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## MICROCEPHALY: A Developmental Disorder

**Humera Kausar**

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Kausar, H. .(2022). MICROCEPHALY: A Developmental Disorder. Pakistan BioMedical Journal, 5(8). <https://doi.org/10.54393/pbmj.v5i8.791>

Microcephaly is a result of abnormal in utero development resulting in an unusually small head size. It is caused by a number of variables, including chromosomal abnormalities as well as other genetic conditions, infections during pregnancy, for instance; rubella, toxoplasmosis, and prenatal exposure to dangerous toxicants. Although drastically deficient cognitive growth is prevalent, problems with motor control processes not showing up until much later in life. Most negatively impacted infants have severe neurological abnormalities and sometimes seizures, as well. Motor function and verbal advancement may also be deferred while hyperactivity and intellectual disability are both prevalent, however to varying degrees. Convulsions are also possible with variations in motor ability; from clumsiness to spastic quadriplegia in some people. The majority of cases of microcephaly are caused by genetic variations. On the one hand, linkage has been discovered between autism, gene duplications, and macrocephaly. On the contrary, a link has been discovered between schizophrenia, gene removals, and microcephaly.

Being caused by a reduction in cerebral cortex, and it can occur throughout embryonic and foetal growth phases because of inadequate neural stem cell advancement, impeded neurogenesis, or decrease of neural stem cells. Many genes needed for standard neural development have been discovered through studies in animal models such as rodents. The genes associated with the Notch pathway, for instance, govern stem cell advancement and neurogenesis. Genetic variations induced in mouse models in an experimental setting can induce microcephaly that in comparison is similar to that of the human beings. Abnormal Spindle-like Microcephaly-Associated (ASPM) gene abnormalities have been linked to human microcephaly, and a knockout-model of a ferret with extreme microcephaly has now been designed. Furthermore, viruses like Zika virus and Cytomegalovirus (CMV) have been found to afflict and destroy the brain's primary stem cells and radial glial cells, resulting in the destruction of daughter neurons.

A comprehensive physical and history assessments are carried out on patients with microcephaly. Neuroimaging, metabolic evaluation, and genetic examination should be taken into consideration in cases of deteriorating microcephaly. Neuroimaging with Magnetic Resonance Imaging (MRI) is mostly utilized as the very first diagnostic analysis in children suffering from microcephaly. Genetic screening is frequently the very next process after imaging techniques. Microcephaly is a long-term condition with no specific treatment available.



## Monkeypox and its Outbreak

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Given that it spreads around the world and not just in nations in west and central Africa, monkey pox is a disease of worldwide public health significance. An uncommon condition known as monkey pox is brought on by infection with the monkey pox virus. The virus that causes monkey pox is related to the virus that causes smallpox, or variola virus. Smallpox symptoms are comparable to those of monkey pox, although they are less severe, and monkey pox seldom results in death. Monkey pox has replaced smallpox as the most significant orthopoxvirus for public health since smallpox was eradicated and smallpox vaccinations were subsequently discontinued. Primarily occurring in tropical rainforests in central and west Africa, monkey pox has been steadily spreading into cities. Numerous rodent species and non-human primates serve as hosts for animals. Outside of the African nations where monkey pox is widespread, the United States saw an epidemic. Boston, Massachusetts, recorded the first case. The first monkey pox epidemic outside of Africa occurred in the United States and contact with sick pet prairie dogs was to blame. Fever, chills, swollen lymph nodes, exhaustion, muscle and backaches, headaches, and respiratory problems are some of the signs and symptoms of monkey pox (e.g. sore throat, nasal congestion, or cough). Multiple instances of monkey pox were discovered in numerous non-endemic nations. Studies are being conducted right now to learn more about the epidemiology, sources of illness, and patterns of transmission. Direct contact with the blood, body fluids, cutaneous or mucosal lesions of infected animals can result in animal-to-human (zoonotic) transfer. Numerous animals in Africa, including rope squirrels, tree squirrels, Gambian pouched rats, dormice, several kinds of monkeys, and others, have shown signs of infection with the monkey pox virus. Although rodents are most probable, the natural reservoir of monkey pox has not yet been discovered. Eating undercooked meat and other diseased animal products is a potential risk factor. People who live in or close to forests may be indirectly or minimally exposed to diseased animals. Close contact with respiratory secretions, skin sores on an infected person, or recently contaminated objects can cause human-to-human transmission. Monkey pox typically takes 6 to 13 days to incubate, but it can take anywhere from 5 to 21 days for symptoms to appear. Other rash disorders, such as chickenpox, measles, bacterial skin infections, scabies, syphilis, and medication-associated allergies, must be taken into account when making a clinical differential diagnosis. As a clinical characteristic, lymphadenopathy during the prodromal stage of the illness can help differentiate monkey pox from chickenpox or smallpox. Given its precision and sensitivity, polymerase chain reaction (PCR) is the primary laboratory test. Fluids and food should be provided to patients in order to maintain a healthy nutritional condition. Multiple observational studies have shown that the smallpox vaccine is around 85% effective at preventing monkey pox. The major preventative method for monkey pox is increasing public knowledge of risk factors and teaching individuals about the steps they may take to lessen viral exposure. The feasibility and suitability of vaccination for the prevention and control of monkey pox are now being evaluated through scientific investigations. Some nations have policies in place or are creating them to provide vaccines to those who may be at risk, including laboratory staff, members of quick reaction teams, and healthcare professionals.



## Review Article

## Sonographic Assessment of Primary Infertility in Women having PCOS

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## ABSTRACT

PCOS are the major source of infertility in women all over the world. This pattern is common in young women. **Objective:** To find the primary gravidity in women having polycystic ovarian disease by Ultrasonography assessment. **Methods:** In this systematic review data published by Google Scholar, Medline, science direct, pub med, and the obsgyn online library that was requested to be published between 2004 and 2016 using certain MeSH terms. In this methodical study composition, we analyzed 10 cross-sectional studies for the collection of data. **Results:** 10 studies conducted between the years 2004 to 2016 were included in this systematic review. The total sample size was 1863 women age between 18 and 45 years. In this study, Ovulatory Disorders are the major leading cause of infertility in women. Polycystic ovarian disease is related with 75% of the causes of ovulatory infertility. The infertility range is 2 to 5%. Polycystic ovarian disease is the commonest endocrine disorder, affecting 6.6% to 8% of the women of child bearing age. Half of women with polycystic ovarian disease are obese. Hirsutism, menstrual irregularities, acne and gravidity have been shown to be the most depressing symptoms in adults with PCOS. Ultrasound is the only modality for the diagnosis of PCOS, Polycystic morphology revealed the existence of follicle measuring 2 to 9 mm in diameter. The sight of less than and equal to  $\geq 12$  follicles are seen in each ovary, full number of follicle per ovary scaling 2 to 9 mm in fringe and accelerated ovarian volume is about greater than three centimetre per cube ( $> 10 \text{ cm}^3$ ). **Conclusions:** From this methodical review, we conclude that ovulatory stimulation is a major cause of major gravidity. PCOS is associated with 75% of the causes of an ovulatory. PCOS are the commonest endocrine disorder, influence 6.6 to 8% of the women at child bearing age. On ultrasound the sight is less than and equal to 12 follicles are seen in each ovary measuring 2 to 9 mm in diameter with the volume of greater than ten centimetre per cube ( $>10 \text{ cm}^3$ ).

## INTRODUCTION

Infertility is a Medical Condition in which the involuntary failure to conceive after trying for at least 12 months of commencing unproductive sexual interaction [1]. Gravidity denotes lack of fertility, or an involuntary reduction in the capability to produce children. WHO description on gravidity patients predicated that patients fail to conceive after trying of 24 months or approximately 2 years of duration. Primary gravidity is the complete incapability to conceive ranges from 2 to 5% [2]. Polycystic ovary syndrome is the commonest endocrine complication, attack 6.6 to 8% of women of breeding age [3]. It is correlated with 75% of the source of an ovulatory unfertile [4]. Polycystic ovarian disease is an endocrine disorder in which the ovaries produce abnormal amount of androgens,

ovulatory malfunction, and increase amount of prolactin, thyroid disease, and adrenal hyperplasia. Public Health effect and associated reproductive, endocrine, and metabolic attack assertion [5]. 50% of women having PCOS are overweight [6]. Obesity leads to change in type 2 diabetes and glucose tolerance in women having polycystic ovarian disease [7]. Hirsutism, menstrual irregularities, acne and gravidity are most depressing symptoms in young women having PCOS [8]. Polycystic ovaries are presence of 12 immature follicles with 9 mm in diameter, appeared as circular area at periphery with central stoma. It shows a ring like appearance. Immature follicles arrange at periphery [9]. Ultrasonography criteria including enlarge size of ovaries, increases ovarian volume and their

viscosity with central echogenic stoma. By ESHRE/ ASRM agreement, ultrasound guidelines indicate PCOS as immature follicles size 2 to 9 mm, containing 12 or more follicles [10]. PCOS contain numerous immature recess follicle, the follicles develop duly at periphery and show a ring like appearance, and hence, there's no ovulation do, so gravidity prevalence with polycystic ovaries is veritably high [11]. The Rotterdam procedure requires three components for diagnosing polycystic ovarian syndrome clinical and biochemical High level of androgens, acne, menstrual dysfunction and morphology of polycystic ovaries by ultrasound, after the release of the second cause. International guidelines for PCOS Monitoring [12]. Polycystic ovarian morphology revealed the presence of less than and equal to  $\geq 12$  follicles in each ovary 2 to 9 mm measuring. Arrangement of PCOS at periphery with enlarged ovarian volume less than  $10\text{cm}^3$  ( $> 10\text{cm}^3$ ) [13].

## RESULTS

In this systematic review, 10 studies from the years 2004 to 2016 were analysed. 1863 women between the ages of 18 and 45 made up the entire sample size. According to this study, ovulatory disorders are the main factor in female infertility. Seventy-five percent of the reasons of ovulatory infertility are linked to polycystic ovarian disorder. The percentage of infertility ranges from 2 to 5. The majority of endocrine disorders, polycystic ovarian disease affects 6.6 to 8% of women of childbearing age. Obese women make up half of polycystic ovary syndrome patients. The most discouraging symptoms in individuals with PCOS include hirsutism, irregular menstrual cycles, acne, and pregnancy. The only method for diagnosing PCOS is ultrasound. Polycystic morphology showed that there were follicles with a diameter of 2 to 9 mm. Each ovary has less than and equal to 12 visible follicles, with the total number of follicles per ovary ranging from 2 to 9 mm in the fringe, and the accelerated ovarian volume is approximately greater than three centimetres per cube ( $> 10\text{cm}^3$ ).



**Figure 1:** Ultrasound image of polycystic ovary(PCOS)

## DISCUSSION

Hussein et al., conducted a study on "prevalence of PCOS in Kurdish infertile women". to examine and contrast the factors, clinic examination, biochemical and ultrasound examination of sterile female and outside for PCOS. A patient who went to an infertility care and the IVF Centre in Erbil City, Northern Iraq, in the Kurdistan region was examined for clinical and ultrasonography characteristics of sterile female with and on PCOS. Its result was collected in a data collection form, 320 sterile female aged 18 - 45, tested for clinical examination (oligomenorrhea, amenorrhea, hirsutism), body mass index (BMI) and hormonal procedures. To diagnose ovarian morphology transvaginal ultrasonography was used. PCOS were found to be 33% prevalent. There was an appreciable difference between two groups regarding oligomenorrhea, amenorrhea, hirsutism and features presented in pelvic ultrasound. There were no considerable differences between the two groups concerning interrelation between obesity rates and abortion cases, high level of endrogen and hirsutism and hormonal factors. High prevalence of PCOS were seen among sterile women visiting an IVF facility using the Rotterdam diagnostic method [14]. Al-zemi et al., (2004) conducted a study on "causes of polycystic ovary syndrome in obese women " In this study 270 women with PCOs visit a fertility clinic .Significantly, over weight females presented with oligomenorrhoea  $p < 0.01$  along with anovulation  $p < 0.01$  than female with standard weight. Over weight in female negatively affects the effect of ovulation stimulation on clomiphene citrate and gonadotropins; 79% of female who had BMI of 18-24 ovulated within 6 months, in comparison to 15.3% of those female with BMI 30-34 ( $p < 0.001$ ) including 11.8% of female who had a BMI  $\geq 35$  ( $p < 0.001$ ). The chance of pregnancy along with output had a negative impact on obesity. Overweight has a negative effect on the output of sterility treatment [15]. Haq et al., (2007) conducted research on " biochemical, clinical and ultrasonic characteristics of infertility in women having PCOS " Clinical features were tested of the patients who visited the Aga Khan University Hospital in Karachi and the Concept Fertility Centre also in Karachi. A complete biochemical testing had been performed. Results were obtained through data collection pattern. STo examine the structural appearance of the ovaries ultrasound examination was performed via transvaginal ultrasound .508 of the patients presented pathological features of Poly cystic ovaries. The prevalence of Poly cystic ovary syndrome in obstetrics was found to be 17.6% showing higher over weight (68.5%) and hyperinsulinemia (59%). The most elevated level of morphological abnormalities were visible above the BMI of 30 [16]. Alnakash et al., (2007) conducted a study on "

polycystic ovarian disease a link between luteinizing hormone, follicular stimulating hormone level and disclosure of disease." A female patient visiting the Institution of Infertility Treatment and Embryo Research Centre was assessed for its implanted clinical features according to her history of menstruation. Ultrasound was done to discover presence of PCOs. Body mass index was tested and entered in the correlation. Blood was collected giving a 4-5 days break for every caregiver to measure serum FSH, LH & mean LH / FSH levels. 59.81% of women were 25-32 years old also 63.55% of the women were overweight (BMI > 25). Other than infertility, the second most prevalent complaint found was hirsutism (64.49%) Although oligomenorrhea is 43.93%, amenorrhea at 22% and with few (6.56%) menstrual cramps. The relationship between the studies volatile as examined by correlation analysis did not result in a statistically significant correlation between luteinizing hormone / follicular stimulating hormone, body mass index and other presentations (hirsutism and oligomenorrhea). No significant statistically significant correlation was seen between LH / FSH ratio, BMI, menstrual pattern and hirsutism. This defies the conventional notion of PCOS that when a patient is obese, he or she becomes high with LH or even severe manifestations [17]. Jonard et al., (2003) conducted a study of " ultrasonography assessment of polycystic ovarian syndrome examined the relationship between hormonal and metabolic features of polycystic ovarian syndrome with the number of follicles per ovary (FNPO)". The examination consisted of 214 female with Poly cystic ovary syndrome in comparison to the 112 female with ovaries that were found normal. All main symptoms for Poly cystic ovary syndrome were examined throughout the first follicular phase. The FNPO measurement of  $2 \pm 5$  mm sized follicles was appreciably more in the PCO compared to controls, whereas it resulted to be identical within a range of  $6 \pm 9$  mm. By using a limit of 12 to  $2 \pm 9$  mm FNPO gives an optimum consistency between specificity and sensitivity. The follicular range of  $2 \pm 5$  mm, showed an appreciable positive relationship between Follicles per ovary and androgen. FNPO range of  $6 \pm 9$  mm was significantly and negatively relation related to the body weight index and insulin level of serum fasting. PCOS were adding the existence of greater than twelve > 12 follicles with a diameter of 2 to 9 mm of both ovaries. Our results also strengthen the view that intraovarian hyperandrogenism stimulates excessive early follicular growth and development may not progress normally due to hyperinsulinism and / or other metabolic effects related with being overweight [18]. Guraya et al., (2013) conducted a study on the "ultrasound features of polycystic ovaries in young Saudi unmarried women. Various clinical studies

were conducted at Taibah University Medical Centre Almadinah Almu-nawwarah Saudi Arabia during the period of January 2012 to December 2012. They were tested between the age of 18 to 28 with irregularities menstrual cycle and hirsutism. Of the 201 participants, 108 (53.7%) were seen to have a PCOS average of  $21.3 \pm 2.1$  years. Demographic data, menstrual irregularities and dermatological manifestations observed in 108 PCOS cases are displayed. Ultrasound criteria of 12 or more than 12 follicles measuring 2-9 mm in diameter are the most prevalent diagnostic in 97 patients (89.8%), followed by peripheral distribution of ovarian follicles in 89 (82.8%). Ultrasound diagnostic criteria for PCOS improved the examination of ovarian stroma and the purpose of observation. With each consecutive technological refinement, diagnostic accuracy has emerged from displaying just the total ovarian size to the detection of follicular pattern distribution patterns and subtle text changes in the uterine stroma. The appearance of 12 or more follicles of 2-9 mm shows to be more sensitive to ovary volume or stromal light [19]. Haq et al., (2008) conducted a study on polycystic ovarian syndrome (PCOS) and the infertility association with natural factors such as body mass index and interfamily marriages. Research includes examination of clinical, biological and hormonal aspects of disease. During this study, 203 patients were tested PCOS with morphological and biochemical features. The obesity prevalence was 70%. 59.3% of women were diagnosed with hyperinsulinemia and 52.3% patients were presented with insulin resistance according to the Homeostatic model assessment index. The relationship of oligomenorrhea, family history of diabetes, serum fasting serum levels, insulin resistance and abnormal glucose tolerance tests were obtained. As different variant. From the data, 48% of couples were in first degree of intra family marriages, proposing that there may be a higher genetic predisposition to abnormal metabolic factors other than racial tendencies. The direct relationship between high BMI and family marriages has found to be resistant to insulin, oligomenorrhea and impaired glycaemic control. Number of overweight female increased with the rate of interfamily marriages, put our population at risk [20].

## CONCLUSIONS

It is concluded that ovulatory stimulation is a significant contributor to substantial gravidity from this thorough research. Seventy five percent of ovulatory reasons are linked to PCOS. The most prevalent endocrine condition, PCOS, affects 6.6 to 8% of women of childbearing age. Less than 12 follicles, each measuring 2 to 9 mm in diameter with a volume larger than ten centimetres per cube ( $>10 \text{ cm}^3$ ), can be observed on ultrasonography in each ovary.

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## Original Article

## A Randomized Control Trial to Compare the Effects of Endurance Training Versus Strength Training Among Students with Neck Pain

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## ABSTRACT

Neck pain is pain perceived as arising in a region bounded superiorly by the superior nuchal line and inferiorly by an imaginary transverse line through the spinous process of the first thoracic vertebra. Musculoskeletal disorders are common among general population; the yearly prevalence of neck pain is almost 30% to 50%. **Objective:** The purpose of this study was to compare the effects of endurance training versus strengthening exercises among students with chronic neck pain. **Methods:** It was Randomized Control Trial. A total of 30 patients were recruited into the study and were randomly allocated into two groups, the treatment group and control group. Treatment group received endurance therapy while control group was treated with strengthening exercises. Pre-test and post-test assessments were performed among both groups to compare the effect of these interventions. **Results:** Independent t-Test interpretation of PNS. Pre-treatment PNS for control group Mean=4.93, SD=1.53, p-value=.614, for experimental group Mean=5.20, SD=1.32, P-value=.614. According to results of Post-treatment PNS, there was significant reduction in pain intensity and p-value<0.01 for experimental group Mean=0.40, SD=0.507, P-Value=0.000. Independent t-Test interpretation of duration of symptoms (DOS). Pre-treatment duration of symptoms for control group Mean=2.60, SD=.632, p-value=.148, for experimental group Mean=2.93, SD=0.594, P-value=.148 **Conclusion:** It is concluded that endurance exercises were more effective than strength training in improving chronic neck pain among medical students of RMU.

## INTRODUCTION

The neck starts at the base of the skull and joins the thoracic spine via a sequence of seven cervical vertebrae [1]. The cervical spine is susceptible to developing a wide range of unpleasant disorders because of its complicated and complex structure, as well as the numerous loads and forces that can be applied to it by an injury or even just regular activities. The cervical spine plays a number of important roles [2]. Housing and protection of spinal cord. Facilitation of blood flow to brain. Supporting the head and its movements. Neck discomfort is pain that is believed to

originate in an area that is bordered inferiorly by the spinous process of the first thoracic vertebra and superiorly by the superior nuchal line [3]. Neck discomfort has been linked to a number of different reasons, including infection, chemical or mechanical trauma, and high levels of physical and psychological stress [4]. This occupational group frequently adopts a prolonged forward head posture, which may be linked to musculoskeletal disorders [5]. According to biomechanics, prolonged forward neck flexion increases compressive strain on the cervical spine

and causes a creep response in the nearby soft tissues [6]. The main cause of pain is overuse of the muscles in the cervical and shoulder girdle, particularly during repetitive low-load tasks that encourages over activity of low threshold motor units [7]. Due to static incorrect head posture, cervical stabilizer muscles may become painful or tight, resulting in neck pain with or without cervicogenic headaches [8]. The most common early symptom of a chronic musculoskeletal condition linked to neck discomfort is neck stiffness, which may or may not be accompanied by headaches [9]. This occupational group frequently adopts a prolonged forward head posture, which may be linked to musculoskeletal diseases. Numerous studies [10] have demonstrated a link between neck pain and a decline in health-related quality of life (HRQoL). Spasms of the shoulders and back muscles can be caused by a variety of things, including long-term popularization of forward head posture [11]. One of the most prevalent postural changes in people with neck disorders is a forward head posture [12]. In comparison to those who do not have neck-shoulder disorders, patients with these disorders have a more severe forward head posture, and their scapular acromion protrudes [13]. NSAIDs and muscle relaxants are two medications used to treat neck discomfort pharmacologically [14]. Mechanical neck pain is relieved immediately and permanently by stretching and isometric exercises combined with ergonomic modification [15]. Low power laser (830 to 904 nm) electrotherapy for mechanical neck discomfort immediately reduces pain and improves function [16]. Ergonomic changes lead to an improvement in working posture and a decrease in the frequency of musculoskeletal problems. Stretching and isometric workouts serve to increase muscle strength, flexibility, and range of motion [17]. Both the sub occipital release technique and the craniocervical flexion exercise have been used to improve forward head position. To assess the effectiveness of endurance training for the treatment of neck pain among medical students.

## METHODS

Sample size was thirty  $n=30$ . Sampling method was Simple Random sampling and allocation between groups was done using sealed envelope method. Male and female students having neck pain at least once in the last month. Age group of 18 to 30 years. Patients with chronic neck pain due to faulty head posture. Exclusion Criteria: Fracture of cervical spine, Cervical Spondylolisthesis, Tumors of spine, Systemic disorders, Cervical radiculopathy. Structured Questionnaire and Pain Numeric Scale NDI (The NDI contains 10 item with 7 related to daily activities, 2 related to pain, and 1 related to concentration [21]. Thirty patients in total were chosen and randomly divided into the

treatment group and the control group. For two months, interventions were used three to four times each week. Each individual did 10–12 repetitions of a weight that they could lift ten times on the first training session (ten repetitions maximum) and worked their way up to fifteen repetitions in phase one. For four weeks, they remained at this level. In phase two, subjects worked out for three sets of 15–20 repetitions at maximal load after the initial 10 repetitions, with a minute of rest in between sets. The subjects in the Control group underwent a specially created strength training program that included cervical isometrics. This training regimen was divided into two halves. both the first and second phases last for four weeks. Each participant did 5–10 repetitions of a weight that they could lift 10 times during the first training session (10 repetitions maximum) in phase one, working their way up to a load that could be accomplished for a maximum of 12 repetitions. For four weeks, they remained at this level. Phase two saw the patients performing three sets of five to ten repeats of the initial twelve to fifteen repetitions at their maximum load, with a minute of rest in between sets. Data was entered and analyzed using SPSS version 21.0. Cross tabulation and multiple bar charts were used to present the data. Independent samples t-test was applied at 5% level of significance to compare the means of two study groups for the continuous outcome variables.

## RESULTS

Comparison of pre- and post-treatment effects of pain on sleeping and reading between groups. The experimental group's sleep and reading quality significantly improved because of a significant reduction in pain-related disruption.

Group		Mean±SD	S.E	P-value
PRE-PAIN& SLEEPING	Control Group	2.73±.704	.182	.087
	Experimental Group	3.13±.516	.133	.088
POST-PAIN SLEEPING	Control Group	1.87±.640	.165	.000
	Experimental Group	1.07±.258	.067	.000

**Table 1:** independent t-test for pre and post-treatment effect of pain on sleep

Comparison of pre- and post-treatment effects of pain on duration of symptoms between groups. The experimental group's sleep and reading quality significantly improved because of a significant reduction in pain-related disruption.

Group		Mean±SD	S.E	P-value
PRE-DURATION OF SYMPTOMS	Control Group	2.60±.632	.163	.148
	Experimental Group	2.93±.594	.153	.148
POST-DURATION OF SYMPTOMS	Control Group	1.53±.516	.1330	.000
	Experimental Group	1.00±0.000	.000	.001

**Table 2:** independent t-test for pre and post-treatment duration of symptoms

Comparison of pre- and post-treatment effects of pain on



reading and watching TV between groups. The experimental group's sleep and reading quality significantly improved because of a significant reduction in pain-related disruption.

Group		Mean±SD	S.E	P-value
PRE-Reading And Watching TV	Control Group	2.60±.632	.163	.018
	Experimental Group	3.20±.676	.175	.018
POST-Reading And Watching TV Week8	Control Group	1.60±.632	.1630	.001
	Experimental Group	1.00±0.000	.000	.003

**Table 3:** Independent T-test for pre- and post-treatment effect of pain on reading and watching TV

Interpretation of the Experimental group's paired t-test. P-value of pre-PNS-post =0.000, P-value of pre-DOS-post =0.000, or p0.01 results, indicated that the findings were significant. Thus, the null hypothesis was disproved.

