Vol III - Issue 2 April - May - June 24 eISSN: 2583 – 4304

Indian Journal of Physiotherapy and Rehabilitation Science

Published by
Association of Health and Wellness Providers (AHWP)

https://ijptrs.com

Indian Journal of Physiotherapy and Rehabilitation Science

Indian Journal of Physiotherapy and Rehabilitation Science

IJPTRS Vol 3(2) April - May - June 2024 pp94-98 E-ISSN 2583-4304

Impact of Cervical Stabilization Exercise on Pain and Craniovertebral Angle among IT Workers

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URL: https://ijptrs.com/view-issue/144/Fulltext

DOI:https://ijptrs.com/public/images/content/570Vimal%20volume%203%20issue%202.pdf

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Submission: 2nd Feb 2024

Revised: 15th Feb 2024

Publish: 1st April 2024

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ABSTRACT

Background: Nowadays forward head posture and neck pain are very common in people who working in Information Technology companies, it occurs due to many reasons like prolonged use of computers, bad posture, muscle weakness etc., leading to chronic neck pain. About 14-71% of adults experience neck pain at some point of their life, which makes it a common cause for disability among adults. Therefore, the need for the study is to check the effectiveness of cervical stabilization exercise on improving forward head posture and neck pain. The aim of this study was to find out the impact of cervical stabilization exercise on pain and craniovertebral angle among IT workers.

Methodology: 30 people aged from 20 to 40 years selected by convenient sampling method. Subjects who fulfilled the inclusion and exclusion criteria were selected and assigned as groups A and B equally underwent cervical stabilization exercises and conventional exercises respectively. The total study duration was 6 months. Pain was measured by Numerical pain rating scale and Craniovertebral angle was measured by Photogrammetry method.

Result: Paired and Unpaired 't' test was the statistical tool used to compare the two groups. The Statistical Analysis showed a significant difference on pain (NPRS), using unpaired 't' test, at 0.05% as a level of significance, the calculated 't' value was 4.76. And in craniovertebral angle (Photogrammetry method) using unpaired 't' test, at 0.05% as a level of significance, the calculated 't' value is 3.44.

Conclusion: This study concludes that the group which was given cervical stabilization exercise with conventional physiotherapy exercises as an intervention method showed more improvement on pain and craniovertebral angle than the group which was underwent only conventional physiotherapy exercises.

Keywords: Forward head posture, Cervical stabilization exercise, Neck pain, Craniovertebral angle.

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INTRODUCTION:

Body posture can be described as a state of alignment of the body for a particular amount of time. The tendency to remain situated for long periods of time is increasing as within the rate of the population that uses a personal computer or smartphone. This may cause changes within the alignment of the spine, leading to improper posture [1].

The static and dynamic postural control of head and neck is contributed by complex arrangement of muscle surrounding the cervical spine. Longus colli, longus capitis, rectus capitis anterior and rectus capitis lateralis are the deep cervical muscles [2]. The imbalance between the stabilizers on dorsal aspect of the neck and deep cervical flexors is caused by impaired muscle function which finally causes impairment of cervical spine [3].

Forward head posture is increasingly prevalent for postural deviation, especially among prolonged computer users. The prolonged placement of head anterior to the body's centre of gravity is a main etiology for forward head posture [4]. Craniovertebral angle is one of the methods used to measure forward head posture.

Forward head posture is generated due to shortness of the cervical extensors and pectoralis muscles and weakness in the deep cervical flexor muscles and mid-thoracic scapular retractors [5]. And there is an anterior shift of head from the line of gravity, rotation of scapula medially, development of thoracic kyphosis and decrease in overall height of the vertebral column. Characteristics of forward head posture are reduced cervical lordosis and compensatory tilting back of the head at atlanto-occipital joint. In the posterior cervical muscles, there is an over action with an eventual shortening of semispinalis capitis and stretching and weakness of semispinalis cervicis.

Neck pain is a musculoskeletal disorder mainly affected due the improper posture with physical impairment or functional limitation. Chronic neck pain is increasingly prevalent in the society. The incidence of neck pain is higher in women and rises with age. Mechanical neck pain arises gradually and is more often multifactorial in origin. The forward head posture is known to be an internal component that causes neck pain [6].

Cervical stabilization exercises are commonly used to decrease pain, maximize function, and progress physical impairments for individuals with nonspecific neck pain. Cervical stabilization exercises focusing to train deep stabilizer muscles of the cervical spine and improve coordination between superficial and deep cervical muscles have been commonly used in recent years [7].

Craniovertebral angle is also known as cervical angle and forward head angle. Measurement of craniovertebral angle (CVA) is one of the common methods in assessing forward head posture. A forward head posture causes for a posture in which the extended head and upper cervical, and the lower cervical vertebrae flexed. This leads to an increase in the external moment's length (the arm) by moving the gravitational centre (the head) ahead of the weight bearing axis. The continuous loading on the craniovertebral extensor muscles and the noncontractile structures causes an alter in the biomechanical motions, and this elevated stress can cause musculoskeletal injury or pain [8]. The intersection of the horizontal line passing through the C7 spinous process is known as the craniovertebral angle.

The Numerical Pain Rating Scale (NPRS) is an outcome measure that is used as a unidimensional measure to analyse the intensity of the pain in adults, including the subjects with chronic pain [9].

MATERIALS AND METHODS:

This study was a pre-test and post-test experimental study design. The study setting was done at Outpatient department of Physiotherapy, K.G. College of Health Sciences Coimbatore. 30 people aged from 20 to 40 years were selected by convenient sampling method. A total of 30 subjects who fulfilled the inclusion criteria [both male and female, subjects with age of 20 to 40 and subjects with neck pain < 5 in NPR scale] and exclusion criteria [participants with any congenital abnormalities

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in neck or shoulder, recent surgery in neck, shoulder or

thorax, recent trauma to the neck, shoulder or thorax, any history of cervical spondylosis, any problems of systemic, muscular, neurological or connective tissue disorder] were selected and assigned as groups A and B equally underwent cervical stabilization exercises and conventional physiotherapy respectively. The total study duration was 6 months.

Numerical pain rating scale for pain and photogrammetry method for craniovertebral angle were used as outcome measures.

GROUP A: The Experimental Group was given Cervical Stabilization exercises along with Conventional Physiotherapy treatment. The exercise program included axial elongation exercise, craniometrical flexion exercise, cervical extension exercise, and cervico-scapulothoracic strengthening exercises. Each subjects done exercises for 6 weeks.

GROUP B: The Conventional Group was given only Conventional treatment which included cervical isometric exercises, transcutaneous electrical nerve stimulation (TENS) and hot packs. TENS was given for 10 min, at the intensity of 10-30 mA with a frequency of 80 Hz. All the subjects accomplished cervical isometric exercises in the sitting position by applying resistance at the forehead (cervical flexion, extension, rotation, and side bending) maintained for 10 sec having 15-sec breaks between holds with 10-15 repetitions increasingly.

RESULTS:

In this study 30 subjects were selected to find out the effect of cervical stabilization exercise on pain and craniovertebral angle among IT workers.

Out of 30 subjects, 13 male participants of which 7 were in group A and 6 were in group B, and 17 female participants of which 8 were in group A and 9 were in group B, took part in this study.

The correlation between post-test values of numerical pain rating scale both groups A and B showed that, the mean value of group A is 1.40 and for group B its 3.20. Using unpaired 't' test with 28 degrees of freedom and 0.05% as a level of significance, the calculated 't' value is 4.76, which was greater than the tabulated 't' value 2.04.

The correlation between post-test values of craniovertebral angle both group A and group B showed that, the mean value of group A is 47.76 and for group B is 46.46. Using unpaired 't' test with 28 degrees of freedom and 0.05% as a level of significance, the calculated 't' value is 3.44, which was greater than the tabulated 't' value 2.048.

COMPARISON OF PAIN BETWEEN GROUP A AND GROUP B (USING NUMERICAL PAIN RATING SCALE)

Post test values	Mean	't' value	p-value
Group A	1.40	4.76	p< 0.05
Group B	3.20		

COMPARISON OF CRANIOVERTEBRAL ANGLE BETWEEN GROUP A AND GROUP B (USING PHOTOGRAMMETRY METHOD)

Post test values	Mean	't' value	p-value
Group A	47.76	3.44	p< 0.05
Group B	46.46		

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DISCUSSION:

The main aim of this study was to find out the impact of cervical stabilization exercise on pain and craniovertebral angle among IT workers.

About 14-71% of adults experience neck pain at some point of their life, which makes it a common cause for disability among adults [10]. One of the major causes of pain or discomfort is usually poor posture. A kind of poor posture associated with increased kyphosis in thoracic region and anterior shoulder positioning is forward head posture (FHP). It is an internal factor causing neck disability and pain. As a result of extension of head and upper cervical region and flexion of lower cervical vertebrae, forward head posture occurs. This causes the centre of gravity to move ahead of the weight bearing axis leading to increased length of external moment arm [11].

Forward head posture is generated due to shortness in the cervical extensors and pectoralis muscles and weakness of the deep cervical flexor muscles and mid-thoracic scapular retractors.

Prolonged load on craniovertebral extension muscle and non-contractile structure leads to a change in biomechanical movement and this increased stress causes musculoskeletal damage or pain. Some studies revealed that forward head posture can lead to reduction in number of sarcomere and shortening of muscle fibre, which has an adverse effect on muscular contraction and further it leads to pain and dysfunction.

Forward head posture is the most common postural fault in the sagittal plane. It is also associated with neck pain and dysfunction, cervicogenic headache and even an increased falling risk in the elderly. Due to the increased uses of computer, cell phones in college students, the forward head posture is very common [12]. It can also result in the weakness of neck muscle. Forward head posture makes changes to strength and length of neck muscle and likely shortens the posterior muscles in the neck while lengthening and weakening of anterior neck muscles [13].

In this study we analysed that, cervical stabilization exercise will help to reduce and to prevent forward head posture by improving the muscle function, which also helped to reduction of pain along with the conventional physiotherapy treatment.

Treatment methods like cervical stabilization exercises, conventional exercises including neck isometric exercises and pain-relieving modalities were used in this study. These treatment methods were shown to be effective in reducing pain and forward head posture. There is also a significant reduction in forward head posture.

CONCLUSION:

This study concludes that the cervical stabilization exercises is effective on forward head posture and neck pain. Group which was given cervical stabilization exercise along with conventional physiotherapy as an intervention method showed more improvement on pain and craniovertebral angle than the group which was underwent only conventional physiotherapy treatment.

ACKNOWLEDGEMENT:

The authors sincerely thank Dr. G. Bakthavathsalam, Chairman, Mrs. Vasanthi Raghu, Vice Chairman and Prof. V. Mohan Gandhi, CEO, KG Hospital, Coimbatore, Tamilnadu, India for their constant support and logistical help to conduct this research.

ETHICAL CLEARANCE – Institutional Ethical Committee, K.G. College of Physiotherapy, Coimbatore, Tamilnadu, India. Reference number: ECKGH-00315; 15.05.2023.

SOURCE OF FUNDING – Self**.**

CONFLICT OF INTEREST – Nil.

REFERENCES:

1. Kim D-H, Kim CJ, Son SM. Neck Pain in Adults with Forward Head Posture: Effects of Craniovertebral Angle and Cervical Range of Motion. Osong Public Health and Research Perspectives. 2018 Dec;9(6):309–313.

2. Grace P.Y Szeto, Leon Straker, Sally Raine. A field comparison of neck and shoulder postures in symptomatic and asymptomatic office workers. Applied Ergonomics.2002 Jan;33(1):75-84
3. Sumaiyah O and Mirza OB. Disability due to Neck Pain. Journal of Yoga & Physical Therapy. 2017, 7:1
4. Kang JH, Park RY, Lee SJ, Kim JY, Yoon SR, Jung KI. The effect of the forward head posture on postural balance in long time computer-based worker. Ann Rehabil Med. 2012;36(1):98–104.
5. Susan Armijo Olivo , Jaime Bravo, David J Magee, Norman M R Thie, Paul W Major, Carlos Flores-Mir.The association between head and cervical posture and temporomandibular joint disorders: a systematic review. Journal of Orofacial Pain. 2006;20(1):9-23
6. Damian Hoy et al. The global burden of neck pain; estimates from the global burden of disease. Annals of the Rheumatic Diseases. 2014 Jul;73(7):1309-15.
7. Yi-Liang Kuo , Tsung-Han Lee , Yi-Ju Tsai. Evaluation of a Cervical Stabilization Exercise Program for Pain, Disability, and Physical Impairments in University Violinists with Nonspecific Neck Pain. Int J Environ Res Public Health. 2020 Jul 28;17(15):5430
8. Dae-Hyun Kim , Chang-Ju Kim, Sung-Min Son. Neck Pain in Adults with Forward Head Posture: Effects of Craniovertebral Angle and Cervical Range of Motion. Osong Public Health Res Perspect. 2018 Dec;9(6):309-313.
9. Ahmad H Alghadir , Einas S Al-Eisa, Shahnawaz Anwer, Bibhuti Sarkar. Test-retest reliability, validity, and minimum detectable change of visual analog, numerical rating, and verbal rating scales for measurement. Journal of Pian and Research. 2018 Apr 26:11:851-856.
10. Rene Fejer , Kirsten Ohm Kyvik, Jan Hartvigsen. The prevalence of neck pain in the world population: a systematic critical review of the literature. European Spine Journal. 2006 Jun;15(6):834-48.
11. Mi-Young Lee, Hae-Yong Lee, Min-Sik Yong. Characteristics of Cervical Position Sense in Subjects with Forward Head Posture. Journal of Physical Therapy Science. 2014 Nov; 26(11): 1741–1743.
12. Deepa Abichandani, Jonathan Tong Yuk Ting, Edith Elgueta Cancino. Measures of neck muscle strength and their measurement properties in adults with chronic neck pain—a systematic review. Systematic Reviews. 2023 Jan; 12: 6.
13. DM Walton et al. An Overview of Systematic Reviews on Prognostic Factors in Neck Pain: Results from the International Collaboration on Neck Pain (ICON) Project. The Open Orthopaedics Journal. 2013 Sep 20:7:494-505.

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Effectiveness of Resistance Training using TheraBand on Pain, Neck Disability and Quality of life in Desk job Workers with Chronic Neck Pain

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URL: https://ijptrs.com/view-issue/176/Fulltext
DOI:https://ijptrs.com/public/images/content/28sheetal%20VOLUME%203%20ISSUE%202.pdf

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Submission: 2nd Feb 2024
Revised: 15th Feb 2024
Publish: 1st April 2024

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ABSTRACT

Background: Neck pain is an extremely common musculoskeletal disorder often observed in desk job workers. It's a frequent cause of disability, leading to human suffering and impacting individuals' well-being**.** The aim of this study was to determine whether TheraBand intervention is a useful adjunct to traditional neck pain treatment for people who work desk jobs.

Materials and methods: For a period of six weeks, thirty individuals, aged 25 to 55, were randomized toeither the experimental group, which received resistance band exercises in addition to conventional treatment, or the control group, which received only conventional treatment. The Neck Disability Index (NDI), the SF-36, and the Numeric Pain Rating Scale (NPRS) were used to measure pain, disability, and quality of life, respectively.

Results: In the 2-way mixed-model ANOVA for neck pain ($F = 3.230$, $do = 1$, $P = .04$) and disability ($F = 5.53$, $do = 1$, $P = .04$), the findings showed a significant group-by-time interaction. In comparison to the Control group, the Experimental group showed a considerably higher improvement in pain and impairment. Additionally, notable distinctions were noted between the two cohorts concerning the aspects of quality of life related to general health, emotional difficulties, emotional well-being, role restrictions resulting from physical health, and physical functioning ($p<0.05$).

Conclusion: The results revealed that for desk job workers with chronic neck pain, adding TheraBand exercises to conventional treatment is more beneficial than using conventional treatment alone in terms of improving pain alleviation, lowering disability, and raising overall quality of life.

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INTRODUCTION

Neck pain is an extremely common musculoskeletal disorder often observed in desk job workers. It's a frequent cause of disability, leading to human suffering and impacting individuals' well-being. In research, the 12-month prevalence of neck pain in office workers was found to be 45.5% [1] Several studies have shown that neck pain is linked to diminished HRQOL. While a consensus measure to assess Health-Related Quality of Life (HRQOL) in people with neck pain does not yet exist, researchers have used a variety of assessment instruments, such as the SF-36 and its corresponding subscales [2]

Especially after the pandemic and the shift to remote work, increased use of modern technologies has led to changes in behaviors, making people more sedentary and promoting improper body habits. Posture, a crucial factor, is significantly affected. In desk jobs, maintaining a constant forward head posture for prolonged periods is common. This contributes to Forward Head Posture (FHP), a prevalent neck disorder resulting from prolonged incorrect posture. FHP occurs when the head's position shifts anteriorly to the center of gravity, causing instability not only in the cervical spine but also in the musculoskeletal system, leading to chronic neck pain [3]. Treating neck pain, particularly among desk job workers, is essential as their forward posture strains muscles and predisposes them to faulty posture, muscle imbalance, and potential herniated disc issues that compress nerve roots.

A multimodal physiotherapy program, including electrotherapy, exercises, education, and ergonomics, is effective in reducing chronic neck pain. Isometric exercises enhance muscle performance, and posture correction is recommended for desk job workers with poor neck posture. Strength training, including dynamic resistive exercises with tools like the TheraBand, is beneficial in alleviating neck pain.

Resistance band comes with color-coded to indicate resistance levels, is widely used for fitness and strength training [4]. Some potential benefits of TheraBand-based strength training compared to conventional strength training can be that resistance bands are lightweight and portable, making them easy to carry and use in various settings, such as at home, at work in office or while traveling. This versatility allows for a more flexible and accessible workout routine.

This research aimed to assess the effectiveness of resistance training using the TheraBand on pain, neck Disability and the quality of life in desk job workers with chronic neck pain.

