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ISSN Online (2790-7414)  
ISSN Print (2790-7406)

JOURNAL OF THERAPIES &  
REHABILITATION SCIENCES

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## THE THERAPIST

JOURNAL OF THERAPIES &amp; REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



### Editorial

## Effectiveness of Physical Therapy in Rehabilitation of Muscular Dystrophy (MD) Patients

**Muhammad Akram Tariq<sup>1</sup>**<sup>1</sup>Punjab Higher Education Department, Lahore, Pakistan\*[akram@soe.ucsc.edu](mailto:akram@soe.ucsc.edu)

### ARTICLE INFO

#### How to Cite:

Akram Tariq, M. (2022). Effectiveness of Physical Therapy in Rehabilitation of Muscular Dystrophy (MD) Patients. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences), 3(1). <https://doi.org/10.54393/tt.v3i1.41>

A category of hereditary genetic diseases known as muscular dystrophies (MD) gradually weaken the muscles, resulting in a growing degree of impairment. Since MD is a progressive disorder, it deteriorates over time. Before impacting the muscles more broadly, it frequently starts by affecting a specific group of muscles. Some forms of MD eventually impair the heart or the respiratory muscles, which makes the condition potentially fatal. Although there is no known treatment for MD, many of its symptoms can be managed with it. MD is brought on by modifications (mutations) in the genes in charge of a person's muscles' composition and functionality. The muscle fibres undergo alterations as a result of the mutations, which obstruct the muscles' capacity to work. This results in growing handicap over time. A person's parents frequently pass on the mutations to their offspring. Your doctor may recommend genetic testing and counselling if there is a family history of MD in order to assess your risk of contracting the illness or passing it on to a child and to go over your alternatives.

There are numerous varieties of MD, and each has relatively unique symptoms. Many do not have an impact on life expectancy, and not all types result in severe disability. Among the more prevalent forms of MD are: One of the most prevalent and severe kinds is Duchenne MD, which often affects boys in their early years and has a life expectancy of only 20 to 30 years. Myotonic dystrophy is a type of MD that can appear at any age. Although it does not usually limit life expectancy, those with a severe form of the disease may do so. Facioscapulohumeral MD is a slow-progressing, mostly non-life-threatening kind of MD that can occur in both childhood and adults. Closely linked to Duchenne MD, Becker MD develops later in childhood, is less severe, and often has less of an impact on life expectancy. limb-girdle MD is a set of illnesses that typically appear in late adolescence or early adulthood, some varieties can advance swiftly and pose a serious threat to life, while others proceed more slowly. Oculopharyngeal MD is a kind of MD that often does not shorten life expectancy until a person is between the ages of 50 and 60. Emery-Dreifuss MD is a kind of MD that often manifests in childhood or early adulthood, most sufferers will live at least into middle age.

The various kinds of MD can be diagnosed using a wide range of techniques. Depending on when symptoms first show, an illness may be diagnosed at a different age. Investigation of any symptoms, discussion of any family history of MD, physical examination, blood tests, electrical tests on the nerves and muscles, and a muscle biopsy (where a small tissue sample is extracted for testing) are all steps in the diagnosis process. Although there is no known cure for MD, there are numerous therapies that can help with any physical issues or limitations that may arise. These can include mobility assistance, physical therapy, and other physical aids, as well as support groups to help with the emotional and practical effects of MD, drugs - such as steroids to boost muscle strength, or ACE inhibitors and beta blockers to manage cardiac problems, or surgery - to correct postural deformities, such as scoliosis. Methods of mending the genetic alterations and harmed muscles linked to MD are the subject of recent research.



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JOURNAL OF THERAPIES &amp; REHABILITATION SCIENCES

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Volume 3, Issue 1 (Jan-Jun 2022)



## Guest Editorial

## Roll of Stem Cell Therapy in Osteoarthritis

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### ARTICLE INFO

#### How to Cite:

Ehsan, K. (2022). Roll of Stem Cell Therapy in Osteoarthritis. *THE THERAPIST (Journal of Therapies & Rehabilitation Sciences)*, 3(1). <https://doi.org/10.54393/tt.v3i1.29>

Osteoarthritis(OA) is by far the most prevalent type of degenerative joint disease. It is a painful, long-lasting disorder that can affect any synovial joint. Over the future decades, diseases would impose a significant socioeconomic burden on society as a result of an ageing population and rising disease prevalence [1]. The fact that there are few OA therapy choices complicates this situation. Since neither pharmacological nor non-operative treatments have shown to be effective in slowing or stopping the progression of disease, treatment is limited to managing aggravating variables over the long term and managing pain. When mechanical deformity is evident, surgical alternatives such as osteotomies are available to improve alignment and reduce the risk of OA; however, these operations are of limited effect once severe degenerative changes have occurred [2]. Despite improvements in these techniques, they cannot be used to treat more severe joint degeneration brought on by OA. The hunt for disease-modifying remedies goes on in the lack of successful tactics.

For degenerative musculoskeletal disorders like OA, mesenchymal stem cells (MSCs) have been recommended as the best restorative cellular treatment. These cells can quickly multiply and differentiate into musculoskeletal lineages like bone and cartilage. They can be found in a range of tissues [3]. A large body of research has also shown that these cells control crucial immunologic processes by modifying the local inflammatory response. Together, these elements lend credence to MSCs' potential to prevent degenerative joint disease. Due to the fact that this cytotype can be found in a wide variety of tissues, research has concentrated on identifying the best source for MSC generation [4]. Thus, MSC-based therapeutic approaches can be employed to treat OA as a standard treatment plan in near future.

### REFERENCES

- [1] Brooks PM. Impact of osteoarthritis on individuals and society: how much disability? Social consequences and health economic implications. *Current Opinion in Rheumatology*. 2002 Sep; 14(5):573-7. doi: 10.1097/00002281-200209000-00017
- [2] Bert JM and Gasser SI. Approach to the osteoarthritic knee in the aging athlete: debridement to osteotomy. *Arthroscopy*. 2002 Dec; 18(9 Suppl 2):107-10. doi: 10.1053/jars.2002.36513
- [3] Kolf CM, Cho E, Tuan RS. Mesenchymal stromal cells. *Biology of adult mesenchymal stem cells: regulation of niche, self-renewal and differentiation*. *Arthritis Research and Therapy*. 2007; 9(1):204. doi: 10.1186/ar2116
- [4] Strioga M, Viswanathan S, Darinkas A, Slaby O, Michalek J. Same or not the same? Comparison of adipose tissue-derived versus bone marrow-derived mesenchymal stem and stromal cells. *Stem Cells and Development*. 2012 Sep; 21(14):2724-52. doi: 10.1089/scd.2011.0722



# THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



## Original Article

# Evaluation of the Causes of Abdominal Right Upper Quadrant Pain using Ultrasound

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## ARTICLE INFO

### Key Words:

Ultrasonography, RUQ, Pain, Abdomen, Fatty liver

### How to Cite:

Aftab Ahmed, A. ., John, A. ., Ali, A. ., Mehar, M. A. ., & Fatima Rizvi, S. T. .(2022). Evaluation of the Causes of Abdominal Right Upper Quadrant Pain using Ultrasound: Abdominal Right Upper Quadrant Pain using Ultrasound. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences), 3(1). <https://doi.org/10.54393/tt.v3i1.30>

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Received Date: 11<sup>th</sup> April, 2022

Acceptance Date: 10<sup>th</sup> May, 2022

Published Date: 30<sup>th</sup> June, 2022

## ABSTRACT

The outermost upper quadrant at the right side of the abdomen is right upper quadrant, also acknowledged as epigastrium. **Objectives:** To evaluate of the causes of abdominal right upper quadrant pain using ultrasound. **Methods:** This was a descriptive cross-sectional study conducted at private medical setup of Gujranwala, Pakistan from January 2022 to March 2022. The information required for this study was collected by using ultrasound equipment TOSHIBA XARIO 100 having probe frequency of 3.5Hz. A sample size of 70 patients was considered having abdominal pain in the right upper quadrant. The data were entered and analyzed using SPSS version 20.0. **Results:** Highest frequency of RUQ pain was shown in more than 45 years in females 47 (67.1%). The most common diagnosis of patients with RUQ pain was fatty liver disease 27 (38.6%) followed by Cholelithiasis 11(15.7%). **Conclusions:** Ultrasound is the gold standard modality for diagnosing abdominal organs diseases as it is a cheap, non-invasive and fast modality. Most common diseases diagnosing in patients with RUQ pain is fatty liver (38.6%) in old females(67.1 %).

## INTRODUCTION

The outermost upper quadrant at the right side of the abdomen is Right Upper Quadrant, also acknowledged as Epigastrium [1-3]. Right Upper Quadrant abbreviated as RUQ outstretched from umbilical plane at the right side to right ribcage [4]. Right upper quadrant (RUQ) accommodate organs that are liver, gall bladder, biliary track, head of pancreas, and right kidney. Epigastric or RUQ pain is most common presenting problem in hospital settings [5]. In patients with right upper quadrant (RUQ) pain, imaging plays a vital role in diagnosis [6]. The first line choice of modality for the assessment of pain is ultrasound. To locate the cause of pain and early diagnosis is essential for proper treatment [7,8]. The differential diagnosis for

pain in RUQ includes hepatic diseases, acute hepatitis, fatty liver disease, G.B stones, Cholecystitis, pancreatitis, renal disorders, right Hydronephrosis, and renal parenchymal lesions [9-11]. Pathologies involving liver include hepatitis, a condition of inflammation of liver, categorized as acute or chronic [10,12]. Fatty liver disease is a condition involving deposition of extra fat in the liver. Hepatitis involves inflammation of liver [13]. Pathologies of gall bladder involves stones that are hard deposits and clog the cystic duct [14]. A cute cholecystitis involves abrupt inflammation of gall bladder. Pancreatitis, a condition having inflammation of pancreas [15]. Hydronephrosis is a condition in which urine is unable to drain from kidneys

causing dilatation or swelling of calices or renal pelvis [16,17]. Renal stones, also called Urolithiasis are hard structures and are made up of salt and minerals [18,19]. Fluid filled sacs in the kidneys are called renal cysts. These cysts can be simple and complex [20,21]. Ultrasound in the front-line imaging modality used in modern medicine due to its vast availability. It provides quick, real-time and dynamic imaging techniques [22,23]. It is non-invasive, painless imaging modality that uses non-ionizing radiations which causes no harmful effects on the human body. Ultrasound can be escorted to the patient's bedside and it provides expeditious information [24,25]. This study showed the assessment of patients presenting with pain in right upper quadrant. The best modality for diagnosing pain in RUQ is ultrasound. Ultrasound is widely used due to its advantages as it is cheap, fast, and non-invasive. It contains no harms so it can be performed at any age.

## METHODS

This was a descriptive cross-sectional study conducted at private medical setup of Gujranwala, Pakistan from January 2022 to March 2022. The information required for this study was collected by using ultrasound equipment TOSHIBA XARIO 100 having probe frequency of 3.5Hz. This study included patients who presents with RUQ pain while pregnant females are excluded. A sample size of 70 patients has considered from a previous published article. The data were entered and analyzed using SPSS version 20.0.

## RESULTS

| Age Groups   | Frequency(%) |
|--------------|--------------|
| 0-15         | 4(5.7%)      |
| 16-30        | 17(24.3%)    |
| 31-45        | 24(34.3%)    |
| More than 45 | 25(35.7%)    |
| Total        | 70(100.0%)   |

**Table 1:** Age Group of Respondents

This is a descriptive cross-sectional study conducted at private medical setup of Gujranwala, Pakistan. The study was organized over a period of three months from January 2022 to March 2022. Table 1 shows age group of respondents categorized as 0-15years 4(5.7%), 16-30 years 17(24.3%), 31-45 24(34.3%) and more than 45 were 25(35.7%). It demonstrates that the highest frequency of right upper quadrant pain is shown in age group of more than 45 years while least frequency is between 0-15 years.

| Gender | Frequency(%) |
|--------|--------------|
| Female | 47(67.1%)    |
| Male   | 23(32.9%)    |
| Total  | 70(100.0%)   |

**Table 2:** Gender of Respondents

Table 2 shows gender of respondents which demonstrate

that females 47(67.1%) are more common to develop right upper quadrant pain than males 23(32.9%).

| Pain Duration       | Frequency(%) |
|---------------------|--------------|
| Less than 1 month   | 41(58.6%)    |
| Less than 6 months  | 18(25.7%)    |
| Less than 12 months | 11(15.7%)    |
| Total               | 70(100.0%)   |

**Table 3:** Pain Duration of Respondents

Table 3 shows pain duration of respondents which demonstrates that pain in RUQ is more common in duration of less than 1 month 41(58.6%) following by less than 12months 11(15.7%).

| Ultrasound Findings        | Frequency(%) |
|----------------------------|--------------|
| Hepatitis                  | 2(2.9%)      |
| Fatty Liver                | 27(38.6%)    |
| Cholelithiasis             | 11(15.7%)    |
| Cholecystitis              | 2(2.9%)      |
| Right Renal Stone          | 11(15.7%)    |
| Right Renal Cyst           | 1(1.4%)      |
| Right Renal Hydronephrosis | 7(10.0%)     |
| Pancreatitis               | 3(4.3%)      |
| Normal USG Findings        | 6(8.6%)      |
| Total                      | 70(100.0%)   |

**Table 4:** Ultrasound findings of Respondents

Table 4 shows the ultrasound findings of patients' presenting with RUQ pain. The most common diagnosis of patients with RUQ pain was fatty liver disease 27(38.6%), followed by hepatitis 2(2.9%), Cholelithiasis 11(15.7%), cholecystitis 2(2.9%), right renal stone 11(15.7%), right renal cyst 1(1.4%), right renal Hydronephrosis 7(10.0%), pancreatitis 3(4.3%), normal USG findings 6(8.6%).

## DISCUSSION

It was a descriptive cross-sectional analysis conducted at private medical setup of Gujranwala, Pakistan. Information required for this study was collected from TOSHIBA XARIO 100 with use of probe having frequency of 3.5Hz. This study included patients who presented with RUQ pain while pregnant females are excluded. The outermost upper quadrant at the right side of the abdomen is Right Upper Quadrant, also acknowledged as Epigastrium. The current study evaluates the causes of pain in right upper quadrant (RUQ) which concluded that the highest frequency of age was in more than 45years 25(35.7%) in females. Fatty liver was one of the most dominant diseases in patient's presenting with RUQ pain. A study carried at Khartoum state in 2016 by Elnair also concluded that RUQ pain can lead to different diseases including gall bladder stones, and fatty liver while the current study also included that fatty liver can cause RUQ pain [26]. The current study was done by using ultrasound; it is a safe, easily available and cheap tool for diagnosing pathologies of abdomen. In 2011, Krishnan also found that ultrasound is the best modality for

diagnosing diseases in patients presenting with RUQ pain [27]. It contains non-ionizing radiations that are safe for the patients and cause no harm. It is a cheap, fast, portable and safe tool for evaluation of different organs of abdomen. A similar study was done by Revzin in 2017 also concluding that ultrasound is the first line modality for diagnosing diseases of RUQ in patients having symptom of pain [2].

## CONCLUSIONS

Ultrasound is the gold standard modality for diagnosing abdominal organs diseases as it is a cheap, non-invasive and fast modality. Most common diseases diagnosing in patients with RUQ pain was fatty liver (38.6%), Cholelithiasis and right renal stone was (15.7%).

## REFERENCES

- [1] Tabidi NAMA. Assessment of Patients with Right Upper Quadrant Pain using Ultrasonography: Sudan University of Science and Technology; 2020.
- [2] Revzin MV, Scoutt LM, Garner JG, WS Moore CL. Right upper quadrant pain: ultrasound first! *Journal of Ultrasound in Medicine*. 2017 Oct; 36(10):1975-1985. doi: 10.1002/jum.14274.
- [3] Tortora GJ, Derrickson BH. Principles of anatomy and physiology: John Wiley & Sons; 2018 May.
- [4] Scott AS, Fong E. Body structures and functions: Cengage Learning; 2013 March.
- [5] Wade CI, Streitz MJ. Anatomy, Abdomen and Pelvis, Abdomen. StatPearls [Internet]. 2021 Jul.
- [6] Bennett GL. Evaluating Patients with Right Upper Quadrant Pain. *Radiologic Clinics of North America*. 2015 Nov; 53(6):1093-130. doi: 10.1016/j.rcl.2015.06.002.
- [7] Yarmish GM, Smith MP, Rosen MP, Baker ME, Blake MA, Cash BD, et al. ACR appropriateness criteria right upper quadrant pain. *Journal of the American College of Radiology*. 2014 Mar; 11(3):316-22. doi: 10.1016/j.jacr.2013.11.017.
- [8] Avegno J, Carlisle M. Evaluating the patient with right upper quadrant abdominal pain. *Emergency Medicine Clinics of North America*. 2016 May; 34(2):211-28. doi: 10.1016/j.emc.2015.12.011.
- [9] Gao B, Ahmad MF, Nagy LE, Tsukamoto H. Inflammatory pathways in alcoholic steatohepatitis. *Journal of hepatology*. 2019 Feb; 70(2):249-259. doi: 10.1016/j.jhep.2018.10.023.
- [10] Sánchez-Calvo B, Cassina A, Mastrogiovanni M, Santos M, Trias E, Kelley EE, et al. Olive oil-derived nitro-fatty acids: protection of mitochondrial function in non-alcoholic fatty liver disease. *The Journal of Nutritional Biochemistry*. 2021 Aug; 94:108646. doi: 10.1016/j.jnutbio.2021.108646
- [11] Spence SC, Teichgraeber D, Chandrasekhar C. Emergent right upper quadrant sonography. *Journal of ultrasound in medicine*. 2009 Apr; 28(4):479-96. doi: 10.7863/jum.2009.28.4.479.
- [12] Vezali E, Aghemo A, Colombo M. A review of the treatment of chronic hepatitis C virus infection in cirrhosis. *Clinical therapeutics*. 2010 Dec; 32(13):2117-38. doi: 10.1016/S0149-2918(11)00022-1.
- [13] Nylund K, Ødegaard S, Hausken T, Folvik G, Lied GA, Viola I, et al. Sonography the small intestine. *World journal of gastroenterology*. 2009 Mar; 15(11):1319-30. doi: 10.3748/wjg.15.1319.
- [14] Mederos MA, Reber HA, Girgis MD. Acute pancreatitis: a review. *Jama*. 2021 Jan; 325(4):382-390. doi: 10.1001/jama.2020.20317
- [15] Patel K, Batura D. An overview of hydronephrosis in adults. *British Journal of Hospital Medicine*. 2020 Jan; 81(1):1-8. doi: 10.12968/hmed.2019.0274.
- [16] Bhavnagri A, Chaudhary T, Chaudhary V, Maheshwari H, Sen DJ. Hydronephrosis: A tale of water inflammation in nephron. *World Journal of Pharmaceutical Sciences*. 2015:1546-554.
- [17] Yilmaz E, Guney S. Giant hydronephrosis due to ureteropelvic junction obstruction in a child: CT and MR appearances. *Clinical imaging*. 2002 Apr; 26(2):125-8. doi: 10.1016/s0899-7071(01)00369-2.
- [18] Hesse A. Urinary stones: Diagnosis, treatment, and prevention of recurrence: Karger Medical and Scientific Publishers. 2009; 213-215.
- [19] Khan SR, Pearle MS, Robertson WG, Gambaro G, Canales BK, Doizi S, et al. Kidney stones. *Nature reviews Disease primers*. 2016 Feb; 2:16008. doi: 10.1038/nrdp.2016.8.
- [20] Meola M, Samoni S, Petrucci I. Clinical Scenarios in Chronic Kidney Disease: Cystic Renal Diseases. *Contributions to Nephrology* 2016; 188:120-30. doi: 10.1159/000445474.
- [21] Petrucci I, Clementi A, Sessa C, Torrisi I, Meola M. Ultrasound and color Doppler applications in chronic kidney disease. *Journal of Nephrology*. 2018 Dec; 31(6):863-879. doi: 10.1007/s40620-018-0531-1.
- [22] Vahed LK, Khedmat L. Frequency of symptoms associated with gallstone disease: a hospital-based cross sectional study. *European Journal of Translational Myology*. 2018 Apr; 28(2):7412. doi: 10.4081/ejtm.2018.7412.
- [23] Healey MA, Simons RK, Winchell RJ, Gosink BB, Casola G, Steele JT, et al. A prospective evaluation of abdominal ultrasound in blunt trauma: is it useful? *Journal of Trauma and Acute Care Surgery*. 1996 Jun; 40(6):875-83; discussion 883-5. doi: 10.1097/00005373-199606000-00004.
- [24] Bisset R, Khan AN. Differential diagnosis in

abdominal ultrasound: Elsevier India; 2012 Nov.