Group		Paired Differences	
		Mean±SD	P-value
Pair 1	Pre-PNS_Post-PNS	4.800±1.424	.000
Pair 2	Pre-pain and sleeping post-pain and sleeping	2.067±.458	.000
Pair 3	Pre-Duration of symptoms Post-Duration of symptoms	1.933±.594	.000
Pair 4	Pre-pain and Reading Post-pain and Reading	2.200±.676	.000

**Table 4:** paired samples-test experimental group

## DISCUSSION

The comparison of strength training with endurance training for students with chronic neck discomfort to reduce pain and stiffness was the focus of my study. While the control group engaged in strength training for the purpose of reducing neck discomfort and symptoms, the experimental group was told to engage in endurance training with appropriate rest periods. Thirty students with chronic neck pain in total were chosen for this study from Rawalpindi Medical University and Allied Hospitals using purposive sampling. Following simple random sampling, equal patients were divided into the Control and Treatment groups. Ages of the subjects ranged from 18 to 30 years old. Data were gathered using a questionnaire based on the Neck Disability Index and the Pain Numeric Rating Scale. The assessment factors were pre- and post-training questionnaire scores based on NDI and PNS. Evaluations were given to the control and intervention groups. Cross tabulation between the two groups for pre- and post-treatment PNS revealed that most patients in both groups had pre-treatment PNS with pain levels between 3 and 8, while post-treatment PNS data revealed that pain levels had decreased to levels between 0 and 4 under control conditions and 0 to 1 under experimental conditions. Pre-treatment symptom duration for both groups ranged from less than one hour to more than four hours. Post-treatment symptom duration showed a significant reduction in duration, with the experimental group's duration equal to

normal all-time and the control group's duration equal to less than an hour. Pain Numeric Scale interpretation and analysis within and within groups using a one-way ANOVA test. Pre-PNS P-value was 0.614, Week 4 P-value was 0.39, and Week 8 P-value was 0.000. The pre- and post-treatment means and level of significance (p-values) above support the conclusion that endurance training is superior to strength training in reducing chronic neck discomfort in students. The significance level estimated in the tables shows that progressive endurance therapy, as opposed to progressive strength training, is more effective in helping students with their bad neck posture and chronic cervical pain. A study by Sadarat Borisu [7] compared the impact of endurance training against strength training on persistent neck discomfort. His research's findings indicated that combining physical activity regimens could lessen neck pain and disability. Another study found that among females with persistent neck pain, twelve months of neck strength or endurance training significantly improved HRQoL compared to the control group. One year of either endurance or strength training seems to slightly improve the HRQoL. In order to alleviate non-specific chronic neck pain, Saeed Akhter and his colleagues [18] compared the effectiveness of manual therapy combined with an exercise program to an exercise program alone. According to the results, both groups' levels of pain intensity significantly decreased after three and twelve weeks, respectively. When compared to an exercise regimen on its own, manual therapy (manipulation) with a treatment plan seems to be preferable. L.L. Andersen used a study to examine the efficacy of short daily doses of progressive resistance training for chronic neck/shoulder discomfort. Limited to moderate evidence has been found in systematic reviews to support the usefulness of physical activity in treating neck and shoulder pain [19]. In this study by R.M. Ruivo, the forward head posture and extended shoulder posture of Portuguese teenagers were examined as a result of a 32-week resistance and stretching exercise program used in physical education classes. The effects of detraining after 16 weeks were also evaluated. Adolescents' forward head and prolonged shoulders were successfully reduced by the exercise intervention [20]. All of these research' findings, as interpreted, confirm my own findings that gradual endurance training is helpful for neck pain. The combination of several manual physical training routines also alleviated neck discomfort and stiffness, according to the data. Independent t-Test for comparisons of groups' pre- and post-treatment data The results of the paired t-test within group demonstrate that my null hypothesis was disproved and the study hypothesis—according to which Endurance Training was more effective than Strength Training in reducing student neck pain—was accepted. My

study hypothesis is supported by one-way ANOVA-based statistical analysis of data between and within groups for pre- and post-treatment data, and the null hypothesis was rejected since the p-value was less than 0.05, indicating that the test results were significant.

## CONCLUSIONS

It is concluded that endurance exercises are more effective than strength training in improving chronic neck pain among students.

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## Original Article

## Assessment of Knowledge, Attitudes, and Practices on Healthy Dietary Practices among Sports Students

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## ABSTRACT

Adequate food is the most important requisite for growth; while it is important throughout the children, it is more crucial during the early years of life when rapid growth occurs. Thus, dietary intake, nutritional status, emotional maturity, and physical fitness are major determinants of physical performance. **Objective:** To assess the Knowledge, Attitude, and Practices of healthy dietary practices among sports students. **Methods:** A cross-sectional study was conducted among 100 sports students from the University of Lahore sports complex teams using a non-probability convenient sampling technique. Structured questionnaire surveys were personally given to them to collect the data related to their knowledge, attitude, and practices. Data were analyzed with the help of SPSS version 24.0. **Results:** According to our results, 75.2% of the participants had good knowledge about healthy dietary choices, 64.4% of them had a good attitude towards opting for the right meal, while the practices of the participants were relatively low as about 57.4% of them were practicing their knowledge. **Conclusions:** It was determined that the majority of the sports students had adequate healthy dietary knowledge and healthy eating attitude, but there were inadequate healthy dietary practices among sports students. Most of them had normal healthy BMI, including both gender, but there were inadequate nutritional practices among sports students. Most students were eating out, taking unhealthy snacks, carbonated beverages and caffeine. Moreover, the consumption of water among the students was also affected.

## INTRODUCTION

Nutrition is a deliberate action made by a person to protect and improve their health and quality of life by consuming proper amounts of nutrients at the right times [1]. Physical changes alter and change the body's food requirements throughout this time [2]. In addition to an increased demand for calories, protein, vitamins, and minerals, there is also an increase in appetite [3]. It was noticed that trainers, pupils and instructors do not focus enough on their diets, while training physically as well as are uneducated about the performance being influenced by their diet [4]. Healthy lives are becoming increasingly vital in today's culture. Nutrition education courses are essential for the development of good eating habits. Meta-

analyses and systematic reviews illustrate that school programs for children regarding nutrition education, particularly theory-based therapies and multi-component, significantly have an effect on students' nutritional habits [5]. It is well understood that a well-balanced diet is responsible for giving various nutrients that are required for our bodies to function properly, maintaining our health, and keeping us safe from illness [6]. The vast nutraceuticals and dietary supplements market to improve a customer's health or wellbeing. These products, however, are not necessarily safe for everyone. Nutrition is important for achieving peak sports performance. A well-balanced diet should provide enough calories and macro-

and micronutrients. In addition to the energy demands of exercise, proper eating habits will be carried over to maturity in adolescent athletes, and the risk of an incorrect lifestyle can be decreased in the presence of physical activity [7, 8]. Nutrition in sports is regarded as a method of nutrition information to a regular food plan in order to provide energy for strength training, speed up the body's healing process, and maintain overall health status while competing in sports [9]. Because most sports have a high degree of competition, athletes are vulnerable to the latest diet or supplement trends and may be inclined to change their diet to boost their performance. Unhealthy eating habits severely impact not just their competition performance but also their overall health [10]. Consumption of healthful meals is linked to nutrition knowledge. Those who are active, such as those concerned with physical wellbeing and competitive beginner or experienced athletes, are referred to as athletes [11]. Non-athletes are those who do not participate in sports and are more prone to have an unhealthy life, especially during the week. How well athletes perform in sporting events is influenced by their nutrition expertise, eating choices, and food intake [12]. This study aims to assess the nutritional Knowledge, attitude, and practices among sports students. Healthy dietary practices, knowledge, and attitudes play an important role in the performance and physical fitness. There is a need to create awareness, increase knowledge, and improve dietary practices among sports students.

**METHODS**

A cross-sectional study was conducted among 100 sports students from the University of Lahore sports complex teams by the non-randomized convenient sampling technique. Structured questionnaire surveys were personally given to them to collect the data related to their knowledge, attitude and practices. Our main focus was on teenagers and adults of both genders aged from 15 to 30 years who participated in sports. Data were analyzed with the help of SPSS version 24.0.

**RESULTS**

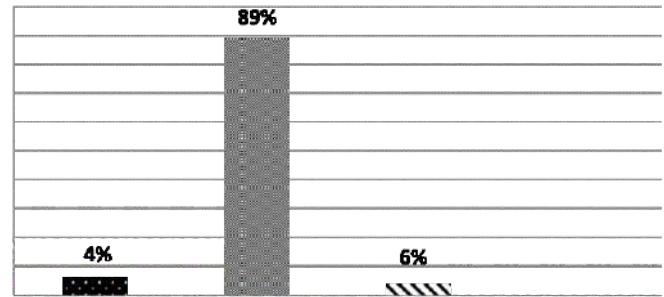
Table 1 shows that there were 19 participants aged between 15-20 years, and 71 participants were from the age group of 21-25 years. At the same time, 10 participants aged between 26-30 years.

Age Group (years)	Frequency
15-20	19
21-25	71
26-30	10

**Table 1:** Frequency distribution of age of the participants

According to figure 1, the majority of the participants (89%) had Normal BMI; 6% and 4% of the participants were

underweight and overweight, respectively, while none were obese.



**Figure 1:** Frequency distribution of BMI of the participants

According to Table 2, 60% of students knew their dietary needs, while 40% were unaware of their body requirements. The majority of participants, 79%, had heard about Food Groups, while 21% had no idea what food groups are. The result of the table above showed that 87 participants knew their water requirements. However, 89% of participants were aware of the negative impacts of an unhealthy diet on their performance. Moreover, 76% of students were aware of the healthy alternatives to junk food, whereas 24 did not know what healthy foods can replace junk food. About 87% of participants knew their water requirements, while 13% of participants did not know their water needs.

	Questions	Yes (%)	No (%)
1.	Knowledge about dietary needs	60	40
2.	Knowledge about Food Groups	79	21
3.	Knowledge of Water Requirements	87	13
4.	Impacts of an unhealthy diet on performance	89	11
5.	Knowledge of alternatives to junk food	76	24

**Table 2:** Frequency distribution of Nutrition Knowledge among sports students

According to Table 3, about 73% of participants often indulged in cheat meals, while 27% of participants didn't. 45% of members like desserts as a pre-workout snack, whilst 55% of members like other options as pre-workout snacks. Moreover, about 72%, take other food items as a post-workout snack. 54% of members choose healthy food from university cafeterias. The number of members that consult the internet for dietary guidelines is 67%, whilst only 33% members do not take help from the internet for dietary guidelines.

	Questions	Yes (%)	No (%)
1.	Participants attitude toward indulgence in a cheat meal	73	27
2.	Participant's attitudes toward healthy eating choices	86	14
3.	Supplement intake for a better performance	73	27
4.	Preference for desserts as a pre-workout snack	45	55
5.	Taking fruits as a post-workout snack	72	28
6.	Opting for healthy snacks from the university cafeteria	54	46
7.	Consulting the internet for dietary guide	67	33
8.	Intake of sugary drinks	50	50

**Table 3:** Frequency distribution of Attitude among sports

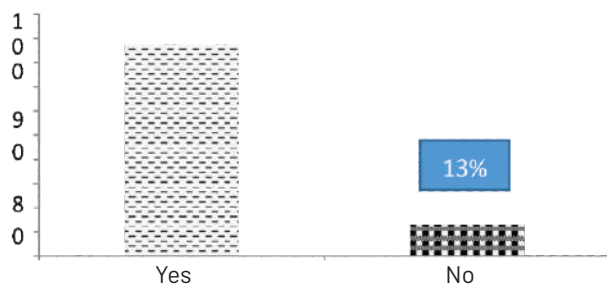
students

The Table 4 shows that 63% of members do not train with their stomach full. 45% of members drink lots of water during training. However, 66% of members often eat out, 36% take protein supplementation, whilst 64% do not take protein supplements for better performance. 59% of members burn calories gained from unhealthy eating, while 41% of members do not feel the need to burn excessive calories. About 68% of participants eat at odd times.

	Questions	Yes (%)	No (%)
1.	Practice training with a full stomach	37	63
2.	Drinking a lot of water during training	45	55
3.	Practice of eating out often	66	34
4.	Practice of protein supplementation	36	64
5.	Burning calories gained from unhealthy eating	59	41
6.	Eating at odd times	68	32

**Table 4:** Frequency distribution of practices among sports students

The Figure 2, displays that 87% say that their diet has an impact on their performance



**Figure 2:** Impact of diet on performance

## DISCUSSION

Healthy eating plays a major role in the maintenance of a healthy body. A balanced diet provides the energy needed by the human body [13]. To regulate all the necessary functions in a body, one must eat a balanced diet consisting of a sufficient amount of carbohydrates, proteins, fats, vitamins, and minerals. On top of that, one must stay physically active to make the body function faster and more efficiently. Carbohydrates provide the energy required by the body, proteins help in muscle building, and fats provide insulation to the skin and protection for the organs. The results obtained from this study were very positive as the majority of the participants had nutrition awareness. According to the current study, 60.2% of students have knowledge of their daily dietary needs, whereas similar results were found in another research [14] which showed that 57.3% of the participants had nutrition knowledge. Having nutrition knowledge is very important for athletes since it allows them to eat what they need and what is better for their performance [15]. Participants had good nutrition knowledge. Meanwhile, poor nutrition knowledge

was seen in other research [16] in which it was seen that only 50% of participants were nutritionally educated. According to the present study, 76% of participants knew the healthy alternatives to junk food; moreover, in another study [17], 70-79% of participants had nutrition education. These results are very similar to the present study's results. Being aware of the healthy alternatives to unhealthy food allows a person to choose better options that help boost his performance. In the current study, it was seen that 78.9% of participants enjoyed healthy snacks; however, in another study of similar nature, it was seen that 80.3% of the participants had a healthy eating attitude, showing the likeness toward healthy snacks [18]. If a person enjoys healthy food, it becomes very easy to follow a healthy diet. This study showed that 72.9% of the participants have a cheat meal often, while an Indian study [19] showed that 70% of the participants had a good nutrition attitude, explaining the possible high intake of junk food. In the current study, 54.2% of the participants chose healthy snacks from their university cafeterias, while, in a Malaysian study, it was observed that 59.55% of the participants had a balanced diet, which clearly shows the choice of a healthy and balanced diet from university cafeterias. Choosing the right kind of snacks from university cafeterias can be very useful in order to keep calorie intake on track. In the practice section, most of our respondents (67%) had practiced maintaining a healthy food lifestyle, consistent with another study that had the same practice claims. However, another study shows that only 4.5% have good practice [17]. Therefore, having good knowledge does not always ensure excellent practice. Being consistent with a healthy lifestyle is the key to a better performance in sports as well as in other daily activities. Better results can only be obtained if one is consistent and determined with a healthy lifestyle. In this study, it was found that 42% of participants took dietary guidelines from their trainers; likewise, in another study, 37% of the respondents took nutritional information from their coaches [20]. This research shows that not all athletes take dietary guidelines from authentic sources; some may be misguided towards making bad food choices. In the present study, 67.7% of the students used the internet to find nutritional information. This suggests that students gather nutritional information from any source they can in order to improve their eating habits and sports performances, irrespective of the fact that their source of information could be misleading in many ways.

## CONCLUSIONS

It was concluded that most sports students had adequate nutritional knowledge and a healthy eating attitude, but there were inadequate nutritional practices among sports students. Most of them had normal healthy BMI, including

both genders. But there were inadequate nutritional practices among sports students. The majority of the students were eating out, taking unhealthy snacks, carbonated beverages, and caffeine. Moreover, the consumption of water among the students was also affected.

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## Original Article

## Determinants of Gastroesophageal Reflux Disease in Patients Visiting Tertiary Care Hospitals, Lahore

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## ABSTRACT

Gastroesophageal reflux disease is a persistent and widespread condition that affects people of all ages. It has multiple symptoms and has a remarkable effect on the lifestyle and work performance of the person. **Objective:** To assess the determinants of GERD in patients visiting tertiary care hospitals, Lahore. **Methods:** A cross-sectional study was conducted at The University of Lahore Teaching Hospital and Jinnah Hospital Lahore for 6 months. Non-probability convenient sampling technique was used to record data of 100 participants by utilizing a validated questionnaire. **Results:** The results revealed that 40% of males and 60% of females participated in the study. Their BMI showed that 44% of participants were overweight and 18% were obese. 61% of the participants developed GERD complications. Analysis of the questionnaire revealed that 66% of the participants had a basic knowledge of GERD. An important determinant identified was the sedentary lifestyle of 70% of the participants. **Conclusion:** The study concluded that GERD is found to be more prevalent in patients having obesity, diabetes, hypertension, heart disease, and kidney disease. It deduced that modifiable risk factors can determine the progression of the disease. In this regard, awareness and public health education campaigns would play a promising role in the reduction of disease.

## INTRODUCTION

Gastroesophageal reflux disease is a condition in which muscles of the lower esophageal sphincter are affected due to which food returns to the esophagus. The main etiologic reasons are assumed to be aberrant LES pressure and enhanced reflux during transitory LES relaxations. This can cause discomfort, bad breath, heartburn, indigestion, nausea, vomiting, and acidity. Heartburn is found to be the most common symptom [1]. GERD can also be asymptomatic that is characterized by the presence of esophageal mucosal injury which can be erosions, peptic ulceration, or Barrett's esophagus [2]. Pathophysiology of GERD can include Transient lower esophageal sphincter

relaxation play and anomalies of the lower esophageal sphincter pressure. Besides this, hiatal hernia, altered esophageal clearance, delayed gastric emptying, and compromised mucosal defensive factors are contributing factors to GERD. Another term identified in pathophysiology of GERD is acid pocket. It occurs because of the abnormal amalgamation of chime with acid in the proximal stomach [3]. Normally, for diagnosis of GERD PPI trial, endoscopy or biopsy is advised. Also, ambulatory reflux monitoring is used which gives the best confirmation of GERD [4]. Many factors may contribute to the development of the disease. The two main categories of

risk factors are modifiable and non-modifiable factors. The modifiable factors include obesity, alcohol consumption, smoking, tomato preserves, coffee, carbonated beverages, and fatty or spicy meals. However, the non-modifiable factors include age, gender, pregnancy, and genetic factors [5]. Medical treatment for GERD incorporates fundoplication and Gastric Bypass. These surgeries are done alone and also in combined form [6]. Other than this alginate therapy is used. Awareness for combating GERD can be very productive in management of the symptoms. Dietary modifications can treat GERD like having less sugar intake and more fiber consumption. Changing eating behavior can also help in treatment since late night meals, large meals, and calorically dense foods increase gastric acid production and gastric distention. Besides, avoiding beverages, chocolates, alcohol, caffeine, spicy foods, carbonation, and peppermint can also be effective since these food consumption cause reductions in LES tone [7]. Fiber laden diet can manage GERD symptoms since it induces a decrease in the number of gastroesophageal refluxes and the frequency of heartburn each week by having more fiber in the diet [8]. A low nickel diet can manage GERD symptoms [9]. GERD is a digestive disorder that occurs when stomach acid frequently flows back into the tube connecting the mouth. If it is left untreated it can progress into ulcers, scarring of the esophagus, and Barrett's esophagus. GERD has an impact on the daily lives of affected individuals interfering with physical activity, impairing social functioning, disturbing sleep and reducing productivity of work on the quality of life of patients [10-12]. It can lead to more absentees at the workplace because of disturbed sleep that can compromise the overall productivity of the person and the organization. The researchers will define the determinant causing GERD among patients in order to highlight or find out the risk factors leading to GERD. So that after the identification of these factors, an awareness plan for the promotion of healthy habits can be devised. Eventually, the provision of extensive health education would be a promising approach to reducing GERD prevalence.

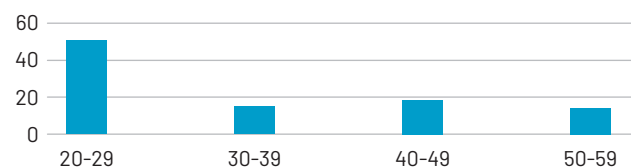
## METHODS

Sample size was thirty  $n=30$ . Sampling method was Simple Random sampling and allocation between groups was done using sealed envelope method. Male and female students having neck pain at least once in the last month. Age group of 18 to 30 years. Patients with chronic neck pain due to faulty head posture. Exclusion Criteria: Fracture of cervical spine, Cervical Spondylolisthesis, Tumors of spine, Systemic disorders, Cervical radiculopathy. Structured Questionnaire and Pain Numeric Scale NDI (The NDI

contains 10 item with 7 related to daily activities, 2 related to pain, and 1 related to concentration [21]. Thirty patients in total were chosen and randomly divided into the treatment group and the control group. For two months, interventions were used three to four times each week. Each individual did 10-12 repetitions of a weight that they could lift ten times on the first training session (ten repetitions maximum) and worked their way up to fifteen repetitions in phase one. For four weeks, they remained at this level. In phase two, subjects worked out for three sets of 15-20 repetitions at maximal load after the initial 10 repetitions, with a minute of rest in between sets. The subjects in the Control group underwent a specially created strength training program that included cervical isometrics. This training regimen was divided into two halves. both the first and second phases last for four weeks. Each participant did 5-10 repetitions of a weight that they could lift 10 times during the first training session (10 repetitions maximum) in phase one, working their way up to a load that could be accomplished for a maximum of 12 repetitions. For four weeks, they remained at this level. Phase two saw the patients performing three sets of five to ten repeats of the initial twelve to fifteen repetitions at their maximum load, with a minute of rest in between sets. Data was entered and analyzed using SPSS version 21.0. Cross tabulation and multiple bar charts were used to present the data. Independent samples t-test was applied at 5% level of significance to compare the means of two study groups for the continuous outcome variables.

## RESULTS

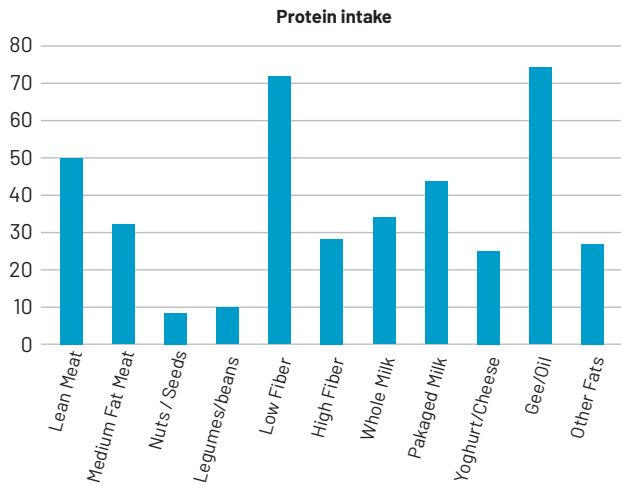
According to Figure 1, frequency distribution showed that 50% participants ranged from age 20-29 years while 17% belongs from 30-39 years as well as 19% belong from 40-49 years and also 14% from age 50-59 years.



**Figure 1:** Frequency distribution of age among GERD patients

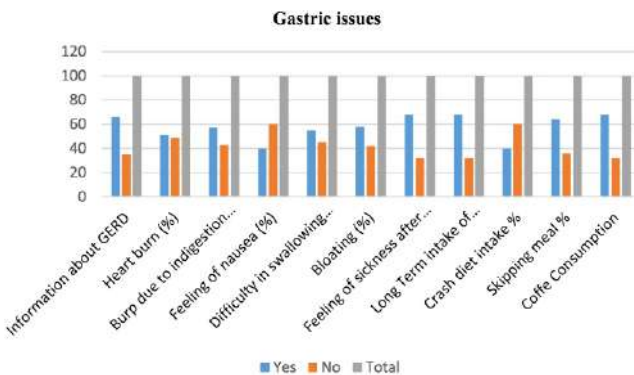
The frequency distribution showed that 66% of participants knew about GERD while 34% didn't. 51% of participants were having heartburn, while 57% had burps due to indigestion while 60% of participants did not feel nausea. The frequency distribution showed that 68% of participants have a long-term medication while 32% of participants did not. The frequency distribution showed that 40% participants were doing crash diet while 64% participants skipped meal. The frequency distribution showed that 70% participants are living sedentary lifestyle,

16% were moderate and 14% were intense. The frequency distribution showed that 50% participants consume lean meat, 32% consume red meat, 8% consume nuts and seeds and 10% consumed legumes (Figure 2).



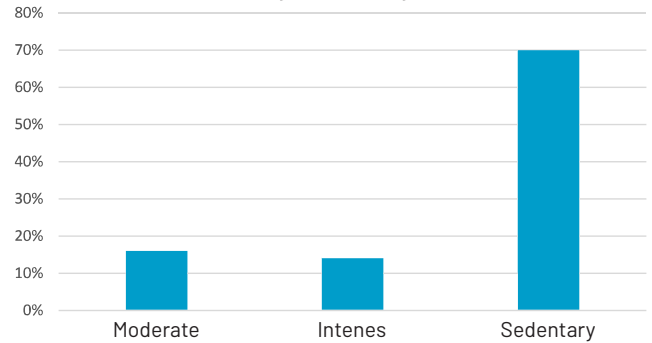
**Figure 2:** Frequency Distribution of protein intake among GERD patients

The frequency distribution showed that 74% participants consume low fiber while fruits 26% consume high fiber fruits. The frequency distribution showed that 34% participants consume whole-milk, 44% consume packaged milk and 22% participants consume yogurt and cheese. The frequency distribution showed that ghee and oil is consumed by 76% participants, 20% consume dressings, mayonnaise, butter, margarine and 4% participants consume sweet candy, soft drinks and jellies. The frequency distribution showed that 68% participants consume coffee while 32% participants did not (Figure 3).