Study Design and participants

A comparative experimental study was carried in the Physiotherapy OPD of DPSRU, Delhi. A total 30 desk job workers were selected by the convenience sampling method on the basis of inclusion and exclusion criteria. All the subjects who had chronic neck pain (pain more than 3 months) were included in the study. After explaining procedure to all the subjects regarding the intervention of resistance band exercises, informed consent was taken. Exclusion criteria were any history of psychiatric illness, acutely ill patient and alcoholic patient, patient with severe neurological injury, recent head injury or cervical fracture.

Randomization

On the basis of baseline assessment, patients were randomly assigned to receive strength training program using resistance band exercises, and conventional treatment for chronic neck pain. All the subjects included in the study were divided into 2 groups, Experimental group (Group A) and control group (Group B) with same number of subjects (n=15).

Procedure

The research committee of Delhi Pharmaceutical Sciences and Research University, Delhi's School of Physiotherapy gave its approval to the study. Before

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beginning the study, participants received information in Hindi or English regarding the relevance, possible advantages, and general goal of the research, and their informed consent was obtained. Group A (experimental, n = 15) and Group B (control, n = 15) comprised the 30 desk job workers who were chosen based on inclusion and exclusion criteria. The experimental group, designated as Group A, undertook a training regimen comprising resisted exercises for cervical flexion, extension, left and right flexors, and left and right rotators utilizing TheraBand. Color-coded elastic resistance bands were used for these workouts, which were done while wearing a head harness. Subjects finished two sets of ten to fifteen repetitions, with mild fatigued on the final set. When subjects could accomplish three sets of eight to twelve repetitions, the resistance was gradually raised.

Group B, the control group, on the other hand, underwent hot water fermentation in addition to isometric neck exercises that targeted the flexors, extensors, side flexors and rotators of both sides. In addition to stretching tense neck muscles, the hot water fermentation treatment took place for ten to fifteen minutes each day. For six weeks, both groups followed their individual workout schedules five times a week.

Outcome measures

During the course of the intervention, the data was recorded and documented at baseline, at the end of third week and at the end of sixth week for the experimental and control group for pain using NPRS scale, muscle strength using manual muscle tester, neck disability using NDI and quality of life using SF-36 questionnaire.

Data analysis

Version 24 of SPSS software was used for data analysis, whereas Microsoft Excel was used for data entry. Both analytical tools (Shapiro-Wilk test) and visual tools (histograms, probability plots) were used to evaluate the normal distribution of the variables. A 2-way mixed-model analysis of variance (ANOVA) was used to examine the effects of the treatment on pain, disability, and quality of life while taking into account the two groups (Experimental and Control). Pairwise comparisons using the Bonferroni correction were carried out in order to find any statistically significant differences in change scores between groups. These comparisons examined group differences from the beginning of therapy to the end of it.

RESULTS

The demographic findings for both the groups are shown in Table 1.

Variables	Experimental	Control
Age	32.55 +/- 4.88	31.40+/- 5.40
BMI	24.01+/- 1.49	23.90+/- 2.43
Gender n (%)	9(30)	8(26.7)
Female Male	6(20)	7(23.3)
Exercise Habits		
Yes	7(23.3)	6(20)
No	8(26.7)	9(30)
Job Experience (Years)	7.2 +/- 3.4	7.8 +/- 2.4
Pain history (Years)	2.8 +/- 1.2	3.1 +/- 0.2
Screen Usage (hrs per day)	7.8 +/- 2.3	8.0 +/- 1.2

TABLE 1- DEMOGRAPHIC DETAILS AND VARIABLES AT BASELINE

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PAIN	**Baseline**	**3rd Week**	**6th Week**
Experimental	6.50 ± 0.85	4.40 ± 0.71	2.00 ± 0.68
Control	6.25 ± 0.68	6.10 ± 1.14	5.40 ± 1.52
Within the group difference			
Experimental		1.85 (2.51 – 1.18) *	4.25 (5.09 – 3.40) *
Control		0.40 (0.69 – 0.10) *	1.10 (1.52 – 0.67) *
Between Group Difference		1.70 (-2.31-1.08)	3.40(-4.15-2.64)
NDI			
Experimental	19.60 ± 2.84	13.70 ± 1.65	7.80 ± 1.26
Control	19.10 ± 3.21	13.30 ± 3.11	4.35 ± 1.70
Within the group difference			
Experimental		5.90 (8.92 – 2.87)	11.80 (14.45 – 9.15) *
Control		5.80 (8.28 – 3.32)	13.60 (16.03 – 11.16) *
Between Group Difference		0.40(-1.99-1.19)	0.45(-2.01-1.21) *

ns – Nonsignificant, (*)- Significant

TABLE 2 - COMPARISON OF PAIN AND NDI FOR BOTH THE GROUP

Regarding neck pain, the 2-way, mixed-model ANOVA findings showed a significant group-by-time interaction (F = 3.230, do = 1, P =.04). Neck pain in the patients in the Experimental group showed a more noticeable improvement than those in the Control group. On the Neck Disability Index (NDI), a significant group-by-time interaction was also noted (F = 5.53, do = 1, P =.04). The Experimental group showed much better improvement in pain alleviation and decreased neck disability than the Control group did.

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Variable	Baseline	3rd Week	6th Week
PHYSICAL FUNCTION			
Experimental	530.00+/-154.82	640.00+/-	850.00+/-
Control	461.00+/-160.98	555.00+/-	765.00+/-
Within the group difference			
Experimental		-94.0 (-135.39-	-389.00(459.84-
Control		-110 (-182.26-	-260.00(-326.38-193.61) *
Between Group difference		85.00(14.74	-260.00 (-326.38-193.61) *
Emotional Problem			
Experimental	361.00+/-45.00	396.00 +/-	484.00+/-
Control	294.00+/-58.61	350.00 +/-36.99	428.00+/-55.97
Within the group difference			
Experimental		20(-4.09 44.09) *	-160.0(-232.26 -87.73) *
Control		50(9.60 90.40) *	-60.00(-121.41 -1.417) *
Between Group difference		46.00(-46.97-46.90) *	56.00(-46.90-46.90) *
Physical Health			
Experimental	210.00+/-133.37	280.00+/-89.43	350.00+/-51.29
Control	180.00+/-150.78	240.00+/-104.63	300.00 +/-91.76
Within the group difference			
Experimental		-70(-108.56 -31.43)	-140(207.06-72.93)
Control		-60(-99.94 -20.05)	-120(172.50-67.49) *
Between Group difference		40.00(102.31-22.31)	50.00(97.59 -2.41)
Energy/ Fatigue			
Experimental	234.00 +/-34.39	262.00+/-45.37	344.00+/-47.50
Control	226.00+/-27.60	258.00+/-32.37	328.00+/-49.58
Within the group difference			
Experimental		-36.00 (-50.0 -21.95)	-118.00(-144.08-91.91)
Control		-24.00(-39.97-8.02)	-94.00 (123.52-64.47)
Between Group difference		4.00(29.23-21.23)	16.00(47.08-15.08)

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Emotional well Being			
Experimental	316.00+/-45.00	396.00+/-78.29	484.00+/-76.11
Control	294.00+/-58.61	350.00+/-36.99	428.001+/-55.97
Within the group difference			
Experimental		-102.00(-143.81-60.11) *	-190.00(-240.02-139.97) *
Control		-34.00(-48.30-19.69)	-112.00(-155.16-68.84)
Between Group difference		46.00(85.19-6.08) *	56.00(98.76-13.23) *
Social function			
Experimental	130.00 +/-36.63	147.00+/-32.546	187.00+/-17.206
Control	115.00+/-34.02	142.00+/-29.132	185.00+/-17.014
Within the group difference			
Experimental		-27.5(-40.06-14.99)	-62.5(-92.07-52.92)
Control		-17.5(-24.40-10.60)	-55.0(-72.55-37.44)
Between Group difference		5.00(14.72-24.77)	2.00(13.45-8.45)
General Health			
Experimental	297.50+/-76.47	307.50+/-74.38	317.50+/-49.00
Control	257.50+/-63.99	287.50+/-57.64	277.50+/-37.08
Within the group difference			
Experimental		-30.5(-39.47-21.52)	-20.5(-29.46-70.46)
Control		-10(-17.37-2.62)	10.00(-71.04-51.04)
Between Group difference		20.00(22.59-62.59)	10.00(17.81-37.81)
Pain			
Experimental	130+/-33.40	182+/-16.58	197.50+/-10.27
Control	121+/-35.61	177+/-17.50	193.50+/-7.69
Within the group difference			
Experimental		-55.50(-82.84-28.15)	-76(-95.31-56.68)
Control		-52.50(76.93-28.06)	-63.5(-82.11-44.88)
Between Group difference		5.00(16.41-5.41) *	4.00(1.81-9.81) *

ns – Nonsignificant, (*)- Significant

TABLE 3 –CHANGES IN COMPONENTS OF SF-36 FOR BOTH THE GROUP

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There is a significant difference between the two groups in terms of physical functioning, role restrictions because of physical health, role limitations because of emotional difficulties, emotional well-being, and general health ($p<0.05$) as indicated by the results shown in Table 3. On the other hand, there were no statistically significant changes seen in the Quality of Life (QOL) energy/fatigue and social functioning components ($p>0.05$).

DISCUSSION

Neck pain is a growing concern that affects people all over the world. It can cause significant discomfort and reduce productivity, making it a problem for families, communities, and even businesses. It's important to be aware of the causes of neck pain and find ways to alleviate it. The aim of this study was to investigate the impact of resistance training using TheraBand on pain, neck disability index, and quality of life in desk jobworkers with chronic neck pain. TheraBand-based strength training is a form of resistance exercise that uses elastic resistance bands instead of traditional weights or machines. [5] While both TheraBand-based and conventional strength training were found to be effective, TheraBand-based training led to significant and better improvements in terms of percentage for most of the study variables i.e. pain, muscle strength and quality of life of patients with chronic neck pain. This finding implies that resistance band exercise could be a valuable method for managing chronic neck pain in desk job workers.

TheraBand resistance bands provide a variable and accommodating resistance throughout the range of motion. This feature can be particularly beneficial for individuals with joint issues or those in need of rehabilitation exercises, as it places less stress on the joints compared to heavy weights [6] Literature also reports that therabands lead to greater activation of stabilizing muscles. This can improve balance and proprioception, which are essential for overall functional fitness. Resistance bands come in various colors, each offering a different level of resistance. This allows for progressive overload, enabling users to gradually increase resistance as their strength improve. TheraBand exercises can involve multidirectional resistance, which helps engage different muscle groups and replicate functional movements better than traditional strength training exercises that usually focus on linear movements [7,8]

Pain

The exercise intervention was targeted towards reducing pain by strengthening the weakened muscle groupsthat are commonly associated with chronic neck pain, such as the neck flexors, extensors, left and right-side flexors, and left and right rotator muscle groups. According to our research, Group A was successful in reducing pain, with the experimental group experiencing a 55% greater reduction in pain than the control group. This suggests that the intervention may be an effective method for managing chronic neck pain in desk job workers. This could be probably since strengthening muscles using resistance exercises helps to support and stabilize joints, reduces stress on bones and ligaments. Exercises to strengthen the muscles necessary for proper posture often target these muscles. By exercising these muscles, individuals can improve their posture and reduce discomfort caused by poor posture or muscle imbalances.

Strength training and other physical exercises are thought to release endorphins, which are natural pain relievers and mood enhancers. As a result, pain perception can be reduced and overall well-being can be improved. Research shows that strength training can reduce the chronic inflammation that is associated with arthritis and fibromyalgia. Strength training often includes movements that improve joint range of motion and flexibility. Pain and discomfort caused by stiffness or restriction of movement can be relieved by increased mobility. The researchers also concluded that strength training can improve nerve-muscle

communication through neuromuscular adaptations. As a result, injuries and pain can be reduced through better control and coordination of movements [9,10,11]

NDI

The results showed a significant reduction in neck disability measured by neck disability index. Group A showed an 18.7% more reduction in disability from baseline period to end of sixth week. The use of TheraBand for strength training significantly reduced disability in the experimental group in this study. Several mechanisms can be used to reduce neck impairment by engaging in regular and targeted strengthening exercises for these muscles, including strengthening the neck muscles, which improve their ability to support and stabilize the neck during daily activities and reduce stress on the cervical spine.

Muscles that are stronger are better able to withstand the demands of daily movement and reduce fatigue- related pain and disability. Strengthening the neck helps balance the body and reduce stress on the neck and disability. It is postulated that strong neck muscles provide better support for the joints of spine which can lead to reduced pain and disability [12,13,14]. In addition, strengthening neck muscles makes everyday tasks easier and more efficient for, which means that one can do them more easily and with less handicap [15,16]

Quality of life

Results showed that there was a significant difference between both groups for most of the components of quality of life i.e. the physical functioning, role limitations due to physical health, role limitations due to emotional problems, Emotional well-being, General health in both groups ($p<0.05$). No significant differences were seen for social functioning and energy/fatigue components of QOL.

In present study experimental group showed improvement by 60.3% in physical functioning, 53.16% in Emotional problems, 66.6% in Physical health, 47.01% in Energy fatigue, 53.1% in Emotional well-being, 44.2% in social functions and 51.9% in Pain component compared to control group.

In a study published in the Journal of Orthopedic & Sports Physical Therapy in 2016[17] researchers conducted a study to evaluate the efficacy of neck specific exercises in patients with chronic pain in the neck. The results of the study indicated that participants who completed a twelve-week program of progressive resistance training of the neck muscles demonstrated considerable reductions in pain intensity and neck disability, as well as improvements in health and quality of life. They found that neck exercises can be a great way to help people with chronic neck pain and improve their quality of life.

Another study looked at how neck and shoulder exercises can help people with neck pain. It was done in 2017 and looked at people with chronic pain in their necks. They went through an 8-week exercise program that focused on strengthening their neck and shoulders. The study found that after the exercise, the pain intensity went down, the person with the neck disability got better, and they had a better quality of life which is similar with present study.

Inclusion of TheraBand exercises in addition to conventional treatment was superior to conventional treatment alone for improving Pain, disability, muscle strength and quality of life in desk job workers with chronic neck pain. The study has clinical implications for physiotherapists that a treatment program that includes both conventional treatment and neck stabilization exercises using therabands may be more beneficial than conventional treatment alone for patients with chronic neck pain.

CONFLICT OF INTEREST

None

ACKNOWLEDGEMENT

The authors are grateful to all the subjects for their voluntary participation in the study.

REFERENCES

1. Behera P, Majumdar A, Revati G, Santoshi JA, Nagar V, Mishra N. Neck pain among undergraduate medical

students in a premier institute of central India: A cross-sectional study of prevalence and associated factors. Journal of family medicine and primary care. 2020 Jul;9(7):3574

2. Leucism NC, Hays RD, Bhattacharyya T. Scoring the SF-36 in orthopedics: a brief guide. The Journal ofbone and joint surgery. American volume. 2015 Oct 10;97(19):1628.
3. Paw aria S, Sudan DS, Kalra S, Yadav J. Effectiveness of cervical stabilization exercises with feedback on respiratory status in chronic neck pain patients with forward head posture. International Journal of Physiotherapy. 2019 Jun 9:70-5.
4. Pancholi P, Yadav J, Kalra S. Effect of Resistance Band Exercises on Neck Pain, Disability and Forward Head Posture in Dentists with Chronic Neck Pain. J Physiotherapy Relabel 2: 1. of. 2018; 5:2.
5. Iversen VM, Vass Eljen O, Mork PJ, Gaiseric S, Bertheussen GF, Salvesen Ø, Fimland MS. Resistance band training or general exercise in multidisciplinary rehabilitation of low back pain? A randomized trial. Scandinavian journal of medicine & science in sports. 2018 Sep;28(9):2074-83.
6. Patterson RM, Stegink Jansen CW, Hogan HA, Nassif MD. Material properties of there-band tubing. Physical therapy. 2001 Aug 1;81(8):1437-45.
7. Page PA, Lamberth J, Abadie B, Boling R, Collins R, Linton R. Posterior rotator cuff strengthening using TheraBand® in a functional diagonal pattern in collegiate baseball pitchers. Journal of Athletic Training. 1993;28(4):346.
8. Kim, H. G., & Nam, H. K. (2011). The effect of their band exercise on muscle flexibility, balance ability, muscle strength in elderly women. *Journal of Korean Academy of Community Health Nursing*, *22*(4), 451-457.
9. Celena ST, Albayrak T, Kaya DO. Acomparison of the effects of stabilization exercises plus manual therapy to those of stabilization exercises alone in patients with nonspecific mechanical neck pain: a randomized clinical trial. journal of orthopedic & sports physical therapy. 2016 Feb;46(2):44-55.
10. Krishnan K, Abadi FH, Choo LA, Zainudin FF, Montevalle S. Comparison between Aquatic and Thera- Band Exercises on Pain Intensity and Endurance among Obese Individuals with Knee Osteoarthritis. International Journal of Human Movement and Sports Sciences. 2022;10.
11. Yoo IG, Yoo WG. The effect of a new neck support tying method using Thera-band on cervical ROM and shoulder muscle pain after overhead work. Journal of Physical Therapy Science. 2013;25(7):843-4.
12. Abd-Meltaway AE, Ameer MA. The efficacy of TheraBand versus general active exercise in improving postural kyphosis. Journal of Bodywork and Movement Therapies. 2021 Jan 1; 25:108-12.
13. Nouri R, Baumann KM, Campari BM, Schroeder J, Kocharian M. Cancer related fatigue and upper limb disabilities cannot improve after 6 weeks resistance training with Thera-Band in breast cancer survivors. International Journal of Applied Exercise Physiology. 2018;7(2):76-84.
14. Paw aria S, Sudhan D, Kalra S. Effectiveness of Cervical Stabilization Exercises on Respiratory Strength in Chronic Neck Pain Patients with Forward Head Posture-A Pilot Study. J. Clin. Diagne. Res. 2019 Apr 1; 13:6-9.
15. Pour Taghi F, Emami Moghadam Z, Ramezani M, Behnam Vaswani H, Mohajer S. Effect of resistance training using there-band on muscular strength and quality of life among the

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elderly. Evidence BasedCare. 2017 Oct 1;7(3):7-16.

