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Effect of yoga therapy in young housewives suffering from chronic nonspecific low back pain

Sonal Shukla, Swati Nerkar
[1] Physiotherapy Intern, DPO's NETT College of Physiotherapy, Thane, Maharashtra, India
[2] Physiotherapist, DPO's NETT College of Physiotherapy, Thane, Maharashtra, India

Abstract
Introduction: Since the time of acquiring two -legged posture from the ancient quadruped state, the lumbosacral junction has remained weak due to its structural and biomechanical inadequacies. Fortunately this has resulted in the presence of mechanical or non-specific low back pain. Non -specific low back pain is defined as low back pain not attributable to a recognising known specific pathology. Non -specific low back pain in general refers to any type of back pain that is caused by placing abnormal stress and strain on muscles of the vertebral column. Yoga is supreme harmonisation of physical, mental, psychological, and spiritual aspects of an individual. Yoga reduces pain by improving optimal physical functioning, flexibility of joints, muscular strength and endurance and neuromuscular coordination. Yoga provides efficiency in functioning of the CNS and PNS and ANS. Studies have found that 83% of housewives and or non-working women suffer from various musculoskeletal disorders and most commonly affected area is low back. Because of various household activities, housewives have become more prone to develop various musculoskeletal disorders which occur because of overuse, twisting, overexertion, and other repetitive motion and bending activities or doing activites for prolonged period of time in bad posture.
Aim: To find the effect of yoga therapy in young housewives suffering from chronic non-specific low back pain
Procedure total no of subjects taken were 30. Subjects were selected based on assessment and inclusion and exclusion criteria. Pawan mukhatasana, paschimottasana, bhujangasana, and shashankasana were taught to the subjects. Initially. Then pre measurements were taken by using mcgillpain questionnaire for pain and oswestry disability index (ODI) for disability. After 4 weeks of yoga therapy post measurements were taken. Before starting the sessions warm up and cool down exercises were given. Asanas were taught and were made to Practised for 4 weeks 3 days per week. Results found pre and post yoga intervention was recorded and statistically analysed by using SPSS software.
Results and Conclusion: There was significant reduction in ODI and mc gill pain questionnaire values after 4 weeks of yoga therapy in young housewives suffering from chronic non-specific low back pain with p values less than 0.01 which is highly significant.

Keywords: chronic nonspecific low back pain, pawanmukhtasana, paschimottasana, shashankasana, bhujangasana, stress, strain

Introduction

Since the time of acquiring two -legged posture from the ancient quadruped state, the lumbosacral junction has remained weak due to its structural and biomechanical inadequacies. Fortunately this has resulted in the presence of mechanical or non-specific low back pain. Low back pain is a problem worldwide with a lifetime prevalence reported to be as high as 84%.

Based on aetiology LBP is classified as specific low back pain and non- specific low back pain. Specific back pain are those back pain which have specific aetiology causes like spondylosis, spondylolisthesis, ankylosing spondylitis, prolapsed intervertebral disc etc. Non -specific low back pain is defined as low back pain not attributable to a recognising known specific pathology. Non -specific low back pain in general refers to any type of back pain that is caused by placing abnormal stress and strain on muscles of the vertebral column. Non-specific is typically associated with pain, soreness, and/or stiffness in the low back region, functional disability for which it is not possible to identify a specific cause of pain. Non-specific low back pain typically results due to poor posture, poorly designed seating and incorrect bending and lifting motions as required in various occupations. Conventionally according to the duration of back pain, low back pain is categorised according to its duration as acute (<6 weeks), sub-acute (6weeks to 12 weeks) and chronic (>12 weeks)