**Figure 3:** Frequency distribution of gastric issues among GERD patients

**Physical Activity**



**Figure 4:** Frequency distribution of physical activity among GERD patients

**DISCUSSION**

Gastroesophageal Reflux Disease (GERD) is increasing due to lifestyle changes and quality of life resulting in esophagitis and many other diseases [13-16]. GERD ratio in Pakistan is 28.9%. The high rate of occurrence of GERD is due to regular usage of spicy fast food, carbonated drinks, sedentary lifestyle, and unhealthy dietary practices. According to the findings of this study, GERD is more frequent in adults due to high consumption of fast food, spicy food, carbonated drinks, coffee, and more screen timing and the similar results were done in another study, who showed that 28.7% patients from the age 29 years, he also concluded that the patients had this issue due to genetic, environmental and non-genetic factors [17]. It was also concluded that females are facing this issue due to many reasons such as obesity, sedentary lifestyle, high consumption of caffeine and family history of GERD [18]. In the current study, 66% of patients had knowledge about GERD and 35% of patients did not knowledge about GERD due to low literacy and educational levels similar results showed in a study which depicted that people in Riyadh had good knowledge about GERD because of attending different educational program and health conference about GERD [12]. In this study, 60% of patients did not feel nausea, and 40% of patients felt vomiting badly because, in GERD, the lower esophageal sphincter (LES) does not function properly, and acid reflux in which stomach acid may creep up in esophagus which may result in nausea. Indigestion or heartburn can also contribute to nausea. However, a similar study presented that patients may experience coughing and burping which can lead to a nauseated feeling [17]. Another study presented that burping is highly common in GERD patients due to indigestion [18]. Similar results were shown by the current study that 57% of patients had burped a lot and 43% of patients didn't burp. Probiotics have a crucial function in gastrointestinal health. Probiotics are found in a variety of meals and supplements [19]. Probiotics mechanisms have been proposed to include direct interaction with gut

luminal bacteria, metabolic effects resulting from enzymatic activities, impact on barrier function and crosstalk with the central nervous system, and enteric immunity. Probiotics that contain bacteria strains from the genus *Lactobacillus* and *Bifidobacterium* presented decreased gastrointestinal symptoms. In the current study, 61% of patients know about probiotics can reduce GERD symptoms and 39% of patients did not know about probiotics importance, similar results were discussed by Tsai et al., in 2020, he concluded that due to the presence *Lactobacillus* and *Bifidobacterium* in probiotics can help in reducing GERD symptoms [11]. Fruits and vegetables are naturally low in fat and sugar, which help to lower stomach acid. GERD has shown to be 33% less common in people who ate the most fruits and vegetables. GERD was shown to be 36% less common in women who ate the most fruits and vegetables. Magnesium is a mineral that is used in several acid reflux therapies. Magnesium hydroxide or magnesium carbonate, along with aluminum hydroxide or calcium carbonate, are commonly used in antacids. These concoctions can neutralize acid and elevate discomfort. According to this study, 59% of patients had knowledge about the importance of fruit to prevent GERD symptoms, and a previous study was done by Shruthi that banana has a natural antacid effect in the body and helps in preventing heartburn and acid reflux [12]. Additional fat surrounding the stomach compresses the stomach, and more fluid goes upward in the esophagus, which can cause GERD. This makes it more likely to experience stomach acid leakage and GERD. The added pressure also causes the sphincter that sits between the stomach and the esophagus to relax, allowing stomach acid into the esophagus. The present study showed that 61% of obese participants had other complications like diabetes heart disease and hypertension with GERD while 39% of participants did not have any complications. Furthermore, the study by Gu et al., reported that obesity is a major risk factor for GERD, which can lead to various complications [17]. The current study showed that 68% of participants had a feeling of heartburn after a meal and 32% of participants do not have any feeling. A similar study conducted by Taraszewska who reported that heartburn is the most common symptom of GERD after taking meals due to indigestion and acid reflux [18]. Intake of long-term GERD medication can increase the risk of esophageal cancer. Over-the-counter medications have side effects like heartburn, when stomach acid rises, it causes a burning sensation in the chest or neck. According to this study, 68% of patients had taken the long-term medication which causes side effects like heartburn while 32% of participants had not taken long-term medications. Furthermore, it was observed that long-term therapy to prevent GERD requires follow-up to decrease

the risk of adverse effects. The acid in the stomach flows back up into the esophagus this irritates the lining of the esophagus cause dry cough and heartburn due to acid reflux makes difficult to swallow certain food [17]. This study showed that 37% of participants had a change in diet and 63% of participants did not change in diet a similar study was held by Dagli and Kalkan in 2017 who studied that lifestyle modification has a significant impact on GERD therapy [13]. Caffeine contains coffee identified as a possible trigger for heartburn and relaxes the lower esophageal sphincter (LES) which triggers GERD symptoms. In this study 68% of participants consumed coffee and 32% of participants did not consume it. In the present study, 50% of participants consumed lean meat, 32% of participants consumed red meat and 10% of participants consumed legumes showed that most of the patients had knowledge about good dietary practices of protein. Furthermore, in 2017 a research was done by Ahmadnezhad et al., who studied that majority of patients consume a lot of protein with a lot of fat, which is more likely to cause GERD. Patients had advised taking lean meat because low-fat meats like chicken, turkey, fish, and shellfish can help to relieve acid reflux symptoms [15]. Fiber can aid with cholesterol reduction, constipation prevention, and digestion. Fibrous meals such as whole grains and root vegetables, make individual feel full, which may help to prevent heartburn [20]. In 2018 Morozov et al., studied that fiber-enriched food can decrease LES resting pressure and decrease heartburn frequency and the present study assess that 74% of participants consumed low fiber food items in diet while 26% of participants consumed high fiber [8].

## CONCLUSIONS

This study specified along with the results of former studies that GERD is a highly prevalent disease globally. It was concluded that in the current study GERD was commonly found in the patients having obesity, diabetes hypertension, heart diseases, and kidney disease. It was also spotted that many modifiable risk factors that noticeably affect the degree of the disease. Awareness campaigns and public health education like seminars and conferences would help in lowering the ratio of disease.

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## Original Article

## Effect of Hand Grip Strength and Endurance on Writing Speed Among Students of DPT in AMNC

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## ABSTRACT

Hand grip strength is a measure and indicator of general strength of upper limb as well as general body strength. The grip strength varies in different populations and regions due to difference in genetic makeup, nutritional habits, body type and level of activity. ADLs of upper limb depend on strength and endurance of hand as greater the strength and endurance greater the performance. **Objectives:** To find the effect of handgrip strength and endurance on handwriting speed. **Methods:** Associational study included 113 healthy young adult students. Convenience sampling technique was used. Dynamometer was used to measure the hand grip strength and endurance in a standardized manner. Letters per Minute test was used to assess the handwriting speed. Dynamometer is an instrument with excellent validity, consistency and reliability. **Results:** The hand grip strength and writing speed was moderately correlated as ( $r = 0.559$ ) and the hand endurance and writing speed was moderately correlated as ( $r = 0.57$ ). **Conclusions:** We concluded that hand grip strength and hand endurance have positive moderate effect on writing speed. Exercises that increase hand strength and endurance can increase the writing speed and ultimately academic performance of students.

## INTRODUCTION

Handwriting is a well-designed activity that requires the synchronization of a number of person's skills. On the other hand, it is a complex skill. Handwriting depends on the development and integration of Visual Perceptual, cognitive and fine motor system ability. Smooth writing is created by combined and synchronized movements of individual for sensory motor feedback and visual monitoring simultaneously [1]. In everyone's daily life, ADLs upper limbs play an important role to perform task effectively. There are some important sensory motor

parameters that include grip strength and endurance which are essential for their satisfactory actions. In clinical practice practitioner assume the strength of grip as a sign of many diseases which can lead patient toward disability [2]. The wrist is a sophisticated biological structure with 27 bones, 15 joints, and around 30° of freedom in rotation and translation. It is used to grasp and exert force on objects of all sizes and shapes as well as to carry out a variety of complicated, highly coordinated actions [3]. Grip strength is being used worldwide due to portability and practicality

of the dynamometer [4]. Grip strength is evaluated as a module of hand function (American Society of Hand Therapists), hand grip strength just not only used to demonstrate the importance of the hand but also to signify as entire upper extremity strength. ASHT has suggested the grip strength to be measured by using the Jamar dynamometer [5]. Since handwriting speed and the capacity to communicate knowledge are closely related, both have a significant impact in academic performance [6]. Grip strength of hand shows overall muscle strength that is measured by using a hand dynamometer. To measure the grip strength and endurance, dynamometer is declared as a gold standard test. Both strength and endurance of the hand was checked in students by using the hand dynamometer and writing speed assessment. Grip strength basically tests the isometric contraction of the hand. Additionally, it was discovered that there are variances based on gender, with males having stronger dominant hand grips [7]. Writing speed is calculated by using the number of letters written with in one minute [8]. Letters per minute test (LPM) is being used instead of words per minute test (WPM) because of the high unpredictability of words. For the training purpose of working adults and amputees this test is very useful for the vocational evaluators and as well as hand therapists. It is also very useful for assessing a patient's ability to return to specific work situations that require written communication [9]. Many professional and job related responsibilities requires handling of tools, equipment and fine movements of hands. A very simple instance is the inability of older persons to open food jars due to diminish strength of grip. The overall performance of upper extremity functions and ability to perform specific tasks is due to weak grip strength [10]. The Jamar is very reliable and also valid for measuring hand grip strength. Its reliability is (ICC [3, 1] = 0.98) and its validity is (ICC (2, K) = 0.99) [11]. The writing speed is evaluated through letters per minute test. According to Dave Bledsoe. for an adult population (age ranges 18-64) the average speed of copying letters is 68 in a minute, with range from a minimum letters of 26 to maximum letters of 113 in a minute [12]. Another study recommend the task based training procedure that can advance the performance and reduce handwriting difficulties in children. The results of this research show that the comprehensive and competence of motor skill improve handwriting in children [13]. The study considered inspecting the handgrip endurance and strength which is considered a significant tool for the measurement the status of nutrition and as an indicator of the muscle quality in underweight individuals with overweight individuals. They discover that the overweight and underweight subjects had a lower grip endurance and strengths

compare to the normal weight group in males, but not in females [14]. The values of handgrip strength in subjects of normal healthy adult using a hand Dynamometer. They find that the normal suggested values of strength handgrip should be recognized and graded according to gender or age. Variation in height does not require changes to be made in order to get and illustrate the average scores for handwriting speed in healthy persons [15]. They recommended that norms of the handwriting speed should be reorganized regularly. The obtained findings will update the therapists about the cause that affect the adult's handwriting speed [16]. Dynamometers to conclude their co-existing reliability and validity for assessing the strength of hand grip in clinical settings. They discovered that there is no major difference between dynamometers' validity and reliability [17]. Because no studies have been conducted to determine the impact of hand grip strength and endurance on handwriting speed, this study is distinctive in that regard. This study will raise students' understanding of how improving hand grip strength and endurance can increase handwriting speed, enabling them to effectively manage their time and writing speed throughout tests.

## METHODS

The study type is associational study and the study data collection center was Azra Naheed Medical College (ANMC) Lahore. This research was completed in three months and convenience sampling technique was used. A Sample of 113 Students of DPT was taken from total population of 600 DPT students in ANMC. Inclusion criteria: Students of DPT in ANMC who were willing to participate in this study, both male and female students were included. Exclusion criteria: Students with fracture or any deformity of upper extremity, any skin lesion or pathology in dominant hand. With permission of HOD and Supervisor researcher gave consent form to students and conducted data. After teaching the whole procedure the researcher first task was to measure maximal grip strength in three trails. The subject was asked to squeeze the dynamometer and the readings of three maximal contractions were noted down in three trials e.g. T1, T2, and T3 with a rest period of 5 seconds between each trial to prevent muscle fatigue. For each subject the dynamometer was reset to zero before the reading of next grip strength. The second task was of muscle endurance (sustained grip strength). This task consisted of a sustained maximal isometric contraction over a period of 10 seconds. After every 10th second the reading for endurance in kilograms was noted down. Using the stop watch, the task was initiated on a start signal and end on a stop signal given by the researcher. For writing speed measurement, Letters per Minute Test (LPM) was used. A paper with a paragraph of 57 words printed on it was

provided to each subject. The subjects were verbally instructed to write down their names on the paper and go through the short paragraph. After the subjects understood the procedure and were ready for the test they were asked to copy the paragraph of 57 words in 1 minute. After one minute, the papers were collected and the number of letters written in one minute by each subject were counted and noted down. The writing speed was calculated as the number of letter. Dynamometer was used for assessment of both Strength and Endurance of hand [5, 7]. Letter per minute test was used to assess the writing speed [8]. Study conducted after an informed consent was signed. The subject was fully informed about the research and the reason for conducting it. The confidentiality of the subject was ensured and not shared with any outside source for public display. Subject was free to withdraw at any stage. Collected data were entered in SPSS version 16.0 and analyzed through correlation test. Result revealed that the hand strength and writing speed was moderately correlated as (r 0.559). The hand endurance and wiring speed was moderately correlated as (r 0.57). Statically results approved the alternative hypothesis.

## RESULTS

Table 1 shows the descriptive characteristics n=113 of the study participants. The gender distribution was out of 113 students, 59 were male while 54 were females. The mean values for the age was  $26 \pm 21.70$ . All 113 study participants were right hand dominant.

Gender	113 (59 M/54 F)
Age	$26 \pm 21.70$
Hand Dominance	113 (RHD)

M= Male, F= Female, R=Right Hand Dominant

**Table 1:** Descriptive statistical analysis (N=113)

Table 2 represents the relationship between hand strength and endurance. The mean score of hand strength was score as  $34.16 \pm 26.24$  and mean score of hand endurance was  $34.74 \pm 24.48$ . The (r) of 0.95 is showing strong positive correlation between hand power and hand endurance.

Variables	Mean $\pm$ SD	Pearson correlation coefficient <sup>®</sup>
Hand Strength (Dynamometer)	$34.16 \pm 26.244$	0.95
Hand Endurance (Dynamometer)	$34.74 \pm 24.486$	

**Table 2:** Relationship b/w Hand strength & Endurance

Table 3 depicts the effect of hand strength on writing speed. The mean value of hand strength score was  $34.16 \pm 26.244$  and mean score of wiring speed was  $100.12 \pm 28.589$ . The (r) of 0.559 is showing effective relationship between hand power and writing speed.

Variables	Mean $\pm$ SD	Pearson correlation coefficient <sup>®</sup>
Hand Strength (Dynamometer)	$34.16 \pm 26.244$	0.559
Writing Speed (Letters per minute)	$100.12 \pm 28.589$	

**Table 3:** Effect of hand grip strength on writing speed

Table 4 shows the effect of hand endurance on writing speed. The mean score of hand endurance was  $34.74 \pm 24.48$  and mean score of wiring speed was  $100.12 \pm 28.589$ . The (r) of 0.57 is showing moderate positive correlation between hand power and writing speed.

Variables	Mean $\pm$ SD	Pearson correlation coefficient <sup>®</sup>
Hand Endurance (Dynamometer)	$34.74 \pm 24.486$	0.570
Writing Speed (Letters per minute)	$100.12 \pm 28.589$	

**Table 4:** Effect of hand endurance on writing speed

## DISCUSSION

The relation of hand grip strength and endurance on handwriting speed was evaluated in this study. To determine the relation between 3 parameters a standardized tool, Dynamometer was used for the measurement of strength and endurance. For the assessment of hand writing speed, Letters per minute Test was used. The report of this study showed the high correlation of strength and endurance (r 0.95), and moderate positive correlation of handwriting speed and strength (r 0.559) and moderate positive correlation of handwriting and endurance (r 0.570). Forceful contraction of muscles required for picking and pulling of object but sustain isometric contraction required for holding any object as in writing both strength and endurance required for movement of pen and holding pen vertically so both characteristics of muscle of hand strength and endurance required for better efficacy and speed of handwriting. As shown in result that strength and endurance are highly correlated so weakness in one of these characteristic will affect the performance of second. A study conducted in 2011 by Bledsoe et al., on hand writing speed in an adult population included 300 individuals. Letters per minute test was selected to assess the handwriting speed. He concluded that the Letters per minute test was very useful for the hand therapists to establish the handwriting speed among young adults by improving their hand grip strength. In the present study, the maximal strength and endurance of the right hand showed a positive relation on handwriting speed which is similar to above mentioned study [12]. According to Massy-Westrop et al., hand grip strength can be calculated by measuring the amount of static force that the hand can squeeze around a dynamometer. Hand grip strength is a reliable measurement when standardized methods and adjusted equipment are used, even when there are different assessors or different brands of dynamometers. The Published normative data for hand



grip strength are available from many countries, and in most cases, data are divided into age and gender subgroups. Analysis of grip strength by gender shows higher grip by males and lower grip by females at all ages. This trend is always present even though some studies divide participants by age, gender, and then by right and left hand, while a small number of studies divide participants by age gender and then dominant and non-dominant hand. These trends can be seen in the current study also. Thus going through all the literatures that showed a positive relation between strength, endurance and writing speed students can improve their academic performance through exercises that increase hand strength and endurance can increase their writing speed [18]. Padmavathi et al., reported a study based on gender difference in muscle strength and endurance on young adults and shows positive relation between strength and endurance. The results of the study showed that males had close to twice the hand grip strength of females in absolute terms ( $P < 0.01$ ). In contrast, the rate of decline of muscle strength during sustained isometric contraction was lower in females as compared to males ( $P < 0.05$ ), suggestive of greater muscle endurance in females. Our study shows similar results as above mention study that there is a positive relation between these two variables (hand strength and endurance) but the only difference is our study is not based on gender difference [19]. In the medical context, handgrip strength (HGS) is frequently employed as a bedside test of muscular function. The purpose of this study was to determine the relationship between HGS, endurance, and work (force during endurance 3 times), as determined by mobility and physical activity (PA), and physical function in young, healthy volunteers. Additionally, the connections between HGS, mobility, PA, and patient quality of life (QoL) were looked at. A total of 45 patients (56 percent men, mean age 55 y) and 92 healthy volunteers (45 percent men, mean age 30 y) had their mobility (timed up-and-go test) and PA examined (Baecke questionnaire or Bouchard activity diary) [20].

## CONCLUSIONS

This study concludes that hand grip strength and hand endurance had positive moderate effect on writing speed. It was found that majority of the students were unaware about the fact that if they had a better hand grip strength and endurance, their writing speed can be greatly influenced. Exercises that increases hand strength and endurance can increase the writing speed and ultimately academic performance of students.

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## Original Article

## Frequency of Fetal Central Nervous System Anomalies Detected on Ultrasonography

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## ABSTRACT

The most serious congenital abnormalities are those involving the central nervous system (CNS). Ultrasound (US) examination is a safe and noninvasive method for detecting these anomalies during pregnancy. **Objective:** To find out the frequency of the fetal central nervous system anomalies detected on ultrasonography. **Methods:** It was a cross sectional study conducted on 385 pregnant women using Convenient Sampling Technique. The patients were referred by obstetricians/gynecologists for routine obstetrical scan. Data was collected from two hospital settings, Allama Iqbal Memorial Teaching Hospital, Sialkot and Umer Diagnostics, Sialkot. The study used a high resolution ultrasound probe with a frequency of 3.5 MHz to identify CNS anomalies in 13 embryos. Data were analyzed using SPSS 26.0. **Results:** 13 fetuses with CNS anomalies were found after 385 pregnant women underwent transabdominal sonography. Anomalies included 2(0.5%) ventriculomegaly, 3(0.8%) acrania, 2(0.5%) encephalocele, 2(0.5%) bilaterally present choroid plexus cyst, 2(0.5%) hydrocephalus, 1(0.3%) agenesis of cerebellar vermis along with mega cisterna magna. **Conclusions:** Acrania is most common among all CNS anomalies. Disability and bed rest are the two most serious consequences of major CNS abnormalities, early detection of these conditions is now crucial. Another significant problem is family counseling.

## INTRODUCTION

Central nervous system (CNS) malformations are a common reason of developing delays and neurological impairments [1]. CNS anomalies are frequent and often fatal and develops between 3 and 20 weeks of intrauterine life [2, 3]. Almost all CNS anomalies are caused by an insult during embryogenesis at some point during development [4]. CNS abnormalities represent an extensive range of congenital birth defects, with a frequency of approximately 1% of all births [5]. Many CNS anomalies can be detected using ultrasound in the first and early second trimesters. Some appear or develop in late pregnancy [6, 7]. Solitary or multiple CNS malformations affect approximately 0.61

percent of kids enrolled in a pediatric clinic [8]. CNS anomalies account for perinatal autopsy series, CNS anomalies make up nearly 10% of all congenital malformations, with neural tube defects (NTDs) (45.5%), hydrocephaly (12.4%), and neuronal proliferation disorders (8.8%) being the most frequent. These chromosomal, cerebral, extracerebral, syndromal, and CNS malformations are frequently linked together [9]. Brazil's ideal second trimester ultrasound screening window is between 20 and 24 weeks of pregnancy [10, 11]. Even though second-trimester ultrasound is the gold standard for identifying structural defects, the number of referrals

for ultrasound exams in the first trimester (11–13 + 6 weeks) has increased in developed nations [12]. A previously unknown fetal congenital defect is discovered on the occasion of a regular third-trimester scan [13]. Structural abnormalities that appear or manifest only in late pregnancy and could not have been reliably detected earlier; congenital malformations that were present earlier but went unnoticed despite adherence to first- and second-trimester screening programmes [14]. Fetal cerebral ventriculomegaly is defined as an atrial diameter of more than 10 mm on prenatal ultrasound examination in the 13th to 40th week of gestation. Due to its non-obstructive causes, the ventricles are mildly increased in size. In spite of the fact that mild fetal ventriculomegaly is quite often unintentional and harmless, it can also be linked to genetic, structural, and neurocognitive abnormalities, with results that can range from standard to severely impaired. Normal classifications for fetal ventriculomegaly include slight (10 to 12 mm), modest (13 to 15 mm), and extreme (more than 15 mm) [15]. Acrania is defined by the nonappearance of flat bones in the cranial vault. The cerebral hemispheres are anomalous despite being fully developed. Acrania develops when an ectodermal and mesodermal growth abnormality following neural tube closure. Acrania must have perfect facial bones, a normal vertebral column devoid of fetal skull, and brain tissue capacity amounted to approximately one-third of the brain size corresponding to the gestational age. There are few effective treatments for acrania, which is a uniformly fatal condition [16]. The embryonic exencephalic brain's abnormal vascularization is caused by the cranial neuropore's breakdown to narrow during the 4th week of growth. Following that, a brain continues to be a spongy vascular clump with certain hind brain structures while the nervous tissue degenerates. Meroanencephaly (the existence of physiological neural tissue) is the current name for what was formerly known as anencephaly (brain complete lack). Meroanencephaly is a deadly birth defect [17]. A congenital NTD known as an encephalocele occurs when a bone defect causes a pouch comprising the brain, the meninges, and CSF to form outside of the cranium. Trauma, tumours, or iatrogenic injury can all cause acquired encephaloceles. Meningocele is the term for the capsule that results from the protuberance of the meninges and cerebral spinal fluid; however, when it contains brain tissue, it is called an encephalocele. However, both are commonly referred to as encephaloceles [18]. The prosencephalon, or embryo's forebrain, neglects to split into two distinct lobes in between the third and fourth weeks of pregnancy, resulting in a birth defect. This method causes the cerebral hemispheres to be separated to varying degrees [19].

## METHODS

It is a cross sectional study conducted on 385 pregnant women using Convenient Sampling Technique, who underwent a routine obstetrical scan after being referred by obstetricians or gynaecologists. Data was collected from two hospital settings, Allama Iqbal Memorial Teaching Hospital, Sialkot and Umer Diagnostics, Sialkot in the time period of January 2022 to June 2022. The CNS anomalies was diagnosed in 13 fetuses utilizing a high-resolution ultrasound probe of 3.5 MHz (Toshiba Xzario 500, Honda Electronics HS-2200). Data were analyzed using SPSS 26.0. Each ultrasound examination took about 15 to 20 minutes. The brains and spinal canals of fetuses were thoroughly scanned in all possible planes.

## RESULTS

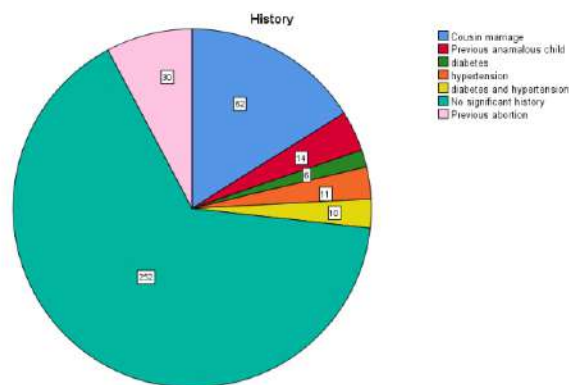
Following transabdominal sonography of 385 expecting females out of which 8 were twin pregnancies, 1 was triplet and 376 were single, 13 pregnancies were found to have CNS anomalous behavior, some fetuses exhibit multiple abnormalities and some fetuses have abnormalities other than CNS Anomalies. CNS Anomalies included 2 (0.5%) ventriculomegaly, 3 (0.8%) acrania, 2 (0.5%) encephalocele, 2 (0.5%) bilaterally present choroid plexus cyst, 2 (0.5%) hydrocephalus. Agenesis of cerebellar vermis along with mega cisterna magna was seen in 1 case (0.3%). Some other abnormalities were seen such as Multicystic kidney (right) in 1 case, Ovarian teratoma in 2 female fetuses, Cystic hygroma in 2 fetuses, Omphalocele in 1 fetus, Esophageal ectasia in 1 fetus. Hydrops fetalis along with cystic hygroma was seen in 1 case. 3 intrauterine demise (IUD) cases were seen. Out of 8 twin pregnancies 1 case was seen with IUD of fetus number 2.