16. Yapici-Oxazole A. The effects of TheraBand training on respiratory parameters, upper extremity muscle strength and swimming performance. Pedagogy of Physical Culture and Sports. 2020;24(6):316-22.

17. Celena ST, Albayrak T, Kaya DO. A comparison of the effects of stabilization exercises plus manual therapy to those of stabilization exercises alone in patients with nonspecific mechanical neck pain: a randomized clinical trial. journal of orthopaedic & sports physical therapy. 2016 Feb;46(2):44-55.

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Comparing the Effects of Hydrotherapy and Physiotherapy on Pain Intensity and Muscle Function of Women with Knee Osteoarthritis

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URL: https://ijptrs.com/view-issue/185/Fulltext
DOI:https://ijptrs.com/public/images/content/400Mohammad%20V3I2%20(1)%20(2).pdf

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Submission: 14th Feb 2024
Revised: 29th Feb 2024
Publish: 1st April 2024

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ABSTRACT

Background: Knee osteoarthritis (KOA) is the most common chronic and progressive joint disease after middle age in the world. This disease begins with the gradual destruction of the joint cartilage and gradually continues with symptoms such as knee joint pain, limited mobility and inability to move, and has a serious impact on the quality of life of sufferers. To alleviate this disease, anti-inflammatory drugs, painkillers and drugs containing glucosamine, are often prescribed. The purpose of this study is to compare the effectiveness of hydrotherapy and physiotherapy on KOA women patients in the elderly.

Materials & Methods: Two groups of 23 participants were randomly selected from 69 KOA patients. At the beginning, they were examined in terms of pain intensity, movement and physical performance using observations and questionnaires. One group participated in hydrotherapy and the other in physiotherapy.

Results: After the necessary investigations and performance evaluation of the patients, the following results were obtained. The intensity of muscle pains and spasms was reduced in both groups, but in the hydrotherapy group, in addition to the significant reduction of pain, participants stated that they were able to do daily activities without the help of others. Also, the results showed that the mental condition of the patients improved significantly.

Conclusion: Therefore, in addition to relieving joint pain, hydrotherapy can also improve muscle function. This method also reduces heart pains and other muscle pains. This is why in recent years; hydrotherapy is known as the best way to prevent and treat knee osteoarthritis.

Keywords: Knee osteoarthritis, glucosamine, hydrotherapy, physiotherapy

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INTRODUCTION

Osteoarthritis is a degenerative joint disease that causes swelling, pain, and stiffness of the knee. This inflammatory joint disease begins slowly and progresses over time. In this disease, as a result of factors such as doing heavy work, exhausting sports, obesity, etc., as a result of excessive pressure on the knee, the joint cartilage of the knee is eroded and damaged due to abrasion, symptoms such as pain dryness of the joints and its swelling warns the patient that he should avoid various factors that cause damage to his bones and joints and ultimately cause weakness in the function of the knee joints (Bennell & Hinman 2011; Cudejko et al., 2018).

Physiotherapy

Physiotherapy is a treatment program that reduces pain, restores muscle strength, and increases joint range of motion, and plays an important role in the treatment of moderate to severe osteoarthritis. In physiotherapy, it is recommended to teach isometric exercises to strengthen the quadriceps and hamstrings and its continuous repetition (Brandi, 1995; O'Reilly & Muir, 1999; Tan & Balci, 1995).

Hydrotherapy

Hydrotherapy or water therapy was initially performed by placing the injured member in a pool of cold or hot water, and then several sessions of various sports using some sports equipment is added to it. With the help of the natural properties of water, movements that humans are not capable of on land are possible in water (Fleming et al., 2010). Therefore, training programs are adapted to the pool environment. Today, physical therapists use water exercise to treat many injuries (Ulf Hassan et al., 2023).

METHODOLOGY

The purpose of the present research is to compare the effects of hydrotherapy and physiotherapy on muscle function and pain intensity in patients with knee osteoarthritis.

Participants

First, the necessary data was collected from a hydrotherapy center located in Mashhad and two groups of 23 participants from among 69 female patients who were diagnosed by doctors with different methods, including photos and MRI, as suffering from osteoarthritis of the knee, were randomly selected.

The age of the participants was between 61 and 77 years and their weight were between 70 and 89 kilos, and none of them had respiratory, infectious, skin, or cardiovascular diseases according to the doctor's examination (see Tables 1 & 2). All suffered from dry knees and joints, especially in the morning. The weight, height and characteristics of all of them were recorded. All the participants informed consent for participating in this research.

Characteristics	Hydrotherapy Group	N
Age	63- 75	23
Weight	74- 89 K	23
Height	153- 166 cm	23

Table 1: Demographic data (Hydrotherapy Group)

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Characteristics	Physiotherapy Group	N
Age	61- 77	23
Weight	71- 82 K	23
Height	151- 171 cm	23

Table 2: Demographic data (Physiotherapy Group)

Procedures

A group 23 participants were recommended to participate in physiotherapy sessions at a physiotherapy center and the rest were (23 participants) subjected to aquatic activities and hydrotherapy. The number of sessions in the physiotherapy group was the same as the number of sessions in the hydrotherapy group. Both groups used therapy sessions for 16 weeks. Before and after the treatment sessions, Western Ontario and McMaster Universities Osteoarthritis Index questionnaire (WOMAC) was completed for all participants to assess muscle problems and movement limitations and generally, their status of KOA.

The patients' pain level was also measured using the Quebec pain intensity questionnaire (QPIQ). The questionnaire contains twenty 6-choice questions and evaluates the amount and severity level of pain in daily activities. The scoring of QPIQ is based on a five-point Likert rating.

Patients suffering from osteoarthritis of the knee mostly had similar problems .Most of them suffered from dry knees and joint pain, their muscle strength was reduced because the range of motion of their joints was limited, they could no longer walk fast, and sometimes they might even be in danger of falling, and in other words, all of these physical complications made them unable to walk properly and do their daily tasks well.

In some of them, due to a lot of pressure on the knees, the knees were swollen, and this swelling of the knee had limited doing many things, and some of them had even lost the hope of a good and normal life.

The hydrotherapy group of patients performed exercises three days a week for two hours each time under the supervision of a trainer. In the hydrotherapy pool, 5 exercise machines were installed in the water for the use of patients. There were two bicycles of different heights, a treadmill, a stepper and a fixed seat.

RESULTS

According to the results, a few patients in the hydrotherapy group were able to perform all the exercises at the beginning, and most of them felt tired and weak in the first to third week after performing the exercises. Gradually, by doing most of the exercises in the fifth week onwards, the participants did the exercises well and showed great desire to continue the aquatic exercises. When the participants of the hydrotherapy group were in the water pool, due to weight loss, the pressure on their joints was also reduced and they were able to perform sports movements more easily, and this significantly reduced their pain. This gave them satisfaction and they came to the pool more willingly in the next sessions. At the end of the ninth week and the end of the sixteenth week, almost the vast majority of the patients continued the

exercises by themselves even without the direct presence of the trainer.

The second group that was the group of physiotherapy patients participated three days a week in a physiotherapy session in a center. In the first weeks, due to muscle pain and knee swelling, they could hardly tolerate physical therapy exercises, that's why the responsible

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person reduced the use of physical therapy devices and also the time of the specified exercises. Gradually and with the passage of time, the maximum tolerance of the patients increased and the trainer started to increase the corrective exercises with the use of the special physiotherapy devices.

Finally, 16 weeks of continuous training ended, and at the end of the last session, the participants were talked to individually and separately and asked for their opinions.

In this research, the intensity level of the knee pain and muscle contractions was investigated in both groups: the group that participated in physiotherapy and the group that participated in the hydrotherapy sessions. The results showed that both treatment methods were associated with reducing muscle pains and muscle contractions. The degree of pain reduction in the hydrotherapy group was associated with a more significant reduction, and the members of this group stated that they were able to perform their daily activities alone and without the help of others at the end of the period. In addition to reducing pain, the results of the research showed that hydrotherapy was able to significantly improve the mental health of patients.

This study indicated that the use of hydrotherapy and physiotherapy not only accelerates the mental recovery and physical performance of patients, but also can create a positive effect on improving the quality of life.

One of the advantages of hydrotherapy over physiotherapy is the use of the natural advantages of water. Water as a natural medicinal agent acts to relieve pain. Using hot hydrotherapy, steam therapy and water massage can help reduce pain and improve muscle and joint function. On the other hand, physiotherapy also uses non-drug methods to improve pain and muscle contractions. This method includes strengthening exercises, stretching exercises and balance exercises. Also, physical therapy can make muscles stronger over time and regulate strict physical activity programs. In this study, it was observed that hydrotherapy had more advantages such as faster pain relief, more significant improvement in physical performance and greater effect on mental relaxation compared to physiotherapy.

DISCUSSION

In the osteoarthritis, the healthy tissues of the knee joint, which smooth the movement between the bones, are attacked. Of course, genetic and environmental factors are also factors of this disease. The diagnosis of this disease is very important and the patient can make his joints less damaged by early treatment.

The patient can alleviate the severity of this disease and knee swelling in different methods. There are different ways that strengthen the muscles protecting the knees and reduce the swelling of the knees and enable the patient to do daily life activities and not been subjected to restrictions.

These factors include:

1. Prevent obesity
2. Prevent from heavy physical activities
3. Changing living conditions and controlling body stress
4. Regular sports
5. Hydrotherapy and physiotherapy
6. Use of protective clothing and shoes
7. Blood sugar control
8.Taking medications containing glucosamine
9. Use of Cortone ampoules
10. Injection of ampoules containing gel
11. PRP method

CONCLUSIONS

In this research, based on the date from questionnaires, interviews, observations, and reports of the patients, after the completion of the hydrotherapy and physiotherapy sessions, the inability to do some tasks such as walking disappeared in most of the patients, and this reduced the mental pressure. Pain, stiffness and dryness of the joints, was also reduced significantly in the patients of both groups.

In general, based on the results of the research, the advantage of using hydrotherapy in patients with knee osteoarthritis is that the body weight in the water is reduced and the load on the knee joint is reduced. This leads to the reduction of pain and inflammation in the joints. Also,

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hydrotherapy strengthens the muscles around the joint and improves the range of motion of the knee.

Another benefit of using hydrotherapy in patients with knee osteoarthritis is the reduction of heart pains and other muscle pains. Hydrotherapy can also be useful for increasing mental relaxation of patients, because in the water environment, the amount of stress and mental pressure is reduced.

On the other hand, the use of hydrotherapy in patients with osteoarthritis of the knee can also prevent the recurrence and severity of joint pains. For this reason, hydrotherapy is considered as the best way to prevent and treat knee osteoarthritis. Therefore, it can be concluded that hydrotherapy is an effective method in the treatment of knee osteoarthritis, which improves muscle function and walking in addition to relieving joint pain. On the other hand, by reducing heart pains and other body muscle pains, Hydrotherapy also improves mental relaxation.

REFERENCES

1. Bennell, K. L., & Hinman, R. S. (2011). A review of the clinical evidence for exercise in osteoarthritis of the hip and knee. Journal of science and medicine in sport, 14(1), 4-9.
2. Brandi, K. D. (1995). Non-surgical management of osteoarthritis. Archives of Family Medicine, 12(4), 1057-64.
3. Cudejko, T., Esch, M., Leeden, M., Holla, J., Roorda, L., Lems, W., & Dekker, J. (2018). Proprioception mediates the association between systemic inflammation and muscle weakness in patients with knee osteoarthritis: Results from the Amsterdam Osteoarthritis cohort. Journal of rehabilitation medicine, 50(1), 67-72.
4. Fleming, S. A., & Gutknecht, N. C. (2010). Naturopathy and the primary care practice. Primary Care: Clinics in Office Practice, 37(1), 119-136.
5. Yázigi, F., Espanha, M., Vieira, F., Messier, S. P., Monteiro, C., & Veloso, A. P. (2013). The PICO project: aquatic exercise for knee osteoarthritis in overweight and obese individuals. BMC musculoskeletal disorders, 14(1), 1-14.
6. O'Reilly, S. C., Muir, K. R., & Doherty, M. (1999). Effectiveness of home exercise on pain and disability from osteoarthritis of the knee: a randomized controlled trial. Annals of the rheumatic diseases, 58(1), 15-19.
7. Tan, J., Balci, N., Sepici, V., & Gener, F. A. (1995). Isokinetic and isometric strength in osteoarthrosis of the knee: a comparative study with healthy women.
8. Ul Hassan, A. M., Salma, A. M., Ali, N. M., Andleeb, U., & Fatima, S. N. (2023). Effectiveness of Hydrotherapy on Health-Related Quality of Life in Children with Juvenile Idiopathic Arthritis: A Randomized Controlled Trial. Journal of Positive School Psychology, 2366-2373.

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To Find out the Prevalence of Neck Pain Among Students of Computer Science Department

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URL: https://ijptrs.com/view-issue/169/Fulltext
DOI:https://ijptrs.com/public/images/content/541Nensi%20V3I2%20(1).pdf

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Submission: 23rdJanuary 2024
Revised: 5th February 2024
Publish: 1st April 2024

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ABSTRACT

A thorough analysis of the research on the association amongst the commonness of musculoskeletal illnesses and keyboard usage revealed that among computer users, the incidence of musculoskeletal disorders associated with keyboard use is comparatively high. Students make extensive use of the computers. Professionals reported using computers for less hours per day than students, according to a poll. Furthermore, college students file more complaints about computer use than do professionals. The training's goalmouth was to determine how common neck pain was among computer science department students. All students gave written informed consent after being informed about the study. A survey named the "Neck Disability Index" was applied to gauge how uncomfortable the students were. Students received information about the questionnaire's statement and were encouraged to express any questions they had about any questions that were confusing. Participants were asked to read their answers to each question on the questionnaire. Participants guaranteed that the evidence they submitted would be reserved isolated and used solely for study. Individuals who expressed a willingness to participate in the study were included, while those who did not were eliminated. To collect data, the Neck Disability Index examine was used. The neck infirmity index was used in this investigation. Near remained 209 contributors in the existing study, of which 49% were females and 51% were male. The computer science department's student body had a higher frequency of neck pain. Additionally, it was discovered that using computer during working hours was linked to neck pain.

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INTRODUCTION

A thorough analysis of the research on the relationship between the prevalence of musculoskeletal illnesses and keyboard usage revealed that among computer users, the incidence of musculoskeletal disorders associated with keyboard use is comparatively high. Students make extensive use of the computers. Professionals reported using computers for less hours per day than students, according to a poll. Furthermore, college students file more complaints about computer use than do professionals. The study's goal was to determine how common neck pain was among computer science department students. All students gave written informed consent after being informed about the study. A questionnaire called the "Neck Disability Index" was utilized to gauge how uncomfortable the students were. Students received information about the questionnaire's statement and were encouraged to express any questions they had about any questions thatwere confusing. Participants were asked to read their answers to each question on the questionnaire. Participants guaranteed that the information they submitted would be kept private and used solely for study. Individuals who expressed a willingness to participate in the study were included, while those who did not were eliminated. To collect data, the Neck Disability Index examine was used. The neck disability index wasused in this investigation. There were 209 participants in the current study, of which 49% were females and 51% were male. The computer science department's student body had a higher frequency of neck pain. Additionally, it was discovered that using a computer during working hours was linked to neck pain.

According to the study, students who use computers should take brief breaks and get instruction and training in an atmosphere that promotes ergonomics. The computer has been considered a useful device to improve the quality of the health care system as well as helpful in studying the efficiency of health workers in the world. Even though information, communication, and technology are being used to improve healthcare systems there may be associated health hazards with the use of these devices [(1)]. Musculoskeletal disorders are the most common type of work-related health problems in the world. Computer- related musculoskeletal disorders continue to be a substantial public health problem. These disorders affect millions of computer users in the world [(2)]. The term musculoskeletal disorders enclose a group of inflammatory and degenerative conditions that affectsthe muscles, tendons, ligaments, joints, peripheral nerves and supporting blood vessels with consequent aches, pain and discomfort [(3)]. An extensive review of the literature on the association between keyboard usage and the prevalence of musculoskeletal disorders showed that the prevalence of keyboard-related musculoskeletal disorder among computer users is relatively high [(4)] Students use computers and smartphones on a daily basis these days. According to a survey, professionals reported working less hours each day on computers than students did. Additionally, complaints about computer use are more common among college students than among professionals [(5)]. The common musculoskeletal symptoms reported were pain (55%) and stiffness (14.8%) and the common sites affected with musculoskeletal problems were neck (44%), low back (30.5%), wrist/hand (19%), and shoulder (12.5%) [(6)].

Neck pain is a common health problem in the general population and especially among computer workers. Most people experience some degree of neck pain in their lifetime [(7)]. Symptoms of neck pain can include general aches and pains that can be postural fatigue in the neck, shoulders, and arms, or persistent pain or discomfort in soft tissues surrounding the neck and shoulders. An ideally aligned neck has a slight lordotic curvature that looks. Prolonged computer uses and sitting with rounded shoulders and faulty neck posture

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disturb the normal lordotic curve of the neck leading to muscular imbalance and consequently neck pain [8].

The long-term, lower-intensity stresses and strains and improper postures are believed to be the most important causative factors for neck pain [9]. Duration of computer use, frequency of breaks, method of keyboard operation, and position of computer monitors, type, and use of input devices are also associated with neck pain at work. Reaching for the mouse, too low a monitor, and leaning forward to operate the computer are some of the faults in workstations that can lead to the development of neck pain [10].