- [25] Mattoon JS, Berry CR, Nyland TG. Abdominal ultrasound scanning techniques. *Small Animal Diagnostic Ultrasound-E-Book*. 2014 Dec; 94(6):93-112.
- [26] Elnair ZA. Assessment of Right Upper Quadrant Pain using Ultrasonography (Doctoral dissertation, Sudan University of Science and Technology).
- [27] Krishnan M, Middleton WD. Ultrasonographic evaluation of right upper quadrant pain in emergency departments. *Ultrasound Clinics*. 2011 Apr; 6(2):149-61. [doi.org/10.1016/j.cult.2011.03.004](https://doi.org/10.1016/j.cult.2011.03.004)



# THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



## Original Article

# Measurement of Uterus Sizes of Multiparous Women using Ultrasound

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## ARTICLE INFO

### Key Words:

Ultrasonography, Pain, Abdomen, Fatty liver

### How to Cite:

Fatima, N. ., John, A. ., Ali, A., Amir, A. ., & Mubbarka, M. . (2022). Measurement of Uterus Sizes Of Multiparous Women using Ultrasound: Uterus Sizes Of Multiparous Women using Ultrasound. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences), 3(1). <https://doi.org/10.54393/tt.v3i1.33>

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Received Date: 10<sup>th</sup> April, 2022

Acceptance Date: 15<sup>th</sup> May, 2022

Published Date: 30<sup>th</sup> June, 2022

## ABSTRACT

Human uterus is a pear-shaped fibromuscular organ. The measurements of a typical uterus are 7.6x4. 5x3cm. The uterus grows slowly during fetal life until the end of the first trimester when it grows at a higher rate due to increased maternal oestrogen production. As a result of this continuation of the maternal oestrogen the uterus shrinks immediately after delivery.

**Objective:** To evaluate uterus size in multiparous women using ultrasound. **Methods:** It was a cross-sectional study carried out at private sector hospital of Gujrat over 4 months period from December 2021 to March 2022. The sample size was 41 calculated via a convenient sampling approach from previously published studies. Multiparous women following ultrasound examination during the study period were included after receiving informed consent. The patients' demographic statistics were collected on a specially designed data collecting sheet. The data was analyzed using the SSPS V20 program. **Results:** The average length was 7.9±1.15, width was 4.3±0.77, and thickness 3.5±0.66. There was no significant correlation between uterine size (length, width, thickness) and many parities because the value in the "Sig. (2-tailed)" is 0.607, 0.640, and 0.983 respectively which is more than 0.05. **Conclusions:** The current study found no correlation between the number of parities and the length, width, and thickness diameters of the uterus.

## INTRODUCTION

The human uterus is a pear-shaped fibromuscular organ that can be split into the upper muscular uterine corpus and lower fibrous cervix [1]. It is positioned in the female pelvis between the urinary bladder anteriorly and the rectum posteriorly [2]. It is divided into three basic parts: fundus, body and cervix which reaches into the vaginal area [3]. The internal os is crossed by the uterine canal which emerges as the external os at the vaginal vault [4]. The uterine and ovarian arteries, which branch out from the internal iliac artery's anterior branch, supply blood to the uterus [5]. The main blood vessels supplying blood to the uterus are the uterine arteries [6]. In a multiparous woman, the cervical os is circular but becomes a transverse slit [3]. The cervix is generally solid, but during pregnancy it feels soft [7].

Uterus is divided into two parts, the cervix, and the corpus [8]. The measurements of a typical uterus are 7.6 x 4.5 x 3cm [9]. The size of the uterus is determined by parity rather than age because ovarian hormone levels drop after menopause, and uterine sizes shrink [10]. The mesometrium (the largest piece), the mesosalpinx (mesentery of the uterine fallopian tubes), and the mesovarium make up the broad ligament (connects the ovaries to the broad ligament). The following structures are found in the broad ligament: Fallopian tubes are the tubes that connect the uterus to the fallopian Ovaries [11] For both the mother and the fetus, uterine rupture is a life-threatening peripartum condition. A previous cesarean delivery is the greatest risk factor for uterine rupture,

which increases the risk to 0.5 percent [12]. Medical reasons force about a quarter of women who have had a previous cesarean delivery to deliver early. Labor induction during TOLAC (trial of labor after cesarean delivery) raises the risk of uterine rupture even more. The danger is considered to be between 1.4 and 2.3 percent [13]. The uterus grows slowly during fetal life until the end of the first trimester when it grows at a higher rate due to increased maternal estrogen production. As a result of this continuation of the maternal oestrogen the uterus shrinks immediately after delivery. Uterine length is less than 35 mm between the ages of 2 and 8 with an anteroposterior diameter of 10 mm [14,10]. Subjects are scanned in a supine position in both longitudinal and transverse plans in US examination [15]. The uterine assessment, such as pelvic ultrasound, should be part of the first evaluation of women who have lost several pregnancies [16]. The post-cesarean uterus is frequently anteфлекed, and myometrial loss of about 50% is common [17]. The uterine flexion angle can be changed to a more retroфлекed position after a caesarean delivery [18]. Gigantic polyps are most common in multiparous women in their 50s. At the time of presentation, these giants cervical polyps are usually misdiagnosed as malignant neoplasm. In multiparous women with something is coming out per vagina, a huge polyp of the cervix anterior lip occurs [19]. Curettage between the 2nd and 4th weeks after delivery is most likely than any other endometrial trauma to produce adhesions. Infertility, recurrent abortion, or menstrual irregularity following any uterine trauma should alert the doctor to the possibilities of intrauterine adhesions. Uterine myomas are the most frequent benign solid pelvic tumors in women, affecting 20-25% of reproductive-age women. Dysmenorrhea, repeated pregnancy loss, and premature birth are all symptoms of submucosal myomas [20]. The mullerian ducts didelphys is a rare congenital abnormality of the uterus [21]. Uterine fibroids are one of the most common uterine disorders affecting roughly 12% to 25% of women of reproductive age. Menorrhagia, frequent urination, and dysmenorrhea are all indications of benign neoplasm [22]. Over 10% of all pregnancies are complicated by preeclampsia (PE) and fetal growth restrictions (FGR) which contributes considerably to fetal and maternal morbidity and mortality [23]. A tangle of aberrant arteriovenous connections in or around the uterus is known as a uterine vascular malformation(UVM) [24]. On the 10th day, the endometrial cavity was substantially bigger in multiparous women, and the uterine cavity was mostly echo-negative [25]. The current study was intended to measure uterus dimension in multiparous women using ultrasound and to correlate the measurement of uterus with number of parities. This

current study ensures that there is no significant relationship between a patient's age and uterus measurement.

## METHODS

A cross-sectional study was conducted in the department of Radiology of a private sector hospital in Gujrat, Pakistan. Subjects for this study were only female from 20 to 50 years who have undergone ultrasound examination, this study was conducted over 4 months from December 2021 to March 2022. A total of 41 patients were selected using a convenient sampling approach. An informed written consent form was also signed by patients. The ultrasound was done using a 3.5 MHz probe. The patients demographic statistics were collected on a specially designed data collecting sheet. The data were analyzed using the SSPS V20.0.

## RESULTS

| Number of parity | Frequency (%) |
|------------------|---------------|
| 1                | 6 (14.6%)     |
| 2                | 15 (36.6%)    |
| 3                | 11 (26.8%)    |
| 4                | 7 (17.1%)     |
| 5                | 2 (4.9%)      |
| Total            | 41 (100.0%)   |

**Table 1:** Frequency distribution of the Parity

The current study was conducted among 41 females for the study measurement of uterus sizes in multiparous. The study was conducted among different age groups ranging from 20-50 years. Table 1 shows the number of parities among female patients with most females reported to the radiology department were having highest frequency 15 (36.6%) and least female reported low frequency 2 (4.9%).

| Descriptive Statistics | N  | Minimum | Maximum | Mean±SD   |
|------------------------|----|---------|---------|-----------|
| Uterus Length          | 41 | 6.20    | 10.30   | 7.9±1.15  |
| Uterus Width           | 41 | 3.20    | 6.40    | 4.3±0.77  |
| Uterus Thickness       | 41 | 2.20    | 5.90    | 3.54±0.67 |

**Table 2:** Descriptive statistics of uterus measurements

Table 2 shows the uterus length, width, and thickness with an average length measuring 7.9±1.15, width 4.3±0.77, and thickness 3.5±0.67.

| Correlation between parity and uterus length |                     | Parity | Uterus Length |
|----------------------------------------------|---------------------|--------|---------------|
| Number of Parity                             | Pearson Correlation | 1      | .083          |
|                                              | Sig. (2-tailed)     |        | .607          |
|                                              | N                   | 41     | 41            |
| Uterus Length                                | Pearson Correlation | .083   | 1             |
|                                              | Sig. (2-tailed)     | .607   |               |
|                                              | N                   | 41     | 41            |

**Table 3:** Correlation between number of parity and uterus length

Table 3 shows the correlation between many parities and uterus length there is no significant relationship between them because the value in the "Sig. (2-tailed)" is 0.607 which is more than 0.05.

| Correlation between parity and uterus width |                     | Parity | Uterus Width |
|---------------------------------------------|---------------------|--------|--------------|
| Number of Parity                            | Pearson Correlation | 1      | -.075        |
|                                             | Sig. (2-tailed)     |        | .640         |
|                                             | N                   | 41     | 41           |
| Uterus Width                                | Pearson Correlation | -.075  | 1            |
|                                             | Sig. (2-tailed)     | .640   |              |
|                                             | N                   | 41     | 41           |

**Table 4:** Correlation between number of parity and uterus width  
Table 4 shows the correlation between number of parity and uterus width there is no significant relationship between them because the value in the "Sig. (2-tailed)" is 0.640 which is more than 0.05.

| Correlation between parity and uterus thickness |                     | Parity | Uterus Thickness |
|-------------------------------------------------|---------------------|--------|------------------|
| Number of Parity                                | Pearson Correlation | 1      | -.003            |
|                                                 | Sig. (2-tailed)     |        | .983             |
|                                                 | N                   | 41     | 41               |
| Uterus Thickness                                | Pearson Correlation | -.003  | 1                |
|                                                 | Sig. (2-tailed)     | .983   |                  |
|                                                 | N                   | 41     | 41               |

**Table 5:** Correlation between number of parity and uterus thickness

Table 5 shows the correlation between number of parity and thickness there is no significant relationship between them because the value in the "Sig. (2-tailed)" is 0.983 which is more than 0.05.

## DISCUSSION

Human uterus is a pear-shaped fibromuscular organ that can be split into upper muscular uterine corpus and lower. Its dimension changes relative to the number of parity and there is no association of uterus measurement with patient age. A total of 41 patients were selected using a convenient sampling approach. The current study included females from age ranged from 20 to 50 years to estimate uterine size in multiparous women using ultrasound. The current study concluded that the size of uterus in multiparous women is unaffected by number of parities. According to the current study the average uterus length was  $7.9 \pm 1.15$ , width  $4.30 \pm 0.77$ , and thickness  $3.5 \pm 0.66$ . The current study found no significant association between uterine size (length, width, thickness) and many parities because the value in the "Sig. (2-tailed)" is 0.607, 0.640, and 0.983 respectively which is more than 0.05. A descriptive cross-sectional study by Mohammed *et al.*, published in 2020 also found similar results concluding that uterus length ( $8.22 \pm 1$ ) cm, width ( $5 \pm 0.84$ ) cm, and thickness ( $3.99 \pm 0.54$ ) cm respectively [3]. In the current study no significant association between uterine width and number of parity because the value in the "Sig. (2-tailed)" is 0.640. Another descriptive cross-sectional study by Ahmed published in 2017 carried out in Hassaheesa teaching hospital had similar results that there was no significant correlation between uterus width and number of parity because the value in the "Sig. (2-tailed)" is 0.119 [26]. In the current study no significant association between uterine thickness and

number of parity because the value in the "Sig. (2-tailed)" is 0.983. Another descriptive cross-sectional study by Ahmed published in 2017 carried out in Hassaheesa teaching hospital had similar results that there is no significant correlation between uterus thickness and number of parity because the value in the "Sig. (2-tailed)" is 0.647 [26]. The current study showed that there is no correlation between the number of parity and patient's age with uterus length, width, and thickness. The similar findings were also concluded in previous studies by Mohammed *et al.*, 2020 [3] and Ahmed 2017 that also shows that there is no association of uterus sizes with age and frequency of parity in females [26].

## CONCLUSIONS

In conclusion, the average uterus length  $7.9 \pm 1.15$ , width  $4.3 \pm 0.77$ , and thickness  $3.5 \pm 0.66$  in diameters. The current study also found no correlation between the number of parities and the length, width, and thickness in diameters of the uterus. Furthermore, the study found that uterus length, width, and thickness in diameters had no significant link with patient age, weight, or height.

## REFERENCES

- [1] Tsili AC. Uterus: Normal Findings. MRI and CT of the Female Pelvis: Springer; 2017;45-60.
- [2] Gossman W, Fagan S, Sosa-Stanley J, Peterson D. Anatomy, abdomen and pelvis, uterus. 2017.
- [3] Mohammed ANA. Measurement of Uterine Size Multiparous Women Using Ultrasonography: Sudan University of Science And Technology; 2016.
- [4] Ellis HJA, Medicine IC. Anatomy of the uterus. 2011 March; 12(3):99-101.
- [5] Puntambekar S, Puntambekar S, Telang M, Kulkarni P, Date S, Panse M, et al. Novel anastomotic technique for uterine transplant using utero-ovarian veins for venous drainage and internal iliac arteries for perfusion in two laparoscopically harvested uteri. Journal of Minimally Invasive Gynecology 2019 Jun; 26(4):628-635. doi: 10.1016/j.jmig.2018.11.021.
- [6] Ameer MA, Fagan SE, Sosa-Stanley JN, Peterson DCJS. Anatomy, abdomen and pelvis, uterus. 2021 Aug.
- [7] Ellis H. Anatomy of the uterus. Anaesthesia & Intensive Care Medicine. 2011 Mar; 12(3):99-101.
- [8] Tamura K, Hasegawa K, Katsumata N, Matsumoto K, Mukai H, Takahashi S, et al. Efficacy and safety of nivolumab in Japanese patients with uterine cervical cancer, uterine corpus cancer, or soft tissue sarcoma: Multicenter, open-label phase 2 trial. Cancer Science. 2019 Sep; 110(9):2894-2904. doi: 10.1111/cas.14148.
- [9] Ezzedine D, Norwitz ERJCo, gynecology. Are women