Yoga is supreme harmonisation of physical, mental, psychological, and spiritual aspects of an individual. There are 4 basic forms of yoga: Karma yoga, Jnana yoga, Bhakti yoga, Raja yoga. The first three forms trace their origin to the Bhagwat Gita.The fourth form (raja yoga) is the creation of the sage Patanjali, the father of yoga science. RAjA yoga has three components. Hatha yoga, Mantra yoga and LAYA yoga. Hatha yoga includes body and mind. Mantra yoga includes recitation of mantras and as an aid to meditation. Laya yoga includes arousal of kundalini by practises of hatha yoga and mantra yoga. The word "hatha" can be divided into two words: *ha* (sun) and *tha* (moon). The common interpretation of hatha yoga is a union of the pairs of opposites. Hatha yoga, the yoga of activity, addresses the body and mind and requires discipline and effort. (2) Asanas have a dominant role to play in hatha yoga. Yoga appears as effective as other non-pharmacologic treatments in reducing the functional disability of back pain. It appears to be more effective in reducing pain severity or "bothersomeness" of

CLBP when compared to usual care or no care [9]. Asanas which are being selected to reduce low back pain are Pawanmukhtasana, Paschimottasana, Shashankasana and Bhujangasana [1].

Yoga reduces pain by improving optimal physical functioning, flexibility of joints, muscular strength and endurance and neuromuscular coordination.Yoga provides efficiency in functioning of the CNS and PNS and ANS.

Need of the Study

- Studies have found that 83% of housewives and or non-working women suffer from various musculoskeletal disorders and most commonly affected area is low back (8)
- Because of various household activities, housewives have become more prone to develop various musculoskeletal disorders which occur because of overuse, twisting, overexertion, and other repetitive motion and bending activities or doing activites for prolonged period of time in bad posture
- Studies found that household activities like cooking, chopping, washing, dish cleaning / toilet cleaning were significantly associated and positively corelated with low back pain (7)
- Various studies have proved increased prevalence of low back pain in housewives between (40% to 50%) and majority of women with low back pain experienced moderate disability (7) (3)
- Studies have been done on yoga therapy in reducing low back pain.
- No studies have been done which proves effect of yoga therapy in improving low back pain and reducing disability in housewives, so there is the need to study
- If it gives positive results it can be used as an intervention in reducing chronic non-specific low back pain in young housewives.

Aim and Objective

AIM

To find the effect of yoga therapy in young housewives suffering from chronic non-specific low back pain

Objective

1. To measure pain and disability in low back by using short form mc-gill pain questionnaire and Oswestry low back disability questionnaire respectively pre yoga intervention
2. To measure pain and disability in low back by using short form mc-gill pain questionnaire and Oswestry low back disability questionnaire post yoga intervention
3. To compare the results obtained pre and post yoga intervention in young housewives suffering from chronic non-specific low back pain and is statistically analysed.

Materials and Methodology

Study design

Type of study: experimental study

Duration: 12 month

Place: metropolitian city

Material used: yoga mat, short form mc gill pain questionnaire, Oswestry low back pain disability scale, pen

Sampling method

Sampling technique: convenient sampling

Sampling size: 30

Sample population: young housewives

Selection criteria

Table 1

Inclusion criteria	Exclusion criteria
Young housewives between age group 25 to 35 years of age	Any known case of neurological, cardiological or respiratory conditions
Young housewives those who are not involved in any kind of exercise program	Subjects having specific low back pain because of any specific conditions
Subjects willing to participate in the study	Subjects who have undergone recent surgery (6 months)
	Pregnant women
	Subjects suffering from any kind of infectious diseases

Procedure

- Ethical clearance was taken from institutional ethical committee
- A written informed consent was taken from the subjects
- Subjects were selected on the basis of inclusion and exclusion criteria
- Selected asanas was taught to the subjects
- Before starting the session low back pain and disability was measured using short form mc gill pain questionnaire and Oswestry disability scale and yoga asanas were taught
- Asanas were taught and practised for 4 weeks, 3 days per week
- Before starting the yoga session warm up exercises and after completing the session cool down exercise will be taught to the subjects
- Warm up exercises will include active exercises in standing and self stretching exercises
- Cool down exercises will include active exercises in sitting and breathing exercise Each asanas was hold for 10 seconds to maximum 1 min depending upon the subjects capability
- Between two asanas there was hold for 10 seconds to 1 minute depending upon the subject
- After 4 weeks of therapy pain and disability was measured by using short form mc gill pain questionnaire and Oswestry disability scale
- Results found pre intervention and post intervention was recorded and statistically analysed