OBJECTIVES

Primary objective:

- To find out the prevalence of neck pain among students of computer science department

Secondary objective:

- To find out the rate of neck pain between boys and girls
- To find out the relationship between working hours and NDI

REVIEW ARTICLES

1. Dr. S A Shah [6] did study on prevalence of neck pain in computer operators in year 2015 and they concluded that among office employees working with video display units, prevalence of self-reported non-specific neck pain was found to be 47%. It was also found that neck pain was associated with work related and individual variables.
2. Aysha siddiqua kalim Khan et al [11] studied on neck pain in computer users in year 2016 and the results of this study shows that the prevalence of neck pain in computer users was 28%. 40% computer users have associated complaint like upper limb pain and paresthesia which are related to neck posture. The prevalence is more in females (60%) and concluded that neck pain has direct relationship with duration of computer job in years, hours of daily work, age of the person, more the age, duration of computer job, daily hours of work more will be the chance of developing neck pain.
3. Faiza Sabeen et al [8] did study on prevalence of neck pain in computer users in year 2013 and results of this study shows that out of 50 persons 72% of computer users had neck pain strong association was found between neck pain and prolonged computer users. Those who took break during their work had less neck pain. No significant association was found between type of chair in use and neck pain. Neck pain and type of system in use also had no significant association. And concluded that duration of computer use and frequency of breaks are associated with neck pain at work. Severe neck pain was found in people who use computer for more than 5 hours a day.
4. Dr. Mohammed Younus Mustafa [12] studied on work related neck pain and its associated factors among registered female nurses who are computer users and the result of this study shows that socio-demographic, lifestyle, ergonomic factors and some of psychological variables were associated with neck pain and concluded that these association patterns suggest. Also, opportunities for intervention strategies in order to stimulate an ergonomic work place setting to improve physical exercise awareness and to increase a positive psychological work environment.
5. Ankita Bansal et al [13] studied on a cross sectional study to determine the prevalence of computer related health problems among students of information technology in various college of Surat city. And the results show that the study revealed the prevalence of the symptoms like watering in eyes, eye strain, back pain, shoulder pain, neck pain and may other problems which were common among students and become more persistent with the increase in hours of work. The study also explained gender variations and concluded that the computer students must be aware about health-related hazards and should be educated and trained for ergonomically conductive environment.

6. R Adedoyin et al [1] studied on musculoskeletal pain associated with the use of computer systems in year 2003 and result of this study shows low back pain and neck pain were found to be in the highest pain complaint with 74% and 73% respectively and 67% of the responders complained of wrist pain followed by finger pain (65%), shoulder pain (63%) and general body pain (61%).The knee and foot pains were least complaints reported with 26% and 25% respectively and concluded that the most complained problems are low back pain, neck pain and wrist pain and the pains are more severe in people with more than four years working experience on the computer system. This study can help in preventing occupational injury associated with use of computer with emphasis on good posture, work station design and making of computer hardware.
7. Ayoub Ghanbary Sartang et al [14] did study on evaluation of musculoskeletal disorders among computer users in year 2015 and results shows that the prevalence of musculoskeletal disorders among computer users in Isfahen universities is pretty high and ergonomics interventions such as computer workstation redesign, users educate about ergonomic principles computer with work, reduced working hours computers with work, cycle of rest work development, use holders paper to minimize the pressure on the neck and back and reduced muscular and visual fatigue, posture hands, wrists and forearms should be straight, in line and parallel to ground and elbows should be kept close to the body with the angle between 90 and 120 degree.
8. S Arun Vijay et al [6] studied on work related musculoskeletal health disorders among the IT professionals in year 2013 and results shows that the 59% of the IT professionals reported that they had experienced some form of work-related musculoskeletal disorders in the past 12 months and neck pain problems were the most frequently reported where 30% also low back pain, wrist and hand pain and shoulder pain were the next frequently reported symptoms where the annual prevalence was reported as 25%, 14%, and 13% respectively and they concluded that the work related musculoskeletal disorders are widely reported among IT professionals working in IT industries in India and an appropriate prevention strategy needs to be carried out in order to enable then work comfortably.
9. Varun Singh et al [12] did study on upper limb musculoskeletal disorder associated with computer usage in health care professionals in year 2015 and result of this study shows that prevalence of upper limb disorders was 45% in the study population about 35.69% of the total problems were related to neck 17.44% to shoulder 19.62% to arm and forearm 16.08% to wrist and 11.17% to hands and concluded that upper limb musculoskeletal disorders following heavy computer usage have a large prevalence among health care professionals and adequate steps for awareness and treatment of these disorder should be taken to provide better patient care and improve the health care system.
10. Mohsen Soroush MD et al [16] studied on the musculoskeletal complaints associated with computer use and its ergonomic risks for office workers in year 2015 and the results of this study shows that the most frequently reported musculoskeletal complaints were related to neck (58.53%) and lower back (58.53%) for men and knee (66.66%), lower back (64.61%) and neck (61.53%) for women. The prevalence of musculoskeletal complaints was significantly more among office workers who worked in a high-risk environment. The pains were considerable in the neck (74.54%) and lower back (80%) and concluded that prevalence of musculoskeletal complaints among office workers of AJA University of medical science is high. Ergonomic interventions such as computer work station redesign and office ergonomics training should be considered to prevent the

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related health problems, especially for high-risk work station.

11. M. J. H. McCarthy [17] did study on the reliability of the Vernon and Mior neck disability index, and its validity compared with the short form-36health survey questionnaire in 2007 and the results shows that the test-retest reliability of the NDI was high and comparable with the best values found with SF36.and concluded that NDI has good reliability and validity and that is compares well with the SF36. The NDI is shorter, quicker to answer and easier to score.

METHODOLOGY:

Ethical clearance was taken from the ethical committee before starting the procedure. The purpose of the study was explained and written informed consent was obtained from all the students. The "Neck Disability Index" was used as a questionnaire to measure the student's discomfort level. Information about the statement of the questionnaire was given to the students and they were encouraged to ask any question regarding the unclearness of the question of the questionnaire. Students were briefed about the purpose of the study. The questionnaire was given and asked to read their responses against each question. Assurance was given that the provided information will be kept confidential and will be used for research purposes only. Participants who were willing to be part of the study were taken into consideration and those who were unwilling were excluded. Neck Disability Index questionnaire was used for data collection.

Neck Disability Index (NDI) score: This questionnaire is designed to provide information as to how neck pain affects a person's ability to manage in everyday life. The questionnaire has 10 components and each component has a scoring from 0 to 5. Thus, total score achievable is 50. A greater score indicates greater disability.

Score (out of 50):

0 – 4 (0-8%) no disability

5-14 (10-28%) mild disability

15-24 (30-48%) moderate disability

25-34 (50-64%) severe disability

>35 (70-100%) complete disability

Test-retest reliability for NDI is found to be good; r = 0.89, Interclass correlation (ICC) = 0.68, 95%, CI = 0.54 – 0.90, Cronbach's alpha is 0.80; specificity and sensitivity are 59% and 52% respectively. Using a sample of 209 people, the study sought to determine the incidence of neck discomfort among computer science department students.

RESULTS:

A thorough analysis of the data was conducted using Microsoft Excel 2016. A thorough examination of the data was conducted, with a particular focus on its analysis using appropriate statistical tools. We examined descriptive statistics such as mean, standard deviation, frequency, and percentage.

Characteristics	Value
Age (mean ± SD)	20.92823 ± 1.032928

Table 1: Participant´s Demographic Data – shows mean value of Age

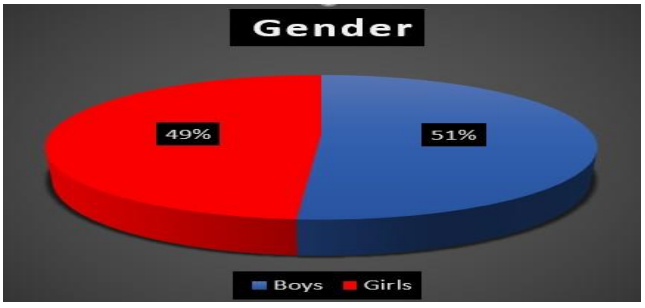

Figure 1: Percentage of Gender

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Neck Disability Index		Number of Participants		
Disability	Percentage	Total	Male	Female
No disability	0 – 8%	37	19	18
Mild disability	10 – 28%	103	57	46
Moderate disability	30 – 48%	57	25	32
Severe disability	50 – 64%	11	6	5
Complete disability	70 – 100%	1	0	1
Total		209	107	102

Table 2: Total Percentage of Participants with Neck Disability

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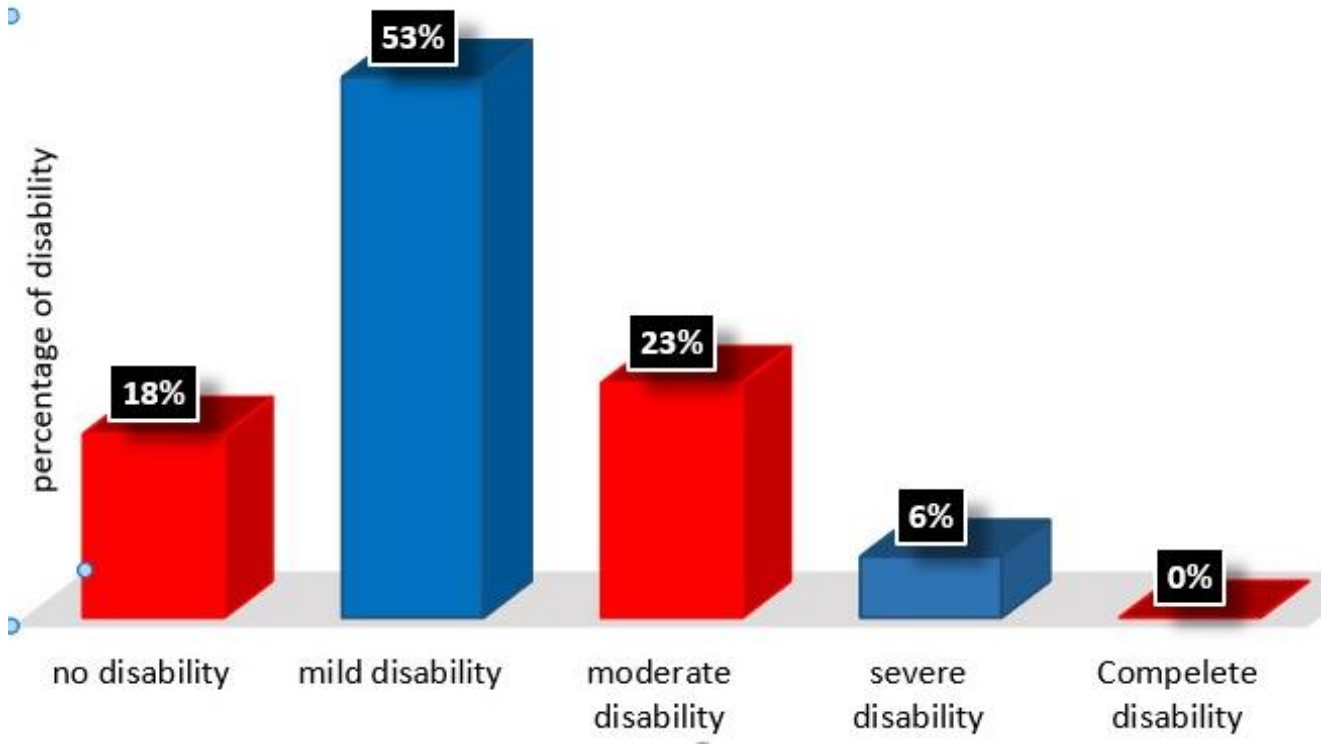

Figure 2: Percentage of Disability for Boys

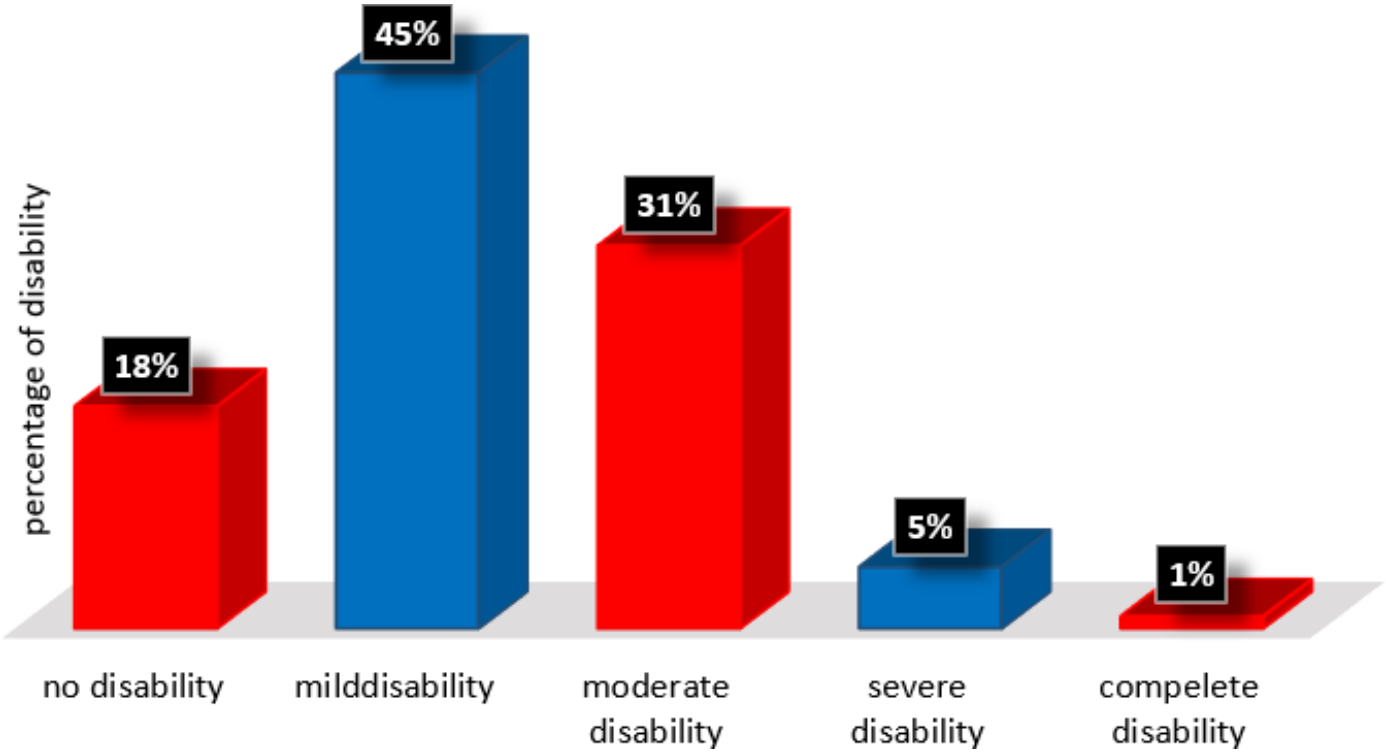

Figure 3: Percentage of Neck Disability in Girls

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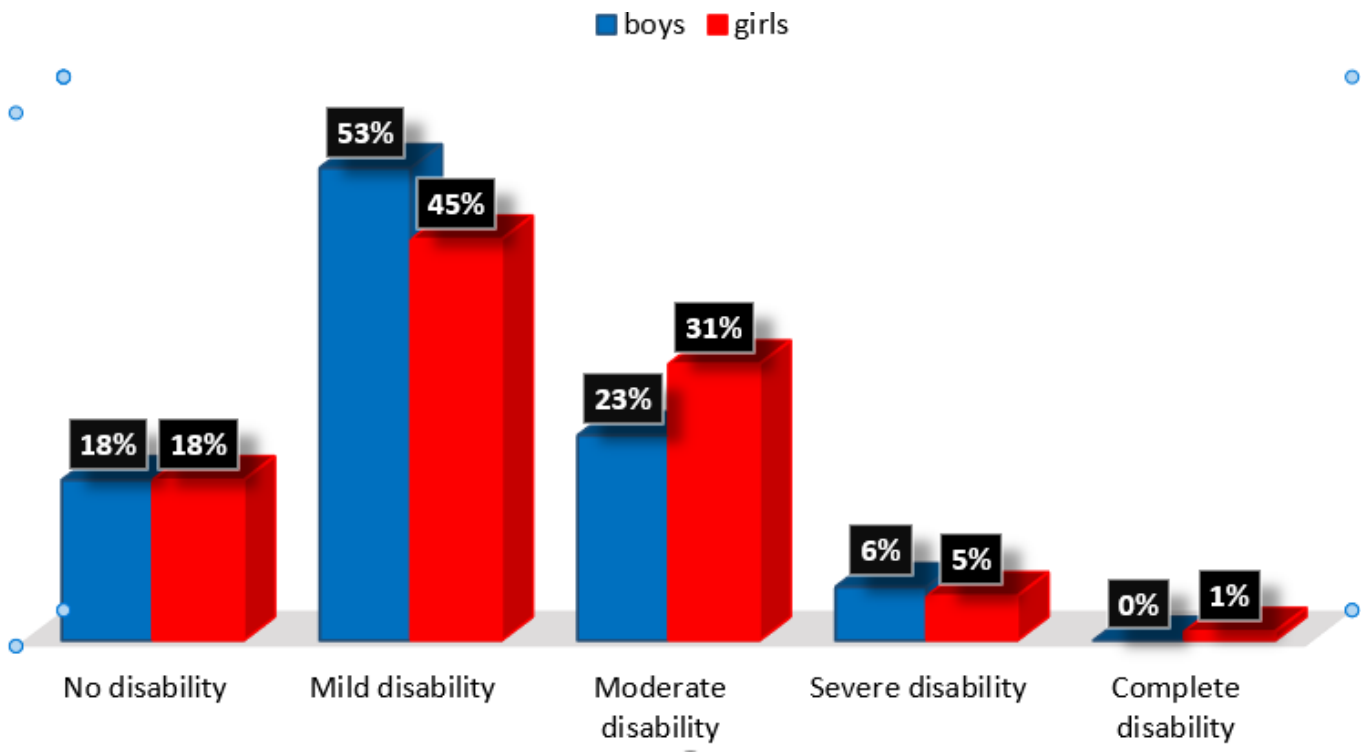

Figure 4: Relationship between Gender and Disability

	Mean	**SD**	**95% Confidence Interval**		**r value**	**P value**
			Minimum value	**Minimum value**		
NDI Score	11	7.33	0.7240	0.8303	0.7828	0.0001
Working hours	3.78	0.86				

Table 3: Correlation between Working hours and NDI Score

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	Mean	SD	95% Confidence Interval		r value	P value
			Minimum value	Minimum value		
NDI Score	11	7.33	-0.02873	0.2397	0.1074	0.1215
Gender	1.48	0.50				

Table 4: Correlation between Gender and NDI Score

The present study includes 209 students of the computer science department of Uka Tarsiidae University. Out of which 107 were boys and 102 were girls. The age of the participants ranged between 19-25 years and the mean age remained 20.92 ± 1.03 years. (Table 4.1)

Out of 209 participants 103 were suffering with mild disability, 57 with moderate disability, 37 with no disability, 11 with severe disability and 1 with complete disability. (Table 4.2)

Out of 209 participants 49% were suffering with mild disability, 27% with moderate disability, 18% with no disability, 5% with severe disability and 1% with complete disability. (Figure 4.2)

The percentage of mild disability was higher in boys (53%) than the girls (45%). The percentage of severe disability was higher in boys (6%) as compared to girls (5%), but the percentage of moderate disability was higher in girls (31%) than the boys (23%). There was only one Percentage of complete disability in the girls. (Figure 4.3, 4.4, 4.5).