- with uterine fibroids at increased risk for adverse pregnancy outcome? *Clinical obstetrics & gynaecology*. 2016 Mar; 59(1):119-27. doi: 10.1097/GRF.000000000000169.
- [10] Parmar AM, Agarwal D, Hathila N, Singel TJIJoMS, Education. Sonographic measurements of uterus and its correlation with different parameters in parous and nulliparous women. 2016 Jul; 3:306-310.
- [11] Craig ME, Sudanagunta S, Billow M. Anatomy, abdomen and pelvis, broad ligaments. 2018.
- [12] Al-Zirqi I, Stray-Pedersen B, Forsén L, Vangen SJBAlJoO, Gynaecology. Uterine rupture after previous caesarean section. *British journal of obstetrics and gynaecology*. 2010 Jun; 117(7):809-20. doi: 10.1111/j.1471-0528.2010.02533.x.
- [13] Hochler H, Wainstock T, Lipschuetz M, Sheiner E, Ezra Y, Yagel S, et al. Induction of labor in women with a scarred uterus: does grand multiparity affect the risk of uterine rupture? *American Journal of Obstetrics and Gynecology MFM*. 2020 Feb; 2(1):100081. doi: 10.1016/j.ajogmf.2019.100081.
- [14] Esmaelzadeh S, Rezaei N, HajiAhmadi MJE-EMHJ, 10, 437-441,. Normal uterine size in women of reproductive age in northern Islamic Republic of Iran. *Eastern Mediterranean Health Journal* 2004 May; 10(3):437-41. doi.org/10.26719/2004.10.3.437
- [15] Umar UM, Isyaku K, Adamu YM, Abubakar S, Kabo N, Nura I, et al. Sonographic measurement of uterine dimensions in healthy nulliparous adults in Northwestern Nigeria. 2017 Jan; 20(1):1.
- [16] Turocy JM, Rackow BW, editors. Uterine factor in recurrent pregnancy loss. *Seminars in Perinatology*; 2019 Mar; 43(2):74-79. doi: 10.1053/j.semperi.2018.12.003.
- [17] Al Naimi A, Wolnicki B, Mouzakiti N, Reinbach T, Louwen F, Bahlmann FJAog, et al. Anatomy of the sonographic post-caesarean uterus. 2021;304(6):1485-1491. *Archives of Gynecology and Obstetrics*. 2021 Dec; 304(6):1485-1491. doi: 10.1007/s00404-021-06074-y.
- [18] Kaelin Agten A, Honart A, Monteagudo A, McClelland S, Basher B, Timor-Tritsch IEJJoUiM. Cesarean delivery changes the natural position of the uterus on transvaginal ultrasonography. *Journal of Ultrasound in Medicine* 2018 May; 37(5):1179-1183. doi: 10.1002/jum.14461.
- [19] Gothwal M, Singh P, Bharti JN, Yadav G, Solanki VJIJoA, Research BM. Giant cervical angiomyomatous polyp masquerading third-degree uterine prolapse: A rare case with review of literature. *International journal of applied and basic medical research* 2019 Dec; 9(4):256-258. doi: 10.4103/ijabmr.IJABMR\_386\_18.
- [20] Liao W-L, Ying T-H, Shen H-P, Wu P-JJTJoO, Gynecology. Combined treatment for big submucosal myoma with High Intensity Focused Ultrasound and hysteroscopic resection. *Taiwanese Journal of Obstetrics and Gynecology* 2019 Nov; 58(6):888-890. doi: 10.1016/j.tjog.2019.04.001.
- [21] Slavchev S, Kostov S, Yordanov AJM. Pregnancy and childbirth in uterus didelphys: a report of three cases. *Medicina (Kaunas)*. 2020 Apr; 56(4):198. doi: 10.3390/medicina56040198
- [22] Liu X, Xue L, Wang Y, Wang W, Tang JJIJoH. Vaginal delivery outcomes of pregnancies following ultrasound-guided high-intensity focused ultrasound ablation treatment for uterine fibroids. *International Journal of Hyperthermia*. 2018; 35(1):510-517. doi: 10.1080/02656736.2018.1510548.
- [23] Poudel R, Stanley JL, Rueda-Clausen CF, Andersson IJ, Sibley CP, Davidge ST, et al. Effects of resveratrol in pregnancy using murine models with reduced blood supply to the uterus. *PLoS One*. 2013 May; 8(5):e64401. doi: 10.1371/journal.pone.0064401.
- [24] Maleux G, Timmerman D, Heye S, Wilms GJEr. Acquired uterine vascular malformations: radiological and clinical outcome after transcatheter embolotherapy. *European Radiology* 2006 Feb; 16(2):299-306. doi: 10.1007/s00330-005-2799-5.
- [25] Paliulyte V, Drasutiene G, Ramasauskaite D, Bartkeviciene D, Zakareviciene J, Kurmanavicius JJO, et al. Physiological Uterine Involution in Primiparous and Multiparous Women: Ultrasound Study. *International journal of Obstetrics and Gynecology* 2017; 2017:6739345. doi: 10.1155/2017/6739345.
- [26] Ahmed SO. Evaluation of Parity Relation with Uterus Size using ultrasonography (Doctoral dissertation, Sudan University of Science & Technology). 2017



# THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



## Original Article

# Evaluation of Hydrocephalus and its Types on Computed Tomography

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## ARTICLE INFO

### Key Words:

Hydrocephalus, Computed Tomography, Cerebrospinal fluid, Ventricles dilatation

### How to Cite:

Sharif Bhatti, A. ., John, A. ., Ali, A., Nasir, U. ., Ashfaq, N. ., & Akram, M. . (2022). Evaluation of Hydrocephalus and its Types on Computed Tomography: Hydrocephalus and its Types on Computed Tomography. *THE THERAPIST (Journal of Therapies & Rehabilitation Sciences)*, 3(1). <https://doi.org/10.54393/tt.v3i1.34>

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Received Date: 9<sup>th</sup> March, 2022

Acceptance Date: 15<sup>th</sup> April, 2022

Published Date: 30<sup>th</sup> June, 2022

## ABSTRACT

Hydrocephalus is the buildup of cerebrospinal fluid in the ventricles of the brain. The extra fluid exerts pressure on the brain. It can be due to genetic issues, Head trauma, infection, stroke, tumors, and bleeding in the brain. **Objective:** To evaluate hydrocephalus and its type on Computed Tomography. **Methods:** The study was conducted in a Govt sector tertiary care hospital of tehsil Kharian, district Gujrat, Pakistan. The data was collected from December 2021 to March 2022 using convenient sampling technique. A sample size of 70 patients was considered as per convenience. The patients of hydrocephalus who undergo brain scan plain were included. The data was collected after informed consent. Data were entered and analyzed using SPSS version 20.0. **Results:** This study revealed that females 40(57.1%) were more likely to have hydrocephalus than males 30(42.9%). The common age group having hydrocephalus was 1-10years 23(32.9%). The most frequent finding evaluated was non-communicating hydrocephalus 36(51.4%). The most common effects in hydrocephalus was congenital dilatation of the third ventricle and two lateral ventricles 40(57.1%). **Conclusions:** CT is the best modality for diagnosing hydrocephalus in children as well as in elders. CT is a useful imaging method for visualizing congenital hydrocephalus.

## INTRODUCTION

Hydrocephalus is a disease in which a large amount of cerebrospinal fluid collects inside the hollow spaces in the brain, these hollow spaces are called ventricles [1]. There are four ventricles present in the human brain [2]. Excess fluid puts extra pressure on the brain so that the intracranial pressure increases [3]. Hydrocephalus can be congenital or acquired [4]. Congenital hydrocephalus occurs at birth, while the acquired form of hydrocephalus occurs at any age because of head injury, meningitis, hemorrhage, brain tumor and infection [5]. According to research which was conducted in the USA in 2018 every 3 out of 1000 newborn babies were born with hydrocephalus [6]. If it left untreated it can be fatal. In infants, the size of the head increases day by day and present with a huge head, seizures, vomiting, fever and problem in sucking the

milk. In adults, hydrocephalus causes severe headache, memory loss, thinking issues, poor bladder control, altered mental status, poor vision and difficulty in speech [7]. An imbalance between drainage and the production of cerebrospinal fluid (CSF) causes hydrocephalus [8]. There is approx. 500ml of CSF form regularly inside the brain. Epidermal cells which are collectively called choroid plexus are responsible for producing CSF and they lined the ventricles of the brain [9]. In adults the normal volume of CSF is 150ml [10]. The CSF production by choroid plexus is continuously absorbs by the arachnoid granulation [11]. The CSF production is not dependent on its absorption. If absorption is reduced then the accumulation of CSF occurs in the ventricles of the brain [12]. Hydrocephalus is of 4 different types communicating, non-communicating,

normal pressure hydrocephalus and ex-vacuo hydrocephalus [13,14]. In communicating type of hydrocephalus the flow of CSF is restricted after it exits the ventricles. A reduction in CSF flow and absorption in the arachnoid villi causes CSF to accumulate in the ventricles [15]. In non-communicating type of hydrocephalus the flow of CSF is blocked along the one or more narrow passages connecting the ventricles [16]. In normal-pressure hydrocephalus CSF collects in the ventricles and intracranial pressure increases which cause thinking and reasoning problems [17]. Adults are affected by hydrocephalus ex-vacuo, which happens when the brain is damaged by a degenerative condition such as Alzheimer's disease, trauma, stroke, infection, or head injury [18]. Some common risk factors of congenital hydrocephalus are the use of alcohol and smoking during pregnancy, diabetic pregnant female suffering with hypertension, lack of prenatal care and radiation therapy during pregnancy [19]. Some common complications of hydrocephalus are epilepsy, gait disturbance and vision problems including double vision. In rare cases, if hydrocephalus is left untreated it causes permanent blindness can be fatal [20,21]. The only treatment of hydrocephalus is to drain the excess fluid surgically [22]. This surgical drainage system is called a shunt [23]. A procedure known as endoscopic third ventriculostomy can be used to treat hydrocephalus [22]. In this process, an endoscope with fiber optics is used to see the ventricles and build a new conduit for CSF to flow through this procedure. The best modalities for diagnosing hydrocephalus are CT scans and MRI. Enlarged ventricles are seen in both the modalities. To differentiate between communicating and non-communicating hydrocephalus, the neurosurgeon can use CT and MRI images. A spinal tap can assist assess CSF pressure in people with normal pressure hydrocephalus [24,25]. CT scanning is quick and painless technique. It produces detailed axial images of brain ventricles. CT scans have been particularly useful in individuals with adequate stenosis and dilatation of the ventricles. This study shows the relevance of computed tomography in the diagnosis of hydrocephalus, as well as its relationship to age. In the case of hydrocephalus, a CT scan is used for emergency exams and early detection of hydrocephalus in infants lowers the mortality rate.

## METHODS

The study was conducted in a Govt sector tertiary care hospital of tehsil Kharian, district Gujrat, Pakistan. The data was collected from December 2021 to March 2022, a four-month cross-sectional study, using convenient sampling technique. A sample size of 70 patients was considered as per convenience. The patients of hydrocephalus, who undergo brain scan plain of age 1 to 50 years, were included. Demographic and clinical history was

noted. The data were collected after informed consent. Data were entered and analyzed using SPSS version 20.0.

## RESULTS

| Gender | Frequency(%) |
|--------|--------------|
| Female | 40(57.1%)    |
| Male   | 30(42.9%)    |
| Total  | 70(100.0%)   |

**Table 1:** Gender of Patients

The current study was conducted in a Govt sector tertiary care hospital with a sample of 70 patients who visited the CT department for diagnosis and investigation of hydrocephalus. The total number of patients was 70 of which there were 40(57.1%) females and 30(42.9%) males, as shown in Table 1.

| Age of patients | Frequency(%) |
|-----------------|--------------|
| 1-10 years      | 23(32.9%)    |
| 11-20 years     | 17(24.3%)    |
| 21-30 years     | 12(17.1%)    |
| 31-40 years     | 10(14.3%)    |
| 41-50 years     | 8(11.4%)     |
| Total           | 70(100.0%)   |

**Table 2:** Frequency distribution of age group

The current study enrolled patients with different age groups as group 1(1-10 years) have the highest frequency of 23(32.9%), group 2(11-20 years) have the frequency of 17(24.3%), group 3(21-30 years) have a frequency of 12(17.1%), group 4(31-40 years) have a frequency of 10(14.3%) and group 5(41-50 years) have the lowest frequency of 8(11.4%) as shown in Table 2.

| Types of hydrocephalus          | Frequency(%) |
|---------------------------------|--------------|
| Communicating hydrocephalus     | 22(31.4%)    |
| Non-communicating hydrocephalus | 36(51.4%)    |
| Normal pressure hydrocephalus   | 12(17.1%)    |
| Total                           | 70(100.0%)   |

**Table 3:** Frequency distribution of types of hydrocephalus

Non-communicating hydrocephalus has the highest frequency of 36(51.4%), normal pressure hydrocephalus has the lowest frequency of 12(17.1%) and communicating hydrocephalus has a frequency of 22(31.4%) as shown in Table 3.

| Dilated ventricles                          | Frequency(%) |
|---------------------------------------------|--------------|
| Two Lateral ventricles                      | 21(30.0%)    |
| Third ventricle and Two lateral ventricles  | 40(57.1%)    |
| Fourth ventricle and Two lateral ventricles | 9(12.9%)     |
| Total                                       | 70(100.0%)   |

**Table 4:** Frequency distribution of dilated ventricles

Two lateral ventricles along with the third ventricle have the highest frequency of 40(57.1%) and fourth ventricle and two lateral ventricles have the lowest frequency of 9(12.9%) as shown in Table 4.

## DISCUSSION

Hydrocephalus is a condition in which a substantial amount

of cerebrospinal fluid accumulates inside the ventricles of the brain. Excess fluid places additional pressure on the brain, raising intracranial pressure. Hydrocephalus can be divided into two types. Congenital hydrocephalus is present at birth. The causes of congenital hydrocephalus include genetic and developmental issues. The most common symptom of congenital hydrocephalus is a swollen head. Hydrocephalus can develop at any age. The causes of acquired hydrocephalus include head injuries, strokes, infections, tumors, and brain bleeding. In the current study, 70 patients were included with 30(42.9%) males and 40(57.1%) females of varied ages. This showed that females are more affected by hydrocephalus. A previous study by Alhussain et.al published in 2018 carried out at Soba university hospital had similar results that the females affected with hydrocephalus are more common than males [1]. In the current study, non-communicating hydrocephalus has the highest frequency of 36(51.4%), normal pressure hydrocephalus has the lowest frequency of 12(17.1%), and communicating hydrocephalus has a frequency of 22(31.4%). A previous study by Alhussain et.al published in 2018 had similar results that non-communicating hydrocephalus has the highest frequency of 40(57.1%) [1]. The current study revealed that hydrocephalus is more common in children than in adults a similar study done by Davis A. et al issued in 2010 also had the same findings that clinical suspicion of hydrocephalus is more in children than adults [26].

## CONCLUSIONS

CT is the best modality for diagnosing hydrocephalus in children as well as in elders. CT is a useful imaging method for visualizing congenital hydrocephalus. Neonates and children under the age of ten are typically affected by hydrocephalus.

## REFERENCES

- [1] Alhussain AMA. A Study of Hydrocephalus Using CT scan: Sudan University of Science and Technology; 2018.
- [2] Faubel R, Westendorf C, Bodenschatz E, Eichele G. Cilia-based flow network in the brain ventricles. *Science*. 2016 Jul; 353(6295):176-8. doi: 10.1126/science.aae0450.
- [3] Metheny N. Fluid and electrolyte balance: Jones & Bartlett Publishers; 2012.
- [4] Toma AK. Hydrocephalus. *Surgery (Oxford)*. 2015 Aug; 33(8):384-389.
- [5] Garne E, Loane M, Addor M-C, Boyd PA, Barisic I, Dolk H. Congenital hydrocephalus—prevalence, prenatal diagnosis and outcome of pregnancy in four European regions. *European journal of paediatric neurology*. 2010 Mar; 14(2):150-5. doi: 10.1016/j.ejpn.2009.03.005.
- [6] Pan P. Outcome analysis of ventriculoperitoneal shunt surgery in pediatric hydrocephalus. *Journal of pediatric neurosciences*. 2018 Jun; 13(2):176-181. doi: 10.4103/jpn.JPN\_29\_18.
- [7] Kammersgaard LP, Linnemann M, Tibæk M. Hydrocephalus following severe traumatic brain injury in adults. Incidence, timing, and clinical predictors during rehabilitation. *Neuro-Rehabilitation*. 2013; 33(3):473-80. doi: 10.3233/NRE-130980.
- [8] Orešković D, Klarica M. Development of hydrocephalus and classical hypothesis of cerebrospinal fluid hydrodynamics: facts and illusions. *Progress in neurobiology*. 2011 Aug; 94(3):238-58. doi: 10.1016/j.pneurobio.2011.05.005.
- [9] Lun MP, Monuki ES, Lehtinen MK. Development and functions of the choroid plexus-cerebrospinal fluid system. *Nature Reviews Neuroscience*. 2015 Aug; 16(8):445-57. doi: 10.1038/nrn3921.
- [10] Langner S, Fleck S, Baldauf J, Mensel B, Kühn JP, Kirsch M, editors. Diagnosis and differential diagnosis of hydrocephalus in adults. *RöFo-Fortschritte auf dem Gebiet der Röntgenstrahlen und der bildgebenden Verfahren; Rofo*. 2017 Aug; 189(8):728-739. English. doi: 10.1055/s-0043-108550.
- [11] Orešković D, Radoš M, Klarica M. Role of choroid plexus in cerebrospinal fluid hydrodynamics. *Neuroscience*. 2017 Jun; 354:69-87. doi: 10.1016/j.neuroscience.2017.04.025.
- [12] Sakka L, Coll G, Chazal J. Anatomy and physiology of cerebrospinal fluid. *European annals of otorhinolaryngology, head and neck diseases*. 2011 Dec; 128(6):309-16. doi: 10.1016/j.anorl.2011.03.002.
- [13] Stadlbauer A, Salomonowitz E, Brenneis C, Ungersböck K, van der Riet W, Buchfelder M, et al. Magnetic resonance velocity mapping of 3D cerebrospinal fluid flow dynamics in hydrocephalus: preliminary results. *European radiology*. 2012 Jan; 22(1):232-42. doi: 10.1007/s00330-011-2247-7.
- [14] OiS. Hydrocephalus Research Update—Controversies in Definition and Classification of Hydrocephalus—. *Neurologia medico-chirurgica*. 2010; 50(9):859-69. doi: 10.2176/nmc.50.859.
- [15] MoNtaNo N, D'Alessandris QG, BiaNchi F, Lauretti L, Doglietto F, Fernandez E, et al. Communicating hydrocephalus following surgery and adjuvant radiochemotherapy for glioblastoma. *Journal of neurosurgery*. 2011 Dec; 115(6):1126-30. doi: 10.3171/2011.8.JNS11738.
- [16] Gholampour S. FSI simulation of CSF hydrodynamic changes in a large population of non-communicating hydrocephalus patients during treatment process