CNS Abnormalities	Frequency (%)
Ventriculomegaly	2 (0.5%)
Acrania	3 (0.8%)
Encephalocele	2 (0.5%)
Agenesis of Cerebellar Vermis	1 (0.3%)
Choroid Plexus cyst	2 (0.5%)
Hydrocephalus	2 (0.5%)
Mega cisterna magna	1 (0.3%)
Other findings	16 (4.2%)
Normal Cases	356 (92.5%)
Total	385 (100%)

**Table 1:** Frequency of fetal CNS Anomalies

No. of fetuses	Frequency (%)
Single	376 (97.7%)
Twin	8 (2.1%)
Triplet	1 (0.3%)
Total	385 (100%)

**Table 2:** Number of fetuses



**Figure 1:** History of Patients

## DISCUSSION

The most prevalent inherited conditions are CNS malformations. The most common central nervous system malformation is neural tube defects, which occur in about 1-2 cases out of every 1000 births [20]. Because of folic acid supplementation, between developed and developing nations, there are differences in the prevalence of CNS anomalies. Furthermore, in one nation, it may follow a different pattern depending on regional food and dietary customs [21]. For example, in our study, 385 pregnancies were evaluated and 13 cases were seen with CNS anomalies. In our study, Acrania was the most common CNS abnormality whereas in a study conducted in Iran on 22500 pregnancies, 112 (0.5 percent) pregnancies were found to have central nervous system defects. They concluded that the most common central nervous system congenital anomalies in Iran, East Azarbaijan, were Chiari malformation and hydrocephalus [22]. In our study we found that fetal brain develops throughout the pregnancy, Fetal CNS irregularities can be detected in late second and third trimester whereas in a study conducted in Israel on 840 pregnant females and 47 fetuses were diagnosed with CNS anomalies. They concluded that some CNS anomalies can only be detected in the end of second and third trimesters so, fetal CNS assessment should be considered when a third trimester scan is performed on patients for any reason [1]. While an another study in India on 7485 pregnant females and 24 cases were diagnosed with Central nervous system inconsistencies, the incidence of CNS anomalies detected by ultrasound was 0.31 percent. It has been decreasing over the years [6]. In China 2571 pregnant women were scanned and 14 fetuses were diagnosed with CNS anomalies [23]. In current study detected CNS anomalies included 2(0.5%) ventriculomegaly, 3(0.8%)acrania, 2(0.5%)encephalocele, 2(0.5%) bilaterally present choroid plexus cyst, 2(0.5%) hydrocephalus, 1(0.3%) agenesis of cerebellar vermis along with mega cisterna magna, whereas the study conducted in Saudi Arabia on 22880 pregnant women. They

diagnose CNS anomalies in 181 fetuses. There were 95 cases of ventriculomegaly (52.2%), 31 cases of neural tube defects (17.03%), 17 cases of cisterna magna (9.34%), and 12 cases of acrania (6.6 %) [24]. In the current study we concluded that early diagnoses of CNS abnormalities is the critical issue due to the most severe complications, Family counseling is really very important in such cases. In Turkey (Istanbul) 15000 expectant mothers in total were scanned, they diagnose CNS anomalies in 41 fetuses. They concluded that disability and bed rest are the two most serious side effects of major CNS anomalies, prognosis and early detection of these conditions have become crucial issues. On the other hand, fetal prognosis and family therapy are significant issues. Parents must decide whether or not to keep having children [25].

## CONCLUSIONS

Deficiency of folic acid, intake of drugs/medication during pregnancy can lead to the fetal CNS abnormalities. In our study, Acrania was the most common among all other CNS anomalies. Important issue is the early detection of CNS abnormalities due to the severe complications, such as disability and bed rest. Another significant problem is family counseling. Parents must decide whether or not to continue their pregnancies.

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## Original Article

## Frequency of Refractive Error in School Going Children Visiting Eye Opd with Complain of Headache and Eye Strain

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## ABSTRACT

Uncorrected refractive error in children leads to various problems in their daily life and can cause multiple problems. **Objective:** The current study was conducted to determine the presences of headache, eye strain and uncorrected refractive error in school going children. **Methods:** The study was conducted on 220 school going children of ages between 5 to 15 years. Patients with complain of headache and eye strain were included in the study after taking informed consent. All other patients with any type of squint, amblyopic, nerve palsies, or any other pathology were not included in the current study. Equipment used during the data collection include distance visual acuity chart (Snellen chart), trial box, occludes, pen torch, retinoscopy and auto refractometer. **Results:** Out of the total 220 participants, patients presented with complain of headache and eyestrain were 114 (51.8%) and 106(48.2%) respectively. Out of the total 220 patients, 80(36.4%) were myopic, 48(21.8%) were hyperopic and 46(20.9%) were astigmatic. Patients with no refractive error were 46(20.9%). Out of the total patients, 78(35.5%) found with mild degree of refractive error. Out of the total patients, 46(20.9%) were presented with visual acuity of 6/6. **Conclusion:** This study concludes that children complain of headache and eye strain can be associated with the uncorrected refractive error. Mild degrees of refractive error are more prevalent as compared to moderate and severe refractive errors. Myopia is more prevalent in school going children complaining of headache and eye strain as compared to hyperopia and astigmatism.

## INTRODUCTION

Good vision is vital for correct bodily and academic progress in growing children. They use their imaginative and prescient to guide other getting to know all processes. Since visual clues are key to how children study and function, impaired vision can have an effect on all components of the development of child (e.g., emotional, neurologic, cognitive and physical) by potentially limiting the range and types of records and experiences that is used for the processing of children health. Hence good vision is vital for every toddler. Globally, refractive error is taken into consideration to be the second main cause of treatable blindness and the purpose of visual impairment of which school children aren't any exception to this reality.

Refractive errors are a main contributor to visual impairment which is an extensive motive of morbidity in children globally. Despite the financial, social and fitness care advances which have occurred in our society, many school age youngsters aren't receiving good enough professional eye and vision care. Preventing vision troubles and retaining healthy eyes for all youngsters from birth via adulthood ought to come to be a public fitness priority in Nigeria [1]. Myopia additionally known as short sightedness is a refractive blunder in which with relaxed accommodation, parallel rays of mild converge to a focal point in the front of the retina. If we count on that there is a normal axial length of the eye and normal focal duration for

the optical system, then myopia can arise in the severe forms, the axial length of the eye may be normal and the focal length of the optical system shorter than normal, or the axial length of the eye longer than ordinary and the focal length of the eye's optical system is normal. Hyperopia also known as long sightedness may be described as a refractive abnormality in which with relaxed accommodation, parallel rays of mild converge to a focus at the back of the retina. Hyperopia is a natural shape of refractive error in infancy and early adolescence earlier than Emmetropization. Most new child toddlers have moderate hyperopia (approximately +2.00) with best a small quantity of instances falling in the moderate to high variety (>3.50D). Emmetropization typically consequences in gradual lower inside the stage of hyperopia in most children [2]. Astigmatism is a refractive anomaly in which the eye's optical structure is incapable of forming a specific image for a specific item because the refracting strength of the eye's optical system varies from one meridian to some other. In astigmatism, versions in symmetry of those curvatures (typically cornea) bring about rays failing to center on a single factor, the power of astigmatism is measured in cylinders, astigmatism is frequently found in affiliation with some power of myopia or hyperopia. However, astigmatism is widely categorized into irregular and regular types [3]. Headache is a main, yet beneath-diagnosed purpose of incapacity globally [4]. The universal one-year occurrence of headache in India is sixty-four% [5]. Children with headache have a decrease health-related quality of lifestyles, and go through an extra considerable effect on their education, because of school absenteeism and bad scholastic overall performance [6]. School-based totally cross-sectional studies globally have suggested a headache prevalence of approximately 20% in younger kids, and as much as 88% in children [7]. A Refractive Error Study in Children (RESC) in India showed hyperopia present in 7.7% of children and myopia in 7.4%. Overall occurrences of refractive errors were discovered to be 29.5%. Headache becomes the single most common place symptom said by 38.58% kids. Nearly 36.54% boys and 36.98% females had mild visual impairment at the same time as 4.80% boys and 2.75% women had severe visual impairment. Among the kids having refractive errors 61.02% kids did not use spectacles [8]. An upward trend of myopia turned into mentioned coinciding with school access (7-8 years) and 11-14 years' age around pubertal boom spurt [9]. Screening applications are designed to target these age groups in school health screening programs particularly in useful resource in poor locations. It is an extraordinary task to reduce the obstacles a few of the children to purchased and regularly put on the glasses [10]. Headache is a not unusual complaint in children and

teens. Headache occurrence quotes among youngsters' variety from 5.9% to 37.7% and develop in college-age (40-50%) and adolescent youngsters (eighty %)[11]. An assault of excessive headache can produce anxiety in each discern and infant; it represents one of the most common place reasons for a go to a pediatric emergency department (ED). In a pediatric ED, the number one goal is to apprehend the serious existence-threatening conditions requiring instant hospital treatment the various extensive spectrums of headache diagnoses. Moreover, in much less intense headache types, appropriate assessment and investigation may prevent needless hospitalization [12, 13]. Headache is the most typical neurological circumstance in terms of the range of human beings affected. It is also a commonplace symptom and fitness problem among school children. Though, the overall incidence of headache in children is 53% in developed international locations, the existence time incidence in adult will reach up to 77% [14, 15]. An epidemiologic survey of school going children discovered that about one 1/3 of the children who have been as a minimum seven years of age and one 1/2 of individuals who were as a minimum 15 years of age had repeated headache. Recurrent headaches can negatively impact a toddler's life in numerous methods, which includes absence from school, decreased academic performance, social stigma, and impaired potential to establish and keep peer relationships. The quality of lifestyles in a child with migraine gets impaired to a volume similar to cancer or arthritis [16, 17].

## METHODS

A hospital based descriptive cross sectional study was conducted at outpatient department of ophthalmology at Al Baqi Trust eye hospital, Sheikhpura. A sample size of 220 patients was calculated by using WHO sample size calculator. All the patients of ages between 5 to 15 years visiting eye department with complain of headache and eye strain were included in the study after taking informed consent. All other patients with any type of squint, amblyopic, nerve palsies, or any other pathology were not included in the current study. Equipment used during the data collection include distance visual acuity chart (Snellen chart), trial box, occlude, pen torch, retinoscopy and auto refractometer. Written informed consent attached was taken from all the participants. All information and data collection was kept confidential. Participants were remained anonymous throughout the study. The subjects were informed that there are no disadvantages or risk on the procedure of the study. They were also being informed that they will be free to withdraw at any time during the process of the study. Data were kept in under key and lock while keeping keys in hand. In laptop it was kept under



password. Statistical Package for the Social Sciences (SPSS) version 20 was used for the data analysis. The results were expressed as percentages and proportions for categorical variables.  $P < 0.05$  was considered statistically significant.

## RESULTS

Out of the total patients 220 (100%), patients presented with age group between 5-10 years are 95 (43.2%) and the patients with age group between 11-15 years were 125 (56.8%). Out of the total patients, 94 (42.7%) are males and 126 (57.3%) were females. Out of the total 220 participants, patients presented with complain of headache were 114 (51.8%) and patients presented with complain of eye strain were 106 (48.2%). Out of the total patients, 46 (20.9%) are presented with a visual acuity of 6/6. The patients with the visual acuity between 6/9-6/12 were 78 (35.5%), patients with visual acuity between 6/18-6/24 were 63 (28.6%), patients with visual acuity of 6/36-6/60 were 33 (15.0%) as shown in Table 1.

Visual Acuity	Frequency (%)
6/6	46 (20.9%)
6/9-6/12	78 (35.5%)
6/18-6/24	63 (28.6%)
6/36-6/60	33 (15.0%)
Total	220 (100.0%)

**Table 1:** Visual Acuity Wise Distribution of Participants

Out of the total patients, 174 (79.1%) patients are found with refractive error and 46 (20.9%) are not found with refractive error as shown in table 2.

Refractive Error	Frequency (%)
Present	174 (79.1%)
Absent	46 (20.9%)
Total	220 (100.0%)

**Table 2:** Refractive Error Wise Distribution of Participants

Out of the total 220 patients, 80 (36.4%) were found myopic, 48 (21.8%) were hyperopic. Patients found with astigmatism 46 (20.9%), patients with no refractive error were 46 (20.9%) as shown in table 3.

Type of Refractive Error	Frequency (%)
Myopia	80 (36.4%)
Hyperopia	48 (21.8%)
Astigmatism	46 (20.9%)
No refractive error	46 (20.9%)
Total	220 (100.0%)

**Table 3:** Distribution of Participants Based On the Type of Refractive Error

Out of the total patients, 78 (35.5%) found with mild degree of refractive error, 63 (28.6%) found with moderate degree of refractive error, 33 (15.0%) were found high degree of refractive error, 46 (20.9%) were presented with refractive error as shown in table 4.

Degree of Refractive Error	Frequency (%)
Mild	78 (35.5%)
Moderate	63 (28.6%)
High	33 (15.0%)
No refractive error	46 (20.9%)
Total	220 (100.0%)

**Table 4:** Distribution of Participants According to the Degree of Refractive Error

## DISCUSSION

A hospital based descriptive cross sectional study was done to assess the frequency and degree of refractive error in the patient presented with the complain of headache and eye strain and which type of refractive error is more likely found in the children of age between 5-15 years. The study was done at Al Baqi Trust Eye Hospital under considering the informed consent from the guardians of children. Social economic demographic characteristics were collected by pre tested questionnaire which includes information about age gender chief complain and the relevant information necessary. Both gender male and female with age group 5-15 years were included as similar in previous study according to current study the total number of participants was 220 (100%) while in previous study the number of participants were 414 (100%). 95 (43.2%) were present with age group 5-15 years. Patients with age group 11-15 years (56.8%) while in previous studies 162 (39.13%) were presented in age group 5-10 years while 252 (60.87%) were presented in age group [18]. According to our study patients having refractive error were 174 (79.1%) while the patients with no refractive error were 46 (20.9%). 114 (51.8%) were presented with complain of headache and 106 (48.2%) were found with complain of eye strain. According to previous studies patients with complain of headache were found 162 (39.13%) in male and 252 (60.87%) were found in females while in control group 187 (45.17%) were found in males and 227 (54.83%) were present in females [18]. This study shows close association of headache with refractive error as it was clearly shown in the past studies. The previous studies and our study shows that headache is closely associated with the moderate degree of refractive error [15]. According to current study patients with visual acuity 6/6 were 46 (20.9%). Patients' ranges visual acuity between 6/9-6/12 were 78 (35.5%). Patients with visual acuity between 6/36-6/60 were 33 (15%) while in previous studies, patients with visual acuity between 6/6-6/9 were found 302 (72.9%), 6/12-6/36 were found 109 (26.3%), patients having visual acuity < 6/60 were found about 3 (0.8%) [19]. According to this study, patients found with mild degree of refractive error were 78 (35.5%), patients with moderate degree of refractive error were 63 (28.6%) while the patients with high degree of refractive error 33 (15%) and the patients with no refractive error were

found 46(20.9%). According to the previous studies, patients found with mild level of myopia were 15, moderate 13, severe 0. Patients with hyperopia were found with the mild degree were 53, moderate were 8, severe 0 [19]. According to this present study the participants were divided on the basis of their different type of refractive error. Out of the total participants' patients found with myopia were 80(36.4%), patients with hypermetropia were found 48 (21.8%) while the patients with Astigmatism was 46 (20.9%) while the patients with no refractive error were found about 46 (26.9%). According to previous study the participants which were included in that study were found with complain of headache have a refractive error with the frequency of 228 (55.1%) while in control group 72 (17.39%) were found. 28(12.3%) were found with myopia in headache group while 48(66.7%) were found in control group. Hyperopia were found about 61(26.8%) in headache group and 14 (19.4%) were found in control group. Patients with astigmatism were found about 139(60.9%) in headache group while on the other hand 10 (13.9%) are found in the control group. While the patients with astigmatism were found with the rule astigmatism were 31, against the rule were 82 and oblique were found about 17. According to previous study it was found that myopia is more likely present in the patients with complain of headache and have a mild and moderate degree of myopia. While in our study it was found that the patients with headache have a myopic refractive error in the participants[20].

## CONCLUSIONS

This study concludes that children complain of headache and eye strain can be associated with the uncorrected refractive error. Mild degrees of refractive error are more prevalent as compared to moderate and severe refractive errors. Myopia is more prevalent in school going children complaining of headache and eye strain as compared to hyperopia and astigmatism.

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## Original Article

## Incidence of Restless Leg Syndrome Among Medical School Faculty Members

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## ABSTRACT

Restless leg syndrome is a neurological disorder in which there is unpleasant sensations in the legs. In medical school faculty members RLS is highly incident due to their working hours and therefore daytime sleepiness occur. **Objective:** The aim of the study is to find out incidence of RLS in medical school faculty members of Lahore working in government and private sectors.

**Methods:** This was a cross sectional study. In which population size of medical faculty members was 149. Data was collected from medical faculty members of MBBS, BDS, Pharmacy and Physiotherapy, working in government and private institution of Lahore through questionnaire which consists of demographics, RLS diagnostic criteria, IRLSSG, and Epworth rating scale. Descriptive statistics was applied to extract result. **Results:** The incidence of RLS among medical school faculty members is 51%, in which 38.2% are in MBBS department, 19.7% are in BDS department, 17.1 in Pharmacy department and 25.0% in Physiotherapy department. RLS severity showed significant association with daytime sleepiness which is  $p=0.00$ . **Conclusions:** Hence it is justified that RLS is highly diagnosed condition among medical school faculty members.

## INTRODUCTION

Restless leg syndrome (RLS) is a neurological sensory disorder which term was introduced by Karl -Ekbom in 1944 in it the person's sleep is affected [1]. Restless leg syndrome (RLS) is a troublesome and unbearable feelings in legs. The person forcefully tries to move their legs on bed. These sensations alleviate by moving temporarily [2,3]. It may occur when someone is sitting or standing for prolonged duration especially in medical faculty members because they have greater duration of work. RLS is one of disorder that causes restlessness and daytime sleepiness. In past studies the rest leg syndrome (RLS) was marked as psychoneurotic conditions. In contemporary medicines people are now more aware from this condition. However,

RLS is marked as "Disease mongering" condition. The name restless leg syndrome doesn't describe the true importance of it. The disease is taken for granted because it is not compulsory the patient looks unwell and normally remains asymptomatic during daylight [4-6]. One of issue in explaining RLS that there is no single lab test that can certainly proof existence of disease. Instead, the diagnosis completely relies on patients the clinical features and physician unfavorable judgment. Numerous sufferers don't seek guidance of the practitioners because their manifestations are not considered. They will be tagged as psychosis [7-8]. Recent studies have reported significant extensiveness of RLS among general population. Although

the variation exists in the criteria use to classify RLS, the researchers report widespread presence of RLS in general population to be 2.5 to 15% among the western population the prevalence is to be estimated higher than Asian population. In ethnically comparable population India RLS to be found is 2.1% The incidence of RLS is still assumed to be underestimated. The prevalence in females as twice as compared to male [9-10]. Although, majority with the RLS have intolerable feelings and several report the uncontrollable impulse to move the involved limb. The term used for sensation is dysesthesia [11]. In this condition there is a numbness, itch, pulling, creepy, burning, aching and crawly feelings in the legs. Some of them have control over this desire and some can detain through walking shaking and rubbing their legs. This is compared to scratch the "Mosquito bite" [12]. During the duration that a person can sit or lie down before apprehension the need to move leg decreases as it progresses. This is not possible to execute stationary activities such as watching TV, going to bed like sitting and reading in public place, in a car while few minutes in a traffic or while asleep [13]. Firstly, the indications must occur only at the bedtime and comparatively light. Once the victim is slow down, in falling sleep at bedtime may not be a problem. Those who have intense prosomes it can also occur during arousal. As, it gets trouble its moves towards the arms, legs, abdomens, neck, chest, back, facial and other muscles of the body [14]. It causes disrupted sleep and quality of life gets impair. The impulse in moving the legs becomes severe in the time of night. Person feels difficulty to take sleep at night. When the patient is not active at which time RLS symptoms are manifested as sudden movements of legs such that this condition is frequently accompanied by sleep disturbances Symptoms may become longer in medical faculty members who must work for 6-8 hours [15]. There are four essential clinical features of this syndrome. The desire to move the legs usually coexist with or occur due to miserable and uneasy perceptions in the legs. Sometimes the arms are involved in addition to the legs. Theses sensations start or aggravate during periods of rest, no movement such as lying or sitting but these indications are relatively or completely relieved with motion such as walking or stretching at least if activity continues. Reaction to dopaminergic treatment and periodic limb movement, positive family history was designated as supportive criteria for further diagnosis [16]. (RLS) is a condition which causes 20 percent decrease in work productivity. The most repeated form of this syndrome is known as primary RLS it is idiopathic. It seems alright with the idiopathic RLS. They have no other problem with their nervous or any of other organs. The average person and experienced physician would have no idea that

anyone possess this disorder when meeting them in a day unless they began to explain the discomfort at night and their wish to keep moving. Sometime their close relative even know they are mutually linked with this disorder. Secondary RLS is linked with the condition that is kidney failure, pregnancy and iron deficiency [17]. Over the years the variety of causes have been suggested for RLS this is a common medical disorder that increases the incidence as people gets older. Especially with the older ones may face the complications with some of the nerve fibers going to the legs. These are the cases that have an impact on the nerve damage for example, the general damage can see in neuropathy or with a radiculopathy also called a "pinched nerve" in the back. Therefore, the numerous don't have such a problem with their nerves [18-19]. The purpose of our study on restless leg syndrome in medical faculty members was that it is a medically undiagnosed condition. So, to find out its circumstances and prevalence in different departments of medical faculty members we done this study.

## METHODS

Cross sectional study was done at Government and Private Medical Colleges of Lahore. Which includes Riphah International University, Lahore, FMH, Lahore, University of Lahore, Superior University, Allama Iqbal Medical College, Lahore, Lahore Medical and Dental College, Lahore. Study was completed in four months (September 2018-December 2018) after the approval of Synopsis. For sample size calculation the previously mentioned prevalence of RLS among medical faculty members (10.25%) in past research by following formula was used:

$$n = \frac{z^2 \times p(1-p)}{\alpha_2}$$

Where,  $z = 1.96$  and  $\alpha = 0.00$ ; Total Sample size was 149 Non-probability Convenient Sampling Technique was used for data collection. Medical Faculty members of Government and Private Medical Colleges of Lahore between the ages of 25-65 Years. Both male and female medical faculty members with age ranging from 25-60 years' old who are fulfilling diagnostic criteria of RLS were included in this study. While medical faculty members who are suffering from stroke, have a history of limb weakness or impaired sensation, history of trauma to the limbs, history of Iron deficiency, Pregnancy, Comorbidities including Chronic Renal Failure, Hypertension, Diabetes, and heart disease were excluded from this study. Consent form was filled by medical school faculty members. Then, questionnaire was distributed to each individual faculty member of different departments i.e., MBBS, BDS, Pharmacy, and Physiotherapy of government and private universities of Lahore. Then they had filled all the

demographics, RLS criteria and its severity scale along with Epworth sleepiness scale. The data was analyzed by using the SPSS 21.0 statistical software. Descriptive Statistics including Frequency tables were used to show characteristics of faculty members. Cross tabulation was used for association and as verified by chi square which was ( $p=0.00$ ) There were four parts of questionnaire. In first part there was demographics of medical faculty members. Second part was related to diagnostic criteria of IRLSSG. Third part included severity scale of RLS and last part had Epworth rating scale to measure daytime sleepiness.

## RESULTS

The mean age of medical school faculty members who participated in the study was  $33.35 \pm 8.045$  years. With minimum value of age is 25 years and maximum age is 54 years. Total of 149 participated in this study. Among the total participants 47.7% (71) were male while 52.3% (78) were female. Data collected from the MBBS department was 30.2%, BDS was 19.5%, 20.8% was from Pharmacy and 29.5% was from Physiotherapy. Out of 149 participants, 51.1% (76) had a prevalence of RLS as they positively respond and have an urge or unpleasant sensation in lower limbs while 48.9% (73) said no to this question. Out of 149 participants, 40.3% (60) had unpleasant sensations or urge to move lower limbs worse in evening than a day as they positively respond while 59.7% (89) said no to this question. Out of 76 faculty members who are fulfilling the RLS criteria, 29% are from MBBS department, 15% from BDS, 13% from pharmacy and 19% of physiotherapy department. out of 45 members of MBBS 33.3% (15) faculty members has no severity, 6.7% (3) were mild, 46.7% (21) was moderate, 11.1% (5) was in severe state while 2.2% (1) has very severe symptoms. Among 29 members of BDS faculty, (14)48.3% has no severity, (3)10.3% was mild, (10)34.5% was moderate and (2)6.9% was severe in BDS department. Out of 31 faculty members of pharmacy department, (17)54.8% has no severity, (5)16.1% was mild, (7)22.6% was moderate and (2)6.5% was severe. Among 44 faculty member of physiotherapy 25(56.8) % has no severity, (2)4.5% was mild, (15)34.1 % , (1)2.3% was severe and (1)2.3% was very severe. In cluster bar chart 15% MBBS department have no severity of symptoms and 3% have mild and 21% have moderate severity of symptoms of RLS.5% have severe symptoms and 1% have very many symptoms in MBBS department. In BDS department 14% have no severity of symptoms 3% are mild 10% are moderate symptoms 2% have severe symptoms according to severity scale. Pharmacy department contains 17% with no severity 5% have mild 7% are moderate symptoms and 2% have severe symptoms. In chart 25% have no severity 2% have mild symptoms 15% have moderate symptoms and 1% lies in severe category

according to it. Table 1: Distribution of different medical departments

Data collected from the MBBS department was 30.2%, BDS was 19.5%, 20.8% was from Pharmacy and 29.5% was from Physiotherapy, Table 1

Distribution of departments	Frequency (%)	Valid Percent
MBBS	45 (30.2%)	30.2
BDS	29 (19.5%)	19.5
Pharmacy	31 (20.8%)	20.8
Physiotherapy	44 (29.5%)	29.5
Total	149 (100.0%)	100.0

**Table 2:** out of 45 members of MBBS 33.3% (15) faculty members has no severity, 6.7% (3) were mild, 46.7% (21) was moderate, 11.1% (5) was in severe state while 2.2% (1) has very severe symptoms.