Table 4.4 represents the correlation between working hours and neck disability score. Correlation coefficient (r)= 0.7824, P value is <0.0001, shows extremely significant correlation.

Table 4.5 represents the correlation between gender and neck disability score. Correlation coefficient (r)= 0.1074, P value is 0.1215, shows non-significant correlation

DISCUSSION

This is a cross-sectional study with a primary aim to find out the prevalence of neck pain among students of the computer science department. Neck pain is mainly a self-reported condition. The neck disability index was used in this study. In epidemiological studies for neck pain prevalence, different definitions have been used. There is no "gold standard" measurement tool for estimating the prevalence of neck pain among populations. So, the questionnaire is considered to be an important tool in research. In the present study, there were a total of 209 participants out of them 51% were boys and 49% were girls.

Aysha Siddiqui Kalim Khan et al[11] studied neck pain in computer users and the results of this study show that the prevalence of neck pain in computer users was 28% and the prevalence is more in females (60%) than in males. Dr. S A Shah et al [7]did a study on the prevalence of neck pain in computer operators and the result shows that among office employees working with video display units, the prevalence of self-reported non- specific neck pain was found to be 47% Koyyalamudi prudhvi et al[19] did study on self-reported musculoskeletal pain among dentists and the result shows that the prevalence is more in male than females.

In our study, no difference was found in the prevalence rate of neck pain between boys and girls (82%), which is contrary to the previous studies this could be due to the disproportionate sample size between boys and girls (51% vs. 49%). The correlation was done between gender and NDI, which shows a negative

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correlation. A correlation between working hours and NDI was also done which shows a positive correlation. It indicates that as working hours will increase, the NDI score will also increase. In this study, the mild disability was higher among students. it can progress from mild to severe disability and may produce further disabilities of cervical spine. So ergonomic interventions such as computer workstation redesign and ergonomic training should be advised to students. In our study, the prevalence of neck pain was 82% which is higher than the previous studies. The reason could be that the computers are widely used by students. In a study done by Noack-Cooper et al [18] students reported more hours of work per day on computers than professionals. Musculoskeletal Complaints are also more prevalent among college students using computers than computer-using professionals.

CONCLUSION

The prevalence of neck pain was found higher among students of the computer science department of Uka Tarsiidae University. It was also found that neck pain was associated with working hours of computer use. The study proposed that computer user students should take breaks of a few seconds in between and should be educated and trained for ergonomically conducive environments.

CONFLICT OF INTEREST:

There is no conflict of interest

REFERENCES

1. R Adedoyin et al, Musculoskeletal pain associated with the use of computer system in Nigeria, The internet journal of pain, symptom control and palliative care. 2003; 3:2.
2. Idowu Bayo et al, Information and communication technology in Nigeria, The health sector experience journal of information technology impact. 2003; 3(2):69-76.
3. Md Rahul Amin et al, the prevalence of computer related musculoskeletal disorders among bankers of Dhaka city, Chattogram-o-shisha hospital medical collage journal. 2016; 15:1.
4. Safe Computer Tips.com, stay Healthy and avoid injury while working long hours on your pchttp://www.safecomputingtips.com/musculoskeletal-disorderkeyboard.html (accessed on January 07,2013).
5. Venkatesan Rajagopal et al, the prevalence of computer related musculoskeletal pain among college students, American medical journal. 2012; 3(1):33-36.
6. S Arun Vijay et al, work related musculoskeletal health disorders among the information technology professionals in India, International journal of management research and business strategy.2013; 2:2.
7. Dr. S A Shah et al, prevalence of neck pain in computer operators, NHL journal of medical sciences. 2015; 4:1.
8. Faiza Sabeen et al, prevalence of neck pain in computer users, ANNALS.2013; 19:2.
9. Hakala et al, frequent computer related activities increase risk of neck-shoulder and low back pain in adolescents, Eury J public health.2007; 16(5):536-541.
10. Szeto et al, a comparison of symptomatic and asymptomatic office workers performing monotonous keyboard work-2: Neck and Shoulder Kinematics. Manual Therapy; 2005; 10:281-291.
11. Aysha Siddiqua Kalim Khan et al, neck pain in computer users, panacea journal of medical sciences. 2016; 6(2):88-91.
12. Dr. Mohammed Younus Mustafa et al, work related neck pain and its associated factors among registered female nurses who are computer users, IOSR journal of Nursing and Health Science (IOSR-JNHS). 2013; 1(2):41-56.

IJPTRS Vol 3(2) April - May - June 2024 pp68- 78 E-ISSN 2583-4304
13. Ankita Bansal et al, a cross sectional study to determine the prevalence of computer related health problems among students of information technology, International J. Res Med.2013; 2(2):48-51.
14. Ayoub Granary Sartang et al, evaluation of musculoskeletal disorders among computer users, Iranian Journal of Health, safety & environment. 2015; 2(3):330-334.
15. Varun Singh et al, Upper limb musculoskeletal disorder associated with computer usage in health care professionals, International Journal of Medical Science and Public Health. 2015; 4(11).
16. Mohsen Soroush MD et al, musculoskeletal complaints associated with computer use and its ergonomic risks for office workers, AMHSR. 2015; 13:2-6.
17. M. J. H. McCarthy et al, the reliability of the Vernon and Moir neck disability index, and its validity compared with the short form-36health survey questionnaire, EUR Spine J. 2007; 16:2111-2117.
18. Noack-Cooper Karen et al, college students and computers: assessment of usage pattern and musculoskeletal discomfort, work. 2009; 32(3):285-298.
19. Koyyalamudi Prudhvi et al, self-reported musculoskeletal pain among dentists, Indian J Dent Res. 2016; 27:348-52.

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A comparative analysis of lumbar stabilization exercises and back school program for sub-acute & chronic non-specific low back pain: an experimental study examining efficacy and outcomes

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URL: https://ijptrs.com/view-issue/175/Fulltext

DOI:https://ijptrs.com/public/images/content/168Afrah%20V3I2%20(1)%20(1).pdf

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Submission: 23rdJanuary 2024
Revised: 5th February 2024
Publish: 1st April 2024

Table of content

ABSTRACT

Background: Non-specific low back pain is a burdensome condition affecting lives. Non-specific kind of pain means that the basis of the pain is not identifiable. Low back pain arrives anywhere in the region from below the 12th rib to the inferior gluteal folds.

Objective: To conduct a comparative analysis between Lumbar Stabilization Exercises (LSE) and Back School (BS) Program on subacute and chronic non-specific low back pain. Lumbar Stabilization Exercises are designed to stabilize the lumbar area and strengthen the core muscles. Back School Program is a holistic approach to reduce back pain which comprises of educational counselling, postural and ergonomic advice and exercises.

Materials and Methodology: Two groups are made, each group had 10 subjects. Group A received LSE and Group B received BS program. Both the groups also underwent conventional treatment. This design permitted us to check the specific impact of Lumbar Stabilization Exercises and the Back School Program along with the conventional treatment provided. Ten sessions of the treatment were given. Outcome measures include Numerical Pain Rating Scale (NPRS), Quebec Back Pain Disability Scale (QBPDS) and ROM was measured.

Results: Lumbar stabilization exercises demonstrated greater efficacy than the Back School Program in diminishing sub-acute and chronic nonspecific low back pain.

Conclusion: Lumbar Stabilization Exercises are comparatively more effective than the Back School Program in reducing sub-acute and chronic nonspecific low back pain.

Keywords: Core strengthening, Lumbar ROM, Non-Specific Low Back Pain, Musculoskeletal disorders, QBPDS

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INTRODUCTION

In both developed and developing nations, low back pain is the most common reason for years of disability and ranks sixth in terms of the burden of all diseases[1]. It is a common complaint that has been linked to worse quality of life (QOL) and activities of daily living (ADLs)[2]. Compared to the overall population and other ethnic populations, the Indian community has higher point, yearly, and lifetime prevalence rates of LBP, which impacts a sizable fraction of the population, particularly among women, rural residents, and elementary workers[3].

Depending on pain duration low back pain can be classified as acute (lasting less than 6 weeks), subacute(lasting between 6 and 12 weeks), or chronic (lasting beyond three months)[4]. Pain between the 12th rib andthe inferior gluteal folds, with or without leg pain, is defined as low back pain. The majority of instances are non-specific, but in 5–10% of cases, a particular cause is identified. Some degenerative problems, inflammatory illnesses, infective and neoplastic causes, metabolic bone disease, referred pain, psychogenic pain, trauma, and congenital disorders are specific causes of back pain. Back pain with no known underlying pathology is referred to as non-specific Low back pain[5].

Exercise has the most evidence of success for treating chronic low back pain, with greater advantages in terms of pain and function than any other treatment. A wide range of exercise programs have been developed; nevertheless, "lumbar stabilization exercises" have grown in popularity among clinicians who treat spine diseases[6]. In patients with non-specific low back pain, lumbar stabilization exercise is more beneficial than regular physical therapy exercises in terms of pain reduction[7]. In current practice, stabilizing exercises are used to increase the endurance, strength, and flexibility of the core muscles[8].The transverse abdominis muscle, which attaches to the vertebra via the thoracolumbar fascia, aids in spine stiffening by promoting intra-abdominal pressure[9].Exercises for lumbar stabilization are designed to enhance the neuromuscular control, strength, and endurance of the muscles that are essential for preserving the dynamic stability of the spine and trunk. The efficacy of lumbar stabilization exercises on people with low back pain, pelvic pain, and LBP with leg pain has been studied[10].

Numerous treatment options exist, including prescription drugs, physical therapy, various forms of exercise, and guidelines for back-friendly working practices[11].Back school (BS) program is an educational curriculum designed to prevent pain in the back and help people with degenerative spine conditions get better. Back school programs use theoretical and practical instruction in subjects including exercises, spine anatomy, biomechanics, best posture, and ergonomics to help patients become active participants in their recovery and in the maintenance of their quality of life[12].Although back schools have been practiced since 1969, their benefit in preventing or treating back pain has not yet been conclusively shown. A Cochrane review reasonedthat back school programs for patients with chronic LBP in a work-related setting had been relatively efficacious in comparison to other treatments or placebo or control groups which were kept on hold. More than a decade has passed since the last thorough analysis on this topic, and new studies as well as new guidance on conducting systematic reviews in the pain field have been published. More recent reviews that contain studies on back schools exist, although they are also now antiquated or are not thorough, for example, because they are geographically limited[11].

Hence, the present study was done with the objective of comparing the short-term effects of lumbar stabilization exercises and back school programs and finding a better approach in clinical practice for sub- acute and chronic nonspecific low back pain.

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Objective of the study

To compare the effect of lumbar stabilization exercises and back school program for sub-acute and chronic non-specific low back pain

Hypothesis

Null Hypothesis(H0)

There is no significant effect of Lumbar stabilization exercises on sub-acute and chronic non-specific low back pain.

There is no significant effect of Back School Program on sub-acute and chronic non-specific low back pain.

There is no significant effect of both Lumbar Stabilization Exercises and Back School Program on sub-acute and chronic non-specific low back pain.

Research Hypothesis(H1)

There is significant effect of Lumbar stabilization exercises on sub-acute and chronic non-specific low back pain.

There is significant effect of Back School Program on sub-acute and chronic non-specific low back pain.

There is significant effect of both Lumbar stabilization exercises and Back School Program on sub-acute and chronic non-specific low back pain.

REVIEW OF LITERATURE

1. **K. Kodeeswaran, S. Ashiya Anjum, et al.: -** conducted a study to compare the effects of Lumbar Stabilization Exercise (LSE) versus conservative treatment in healthcare professionals with chronic low back pain (LBP). The study utilized convenient sampling and grouped 15 subjects for LSE with IFT (Interferential Therapy) and 15 for conservative treatment with IFT. Outcome measures included NPRS (Numeric Pain Rating Scale) and Modified Oswestry Low Back Pain Disability Questionnaire. The treatment duration was 4 weeks. The study concluded that LSE with IFT was more effective than conservative management with IFT in managing LBP among healthcare professionals.

   International Journal of Current Research and Review 2022;14(8):36-39.

2. **Hye Jin Moon, MD, Kyoung Hyo Choi, MD, et al.: -** conducted a comparative study on patients with chronic non-specific low back pain. They compared lumbar stabilization exercises (LSS) with dynamic lumbar strengthening exercises. Randomization was employed, with 11 participants in the LSS group and 10 in the dynamic strengthening group. The exercises were performed for 1 hour, twice a week, over 8 weeks. Outcome measures included VAS, ODQ, and lumbar extensor strength at various angles ranging from 0° to 72°. The study concluded that LSS was more effective in strengthening lumbar extensors and improving functional outcomes in patients.

   Annals of Rehabilitation Medicine 2013;37(1): 110-117.

3. **Jaza Rizvi, Neelum Zehra et. al.: -** conducted a study at Dr. Ziauddin Hospital, to compare two different exercise approaches on non-specific low back pain (LBP) among 30 occupational therapists. The participants were divided into two groups: Group A received lumbar stabilization exercises, while Group B underwent general extension exercises. The researchers used the Numeric Pain Rating Scale (NPRS) and Oswestry Low Back Pain Disability Questionnaire as outcome measures. The results of the study showed that lumbar stabilization exercises proved to be more effective than general extension exercises in reducing low back pain among occupational therapists

   Pakistan Journal of Rehabilitation 2019;8(1): 43-48.

1. **Esha A. Bhadauria and Peeyush Gurudutt: -** conducted a study to see the efficacy of three different forms of exercises namely, LSS, Dynamic Strengthening, and Pilates in treating chronic non- specific low

back pain. The study included a total of 44 randomly assigned subjects who participated in 10 exercise sessions over a period of three weeks. IFT and HMP were used as conservative treatment for all groups. To evaluate the effectiveness of the interventions VAS, Oswestry Disability Questionnaire, Schober's test, and pressure biofeedback were used. The findings of the study indicated that the LSS group demonstrated significant improvements across all outcome measures

Journal of Exercise Rehabilitation 2017;13(4):477-485.

2. **Mehdi Pambazo, Mohammad Ali Hosseini et.al.: - conducted** a study In Iran on Effectiveness of the back school program on the low back pain and functional disability of Iranian nurse. Low back pain (LBP) as a recurrent and costly health problem and one of the leading causes of disability, is common in nurses. It can have adverse effects on the quality of life of nurses and quality of care of patients.The aim of the study was to evaluate the effectiveness of Back School program on the LBP and functional disability of Iranian nurses. A quasi-experimental methodological design was utilized for this study. Participants were nurses with back pain who participated in the Back School program workshop and completed a self-report visual analogue scales and Roland–Morris Disability questionnaire that measuring LBP and functional disability. Data were analyzed descriptively and comparisons in LBP and functional disability made between groups with t-test for pre-intervention and analysis of covariance for after intervention. Sixty-four participants (16 males, 48 females) completed this survey. The study participants' mean age was 38.9± 8.1 years in intervention group and 38.1± 8.2in control group. There were no significant differences in terms of pain (P= 0.575) and disability scores (P= 0.844) before intervention. Although, the intervention led to a decrease in the functional ability and LBP scores of the nurses (P< 0.001) in the intervention group compared with that in the control group. Overall, Back School program as an educational strategy can reduce the LBP and functional disability in nurses. This program can be suitable for preventing of pain and functional disability among nurses working in hospital settings.

Journal of exercise rehabilitation 2019 Feb; 15(1): 134–138.

3. **Patricia Thurow Bartz et. al.: -** conducted a study on Effectiveness of the back school program for the performance of activities of daily living in users of a basic health unit in Porto Alegre, Brazil. In this study, the effects of Back School on pain, functionality, and the performance of activities of daily living (ADL) in users with chronic musculoskeletal pain were evaluated. [Subjects and Methods] Forty- four users (33 females and 11 males) participated in Back School, with five two-hour theoretical and practical meetings held once a week. The assessment instruments used were as follows: (a) a circuit evaluation of posture dynamics recorded on video, (b) an observational instrument of ADL using video,
(c) anamnesis, (d) the visual analogue scale, and (e) the Oswestry Disability Index. [Results] The results showed decreased pain intensity, improved functionality, and the recovery of ADL. [Conclusion] The Back School program is an effective health education strategy for users with chronic musculoskeletal pain.

Journal of Physical Therapy Science 2016 Sep; 28(9): 2581–2586.