- with regard to their clinical symptoms. *PLoS One*. 2018 Apr; 13(4):e0196216. doi: 10.1371/journal.pone.0196216.
- [17] Kiefer M, Unterberg A. The differential diagnosis and treatment of normal-pressure hydrocephalus. *Deutsches Ärzteblatt International*. 2012 Jan; 109(1-2):15-25; quiz 26. doi: 10.3238/arztebl.2012.0015.
- [18] Kim M, Park S-W, Lee J-Y, Kim H, Rhim JH, Park S, et al. Differences in Brain Morphology between Hydrocephalus Ex Vacuo and Idiopathic Normal Pressure Hydrocephalus. *Psychiatry Investigation*. 2021 Jul; 18(7):628-635. doi: 10.30773/pi.2020.0352.
- [19] Munch TN, Rasmussen M-LH, Wohlfahrt J, Juhler M, Melbye M. Risk factors for congenital hydrocephalus: a nationwide, register-based, cohort study. *Journal of Neurology, Neurosurgery & Psychiatry*. 2014 Nov; 85(11):1253-9. doi: 10.1136/jnnp-2013-306941.
- [20] Giordan E, Palandri G, Lanzino G, Murad MH, Elder BD. Outcomes and complications of different surgical treatments for idiopathic normal pressure hydrocephalus: a systematic review and meta-analysis. *Journal of neurosurgery*. 2018 Nov: 1-13. doi: 10.3171/2018.5.JNS1875.
- [21] Bodilsen J, Schønheyder HC, Nielsen H. Hydrocephalus is a rare outcome in community-acquired bacterial meningitis in adults: a retrospective analysis. *BMC Infectious Diseases*. 2013 Jul; 13:321. doi: 10.1186/1471-2334-13-321.
- [22] Vogel TW, Bahuleyan B, Robinson S, Cohen AR. The role of endoscopic third ventriculostomy in the treatment of hydrocephalus. *Journal of Neurosurgery: Pediatrics*. 2013 Jul; 12(1):54-61. doi: 10.3171/2013.4.PEDS12481.
- [23] Harris CA, McAllister JP. What we should know about the cellular and tissue response causing catheter obstruction in the treatment of hydrocephalus. *Neurosurgery*. 2012 Jun; 70(6):1589-1602.
- [24] Lotan E, Damadian BE, Rusinek H, Griffin M, Ades-Aron B, Lu N, et al. Quantitative imaging features predict spinal tap response in normal pressure hydrocephalus. *Neuroradiology*. 2022 Mar; 64(3):473-481. doi: 10.1007/s00234-021-02782-z.
- [25] Schmidt H, Elster J, Eckert I, Wiefek J, Paulus W, von Steinbuechel N, et al. Cognitive functions after spinal tap in patients with normal pressure hydrocephalus. *Journal of neurology*. 2014 Dec; 261(12):2344-50. doi: 10.1007/s00415-014-7489-2.
- [26] Davies E, Connolly DJ, Mordekar SR. Encephalopathy in children: an approach to assessment and management. *Archives of disease in childhood*. 2012 May; 97(5):452-8. doi.org/10.1136/adc.2011.300998



# THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



## Original Article

# Prevalence of Trigger Finger among Instrumental Musicians of Lahore, Pakistan

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## ARTICLE INFO

### Key Words:

Trigger finger, Instrumental Musicians, Frequency

### How to Cite:

Amjad, F. ., Asif, M. ., & Mustansar Billah, A. . (2022). Prevalence of Trigger Finger among Instrumental Musicians of Lahore, Pakistan. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences), 3(1). <https://doi.org/10.54393/tt.v3i1.35>

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Received Date: 15<sup>th</sup> March, 2022

Acceptance Date: 14<sup>th</sup> April, 2022

Published Date: 30<sup>th</sup> June, 2022

## ABSTRACT

Trigger finger is also known as stenosing tenosynovitis. It is a troublesome anomaly that is experienced by most of the musicians and is characterized by catching, popping and locking of the affected finger/fingers. The causes of this anomaly are repetitive hand movements and holding heavy musical instruments. **Objective:** the basic aim of this study is to determine the prevalence of trigger finger in instrumental musicians. **Methods:** A cross sectional study design and convenient sampling technique was used to collect the data. A data of 320 musicians was collected through a self-administered questionnaire, who were lying in the inclusion criteria of the study. **Results:** In this study the results concluded that the frequency of trigger finger in instrumental musicians is 2.2%. Total 320 instrumental musicians participated in the study and out of it 292 (91.3%) were male and 28 (8.8%) were female. Minimum age was 20 and maximum age was 59 years. 283 (88.4%) were in the age range from 20-29, 25 (7.8%) participants were in the age range of 30-39 years, 10 (3.1%) participants were in the range of 40-49 years and 2 (0.6%) participants were in the range of 50-59 years. **Conclusions:** The present study concluded that frequency of trigger finger in musicians was very low as 2.2%. The study also determined that occurrence of trigger finger in musicians relies on repetitive hand movements and holding heavy musical instruments.

## INTRODUCTION

The disease trigger finger procures its name from the excruciating popping or clicking sound elicited by flexion and extension of the involved digit. Described by Notta in 1850 it is caused by a difference in diameter of a flexor ligament and its retinacula sheath because of thickening and narrowing of the sheath. It is also known as stenosing tenosynovitis. A few reasons for trigger finger have been proposed, however the exact etiology has not been clarified. Mostly, repetitive finger movements and local injury are conceivable outcomes with such stress and degenerative power additionally representing an increased frequency of trigger finger in the dominant hand. There are reports connecting trigger finger to occupations requiring extensive grasping and hand flexion, for example, utilization of shears or hand held instruments. The underlying complaint related with trigger finger might be of a painless clicking with digital manipulation. On the further advancement of the condition can make the catching or

popping to become excruciating with both flexion and extension, and be related as happening at either the metacarpophalangeal (MCP) or PIP joints. The classic presentation of popping and locking of a trigger finger is typically all that is needed for diagnosis; however, with acute onset of symptoms patients may present with pain and swelling over the involved flexor sheath with avoidance of finger motion. The work of professional musicians exposes them to a range of physical and psychological risk factors, which, in other occupations, have been linked with occurrence of musculoskeletal disorders (MSDs). These include static loading of muscles, repetition, precision grip and psychosocial work pressures. The instruments are the tools of the instrumental performer, while the concert hall or club provides the setting. Both are set in stone by tradition and are resistant to change when work-related issues occur. As a result, in the event of the start of a musculoskeletal condition, the musician's work-related

behaviors, namely his or her performance and practice habits, are modifiable. Because of the amount and type of motor skills necessary, regular performance and practice with a musical instrument demands the player to become practically a "upper extremity athlete". Professional musicians must perform rapid, repetitive motions with considerable strength and precision, and the movements necessary do not always correlate to the types of rotational and angular movements called "physiological" or "natural." These motions create an ideal environment for tendonitis or muscle injury to develop. Tenosynovitis and tendinitis are endemic among musicians and guitarists and essentially influence the wrist of the non-predominant hand. Recovery of the instrumental artist with an occupationally related musculoskeletal issue is an interesting issue. The aim of this paper is to create awareness about the commonness of trigger finger in musicians so that their work related behaviors and practice habits can be changed or modified in order to prevent injury and in case of initial phases of injury the physical therapist must be able to diagnose correctly.

## METHODS

A cross sectional study design is used to conduct the study. The sample size consists of 320 musicians. Conveniently approachable samples were taken in the study. Data was collected from professional musicians in the walled city of Lahore and Alhamra Cultural Complex and Alhamra Arts Council. Data was collected in almost 8 months after the approval of the synopsis. Sample size was calculated through an Epitool Calculator. Data is collected from both males and females. The age limit is from 20 years of age to 69 years. Time span since the musician is playing the instrument is chosen to be at least 2 weeks on the instrument. All the instrument players are included, i.e. string players, percussionists and brass & wind players. Professionals who were off the instrument and Professionals who were experiencing symptoms for less than 2 weeks are not included. In the study the data is collected using a self-administered questionnaire. Data is collected from 320 professional musicians and music trainees. Information about the questionnaire and study was given to the participants and their consent was taken through a consent form sanctioned by authorities of institutions where the participants belonged to. For the statistical analysis of the data SPSS version 20 was used. Study results of qualitative variables are expressed in the form of tables and charts. Statistical analysis is done with P-value set as  $p < 0.05$  and by using Pearson's chi square-test.

## RESULTS

In this study the results concluded that the frequency of trigger

finger in instrumental musicians is 2.2%. Total 320 instrumental musicians participated in the study and out of it 292 (91.3%) were male and 28 (8.8%) were female. Minimum age was 20 and maximum age was 59 years. 200 (62.5%) participants were string player, 102 (31.9%) were percussionists and 18 (5.6%) participants were brass and wind players. The most important sign of trigger finger is the locking of fingers in bent position and most of times trigger finger is diagnosed on the basis of this sign. Out of 320 participants 7 (2.2%) participants complained of their fingers getting locked in bent position while 313 (97.8%) participants were normal as given in Table-1. Making fist might be difficult for patients with trigger finger but it's not common in all the patients with trigger finger so only 5 (1.6%) participants felt difficulty in making fist while 315 (98.4%) were able to easily make fist. In the affected participants left hand is involved in 7 (2.2%) participants and right hand of only 1 (0.3%) participants was involved while 312 (97.5%) were normal as shown in Table-1. A cross tabulation was done between trigger finger and age. According to the calculations there is significant association between age and trigger finger because the p-value is 0.000 which is less than 0.05, and most of the participants with trigger finger were lying in the age range of 20-19 years and it's given in Table-2. A cross tabulation between instrument and trigger finger was done. The p-value found to be 0.073 that is greater than 0.05, and it shows that there is no significant association between instruments and trigger finger, all the participants are equally prone to this condition as shown in Table-3. Another cross tabulation was done between gender and trigger finger and the p-value found to be 0.600 that is greater than 0.05, which means there is no significant association between gender and trigger finger as given in Table-4

| Characteristics          |               |
|--------------------------|---------------|
| Age                      | Frequency (%) |
| 20-29                    | 283(88.4%)    |
| 30-39                    | 25(7.8%)      |
| 40-49                    | 10(3.1%)      |
| 50-59                    | 2(0.6%)       |
| Gender                   | Frequency (%) |
| Males                    | 292(91.3%)    |
| Females                  | 28(8.8%)      |
| Instrument Family        | Frequency (%) |
| String Instrumentalists  | 200(62.5%)    |
| Percussionists           | 102(31.9%)    |
| Brass & Woodwind Players | 18(5.6%)      |
| Trigger Finger symptoms  | Frequency (%) |
| Symptoms present         | 7(2.2%)       |
| Symptoms not present     | 313(97.8%)    |
| Hand affected            | Frequency (%) |
| Right hand               | 1(0.3%)       |
| Left hand                | 7(2.2%)       |
| None                     | 312(97.5%)    |
| <b>Total</b>             | <b>n=320</b>  |

**Table 1:** Basic and demographic characteristics of participants

| Age   | Trigger Finger present | Trigger finger not present | Total | p-value |
|-------|------------------------|----------------------------|-------|---------|
| 20-29 | 4                      | 279                        | 283   | .000    |
| 30-39 | 1                      | 24                         | 25    |         |
| 40-49 | 1                      | 9                          | 10    |         |
| 50-59 | 1                      | 1                          | 2     |         |
| Total | 7                      | 313                        | 320   |         |

**Table 2:** Cross Tabulation between Age and Trigger Finger

| Instrument   | Trigger Finger present | Trigger finger not present | Total | p-value |
|--------------|------------------------|----------------------------|-------|---------|
| String       | 2                      | 198                        | 200   | 0.73    |
| Percussion   | 5                      | 97                         | 102   |         |
| Brass & wind | 0                      | 18                         | 18    |         |
| Total        | 7                      | 313                        | 320   |         |

**Table 3:** Cross Tabulation between Instrument and Trigger Finger

| Gender | Trigger Finger present | Trigger finger not present | Total | p-value |
|--------|------------------------|----------------------------|-------|---------|
| Male   | 6                      | 286                        | 292   | 0.600   |
| Female | 1                      | 27                         | 28    |         |
| Total  | 7                      | 313                        | 320   |         |

**Table 4:** Cross Tabulation between Gender and Trigger Finger

## DISCUSSION

The present cross sectional investigation decided a frequency of trigger finger in instrumental performers by characterizing the instrumentalists in various classifications on the premise of the sort of instrument they play. The goal of the present examination was to decide the frequency of trigger finger in populace of artists of Lahore, Pakistan. A cross sectional examination was made and 320 people took an interest, out of which 292 (91.3%) were males and 28 (8.8%) were females. As per this poll overview just 7 (2.2%) performers experienced trigger finger. The present investigation demonstrated that trigger finger relies upon various playing related factors including diverse manifestations and exasperating factors. A study is conducted by Han-Sung Lee et al to determine the prevalence of work-related musculoskeletal disorders in musicians 12% of subjects of 507 subjects were experiencing muscle-tendon syndrome as a result of carrying heavy musical instruments and repetitive movements of finger. The present study suggests the same. To play musical instrument, repetitive hand movements is a requirement and all the instruments i.e. string instruments (like guitar, sitar, rubab) and percussion instruments (like drum, tumbak, djembe, ukulele) are played by repetitive strumming and tapping respectively. On the same note a systematic review of literature was conducted by Paula ECG Nielsen et al. to find out occupational musculoskeletal disorders in arms and hands. In her study she found that repetitive hand movements can result in injuries of the tendons that includes trigger finger and people who are performing

tasks that involve excessive repetitive movements are at higher risk of getting trigger finger than those who are performing tasks that involve less repetitive movements of hands. The present study suggests that there is no significant association between types of instrument and trigger finger, all categories of instrumentalists are equally prone to have trigger finger. On the contrary a study conducted by Lili Allsop and Tim Ackland emphasized that professional pianists are at higher risk of getting musculoskeletal problems as compare to non-professional pianists. And playing instruments for longer duration can cause musculoskeletal disorders while in the present study there is no association between duration of playing the instruments and occurrence of trigger finger. Another study showed that affected musicians more percussionists experienced trigger finger than string players. In contrast a study conducted by author suggests that guitarists are more exposed to trigger finger than other instrument players. In the present study it was suggested that a proper warm up exercises before playing the instrument and stretching exercises after the performance can reduce the risk of getting trigger finger. A retrospective review by Katherine Butler and Ian Winspur reported that instrumentalists who had trigger finger were successfully returned to normal professional playing after corrective surgery of trigger finger. To the best of learning for the author, past investigations explained distinctive parts of trigger finger, its causes, treatment and prevention but the present study was conducted to determine the prevalence of trigger finger in instrumental musicians.

## CONCLUSIONS

This study focuses mainly on the prevalence of trigger finger in instrumental musicians in order to keep the musicians from losing their career. Although the frequency of trigger finger is not very high in the given population and is found to be only 2.2%, present study concluded that vigorous and repetitive hand and finger movement is the major cause of trigger finger in instrumental musicians

## REFERENCES

- [1] Blazar P, Aggarwal R. Trigger finger (stenosing flexor tenosynovitis). 2018.
- [2] Blair G, Weinstein JM, Christia F, et al. Community policing does not build citizen trust in police or reduce crime in the Global South. 2021; 374(6571): eabd3446.
- [3] Shafae-Khanghah Y, Akbari H, Bagheri NJWJoPS. Prevalence of carpal tunnel release as a risk factor of trigger finger. 2020; 9(2): 174.
- [4] Amjad N, Anjum A, Ghazal S, Skinner MJPJoPR. Aggressive Acts, Thinking, Remorse and Private Self-

- consciousness-An Examination of Real Life Aggressive Episodes. 2018; 277-97.
- [5] Shuja A, Qureshi IA, Schaeffer DM, Zareen MJKM, Journal E-LAI. Effect of m-learning on students' academic performance mediated by facilitation discourse and flexibility. 2019; 11(2): 158-200.
- [6] Junaid M, Hashmi MZ, Tang Y-M, Malik RN, Pei D-SJSr. Potential health risk of heavy metals in the leather manufacturing industries in Sialkot, Pakistan. 2017; 7(1): 1-13.
- [7] Mineoka Y, Ishii M, Hashimoto Y, et al. Trigger finger is associated with risk of incident cardiovascular disease in individuals with type 2 diabetes: a retrospective cohort study. 2021; 9(1): e002070.
- [8] Kuczmarski AS, Harris AP, Gil JA, Weiss A-PCJTJoHS. Management of diabetic trigger finger. 2019; 44(2): 150-3.
- [9] Makkouk AH, Oetgen ME, Swigart CR, Dodds SDJCRiMM. Trigger finger: etiology, evaluation, and treatment. 2008; 1(2): 92-6.
- [10] Matthews A, Smith K, Read L, Nicholas J, Schmidt EJJotAAoP. Trigger finger: An overview of the treatment options. 2019; 32(1): 17-21.
- [11] Shah A, Rettig MEJBotNHfJD. Trigger finger: Location and association of comorbidities. 2017; 75(3): 198.
- [12] Vahdatpour B, Momeni F, Tahmasebi A, Taheri PJOAJoSM. The effect of extracorporeal shock wave therapy in the treatment of patients with trigger finger. 2020; 11: 85.
- [13] Fiorini HJ, Tamaoki MJ, Lenza M, Dos Santos JBG, Faloppa F, Carlos Belloti JJCDoSR. Surgery for trigger finger. 2018; (2).
- [14] Welman T, Young K, Larkin J, Horwitz MDJH. Trigger Finger From Ocean Rowing: An Observational Study. 2022; 17(2): 254-60.
- [15] Beleckas CM, Wright M, Prather H, Chamberlain A, Guattery J, Calfee RPJTJohs. Relative prevalence of anxiety and depression in patients with upper extremity conditions. 2018; 43(6): 571. e1-. e8.
- [16] Colbourn J, Heath N, Manary S, Pacifico DJJoht. Effectiveness of splinting for the treatment of trigger finger. 2008; 21(4): 336-43.
- [17] Holte KB, Juel NG, Brox JI, et al. Hand, shoulder and back stiffness in long-term type 1 diabetes; cross-sectional association with skin collagen advanced glycation end-products. The Dialong study. 2017; 31(9): 1408-14.
- [18] Sood RF, Westenberg RF, Winograd JM, Eberlin KR, Chen NCJP, surgery r. Genetic Risk of Trigger Finger: Results of a Genomewide Association Study. 2020; 146(2): 165e-76e.
- [19] Mitake T, Iwatsuki K, Hirata HJJoOS. Differences in characteristics of carpal tunnel syndrome between male and female patients. 2020; 25(5): 843-6.
- [20] Akhtar S, Bradley MJ, Quinton DN, Burke FDJB. Management and referral for trigger finger/thumb. 2005; 331(7507): 30-3



# THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



## Original Article

# Comparison of Effectiveness of Muscle energy Technique with Strain Counter Strain Technique on the Patients of Non-Specific Neck Pain

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## ARTICLE INFO

### Key Words:

Muscle energy technique, Nonspecific Neck Pain, StrainCounter Strain

### How to Cite:

Ameer, T. ., Ghaffar, N. ., Ahmed Zahoor, I. ., Ali Rana, A. ., Ahmad, I. ., & Azam, H. . (2022). Comparison of Effectiveness of Muscle energy Technique with Strain Counter Strain Technique on the Patients of Non-Specific Neck Pain. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences), 3(1). <https://doi.org/10.54393/tt.v3i1.36>

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Received Date: 12<sup>th</sup> Feb, 2022

Acceptance Date: 5<sup>th</sup> March, 2022

Published Date: 30<sup>th</sup> June, 2022

## ABSTRACT

Non-specific neck pain is a condition which is diagnosed through symptoms when serious and objective cervical spinal pathology (e.g., trauma, malignancy, radiculopathy, etc.) has been ruled out. Many studies have done previously for both techniques, muscle energy technique and strain-counter strain technique, for treatment of patients with non-specific neck pain.