IRLSSG scale	Frequency (%)	Valid Percent	Cumulative Percent
None mild	15(33.3%)	33.3	33.3
Moderate	3(6.7%)	6.7	40.0
Severe	21(46.7%)	46.7	86.7
Very	5(11.1%)	11.1	97.8
Severe	1(2.2%)	2.2	100.0
Total	45(100.0%)	100.0	

**Table 2:** IRLSSG scale for MBBS department a. Department = MBBS

Cross tab was used to check the association between the RLS severity and daytime sleepiness. From 149, 71 members have no daytime symptoms of sleepiness. Members which have mild symptoms, 4 members which are unlikely have abnormal pattern 5 members have average amount and 4 needs medical attention. According to this table, members who have moderate severity of RLS, 26 members are abnormal sleep, 12 faculty members have average amount of day time sleepiness symptoms and 14 of them requires medical help. Participants with severe RLS symptoms, 4 members have no issue with the sleep while 2 have average amount of daytime sleepiness. Although, 3 of them needs medical attention.

RLS severity	Daytime sleepiness				Total	p-value
	Unlikely that patient is abnormally sleep	Patient has an average amount of daytime sleepiness	Patient is excessively sleepy and should consider seeking medical attention	Patient is excessively sleepy and should consider seeking medical attention		
None mild	71	0	0	0	71	0.00
Moderate	4	5	4	0	13	0.00
Severe	26	12	14	1	53	0.00
Very	4	2	3	1	10	0.00
Severe	1	0	1	0	2	0.00
Total	106	19	22	2	149	

**Table 3:** Association between the RLS severity and daytime sleepiness

Do you feel an urge to move your legs, usually accompanied? or caused by uncomfortable or unpleasant sensations in the legs?		Frequency (%)	Valid Percent
Yes	Mbbs	29(19.7%)	38.2
	Bds	15(38.2%)	19.7
	Pharmacy	13(17.1%)	17.1
	Physiotherapy	19(25.0%)	25.0
	Total	76(100.0%)	100.0
No	Mbbs	16(21.9%)	21.9
	Bds	14(19.2%)	19.2
	Pharmacy	18(24.7%)	24.7
	Physiotherapy	25(34.2%)	34.2
	Total	73(100.0%)	100.0

**Table 4:** Distribution of RLS diagnosed faculty members in different departments

## DISCUSSION

The global incidence of RLS range from 2.5% to 15%. Studies conducted in Asian countries yielded a prevalence ranging from 1.1 to 2.1% while those from western countries showed an estimation of 4% to 9% (5). This study was designed to determine the occurrence of idiopathic form of disease between medical faculty members in Lahore. This cross-sectional study was conducted at various hospitals in Lahore. Past studies vary from 10.25% to 23.25% [20]. The sample size was 149 in which (n males= 71), (n females =78) from which 51% faculty members have prevalence of RLS according to diagnostic criteria of IRLSSG. In this study 4 departments were taken from medical schools. MBBS, BDS, Pharmacy and Physiotherapy. Study was measured according to 2 scales severity and Epworth but in Brazilian study Stanford scale was also included. According to severity scale medical faculty was evaluated in which maximum value was 11.1%,6.5%,6.5%,2.3% and minimum was 33.3%,48.3%,54.8%,56.8% MBBS, BDS, Pharmacy and Physiotherapy respectively. Thus, it was showing that severity is under alarming condition among medical faculty members. Sleepiness was detected according to Epworth scale the maximum value was 33%,18%,22%,33% MBBS, BDS, Pharmacy, Physiotherapy hence they had abnormal pattern of sleep. The chi-square is used for association between the Epworth and severity scale. Former study, presenting the day time sleepiness were clinical manifestation of RLS had (p value=0.04) [20] despite our study shows the correct and precise correlation between presence of RLS and daytime sleepiness (p value=0.00). In earlier researchers there was relation of age and RLS Like this research in our study there was no dependency with the age. Like earlier studies, smoking was a probable risk factor of restless leg syndromes. Our study also shows that one third of the person who smoke have RLS. Mcmnamaet.al showed that

application of physical activity program seeking the better conditioning provided the mild symptoms in the 6-week training. Therefore, it is important that implicating the activity before 1 hour have increased risk of developing RLS [12]. According to the circadian rhythm, forcefulness of repeated movements can be caused by RLS. Biological rhythm consists of 4 stages of sleep in which 12 stages of non-REM leads to awakening, sleep disturbance and daytime sleepiness. Excessive day time sleepiness can lead to obstructive day time sleepiness. Those faculty members whose sleep is less than 6 hours were 16.8% while above it was 83.2% [21]. By American study of sleep Medicine for the treatment of RLS dopaminergic drugs is significant drug. L-Dopa was the drug, but it had many side effect. In addition to that there are behavioral modification therapies. It is essential to treat the disease [22].

## CONCLUSIONS

In past it was misunderstood condition and paid no attention by the physician at some time it is highly widespread. Its distribution among the medical school faculty is high. Advancing age, smoking had no effect on restless leg syndrome.

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## Original Article

## Knowledge Attitude and Practices of Healthcare Service Providers about Minimum Service Delivery Standards

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## ABSTRACT

Worldwide Health care services are provided and regulated as well as monitored by applying standard regimens. It is pivotal for patient health, safety and efficient treatment and health services provision. **Objective:** To assess the knowledge, attitude and Practices of healthcare service providers about Minimum Service Delivery Standards. **Methods:** It is a cross sectional study in which questionnaire was developed to study minimum service delivery provision towards patients by professional health care providers. A complete Performa was filled by interviewing doctors (MBBS), dentists, nurses, dispensers and para medical staff working at BHUs and RHCs. The data was collected after informed consent following ethical considerations and guidelines by University of Lahore. The data was entered and analyzed using SPSS version 22. **Results:** The results show the good knowledge of HCPs was resounded in lowest parameter of 1.5% while poor knowledge was scored 95.5%. The attitude of HCPs toward was recorded the positive attitude 58.3% neutral 40.2% while negative attitude 1.5%. the Practices of MSDS at health facility was scored good Practices 4.9% Satisfactory Practices was recorded 0.4% while poor Practices of MSDS was recorded 94.7%. **Conclusion:** Using MSDS parameter the one can create a better environment of health care to patients. The medical and para medical staff should meet all standards assured in the current study to make a better place for the sake of health and treatment.

## INTRODUCTION

In all over the world healthcare delivery services are regulated by applying standardization regimens to improve the quality of healthcare services [1]. Regulation of Healthcare services delivery system is pivotal for patient safety and quality assurance & improvement [2]. Health is an utmost need of every person and it is the primary responsibility of provincial government to provide quality of healthcare services for their population. The Government of Punjab has established an elaborate system of healthcare facilities including a network of about 49 teaching hospitals, 26 DHQ Hospitals, 128 THQ Hospitals 318

RHCs, 2506 BHUs and 188 MCHC centers [1]. In 2010 an enactment to regulate the healthcare delivery services in public as well as private sector was endorsed in Punjab province of Pakistan. PHC is mandated to improve the quality of healthcare services through enforcement of service delivery standards in public and private sector. In order to facilitate the healthcare establishments, The PHC has introduced according to category specific and their scope of work [3]. PHC categorize Healthcare establishments are as, Cat-I Hospitals having more than 50 indoor bed strength, Cat-II-A Hospital having 31-49 indoor

Bed strength, Cat-II-B Hospitals 16-30 indoor Bed strength, Cat-II-C HCE 01-15 indoor Bed strength and Cat-III HCEs day care centers (OPD services only) [4,5]. PHC maneuver MSDS according to categories besides different in numbers as per their scope of work, The RHC is consist of 20 indoor beds and fall in category-II C and MSDS for RHC comprise of 10 functional areas 28 standards and 95 indicators [5]. While BHU is consist of 02-03 beds for only short admissions of patients to provide day care services and fall in Cat-III. So the MSDS for BHUs is comprise of 10 functional areas, 24 Standards and 75 indicators to improve the quality of healthcare services as per their service delivery packages [6,7]. The BHUs and RHCs mainly provide primary healthcare services at the door step of community. Approximately the RHCs and BHUs are providing services to about 80 Million patients per annum in Punjab [8]. A huge number of patient turn over on these facilities. So implementation of these service delivery standards can play important role to expand the service delivery structure [3]. There should be a mechanism of pre service and in service training of all medical professionals through health institutions [8]. The Service delivery standards may also be included in the Syllabus of health professionals. Furthermore, the teaching institutes and health department should conduct capacity building workshops of newly inducted doctors and allied health professionals and refresher trainings over a period of time [9]. It is a matter of quality assurance, quality improvement and patient safety [10]. Enforcement of these quality standards is also another challenge for the authorities as there are certain factors which may contribute in poor compliance for implementation of these standards. It may be lack of awareness of service providers about standards, hesitant arrogant behavior, misconceptions, political and socio-economic factors etc [11,12]. In 2010 the Punjab Healthcare Commission Act was passed, which mandates the Commission to improve the quality of services and regulate the health care establishments by implementing service delivery standards with the objective to eliminate avoidable errors in clinical and patient management areas, it is mandatory for all health care service providers to comply with MSDS to get the license from PHC [7,13,14]. The Punjab Healthcare Commission has started orientation program and trained only 02 healthcare service providers on MSDS from each RHCs and BHUs in Punjab and also provide MSDS reference manuals to facilitate the implementation of MSDS. But there is huge turn over regarding transfer posting of service providers at these facilities and frequent induction of doctors and Paramedics on regular basis. There is also no periodic and regular mechanism to monitor the implementation of MSDS by health facility in charge and District health

management team. There is no long term solution to sustain the implementation of these standards on these healthcare facilities [15,16]. There is a dearth about Minimum Service Delivery Standards awareness of Healthcare service providers working at Rural Health centers and Basic Health Units [17,18]. Although the Punjab Healthcare Commission has started orientation program and trained only 02 healthcare service providers on MSDS from each RHCs and BHUs in Punjab and also provide MSDS reference manuals to facilitate the implementation of MSDS [19]. There is huge turn over regarding transfer posting of service providers at these facilities and frequent induction of doctors and Paramedics on regular basis [20]. There is also no periodic and regular mechanism to monitor the implementation of MSDS by health facility in charge and District health management team. There is no long term solution to sustain the implementation of these standards on these healthcare facilities [17-21].

## METHODS

It is a cross sectional study in which questionnaire was developed to study minimum service delivery provision towards patients by professional health care providers. A complete Performa was filled by interviewing doctors (MBBS), dentists, nurses, dispensers and para medical staff working at BHUs and RHCs of District D.G. Khan. A self-administrated questionnaire is developed and validated by conducting pilot study on 15 healthcare service providers. The knowledge, attitude and practices construct will be measured using 15-item from yes to no answers 0-15 score. The data was collected after informed consent following ethical considerations and guidelines by University of Lahore. The data was entered and analyzed using SPSS version 22. The numeric data was summarized using descriptive statistics (mean and standard deviation). The categorical data like knowledge of MSDS was summarized using frequency and percentages.

## RESULTS

A questionnaire was developed with basic vitals of gender, age, qualification, designation and Type of HCE. This questionnaire was based on three main portions and each portion was filled carefully, which are: Knowledge, Attitude, Practices. Every part of questionnaire was consisting of 15 questions. Result of this pilot study analyzed using Cronbach's alpha value. More than 12 correct answers measure Good Knowledge (80%). More than 9-11 correct answers measure satisfactory knowledge (60-79%) and below 9 correct answers measures poor knowledge (below 60%).

Variables	No. of Questions	Sum of variances of questions	variances of total score	Cronbach's alpha value
Knowledge	15	1.70	6.36	0.7852
Attitude	15	1.32	5.00	0.7874
Practices	15	0.98	2.40	0.6346

**Table 1:** Cronbach's Values

HCE Type	Frequency(%)
BHU	128(48.5%)
RHC	136(51.5%)
Total	264(100.0%)

**Table 2:** The HCE type wise frequency of Healthcare Service Providers

There were 264 HCSP in this study in which 128 (48%) HCSP from BHUs and 136 (52%) HCSP from RHCs.

Qualification	Frequency(%)
MBBS	70(26.5%)
BDS	6(2.3%)
Nursing	19(7.2%)
Para medical staff	169(64.0%)
Total	264(100%)

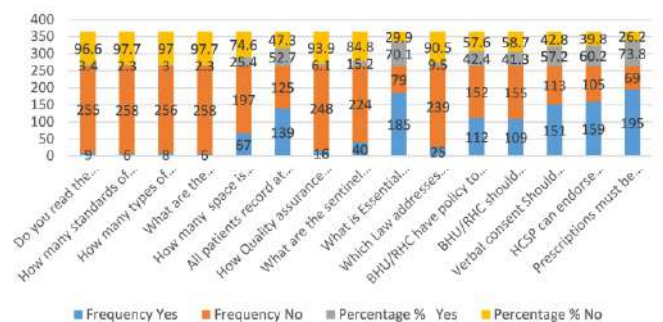
**Table 3:** The Qualification wise frequency of Healthcare Service Providers

There were 264 HCSP in which 70 (26.5%) MBBS, 06 (2.3%) Dental surgeons, 19 (7.2%) Nurses and 169 (64.0%) paramedical staff

Knowledge	Frequency(%)	Good	Satisfactory	Poor
		4(1.5%)	8(3%)	252(95.5%)
Attitude	Frequency(%)	Negative	Neutral	Positive
		4(1.5%)	106(40.2%)	154(58.3%)
Practice	Frequency(%)	Good	Satisfactory	Poor
		13(4.9%)	1(0.4%)	250(94.7%)

**Table 4:** The frequency and percentage of Healthcare Service Providers Knowledge, Attitude and Practices of MSDS

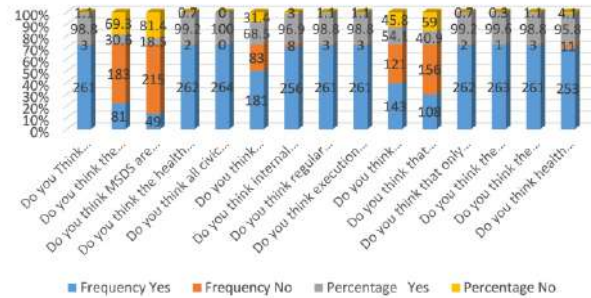
The study on 264 HCSP reveals that 1.5% good, 03% Satisfactory and 95.5% poor knowledge, 1.5% Negative, 40.2% Neutral and 58.3% Positive attitude. 4.9% good, 0.4% Satisfactory and 94.7% poor practices of MSDS.



**Figure 1:** The comparison of frequency and percentage of Knowledge of HCSP about MSDS

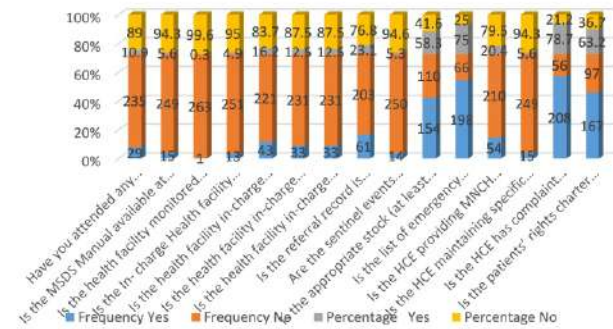
Multiple questions were asked from health service providers from this section "Knowledge". These questions were about MSDS, their number and types, compliance requirement, quality assurance, domicile policy, verbal and

endorse form consent. And most important question was done that was prescriptions are reviewed and stamped by medical officers or not. When professional HCPs were asked 15 different questions to judge their knowledge grip on provision of skills and MSDS to the patients, it was noticed that they had least knowledge about MSDS and health care facilities. Their response was least recorded at question in which it was asked that "do you know how many standards are there for BHU" only 2.27% HCPs were aware to it. 73% of professional HCPs were agreed on the point that patient's prescription should be stamps and alleged.



**Figure 2:** The comparison of frequency and percentage of Healthcare Service Providers Attitude about MSDS

Second portions in this questionnaire were included as attitude of HCPs towards MSDS. A list of questions such as essential to improve quality, easily implementation, emergency mock arrangements, all documents of HCPs should be attested, patients comfort zone, regular internet monitoring etc. Response rate of HCPs was different based on their knowledge, skills and grips. When they were asked that patient comfort amenities should be provided by HCE, it scored 100 percent attitude toward positive response while least percentage was shown on question that "can HCPs can easily implement the MSDS at health facility"



**Figure 3:** The Comparison of frequency and percentage of Healthcare Service Providers Practices of MSDS

In 3rd portion of this survey based pilot study questions were designed to check implantation of MSDS such as attending MSDS conference or seminars, maintenance of patient file, record maintenance, organized events, stock of essential medicines, dealing with emergency situations, complaint management by health care providers, charts and flex banners pasting in hospitals and health care units

for patients awareness etc. in case of implementation of MSDS multiple questions were asked and it was observed that attitude towards implementation was not satisfactory except in few cases. 0.37% of application of MSDS was responded in positive response while 78.7% professional HCPs responded that HCE has complaint management system.

## DISCUSSION

In accordance to the present study a sample of 264 Healthcare service providers from BHUs and RHCs was collected among Doctors, Dental surgeons, Nurses, LHVs, Midwives and Para medical staff. In this sample 156 (51.1%) Healthcare Service Provider were females and 108 (48.9%) were males. The HCSP were with different age groups 21-30 years 103 (75.2%), 31-40 years 22 (16.1%), 41-50 years 8 (5.8%) and 51-60years 4 (2.9%). This indicates majority of Healthcare Service Provider were in young age group 70.2% and about 16.1% were from 31-40-year age group and remaining about 14% were old age whereas the previous study by A Ranasinghe relate with the current findings [22]. In accordance to this study HCSP represent 128 (48.5%) from BHUs and 136 (51.5%) from RHCs. The Healthcare Service Provider were representing different qualification and designations. in which 70 (26.5%) MBBS doctors, 06 (2.3%) Dental surgeons, 19 (7.2%) Nurses and 169 (64%) paramedical staff. It reveals majority of Healthcare Service Provider were para medical staff and doctors. A study was conceded in Nigeria 2016 about knowledge attitude and Practices of healthcare providers to appropriate medical waste management and occupational safety. The results revealed that 40% of healthcare managers had got trained on medical waste management and occupational safety. Only 1.9% hospitals had good knowledge and were Practices safe waste disposal while 98.1% were poor knowledge & Practices inadequate waste disposal. While 100% Healthcare facilities have good attitude to Practices safe waste disposal [23]. In accordance to the present study the gender wise study reveals 108 (48.9%) male HCPs 66 (25.0%) positive attitude toward MSDS while 42 (15.9%) have Neutral attitude towards MSDS and 156 (51.1%) female HCPs 88 (33.3%) have positive attitude 64 (24.2%) Neutral attitude and only 04 (1.5%) Negative attitude towards MSDS. In accordance to the present study conducted on 264 HCPs. The qualification wise distribution of HCPs reveals 70 (26.5%) MBBS doctors showed 43 (16.3%) Positive attitude, 27 (10.2%) Neutral attitude and 0% Negative attitude. 06 (2.3%) BDS doctors showed 03 (1.1%) Positive attitude 03 (1.1%) Neutral attitude and 0% Negative attitude. 19 (7.2%) Nurses showed 12 (4.5%) Positive attitude 07 (2.7%) Neutral attitude and 0% Negative attitude. And 169 (64.0%) paramedical staff showed 96

(36.4%) Positive attitude 69 (26.1%) Neutral attitude and 04 (1.5%) Negative attitude about MSDS. Sandeep Kumar et.al 2008 conducted a study in Lucknow about knowledge, attitude and Practices of hospital Healthcare providers with regard to pre-hospital and emergency care in Lucknow. Median scores of knowledge 52% (26/50), attitude 82% (41/50) and Practices 54% (27/50) showed less than adequate knowledge and Practices. However, a positive attitude was seen in all the 3 group of respondents i.e. resident doctors, hospital consultants and private practitioners [24]. JB Suchitra et.al 2017 carried out a study on Impact of education on knowledge, attitudes and Practices among various categories of health care workers on nosocomial infections. The study exposed Post graduates scored good and admirable results. However, this deteriorated with the passage of time. The hand washing Practices was compiled different among the different HCWs. Total compliance was 63.3% and ward aides were most compliant 76.7% [25].

## CONCLUSION

This study shows that Knowledge of HCPs working at BHUs and RHCs is poor as Majority of staff was newly appointed and not aware of MSDS requirement. Due to which quality of healthcare and patient safety is extremely compromised. Practices of MSDS are associated with knowledge of HCPs about MSDS. However, majority of HCPs working at BHUs and RHCs have good attitude towards MSDS implementation.

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## Original Article

## Pain and Difficulty Level in Working Females having Plantar Fasciitis of Multan City

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## ABSTRACT

Plantar fasciitis is an inflammation of the plantar fascia that is most commonly seen in the working population with prolonged standing and inappropriate shoe wear. Plantar fasciitis is presented with heel pain, resulting in disturbances of activities of daily life. **Objective:** To determine the pain and difficulty level in working females of Multan having plantar fasciitis. This will help them in reducing pain and difficulties by reducing risk factors that can cause plantar fasciitis. **Methods:** A cross-sectional study was conducted with 150 working females of Multan having plantar fasciitis. Data were collected through the plantar fasciitis pain scale, visual analogue scale, and windlass test. Data were obtained non-randomly from different working places of Multan. (Hospitals, Schools, Colleges, Salons, and Malls). 150 respondents were of age group 30-50 years were included in the study. **Results:** The pain and difficulty level in working females of Multan having plantar fasciitis was 72%. Surface pain was 46% and deep pain was 54%. 34% of subjects suffer from pain throughout the day with regular intervals. 18% had pain only when they first get up. 67% of women feel comfortable walking on toes while 33% feel uncomfortable. Pain interferes with athletics and weight-bearing activities of 53% of women. **Conclusion:** The pain and difficulty level in working females of Multan having plantar fasciitis is 72%. It increases with an increase in associated risk factors, such as prolonged standing, long working hours, inappropriate shoe wear, and postural malalignment.

## INTRODUCTION

A cross-sectional study was conducted on 150 working females of Multan having plantar fasciitis, to find out the level of pain and difficulty. The duration for this study was six months after the approval of the synopsis. The working ladies of age 30-50 years having a minimum of five years of experience, were selected to figure out the pain and difficulty level that is present. Plantar fasciitis is a disorder of the insertion site of the ligament on the bone characterized by micro tears, breakdown of collagen, and scarring. The plantar fascia plays an important role in the normal biomechanics of the foot and is composed of three segments, all of which arise from the calcaneus. The fascia itself is important in providing support for the arch and providing shock absorption [1]. Plantar fasciitis, a chronic

degenerative process that causes medial plantar heel pain, is responsible for approximately 1 million physician visits each year [2]. In America, two million people receive the treatment for plantar fasciitis each year [3]. When plantar fasciitis occurs, the pain is typically sharp and usually unilateral (70% of cases). Bearing weight on the heel after long periods of rest worsens heel pain in affected individuals. Individuals with plantar fasciitis often report their symptoms are most intense during their first steps after getting out of bed or after prolonged periods of sitting. Symptoms typically improve with continued walking. Common symptoms include numbness, tingling, swelling, or radiating pain. Typically, there are no fevers or night sweats [4]. Since inflammation plays either a lesser

or no role, a review proposed it be renamed as "Plantar Fasciosis", "Painful Heel Syndrome", "Runner's Heel", "Tennis Heel", "Calcaneal Peritonitis", and "Heel Spur Syndrome". During normal circumstances, the plantar fascia acts like a biomechanical shock absorber, supporting the arch in the foot but, if the tension on the plantar fascia exceeds the limits of the tissue, small tears can develop in the fascia. Repetitive tension, stress, and subsequent tearing can cause the fascia to become inflamed and painful. Plantar fasciitis is regarded as a self-limiting disease, and over 90% of patients will be cured within 6 months with non-operative scenarios [5]. Laboratory investigation performs to rule out underlying endocrine and inflammatory conditions. X-rays are required to rule out other causes of heel pain, specifically calcaneal stress fractures and not calcaneal spur, as its rules in the pathogenesis of PF are controversial [6,7]. MRI is performed in patients who are resistant to treatment, to exclude alternative diagnoses that were not observed on the X-ray, such as a calcaneal stress fracture, calcium deposit, or soft-tissue tumor. Ultrasonography is the study imaging of choice due to its low cost when the diagnosis of plantar heel pain is unclear, but it requires a specialized training personal [8]. Between 4% and 7% of the general population has heel pain at any given time about 80% of these are due to plantar fasciitis [9]. Approximately 10% of people have the disorder [10]. Conservative treatment includes: physical treatment such as low dye strapping, therapeutic orthotic insoles, orthotic devices, night splints, Achilles and plantar fascia stretching; pharmacotherapy such as oral inflammatory medication, cortisone injections, and botulinum toxin injections. Treatment should start with stretching of the plantar fascia, ice massage, and nonsteroidal anti-inflammatory drugs. Many standard treatments such as night splints and orthoses have not shown benefit over placebo. These days, the treatment options available include autologous plasma transfusions, corticosteroid injections, physiotherapy-like strength training, and Extracorporeal Shock Wave Therapy (ESWT). Recalcitrant plantar fasciitis can be treated with injections, extracorporeal shock wave therapy, or surgical procedures, although evidence is lacking. Endoscopic fasciotomy may be required in patients who continue to have pain that limits activity and function despite exhausting nonoperative treatment options. ESWT is comparable to surgical plantar fasciotomy without any operative risks and yields good long-term effects [11, 12]. Effective treatment is predicated on the modification of risk factors and the implementation of an evidence-based treatment approach. Ultimately, a good prognosis is expected. Approximately 85% to 90% of patients with plantar fasciitis can be successfully treated without

surgery. Methods include rest, Over-the-Counter (OTC), Nonsteroidal Anti-Inflammatory Drugs (NSAIDs), stretching, counter-strain technique, orthoses, corticosteroid injections, Extracorporeal Shock Wave Therapy (ESWT), and ultrasound therapy [2]. The natural history of PF is often self-limited and resolve in 80% of the patients with-in 1-4 years regardless of the treatment [13, 14]. What makes the patients seek medical attention is either the irritation or the incapacitating pain at the time of an attack. For that, trial of conservative therapies is advised before more invasive treatments are attempted [8, 15].

