55 years	9	30	6	20
2. Education:				
Professional degree	0	0	0	0
Graduate	0	0	0	0
Intermediate/ Diploma	0	0	0	0
High school	0	0	0	0
Middle school	2	6.7	5	16.7
Primary school	15	50	10	33.3
Illiterate	13	43.3	15	50
3.Occupation				
Professional	0	0	0	0
Semi professional	0	0	0	0

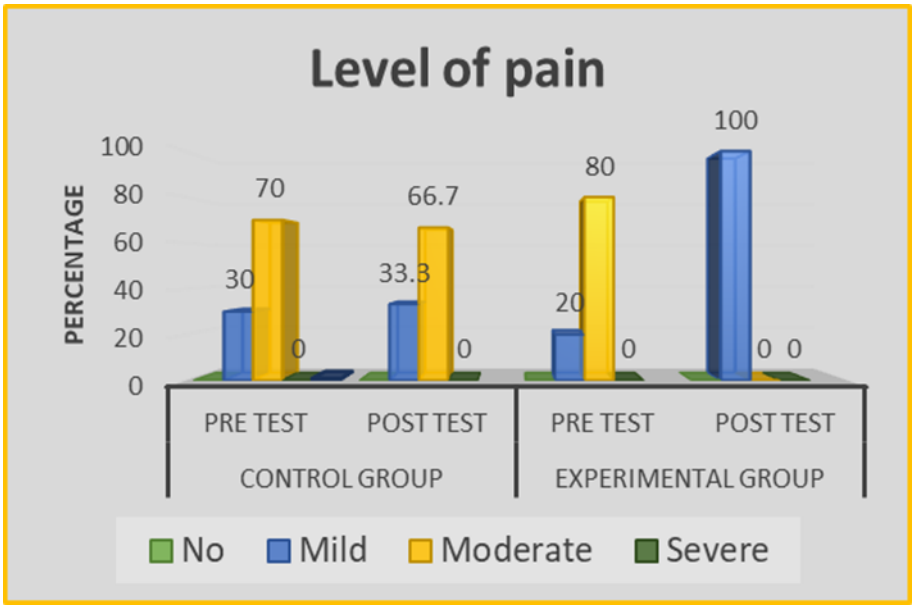
Demographic variables	Control group(n=30)		Experimental group(n=30)	
	Frequency	Percentage	Frequency	Percentage
clerical / shop/Farm	0	0	0	0
Skilled worker	0	0	0	0
Semiskilled worker	5	16.7	5	16.7
Unskilled worker	7	23.3	9	30
Home maker	18	60	16	53.3
4. Family monthly income in rupees				
>1,35,169/-	0	0	0	0
67,587-1,35,168/-	0	0	0	0
50,560-67,586/-	0	0	0	0
33,793-50,559/-	0	0	0	0
20,274-33,792/-	17	56.6	15	50
6,768-20,274/-	11	36.7	11	36.7
<6,767/-	2	6.7	4	13.3
5. Religion				
Hindu	21	70	20	66.7
Christian	9	30	7	23.3
Muslim	0	0	3	10
Others	0	0	0	0
6. Dietary pattern				
Vegetarian	13	43.3	16	53.3
Non-vegetarian	17	56.7	14	46.7
7.Have you Birth to the child:				
Yes	29	97.7	30	100
No	1	3.3	0	0
7.1.1 Specify number of children:				
0	1	3.3	0	0
1	1	3.3	5	16.7
2	7	23.3	6	20
3	11	36.7	2	6.7
4	8	26.7	8	26.7
5	2	6.7	8	26.7
6	0	0	1	3.3
7.1.2 Type of delivery				
Normal delivery				
0	7	23.3	9	30

Demographic variables	Control group(n=30)		Experimental group(n=30)	
	Frequency	Percentage	Frequency	Percentage
1	8	26.7	3	10
2	13	43.3	11	36.7
3	2	6.7	6	20
4	0	0	1	3.3
7.1.3 Type of delivery Caesarean section				
0	19	63.3	20	66.7
1	6	20	10	33.3
2	5	16.7	0	0
7.2 Type of delivery Home delivery				
0	9	30	5	16.7
1	9	30	8	26.7
2	11	36.7	16	53.3
3	1	3.3	1	3.3
8. Age of menopause				
Below 45 year	11	36.7	11	36.7
45-50 year	18	60	18	60
Above 50 year	1	3.3	1	3.3
9.Type of menopause				
Natural	22	73.3	26	86.7
Surgical	8	26.7	4	13.3
10.Any medication:				
Yes	10	33.3	7	23.3
No	20	66.7	23	76.7
10.1.if yes, Type of medication:				
Acetaminophen				
Multivitamin calcium	0	0	0	0
Diclofenac table	6	20	5	16.7
None	0	0	0	0
	4	13.3	2	6.7

Section II: description of sample based on characteristics of low back pain among the post-menopausal women.