4. **M W Heymans, R Esmail et.al. :-**
conducted a study on Back schools for non-

specific low back pain. The objective of this systematic review was to assess the effects of back schools for patients with non-specific low back pain. Only randomized trials that reported on any type of back school for non-specific low back pain were included. Fifteen RCTs were included in systematic review. Overall, the methodological quality was low. Only 3 trials were considered high quality. It was not possible to make relevant subgroup analyses for radiation versus no radiation or to have a relevant subgroup of studies reporting on acute low back pain only. The results indicate that there is moderate evidence that back schools have better short-term effects than other treatments for chronic low back pain, and that there is moderate evidence that back schools in an occupational setting are more effective compared to 'placebo' or waiting list controls. **Spine 2005; 30(19):2153-2163.**

5. **Thayna Maria Jose, Clemente da silva et. al. : -** conducted a study to evaluate the effects of back school components in relieving pain and to improve quality of life on patients with chronic back pain
. Forty-one patients were randomized and into four groups: (I) a back school group (educational lessons and physical exercise); (ii) an educational lessons group; (iii) a physical exercise group and (iv) a waiting list control group. Patients were evaluated before and after treatment with a visual analogue scale, a short form quality-of-life questionnaire, a Roland Morris disability questionnaire and a finger- floor distance test. The back school group showed significant reduction in scores in the visual analogue scale and the Roland Morris disability questionnaire and an increase in the short-form quality of life questionnaire. The effectiveness of back
school programs in chronic back pain patients seems to be due to the physical exercise component and not on account of the educational lessons.
ConScientiae Saúde, 2014;13(4):506-515.
6. **Megan Davidson, Jennifer L Keating et. al.: -** conducted a study to examine 5 commonly used questionnaires for assessing disability in people with low back pain. The modified Oswestry Disability Questionnaire, the Quebec Back Pain Disability Scale, the Roland-Morris Disability Questionnaire, the Waddell Disability Index, and the physical health scales of the Medical Outcomes Study 36-Item Short- Form Health Survey (SF-36) were compared in patients undergoing physical therapy for low back pain. This research involved 106 individuals suffering from low back pain who completed questionnaires during their initial visit to a physical therapist and again six weeks later. The study aimed to assess the reliability and responsiveness of these questionnaires in measuring changes in patients' conditions. It was found that the measurements obtained from the modified Oswestry Disability Questionnaire, the SF-36 Physical Functioning scale, and the Quebec Back Pain Disability Scale were the most dependable and had a wide enough range to consistently detect improvements or deteriorations in most patients' conditions. On the other hand, the Waddell Disability Index had a moderate level of reliability, but it was not considered suitable for practical clinical use due to certain limitations. Meanwhile, the Roland-Morris Disability Questionnaire and the Role Limitations–Physical and Bodily Pain scales within the SF-36 were found to be lacking in terms of both reliability and the range they covered, making them less suitable for clinical applications.
Physical Therapy 2002; 82(1):8-24.
7. **7. Childs JD, Piva SR et. al.: -** conducted

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cohort study to examine the responsiveness characteristics of the numerical pain rating scale (NPRS) in patients with LBP using a variety of methods. Determination of change on the NPRS during 1 and 4 weeks was examined by calculating mean change, standardized effect size, Guyatt Responsiveness Index, area under a receiver operating characteristic curve, minimum clinically important difference, and minimum detectable change. Change in the NPRS from baseline to the 1 and 4-week follow-up was compared to the average of the patient and therapist's perceived improvement using the 15-point Global Rating of Change scale. They concluded that Clinicians can be confident that a 2-point change on the NPRS represents clinically meaningful change that exceeds the bounds of measurement error.

Spine 2005; 30(11):1331-1334.

The study was conducted at the Department of Physiotherapy, Dr. B. R. Ambedkar Medical College and Hospital in Bangalore, using a quasi-experimental design. A total of 20 participants were selected using a convenient sampling method, with strict inclusion and exclusion criteria applied. The participants were assigned to either group A (receiving lumbar stabilization treatment) or group B (receiving in back school program). Both groups received conservative treatment, including interferential therapy (IFT) and moist heat therapy, over a course of 10 sessions. This design allowed us to assess the specific impact of Lumbar Stabilization Exercises and the Back School Program in addition to the standard care provided.

Inclusion Criteria

- Both male and female aged 25-50 years
- Non-specific low back pain (>2 months)
- NPRS >= 6

Exclusion Criteria

- Spinal fractures
- Degenerative changes and tumors
- Subjects with neurological involvements
- Bone disorders
- Systemic disorders

Outcome Measures

- Numerical Pain Rating Scale
- Quebec back pain disability scale
- ROM will be measured

Experimental Procedure-

Lumbar Stabilization Exercises

- Superman Pose
- Knee to Chest
- Bridging
- Lumbar Rotation
- Pelvic Tilt
- Sit-Ups

Back School Program

- Knee Up
- Standing Quadricep Stretching
- Cat and Camel
- Abdominal Hollowing
- Bird Dog
- Lying Hamstring Stretch

The comparison was done by making a group of 10 each. Where they received LSE or BS along with conservative treatment for patients suffering from sub-acute and chronic non-specific LBP patient. We have included patients meeting the inclusion criteria and the outcome measures used is QBPDS, NPRS and lumbarROM was measured.

Statistical Analysis

The collected data were tabulated and analyzed using descriptive and interferential statistics. Paired t-test is used to analyses significance between pre and post-test values and unpaired t-test was used to analyse significance between two groups. P value <0.05 was considered as statistically significant.

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	Group – A (n=10) Mean ± SD.	Group – B (n=10)Mean ± SD.
Age (years)	40.2 ± 6.27	**40.4 ± 2.97**
Gender	**5 Males 5 Females**	**5 Males 5 Females**

Table 1. Demographic Characteristics

RESULTS

From the statistical analysis made with the quantitative data, paired t-test revealed that the mean is statistically significant between pre-test and post-test in lumbar stabilization group with $p<0.05$ and the unpaired t-test conducted between group A and B resulted that there was a significant difference between the groups with the p-value of 0.0001. Thus, lumbar stabilization exercises have a significant role in reducing low back pain.

The differences between the two groups were analyzed using post mean values of components. In general, both the groups showed significant results ($p<0.05$), however Group A (lumbar stabilization exercise) showed better reduction in pain and increased flexion/extension movements in comparison to Group B (Back school program).

	Mean	SD	T value	P value
Pretest valuesof group A	7.10	1.197	11.716	<0.0001
Post test valuesof group A	1.40	0.966		

Table 2: Pre and Post test comparison of Lumbar stabilization exercise.

Interpretation: The pre-test mean value of Numeric Pain Rating Scale (NPRS) is 7.10 (SD: 1.43) and post-testmean value is 1.40 (SD: 0.966). This interprets that functioning of low back is gradually increasing with the P value 0.0001, which is statistically significant.

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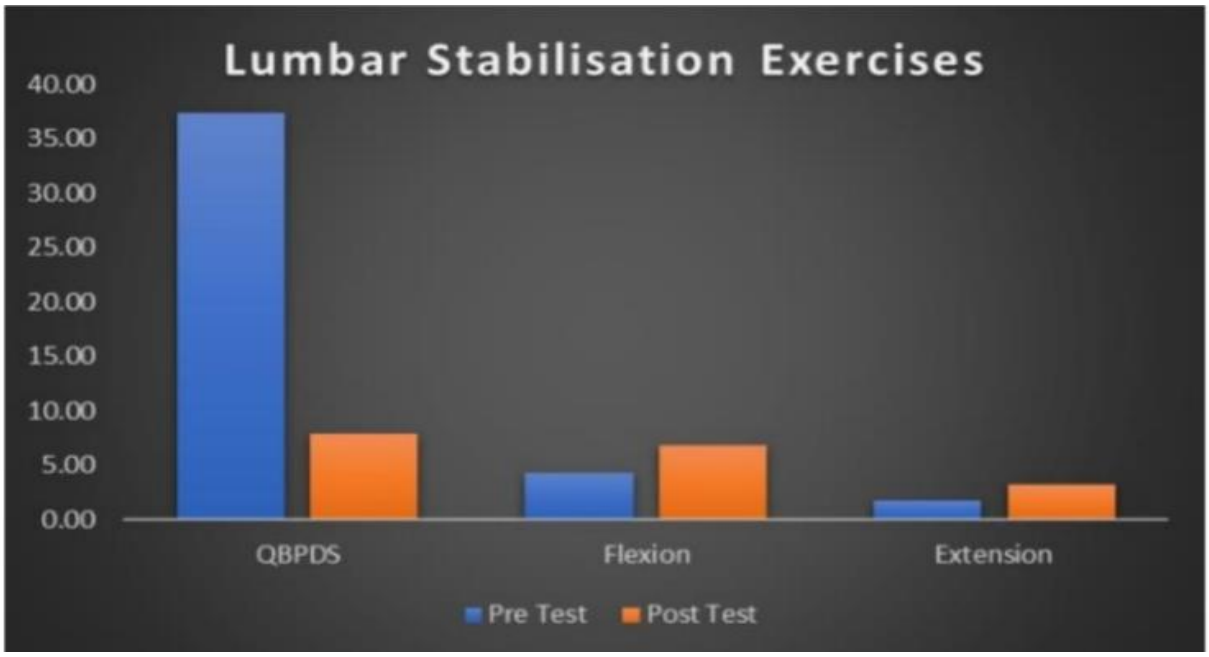

Figure 13: represents the mean comparison of Lumbar Stabilization group with the pre-test mean value of QBPDS scores, Flexion values and extension values.

Mean		SD	T value	P value
Pretest values of group B	**7.10**	**1.101**	**4.148**	**<0.0001**
Post test values of group B	**4.30**	**1.829**		

Table 3: Pre and Post test comparison of Back School Program.

Interpretation: The pre-test mean value of Numeric Pain Rating Scale (NPRS) is 7.10 (SD: 1.101) and post-test mean value is 4.30 (SD: 1.829). This interprets that functioning of low back is gradually increasing with the P value 0.0001, which is statistically significant.

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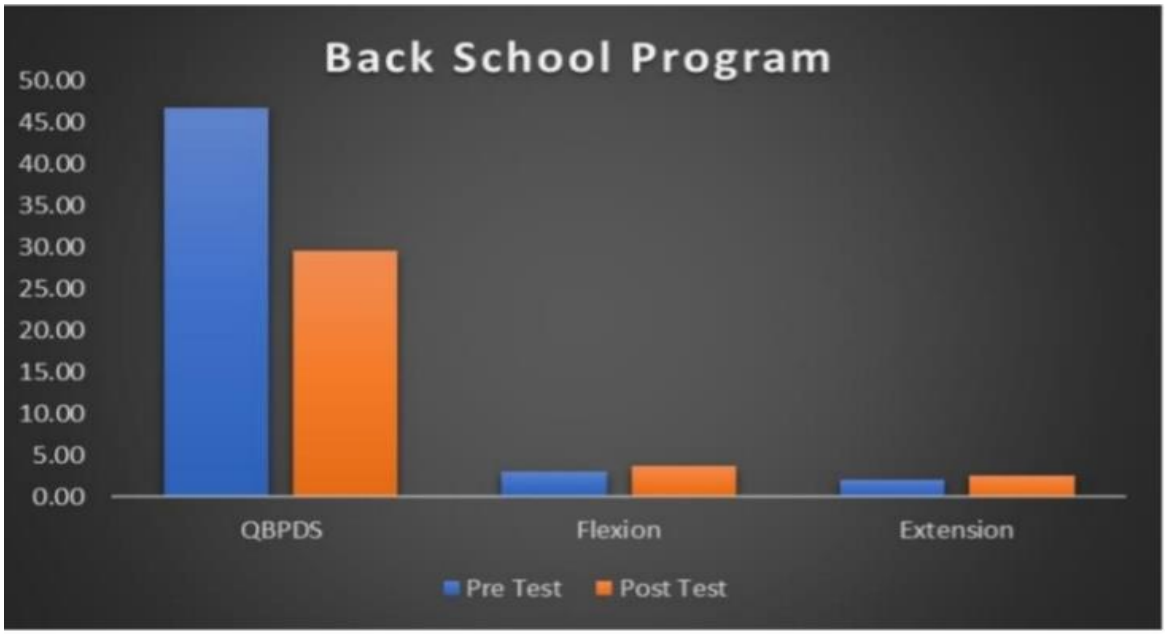

Figure 14: represents the mean comparison of Back School Program group with the pre-test mean value of QBPDS scores, Flexion values and extension values.

DISCUSSION

Low back pain (LBP) is a pervasive and debilitating condition that affects a wide range of individuals, particularly those aged between 25 to 50 years. The burden of LBP on both individuals and healthcare systems underscores the importance of effective interventions. In this study, we examined the impact of Lumbar Stabilization Exercises (LSE) and the Back School Program (BS) in the management of non-specific sub-acute and chronic low back pain.

Lower back exercises play a key role in preventing and managing back pain. The lumbar stabilization exercises program is designed to strengthen the muscles that support the torso, with a special emphasis on the abdominal muscles, which act like a corset to stabilize the lower back. These exercises are essential for maintaining a healthy spine, facilitating limb movements, and restoring balance between the abdominal and back muscles[13].

The Back School program consists of educational and training sessions delivered by therapists to patients or workers, aiming to treat or prevent lower back pain. These programs are widely utilized, especially in occupational health settings.[11]

Our study revealed that both the groups showed significant results ($p<0.05$), however LSE showed better reduction in pain and increased flexion/extension movements in comparison to BS Program. The results of our study were consistent with study of Rizvi J. et al which concluded that LSS are more effective to reduce non- specific LBP. One research has shown that core stabilization exercises not only enhance the strength of core muscles but also improve the overall function of individuals dealing with chronic non-specific lower back pain.[8]

On the contrary, a study conducted by Mehdi Pambazo showed Back School program as an educational strategy that can reduce the LBP and functional disability in nurses.[14]

The results of our study were inconsistent with the research conducted by Thayna Maria Jose et al. In their study, the back school group demonstrated a notable decrease in Visual Analogue Scale scores Roland Morris disability questionnaire scores, and an increase in the Short-Form Quality of Life Questionnaire scores.[12]

In general, both the groups showed significant results ($p<0.05$) statistically however LSE showed better reduction in pain and increased flexion/extension movements compared to BS Program.

In line with our results, a previous finding of the done by Esha A Bhadauria et al indicated that the LSE group demonstrated significant improvements across all outcome measures.[10]

The results from our study show that lumbar stabilization exercises led to a clear reduction in low back pain, as there was a noticeable difference between the initial and final values ($p<0.05$). Additionally, there was a significant difference between the effectiveness of lumbar stabilization exercises (Group A) and the Back School Program (Group B), suggesting that lumbar stabilization exercises were more successful in reducing low back pain

CONCLUSION

In conclusion, this study has demonstrated that lumbar stabilization exercises are associated with more effective pain reduction and improved mobility. Patients who engaged in LSS experienced notable reductions in discomfort and significant enhancements in their ability to move and flex their lower back. These findings underscore the effectiveness of lumbar stabilization exercises as a valuable approach to managing non-specific low back pain, highlighting their potential to deliver substantial improvements in the overall well-being.

CONFLICT OF INTEREST

Authors declare no conflict of interest.

REFERENCES

1. Chris Maher, Martin Underwood, Rachelle Buchbinder. Non-specific low back pain. The Lancet.2017;389(10070):1-12.
2. Yoichi Iizuka, Haku Iizuka, Toke Mieda, Daisuke Tsunoda, Tsuyoshi Sasaki, Tsuyoshi Tajika, Atsushi Yamamoto, Kenji Takagi. Prevalence of Chronic Non-specific Low Back Pain and Its Associated Factors among Middle-Aged and Elderly People: An Analysis Based on Data from a Musculoskeletal Examination in Japan. Asian spine J 2017;11(6):989-997.
3. Shetty GM, Jain S, Thakur H, Khanna K. Prevalence of low back pain in India: A systematic review andmeta-analysis. Work. 2022;73(2):429-452.
4. Jack Malecki. Nonspecific low back pain – what does it exactly mean? A proposed redefinition and classification of the problem. Eur J Clin Exp Med. 2017;15(4): 349-355.
5. M. Krismer MD, M. van Tulder, The Low Back Pain Group of the Bone and Joint Health Strategies for Europe Project. Low back pain (non-specific). Best Practice & Research Clinical Rheumatology. 2007;21(1):77-91.
6. Vásquez-Ríos JR, Nava-Bringas TI.

Ejercicios de estabilización lumbar [Lumbar stabilization exercises].Cir Cir. 2014;82(3):352-9.

7. Akhtar MW, Karimi H, Gilani SA. Effectiveness of core stabilization exercises and routine exercise therapy in management of pain in chronic non-specific low back pain: A randomized controlled clinical trial. Pak J Med Sci. 2017;33(4):1002-1006
8. Rizvi J, Zehra N, Masood H. Effectiveness of Lumbar Stabilization Exercises in Non-specific Low Back Pain among Occupational Therapists. Pak. J. rehab. 2019;8(1):43-48.
9. K. Kodeeswaran, S. Sahiya Anjum, M. Akshaya, S. Santhana Lakshmi. To Compare the Effect of Lumbar Stabilization Exercise and Conservative Treatment in Low back Pain for Healthcare Professionals. International Journal of Current Research and Review.2022;14(8):36-39.
10. Esha A. Bhadauria, Peeyush Gurudut. Comparative effectiveness of lumbar stabilization, dynamic strengthening, and Pilates on chronic low back pain: randomized clinical trial. Journal of Exercise Rehabilitation.2017;13(4):477 485.
11. Straube S, Harden M, Schröder H, ArendackaB, Fan X, Moore RA, Friede T. Back schools for the treatment of chronic low back pain: possibility of benefit but no convincing evidence after 47 years of research-systematic review and meta-analysis. Pain. 2016;157(10):2160-2172.
12. Thayna Maria Jose Clemente da Silva, Niedja Natallia da Silva, Sergio Henrique de Souza Rocha, Deborah Marques de Oliveira, Katia Karina Monte-Silva, Angelica da Silva Tenorios, Maria das Gracas Rodrigues de Araujo. Back school program for back pain: education or physical exercise? Conscientized Saude, 2014;13(4):506-51.
13. Vishnu K Nair, Abhilash. P. V., Arya Haridas. Effectiveness of Lumbar Stabilization Exercise on Mechanical Low Back Pain. International Journal of Health Sciences and Research. 2022; 12(5): 347 – 351.
14. Pambazo M, Hosseini MA, Aemmi SZ, Gholami S. Effectiveness of the back school program on the lowback pain and functional disability of Iranian nurse. J Exec Rehabil. 2019;15(1):134-138.

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"The End of Physiotherapy: Myth or Reality?"