## METHODS

A cross sectional study was conducted in general population of Multan city. The study was completed within "6 months" after the approval of synopsis. Sample selection was based upon the inclusion and exclusion criteria. The sample size was taken by using the non- probability purposive sampling technique. The sampling tools were the plantar fasciitis pain/disability scale, visual analogue scale, and windlass test. Inclusion criteria; working females of 30 to 50 years' age with minimum 5 years of working experience. Exclusion criteria; presence of fracture in foot bones, recent surgery of foot, mentally unstable working ladies, having musculoskeletal disorders and other comorbidities, pathological disease, osteoporotic females, and congenital diseases of foot. On the initial appointment the patients were assessed to rule out the possibility of presence of any of the signs mentioned in the exclusion criteria. After that they were requested or offered to participate in the study. A detailed consent form was duly signed by each patient willing to participate in the study and the filled out plantar fasciitis pain/disability index questionnaire. The main aim of the study is to search out pain and difficulty levels in working females having plantar fasciitis. This study can facilitate in reducing pain and difficulties in those operating females having plantar fasciitis.

## RESULTS

The pain and difficulty level in working females of Multan having plantar fasciitis is 72% above age group 50. Signs and symptoms of plantar facilities increased with prolonged standing and relieved by rest. Surface pain was 46% and deep pain was 54%. 34% of subjects suffer from pain throughout the day with regular intervals. 18% women have pain only when they first get up. 67% of women feel comfortable walking on toes while 33% feel uncomfortable. Hence, it is comfortable to walk on toes than walk flat footed for patients. Pain interferes with athletics and weight-bearing activities of 53% of women. The associated risk factors account for pain and difficulty in working

females having plantar fasciitis are prolonged standing 49.01%, bad posture 18.30 %, inappropriate shoes 10.45%, Obesity 12%, and Others 14 %. Pain and difficulty levels affect most commonly women above 50 years of age.

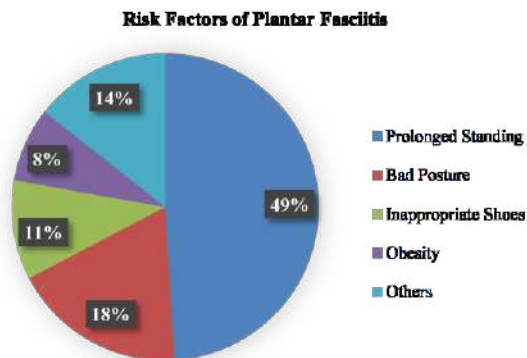


Figure 1: Percentage of risk factors influencing pain and difficulty level in plantar fasciitis

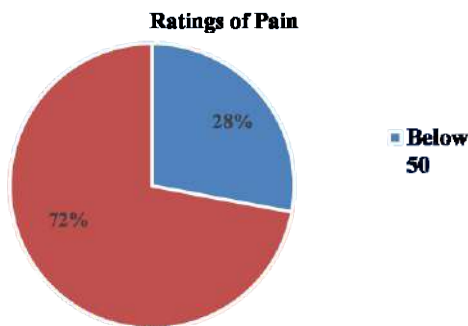


Figure 2: Ratings of pain depending on patient age

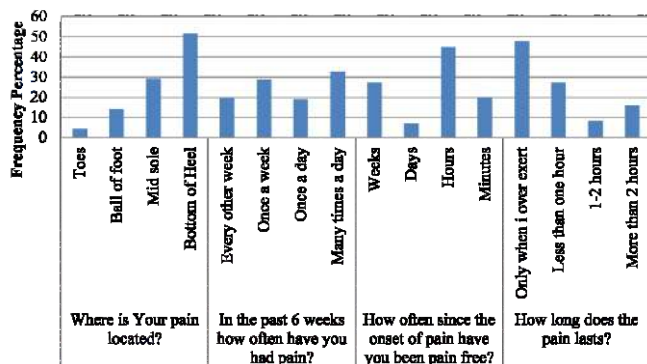


Figure 3: Location of pain, frequency of pain, duration of pain, and pain free time

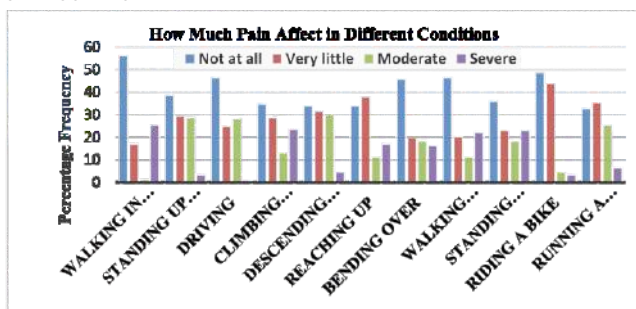


Figure 3: Location of pain, frequency of pain, duration of pain, and pain free time

Thus by concluding this study, it is found out that pain and difficulty level in working females having plantar fasciitis increases (72%) with age as in this study, above 50 years of age. Women are having more troubles in facing prolonged standing (49%), walking (14%), and running (11%). Pain level was intense when they took their first step in the morning and during long standing working hours. Obesity (8%), inappropriate shoe-wear (10%), and postural abnormalities (18%) may influence difficulty level. Hence, we can improve and reduce pain and difficulty level by keeping in mind the above mentioned risk factors and taking precautionary measures accordingly.

## DISCUSSION

This present study was conducted to determine pain and difficulty level in working females of Multan having plantar fasciitis. Previous studies report that plantar fasciitis is common with prolonged standing and weight-bearing tasks like running and walking and as the duration of these activities increases, a cross-sectional study by Robert and his colleagues "Risk Factor of Plantar Fasciitis among Assembly Plant Workers" working at least for last 6 months with full-time employment. It was concluded that as time spent standing increases the prevalence of plantar fasciitis increases. In the current study, we selected working females who spent most of their time standing inappropriately with postural mal-alignment. Plantar fasciitis is commonly present with heel pain. The research was conducted in 2015 to find out the prevalence and risk factors of plantar fasciitis in heel pain patients. Goweda et al, [16] used the cross-sectional method and selected 270 patients from 5 health centres of Makkah, KSA. The authors designed a self-structured interview questionnaire in which demographic data and risk factors of plantar fasciitis were evaluated. Patients height, weight, BMI was also calculated. This research found that 57.8% had plantar fasciitis among heel pain in which 56.4% were male, 66.7% were obese, 58.3% were wearing inappropriate shoes, and 89.7% had a sedentary lifestyle. In the present study, we selected 150 female workers by using the (PFPS) Plantar Fasciitis Pain/Disability Scale. This present study was conducted to determine pain and difficulty level in working females of Multan having plantar fasciitis. Nahin RL, et al [17] conducted a research on "Prevalence and Pharmaceuticals Treatment of Plantar Fasciitis" in "United States" in 2018. It revealed that 85% of sample was diagnosed as plantar Fasciitis with pain. Higher prevalence was seen in women (1.19%) versus men (0.47%) in age group of 45-64 years (1.33%) versus age group of 18-44 years (0.53%), in obese (1.48%) versus those who have body mass (less than 25) (0.29%). 41.04% of PF were seen using prescribed medications for pain. (4.01%) NSAID's, (2.21%)



opioids were the most prevalent prescribed drugs PF pain. They were also seen using analgesics for pain management. In this study we have observed only working females with 150 working size. We have studied women both with obese and lean body mass. Rasenberg N. et al, conducted a research on "Incidence, Prevalence, and Management of Plantar Heel Pain". A retrospective cohort study in "Dutch Primary Care". The overall incidence PHP was 3.83 cases per 1000-year. The incidence of female was 4.64 and of males was 2.98. Overall prevalence of PHP was 0.4374%. The incidence of PHP was seen on its peak in September and October of each year [18]. In this study we have conducted research on working females only during eid festivals and long working-hour durations. They reported heel pain during this time. Patricia Palomo-Lopez [19] did cross-sectional descriptive study to evaluate and compare the impact on Quality of Life (QoL) related to foot health and general health between males and females with PF [20]. Physical examination, data, and the self-reported Foot Health Status Questionnaire (FHSQ) declared that females with PF showed a worse health-related QoL for foot pain, foot function, footwear, and general foot health than males. In current study the prevalence of plantar fasciitis is per 150 working females. We have observed working females of Hospitals (House Officers), Schools (Teachers), Malls (Sales Girls), and Salon (Beautician) suffer more from foot disorders, plantar fasciitis, and face more difficulty in standing and walking.

## CONCLUSIONS

It is concluded that pain and difficulty level in working females of Multan having plantar fasciitis was common. Signs and symptoms of plantar facilities increased with prolonged standing and relieved by rest.

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## Original Article

## Role of Ultrasound and Colour Doppler in Assessment of Thyroid Nodules

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## ABSTRACT

Thyroid nodules, both macroscopic and microscopic, are widespread in the general population with up to 80% of people having them at autopsy. Ultrasonography is now widely available to diagnose thyroid nodules. **Objective:** To determine the role of ultrasound and colour doppler in assessment of thyroid nodule. **Methods:** This cross-sectional study was conducted at Aziz Bhatti Shaheed Teaching Hospital Gujrat, Pakistan from 1<sup>st</sup> February to 20<sup>th</sup> June, 2022. In this study total 70 patients with thyroid nodules were included who visited the hospital OPD with the complaint of neck pain and difficulty in swallowing. It included individuals with all ages of wither gender. People with the history of previous neck surgery were excluded. A linear high frequency transducer was used on Toshiba Aplio XG ultrasound machine. Data were analysed by SPSS version 22. **Results:** Total 70 patients were included in this study. Their age ranged from minimum 25 to maximum 74 with median age 47.50 years. As regard age, the mean age of study population was 46.057 ± 11.910. The diagnosis was confirmed by ultrasound and color doppler. As regard ultrasound findings, we classified type of nodule as irregular nodule (n)2.9%, left solitary nodule (n)21.4%, right solitary nodule (n)30.0%, isthmus nodule (n)7.1%, multi-nodule goiter (n) 18.6%, bilateral nodule (n)10.0%, heterogenous thyroid nodule (n)7.1%, complex thyroid nodule (n)2.9% were present. As regard color doppler flow present in (n)32.9% and no flow seen in (n) 67.1%. **Conclusions:** Ultrasound is a rapid and secure way to evaluate thyroid nodules. It is the most accurate and cost-effective method for evaluating and monitoring thyroid nodules.

## INTRODUCTION

Solid or fluid-filled lumps called thyroid nodules develop in the thyroid gland, which is positioned immediately above the breast bone at the base of neck. The majority of thyroid nodules are benign and do not produce symptoms [1, 2]. Thyroid nodules are malignant in just a small percentage of cases. Thyroid nodules are four times as prevalent in women as they are in males, and they are more common in those who live in iodine-deficient areas [3, 4]. While the majority is benign, roughly 5% of all palpable nodules are cancerous. 4–7% of the population, or 10–18 million people, have palpable thyroid nodules, whereas nodules found by accident during an ultrasonography estimate a prevalence of 19–67% [5, 6]. Thyroid nodules come in many different shapes and sizes. The most common type of nodule is a colloid nodule, which has no elevated risk of cancer. Follicular adenomas, for the most part, are harmless.

Follicular malignancies are discovered in about 5% of micro-follicular adenomas [7, 8]. A solitary palpable the most typical sign of thyroid cancer is a thyroid nodule. Thyroid cancer that occurs most frequently is called papillary carcinoma [7, 9]. Nodules less than 1 cm in diameter are typically undetectable unless they are situated in the anterior thyroid lobe. Larger lesions are easier to palpate, with the exception of those deep into the gland. Regardless, nearly half of all ultrasonography-detected nodules are missed on clinical inspection [10, 11]. Ultrasound (US) has emerged as a useful diagnostic tool for the assessment of thyroid nodules. It has a high sensitivity for finding nodules, and it may use the sonographic characteristics of nodules to determine whether further testing is necessary [12]. Because of its safety, non-invasiveness, lack of radioactivity, and effectiveness, the

best method for identifying thyroid problems is ultrasonography. It can also detect the location, presence, shape, size, and number of thyroid nodules, unilateral or bilateral, marginal, echo structure, echogenicity, and calcifications [13]. The ultrasound shows characteristics malignancy characteristics such as ill-defined margins, irregular shape, hypo-echogenicity, heterogenicity, and the absence of cystic lesions or the appearance of a halo, the presence of calcification, and invasion of nearby organs [14]. Only 4 to 7% of the population has palpable nodules with imaging investigations revealing up to 10 times more nodules, the majority of which are benign [15]. High-resolution ultrasonography, which is able to see small nodules as small as 2mm, can identify them when physical examination cannot [16]. Thyroid nodules are more common in women than in males (4:1), and the prevalence of thyroid nodules rises with age, reaching 50% in women over 70 [17]. With the increased use of neck ultrasonography or other imaging and early identification and treatment, more nodules are discovered by chance [18]. Thyroid nodule can be accessed via Colour Doppler imaging, with the flow pattern of the lesion being characterized into four kinds. In type 0 colour flow absent, type 1 Absent peri-nodular blood flow and slightly intra-nodular blood flow, type 2 prominent blood flow at periphery of nodule, basketlike appearance with or without blood flow at centre (Halo sign), type 3 The nodule has a distinct colour flow across it with inferno Thyroid nodule can be accessed via colour doppler imaging, with the flow pattern of the lesion being categorized pattern [19]. Ultrasound examination of the nodules is a quick and efficient diagnostic way to distinguish between different types of nodules their size, shape, echotexture, unilateral, bilateral as well as a colour doppler assessment of the vascularity of the nodules. This could be extremely beneficial to the patient, since they will be able to begin treatment immediately upon an ultrasound diagnosis, preventing the cancer from spreading to their organs.

## METHODS

This cross-sectional study was conducted at Aziz Bhatti Shaheed Teaching Hospital Gujrat, Pakistan. from 1st February to 20th June. It included individuals with all ages of either gender. In this study total 70 patients with thyroid nodules were included who visited the hospital OPD with the complaint of neck pain and difficulty in swallowing. Peoples with a history of previous neck surgery were excluded. A linear high frequency transducer was used on Toshiba Aplio XG ultrasound machine. Data were analysed by SPSS version 22.0. The patient was placed in a supine position with a pillow beneath the shoulders to allow the use of a high frequency probe to help locate pathological conditions and to see the thyroid gland optimally. The exam

was done with the neck in a hyperextended position. The thyroid glands right and left lobes was scanned in longitudinal and transverse planes. During the colour doppler examination, the patient was positioned in a supine posture with the neck hyper extended and avoid swallowing during the procedure, and a high frequency linear probe was used. Sagittal and transverse scans along the nodule's maximal diameter were used to determine its vascularity pattern.

## RESULTS

Total 70 patients were included in this study, minimum age 25, maximum age 74, mean age  $46.057 \pm 11.910$ , shown in Table 1.

	N	Minimum	Maximum	Mean $\pm$ SD
Age of Patients	70	25.00	74.00	46.06 $\pm$ 11.91

**Table 1:** Age of patients

As regard ultrasound findings, we classified type of nodule as irregular nodule (n) 2.9%, left solitary nodule (n) 21.4%, right solitary nodule (n) 30.0%, isthmus nodule (n) 7.1%, multi-nodule goitre (n) 18.6%, bilateral nodule (n) 10.0%, heterogeneous thyroid nodule (n) 7.1%, complex thyroid nodule (n) 2.9% were present showed in table 2.

Types of thyroid nodules	Frequency (%)
Irregular Nodule	2 (2.9%)
Left Solitary Thyroid Nodule	15 (21.4%)
Right Solitary Thyroid Nodule	21 (30.0%)
Isthmus Nodule	5 (7.1%)
Multi Nodular Goitre	13 (18.6%)
Bilateral Thyroid Nodule	7 (10.0%)
Heterogeneous Thyroid Nodule	5 (7.1%)
Complex Thyroid Nodule	2 (2.9%)
Total	70 (100.0%)

**Table 2:** Different types of thyroid nodules on ultrasound

As regard colour doppler flow present in (n) 32.9% and no flow seen (n) 67.1% showed in table 3.

Findings	Frequency (%)
Flow	23 (32.9%)
No Flow	47 (67.1%)
Total	70 (100.0%)

**Table 3:** Colour Doppler findings

## DISCUSSION

The current study shows right solitary thyroid nodules was present 30% and left solitary nodules was present in 21.4% and multinodular goitre was present in 18.6%. A study done by Kamran M. et al, shows the frequency of thyroid incidentalomas in Karachi population with solitary nodule present in 55% and multiple nodule present in 45% of subjects [20]. This current study showed least patients with irregular margin nodules, only 2 patients had irregular margin nodules. A study done by Sudhir et al, on incidental thyroid nodules an ultrasound screening of the neck region

prevalence and risk factors their study showed out of 15 patients, 11 had margins that were clearly defined, whereas 4 had ill-defined margins. That study determined that nodules that lost their smooth border were suspicious nodules that need more testing to establish the diagnosis [21, 22]. In the current study, we classified the type of nodule based on ultrasound findings. Irregular nodule, left solitary thyroid nodule, right solitary thyroid nodule, isthmus nodule, multinodular goitre, bilateral thyroid nodule, heterogeneous thyroid nodule and complex thyroid nodule. Irregular nodule 2.9%, left solitary nodule 21.4%, right solitary nodule 30.0%, isthmus nodule 7.1%, multi-nodule goitre 18.6%, bilateral nodule 10.0%, heterogeneous thyroid nodule 7.1%, complex nodule 2.9% were present. In this study classified the type of nodule as solitary nodule were present 64% of all patients and multi-nodule was 12% of all patients [20, 23]. As for the nodular outline in the current study, irregular or ill-defined nodule were present 2,9% in 2 patients. In this study ill-defined or irregular nodule were present 28% in 7 patients. A crucial criterion for distinguishing between malignant and benign nodules was the presence of poorly defined margins in malignant thyroid nodules [24, 25]. In the current study doppler results showed presence of flow in (n) 32.9% and no flow were seen in (n) 67.1%. The value of using the ultrasound (US) is considered as a diagnostic tool for suspected nodules. Additionally, ultrasound can make it simple to distinguish between nodule type, number, size and extent as well as echogenicity, calcification, margin, component and vascular involvement.

## CONCLUSIONS

Ultrasound is a rapid and secure way to evaluate thyroid nodules. It is the most accurate and cost-effective method for evaluating and monitoring thyroid nodules. Additionally, ultrasound can differentiate between various nodule types and their sizes, shapes, echotextures and vascularity involvement of nodules with central intra-nodular vascularity are regarded as suspicious nodules in color doppler.

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## Original Article

## Association Between Pelvic Floor Dysfunction and Metabolic Syndrome

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## ABSTRACT

The failure to properly relax and coordinate your pelvic floor muscles in order to perform a bowel movement is known as pelvic floor dysfunction. The current cross-sectional study's goal is to establish a link between metabolic syndrome and pelvic floor disorders. The syndrome is made up of a number of variables, including "insulin resistance, visceral obesity, atherogenic dyslipidemia, endothelial dysfunction, hereditary vulnerability, increased blood pressure, hypercoagulable condition, and psychological stress." **Objective:** Association between "pelvic floor dysfunction and metabolic syndrome" in middle aged women. **Methods:** This article summarizes research from Jinnah Hospital that sought to ascertain the relationship between metabolic syndrome and abnormalities of the pelvic floor. 277 female patients were chosen for this cross-sectional investigation using a non-probability convenient sampling strategy. According to the inclusion criteria, information on female hospital patients aged 40 to 77 years old was gathered. Self-made questionnaires were filled by respective patients. Data analysis was performed in SPSS version 21. **Results:** There is no association between "pelvic floor dysfunction and metabolic syndrome" as the value is greater than 0.05. **Conclusions:** In middle-aged women, we were unable to find a connection between "metabolic syndrome and pelvic floor dysfunction." We are well aware that women's dysfunction negatively impacts their quality of life and puts a strain on the nation as a whole on the socioeconomic front. Finding solutions to reduce this stress will benefit women and the nation as a whole in the long run.

## INTRODUCTION

Insufficient pelvic floor muscle activity leads to a wide variety of symptoms and anatomical differences known as pelvic floor dysfunction (PFD). The three-planed muscle complex with a dome shape that makes up the pelvic floor. Its complex actions include rising, squeezing, tightening, and relaxing. The pelvic floor muscles enable bladder and bowel emptying, support orgasm and sexual pleasure, and maintain the lower abdominal and pelvic organs [1]. Women experience pelvic floor problems commonly. Pelvic floor muscle dysfunction can manifest as lower urinary tract symptoms, bowel problems, sexual problems, protrusion illnesses, and pain. Pelvic floor dysfunction induced by relaxed pelvic floor muscles is frequently easily detected,

that include pelvic organ prolapse and urine incontinence [1,2]. The most prevalent kind of incontinence, stress urine incontinence (SUI), occurs in the presence of stimuli such as coughing or sneezing, settings in which the increased pressure inside the pelvic cavity surpasses the muscle control ability. SUI affects around 26% among women aged 30 to 59, with a peak at age 40 to 49% [3]. However, the complaints of non-relaxing pelvic floor muscles differ and are sometimes not allocated to pelvic floor dysfunction, making these disorders less readily identified [1]. Pelvic floor dysfunction (PFD) is mostly caused by weaker or damaged muscles and ligaments that support the pelvic floor [4]. Vaginal birth and a longer second stage of labour

(SSL) have been identified as key risk factors for PFD in several studies [5]. Many illnesses and pathologies can result from a lack of pelvic floor muscular tension or an electrical anomaly in these areas, including visceral prolapse, urine incontinence, and faecal constipation. Pelvic floor muscle issues are expected to grow by 35% over the next two decades, to an annual average of roughly 1.6 million visits by 2030. Pathogenesis is complex as well as multifactorial [6]. Gestational diabetes mellitus (GDM) is the most common pregnancy complication across all ethnic groups. "When compared to non GDM women, women with GDM had an increased risk of urine incontinence within the first 10 years following birth. Furthermore, GDM is associated with a muscular injury that impairs the pelvic floor and rectus abdominis muscles during pregnancy [7]. In addition to this, the prevalence of "pregnancy-specific urine incontinence (PS-UI) and UI two years postpartum" was considerably greater in women with GDM than in pregnant women who were not diabetic [8]. One of the most important public health concerns of the twenty-first century is metabolic syndrome, which is becoming more and more common over time because of inactivity and a dismal outlook in both industrialised and developing nations [9]. It has been linked to an increased risk of death rate and a variety of diseases, including cardiovascular diseases, kidney disease, cancer (breast cancer, renal cell cancer) [10] and diabetes according to the epidemiological studies [11,12]. While physical activity treatments alone are unlikely to restore insulin resistance, regulate lipid abnormalities and overcome obesity, the combined effect of increased exercise and improvement in CRF on these risk factors can have a significant influence on metabolic syndrome health outcomes [13]. As people aged, metabolic syndrome cases increased significantly. Between the ages of 20 and 39 and 60 and older, the frequency was 19.5 and 48.6 percent, respectively [14]. There were no significant variations in metabolic syndrome prevalence between men and women in either age group. There were considerable disparities in race/ethnicity predominance among each age group [15]. Aim of this study was to ascertain the relationship between "metabolic syndrome and dysfunction of the pelvic floor in middle-aged women."

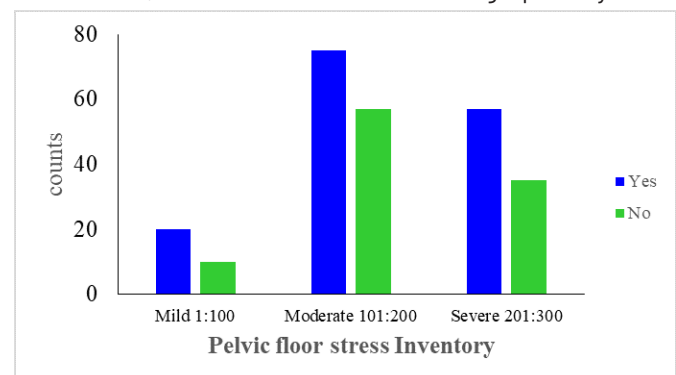
## METHODS

Sample size is calculated with Rao soft sample size calculator. Estimated population size 277 participants. But the analysis was done of 250 participants. Middle aged women between 40-77 years. Inclusion-criteria: The presence of any 03 of the following 5 risk factors. For Asian women, an elevated waist circumference of at least 80 cm. Triglyceride elevation (more than or equal to 150 mg/dL) or

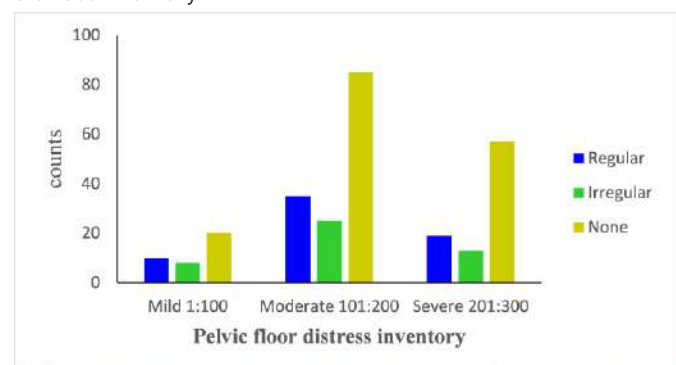
medication for triglyceride elevation. Low levels of "high-density lipoprotein cholesterol (less than 50 mg/dL)," or medication to address low levels of this lipid. Exclusion criteria: Participants who had a history of cancer were disqualified. Women frequently have serious physical or mental illnesses. To prevent the influence of hormone therapy's effects on lipid profiles, women who were now receiving or had recently (within the past year) undergone hormone replacement therapy were excluded. Pelvic Floor Distress Inventory: A Performa/Questionnaire for Data Collection 20 (PFDI-20) The PFDI-20 is a reliable and valid condition-specific questionnaire that measures the severity of symptoms and discomfort brought on by pelvic floor diseases. Elevated waist circumference, Elevated triglycerides, Reduced high-density lipoprotein cholesterol, Elevated blood pressure, Body Mass Index (BMI). The data was analyzed by using the SPSS 21.0 statistical software

## RESULTS

Data was gathered from 250 students for a cross-sectional study on the Association between Metabolic Syndrome and Pelvic Floor Dysfunction in Middle Aged Women. The data produced the following statistical findings when used with SPSS. The frequency distribution of various tables was determined, and these tables were shown graphically.