**Objective:** To compare the effectiveness of Muscle Energy Technique with Strain Counter-Strain Technique in patients with non-specific neck pain. **Methods:** Single blinded randomized clinical trial was conducted. The assessor was blinded from the allocation in the groups. Forty Patients were included in the study divided into two groups; each group received one technique. They were followed for Seven sessions. Questionnaire including visual analogue scale, NDI were used to collect pre-treatment and post-treatment data. Data was analyzed by using SPSS ver. 21. **Independent sample t test** was applied to compare means of patients. **Results:** Neck flexion of the Patients pretreatment Mean Group 1:24.6500, Group2:23.0500. Neck Flexion of the patient after treatment Mean Group 1(SCS) 32.0500 Group 2(MET) 40.0000 Neck Extension of the Patient pretreatment Mean Group 1: 33.8500 Group 2: 30.6500. Neck extension of the patients. Post treatment Mean SCS 41.5000 MET 53. 2500. The given results and detailed results given in the table shows that both techniques are improving ROM, but MET are more effective than SCS. *p value is 0.001* which is significant. **Conclusions:** This study concluded that Muscle Energy Technique is better in reducing pain as compared to Strain Counter Strain Technique

## INTRODUCTION

Non-specific neck pain is a condition which is diagnosed through symptoms when serious and objective cervical spinal pathology (e.g., trauma, malignancy, radiculopathy, etc.) has been ruled out [1]. The disorder which has statistics showing that it affect 30% of males and 50% of female across their life and total 13% of adults at any one time [2]. Epidemiological studies on neck pain shows neck pain is more prevalent in females than males [3]. The neck pain is the cause of major financial load on health care program that can lead to extreme impairments [4]. Research, which have been conducted on subjects using computer in maximum time in Pakistan, shows 27.7%

subjects with radiating and I pilot survey in Pakistan on computer users showed that 27.7% had radiating and localized cervical Ache [5]. The potential cause of this neck pain is Myofascial trigger points (MTrPs) which are present in muscles and fascia. MTrPs refers as hypersensitive taut bands present in skeletal muscle. These are painful on compression or palpation and also show unique pattern of pain radiating beyond its point of origin [9]. There have been used many therapeutic techniques by therapists to manage the Mayo-fascial trigger points but Strain counterstains is an approach that is to be evaluated regarding its efficacy on scientific basis [6]. Strain

counterstrain is an osteopathic technique which is executed by physiotherapists, osteopaths, and manual therapists. It is the technique that is defined "passive specific positioning of patient and affected region by the physiotherapist for about 90 seconds which would result in decrease the sensitivity of trigger point[7]. The unique positioning for upper trapezius is as follows, ipsilateral side flexion, contralateral rotation, and ipsilateral shoulder abduction, external rotation. This position is maintained for approximately 90 seconds[10]. The other technique which is Muscle energy technique (MET) is well-known osteopathic manipulative technique frequently used to manage spinal somatic disorders[11]. There is less evidence to show its effectiveness, however, the effect of MET is compared in a study to determine the active neck range of motion (ROM). Two groups, asymptomatic young and middle-aged adults, were compared (n=18) pre-treatment and post-treatment protocol. The results against matched control subjects (n=14) that had received sham manipulative treatment regimen were compared[12]. The MET showed a substantial increment in overall regional neck range of motion in the treatment group (approximately 4 degrees) when matched with control group ( $p<.001$ ). Significant differences were also seen in the size of change in the domain of three planes of motion (rotation,  $p<.002$ ; lateral bending,  $p<.01$ ), with flexion/extension being the minimum affected ( $p=.2$ ). These statistics show that the use of the MET can make sharp rises in active cervical degree of movements in asymptomatic group [18]. The effectiveness of various mobilization and therapeutic techniques in improving cervical ROM and decreasing neck pain in the patients of non-specific neck pain is still ambiguous and unclear.

## METHODS

Single blinded randomized clinical trial was conducted at Mayo Hospital Lahore Pakistan. The assessor was blinded from the allocation in the groups. Permission was obtained from the Head of the department of physiotherapy Mayo Hospital Lahore. Sample of patients was taken randomly. Both male and female between age of 20-40 year having neck pain and decrease cervical ROM, diagnosed cases of non-specific neck pain were included in the study while patients with cervical injury, radiculopathy and spondylosis were excluded. 40 patients were included and divided into two groups. Consent is taken from the patients for inclusion in the study. Patients in both groups were assessed for same parameters (VAS, ROM and NDI). Patients were followed by 2 weeks. Patients were divided into two groups Group 1 and Group 2. Pre-test measurements was taken with the help of Visual Analogue Scale, and Neck Disability Index and goniometer prior to the intervention. Group 1 patients were given Strain Counter

Strain technique for 7 sessions in two weeks. Patient was remained in the position of ease for 90-120 seconds. Group 2 patients were given muscle energy techniques for 7 sessions in two weeks. 3-5 muscle contractions with 5-7 seconds each contraction (not more than 20% of total muscle strength) for 5 repetitions. Collected data was analysed by entering it into the SPSS ver. 21. Outcome measuring tools were compared by means compared for both techniques which were going to be compared in this study. It compared by using independent sample t test.

## RESULTS

Results for Independent sample t test are given as for the ROM and NDI. Neck flexion of the Patients pretreatment Mean group 1: 24.6500 group 2: 23.0500. Neck Flexion of the patient after treatment Mean SCS 32.0500 MET 40.0000. Neck Extension of the Patient pretreatment Mean Group 1: 33.8500 GROUP 2: 30.6500. Neck extension of the patients Post treatment Mean SCS 41.5000 MET 53.2500. Neck disability Index pain intensity. Group 1: 4.2500 Group 2: 5.2000. Neck disability index Pain intensity post treatment. SCS 2.8500 MET 1.7500. Neck disability index personal care Group 1: 4.8500 Group 2: 5.1500. Neck disability index personal care post treatment SCS 3.5000 MET 2.2500. Neck disability index Lifting pretreatment Group 1: 4.5500, Group 2: 5.3500. Neck disability index post treatment SCS 3.4000, MET 2.4000. Both groups showed decrease in pain and increased ROM of neck within group in pre and post-treatment analysis as the p-value was  $>0.05$  while Muscle Energy Technique more reduction in pain and to increase ROM in patients suffering from non-specific neck pain as compared to Strain Counter strain technique. the independent sample T-test showed that both techniques were improving ROM, but MET was more effective than SCS. p value is 0.001 which is significant

|                                                       | Group Statistics                 |    |                 |                 |
|-------------------------------------------------------|----------------------------------|----|-----------------|-----------------|
|                                                       | Treatment Applied to the patient | N  | Mean±SD         | Std. Error Mean |
| Neck flexion of the Patients                          | SCS                              | 20 | 24.6500±7.52032 | 1.68160         |
|                                                       | MET,S                            | 20 | 23.0500±7.27993 | 1.62784         |
| Neck flexion after treatment                          | SCS                              | 20 | 32.0500±7.58444 | 1.69593         |
|                                                       | MET,S                            | 20 | 40.0000±4.86664 | 1.08821         |
| neck extension of the patients pre treatment          | SCS                              | 20 | 33.8500±9.40479 | 2.10297         |
|                                                       | MET,S                            | 20 | 30.6500±6.15822 | 1.37702         |
| Neck extension of the patients after treatment        | SCS                              | 20 | 41.5000±8.90003 | 1.9901          |
|                                                       | MET,S                            | 20 | 53.2500±4.06364 | 1.9086          |
| Neck left side flexion pre treatment                  | SCS                              | 20 | 20.6000±3.80305 | 6.85039         |
|                                                       | MET,S                            | 20 | 23.5000±5.64288 | 1.26179         |
| neck left side flexion after treatment                | SCS                              | 20 | 27.4000±3.81686 | .85348          |
|                                                       | MET,S                            | 20 | 38.4500±2.45967 | .55000          |
| Neck right side flexion of the patients pre treatment | SCS                              | 20 | 20.6000±3.80305 | .85039          |
|                                                       | MET,S                            | 20 | 23.5000±5.64288 | 1.26179         |
| neck right side flexion after treatment               | SCS                              | 20 | 27.4000±3.81686 | .85348          |
|                                                       | MET,S                            | 20 | 37.3500±3.06551 | .68547          |

|                                                     |       |    |                  |         |
|-----------------------------------------------------|-------|----|------------------|---------|
| neck right rotation of the patient pre treatment    | SCS   | 20 | 32.0500±7.58444  | 1.69593 |
|                                                     | MET,S | 20 | 40.0000±4.86664  | 1.08821 |
| Neck right rotation of the patients after treatment | SCS   | 20 | 40.6000±7.25041  | 1.62124 |
|                                                     | MET,S | 20 | 56.0000±3.07794  | .68825  |
| Neck left rotation of the patients pre treatment    | SCS   | 20 | 27.4000±3.81686  | .85348  |
|                                                     | MET,S | 20 | 37.3500±3.06551  | .68547  |
| Neck left rotation of the patients after treatment  | SCS   | 20 | 38.0000±4.5653   | 1.02084 |
|                                                     | MET,S | 20 | 22.94511±2.94511 | .65855  |

**Table 1:** Group Statistics of Neck ROM Pre and Post Treatment

|                                                       |                             | Independent Samples Test                |                         |                              |        |                 |                 |                       |                                           |           |          |
|-------------------------------------------------------|-----------------------------|-----------------------------------------|-------------------------|------------------------------|--------|-----------------|-----------------|-----------------------|-------------------------------------------|-----------|----------|
|                                                       |                             | Levene's Test for Equality of Variances |                         | t-test for Equality of Means |        |                 |                 |                       | 95% Confidence Interval of the Difference |           |          |
|                                                       |                             | F                                       | Sig.                    | t                            | df     | Sig. (2-tailed) | Mean Difference | Std. Error Difference | Lower                                     | Upper     |          |
|                                                       |                             | Neck flexion of the Patients            | Equal variances assumed | .109                         | .743   | .684            | 38              | .498                  | 1.60000                                   | 2.34043   | -3.13796 |
|                                                       | Equal variances not assumed |                                         |                         | .684                         | 37.960 | .498            | 1.60000         | 2.34043               | -3.13813                                  | 6.33813   |          |
| Neck flexion after treatment                          | Equal variances assumed     | 3.277                                   | .078                    | -3.945                       | 38     | .000            | -7.95000        | 2.01504               | -12.02924                                 | -3.87076  |          |
|                                                       | Equal variances not assumed |                                         |                         | -3.945                       | 32.378 | .000            | -7.95000        | 2.01504               | -12.05263                                 | -3.84737  |          |
| neck extension of the patients pre treatment          | Equal variances assumed     | 1.983                                   | .167                    | 1.273                        | 38     | .211            | 3.20000         | 2.51370               | -1.88872                                  | 8.28872   |          |
|                                                       | Equal variances not assumed |                                         |                         | 1.273                        | 32.763 | .212            | 3.20000         | 2.51370               | -1.91557                                  | 8.31557   |          |
| Neck extension of the patients after treatment        | Equal variances assumed     | 6.565                                   | .014                    | -5.371                       | 38     | .000            | -11.75000       | 2.18773               | -16.17884                                 | -7.32116  |          |
|                                                       | Equal variances not assumed |                                         |                         | -5.371                       | 26.592 | .000            | -11.75000       | 2.18773               | -16.24209                                 | -7.2579   |          |
| Neck left side flexion pre treatment                  | Equal variances assumed     | 4.661                                   | .037                    | -1.906                       | 38     | .064            | -2.90000        | 1.52160               | -5.98032                                  | 1.1803    |          |
|                                                       | Equal variances not assumed |                                         |                         | -1.906                       | 33.308 | .065            | -2.90000        | 1.52160               | -5.99463                                  | 2.19463   |          |
| neck left side flexion after treatment                | Equal variances assumed     | 3.372                                   | .074                    | -10.883                      | 38     | .000            | -11.05000       | 1.01534               | -13.10545                                 | -8.99455  |          |
|                                                       | Equal variances not assumed |                                         |                         | -10.883                      | 32.459 | .000            | -11.05000       | 1.01534               | -13.11704                                 | -8.9829   |          |
| Neck right side flexion of the patients pre treatment | Equal variances assumed     | 4.661                                   | .037                    | -1.906                       | 38     | .064            | -2.90000        | 1.52160               | -5.98032                                  | 6.1803    |          |
|                                                       | Equal variances not assumed |                                         |                         | -1.906                       | 33.308 | .065            | -2.90000        | 1.52160               | -5.99463                                  | 2.19463   |          |
| neck right side flexion after treatment               | Equal variances assumed     | .334                                    | .567                    | -9.090                       | 38     | .000            | -9.95000        | 1.09466               | -12.16603                                 | -7.73397  |          |
|                                                       | Equal variances not assumed |                                         |                         | -9.090                       | 36.310 | .000            | -9.95000        | 1.09466               | -12.16942                                 | -7.73058  |          |
| neck right rotation of the patient pre treatment      | Equal variances assumed     | 3.277                                   | .078                    | -3.945                       | 38     | .000            | -7.95000        | 2.01504               | -12.02924                                 | -3.87076  |          |
|                                                       | Equal variances not assumed |                                         |                         | -3.945                       | 32.378 | .000            | -7.95000        | 2.01504               | -12.05263                                 | -3.84737  |          |
| Neck right rotation of the patients after treatment   | Equal variances assumed     | 16.287                                  | .000                    | -8.744                       | 38     | .000            | -15.40000       | 1.76128               | -18.96552                                 | -11.83448 |          |
|                                                       | Equal variances not assumed |                                         |                         | -8.744                       | 25.633 | .000            | -15.40000       | 1.76128               | -19.02289                                 | -11.77711 |          |
| Neck left rotation of the patients pre treatment      | Equal variances assumed     | .334                                    | .567                    | -9.090                       | 38     | .000            | -9.95000        | 1.09466               | -12.16603                                 | -7.73397  |          |
|                                                       | Equal variances not assumed |                                         |                         | -9.090                       | 36.310 | .000            | -9.95000        | 1.09466               | -12.16942                                 | -7.73058  |          |
| Neck left rotation of the patients after treatment    | Equal variances assumed     | 5.290                                   | .027                    | -15.969                      | 38     | .000            | -19.40000       | 1.21482               | -21.85928                                 | -16.94072 |          |
|                                                       | Equal variances not assumed |                                         |                         | -15.969                      | 32.480 | .000            | -19.40000       | 1.21482               | -21.87308                                 | -16.92692 |          |

**Table 2:** Independent Sample t-test on Neck ROM

The results showed that both techniques were improving ROM but MET was more effective than SCS. p value is 0.001 which is significant.

## DISCUSSION

In this study two Techniques were compared one was the SCS and other was MET Patients were followed for Seven sessions. Above given results of ROM and NDI shows that MET is better than the SCS in reducing pain and increasing ROM of the patients suffering from nonspecific neck pain. This study will promote the decision making of the professionals who are treating the nonspecific neck pain in selecting the most appropriate technique for the better outcomes and for the better results. This study will prevent the professionals from the time consuming and further

experimental application and a clinician will be able to make the proper decision and proper management of the disease. By using these methods, people are better treated and their non-specific neck discomfort is less painful. In a study on low back pain conducted by Patel *et al*, it was shown that both the muscle energy technique and the strain-counterstrain approach were equally beneficial [19]. Sbardella *et al.*, done study which showed that muscle energy technique is effective for the treatment of acute and chronic non-specific neck pain. The results are similar to this study that muscle energy technique reliefs non-specific neck pain [20]. Marzouk A. Ellythy *et al.*, done similar study on low back dysfunction which shows that both Muscle Energy Technique and Strain Counter Strain are effective of treatment [21].