Outcome measures

Reliability of Oswestry disability index is 0.83 it is valid and reliable scale for measuring disability

Short form mc gill pain questionnaire is sufficiently sensitive to measure pain and demonstrate differences due to treatment at statistical level

Data analysis and Interpretation

A total of 30 subjects were included in the study. There were no dropouts in the study

Analytical statistics

Data was collected on the datasheet and encoded for computerized analysis using SPSS version 28.0 for windows. The data of pre and post ODI was normally distributed with Shapiro wilk test values of pre ODI was 0.187 and post ODI was 0.015

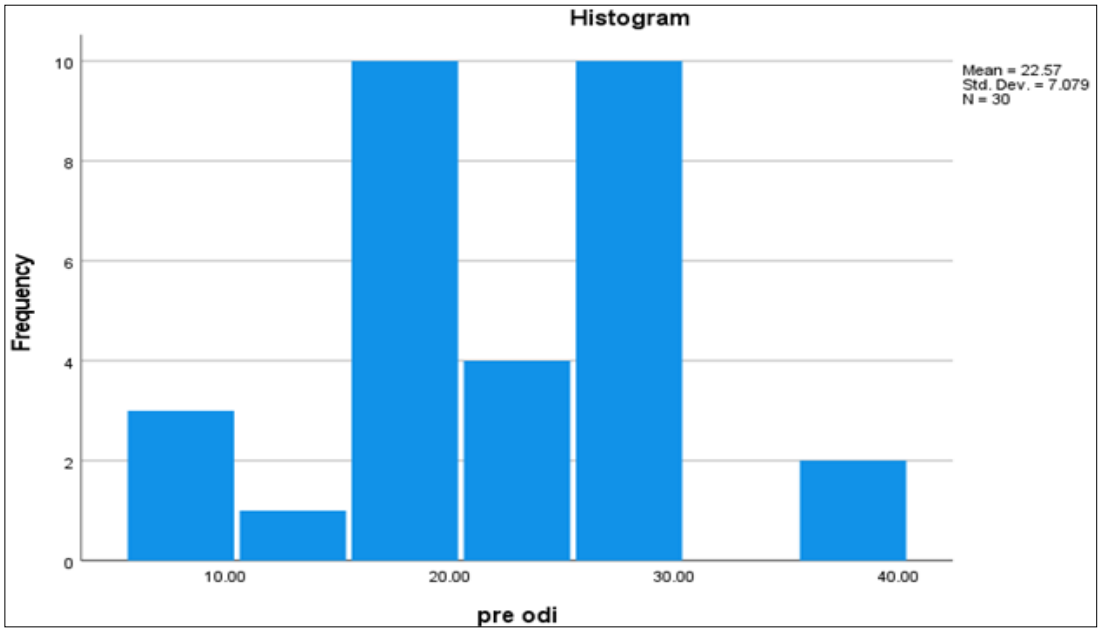


Fig 1

The data of pre and post mc gill pain questionnaire was normally distributed

Table 2

Tests of normality						
	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pre odi	.158	30	.053	.952	30	.187
post odi	.146	30	.101	.928	30	.044