Table-4.2.1 Frequency and percentage of sample based on level of pain as measured by numerical pain scale.

Level of pain	Control group				Experimental group			
	Pre test		Post test		Pre test		Post test	
	F	%	F	%	f	%	F	%
No	0	0	0	0	0	0	0	0
Mild	9	30	10	33.3	6	20	30	100
Moderate	21	70	20	66.7	24	80	0	0
Severe	0	0	0	0	0	0	0	0
Overall	30	100	30	100	30	100	30	100



The data presented in Table-4.2.1 show that samples had moderate pain were control group pre test 21(70%) and post-test 20(66.7%). In experimental group pre test 24(80%) and 30(100%) mild pain. Therefore, was inferred that since there was reduction in the number of samples with moderate to mild pain, the intensity of low back pain decreases the pain after intervention.

Section III: description of intensity of low back pain based on pain numerical pain score.

Table-4.3.1: Mean, SD and mean% of pre and post-test on control and experimental group. (N=60)

Level of pain	Max. score	Range	Mean	SD	Mean%
Control group pre test	10	6-2	4.2	1.24	42
Control group post test	10	6-2	4.13	1.25	41

Experimental group pre test	10	6-2	4.2	1.24	42
Experimental group post test	10	3-1	1.77	0.63	18

The above Table-4.3.1 reveals that, in control group, pretest mean score was (4.2 ± SD 1.24) and post-test mean score was (4.13± SD 1.25). in experimental group, pretest mean score was (4.2 ± SD 1.24) and post-test mean score was (1.77± SD 0.63). Therefore, it was inferred that the reduce low back pain among the post-menopausal women after giving the intervention of experimental group.

Table-4.3.2: Paired "t"-test was found in control group to assess the effectiveness of windmill back strengthening exercise on low back pain among post-menopausal women.

Level of pain	**Control group pretest**		**Control group post test**		**Mean difference**	**'t' value**	**p-value**
	Mean	**SD**	**Mean**	**SD**			
Overall	**4.2**	**1.24**	**4.13**	**1.**	**0.067**	**1**	**0.325(NS)**
Level of pain	**Experimental group pretest**		**Experimental group post test**		**Mean difference**	**'t' value**	**p-value**
	Mean	**SD**	**Mean**	**SD**			
Overall	**4.4**	**1.13**	**1.77**	**0.63**	**2.63**	**10.29**	**P<0.001***(HS)**

Result shows that Paired "t" test was used to test the significance of difference in the low back pain among the post-menopausal women as measured numerical pain rating scale across two groups measures. The analysis shows that control group pre-test (mean=4.2), (SD=1.24), control group post-test (mean=4.13), (SD=0.067), ("t" value=10.29), (p-value=p-0.001***). Experimental group pre-test (mean=4.4), (SD=1.13), experimental group post-test (mean=1.77), (SD=0.62). significant reduction in the intensity of low back pain experimental group (P<0.001). Thus, the research hypothesis H1 was accepted. Therefore, it is inferred that windmill back strengthening exercises were effective in individual suffering from low back pain among the post-menopausal women.

Table-4.3.3: Unpaired "t"-test was found between pre test and post test on control and experimental group.

Level of pain	**Control group pre test**		**Experimental group pre test**		**Mean difference**	**'t' value**	**p-value**
	Mean	**SD**	**Mean**	**SD**			
Overall	**4.2**	**1.24**	**4.4**	**1.13**	**0.2**	**0.651**	**0.517(NS)**
Level of pain	**Control group post test**		**Experimental group post test**		**Mean difference**	**'t' value**	**p-value**
	Mean	**SD**	**Mean**	**SD**			
Overall	**4.4**	**1.13**	**1.77**	**0.63**	**2.63**	**10.29**	**P<0.001***(HS)**

Result shows that Unpaired "t" test was used to test the significance of difference in the intensity of low back pain among the post-menopausal women as measured numerical pain rating scale across two groups measures. The analysis shows that control group post-test (mean=4.4), (SD=1.77), experimental group post-test (mean=1.77), (SD=0.63), (mean difference =2.63), ("t" value=10.29), (p-

value=p<0.001***).Significant reduction in the intensity of low back pain experimental group (P<0.001). Thus, the research hypothesis H1 was accepted. Therefore, it is inferred that windmill back strengthening exercises were effective in individual suffering from low back pain among the post-menopausal women.

Section V: association between intensity of low back pain among the post-menopausal women.

Table 4.4.1: Association for level of pain in Experimental and control group pretest and selected demographic data.