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URL: https://ijptrs.com/view-issue/125/Fulltext
DOI:https://ijptrs.com/public/images/content/864BID%20V3%20I2%20(1).pdf

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Submission: 1st June 2023
Revised: 15th November 2023
Publish: 1st April 2024

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ABSTRACT

Physiotherapy is a crucial healthcare profession that focuses on restoring and maintaining physical function, mobility, and overall well-being. Despite speculation about the future of physiotherapy in the face of technological advancements, this review article critically examines the field's current state. It explores technology integration, emphasizing the human touch's essential role in healthcare. Physiotherapy encompasses various interventions to improve physical function and quality of life, addressing musculoskeletal, neurological, and respiratory conditions. Physiotherapists collaborate with other healthcare professionals to provide comprehensive care and enhance patient outcomes. Technological advancements in physiotherapy, such as telehealth, wearable devices, virtual reality, and robotics, can improve assessment, treatment, and patient engagement. However, the human touch, physical assessment, manual techniques, and therapeutic relationship remain integral to the profession.

The future of physiotherapy lies in integrating technology as a complementary tool, expanding access to services, and maintaining a balance between technological advancements and the essential elements of the profession. By embracing technology thoughtfully, physiotherapists can optimize patient care, improve outcomes, and deliver holistic, patient-centered care. The ongoing evolution of physiotherapy will rely on integrating technological advancements while upholding the profession's core principles and values.

Keywords:
Physiotherapy, Healthcare profession, Technological advancements, Human touch, Patient-centered care

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INTRODUCTION

Physiotherapy is a healthcare profession that promotes, restores and maintains physical function, mobility, and overall well-being. Physiotherapists are highly skilled professionals who undergo extensive anatomy, physiology, and biomechanics training. They employ various techniques, including manual therapy, exercise prescription, electrotherapy, and patient education, to assess and treat individuals with musculoskeletal, neurological, and respiratory conditions.

In recent years, there has been speculation and debate surrounding the future of physiotherapy. Some individuals and industry observers have questioned whether technological advancements and emerging treatment modalities could render physiotherapy obsolete. The rise of telehealth, wearable devices, virtual reality, and robotics has led to discussions about how these innovations could replace or diminish the role of physiotherapists.[1, 2]

This review article aims to critically examine the notion of "The End of Physiotherapy" by analyzing the current state of the field, exploring technological advancements, discussing the essential role of the human touch in healthcare, and considering potential future directions.

The Current State of Physiotherapy

Physiotherapy encompasses various interventions to improve physical function and quality of life. It involves assessing, diagnosing, and treating individuals with movement impairments or functional limitations due to injury, illness, or disability. Physiotherapists employ evidence-based practice to develop individualized treatment plans, considering the patient's medical history, physical capabilities, and goals. They utilize a holistic approach, addressing the physical symptoms and the psychological and social aspects of the patient's well-being.[3]

Physiotherapy is vital in managing and rehabilitating numerous conditions across different age groups. In musculoskeletal care, physiotherapists treat acute injuries, chronic pain, and post-surgical rehabilitation. They provide exercises, manual therapy, and education to improve joint mobility, strength, and flexibility. In neurological rehabilitation, physiotherapy aids individuals with conditions such as stroke, spinal cord injuries, and multiple sclerosis, focusing on improving balance, coordination, and motor function. Physiotherapists also contribute to cardiovascular and respiratory care, assisting patients with heart and lung conditions through exercise programs, breathing techniques, and endurance training.

Physiotherapists frequently collaborate to deliver comprehensive patient care. They work closely with physicians, surgeons, nurses, occupational therapists, and speech therapists to develop integrated treatment plans that address the multifaceted needs of individuals. Collaborative care ensures patients receive a holistic approach, benefiting from medical interventions, pharmacological management, and physiotherapy techniques. Interprofessional collaboration facilitates effective communication, knowledge sharing, and a coordinated strategy to maximize patient outcomes.

The current state of physiotherapy highlights its importance as a critical component in healthcare delivery. Physiotherapists contribute to managing and treating various conditions, addressing physical impairments and functional limitations. Their expertise and collaboration with other healthcare professionals enhance the overall quality of patient care. Despite technological advancements and emerging treatment modalities, physiotherapy remains a critical profession in the healthcare continuum, promoting physical well-being and improving the lives of countless individuals. [4]

Technological Advancements in Physiotherapy

Technological advances have revolutionized healthcare, introducing innovative tools and solutions to improve patient care, diagnostics, and treatment outcomes. These advancements

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have also made their way into physiotherapy, offering new opportunities for assessment, treatment, and patient engagement. [5]

Integration of technology in physiotherapy practice includes:

1. *Telehealth and remote consultations*: Telehealth has emerged as a valuable platform in physiotherapy practice, allowing for remote consultations between physiotherapists and patients. Through videoconferencing and secure online platforms, physiotherapists can assess, diagnose, and guide patients from a distance. Telehealth enables access to physiotherapy services for individuals in remote areas, those with limited mobility, or those unable to visit a clinic in person. It also promotes convenience, reduces travel time, and increases patient engagement. [6-8]
2. *Wearable devices and their impact on assessment and treatment*: Wearable devices, such as activity trackers, biosensors, and smart garments, have gained popularity in recent years. These devices monitor physiological parameters like heart rate, sleep, and movement. In physiotherapy, wearable devices provide objective data that can assist in assessing patients' progress, adherence to exercise programs, and overall physical activity levels. This data helps physiotherapists tailor treatment plans and provide personalized recommendations for optimizing rehabilitation outcomes. Additionally, wearable devices can promote patient self-management, motivation, and empowerment by providing real-time feedback and tracking progress.[9-10]
3. *Virtual reality and robotics in motor rehabilitation*: Virtual reality (VR) and robotics offer exciting possibilities in motor rehabilitation. VR technology provides immersive and interactive environments that can be used to simulate real-life activities and exercises. It engages patients in enjoyable and meaningful experiences while facilitating motor learning, balance training, and functional rehabilitation. Robotics, such as exoskeletons or robotic-assisted devices, can provide assistance or resistance during movement, allowing patients to practice and regain motor control. These technologies offer precise measurement and real-time feedback and can be adjusted to individual needs, enabling targeted and progressive rehabilitation. [(11, 12)]

The Integration of technology in physiotherapy practice enhances patient care, assessment, and treatment outcomes. Telehealth expands access to physiotherapy services, wearable devices provide objective data for personalized interventions, and virtual reality and robotics offer innovative and engaging rehabilitation experiences. However, it is crucial to strike a balance, ensuring that technology complements and augments the essential elements of physiotherapy, such as hands-on assessment, manual therapy, and the human touch. The judicious use of technology alongside the expertise of physiotherapists can contribute to more efficient, effective, and patient-centered care. [13]

The Role of Human Touch in Healthcare

A. The unique skills and expertise of physiotherapists:

Physiotherapists possess unique skills and expertise that set them apart in healthcare. Their extensive training in anatomy, physiology, and biomechanics equips them with a deep understanding of the human body and its movement patterns. This knowledge allows them to perform accurate assessments, identify impairments, and develop targeted treatment plans. Physiotherapists are skilled in palpation, using their hands to feel and assess tissue texture, muscle tone, joint mobility, and other physical characteristics. This tactile sensitivity enables them to detect subtle changes, identify areas of dysfunction, and tailor interventions accordingly.

B. Importance of physical assessment and manual techniques:

Physical assessment is a fundamental aspect of physiotherapy practice. Through hands-on examination, physiotherapists can gather valuable information about a patient's

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condition, including the range of motion, muscle strength, joint stability, and tissue integrity. Manual therapy techniques, such as joint mobilization, soft tissue massage, and myofascial release, are integral to physiotherapy interventions. These techniques restore joint function, reduce pain, and promote tissue healing. Skilled manual therapy addresses physical impairments, enhances circulation, reduces muscle tension, and stimulates the body's natural healing mechanisms.

C. Therapeutic relationship and its impact on patient outcomes:

The therapeutic relationship between physiotherapists and their patients is vital to healthcare outcomes. Physiotherapists foster a professional and empathetic connection with their patients, building trust, rapport, and effective communication. This relationship creates a supportive environment where patients feel comfortable sharing their concerns, goals, and progress. The trust and rapport established between a physiotherapist and their patient promote active engagement in the rehabilitation process, leading to better adherence to treatment plans and improved outcomes. Furthermore, physiotherapists' emotional support, encouragement, and education contribute to patients' well-being and empowerment.

The human touch in physiotherapy is an essential element that technological advancements cannot replace solely. Physiotherapists' unique skills, physical assessments, and manual techniques allow for a comprehensive evaluation and individualized treatment. The therapeutic relationship between physiotherapists and their patients fosters trust, open communication, and patient engagement, significantly impacting treatment outcomes. While technology can augment and enhance physiotherapy practice, the human touch remains irreplaceable in providing compassionate, holistic care to individuals. [14]

Debunking the Myth: The Future of Physiotherapy

A. Integration of technology as a complementary tool:

Contrary to the speculation about the end of physiotherapy, the future of the field lies in the Integration of technology as a complementary tool rather than a replacement. Technology has the potential to enhance the capabilities of physiotherapists, allowing for more accurate assessments, personalized interventions, and improved patient outcomes. By embracing technological advancements, physiotherapists can leverage tools such as telehealth, wearable devices, virtual reality, and robotics to augment their practice. These technologies provide additional data, enable remote consultations, offer engaging rehabilitation experiences, and facilitate precise measurements. By integrating technology thoughtfully and purposefully, physiotherapists can optimize their ability to deliver high-quality care and achieve better outcomes.

B. Expanding access to physiotherapy services through technology:

One of the significant advantages of technology in physiotherapy is its potential to expand access to services. Telehealth platforms enable physiotherapists to reach patients in remote or underserved areas, providing necessary care without the constraints of geographical boundaries. Remote consultations allow for regular monitoring, follow-ups, and ongoing support, enhancing continuity of care. Additionally, technology enables self-management and home-based exercises through smartphone applications or online platforms, empowering patients to participate actively in rehabilitation. By leveraging technology, physiotherapists can break down barriers to access and provide care to a broader population, ultimately improving public health outcomes.

C. Balancing technological advancements with the essential elements of physiotherapy:

While embracing technology, it is crucial to maintain a balance with the critical elements of physiotherapy. The human touch, physical assessment, manual techniques, and the therapeutic relationship remain integral to the practice. Despite the benefits of technology,

physiotherapists should continue to prioritize hands-on examination, palpation, and manual interventions as they provide unique insights and therapeutic benefits that cannot be replicated by technology alone. The personalized and empathetic approach, tailored treatment plans, and patient-centered care should remain at the core of physiotherapy practice. Technology should be used as a tool to enhance and complement these essential elements rather than overshadow or replace them. By striking a balance between technology and the human touch, physiotherapy can evolve and adapt to the changing landscape of healthcare while staying true to its core principles.

The future of physiotherapy lies in integrating technology as a complementary tool, expanding access to services, and striking a balance between technological advancements and the essential elements of the profession. By thoughtfully leveraging technology, physiotherapists can enhance their practice, improve patient outcomes, and deliver holistic, patient-centered care. The ongoing evolution of physiotherapy will rely on the ability to embrace and integrate technological advancements while upholding the core values and skills that make the profession invaluable in the healthcare ecosystem.[15-16]

CONCLUSION

Physiotherapy is an indispensable healthcare profession that promotes physical function, mobility, and quality of life. Physiotherapists possess unique skills and a holistic approach, contributing significantly to patient care. While technology offers new opportunities, it should complement rather than replace essential elements of physiotherapy. By integrating technology thoughtfully, physiotherapists can leverage advancements in telehealth, wearable devices, virtual reality, and robotics to expand access and provide personalized care. Proactive preventive care and chronic disease management approaches enhance the profession's impact. The future of physiotherapy is promising, with growth, innovation, and improved outcomes.

Embracing technology while upholding core values ensures continued impact on individuals' lives and public health.

REFERENCES:

1. Nicholls DA. The End of Physiotherapy: Routledge; 2018.
2. Poulis I. The end of physiotherapy. The Australian Journal of Physiotherapy. 2007;53(2):71-2.
3. Raja K. Physiotherapy - The state of the profession in India: An analysis. Physiotherapy - The Journal of Indian Association of Physiotherapists. 2017;11(1):34-6.
4. Available from: https://www.mwtherapy.com/blog/physical-therapy-current-issues-in-2023.
5. Baird C. Open Colleges. 2023. [cited 2023].
6. Tarina vdS. Introduction to Telehealth: Physiopedia; 2023. Available from: https://www.physio-pedia.com/Introduction_to_Telehealth.
7. Reynolds A, Awan N, Gallagher P. Physiotherapists' perspective of telehealth during the Covid-19 pandemic. International Journal of Medical Informatics. 2021;156:104613.
8. Cottrell MA, Russell TG. Telehealth for musculoskeletal physiotherapy. Musculoskeletal Science and Practice. 2020;48:102193.
9. Leroux A, Rzasa-Lynn R, Crainiceanu C, Sharma T. Wearable Devices: Current Status and Opportunities in Pain Assessment and Management. Digital Biomarkers. 2021;5(1):89-102.
10. Rodgers MM, Alon G, Pai VM, Conroy RS. Wearable technologies for active living and rehabilitation: Current research challenges and future opportunities. Journal of Rehabilitation and assistive technologies engineering. 2019;6:2055668319839607.
11. Sveistrup H. Motor rehabilitation using virtual reality. Journal of NeuroEngineering and Rehabilitation. 2004;1(1):10.
12. Punyani S, Kahile M, Kane S. Can AR, VR, and Gaming Be the Future of Physiotherapy

Education and Training? ECS Transactions. 2022;107(1):16057.
13. Estel K, Scherer J, Dahl H, Wolber E, Forsat ND, Back DA. Potential of digitalization within
14. physiotherapy: a comparative survey. BMC Health Services Research. 2022;22(1):496.
15. Brown S. Preserving the human touch in medicine in a digital age. CMAJ : Canadian Medical Association journal = journal de l'Association medicale canadienne. 2019;191(22):E622-e3.
16. Jaholkowski BM. Physiotherapy present and future. South African medical journal = Suid-Afrikaanse tydskrif vir geneeskunde. 1979;55(13):513-5.
17. Hartley SE, Ryad H, Yeowell G. Future-proofing the Profession: Physiotherapists' perceptions of their current and emerging role. Physiotherapy. 2023;119:72-9.

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IJPTRS Vol 3(2) April - May - June 2024 pp41- 50 E-ISSN 2583-4304

"Urinary Incontinence: Prevalence, Knowledge and Attitude among rural females of Vadodara district: A Cross Sectional Study"

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URL: https://ijptrs.com/view- issue/167/Full text

DOI:https://ijptrs.com/public/images/content/540sahil%20V3%20I2%20-%20Copy%20(1).pdf

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Submission: 12th Jan 2024
Revised: 22nd Jan 2024
Publish: 1st April 2024

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ABSTRACT

BACKGROUND: Urinary incontinence (UI) is a condition where individuals encounter involuntary urine leakage, leading to challenges in social interactions and individual hygiene. This issue not only affects physical health but also takes a toll on mental and social well-being, causing feelings of anxiety, shame, and social isolation. Globally, the prevalence of UI varies between 8% to 45%, with higher rates observed in developing regions like Asia. Despite its global prevalence, many people avoid asking help due to societal stigma and a lack of knowledge about its treatments. Research in various parts of the world has highlighted insufficient knowledge and unfavorable attitudes towards UI, particularly among women.

AIMS AND OBJECTIVES: There is a lack of evidence on the prevalence, knowledge, and attitude regarding Urinary Incontinence (UI) among the rural population in India. Therefore, the purpose of this study was to assess the prevalence, knowledge, and attitude of UI among rural females in the Vadodara district, Gujarat.

METHODS AND MATERIAL: The prevalence of UI was assessed using the Questionnaire for Female Urinary Incontinence Diagnosis (QUID), while knowledge and attitudes regarding UI were evaluated through the Incontinence Quiz questionnaire

RESULTS: Among 150 participants, 25.3% had urinary incontinence, predominantly stress UI (71%), followed by urge (28.9%) and mixed (15.7%) types. An Incontinence Quiz revealed a mean score of 3.70 ± 2.43 out of 14, indicating insufficient knowledge and negative attitudes toward UI

CONCLUSION: The study reveals a high prevalence of stress urinary incontinence in rural women in Vadodara, accompanied by inadequate knowledge and negative attitudes toward the condition. It is crucial to create awareness and provide health education to promote better understanding and a positive outlook towards urinary incontinence.

KEY WORDS: Urinary Incontinence, Rural Women, QUID, Incontinence Qu

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INTRODUCTION:

As stated by the international continence society Urinary incontinence (UI) is "a condition in which involuntary loss of urine is objectively demonstrable and is a social and hygiene problem.[1] Urinary incontinence (UI) is not be a life-threatening condition, but it can have a significant impact on a person's overall health and well being, physically, mentally and socially.[2] This can cause feelings of anxiety, embarrassment, depression and isolation and make a negative effect on individual.[3, 4]

Different studies in the world have reported a prevalence rate of urinary incontinence ranging from 8% to 45%. Specifically, in 2008, approximately 250 million women in developing Asian countries were affected by urinary incontinence, and this number was projected to rise to 303 million by 2018.[5, 6] the prevalence of UI is associated with ageing, It impacts 7% of women between 20 to 39 years, 17% between 40 to 59 years, 23% between 60 to 79 years, and 32% in those aged 80 and above.[7]

Urinary incontinence is often not adequately addressed despite of its high prevalence, leading to low rates of seeking care. This reluctance is likely because of the social stigma associated to the condition, discomfort in discussing the problem openly, attempts to downplay the issue, and lack of awareness about the availability of effective treatments. These factors suggest a lack of knowledge regarding the management of urinary incontinence. [8, 9, 10]

To effectively raise awareness, It is important to measure the extent of the public`s knowledge of UI. yet, only few studies are available on this issue. A study conducted by Guillen Lopez et al in 2003 concluded that general knowledge about UI is inadequate among 325 Peru women. [11] similar study assessed awareness of UI in Qatar concluded that women have poor knowledge about the causes of UI and do not seek medical care because of shame, which causes the underreporting of cases.[12]

Despite of high prevalence and poor knowledge of UI worldwide, there is a lack of evidence addressing prevalence, knowledge and awareness of UI among rural population of India. Therefore, the aims of this study were to identify the prevalence of UI and its subtypes among rural females of Vadodara district of Gujarat and to determine their knowledge toward this condition.