a. Lilliefors significance correction

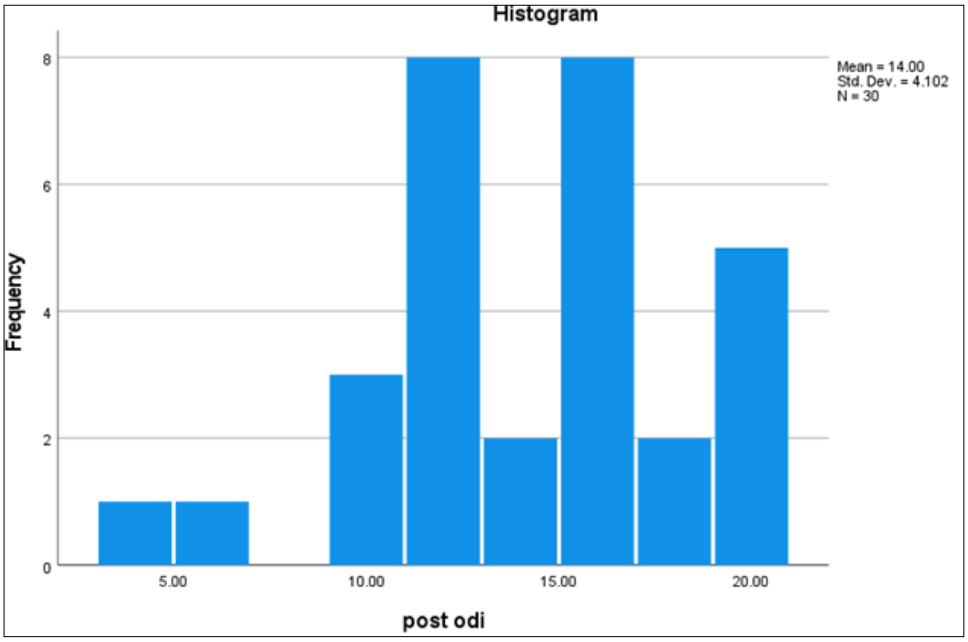


Fig 2

Table 3

Tests of normality						
	Kolmogorov-smirnov[a]			**Shapiro-wilk**		
	Statistic	**df**	**Sig.**	**Statistic**	**df**	**Sig.**