## CONCLUSIONS

From this study it is concluded that Muscle Energy Technique is better to reduce pain and to increase ROM in patients suffering from non-specific neck pain as compared to Strain Counter strain technique

## REFERENCES

- [1] van der Velde G. Mechanical neck pain. Evidence-Based Orthopedics. 2011;661-8. doi.org/10.1002/9781119413936.ch109.
- [2] Gross AKT, Hondras M, Goldsmith C, Haines T, Peloso P, et al. Manual therapy for mechanical neck disorders: a systematic review. *Manual Therapy*. 2002;7(3):131-49. doi: 10.1054/math.2002.0465.
- [3] Bogduk N. The anatomical basis for spinal pain syndromes. *J Manipulative Physiol Ther*. 1995 Nov-Dec;18(9):603-5.
- [4] Bevan S. Economic impact of musculoskeletal disorders (MSDs) on work in Europe. *Best Pract Res Clin Rheumatol*. 2015 Jun;29(3):356-73. doi: 10.1016/j.berh.2015.08.002.
- [5] Chan C, Ackermann B. Evidence-informed physical therapy management of performance-related musculoskeletal disorders in musicians. *Frontiers in psychology*. 2014;5:706. doi: 10.3389/fpsyg.2014.00706.
- [6] Silver JK, Baima J, Mayer RS. Impairment-driven cancer rehabilitation: an essential component of quality care and survivorship. *CA: a cancer journal for clinicians*. 2013;63(5):295-317. doi: 10.3322/caac.21186.
- [7] Farid S, Ahmad R, Niaz IA, Arif M, Shamshirband S, Khattak MD. Identification and prioritization of critical issues for the promotion of e-learning in Pakistan. *Computers in Human Behavior*. 2015;51:161-71. doi.org/10.1016/j.chb.2015.04.037
- [8] Zafarullah S, Mumtaz K, Murad PU, Abida S, Humera S. Teachers' time management and the performance of students: A comparison of government and private schools of Hyderabad, Sindh, Pakistan. *World Journal of Education*, 2016,6 (6). doi.org/10.5430/wje.v6n6p42
- [9] Javaid HMW, Ahmad A, Ajmad F, Liaqat S & Tahir S. Effects of Conventional Physical Therapy with or without Strain Counterstrain in Patients with Trigger Points of Upper Trapezius; a Randomized Controlled Clinical Trial. *Annals of King Edward Medical University*, 2016, 22(3). doi.org/10.21649/akemu.v22i3.1400
- [10] Bron C, Dommerholt JD. Etiology of myofascial trigger points. *Current pain and headache reports*. 2012;16(5):439-44. doi: 10.1007/s11916-012-0289-4.
- [11] Shah JP, Thaker N, Heimur J, Aredo JV, Sikdar S, Gerber L. Myofascial trigger points then and now: a historical and scientific perspective. *PM&R*. 2015;7(7):746-61. doi: 10.1016/j.pmrj.2015.01.024.
- [12] Lavelle ED, Lavelle W, Smith HS. Myofascial trigger points. *Anesthesiol Clin*. 2007 Dec;25(4):841-51, vii-iii. doi: 10.1016/j.anclin.2007.07.003.
- [13] Kojidi MM, Okhovatian F, Rahimi A, Baghban AA, Azimi H. Comparison between the effects of passive and active soft tissue therapies on latent trigger points of upper trapezius muscle in women: single-blind, randomized clinical trial. *Journal of chiropractic medicine*. 2016;15(4):235-42. doi: 10.1016/j.jcm.2016.08.010.
- [14] Bookwala T, Dabholkar TY, Pandit U, Thakur A, Karajgi A, Yardi S. Comparison of efficacy of Active Release Technique with Ultrasound and Strain-Counterstrain Technique with Ultrasound on Upper Trapezius Trigger Points. *Indian Journal of Public Health Research & Development*. 2015;6(3).doi: 10.5958/0976-5506.2015.00178.3
- [15] Miyakoshi K, Umehara J, Komamura T, Ueda Y, Tamezawa T, Kitamura G, et al. Effect of different trunk postures on scapular muscle activities and kinematics during shoulder external rotation. *Journal of shoulder and elbow surgery*. 2019;28(12):2438-46. doi: 10.1016/j.jse.2019.04.059.
- [16] Greenberg J. Muscle energy technique versus dry needling of quadratus lumborum in the treatment of myofascial trigger points: University of Johannesburg (South Africa); 2014. <http://hdl.handle.net/10210/9968>
- [17] Żurowska A, Malak R, Kołcz-Trzęsicka A, Samborski W, Paprocka-Borowicz M. Compression of the fourth ventricle using a Craniosacral osteopathic technique: a systematic review of the clinical evidence. *Evidence-Based Complementary and Alternative Medicine*. 2017;2017. doi: 10.1155/2017/2974962.
- [18] Burns DK, Wells MR. Gross range of motion in the cervical spine: the effects of osteopathic muscle energy technique in asymptomatic subjects. *The Journal of the American Osteopathic Association*. 2006;106(3):137-42.
- [19] Patel VD, Eapen C, Ceepee Z, Kamath R. Effect of muscle energy technique with and without strain-counterstrain technique in acute low back pain—A randomized clinical trial. *Hong Kong Physiotherapy Journal*. 2018;38(01):41-51. doi: 10.1142/S1013702518500051.
- [20] Sbardella S, La Russa C, Bernetti A, Mangone M, Guarnera A, Pezzi L, et al., editors. *Muscle energy*

technique in the rehabilitative treatment for acute and chronic non-specific neck pain: a systematic review. *Healthcare*. 2021 Jun 17;9(6):746. doi: 10.3390/healthcare9060746.

- [21] Ellythy MA. Efficacy of muscle energy technique versus strain counter strain on low back dysfunction *Bull Fac Phys Ther*. 2012;17(2):29-35.



# THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



## Original Article

# Prevalence of Urinary Incontinence Among Married Females in Sialkot Pakistan

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## ARTICLE INFO

### Key Words:

Urinary Incontinence, physical activity, females, pelvic floor, muscles

### How to Cite:

Amanat Ali, M. ., Naeem, L. ., Asif, R. ., Imran, K. ., Noor, M. ., & Hafeez, M. . (2022). Prevalence of Urinary Incontinence among married females in Sialkot Pakistan. *THE THERAPIST (Journal of Therapies & Rehabilitation Sciences)*, 3(1). <https://doi.org/10.54393/tt.v3i1.37>

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Received Date: 1<sup>st</sup> Jun, 2022

Acceptance Date: 14<sup>th</sup> June, 2022

Published Date: 30<sup>th</sup> June, 2022

## ABSTRACT

Impairment in the pelvic floor muscles and nerves that control the continence of urine can occur due to various conditions in the women, which may affect the lifestyle of women. **Objective:** To find the prevalence of Urinary Incontinence in married females in Sialkot. **Methods:** This observational study was conducted at public and private settings of Sialkot in six months after ethical approval. A sample of 100 married females was targeted through non-probability convenient sampling. ICIQ-UI (International Consultation on Incontinence Questionnaire) short form questionnaire was used to collect the data. Middle aged women (35-55 Years) were included, while unmarried females, pregnant females, females with any history of spinal cord injury and other comorbid conditions were excluded. Results are expressed as frequencies and percentages using IBM Software SPSS Version 20.0. **Results:** Mean age  $\pm$  SD of the participants was  $38.4 \pm 6.615$  years. While calculating the amount of urine leaking; 16% (n=16) had none, 57% (n=57) had a small amount, 25% (n=25) had a moderate amount and 2% (n=2) had a large amount. Similarly, interference with everyday life due to leaking urine was found in 79% (n=79) mild to moderate, 16% (n=16) not at all interferes and 5% (n=5) were greatly interfered. Mean ICIQ-UI score  $\pm$  SD was  $9.53 \pm 0.36$  ranging from 0-11. Most of the women reported urine leakage in a small amount, once a day effecting mild to moderately their daily livings usually due to coughing, sneezing or physical activity. **Conclusions:** Most of the females have episodic urinary incontinence mostly associated with cough, sneeze and physical activity.

## INTRODUCTION

Urinary incontinence (UI) is the loss of control of the bladder. The incidence increases as the person crosses the middle age and it greatly affects the lifestyle of the patient [1]. With aging, the chance of developing urinary incontinence increase more in women as compared to men [2]. Risk of urinary incontinence is high in women due to pregnancy and child birth. Urinary incontinence is seen to be associated with the childbirth through vagina and stress incontinence is seen to be associated with the childbirth through C-section [3]. Women in the middle age who went through surgical removal of the uterus are even at higher risk for developing UI. Asian's are less prone to develop UI as compared to White people [4]. Women with increased body

weight are more prone to develop UI particularly the stress incontinence [5]. Muscles of the lower back and pelvis region are responsible for maintaining pelvic stability and continence of urine. Weakness of these muscles leads to disturbance in both the stability and urinary continence [6]. It was seen that urinary incontinence has association with the depression, increasing age, underlying pathology, sedentary lifestyle and increased BMI in the middle aged women [7]. Deterioration in the sexual life in the women is seen to cause UTI. Injuries due to fall are also associated with UI; rushing to the hospital that also increasing the hospital admission and stay [8]. Women suffering from UI do not visit hospital due to shame, they do not consult their



doctor regarding this nor they receive treatment which worsens their health condition [9]. Improvement in the daily living, changing the lifestyle and maintaining good health is seen to be most effective factor in preventing the UI. Staying active can help out in remaining healthy [10]. In a recent study from Pakistan, mixed type of UI was more prevalent and UI had bad effects on women's general health, well-being and quality of life [11]. This study aimed to generate evidence of the urinary incontinence in married female population in Sialkot Pakistan

## METHODS

This observational study was conducted in six months after ethical approval. A Sample of convenience of size 100 participants was approached. Non-probability convenient sampling technique was used. Data was collected from CMH Sialkot, Civil Hospital Sialkot, Amin welfare & teaching hospital, International Consultation on Incontinence Questionnaire-ICIQ-UI Short Form (12) was used as data collection tool. ICIQ-UI SF is a 6 item questionnaire, out of which first two items seek information about age and gender, while 6th item is unscored. Items 3, 4 and 5 are scored with a total score ranging from 0-21, the higher the score the greater the incontinence and vice versa. Married females of age (35-55), both working women and house wives were included. Females with co-morbid conditions, with spinal cord injury and bed ridden females were excluded. Informed consent document was sign by all the participants. The data was analysed using SPSS and frequencies and percentages were calculated.

## RESULTS

Study was conducted on 100 married females (35-55 years) in Sialkot. Mean age  $\pm$ SD was 38.4  $\pm$  6.615 years. Frequency of urine leakage is expressed as table 1.

| Frequency of Urine leakage      | Frequency(%) |
|---------------------------------|--------------|
| Never                           | 16(16.0%)    |
| About once a week or less often | 23(23.0%)    |
| Two or three times a week       | 20(20.0%)    |
| About once a day                | 24(24.0%)    |
| Several times a day             | 15(15.0%)    |
| All the time                    | 2(2.0%)      |
| Total                           | 100(100.0%)  |

**Table 1:** Frequency of Urine leakage

While calculating the amount of urine leaking; 16% (n=16) had none, 57% (n=57) had a small amount, 25% (n=25) had a moderate amount and 2% (n=2) had a large amount. Similarly interference with everyday life due to leaking urine was found in 79% (n=79) mild to moderate, 16% (n=16) not at all interferes and 5% (n=5) were greatly interfered. Mean ICIQ score (sum of above scores) was 9.5  $\pm$  0.36 ranging from 0-11. Activities leading to urine leakage are given as table 2.

| Activities leading to Urine Leakage                    | Frequency(%) |
|--------------------------------------------------------|--------------|
| Urine does not leak                                    | 16(16.00%)   |
| Leaks before you can get to the toilet                 | 16(16.00%)   |
| Leaks when you cough or sneeze                         | 39(39.00%)   |
| Leaks when you are asleep                              | 1(1.00%)     |
| Leaks when you are physically active/ exercising       | 6(6.00%)     |
| Leaks when you have finished urinating and are dressed | 5(5.00%)     |
| Leaks for no obvious reason                            | 16(16.00%)   |
| Leaks all the time                                     | 1(1.00%)     |
| Total                                                  | 100(100.00%) |

**Table 2:** Activities leading to Urine Leakage

## DISCUSSION

We have found that most of the women reported urine leakage in a small amount, once a day effecting mild to moderately their daily livings usually due to coughing, sneezing or physical activity. Females have episodic urinary incontinence associated with coughing, sneezing and physical activity. Nygaard I et al., in 2003 found that approximately 16% reported either mild-moderate or severe incontinence [7]. Another study was conducted in 2000 and reported that the prevalence of urinary incontinence was 28%, 3.5% having daily leakage. Stress urinary incontinence was the dominant type. The odds ratio (OR) of having incontinence increased from 1 to 3.5 with increasing age and from 1 to 2.7 with increasing parity [8]. A study was conducted in 2002 and reported that out of the 1700 women (mean age 40.0years) who returned the questionnaire, 467 (27.5%, 95% confidence interval, CI, 25.4-29.7) reported UI, comprising 210 (12.4%, 10.8-14.0) with stress UI, 28(1.6%, 1.1-2.4) with urge UI and 229(13.5%, 11.9-15.2) with mixed UI, Study showed that stress UI is most commonly seen in the women who was above 40 years of age, recently had vaginal childbirth, surgery of uterus and pregnancy [11]. Result of our study shows similar results that UI chances increases due to multiple factors including weakness of the pelvic floor muscles, multi-parity, multiple pregnancies and deliveries Overactive bladder and stress incontinence are related with each other. The metabolic defects like increase in the BMI level and it most commonly leads to the stress urinary incontinence [12]. Results of our study shows that urinary incontinence is most commonly seen in the middle aged women and is related with the multiple pregnancies and weakness of pelvic floor muscles. The most common risk factors associated with the UI are increased body weight, poor health status, cough, sneezing, underlying pathology of urinary tract and depression [14]. Result of our study shows that urinary incontinence results from weakness of pelvic floor muscles, multi-parity, multiple pregnancies, deliveries and multiple caesarians and chances increase with coughing

and sneezing. Weakness of the pelvic floor muscles is associated with the UI and stress incontinence is most commonly seen [15]. Result of our study shows that pelvic floor muscles, multiple pregnancies and increased BMI increases the prevalence of incontinence. A study was conducted and 43% of the women reported incontinence and women who were aged 50 to 54 years had 1.81 times the odds of severe incontinence compared with women who were less 40 years old (95% CI, 1.66-1.97); women with a body mass index of  $\geq 30$  kg/m<sup>2</sup> had 3.10 times the odds of severe incontinence compared with a body mass index of 22 to 24 kg/m<sup>2</sup> [16]. In a study, 35% of the women reported involuntary urine loss in last one month, mostly owing to stress. In this study including 4 European countries, Spain had the lowest prevalence (23%) as compared to France (44%), Germany (41%) and Germany (42%) respectively [17]. A study was conducted in Pakistan to determine the frequencies of different types of urinary incontinence and their impact on quality of life in women. It was observed that out of 436 women, 281 had mixed type of urinary incontinence and had a greater impact on life quality [18]. Similar findings were observed in another recent study published in 2022, where approximately 46% of female married population had some sort of urinary incontinence which impacted their life adversely [19]. A study carried out in Saudi Arabia in 2022 had also similar observations that urinary incontinence was common in Saudi females especially older age, multiparous and menopause was also a risk factor [20].

## CONCLUSIONS

This study showed that, mild urinary incontinence is prevalent among females and is mostly associated with coughing, sneezing and physical activity. Despite of our work there are some gaps that require more researches in this area. Main point of concern for the researchers should be that, which type of health-related consequences of urinary incontinences can occur. Awareness about lifestyle and health-related factors should be given to middle aged females.

## REFERENCES

- [1] Norton P, Brubaker L. Urinary incontinence in women. *The Lancet*. 2006;367(9504):57-67. doi: 10.1016/S0140-6736(06)67925-7.
- [2] Hellström I, Ekelund P, Milsom I, Mellström D. The prevalence of urinary incontinence and use of incontinence aids in 85-year-old men and women. *Age and ageing*. 1990;19(6):383-9. doi: 10.1093/ageing/19.6.383.
- [3] Parazzini F, Chiaffarino F, Lavezzari M, Giambanco V, Group VS. Risk factors for stress, urge or mixed urinary incontinence in Italy. *BJOG: an international journal of obstetrics and gynaecology*. 2003;110(10):927-33.
- [4] Danforth KN, Townsend MK, Lifford K, Curhan GC, Resnick NM, Grodstein F. Risk factors for urinary incontinence among middle-aged women. *American journal of obstetrics and gynecology*. 2006;194(2):339-45. doi: 10.1016/j.ajog.2005.07.051.
- [5] Townsend MK, Danforth KN, Rosner B, Curhan GC, Resnick NM, Grodstein F. Physical activity and incident urinary incontinence in middle-aged women. *The Journal of urology*. 2008;179(3):1012-7. doi: 10.1016/j.juro.2007.10.058.
- [6] Samuelsson E, Victor A, Svärdsudd K. Determinants of urinary incontinence in a population of young and middle-aged women. *Acta Obstetrica et Gynecologica Scandinavica*. 2000;79(3):208-15.
- [7] Nygaard I, Turvey C, Burns TL, Crischilles E, Wallace R. Urinary incontinence and depression in middle-aged United States women. *Obstetrics & Gynecology*. 2003;101(1):149-56. doi: 10.1016/s0029-7844(02)02519-x.
- [8] Møller LA, Lose G, Jørgensen T. Incidence and remission rates of lower urinary tract symptoms at one year in women aged 40-60: longitudinal study. *Bmj*. 2000;320(7247):1429-32. doi: 10.1136/bmj.320.7247.1429.
- [9] Wesnes SL, Hunskår S, Bo K, Rortveit G. The effect of urinary incontinence status during pregnancy and delivery mode on incontinence postpartum. A cohort study. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2009;116(5):700-7. doi: 10.1111/j.1471-0528.2008.02107.x.
- [10] Mishra GD, Hardy R, Cardozo L, Kuh D. Body weight through adult life and risk of urinary incontinence in middle-aged women: results from a British prospective cohort. *International journal of obesity*. 2008;32(9):1415-22. doi: 10.1038/ijo.2008.107.
- [11] Peyrat L, Haillot O, Bruyere F, Boutin J-M, Bertrand P, Lanson Y. Prevalence and risk factors of urinary incontinence in young and middle-aged women. *BJU international*. 2002;89(1):61-6. doi: 10.1046/j.1464-4096.2001.01813.x.
- [12] Hajebrahimi S, Corcos J, Lemieux MC. International consultation on incontinence questionnaire short form: comparison of physician versus patient completion and immediate and delayed self-administration. *Urology*. 2004 Jun 1;63(6):1076-8. doi: 10.1016/j.urology.2004.01.005.
- [13] Telemann PM, Lidfeldt J, Nerbrand C, Samsioe G, Mattiasson A, Group WS. Overactive bladder:

- prevalence, risk factors and relation to stress incontinence in middle-aged women. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2004;111(6):600-4. doi: 10.1111/j.1471-0528.2004.00137.x.
- [14] Minassian VA, Drutz HP, Al-Badr A. Urinary incontinence as a worldwide problem. *International Journal of Gynecology & Obstetrics*. 2003;82(3):327-38. doi: 10.1016/s0020-7292(03)00220-0.
- [15] Cornacchia M, Zenorini A, Perobelli S, Zanolla L, Mastella G, Braggion C. Prevalence of urinary incontinence in women with cystic fibrosis. *BJU international*. 2001;88(1):44-8. doi: 10.1046/j.1464-410x.2001.02242.x.
- [16] Fultz N, Girts T, Kinchen K, Nygaard I, Pohl G, Sternfeld B. Prevalence, management and impact of urinary incontinence in the workplace. *Occupational Medicine*. 2005;55(7):552-7. doi: 10.1093/occmed/kqi152.
- [17] Hunskaar S, Lose G, Sykes D, Voss S. The prevalence of urinary incontinence in women in four European countries. *BJU international*. 2004;93(3):324-30. doi: 10.1111/j.1464-410x.2003.04609.x.
- [18] Hassan S, Malik KK, Khursheed MA, Seikh AH, Ali A, Siddiqui AA. Frequency of Different Types of Urinary Incontinence and Their impact on Quality of Life of Pakistani Women: Different Types of Urinary Incontinence and Their impact on Quality of Life. *Pakistan BioMedical Journal*. 2022 Jun 30:291-5. doi.org/10.54393/pbmj.v5i6.190
- [19] Vandoninck V, Bemelmans BL, Mazzetta C, Robertson C, Keech M, Boyle P, Kiemeny LA; UREPIK study group. The prevalence of urinary incontinence in community-dwelling married women: a matter of definition. *BJU Int*. 2004 Dec;94(9):1291-5. doi: 10.1111/j.1464-410X.2004.05214.x.
- [20] Alshehri SZ, Abumilha AK, Amer KA, Aldosari AA, Shawkhan RA, Alasmari KA, Sabrah TA. Patterns of Urinary Incontinence Among Women in Asir Region, Saudi Arabia. *Cureus*. 2022 Jan 26;14(1):e21628. doi: 10.7759/cureus.21628.