SUBJECTS AND METHODS:

The study was carried out among females of different villages of Vadodara district in period of one year after getting ethical approval by Institutional Review Board. Consent was taken from the subjects prior to the cross-sectional study, using convenient sampling method out of 200, 150 women more than 30 years old giving consent for the study were included. Subjects having any neurological or psychological conditions, active pregnancy and undergone surgery within the last 12 weeks were excluded from the study.

After getting consent from the subjects a detailed subjective assessment was taken including demographic data (name, age, marital status, literacy level, occupation, etc.) gynecological & obstetrics history (menstrual history, no. of delivery, type of delivery, history of abortion, history of episiotomy, hysterectomy, hernia repair etc.) history of any existing medical conditions etc.

In the present study, the definition of UI was "any leakage of urine or accidental loss of control of urination which made you, your pads or undergarments wet in inappropriate times or places in the last 12 months"

Prevalence of UI was evaluated by the Questionnaire for female Urinary Incontinence Diagnosis (QUID). It contains total 6 questions to assess different types of UI:

Do you leak urine (even small drops), wet yourself, or wet your pads or undergarments:

1. When you cough or sneeze?
2. When you bend down or lift something up?
3. When you walk quickly, jog, or exercise?
4. While you are undressing to use the toilet?
5. Do you get such a strong and uncomfortable need to urinate that you leak urine (even small drops) or wet yourself before reaching the toilet?

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6. Do you have to rush to the bathroom because you get a sudden, strong need to urinate?

All of the questions refer to the "last 1 year".

The extent of the condition was determined by summing up the scores from each question. The scores ranged between 0 and 5 on a scale of frequency of incontinence (0 is none of the time, 1 is rarely, 2 is sometimes, 3 is often, 4 is usually, and 5 is all the time).[13, 14]

Internal consistency of the stress and urge items is good (Cronbach alpha = 0.72 and 0.79, respectively). Sensitivity and specificity of QUID are 85% and 71% respectively.[14]

A woman with a combined score of questions 1, 2 and 3 is ≥4 is classified as having stress incontinence and a woman with a combined score of ≥6 for questions 4, 5 and 6 is classified as having urge incontinence. Mixed urinary incontinence was identified among women diagnosed with both stress and urge urinary incontinence by the QUID.[14, 15]

The Incontinence Quiz questionnaire was utilized to assess knowledge regarding UI. This tool was specifically designed to explore beliefs and understanding related to various aspects of UI, including its causes (items 2, 4, 5, and 10), treatment options, and effects (items 1, 3, 6, 7, 11, and 14), communication between physicians and patients about UI (items 12 and 13), and the connection between aging and UI (items 8 and 9). Respondents were required to indicate their agreement, disagreement, or uncertainty for each item. Correct responses were determined for each item, and a cumulative score was calculated by summing up the number of correct answers, ranging from 0 to 14. A higher score reflected a better understanding and more positive attitudes toward managing UI.[15]

The data were analyzed by using the frequency distribution table, graphs by Statistical Packages for Social Sciences (SPSS) software

RESULTS:

A total of 150 of 200 enrolled subjects participated in the study; table 1 gives the socio demographic and reproductive characteristics of the study subjects.

According to the QUID out of 150 participants total 25.3% (38/150) had urinary incontinence. Among total subjects having incontinence, highest 71% were having stress UI (27/38), followed by 28.9 % (11/38) women had urge incontinence and 15.7 % (6/38) women had mix type of urinary incontinence.

Knowledge and attitude were checked using Incontinence quiz and specific responses are presented in table 3.

Demographic Variables of Subjects		
Characteristics		**n (%)**
Age (years)	30-39	60 (40)
	40-49	28 (18.6)
	50-59	32 (21.3)
	60 and above	26 (17.3)

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Literacy level	Illiterate	39 (26)
	Primary Education	78 (52)
	Secondary Education	17 (11.3)
	Graduation	13 (8.6)
	Post Graduation	3 (2)
Marital status	Married	136 (90.6)
	Un Married	3 (2)
	Widow	11 (7.3)
Route of delivery	Vaginal	104 (69.3)
	Caesarean Section	18 (12)
	Both	18 (12)
	None	10 (6.6)
Menopausal history	Pre Menopausal	82 (54.6)
	Peri Menopausal	26 (17.3)
	Post Menopausal	42 (28)
History of any abdominal or reproductive surgery	Yes	47 (31.3)
	No	103 (68.6)

Table 1: Demographic Variables of Subjects

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Demographic variables		Number of participants	Type of UI and Frequency (n)
Age	30-39	60	Stress UI: 3 Urge UI: 2 Mixed UI: 1
	40-49	28	Stress UI: 4 Urge UI: 2 Mixed UI: 2
	50-59	32	Stress UI: 10 Urge UI: 5 Mixed UI: 3
	60 and more	26	Stress UI: 10 Urge UI: 2 Mixed UI: 0
Marital status	Married	136	Stress UI: 24 Urge UI: 9 Mixed UI: 0
	Un Married	3	Stress UI: 0 Urge UI: 0 Mixed UI: 0
	Widow	11	Stress UI: 3 Urge UI: 2 Mixed UI: 0

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Demographic variables		Number of participants	Type of UI and Frequency (n)
Route of delivery	Vaginal	114	Stress UI: 23 Urge UI: 11 Mixed UI: 6
	Caesarean Section	18	Stress UI: 2 Urge UI: 0 Mixed UI: 0
	Both	18	Stress UI: 2 Urge UI: 0 Mixed UI: 0
	None	10	Stress UI: 0 Urge UI: 0 Mixed UI: 0
Menopausal history	Pre Menopausal	82	Stress UI: 10 Urge UI: 5 Mixed UI:4
	Peri Menopausal	26	Stress UI: 4 Urge UI: 2 Mixed UI:0
	Post Menopausal	42	Stress UI: 13 Urge UI: 4 Mixed UI: 2

Table 2: Prevalence of different types of UI

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Sentence for which correct answer is agree		Number and % of subjects who are		
		Agree	**Disagree**	**Don't know**
1	Most people who currently have involuntary urine loss live normal lives	57 (38)	65 (43.3)	28 (18.6)
2	Women are more likely than men to develop Urinary Incontinence	49 (32.6)	10 (6.6)	91 (60.6)
3	Many people with involuntary urine loss can be cured and almost everyone can experience significant improvement.	44 (29.3)	12 (8)	94 (62.6)
4	Involuntary loss of urine can be caused by several easily treatable medical conditions	54 (36)	39 (26)	57 (38)
5	any common over-the-counter medications can cause involuntary urine loss	53 (35.3)	33 (22)	64 (42.6)
6	There are exercises that can help control urine if one leaks when they cough, sneeze, or laugh	41 (27.3)	10 (6.6)	99 (66)
Sentence for which correct answer is disagree				
7	Once people start to lose control of their urine on a regular basis, they usually can never regain complete control over it again	52 (34.6)	42 (28)	56 (37.3)
8	Involuntary loss of urine, often called a leaky bladder or urinary incontinence is one of the results of normal aging.	55 (36.6)	22 (14.6)	73 (48.6)
9	Most people will involuntarily or accidentally lose control of their urine on a regular basis by the time they reach age 85	41 (27.3)	33 (22)	76 (50.6)
10	Involuntary urine loss is caused by only one or two conditions	37 (24.6)	43 (28.6)	70 (46.6)
11	Other than pads, diapers, and catheters, little can be done to treat or cure involuntary urine loss.	44 (29.3)	40 (26.6)	66 (44)
12	Most physicians ask their older patients whether they have bladder control problems.	43 (28.6)	18 (12)	89 (59.3)
13	Most people with involuntary urine loss talk to their doctors about it.	54 (36)	33 (22)	63 (42)
14	The best treatment for involuntary urine loss is usually surgery.	56 (37.3)	27 (18)	67 (44.6)

Table 3: Incontinence Quiz results

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Total score from the Incontinence Quiz was calculated to measure knowledge and attitudes about UI. The mean of Incontinence Quiz score was 3.70 ± 2.43 out of 14, which was much lower than midpoint of 7.0, indicating that respondents had less knowledgeable and negative attitudes towards UI. Total 8 (5.3%) subjects answered all the items incorrectly. Only 14 (9.3%) subjects scored more than 7 and 136 (90.6%) subjects answered less than 7 items correctly.

The cause of UI was screened by items 2, 4, 5 and 10, where 32.6 % subjects agreed to the item "Women are more likely than men to develop Urinary Incontinence", in 4th item "Involuntary loss of urine can be caused by several easily treatable medical conditions" total 36% subjects answered correctly. 35.3% subjects agreed that any common over-the-counter medications can cause involuntary urine loss. 28.6 % gave correct answer of item 10 "Involuntary urine loss is caused by only one or two conditions" by not agreeing the sentence. Treatment and effects of UI related items were asked in items 1, 3, 6, 7, 11 and 14. Total 38% subjects agreed that "most people who currently have involuntary urine loss live normal lives". Correct answer of 3rd item "Many people with involuntary urine loss can be cured and almost everyone can experience significant improvement" was given by 29.3% females.

Total 66% subjects didn't know that "There are exercises that can help control urine if one leaks when they cough, sneeze, or laugh". Whereas total 34.6% subjects believed that "Once people start to lose control of their urine on a regular basis, they usually can never regain complete control over it again", correct answer of 11th item "Other than pads, diapers, and catheters, little can be done to treat or cure involuntary urine loss" was given by 26.6% subjects. Total 37.3% gave incorrect answer of item states that "The best treatment for involuntary urine loss is usually surgery".

Item 12 and 13 were about physician–patient discussion about UI in which only 12% subjects answered correctly of item "Most physicians ask their older patients whether they have bladder control problems", the item 13th stated "Most people with involuntary urine loss talk to their doctors about it" answered correctly by 22% subjects. Two items (8 and 9) query the relationship between aging and UI. Both are inaccurate. They elicited correct answers in 14.6% and 22% of the subjects respectively.

DISCUSSION

In present study prevalence of UI, knowledge and attitude towards UI was assessed among the females of rural Vadodara.

Prevalence of UI in current study was 25.3%. The finding of present study was similar to the results of studies by Biswas et al.16 among women aged 50 years and above in a rural health facility of West Bengal 27.7%, Pabhu and Shanbhag 17 concluded 25.5% prevalence on women residing in a tribal area in Maharashtra. Singh et al.18 reported 21.8%, Ansar et al.19 concluded 23.9% prevalence of UI.

Prevalence of stress UI in present study was 71% whereas urge and mixed UI was 28.9% and 15.7% respectively. Similar studies on the prevalence of various type of UI concluded stress UI 51%, followed by mixed UI 32.7% and urge UI 16.3% 16 another study by Agarwal BK, Agarwal N 20 revealed stress UI and 22% women had stress UI, 38% urge UI and 38% had mixed type of UI. Similar to current study stress UI was the commonest type in other studies 18, 21, 22. This variance in the prevalence may be due to different study settings, subjects and their possible risk factors and definition of UI used.

Another objective of this study was to evaluate knowledge and attitudes about UI. Results (mean of Incontinence Quiz score 3.70 ± 2.43 out of 14) suggested that rural women of Vadodara had less knowledgeable and more negative attitudes toward UI. Kubik and colleagues assessed Incontinence quiz in California where the mean cumulative Incontinence Quiz score was 5.46 ±2.66 in minority women and 6.16 ± 2.86 in whites23. Whereas the study conducted by Youngmi Kang concluded mean incontinence quiz score was 4.85 ± 2.75 out of 1424. This variation suggests that subjects of current study had less knowledge and negative attitude about UI.

Reason behind the lack of knowledge could low literacy level, poor health education, lack of medical facilities among rural areas whereas misconceptions, beliefs, hesitation for asking help could be the reason for negative attitude of subjects.25, 26.

CONCLUSION

The study's findings indicate a considerable prevalence of urinary incontinence; specifically stress urinary incontinence, among rural women. Additionally, the results show that women in the rural areas of Vadodara have insufficient knowledge and negative attitude about urinary incontinence, potentially leading to delayed or neglected treatment. To address this issue, it is crucial to create awareness and provide health education to promote better understanding and a positive outlook towards urinary incontinence.

FINANCIAL SUPPORT: None

CONFLICTS OF INTEREST: None

REFERENCE:

1. Bates P, Bradley WE, Glen E, Griffiths D, Melchior H, Rowan D, et al. The standardization of terminology of lower urinary tract function. J Urol 1979;121:551 –554.
2. Haylen B.T., de Ridder D., Freeman R.M., Swift S.E., Berghmans B., Lee J., Monga A., Petri E., Rizk D.E., Sand P.K., et al. An International Urogynecological Association (IUGA)/International Continence Society (ICS) Joint Report on the Terminology for Female Pelvic Floor Dysfunction. Int. Urogynecol. *J.* 2009; 21:5–26.
3. Wan X, Wang C, Xu D et al (2014) Disease stigma and its mediating Effect on the relationship between symptom severity and quality of life among community-dwelling women with stress urinary incontinence: a study from a Chinese city. J Clin Nurs 23(15): 2170–80
4. Bartoli S, Aguzzi G, Tarricone R (2010) Impact on quality of life of urinary incontinence and overactive bladder: a systematic literature review. Urology 75(3): 491-500.
5. Thomas TM, Plymat KR, Blannin J. Meade TW, Prevalence of urinary incontinence. Br Med J. 1980:281:1243-5.
6. Fall M, Frankenberg S, Frisen M, Larsson B, Petren M. 4556.000 Swedes may have urinary incontinence, only fought soken helped for the answer. (In Swedish; '456.000 Swedes may have urinary incontinence, only every fourth subject seeks help'), Lakartidningen. 1985;82:2054-6
7. Norton P, Brubaker L. Urinary incontinence in women. Lancet 2006;367:57-67.
8. Vasconcelos CTM, Firmiano MLV et al (2019) Women's knowledge, attitude and practice related to urinary incontinence: systematic review. Int Urogynecol J 30 (2): 171-180
9. Perera J, Kirthinanda DS, Wijeratne S, Wickramarachchi TK. Descriptive cross sectional study on prevalence, perceptions, predisposing factors and health seeking behaviour of women with stress urinary incontinence. BMC Womens Health. 2014;14:78
10. Siddiqui NY, Levin PJ, Phadtare A, Pietrobon R, Ammarell N. Perceptions about female urinary incontinence: a systematic review. Int Urogynecol J. 2014;25(7):863–71.
11. Guillen Lopez O, Llanos Zavalaga F, Lecca Garcia L. Conocimientos sobre incontinencia urinaria en pacientes hospitalizados. Rev Med Herediana. 2003;14(4):186–94
12. Saleh N, Bener A, Khenyab N, Al-Mansori Z, Al Muraikhi A. Prevalence, awareness and determinants of health care-seeking behaviour for urinary incontinence in

Qatari women: a neglected problem? Maturitas. 2005;50(1):58–65

13. Am J obstet. Validity of utility measures for women with urge,stress and mixed urinary incontinence. Gynecol ,2014.jan 210(1):85
14. Bradley CS, Rovner ES, Morgan MA, et al. A new questionnaire for urinary incontinence diagnosis in women: development and testing. Am J Obstet Gynecol 2005;192:66–73.
15. Farrell, sa ,bent a ,amir- khalkhali b ,rittenberg D , Zilbert A. women's ability to assess their urinary incontinence type using the QUID as an educational tool.inturogynecol 2013,may ,24(5):759-62
16. Biswas B, Bhattacharyya A, Dasgupta A, Karmakar A, Mallick N, Sembiah S. Urinary incontinence, its risk factors, and quality of life: A study among women aged 50 years and above in a rural health facility of West Bengal. J Mid-life Health 2017;8:130-6
17. Prabhu SA, Shanbhag SS. Prevalence and risk factors of urinary incontinence in women residing in a tribal area in Maharashtra, India. J Res Health Sci 2013;13:125-30
18. Singh U, Agarwal P, Verma ML, Dalela D, Singh N, Shankhwar P, et al. Prevalence and risk factors of urinary incontinence in Indian women: A hospital-based survey. Indian J Urol 2013;29:31-6.
19. Ansar H, Adil F, Munir AA. Unreported urinary and anal incontinence in women. J Liaquat Univ Med Health Sci 2005;4:54-6.
20. Agarwal BK, Agarwal N. Urinary incontinence: prevalence, risk factors, impact on quality of life and treatment seeking behaviour among middle aged women. Int Surg J 2017;4:1953-8
21. Kinchen KS, Burgio K, Diokno AC, Fultz NH, Bump R, Obenchain R. Factors associated with women's decisions to seek treatment for urinary incontinence. J Womens Health (Larchmt) 2003;12:687-98.
22. Sommer P, Bauer T, Nielsen KK, Kristensen ES, Hermann GG, Steven K, et al. Voiding patterns and prevalence of incontinence in women. A questionnaire survey. Br J Urol 1990;66:12-5
23. Kubik K, Blackwell L, Heit M. Does socioeconomic status explain racial differences in urinary incontinence knowledge? Am J Obstet Gynecol. 2004;191(1):188-193.
24. Kang Y. Knowledge and attitudes about urinary incontinence among community-dwelling Korean American women. J Wound Ostomy Continence Nurs. 2009 Mar-Apr;36(2):194-9
25. Rashidi Fakari, F., Hajian, S., Darvish, S. *et al.* Explaining factors affecting help-seeking behaviors in women with urinary incontinence: a qualitative study. *BMC Health Serv Res* 21, 60 (2021).
26. Aoki Y, Brown HW, Brubaker L, Cornu JN, Daly JO, Cartwright R. Urinary incontinence in women. Nat Rev Dis Primers. 2017 Jul 6;3:17042

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