**Figure 1:** According to bar chart, 250 candidates 101 to 200 candidates found out menopause at moderate level in pelvic floor distress inventory



**Figure 2:** According to the bar chart 250 candidates the range of



101 to 200 found out menstrual cycle at moderate level with percentage of 12.80% having regular menstrual cycle while 8.80 % having irregular menstrual cycle and 30.40% having no menstrual cycle at all

Variables	Menopause Yes	Menopause No	P-Value
Pelvic floor distress inventory Mild (1-100)	20	15	0.731
Moderate (101-200)	72	54	
Sever (201-300)	54	35	

**Table 1:** Association between menopause and pelvic floor dysfunction

a 0 cells (.0%) have expected countless than 5. the minimum expected count is 13.20.

In this table P value is greater than 0.05 so there is no association between menopause and pelvic floor dysfunction

Variables	Waist Circumference Normal	Waist Circumference abnormal	P-Value
Pelvic floor distress inventory Mild (1-100)	40	18	0.303
Moderate (101-200)	80	27	
Sever (201-300)	65	20	

**Table 2:** association between waist circumference and pelvic floor dysfunction

A 112 cell (91.1%) have expected count less than 5. The minimum expected count is .13. In this table the P value is greater than 0.05 that shows there is no association between waist circumference and pelvic floor dysfunction

Variables	Triglycerides Normal	Triglycerides Abnormal	p-Value
Pelvic floor distress inventory Mild (1-100)	7	36	0.216
Moderate (101-200)	59	81	
Sever (201-300)	33	34	

**Table 3:** Association between triglycerides and pelvic floor dysfunction

a 182 cell (97.8%) have expected count less than 5. The minimum expected count is .13. In this table the P value is greater than 0.05 this shows that there is no significant association between triglycerides and pelvic floor dysfunction.

Variables	HDL Normal	HDL abnormal	P-Value
Pelvic floor distress inventory Mild (1-100)	98	86	0.319
Moderate (101-200)	27	14	
Sever (201-300)	12	13	

**Table 4:** Association between HDL and pelvic floor dysfunction

a 61 cell (81.3%) have expected count less than 5. The minimum expected count is 13. In this table the P value is greater than 0.05 that shows there is no association between HDL and pelvic floor dysfunction

Variables	Fasting Blood Sugar Mean + S.D	P-Value
Pelvic floor distress inventory Mild (1-100)	138 ± 11	0.116
Moderate (101-200)	152 ± 18	
Sever (201-300)	170 ± 2	

**Table 5:** Association between fasting blood glucose and pelvic floor dysfunction

a 66 cells (78.6%) have expected countless than 5. The minimum expected count is 13. In this table the P value is greater than 0.05 that shows there is no association between fasting blood glucose and pelvic floor dysfunction

## DISCUSSION

This investigation looked at the relationship between middle-aged women's "metabolic syndrome and pelvic floor dysfunction." Because of their increased incidence as the proportion of aged women increases and the detrimental effects they can have on a "woman's quality of life, pelvic floor disorders" are emerging as a serious public health concern. According to the study's findings, about 55% of women experience pelvic floor dysfunction, and participants who have metabolic syndrome also occasionally experience pain, abdominal bloating, diarrhoea, dizziness, sweating, and nausea. POP is a frequent illness that affects between 30% and 50% of women over the age of 50 worldwide. There is a strong link between the prevalence of pelvic organ prolapse and the metabolic syndrome. Fasting blood glucose, triglycerides, and HDL are important components of the five types of metabolic syndrome in individuals with pelvic organ prolapse. According to the results, an increase in triglycerides and a decrease in HDL had an impact on the severity of pelvic organ prolapse by 1.58 times and 1.42 times, respectively [16]. As you can see from the pie chart, 60% of the patients with pelvic floor disorders are menopausal, and their relationship to the pelvic floor is heavily taken into account. In our study, it was shown that out of 250 participants, the majority of patients had abdominal heaviness and discomfort, but few experienced symptoms of straining excessively to urinate or have frequent bowel movements due to high glucose levels. According to the results of the current study, women who had higher BMIs, larger waist circumferences, higher LDL levels, and higher FG levels are more likely to develop OAB [17]. Genitourinary atrophy, which is basically a component of the entire condition and is usually linked to these issues in middle age. Because of their shared hormone response, the tissues of the pelvic floor react individually to postmenopausal hormone loss. This review article discusses the potential anatomical and/or functional consequences of oestrogen shortage and emphasises the identify and act of puberty and maturing on pelvic floor

function. It emphasises the importance of assessing the quality-of-life effects of leakage, protrusion, and gastrointestinal shrinkage and offers a technique for the original evaluation of pelvic function in midlife women [18]. As people age, their bodies weaken and other medical issues arise, which raises PFD prevalence. Numerous risk factors have been discovered by researchers as contributing to PFD development. 62 The prevalence of PFD was substantially correlated with age. This was in line with research findings that indicated at least one symptomatic PFD was present among women older than 40 [19]. "The metabolic syndrome (MS) is regarded as a risk factor for SUI in females, and studies have revealed a strong association between the two. In a single person, MS represents a collection of risk factors for numerous disorders, including hypertension, hyperglycaemia, obesity, and improper lipid metabolism. MS can impair the body's ability to process proteins, carbs, and fats. According to studies, SUI in women is associated with obesity, hypertension, and hyperglycaemia. Additionally, the glucose metabolism issue and oxidative stress response brought on by MS can induce vascular and muscle damage as well as make pelvic floor relaxation even worse [20].

## CONCLUSIONS

According to the most recent research, there is no connection between "high density cholesterol, fasting blood glucose, waist size, or blood pressure and pelvic floor dysfunction." As we examine, the research believed that middle-aged women between the ages of 40 and 77 had symptoms of mild, moderate, and severe conditions.

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## Original Article

## Spectrum of Antimicrobial Susceptibility Pattern of Urinary Tract Infection in Adults

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## ABSTRACT

Patients of all ages and genders regularly experience urinary tract infections. Antibiotic misuse has caused organisms to develop drug resistance, creating a treatment problem. **Objective:** To uncover risk variables and relationships, as well as the antibiotic susceptibility in UTI patients. **Methods:** Diabetes and non-diabetes with UTI were compared within groups using the Chi-square test, with a significant P-value of 0.05. **Results:** 32 (21.2%) were given empirical treatment with ciprofloxacin (11%), cefixime (5%), ceftriaxone (2.6%), cefoparazone-sulbactam (1.30%), amoxicillin-clavulanic acid (1.30%), ampicillin (1.30%), and co-trimoxazole (0.60%), respectively. *E. coli* was the most prevalent pathogen, with an isolation rate of 84%, followed by *Pseudomonas aeruginosa* (6%), *Serratia* (3.3%), *Klebsiella* (2.6%), *Enterobacter cloacae* (2.6%), *Sternotrophomus* (0.7%), and MRSA (each in 0.7%). Ampicillin, Cefixime, Ceftriaxone, Co-Trimoxazole, Ciprofloxacin, Amoxicillin-Clavulanic Acid, Tetracycline, and Levofloxacin were all often resistant to, respectively, 87 percent, 83 percent, 78 percent, 78 percent, and 51 percent of these antibiotics. **Conclusions:** MDR prevalence is highest in gram-negative bacteria. The presence of diabetes mellitus and being a woman are significant risk factors for UTI, according to tests. *Escherichia coli* (84%) is the most common uropathogen. Carbapenems, piperacillin-tazobactam, Amikacin, Gentamicin, and cefoparazone-sulbactam (parenteral) as well as Nitrofurantoin are the preferred empirical treatments (oral). Hospitals and the nation at large should constantly examine and reassess their antimicrobial policies.

## INTRODUCTION

One of the most typical infectious disorders seen in medical practise, urinary tract infections (UTIs) affect persons of all ages. Around 150 million people get UTIs each year in the world, according to estimates [1]. People with diabetes mellitus experience UTIs more frequently than people without the condition [2], and they also experience UTIs that are more severe and are more likely to result in complications, such as dysuria (pain or burning when urinating), organ dysfunction, and occasionally even death from complicated UTI (pyelonephritis). UTIs are brought on by viruses, bacteria, and fungus that colonise and proliferate in the urinary tract. The frequency of viral and

fungal UTI, however, is extremely low [3]. Gram negative bacteria are the most frequent ones to cause UTIs, but gramme positive bacteria infections have also been documented [4]. *Escherichia coli*, *Staphylococcus saprophyticus*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Enterococcus* species, *Pseudomonas aeruginosa*, and group B streptococcus are the most prevalent uropathogens [5]. Although some studies imply a reduced incidence of *E. coli* linked UTI in diabetics as compared to age matched non-diabetics, *E. coli* is the most frequent bacterium causing UTI in both diabetic and non-diabetic people [6]. Normally, the urinary tract works to prevent

long-term colonisation of infections. This results from the repeated flushing out of dangerous organisms and bladder emptying." Innate immunity and a high concentration of urea in the urinary tract are additional elements that offer defence against pathogen colonisation [7]. The risk of UTI increases if the host's defences are weakened or any morphological or pathological abnormalities in the urinary tract blocks the passage of urine. *E. coli* and other uropathogens colonise the urinary system when this kind of damage takes place as a result of the presence of specific virulent elements that allow them to infiltrate the uroepithelium [8]. The anatomical and physiological differences between men and women make UTI more prevalent in women [9]. This infection affects about half of all women at some point in their lives [10]. In accordance with earlier research, 1 in 5 women will develop a UTI at some point in their lives [11], making it a very widespread issue. One of the factors contributing to females experiencing UTIs more frequently is the proximity of the urethra to the anus. This anatomical characteristic makes the perineal area vulnerable to contamination by stomach bacteria, which can subsequently spread to the urine bladder and result in infection. Other significant risk factors that raise the likelihood of UTI include diaphragm use, catheterization, diabetes mellitus (DM), and birth control tablets, spermicidal substances, advanced age, missed micturition, antibiotic misuse, and other immune suppressing diseases [12]. In patients with diabetes compared to non-diabetics, asymptomatic bacteriuria (ASB) and symptomatic UTI are more common, and these conditions more frequently result in consequences [13]. Changes in host immunity, delayed bladder emptying, and an increase in the concentration of glucose in urine are factors that contribute to a higher prevalence of UTI and a significantly increased risk of complications in diabetes. This is the host component that raises the likelihood of infection, which is more significant than changes in the bacterium. Uropathogens like *E. coli* are more likely to stick to the bladder surface because of changes in the uroepithelium cells. Theoretically, these alterations are attributed to the infected cells' glycosylation. UTI is more frequent, severe, and results in more disastrous outcomes in individuals with DM, according to research [14]. The empirical treatment of suspected UTIs in the emergency room and outpatient department is a relatively prevalent procedure. On the one hand, it is wise to treat the UTI right once to avoid complications like sepsis, but on the other hand, it is also crucial to use antibiotics when necessary to avoid the development of drug resistance. With common urinary bacterial infections, resistance to trimethoprim-sulfamethoxazole (TMP-SMX) and fluoroquinolone antibiotics has been on the rise. Extended-spectrum -

lactamase and other multi-drug resistant pathogens are also becoming more common [15]. Given the inappropriate use of antibiotics whether due to inappropriate prescription by health professionals, self-medication, quackery or availability of antibiotics over the counter, antibiotic resistance is on the rise. It is deemed necessary that physicians or other health care workers should prescribe appropriate treatment for suspected UTI. Infectious Diseases Society of America (IDSA) and the American Academy of Pediatrics (AAP) have provided some international guidelines for this purpose [16]. However, local factors influence the resistance pattern, and this should be studied and reviewed locally time to time. Internationally antibiograms are used in hospitals to provide local guidelines in management of UTI and other infections empirically." These antibiograms can be used by doctors, along with worldwide standards, to adjust prescriptions based on local conditions. There are issues with UTI prescribing practices, namely the overuse of broad-spectrum antibiotics and treatment in the absence of a real illness [17].

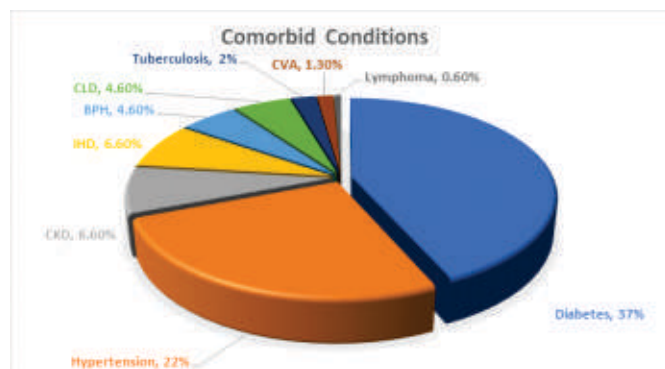
## METHODS

This cross-sectional study was conducted at the Rawal Institute of Health Sciences in Islamabad, Pakistan, from February 1, 2021, to June 30, 2021, after getting ethical permission. Patients who showed signs of a urinary tract infection and are above the age of 18 (i.e., burning, urgency, hematuria supported by urine routine examination findings of pyuria, positive nitrite, and bacteriuria) were included. Patients with critical illnesses, septic shock, terminal illnesses (from cancer), those who had recently started antibiotic therapy, hospital acquired UTIs, and those who were catheterized (with indwelling or suprapubic catheters) were all disqualified. Informed consent was obtained before selecting 151 cases overall through successive sampling. Their demographic information, medical history, symptoms, co-morbid conditions, self-medication history, and clinical findings were recorded. Patients with symptoms of a UTI were encouraged to undergo routine urine testing, including HbA1c, culture and sensitivity tests, and random blood sugar checks. After sending a urine culture, drugs were begun for patients who needed empirical therapy. In order to evaluate the isolated organisms and the pattern of treatment resistance and susceptibility, reports were examined during the follow-up visit. According to ADA guidelines, patients were classified as diabetes based on their HbA1c levels. On a unique proforma, the specifics were recorded. SPSS version 22 was used to analyse the data. Age has a mean and standard deviation determined; frequencies and percentages are used for qualitative characteristics (gender, micro-

organism isolated, anti-microbial sensitivity and resistance). Diabetes patients and non-diabetics with UTI were compared within groups. The connection between age, gender, isolated organism, and sensitivity between two groups was investigated using the Chi-square test. P-value under 0.05 is regarded as significant. Information is provided as a table, pie chart, and bar graph.

## RESULTS

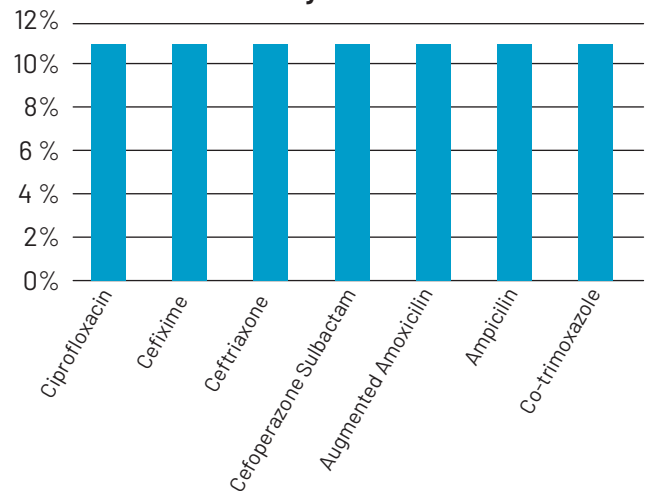
There were 151 patients in this study that had UTI symptoms overall. 46 (31%) were men and 105 (69.5%) women were present. Hypertension was present in 56 patients (22%) and was followed by chronic kidney disease (CKD) (6.6%), ischemic heart disease (6.6%), benign prostatic hypertrophy (4.6%), chronic liver disease (4.6%), tuberculosis (2%), cerebrovascular accident (1.3%), and lymphoma (1.3 percent). The patients' ages ranged from 13 to 91, with a mean age of 48 and a standard deviation of 19. Of these 56 patients, 37 percent had diabetes (0.60 percent). 14.7% of the patients in the research had no other co-morbid conditions that were known to them (Figure 1).



**Figure 1:** Pie chart presenting Various Co-morbid conditions Observed in patients presenting with Urinary Tract infection (n=151)

40 (26.5%) of the patients were found to be self-medicating, with 18 (32%) having diabetes and 22 (23%) not. Thirty-two patients (21.2%) who underwent empirical treatment did not respond; 13 of these had diabetes and 19 did not. After sending urine for culture sensitivity testing, ciprofloxacin was the drug that was most usually administered. Following Ciprofloxacin (11%), patients were given Cefixime (5%), Ceftriaxone (2.6%), Cefoperazone-Sulbactam (1.30%), Amoxicillin-Clavulanic Acid (1.30%), Ampicillin (0.60%), and Co-trimoxazole (0.60%). (Figure 2).

### Empirical therapy received by patients with Urinary Tract Infections



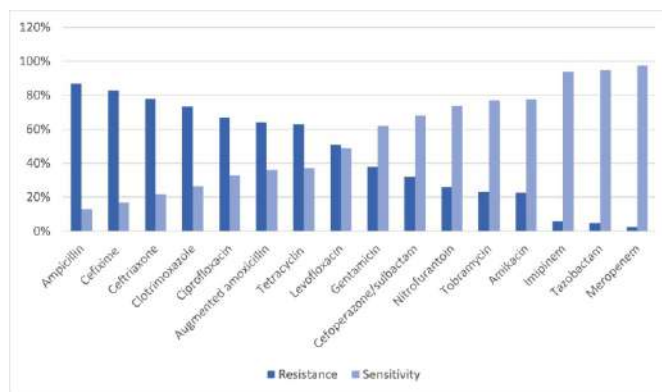
**Figure 2:** Bar graph presentation of Medications received by Patients with Urinary tract infection after sending the culture and sensitivity report (n=151)

100 percent of the 151 individuals showed some UTI symptoms. The most common clinical symptom, occurring in 144 (95.4 percent) of the patients, was urinary urgency. Of the patients, 140 (92.7%) reported dysuria as the second most common symptom. Following this, 88 patients (58.3%) experienced hematuria, and 4 patients (2.6%) experienced fever. In 95 (62.9%) instances, there was a prior history of UTI (Table 1). Each patient had bacteriuria, according to the urine analysis result for 151 patients who had a positive UTI culture. 55 (98%) of the 113 total individuals who had hematuria also had diabetes. After that, nitrite was found in 143 (94.7%) people, 88 (92.6%) of whom had diabetic mellitus. All people with positive cultures showed the tendency of pyuria in the following order. 39 (41%) of the 69 patients (45.7%) with many pus cells had diabetes mellitus. 11 (7.3%) of the diabetics had 20–25 pus cells/HPF in 6 (3.9%) (Table 1). Seven different pathogens were isolated from urine culture. E. coli was the isolate that was found 127 times (84%) the most frequently. The next most frequent species were Pseudomonas aeruginosa (9%) followed by Serratia (5%) Klebsiella (4%) Enterobacter cloacae (4%) Sternotophomus (0.7%), and Methicillin-resistant Staphylococcus aureus (0.7%). All bacterial cultures were tested with 16 different antibiotics. Meropenem had the highest sensitivity to isolates (97.4%), Imipenem was second (94.4%), then Piperacillin-Tazobactam was third (94.74%), Amikacin was seventh (77.5%), Tobramycin was eighth (76.8%), Nitrofurantoin was seventh (74.2%), and Gentamicin was sixth (61.6%) (Table 1).

Demographic variables and Culture and sensitivity report	Amongst all n=151	Diabetics n=56	Non-diabetics n=95	p-value
Age (range13-91years)	48±17	59±14	41±19	0.023
<b>Gender</b>				
Female	105(69.3%)	42(75.1%)	63(64.5%)	0.262
Male	46(30.1%)	14(25.2%)	32(37.3%)	
<b>Self-medication</b>				
Yes	40(26.2%)	18(32.4%)	22(27.2%)	0.225
No	111(73.4%)	38(68.4%)	73(75.1%)	
<b>Empirical therapy</b>				
Yes	32(21.7%)	13(25.4%)	19(27.9%)	0.644
No	119(78.3%)	43(75.4%)	76(83.6%)	
<b>Urine Analysis Results</b>				
blood	113(74.8%)	55(91.5%)	58(61.9%)	<0.0001
bacteria	151(100%)	56(100%)	95(100%)	-
Nitrite	143(94.1%)	55(98.5%)	88(92.6%)	0.139
<b>Pus cells</b>				
<5	5(3.3%)	0(0%)	5(5.7%)	
6-10	11(7.6%)	2(3%)	9(9.4%)	
11-15	29(19.2%)	11(19.7%)	18(17.3%)	0.010
16-19	25(16.1%)	13(22.6%)	12(12.2%)	
20-25	11(7.4%)	0(0%)	11(11.2%)	
Numerous	69(45.9%)	30(53.1%)	39(42.7%)	
<b>Urine Culture and Sensitivity Results</b>				
<b>Organism isolated</b>				
E-coli	127(85%)	47(81%)	80(84%)	0.93
Pseudo-monas	9(7%)	7(12.6%)	2(2%)	0.09
Serratea	5(3.4%)	0(0%)	5(5.2%)	0.01
Klebsilla	4(2.7%)	2(3.7%)	2(2%)	0.58
Enterobacter Cloaca	4(2.5%)	0(0%)	4(4.2%)	0.10
Strenotophomas	1(0.8%)	0(0%)	1(1%)	0.41
MRSa	1(0.9%)	0(0%)	1(1%)	0.41
<b>Sensitivity</b>				
Imipinam	142(94.1%)	52(92.3%)	90(95%)	0.67
Cefoperazon-sulbactam	103(68.6%)	31(54.3%)	72(76%)	0.09
Tazobactm-piperacillin	143(94.2%)	54(95.2%)	89(94%)	0.47
Meropenm	147(97.9%)	55(97.5%)	92(97%)	0.62
Tobramysin	116(76.8%)	44(78.7%)	72(76%)	0.66
Amikasin	117(77.6%)	37(66.1%)	80(84%)	0.00
Nitrofurantoen	112(74.2%)	39(70.5%)	73(77%)	0.39
Gentamisin	93(61.4%)	27(48.5.9%)	66(69.5%)	0.09
Levofloxasin	74(48.7%)	25(44.1%)	49(51.6%)	0.41
Augmented amoxicillin	54(35.7%)	17(30%)	37(39%)	0.28
Ciprofloxacina	50(32.7%)	16(28%)	34(36%)	0.36
Ceftriaxone	33(21.5%)	06(10%)	27(28%)	0.01
Cefixime	26(17.4%)	04(7.1%)	22(23%)	0.01
Co-trimoxazole	40(26.47%)	11(19%)	29(30.5%)	0.14
Tetracycline	56(37.14%)	16(28%)	40(42%)	0.09
Ampicillin	19(12.71%)	4(7.6%)	15(15.8%)	0.12

**Table 1:** Presenting demographic variables, self-medication, empirical therapy, urine routine examination and culture and sensitivity and diabetics vs non- diabetics with UTI(n=151)

With resistance rates of 87 percent, 83 percent, 78 percent, 73.5%, and 51 percent, respectively, to commonly used antibiotics like ampicillin, cefixime, ceftriaxon, cotrimoxazol, ciprofloxacin, amoxicillin-clavulanic acid, tetracyclin, and levofloxacin, the majority of the organisms showed resistance to these drugs. The MDR frequency were found to be 100% in all gram-negative bacteria.