pre mcgill	.186	30	.009	.939	30	.088
post mcgill	.219	30	<.001	.921	30	.029

a. Lilliefors significance correction

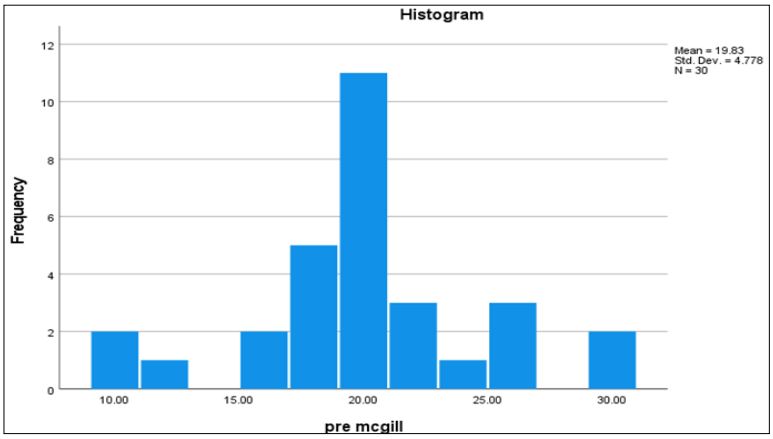


Fig 3

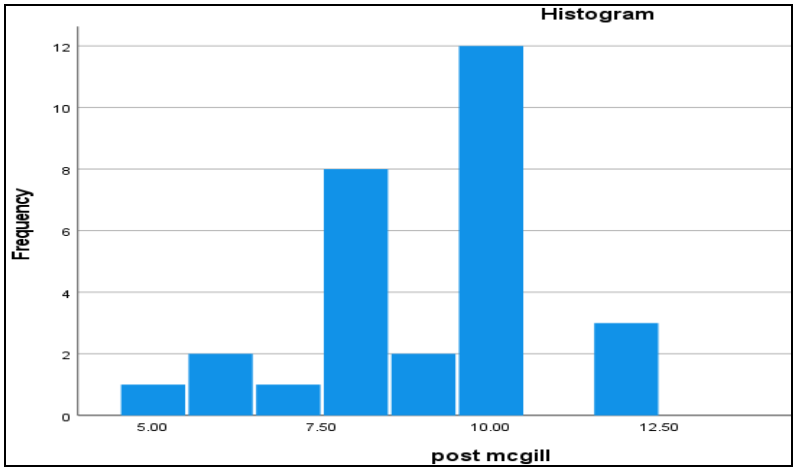


Fig 4

Demographic data

Table 4

Sample size	30
Age group	25-35
Mean	29.43
SD	3.36

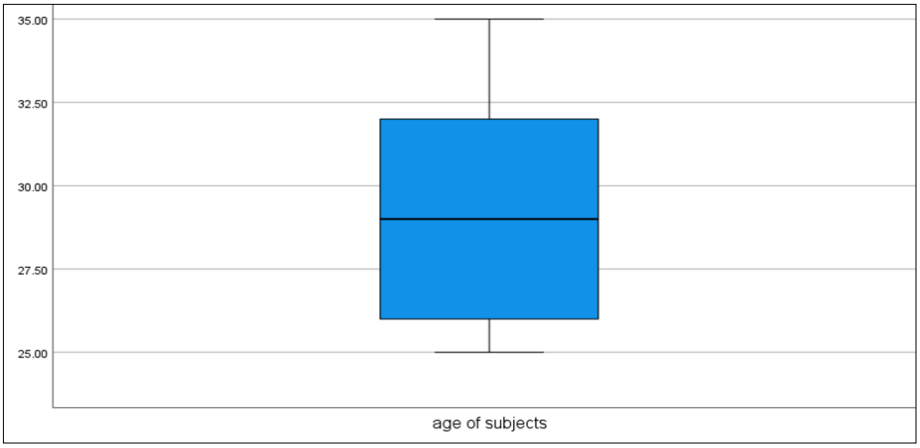


Fig 5

Table 5

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	PRE ODI	22.5667	30	7.07927	1.29249
	POST ODI	14.0000	30	5.60172	1.02273

Table 6

Paired Samples Correlations

		N	Correlation	Significance One-Sided p	Significance Two-Sided p
Pair 1	PRE ODI & POST ODI	30	.863	<.001	<.001

Table 7

Paired Samples Test

		Paired Differences					t	df	Significance One-Sided p	Significance Two-Sided p
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper				
Pair 1	PRE ODI - POST ODI	8.56667	3.61685	.66034	7.21611	9.91722	12.973	29	<.001	<.001

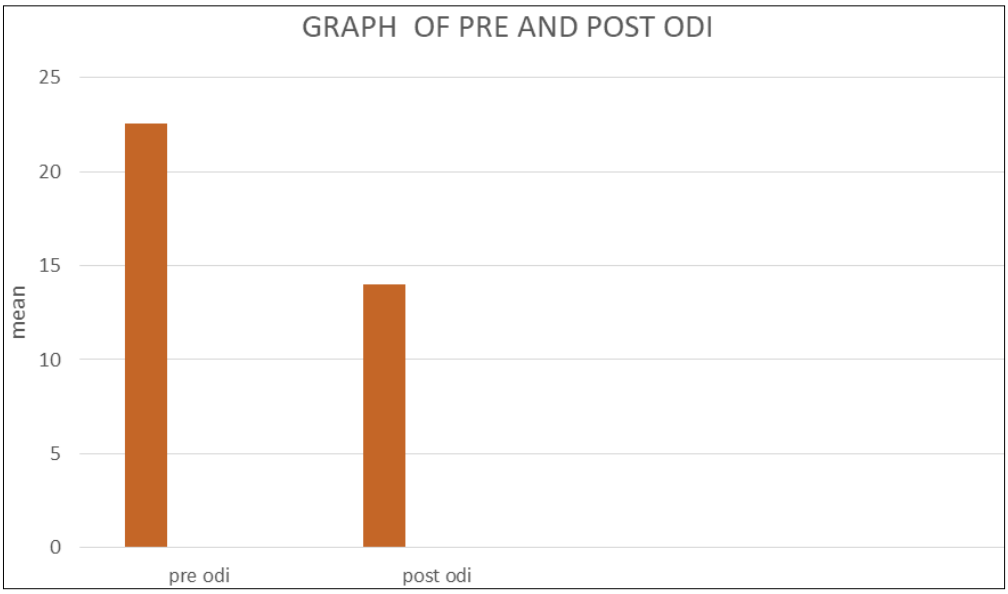
Table 8

Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate	95% Confidence Interval Lower	95% Confidence Interval Upper
Pair 1	PRE ODI - POST ODI	Cohen's d	3.61685	2.369	1.659	3.067
		Hedges' correction	3.66448	2.338	1.637	3.027