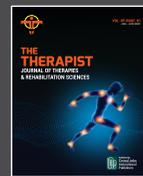


# THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



## Original Article

## Quality of Life in Patients with Knee Osteoarthritis

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### ARTICLE INFO

#### Key Words:

Quality of life (QOL), Osteoarthritis, Knee Joint.

#### How to Cite:

Asif, T., Ali Rana, A. . ., Ahmed Zahoor, I. ., Ghaffar, N. ., Ahmad, I., & Idrees, Q. . (2022). Quality of Life in Patients with Knee Osteoarthritis: Quality of Life in Patients with Knee Osteoarthritis. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences), 3(1). <https://doi.org/10.54393/tt.v3i1.39>

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Received Date: 21<sup>st</sup> May, 2022

Acceptance Date: 5<sup>th</sup> June, 2022

Published Date: 30<sup>th</sup> June, 2022

### ABSTRACT

Osteoarthritis is a joint degenerative disease. Old age is the usual cause of knee osteoarthritis. Knee osteoarthritis affects quality of life (physical, social and psychological) of patient and can cause other health related problems. Most people who undergo knee osteoarthritis have serious consequences, which affect their quality of life. **Objective:** The purpose of this study was to evaluate the quality of life in patient by knee osteoarthritis. **Methods:** This was a cross sectional study that was conducted in Lahore, Pakistan in 2017. The sample size of 192 was taken with the age range of 30 to 70 years. SF-36 V2 extracted questionnaire was used to find out the quality of life in patients by knee osteoarthritis. People were asked about the effect of knee osteoarthritis on their physical, social and psychological health and result was calculated. **Results:** Quality of life was seen in 192 individuals having knee osteoarthritis with mean age of 47.66 years (range from 30 to 70). A strong impact of osteoarthritis was found on quality of life of such patients. Physical health limitation was found to be 59.9% and psychological impact was 49.5%. **Conclusions:** It was concluded that people with knee osteoarthritis had poor quality of life. Their physical, social and psychological health was compromised to a healthy individual.

### INTRODUCTION

Osteoarthritis (OA) is a joint degenerative disease, which results from breakdown of joint cartilage and underlying bone. The world's most common community health problem is knee osteoarthritis mostly affecting old age people. Knee osteoarthritis has negative effect on quality of life that varies from person to person. Old age is the leading cause of (OA) in developing countries. Female suffers more than men from OA of knee [1,2]. The prevalence of knee pain is 46.2% in general (58.0% in women and 32.2% in men). In 10.3%, 9.1% and 26.8% of patients, pain may be within close proximity of left, right or may be present in both knees respectively. The prevalence of unilateral knee pain is found to be 10.3% and 16.1% in both knees. The knee pain prevalence is considerably higher in women than in men. In women occurrence of knee pain increases with age range of 30 to 70 years. In men the prevalence of knee pain does not increase with age as

compared to women [3]. The occurrence of knee pain and symptomatic knee osteoarthritis can be decrease 10 to 25% by alteration in body mass index and additional age adjustment [4]. Etiologies of osteoarthritis are numerous. Old age people, female gender, overweight, injury to the knee, rhythmic use of joints, abnormal joint or limb development, loss of strength in muscles, injury and laxity of joints all play a part in the development of knee joint osteoarthritis [5]. Trauma to the knee joint can also cause osteoarthritis. The risk of knee osteoarthritis increases 3.86 times due to earlier knee trauma. In extreme cases, it can lead to severe pain and limitation of physical activities. The joint begins to "wear out" due to use or overuse, which cause the cartilage that act as a cushion the bone ends in the joint to deteriorate. Elderly people are at more risk as with the passage of time bones density reduce and bones become more fragile [6]. Risk factor of osteoarthritis are



extrinsic (occupational) and intrinsic (personal). Kneeling and squatting are considered main primary risk factor in correlation with knee disorders. Occupation involving squatting or kneeling more than two hours daily were associated with increased risk of moderate to severe knee osteoarthritis. Inflammation after miniscal surgery, mechanical forces, obesity and repetitive use of knee joint may cause a contributive part in the development of osteoarthritis in knee [7,8]. Physiotherapy plays an important role in osteoarthritis. A patient instruction in self-management, well-designed balance training and gait has been recommended. The use of intra-articular corticosteroid injections, braces and heel wedges provided a better role in decreasing pain and improving physical functions [9,10]. Appropriate treatment modalities for all participants with knee osteoarthritis included biomechanical interventions, exercises (on land and in water), strengthens training, self-education, and managing. Physical functioning seems to be improved by therapeutic exercise programs such as walking and other activities [11]. The first line treatment in medicine is Acetaminophen. However, the use of glucosamine, capsaicin cream, contemporary nonsteroidal anti-inflammatory drugs (diclofenac) and acupuncture may provide some benefits. Those above mentioned drugs may also have unfavorable results; therefore, the patient who was receiving these drugs should be careful and monitored properly. Intra-articular corticosteroid injections also have some role in management osteoarthritis of knee [12,13]. It has been shown that the Arthroscopic surgery in knee osteoarthritis has no advantage. If symptomatic treatment is ineffective than total joint arthroplasty of the knee should be well thought-out [14]. Rationale of this study was help in raising awareness about physical, social and psychological life in-patients with osteoarthritis of knee and the impact of osteoarthritis on physical functioning, social health and psychological problems.

## METHODS

It was a cross sectional survey. Data was collected from Services Hospital, Jinnah Hospital and Social Security Hospital in Lahore, Pakistan 2017. Permission was taken from university ethical review committee. This study was completed in estimate period of 4 months. The sample size of 192 participants was taken with the age range from 30 to 70 years. SF-36 V2 extracted questionnaire was used which included physical examination, psychological and social health to evaluate the quality of life in-patient by knee osteoarthritis. Individuals were asked about the effect of knee osteoarthritis on their physical, social and psychological health and result were calculated. In this study convenient sampling technique was used. The

inclusion criteria were all those participants who presented with knee pain from past 4 weeks, stiffness from last 30 minutes, age between 30 to 70 and both male and female were included in this study. The exclusion criteria were all those participants who had medical conditions (kidney and liver disease, deep vein thrombosis), malignancy, trauma or any bleeding disorder and people with other disabilities.

## RESULTS

| Limitation            | Bending or stooping           | Walking more than a mile     |
|-----------------------|-------------------------------|------------------------------|
|                       | Frequency(%)                  | Frequency(%)                 |
| Yes limited a lot     | 64(33.3%)                     | 64(33.3%)                    |
| Yes limited a little  | 127(66.1%)                    | 123(64.1%)                   |
| No not limited at all | 1(0.5%)                       | 5(2.6%)                      |
|                       | Walking several hundred yards | Bathing or dressing yourself |
|                       | Frequency(%)                  | Frequency(%)                 |
|                       | 155(80.7%)                    | 4(2.1%)                      |
|                       | 35(18.2%)                     | 55(28.6%)                    |
|                       | 2(1.0%)                       | 133(69.3%)                   |

**Table 1:** Limitations in performing physical work/ activities

The study was conducted to evaluate the quality of life in patients by knee osteoarthritis. The study population consisted of n=192 of which n=142 (74.0%) were female and 50 (26.0%) were male. The result shows that old age is the most common cause of osteoarthritis. The mean value of age was 47.66 years and standard deviation was 9.382. Minimum value of age was 31 years and maximum age value was 67 years. Majority of the participant has problem in performing physical activities as shown in (table 1).

| Physical health and emotion | Cut down amount of the time                    | Limited in kind of the work or activities |
|-----------------------------|------------------------------------------------|-------------------------------------------|
|                             | Frequency(%)                                   | Frequency(%)                              |
| All of the time             | 20(10.4%)                                      | 28(14.6%)                                 |
| Most of the time            | 74(38.5%)                                      | 115(59.9%)                                |
| Some of the time            | 71(37.5%)                                      | 44(22.9%)                                 |
| A little of the time        | 26(13.5%)                                      | 4(2.1%)                                   |
|                             | Difficulty performing work or other activities | Felt downhearted and depressed            |
|                             | Frequency(%)                                   | Frequency(%)                              |
|                             | 128(66.7%)                                     | 18(9.4%)                                  |
|                             | 54(28.1%)                                      | 95(49.5%)                                 |
|                             | 7(3.6%)                                        | 60(31.2%)                                 |
|                             | 2(1.0%)                                        | 19(9.9%)                                  |

**Table 2:** Physical health and Psychological problems

Result shows that the participants have physical problems while performing work or other activities. They usually decrease the duration of time while performing activities. 49.5% participants show some psychological problems like depression and anxiety as shown in (Table 2).

|             | Physical health and emotional problems | Pain interfere normal work |
|-------------|----------------------------------------|----------------------------|
|             | Frequency (%)                          | Frequency (%)              |
| Extremely   | 10(5.2%)                               | 6(3.1%)                    |
| Quite a bit | 10(5.2%)                               | 12(6.2%)                   |
| Moderately  | 30(15.6%)                              | 57(29.7%)                  |
| Slightly    | 61(31.8%)                              | 116(60.4%)                 |
| Not at all  | 81(42.2%)                              | 1(0.5%)                    |

**Table 3:** Pain interference in work and emotional problems  
Pain interferes in performing their normal work. 60.4% peoples show slightly pain that may increase during an activity as mentioned in the table 3.

## DISCUSSION

In the study quality of life was assess among 192 individual who had developed knee osteoarthritis. The study conducted by L Engebretsen to investigate the connection between radiographic tibiofemoral knee osteoarthritis and knee pain, symptoms, purpose and knee related quality of life 10 to 15 years after Anterior cruciate ligament restoration. This study indicates the poor quality of life in patient with knee osteoarthritis or 10 to 15 years after anterior cruciate ligament restoration [15]. Similarly the result of the present study also shows the poor quality of life in patient with knee osteoarthritis. The finding shows that patient with knee osteoarthritis have limitations in performing physical activities. Berat Meraym Alkan conducted a study to evaluate the quality of life in patient by knee osteoarthritis and to determine its relationship with conventional clinical measure and self reported disability. SF-36, WOMAC and VAS were used to assess physical functioning, pain and disability respectively. The patient with knee osteoarthritis had significantly low quality of life. Pain and of quality of life did not show correlation with comorbidity with knee osteoarthritis. The result shows SF 36 and WOMAC pain score were more severe in female patient [16]. Similarly the result of the present study also shows the quality of life in patient with knee osteoarthritis that is most frequent in old age and female are at more risk for development of knee osteoarthritis. The study conducted by Fioravanti, Antonella in 2012 . The aim of this study were to assess whether balneotherapy with mineral sulphate-bicarbonate-calcium water could determine symptomatis enhancement and to detect any change in the quality of life of patients by osteoarthritis in knee. The study was randomized, single blind controlled trial. The Patients were evaluate by Visual Analogue Scale (VAS) for natural pain, SF-36 and Arthritis Impact Measurement Scale. The outcome corroborate the beneficial effects of balneotherapy in patients with knee osteoarthritis last over time and significant improvement in physical functioning and quality of life [17]. Contrarily the present study shows the quality of life among people who had undergone knee

osteoarthritis and it was assessed by SF-36 extracted form. The study was cross sectional. Bruyere, Olivier conducted a study in 2012. The aim of this study was to evaluate health related quality of life in a prospective study with 7 years of follow-up in 49 consecutive patients who had a total knee joint replacement because of osteoarthritis. The outcome tool used in this study was short form of SF-36 and WOMAC to assess the quality of life and disability. 56.4% patients had hip replacement surgery and 43.6% had knee replacement. The study found that six months after surgery a significant improvement was observed in physical function and pain [18]. The result of present study shows that 59.4% people have difficulties in performing physical activities and low quality of life. Losina, Elena conducted a study in 2011 to assess the quality of life due to obesity, knee osteoarthritis on morbidity and mortality in older Americans and health benefits of reducing obesity. The data was collected from US population from aged 50 to 84 years. The result of the study showed that the quality of life was poor due to knee osteoarthritis and obesity. It was also observed that by reducing body mass would yield substantial health benefits. The result of present study also shows the poor quality of life in patient wuth knee osteoarthritis either in obese or nonobese people [19]. Contrarily in present study the data was collected from Jinnah Hospital, Services Hospital and Social Security Hospital in Lahore, Pakistan. The data was collected age group from 30 to 70 years. The study conducted by Ippolytic papakostidou in 2012 who have investigate the outcomes and factor influencing quality of life after total knee arthroplasty. The outcome tool used in this study was WOMAC and VAS to assess disability and pain respectively. The study found that patient presented with poor quality of life at 6 weeks after surgery [20]. Similarly the result of the present study also shows low quality of life in patient by osteoarthritis of knee.

## CONCLUSIONS

Osteoarthritis was the most common problem among old age peoples. Knee osteoarthritis has negative effect on quality of life. It disturbs physical health and cause limitation and difficulties in performing work or daily activities. 49.5% participants feel depressed and downhearted. Knee osteoarthritis affects different aspects of life of an individual, which varies from person to person.

## REFERENCES

- [1] Shen JM, Feng L, Feng C. Role of mtDNA haplogroups in the prevalence of osteoarthritis in different geographic populations: a meta-analysis. *PLoS One*. 2014 Oct; 9(10):e108896. doi: 10.1371/journal.pone.0108896.

- [2] Neogi T. The epidemiology and impact of pain in osteoarthritis. *Osteoarthritis Cartilage*. 2013 Sep; 21(9):1145-53. doi: 10.1016/j.joca.2013.03.018.
- [3] Kim IJ, Kim HA, Seo Y-I, Jung YO, Song YW, Jeong JY, et al. Prevalence of knee pain and its influence on quality of life and physical function in the Korean elderly population: a community based cross-sectional study. *Journal of Korean medical science*. 2011 Sep; 26(9):1140-6. doi: 10.3346/jkms.2011.26.9.1140.
- [4] Nguyen US, Zhang Y, Zhu Y, Niu J, Zhang B, Felson DT. Increasing prevalence of knee pain and symptomatic knee osteoarthritis: survey and cohort data. *Annals of Internal Medicine*. 2011 Dec; 155(11):725-32. doi: 10.7326/0003-4819-155-11-201112060-00004.
- [5] Neogi T, Zhang Y. Epidemiology of osteoarthritis. *Rheumatic Diseases Clinics of North America*. 2013 Feb; 39(1):1-19. doi: 10.1016/j.rdc.2012.10.004.
- [6] Heidari B. Knee osteoarthritis prevalence, risk factors, pathogenesis and features: Part I. *Caspian journal of internal medicine*. 2011; 2(2):205.
- [7] Johnson VL, Hunter DJ. The epidemiology of osteoarthritis. *Best practice & research Clinical rheumatology*. 2014 Feb; 28(1):5-15. doi: 10.1016/j.berh.2014.01.004.
- [8] Silverwood V, Blagojevic-Bucknall M, Jinks C, Jordan J, Protheroe J, Jordan K. Current evidence on risk factors for knee osteoarthritis in older adults: a systematic review and meta-analysis. *Osteoarthritis and cartilage*. 2015 Apr; 23(4):507-15. doi: 10.1016/j.joca.2014.11.019.
- [9] Shull PB, Silder A, Shultz R, Dragoo JL, Besier TF, Delp SL, et al. Six-week gait retraining program reduces knee adduction moment, reduces pain, and improves function for individuals with medial compartment knee osteoarthritis. *Journal of Orthopaedic Research*. 2013 Jul; 31(7):1020-5. doi: 10.1002/jor.22340.
- [10] Ringdahl EN, Pandit S. Treatment of knee osteoarthritis. *American family physician*. 2011 Jun; 83(11):1287-92.
- [11] McAlindon TE, Bannuru RR, Sullivan M, Arden N, Berenbaum F, Bierma-Zeinstra S, et al. OARSI guidelines for the non-surgical management of knee osteoarthritis. *Osteoarthritis and cartilage*. 2014 Mar; 22(3):363-88. doi: 10.1016/j.joca.2014.01.003.
- [12] Merashiy M, Uthman I. Management Of Knee Osteoarthritis. *Lebanese Medical Journal*. 2012; 60(4):237.
- [13] Jo CH, Lee YG, Shin WH, Kim H, Chai JW, Jeong EC, et al. Intra-articular injection of mesenchymal stem cells for the treatment of osteoarthritis of the knee: a proof-of-concept clinical trial. *Stem cells*. 2017 Jun; 35(6):1651-1652. doi: 10.1002/stem.1634
- [14] Hochberg MC, Altman RD, April KT, Benkhalti M, Guyatt G, McGowan J, et al. American College of Rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip, and knee. *Arthritis care & research*. 2012 Apr; 64(4):465-74. doi: 10.1002/acr.21596.
- [15] Øiestad BE, Holm I, Engebretsen L, Risberg MA. The association between radiographic knee osteoarthritis and knee symptoms, function and quality of life 10-15 years after anterior cruciate ligament reconstruction. *British journal of sports medicine*. 2011 Jun; 45(7):583-8. doi: 10.1136/bjsm.2010.073130.
- [16] Alkan BM, Fidan F, Tosun A, Ardiçoğlu Ö. Quality of life and self-reported disability in patients with knee osteoarthritis. *Modern rheumatology*. 2014 Jan; 24(1):166-71. doi: 10.3109/14397595.2013.854046.
- [17] Fioravanti A, Giannitti C, Bellisai B, Iacoponi F, Galeazzi M. Efficacy of balneotherapy on pain, function and quality of life in patients with osteoarthritis of the knee. *International journal of biometeorology*. 2012 Jul; 56(4):583-90. doi: 10.1007/s00484-011-0447-0.
- [18] Bruyère O, Ethgen O, Neuprez A, Zegels B, Gillet P, Huskin J-P, et al. Health-related quality of life after total knee or hip replacement for osteoarthritis: a 7-year prospective study. *Archives of orthopaedic and trauma surgery*. 2012 Nov; 132(11):1583-7. doi: 10.1007/s00402-012-1583-7.
- [19] Losina E, Walensky RP, Reichmann WM, Holt HL, Gerlovin H, Solomon DH, et al. Impact of obesity and knee osteoarthritis on morbidity and mortality in older Americans. *Annals of internal medicine*. 2011 Feb; 154(4):217-26. doi: 10.7326/0003-4819-154-4-201102150-00001.
- [20] Papakostidou I, Dailiana ZH, Papapolychroniou T, Liaropoulos L, Zintzaras E, Karachalios TS, et al. Factors affecting the quality of life after total knee arthroplasties: a prospective study. *BMC musculoskeletal disorders*. 2012 Jun; 13:116. doi: 10.1186/1471-2474-13-116.