Sr no.	Demographic variable	Control group (n=60)			Experimental group (n=60)		
		Df	χ2-	p-value	Df	χ2-	p-value
1.	Age in year	2	4.24	0.128	2	0.059	0.971
2.	Education	2	1.37	0.502	2	4.17	0.125
3.	Occupation	2	1.31	0.520	2	1.71	0.425
4.	Family monthly income	2	1.07	0.585	2	4.47	0.107
5.	Religion	1	2.18	0.139	2	2.39	0.302
6.	Dietary pattern	1	0.006	0.936	1	0.033	0.855
7.	Have you birth to the child	1	0	1	1	0	1
7.1	Specify number of children	5	1.49	0.913	5	3.12	0.681
7.2	Type of delivery (normal delivery)	3	5.58	0.133	4	3.86	0.425
7.3	Caesarean section	2	0.39	0.822	1	0	1
7.4	Home delivery	2	0.39	0.822	2	0.39	0.822
8.	Age of menopause	2	3.16	0.206	2	0.736	0.691
9.	Type of menopause	1	1.59	0.207	1	0.07	0.788
10.	Any medication taken.	1	0	1	1	0.419	0.517
11.	If yes, specified medicine	2	1.27	0.530	2	1.22	0.543

Table 4.4.1 The data depicted that there was no significant association for level of pain in control group pre-test and selected demographic data. Thus the research hypothesis H2 was rejected with regard to age, (χ2- 4.24, p=0.128,) education, (χ2- 1.37, p=0.502) occupation, (χ2- 1.31, p=0.520) monthly income, (χ2- 1.07, p=0.585), religion, (χ2- 2.18 p=0.139), dietary pattern, (χ2-0.006, p=0.936), have you birth to the child, (χ2- 0, p=1) (χ2- (p=0.1330), normal delivery, (χ2- 5.58, p= 0.133), caesarean section, (χ2- 0.39, p=0.822), home delivery, (χ2- 0.39, p=0.822), age of menopausal, (χ2- 3.16, p=0.206), type of menopausal, (χ2- 1.59, p=0.207) and any medication taken, (χ2- 0, p=0.530), if yes specified medication (χ2- 1.27, p=0.530).

The data depicted that there was no significant association for level of pain in experimental group pre-test and selected demographic data. Thus the Research hypothesis H2 was rejected with regard to age, (χ2-0.059, p=0.971) education, (χ2-4.17, p=0.125), occupation, (χ2- 1.71, p=0.425) monthly income, (χ2-4.47, p=0.107), religion, (χ2-2.39), p=0.107), dietary pattern, (χ2-0.033, p=0.302), have you birth to the

child, (χ2-0, p=1), normal delivery, (χ2-3.86, p=0.425), caesarean section, (χ2-0, p=1), home delivery, (χ2-0.39, p=0.691), age of menopausal, (χ2-0.788, p=0.691), type of menopausal, (χ2-0.07, p=0.788), and any medication taken, (χ2-0.419, p=0.517), if yes specified the medication, (χ2-1.22, p=0.543).

DISCUSSION

In present study finding was majority of 11(36.7%) of the control group in the age group 45 to 55 year while 14(46.7%) experimental group was age group 50 to 55 year. majority of 15(50%) of the control group in the primary education while 15(50%) experimental group was illiterate. majority of 18(60%) of the control group while 16(53.3%) experimental group was home maker. majority of 11(36.7%) of the control group while 11(36.7%) experimental group family monthly income was 6768-20,274. majority of 21(70%) of the control while 20(66.7%) experimental group was Hindu religion. majority of 17(56.7%) of the control group in while 16(53.3%) experimental group was non vegetarian dietary pattern. majority of 29(97.7%) of the control group in the while 30(100%) experimental group was have you birth of the child. Majority of the experimental 11(36.7%) and control group 13(43.3%) normal delivery. The majority 20(66.7%) of experimental group and control group were19(63.3%) women caesarean section. majority 16(53.3%) of the experimental group while 18(60%) of the control group was in home delivery. Majority of the experimental 18(60%) and control group 18(60%) age of menopausal. The majority 23(76.7%) of experimental group and control group were20(66.7%) any medication taken. Majority of if yes, type of medication taken in experimental group 23(76.7%) and control group 20(66.7%).

The Table(Table-4.3.1) represented on control group pre test Mean score (10), SD(4.2), and mean%(41), post test on control group mean(4.13), SD(1.25), mean%(41), difference in mean%(1). Experimental group pre test mean(4.2), SD(1.24), mean%(42), experimental post test mean(1.77%), SD(0.63), mean%(18), difference in mean % (24).