a. The denominator used in estimating the effect sizes.
Cohen's d uses the sample standard deviation of the mean difference.
Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.

Graph of mean values of pre and post odi and graph of pre and post mc gill questionnaire values was made in Microsoft mc gill word



Graph 1

Interpretation
Paired t test was used for data analysis

Which showed significant decrease in ODI values with p values of (<0.01)

Table 9

Paired Samples Statistics					
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	pre mcgil	19.5000	30	5.43139	.99163
	post mcgill	9.2333	30	2.02882	.37041

Table 10

Paired Samples Correlations					
		N	Correlation	Significance	
				One-Sided p	Two-Sided p
Pair 1	pre mcgil & post mcgill	30	.584	<.001	<.001

Table 11

Paired Samples Test

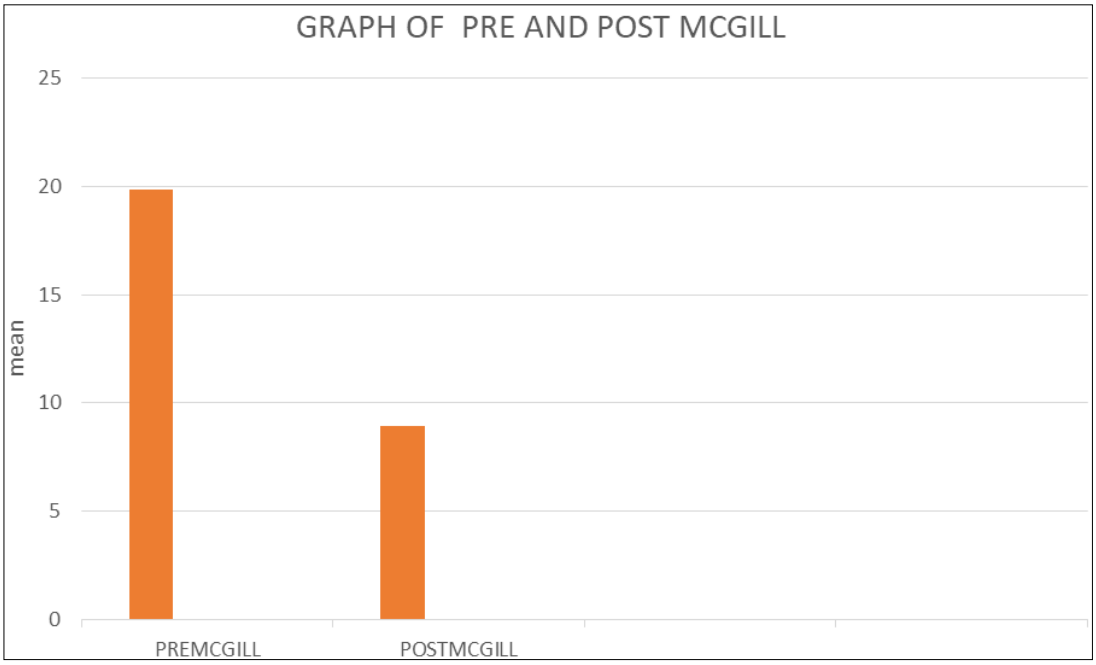
		Paired Differences					t	df	Significance	
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			One-Sided p	Two-Sided p
Pair 1	pre mcgil - post mcgill	10.26667	4.55566	.83175	8.56556	11.96778	12.344	29	<.001	<.001

Table 12

Paired Samples Effect Sizes

			Standardizer[a]	Point Estimate	95% Confidence Interval Lower	Upper
Pair 1	pre mcgil - post mcgill	Cohen's d	4.55566	2.254	1.569	2.927
		Hedges' correction	4.61565	2.224	1.548	2.889

a. The denominator used in estimating the effect sizes.
Cohen's d uses the sample standard deviation of the mean difference.
Hedges' correction uses the sample standard deviation of the mean difference, plus a correction factor.