# THE THERAPIST

JOURNAL OF THERAPIES & REHABILITATION SCIENCES

<https://thetherapist.com.pk/index.php/tt>

Volume 3, Issue 1 (Jan-Jun 2022)



## Systematic Review

### Forward Head Posture in Young Adults: A Systematic Review

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## ARTICLE INFO

### Key Words:

Muscle Spasm, forward head posture, neck pain, cervical pain

### How to Cite:

Arooj, A. ., Aziz, A. ., Khalid, F. ., Hussain Iqbal, M. ., & Binte Ashfaq, H. . (2022). Forward Head Posture in Young Adults: A Systematic Review. THE THERAPIST (Journal of Therapies & Rehabilitation Sciences), 3(1). <https://doi.org/10.54393/tt.v3i1.38>

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Received Date: 2<sup>nd</sup> June, 2022

Acceptance Date: 17<sup>th</sup> June, 2022

Published Date: 30<sup>th</sup> June, 2022

## ABSTRACT

A recent study shows that almost 78% of population have its neck in working position within 24 hours causing continuous stress on neck and shoulders which is forcing the neck in anterior or forward head posture. This may lead to upper back tightness and muscle spasm causing nagging to sharp pain. Hence, cervical pain and neck pain getting more attention. This study is designed to narratively review the prevalence of forward head posture in young adults. **Methods:** A structured search on literature was done through various electronic and print data bases such as: Pubmed, cinhal, google scholar, science direct, cochrane library and scopus. Those studies were included in which age ranged from 20 to 45 years. Young adults from any profession were included. Those studies were excluded in which forward head posture was reported due to any systemic issue. **Results:** A total of 120 studies had gone through in which 65 studies were short listed and on further review only 4 studies were included as they fit in proper methodology and hence, reviewed and reported. Studies reported a considerable variation in the prevalence with the clear greater incidence. **Conclusions:** Forward head posture is a commonly seen disorder among young adults. Investigations and interventions in time along with knowledge of postural correction can deal with this raising problem.

## INTRODUCTION

Forward head posture is the positioning of cervical spine anteriorly causing the neck to roll forward which puts abnormal pressure on cervical spine leading to muscle imbalances. Forward head posture is actually reported when external auditory meatus goes forward to the coronal line. Muscles which are responsible for anterior placement of head are sternocleidomastoid, pectoralis, suboccipitals and posterior cervical muscles. Forward head posture is depicted as anterior positioning of cervical spine which is often called as 'Text neck'. The normal cervical angle should be between 20° to 40°. Forward displacement of tragus is leading to FHP-. Any increase in the aforementioned angle is the risk for forward head posture shown in the following diagram.

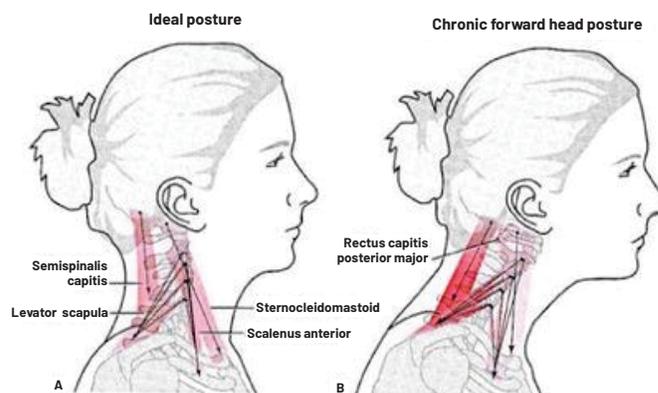
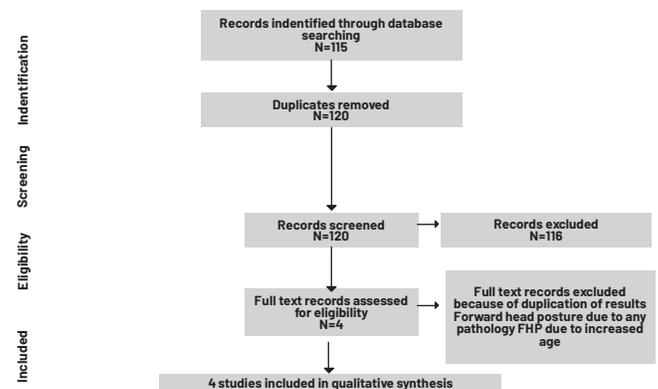


Figure 1: Forward head posture (FHP)

FHP (forward head posture) causes increased external torque in flexion that results in change in vertebral alignment putting pressure on neck extensors and the surrounding connective tissues. FHP has an adverse effect on brain activity that it decreases the proprioception [5]. Now a days, young adults are more prone to technologies which can be in any form such as desktop computers, laptops and smart phone usage. This technological diversity is leading the population in constant anterior movement of neck putting pressure on muscles of upper back and hence causing forward head posture. FHP is common in young adults due to prolong usage of technologies without having appropriate gaps in between [5,6]. This muscular dearrangement is also called as poking chin because the neck along with chin pops out [7]. Anatomically, forward head posture sighs at the cervical apophyseal joints by applying compressive forces to it [8]. The short neck flexors and infrahyoids get lengthened due to prolong adaptation of abnormal posture. On the other hand, shortening of suprahyoids and neck extensors occurs. This may leads to the elevation of hyoid bone [5]. FHP increases the pressure on the posterior aspects of cervical vertebrae and hence, increases strain and stretch on anterior tissues of neck and shortening of posterior tissues that eventually causes increased torque about C7 vertebrae and perpetuation of sub occipital trigger points [9]. Literature has reported a number of risk factors for prevalence of forward head posture in young adults in which constant neck pain is at the top of the list. Following the study, estimated 1 year incidence of neck pain has ranged 10.4% to 21.3% [10-12]. There are so many other disorders which are related to forward head posture such as sight and hearing problems because of the muscular imbalances in relation to auditory meatus, temporomandibular disorders (TMD) due to misalignment at coronal line enhancing mandible to move forward [13]. Migraine is also commonly seen in people having FHP [6]. In the upright posture, when the head is in neutral position and ears are aligned with center of shoulders, the weight of the head is 10-12 lb. approximately which is normal through muscles of neck [14]. But when the neck moves anteriorly, it simultaneously increases the weight of head on the muscles causing discomfort. If the head moves at least an inch, the head weighs six times more than the normal [2]. If FHP left untreated it may cause spinal degeneration, disc compression or herniation, flattening of the spinal curve, onset of early arthritis, nerve or muscle damage completely [3]. The sole purpose of this study is to review the prevalence of forward head posture among young adults. Those studies were involved in which subjects are either university going students or working in offices.

## METHODS

All the literature was searched and sorted with the help of some specific key words such as 'prevalence', 'forward head posture', 'anterior displacement of cervical spine in young adults'. The literature was searched through different databases such as PubMed, CINHAL, Google Scholar, Science Direct, Cochrane library and SCOPUS etc. Studies included were published in peer reviewed journals and only those articles were included which were in English language. Those studies were included in which age ranged from 20 to 45 years. Young adults from any profession were included. Those studies were excluded in which forward head posture was reported due to any systemic issue. Studies in other languages, with copyright or permission issues were also excluded. The studies were reviewed according to PRISMA guidelines.



**Figure 1:** Eligibility Screening and identification

### Narrative Review:

A total of 120 studies were reviewed initially which were, somewhat, found closely related to the topic. After thoughtful screening only 4 studies were included in the study as those were fulfilling the inclusion criteria to the most. There were some studies which were not exclusively done for prevalence of forward head posture but in the published research work we have found some relatable statistics for the review. In May 2020, a study was published by Kolhatkar A. et al. in which their main objective was to find out the relation between myopia and forward head posture. But they also have given the prevalence of FHP, which was 58.95% [15]. They have also found out that FHP is more common in females than males with 73.21% in females and 26.79% in males. Wiguna NP et al., published a study on smart phone usage and forward head posture in 2019, in which the point prevalence for FHP was 51.78%. This study has also the more female ratio as compared to the male young adults [11]. Naz A et al., in April 2018 studied the prevalence of forward head posture among university students in which it was concluded that out of 197 subjects 126 were found active with forward head posture with the prevalence of 63.96% [16]. Tanveer F et al., in 2018 studied

the effects of FHP over stress and neck disability index in which they found out the prevalence of forward head posture as 56%. The male prominence was seen in the study[17].

| Sample size | Cases | Prevalence rate | Male/Female ratio     | Instrument used to measure FHP     |
|-------------|-------|-----------------|-----------------------|------------------------------------|
| 95 [15]     | 56    | 58.95%          | Female prominence     | Photogrammetry                     |
| 126 [11]    | 70    | 56%             | Female prominence     | Measuring craniovertebral angles   |
| 197 [16]    | 126   | 63.69%          | No gender association | Plumb line                         |
| 56 [17]     | 29    | 51.78%          | Male prominence       | A Mytrin's inclinometer/goniometer |

**Table 1:** Prevalence of forward head posture in different studies

## RESULTS

Total 120 studies were short listed in which 4 studies were reviewed. Studies include both surveys, cross sectional and cohort studies. Studies reported a considerable incidence of forward head posture in young adults. Females found more prevalent to FHP.

## DISCUSSION

Overall the prevalence rate of FHP in young adults in recent years till 2018 was 58.95% [15], 56% [11], 63.69% [16] and 51.78% [17] respectively, which indicated a relatively high prevalence. The prevalence of forward head posture among school going children was about 63% which was calculated in 2018 among the age group of 12-16 years old [18]. The prevalence ratio in Chinese adolescents was turned out to be 25% [19]. In one of the studies in 2015, the prevalence for forward head posture reported was 62.3%. In the survey, subjects included, claimed that while using computers or smartphones, their neck hurts [20]. This survey report is very close to the prevalence rates recorded in our review. Our study has claimed more female association over male association with forward head posture. In another study in 2015 showed the results with more male prominence with forward head posture among young adults from 17-33 years of age. This study was done to comprehend the gender differences over neck problems due to smart phone or compute usage [21]. There have been several researches which focus on particular populations in which FHP is clearly associated with gender, age or duration of technology usage [9,22]. Another study done in 2018 has showed more female prominence with 71.1% [18]. Forward head posture is labelled when the sagittal distance from C7 to the nose or the angle between C7 and the ear increases and thus reflecting head and neck position with respect to the trunk [23]. In our review, one of the studies done by Kolhatkar A. et. Al, 2020 determined FHP by measuring craniovertebral angles, head title angle and head position angle using photogrammetry in which subjects were asked to stay in the routine posture as they

used to be and they were clicked from the lateral side [15]. This CV angles method measures the forward facing angle at the base of neck ruled by a horizontal line and the other line which goes up to the ear [24]. In the 2<sup>nd</sup> study by Wiguna NP et al., 2019, FHP was recorded by measuring craniovertebral angles by measuring the C7 angle to the tragus of ear and nose [11]. The smaller the angle, the more severe will be the forward head posture [23]. In the 3<sup>rd</sup> study by Naz A et al., 2018, FHP was measured through plumb line in which assessment was done in sagittal plane. The tragus of the ear was considered as the reference point, if the plumb lines moves away from it, thus result marked positive with FHP [16]. In the 4<sup>th</sup> study included in the review, by Tanveer F et al., 2018 measured the FHP by using A Myrin's inclinometer/goniometer was used [17]. In this method, body of goniometer placed at the lateral profile of C7 spinous process and the moving arm with the tragus of ear [25]. In other studies, FHP was measured by measuring craniovertebral angles using photogrammetry. The inter rater reliability and intra rater reliability of this method found good [22,26].

## CONCLUSIONS

Forward head posture is a commonly seen disorder among young adults. Investigations and interventions in time along with knowledge of postural correction can deal with this raising problem.

## REFERENCES

- [1] Nejati P, Lotfian S, Moezy A, Moezy A, Nejati M. The relationship of forward head posture and rounded shoulders with neck pain in Iranian office workers. *Medical journal of the Islamic Republic of Iran*. 2014;28:26.
- [2] Neupane S, Ali U, Mathew A. Text neck syndrome-systematic review. *Imperial Journal of Interdisciplinary Research*. 2017;3(7):141-8.
- [3] Kirupa K, Mary SD, Nithyanisha R, Kumar SN. A Study on the Effectiveness of Scapular Retraction Exercises on Forward Head Posture. *Indian Journal of Public Health Research & Development*. 2020;11(6):284-289. doi.org/10.37506/ijphrd.v11i6.9785
- [4] Damasceno GM, Ferreira AS, Nogueira LAC, Reis FJJ, Andrade ICS, Meziat-Filho N. Text neck and neck pain in 18-21-year-old young adults. *European Spine Journal*. 2018;27(6):1249-1254. doi: 10.1007/s00586-017-5444-5.
- [5] Tucker N. 3 - Cervical spine. In: Longbottom J, ed. *Acupuncture in Manual Therapy*. Churchill Livingstone; 2010:35-55.
- [6] Ferracini GN, Chaves TC, Dach F, Bevilacqua-Grossi D, Fernández-de-las-Peñas C, Speciali JG. Relationship

- between active trigger points and head/neck posture in patients with migraine. *American journal of physical medicine & rehabilitation*. 2016;95(11):831-839. doi: 10.1097/PHM.0000000000000510.
- [7] Bull MR, Bridge MW. Forward Head Posture and the Golf Swing.
- [8] Khayatzaeh S, Kalmanson OA, Schuit D, et al. Cervical spine muscle-tendon unit length differences between neutral and forward head postures: biomechanical study using human cadaveric specimens. *Physical therapy*. 2017;97(7):756-766. doi: 10.1093/ptj/pzx040.
- [9] Migliarese S, White E. Review of Forward-Head Posture and Vestibular Deficits in Older Adults. *Current Geriatrics Reports*. 2019;8(3):194-201.
- [10] Mahmoud NF, Hassan KA, Abdelmajeed SF, Moustafa IM, Silva AG. The Relationship Between Forward Head Posture and Neck Pain: a Systematic Review and Meta-Analysis. *Current reviews in musculoskeletal medicine*. 2019;12(4):562-577. doi: 10.1007/s12178-019-09594-y.
- [11] Wiguna NP, Wahyuni N, Indrayani AW, Wibawa A, Thanaya SAP. The Relationship Between Smartphone Addiction and Forward Head Posture in Junior High School Students in North Denpasar. *Jurnal Epidemiologi Kesehatan Komunitas*. 2019;84-89. doi.org/10.14710/jekk.v4i2.5268
- [12] Ashfaq HB, Sharif F, Arooj A, Ahmad A. Association between sitting time and neck-shoulder pain among office workers: A cross-sectional study. *Pakistan Journal of Physiology*. 2021;17(1):37-40.
- [13] Cortese S, Mondello A, Galarza R, Biondi A. Postural alterations as a risk factor for temporomandibular disorders. *Acta Odontol Latinoam*. 2017;30(2):57-61.
- [14] Rantala LM. Working postures. *Voice Ergonomics: Occupational and Professional Voice Care*. 2019;34(2):65-69.
- [15] Kolhatkar A, Rayjade A. A Study of Relation between Myopia and Head Posture in Young Adult Population. *Indian Journal of Public Health Research & Development*. 2020;11(5):49-54. doi.org/10.37506/ijphrd.v11i5.9289
- [16] Naz A, Bashir MS, Noor R. Prevalance of forward head posture among university students. *Rawal Medical Journal*. 2018;43(2):260-2. doi:10.25259/AUJMSR\_18\_2020
- [17] Tanveer F, Shahid S, Hafeez MM. Effect of Forward Head Posture on Neck Disability and Level of Stress among Undergraduate Students. *AGE*. 2018;22(2.48):18-28.
- [18] Verma SL, Shaikh J, Mahato RK, Sheth MS. Prevalence of forward head posture among 12-16-year-old school going students—A cross-sectional study. *Applied Medical Research*. 2018;18:10.5455.
- [19] Cho C-Y. Survey of faulty postures and associated factors among Chinese adolescents. *Journal of manipulative and physiological therapeutics*. 2008;31(3):224-229. doi: 10.1016/j.jmpt.2008.02.003.
- [20] Fishman D. Text neck: a Global Epidemic. *The Text Neck Institute*. 2015;28(1):34-8.
- [21] Guan X, Fan G, Chen Z, et al. Gender difference in mobile phone use and the impact of digital device exposure on neck posture. *Ergonomics*. 2016;59(11):1453-1461. doi: 10.1080/00140139.2016.1147614.
- [22] Singla D, Veqar Z, Hussain ME. Photogrammetric Assessment of Upper Body Posture Using Postural Angles: A Literature Review. *Journal of Chiropractic Medicine*. 2017/06/01/ 2017;16(2):131-138. doi:https://doi.org/10.1016/j.jcm.2017.01.005. doi: 10.1016/j.jcm.2017.01.005.
- [23] Ahmadi A, Maroufi N, Sarrafzadeh J. Evaluation of forward head posture in sitting and standing positions. *European spine journal*. 2016;25(11):3577-3582. doi: 10.1007/s00586-015-4254-x.
- [24] Talati D, Varadhranjulu G, Malwade M. The effect of forward head posture on spinal curvatures in healthy subjects. *Asian Pacific Journal of Health Sciences*. 2018;5(1):56-9. doi: 10.21276/apjhs.2018.5.1.13
- [25] Dunleavy K, Neil J, Tallon A, Adamo DE. Reliability and validity of cervical position measurements in individuals with and without chronic neck pain. *Journal of Manual & Manipulative Therapy*. 2015;23(4):188-196.