Table-4.3.2: Regarding paired "t" test pain scale within group mean difference (0.2), 't' value (10.29), p – value (p<001***).

Table-4.3.3: Regarding unpaired "t" test scale found between the group control group mean difference(2.37), "t" value (9.25), p value (p<0.0001***).

Table-4.4.1: The data depicted that there was no significant association for level of pain in control group pre test and selected demographic data. Thus Null hypothesis was accepted and research hypothesis H2 was rejected with regard to age,(p=0.128) education,(p=0.502) occupation,(p=0.520) monthly income(p=0.585), religion(p=0.139), dietary pattern(p=0.936), normal delivery(p=0.1330), caesarean section(p=0.822), home delivery(p=0.822), age of menopausal (0.206), type of menopausal(p=0.207) and any medication taken(p=0.530).

The data depicted that there was no significant association for level of pain in experimental group pre test and selected demographic data. Thus null hypothesis was accepted and research hypothesis H2 was rejected with regard to age,(p=0.971) education,(p=0.125) occupation,(p=0.425) monthly income(p=0.107), religion(p=0.107), dietary pattern(p=0.302), normal delivery(p=0.425), caesarean section(p=1), home delivery(p=0.691), age of menopausal (0.691), type of menopausal(p=0.788) and any medication taken(p=0.543).

CONCLUSION

The following facts can be concluded from the present study:

Most of the samples had a family history of low back pain.

- The short-term effect of windmill back strengthening exercise to reduce the low back pain was found to be significant.
- Thus, it can be concluding the study windmill back strengthening exercise is safe, easy and effective method for reducing the low back pain among the post-menopausal women.

REFERENCE

1. Bhaskar, n. (2012). Midwifery and obstetrical nursing. Bangalore: emmess medical publication.
2. Brunner. (2008). Medical surgical nursing. Philadelphia: Lippincott publisher.
3. Black. (2004). Medical surgical nursing. New Delhi: Elsevier published.
4. Cole, H. (1997). The low back pain handbook. New Delhi; Jaypee publisher.
5. Datta, D.C. (2012). Text book of gynecology. Kolkata: new central book agency.
6. http://www images.app.goo.gl/q8yBVaGjMPUYPhox9 low back pain and disability in community based women; prevalence and association factors. Menopauses. 2009;16:24-29. Doi: 10.1087/gme.
7. https://www SlideShare. net. menopause-ppt chiropractic manipulation, and provision of an educational booklet for the treatment of patient with low back pain. N eng J med. 1998;339:1021-1025.
8. Binge Fors k, Isacson D. epidemiology, co-morbidity, and impact on health related quality of life reported headache and musculoskeletal pain a gender respective. Eur j pain. 2004;8: 435-450.10.1016/j. explain. 2004 01.005 [PubMed]
9. Windhaven Hade vet HC, Picavet HS. Prevalence of musculoskeletal disorder is systematically higher in women than in men. Clin j pain. 2006;22: 717-724. 10.1097/01.apj. 000021091. 95664.53[PubMed]
10. Bachman S, each p. physiotherapy and rehabilitation for low back pain. Ther much. 2013;70: 543-548. 10 1024/0040-5930/a000444[PubMed][google scholar]
11. Lizier DT, Perez MV, Sakata RK. Exercises foe treatment of nonspecific low back pain. Rev bras anesthesia. 2012;62: 838-846.[PubMed][google scholar]
12. Hoy D, brain C, Williams G, march L, brooks P, Blyth F, et al. A Systematic review of the global prevalence of low back pain. 2012;64: 2028-2037. 10.1002/art.34347[PubMed]
13. http://www.ncbi.nim.gov/pubmed/19892856 Ann intern med. 2005;142:765-775.doi 10.7326/0003-4819-142-9200505030-00013.[PubMed]
14. http://www.livestrong.com/article/pmc3047664 Devanshi exercises beyond menopauses: dos and don'ts. J midlife health. 2011;2:51. Doi: 10. 4103/0976-7800.92524. [PubMed] [google scholar]
15. Rejaniraveenadran nair. Effect of back strengthening exercises on low back pain among nursing student: Indian journal of continuing nursing education. 2011 December; 20-24.
16. Kale Kalpana Shivaji. Effectiveness of yoga therapy on low back pain among the women. The nursing journal of India: 2011 4 July-august; 159-161
17. International journal of advances in scientific research 2015; 1(04); 19-193.
18. Balague F Mannion AF, Pallies F, carancha C. NON specific low back pain. Lancet 2010;379(9814):482(11)60610-7[google scholar]
19. George, J. B. (2011). Nursing Theories. New Delhi: Pearson Publications.
20. Kothari, C.R. (2010). Research Methodology. New Delhi: international Publishers.