Graph 2

Interpretation
Paired t test was used for data analysis of mc gill pain questionnaire which showed significant improvement with p value of (< 0.01)

Discussion
In this study we aimed to find the effect of yoga therapy in young housewives suffering from chronic non-specific low back pain.

In this study we took 30 participants between age group 25 to 35. Yoga therapy was taught to the subjects. The duration of therapy was 4 weeks. Outcome measures recorded pre and post intervention. There was significant reduction in outcome measures between pre and post values of ODI and mcgill pain questionnaire with p values less than 0.01 which is significant. The was significant reduction in mean values of pre odi post odi and pre and post mean values of mcgillpain questionnaire as well.

A Randomised control trial study was done by Kimberly Anne Williams in may 2005 which aimed at effect of Iyengar yoga therapy for chronic non-specific low back pain showed significant reduction in functional disability and pain and usage of pain medications and improvement in spinal range of motion.

A study done by Moseon Lee, Woongjoon Moon and Jaehee Kim aimed to see the effect of yoga on pain, brain derived neurotrophic factor, and Serotonin in Premenopausal Women with Chronic non-specific low back pain showed Serum BDNF significantly increased in yoga group and serum serotonin did not change significantly in the yoga group while serum serotonin reduced significantly in the control group.

According to previous studies it has been implicated that high levels of circulating BDNF presumably have a predominant antinociceptive effect.

The results in this study coincided with a literature search which was conducted in pubmed for randomized control trials addressing treatment of CLBP with yoga by Douglas g. Chang and Erik j. Groessl concluded that yoga appears as effective as other non-pharmacological treatments in reducing the functional disability of backpain. It appears to be more effective in reducing pain severity or borthersomeness of CLBP when compaired to usual care or no care.

Conclusion

There was significant reduction in ODI and MC gill pain questionnaire values in young housewives suffering from chronic non-specific low back pain with p values less than 0.01 which is highly significant.

Clinical Implication

- Yoga therapy can be applied effectively in young housewives suffering from chronic non-specific low back pain.
- The asanas which were used was pawanmukhtasana, bhujangasana, shashankasana, paschimottasana. These asanas include both flexion and extension of trunk, increases muscle flexibility and strengthen the flexors and extensors group of muscles.
- With continued practice it leads to gradual loosening of muscles and connective tissues surrounding the bones and joints.
- All household activities are associated with many musculoskeletal injuries and pain out of which low back pain is vey common. So if a woman is diagnosed with chronic nonspecific low back pain these postures can be practised which will reduce pain and disability.
- It can also be practised as a preventive measure to prevent back pain in young housewives which can also help women in various aspects like preparing the women to prepare for and facilitate child birth.
- Because of pain and disability women are not able to perform household chores effectively therefore by yoga therapy it can help in improving performances by leading to optimal physical fitness.
- The yoga postures which are used have more effect on trunk portion of the body which also brings about changes in pressure in internal cavities of the visceral organs and has a positive impact on the body.
- Young housewives those who are not involved in any kind of physical execise can practise yoga therapy if they are suffering from chronic nonspecific low back pain.

Limitation and Suggestion

Limitations

- Sample size was small. Only between 25 to 35 years of age were included in this study. Only young housewives were included in this study.
- Because of the pandemic half of the people were assessd and treated on video call and zoommeeting. Followup was via telecommunication.

Suggestions

- Males can also be included in this study.
- Working women and women above 35 years of age can be included in ths study.
- Large sample size can be taken.
- Only one group that is only interventional group was there. Two groups can be made. one for traditional physiotherapy and one for yoga intervention both the results found can be compared.

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