**Figure 3:** Bar Graph representing the trends of culture proven organism's resistance and susceptibility to specific antibiotics (n=151)

## DISCUSSION

In the practise of medicine, urinary tract infections are fairly typical. Numerous patients develop urosepsis as a result of fatally inadequate initial treatment. In order to comprehend the new issues in UTI management that can be addressed, we want to determine the most recent pattern of antibiotic susceptibility in UTIs. In this investigation, regardless of accompanying morbidities, E. coli was the most frequently isolated pathogen in both genders and across all age categories. 84 percent of cases of infection were linked to E. coli. This is like a study from India where E. coli was the main pathogen in both CA-UTI (68%) and HA-UTI (45%) [18]. According to studies from Mekelle (83%), observation of high Gram-negative bacterial isolates in patients is consistent and is also in accordance with Sudan (87.2%) [19], India (92%) [20]. However, comparatively lower incidence rates in Ethiopia, such as in Bahir Dar (61.9%), were reported from comparable research [21]. E. coli was the most often isolated uropathogen, according to several additional research from India (67.6 percent) [22], Dessie (63 percent) [23], Sudan (54.6 percent) [21], and Romania (68.9 percent) [24]. A significant proportion of all urinary tract infections (UTIs) are caused by Escherichia coli, a common gastrointestinal pathogen that penetrates the urine tract via its highly powerful virulence factors. Pseudomonas aeruginosa ranked as the second most common bacterial pathogen in our survey (6 percent). Another study in Bahir Dar observed the same trend, and further investigations revealed that proteus and Coagulase negative staphylococci were the second-most prevalent uropathogens in Addis Abeba [25,26]. Serratia (3.3 percent), Klebsilla (2.6 percent), and Enterobacter cloacae were the three isolates that were most frequently found in the current investigation (2.6 percent). Methicillin-resistant Staphylococcus aureus and Strenotophomus maltophilia were found in 0.7 percent of patients, indicating that gram-positive bacteria rarely

cause UTI in this location. While gram-positive bacteria, such as those found in Bahir Dar, are one of the main causes of UTI in several other parts of the world [25]. In our investigation, certain significant risk variables, such as diabetes mellitus, female gender, and prior UTI history, were found. The Diabetic mellitus was found in 37% of patients with culture positive UTIs, which isn't surprising given that the genitourinary system (neuropathy) can be adversely affected by diabetes, leading to bladder dysfunction and micturition abnormalities, both of which are necessary conditions for the development of UTIs. In fact, earlier investigations from Egypt [14] and India [27] came to the same conclusion: UTI incidence increases with DM duration. In our study, women (69.5 percent) were more likely than men (30.5 percent) to get a urinary tract infection (UTI). According to RD Harrington's study, UTI affects women more frequently than males, even though as people get older, the prevalence is the same for both sexes [28]. In this study, 63 percent of patients had a prior history of UTI. An important risk factor for recurrent infection, considerably higher rates of bacteriuria have been observed in certain other investigations in people with a history of urinary tract infections [29]. According to the results of the antibiotic sensitivity tests, the Gram-negative uropathogens *E. coli*, *Pseudomonas*, *Klebsiella*, and *Enterobacter cloacae* were extremely sensitive to Meropenem (97.4%), Piperacillin-Tazobactam (97.4%), Imipenem (94%), Amikacin (77.5%), Tobramycin (76.8%), Nitrofurantoin (74.2%), and (61.6 percent). A study from India found that urine-derived bacterial isolates were highly susceptible to Imipenem (96.7 percent), Piperacillin-Tazobactam (80.7 percent), and Gentamicin (59.4 percent) [30]. No organism demonstrated complete antibiotic sensitivity. Contrarily, Gram-negative isolates, particularly *E. coli*, showed high levels of resistance to several tested antibiotics that are frequently used to treat bacterial UTIs: Ampicillin (87%) Cefixime (83%) Ceftriaxone (78%) Co-Trimoxazole (73.5%) Ciprofloxacin (67%) Amoxicillin-clavulanic acid (64%) Tetracycline (63%) and Levofloxacin (63%) (51 percent). Research from Korea and India revealed a similar trend of resistance to third generation Cephalosporins and Amoxicillin-clavulanic acid [31]. The majority of fluoroquinolone prescriptions are for the treatment of UTI, particularly for the empirical management of female uncomplicated acute cystitis. In our study, 67 percent of the isolates were susceptible to Ciprofloxacin. Between 0.5 and 7.6 percent of *E. coli* isolates were susceptible in European nations [32], whereas in Turkey, this prevalence was 50 percent [33]. Globally, fluoroquinolone resistance is a growing problem [33]. All Gram-negative organisms in this investigation displayed multidrug resistance, and one instance of *E. coli*

displayed pan resistance. More research has confirmed that Gram negative uropathogens are frequently found to have high MDR in other nations as well [23,24,29]. It is possible that the significantly higher prevalence of resistance to these commonly prescribed antibiotics, including MDR, is due to their greater accessibility and affordability outside of treatment centers, which might also lead to careless use of the medication without a prescription, the widespread availability in the market of subpar or expired medications that are likely to be used for self-treatment (26.5 percent in our study), the frequent use of antibiotics were empirically used by 21.2 percent of the participants in our research due to a lack of culture sensitivity testing. Guidelines issued by the French Infectious Disease Society in 2017 that advised against using fluoroquinolones to treat cystitis without first doing antibiotic susceptibility testing [33] brought attention to the rise in fluoroquinolone resistance.

## CONCLUSIONS

The most common Uropathogen was *Escherichia coli*. It was discovered that having diabetes mellitus and being a woman were significant contributors to the higher occurrence of lab-verified urinary tract infections among all individuals. In the present investigation, both Gram-positive and Gram-negative bacterial uropathogens were successfully treated with carbapenems, piperacillin-tazobactam, amikacin, gentamicin, and Cefoperazone-sulbactam, all of which are accessible as parenteral preparations. A substantial prevalence of drug resistance to popular antimicrobials was also revealed by this investigation, particularly to co-trimoxazole, ciprofloxacin, doxycycline, ampicillin, amoxicillin-clavulanate, and ceftriaxone. The prevalence of MDR was also high for Gram-negative bacteria.

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## Original Article

## Association Between Visual Impairment and Neck Pain in Computer Users; A Cross-Sectional Study

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## ABSTRACT

The most common cause of disability in the world is visual impairment. It is a condition that impairs vision and may not be improved by corrective lenses. The key factor for visual impairment is near vision. Nearly 10–21% of people report having neck pain at work, which contributes to forward head position and neck pain. **Objective:** This study examined the relationship between visual impairment and neck pain-related complaints brought on by awkward or bad posture among computer users between the ages of 21 and 30. **Methods:** 141 computer users between the ages of 21 and 30 were chosen for a cross-sectional study based on inclusion and exclusion criteria. The Neck Disability questionnaire and the Visual Functioning Questionnaire - Near Activities Subscale (VFQ-NAS) were used, respectively, to evaluate neck discomfort and visual impairment. **Results:** When performed one at a time with each group, and when the whole set of data was considered to correlate each other, there is a correlation between visual and neck-related complaints that provided significant value (P0.05) of the Chi-square. **Conclusions:** It is concluded that there is a strong relationship between visual impairment (nearsightedness) and neck pain.

## INTRODUCTION

The steadily increasing use of computers, smartphones, and tablets for work and play has resulted in health issues, the majority of which are related to the eyes, including pain, strain, fatigue, tiredness, burning, red, and/or irritated eyes, blurred vision, and double vision, as well as neck and shoulder pain. The population who is visually handicapped has endured great suffering as a result. A disorder known as visual impairment reduces visual performance and may not be improved by surgery, medicine, or refractive devices [1]. The leading preventable cause of disability worldwide is visual impairment. Myopia, an uncorrected refractive defect, is the main factor in vision impairment.

Uncorrected refractive defect (myopia) causes people to focus on objects by altering their physical appearance, such as squinting their eyes [2]. Squinting causes them to have a pinhole effect, which may result in a more accurate visual impression [3]. The orbicularis oculi muscle, which surrounds the eye, contracts when someone squints. Continuous continuing contraction of the annular muscle over a prolonged length of time affects the tear film, the surface of the cornea, and the eyelids, and is associated with symptoms in the neck and scapular region [4–5]. The additional ocular muscles contain some sensory receptors called "muscle spindles and myotendinous cylinders."

Proprioceptive inputs from tendons and joints combine with visual information to contribute to the fused, integrated, perceptual map of the environment, and these receptors are implicated in practically all sensorimotor-driven motions [6]. Specific neck and scapular muscles may be used asymmetrically as a result of incorrect head-to-trunk alignment. These components are all involved in postural imbalance. The body's position in which we have the ideal body mass distribution is called posture. Postural balance may give the body the support it needs to move normally in either a stationary or moving position. The visual, vestibular, and somatosensory systems collaborate to maintain postural balance [7]. Poor postural control is caused by any misalignment between these systems. Low vision may result from any visual impairment, which raised the pressure on the vestibular and somatosensory systems. When a person tries to focus on something in order to see properly but is unsuccessful owing to visual system malfunction, it may even become symptomatic. By squinting, hunching forward, or even by tilting the head unevenly to grip the head forward for straight-ahead vision, the body finds an effective technique to focus its aim. The forward head posture (FHP) may result from daily adaption to this position (long hours per day) [8]. Some head and neck muscles become tight or extended in the forward head posture, whereas other muscles get tight or shortened. (Deep cervical flexors longus capitus and longus colli), (Erector spinae lower cervical and higher thoracic), and other muscles get long and weaker (Shoulder blade retractors middle trapezius and rhomboid muscles). Muscles like the Levator scapulae, Sub occipital, and Chest muscles that are short and tensed may go into spasm or strain, putting undue tension on the neck. Some head and neck muscles become tight or extended in the forward head posture, whereas other muscles get tight or shortened. (Deep cervical flexors longus capitus and longus coli), (Erector spinae lower cervical and higher thoracic), and other muscles get long and weaker (Shoulder blade retractors middle trapezius and rhomboid muscles). Muscles like the Levator scapulae, Suboccipital, and Chest muscles that are short and tensed may go into spasm or strain, putting undue tension on the neck [9]. The aforementioned factors are related to one another, and neck pain appears to be more prevalent. It is unknown what causes neck/scapular area and visual discomfort to coexist. Symptoms of these two categories are typically covered separately in applied and clinical research. Eye-neck and scapular area symptoms are caused by several internal and external sources. These elements may operate alone or occasionally in combination to cause symptoms. People with visual impairment may be impacted by both internal visual deficiencies and the

requirement for vision-improving equipment. According to a national survey conducted in Sweden, neck pain affects people with near-vision issues twice as frequently as it does people with normal vision [12]. Nearly 10-21% of people report having neck pain while at work. Additionally, women are more likely to experience it than men [13]. In terms of disability, neck pain ranks fourth globally and twenty-first overall in terms of pain burden. Neck discomfort is common in various nations, with 52% of people reporting it in India, 57% in New Zealand, 48% in the USA, and 83.8% in China [14]. By treating the visual impairment with the use of the proper refractive aids, various exercises, and by keeping the forward head posture, neck pain associated with visual impairment is managed. The following eye exercises help lessen eye strain: 1) The 20-20-20 rule states that you should take a 20-second break every 20 minutes to focus on something that is around 20 feet away. 2) Shifting the emphasis Figure of eight; scan the space; 5) Eyes blinking. Fix the forward head posture using various strategies, such as Kendall strength training to lessen the forward head position and subsequently neck discomfort and McKenzie's neck stretching techniques for the correction of neck posture [15]. There are a few exercises described that can help to reduce the forward head position. stretch your neck, chin, and anterior chest. reach from the ear to the shoulder, stretching from ear to shoulder while applying pressure movement of the head, head movement with excessive pressure, a head turn supported by the elbows, supine head rotation, whilst seated, rotating the head Isometric neck rotation, looking up and down while seated, isometric neck extension, isometric neck flexion, isometric neck lateral flexion, isometric neck flexion, standing with the back extended, Neck elongation [16]. Additionally, when in 4-point kneeling, extend your neck. Neck flexion, 4-point kneeling neck flexion and extension, elbows supporting neck extension and flexion Neck flexion while kneeling in four points, neck flexion while sitting, Neck lateral flexion, Neck lateral flexor stretch, Neck retraction in sitting, Neck flexor/extensor stretch, in a 4-point squat, rotate your neck. Neck stretches, include neck stretches over the edge of the bed, neck rotator stretches, Stretching the pectorals in the doorframe strengthening your shoulders while you're standing, sitting, or lying down. Crossing your arms as you stand up from your chair, stretching the spine when seated with the arms crossed, Standing and scanning the sky and ground, In the doorframe, stretch [17]. Visual impairment a detriment of posture and neck pain is the most common problem of now a day. Numerous clinical and applied investigations address neck, posture, and their related disorders individually. According to my research and knowledge, there aren't many studies that take into

account "Age Related Muscular Degeneration" and the combined effects of neck pain and vision loss. In order to overcome both restrictions, I chose the demographic of office employees who spend more than six hours each day at their desks (office workers >6 hours) for this study.

## METHODS

Participants were selected from private companies (Riaz Ahmad & Co., RSM International & Co., UHY & Co). Study was conducted on both males and females. It took six months to complete this study after the approval of synopsis. This was a cross sectional study design conducted on computer users. All participants were employed as computer employees between the ages of 21 and 30 who put in more than six hours a day of work without the use of glasses or contact lenses. Participants without systemic illnesses or physical deformities were also included. People with head and neck injuries, cancer, collagen vascular diseases, psychiatric problems (depression), eye diseases such ARMD and diabetic retinopathy, as well as those who had had refractive correction surgery, were excluded from my investigations. The National Eye Institute founded the National Institute of Eye Health, and Oswestry Low Back Pain Index were used to collect the data. To examine the relationship between neck pain among computer users and vision impairment, Pearson's correlation was used. The IBM Statistical Package for Social Sciences version 26.0 were used to analyze the data. Statistics, descriptive Age, gender, and working hours each had mean values, medians, modes, standard deviation values, frequencies, and percentages determined. A p-value of 0.05 or higher was deemed significant.

## RESULTS

Table 1 shows that out of total sample 141, 87 (61.7%) were male & 54 (38.3%) were female. 60.28% were with age range of 21-25 years and 39.72% with the age of 26-30 years. In response to "How many working hours do you work" 89 (63.1%) were doing work more than 6 hours a day and 52 (36.9%) with less than 6 hours a day. Mean values of the Age, Gender & working hours were 1.3972, 1.3830 & 1.3688 respectively. Median & mode of all the variable was 1.00. Standard deviation of Age, Gender & working hours were 0.49105, 0.48785 & 0.48420 respectively. Total scoring of NDI 25.5% had no disability or neck pain, 42.6% had moderate neck pain & 31.9% had severe neck pain. Total scoring of NEI-VFQ-25 19.9% had no visual symptoms, 4.3% had mild symptom, 7.1% had moderate, 37.6% had severe symptoms & 31.2% had visual impairment. Mean value of NDI & VFQ-NAS was 1.81 & 2.5603 respectively. Median value of NDI & VFQ-NAS was 2.09 & 2.5603 respectively. Mode value of NDI & VFQ-NAS was 2.09 &

3.000 respectively. Std. Deviation of NDI & VFQ-NAS was 1.146 & 1.47051 respectively.

Quartile & Interquartile values of all variables					
Variables	Ranges	Frequency(%)	Mean ±SD	Median	Mode
Age	21-25	85(60.3%)	1.3972	1.0000	1.00
	26-30	56(39.7%)			
	Total	141(100%)			
Gender	Male	87(61.7%)	1.3832	1.0000	1.00
	Female	54(38.3%)			
	Total	141(100%)			
Working hours	More than 6 hours	89(63.1%)	1.3688	1.0000	1.00
	Less than 6 hours	52(36.9%)			
	Total	141(100%)			
NDI	0-3=no disability	36(25.5%)	1.81	2.00	2
	12-19=moderate	60(42.6%)			
	20-25=severe	45(31.9%)			
	Total	141(100.0%)			
VFQ-NAS	0-3=no problem	28(19.9%)	2.5603	3.0000	1.00
	4-11=mild	6(4.3%)			
	12-19=moderate	10(7.1%)			
	20-25=severe	53(37.6%)			
	26-40=complete	44(31.2%)			

**Table 1:** Quartile & Interquartile values of all variables

Table 2 shows that out of 141 participants 28 were having no problem related to visual impairment as well as no neck related disability found. 6 participants had mild visual problem & no neck related symptoms found. 2 participants had moderate visual related problem & moderate neck related disability found. Out of 53 severe visual impaired participants, 49 participants were with moderate & 4 participants were with severe neck related symptoms. Out of 44 participants with complete visual impaired symptoms had 3 participants with moderate & 41 participants with severe neck related symptom and the relation between NDI and VFQ-NAS is strong as its P value is significant i.e.  $P < 0.05$ .

Visual functioning	Neck Disability Index-NDI			Total	P-Value
	0-3(No disability)	12-19 (Moderate)	20-25 (Severe)		
0-3 (No problem)	28	0	0	28	0.001
4-11 (Mild problem)	6	0	0	6	
12-19 (Moderate problem)	2	8	0	10	
20-25 (Severe problem)	0	49	4	53	
26-40 (Complete)	0	3	41	44	
Total	36	60	45	141	

**Table 2:** Association between visual functioning and neck disability

Table 3 shows that out of 141 participants, 89 were "work more than 6 hours" only 19 had no disability, 25 with moderate & 45 with severe neck related symptoms. 52 participants "work less than 6 hours" only 17 were with no disability, 35 with moderate & no participant with severe pain. So the relation between NDI and working hours was strong as P value is significant i.e.  $P < 0.0$ .

Working hours	Neck Disability Index-NDI			Total	P-Value
	0-3(No disability)	12-19 (Moderate)	20-25 (Severe)		
More than 6 hours	19	25	45	89	0.001
Less than 6 hours	17	35	0	52	
Total	36	60	45	141	

**Table 3:** Cross tabulation of Neck Disability Index & working hours  
Table 4 shows that out of 141 participants, 89 participants were “work more than 6 hours” only 16 had no visual related problem, 2 with mild & moderate, 25 with severe & 44 had complete Visual impairment. 52 participants “work less than 6 hours” only 12 had no visual related problem, 4 & 8 with mild & moderate respectively, 28 with severe & no participant had complete Visual impairment. The relation between VFQ-NAS and working hours is strong as it P value is significant i.e.  $P < 0.05$ .

Working hours	Working hours		Total	P-Value
	More than 6 hours	less than 6 hours		
0-3 (No problem)	16	12	28	0.001
4-11 (Mild problem)	2	4	6	
12-19 (Moderate problem)	2	8	10	
20-25 (Severe problem)	25	28	53	
26-40 (Complete)	44	0	44	
Total	89	52	141	

**Table 4:** Cross tabulation between visual functioning and working hours

## DISCUSSION

This study was purposely formulated to highlight the association of visual system & neck related issues like neck muscles strains, weakness, tightness, spinal curvature disturbance, trigger points etc. Neck pain complaints highly associated with many other factors other than visual impairment. As current study showed significant outcomes by the consideration of external factors of visual impairment. Focusing problem found frequently in visual impaired individuals without using refractive aids. In a previously conducted experimental study by “Camilla Zetterberg” in 2017 on “Neck/shoulder discomfort due to visually demanding experimental near work is influenced by previous neck pain, task duration, astigmatism, internal eye discomfort and accommodation” have taken 33 participant of chronic neck pain & 33 with control group & did 4 different trail tests by using 4 different types of lens to evaluate the internal & external factors of visual symptoms. Results shows that symptoms of internal eye discomfort aggravated neck/shoulder discomfort, but there was no significant effect of external eye discomfort [18]. As compared to this my study was a cross sectional and I specified the participants of computer users with sample size of 141 by specifying the age limit of 21-30 years to assess that individuals with nearsightedness associated with the neck pain by using VFQ-NAS and NDI to correlate visual related QOL with neck pain. The focus of my study

was external parameter of visual acuity and found a highly significant ( $P < 0.001$ ) results. Another study “Possible Role of Myopia as a Risk Factor for Mechanical Neck Pain in Medical Students” A Pilot Study” by “Bahareh Kardah” in 2019 conducted to evaluate association of myopia and neck pain in medical students by using NDI & NPDS. NDI and NPDS were significantly higher in the case group ( $P < 0.001$ ). However, no significant differences were noticed between the groups regarding the severity ( $P = 0.123$ ) and the duration ( $P = 0.417$ ) of myopia. Also, the correlation of myopia severity with NDPS ( $p = 0.159$ ,  $P = 0.216$ ) and NDI ( $p = 0.201$ ,  $P = 0.116$ ) was non-significant within the case group [19]. As compared to this I selected a general population with specifying the computer usage more than 6 hours. I found the high prevalence of Neck pain in those having the visual impairment and working more than 6 hours. VFQ-NAS used for visual assessment and NDI for the neck pain. Pearson's correction showed positive correlation of VFQ and NDI. This study closely related to my study. Another clinical assessment was performed by Zetterlund & co-authors to account for the effect of low vision on age-related macular degeneration (ARMD) patients. For this assessment, a group of 24 ARMD patients, aged 65 to 85, with low vision and 24 patients with normal vision were selected. The VFQ- NAS and self-assessment questionnaire developed was used to assess these patients' complaints of neck & scapular area muscles. The results of this assessment supported the purpose of this assessment [20]. But in this study I used the assessment tool for VFQ-NAS, 5 questions same as they used in their study & NDI but the purpose of my study is to explore the relation of visual impairment of young adults rather than old age group with the neck pain due to poor posture and found a significant result of Pearson's chi-square correlation  $P < 0.001$ . During this research study I found difficulty in the assessment of forward head posture because of lack of questionnaire related all the parameters of visual, forward & neck pain. Due to lack of resources and participant's co-operation I didn't move to the other assessment methods rather than questionnaire. A combination of 2 questionnaires VFQNAS & NDI used for the assessment of visual function & neck pain respectively. The significant values ( $p = 0.983$ ,  $p = 0.0001$ ) of the results showed strong association between Visual dysfunction and neck pain favor this study. Visual impaired participants who did computer work more than 6 hours a day ultimately suffer from neck related musculoskeletal issue as  $P < 0.05$  showed high significance.

## CONCLUSIONS

It was concluded that visual impairment in office workers lead to neck pain. Findings also indicate that increasing level of nearsightedness can significantly increase neck

pain, particularly when the working hours are > 6 and when the information provided by the somatosensory is disrupted due to disruptive functioning of visual system. As it is expected that poor quality input from the visual organs induce postural imbalance subsequently leading to neck pain. These findings highlight that those individuals who require refractive correction has a greater risk of neck pain.

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**Systematic Review****Factors Contributing to Cervical Cancer Among Women: A Systematic Review and Meta-Analysis**Zummorrad Khurshid<sup>1</sup>, Kabir Ozigi Abdullahi<sup>1</sup>, Kousar Parveen<sup>1</sup> and Sadia Khan<sup>1</sup><sup>1</sup>The University of Lahore, Lahore, Pakistan

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## ABSTRACT

Cervical cancer is among the top 10 most common cancers worldwide, and it is the third most common malignancy among women in Pakistan, with a reported incidence rate of 5.98%. Unprotected and early sex, low socioeconomic status, early menstrual cycles, multiparty relationships, HPV infection, co-infections, hormonally changed immune system, smoking, and low education level, among others are all risk factors associated with cervical cancer.

**Objective:** The targeted objective of this review and meta-analysis was to identify how comprehension and attitude may impact on how frequently women utilize services for cervical cancer screening. **Methods:** The review of the literature was done using a variety of resources, including Google Scholar, PubMed, MEDLINE, and other databases. The keywords "incidence of cervical cancer in Pakistan," "prevalence of cervical cancer," and "risk factors of cervical cancer in Pakistan" were used. **Results:** From this literature review, following factors has been identified that are effecting cervical cancer development. Sexually Transmitted Infections (STI), multiple sexual partners, marrying before age 18 years, multiple childbirths, Oral Contraceptive Pills (OCPs), smoking, obesity, nutritional and dietary factors, and low socioeconomic status.

**Conclusions:** The burden of cervical carcinoma has increased as a result of the rising prevalence of the condition. Although Pakistan has a lower prevalence of cervix carcinoma than other western nations. Mortality rates are high as a result of inadequate awareness, poor follow-up, and late presentation of cervical malignancies.

## INTRODUCTION

Cervical cancer is among the top 10 most common cancers worldwide, and it is the third most common malignancy among women in Pakistan, with a reported incidence rate of 5.98% [1]. In 2012, this aggressive cervical cancer affected over 528,000 women annually, around the world, and 99.7% of cases were brought on by high-risk human papilloma virus [2]. The International Agency for Research on Cancer (IARC) and HPV (Human Papilloma Virus) Information Center report that in Pakistan in 2018, there were about 5,601 instances of cervical cancer; 3,861 of those cases were fatal [3]. Pakistan is one of the top 10 nations with the greatest rates of female mortality due to the prevalence of cervical cancer, where about 20 women

die from the disease every day. According to WHO, cervical cancer will cause over 500,000 women to die by 2030, and more than 98% of these fatalities are projected to take place in poor nations like Pakistan [4]. The onset of the cervical cancer is a severe issue as HIV/AIDS raised the problem to a serious level [5]. The primary cause of cervical cancer is sexually transmitted infection-causing human papilloma virus (HPV) [6]. Currently, vaccinations against HPV infection are readily available [7]. However, in environments with limited resources, early detection by screening and treatment of pre-cancerous lesions remains the greatest method of prevention against cervical cancer [8]. In several countries, cervical cancer precursors and



cases have decreased as a result of prompt treatment with cryotherapy combined with HPV screening. However, it has been demonstrated that HPV-based screening is more efficient than cytology for the diagnosis of cervical cancer precursors and prevention of cervical cancer [9]. However, it has been noted that few low- and middle-income nations have high rates of cervical cancer screening tests [10]. Statistics show that compared to low- and middle-income countries, high-income countries have three times higher (19%) screening rate for cervical cancer [11]. Many low- and middle-income countries believe that a number of issues, such as women's aversion to testing and a lack of understanding about the disease's risk factors and treatment choices, are to blame for the low uptake of cervical cancer screening tests [12]. Therefore, it is crucial to comprehend how knowledge and attitude impact the frequency with which cervical is utilized. For the development of successful strategies, the use of cancer screening tests is required [9]. However, the goal of this systematic review and meta-analysis was to determine how knowledge and attitude may impact how frequently women use services for cervical cancer screening.

## METHODS

According to the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) declaration, the current systematic review was reported. The keywords "cervical neoplasm," "cervical cancer," "risk factors," and "contributing factors" were combined to create the search parameters. The scoping search and entry terms from Medical Subject Headings were used in the systematic search for primary papers relevant to the review question "What are the contributing factors of cervical cancer among women?" In order to maintain balanced sensitivity and accuracy during database search, these keywords were paired with Boolean operators. These words include: female health, cervical screening, early cancer detection, Pap smear, HPV testing AND awareness, OR attitudes, practices, determine, access, facilitators, barriers, socioeconomic, AND OR low- and middle-income countries between March and April 2022, five electronic databases namely, MEDLINE, Embase, CINAHL, Scopus, and Web of Science were searched, and a second search was carried out in June 2022. We used special syntax and symbols (such as truncations or wildcards) to keep search consistency across a few databases. American Cancer Association (2016) and (2019, 2020) also researched for a thorough examination of Cervical Cancer. The American Cancer Society and the International Agency for Cancer Research expert panel committee's extensive investigation was taken into consideration. Before conducting database searches, we identified important

publications that satisfied predetermined inclusion criteria in order to assure the thoroughness of our search for pertinent primary research. These important publications were found in the search results, demonstrating that our search was successful. Furthermore, we carried out a supplementary search for grey literature and studies not indexed in selected databases using Google and Google Scholar. The first 15 pages of results were retained and examined for relevant primary studies. Reference list search of all included studies was conducted to identify related articles. There were 25 articles about the prevalence of cervical cancer in Asia, Pakistan, and other places. After abstracts were reviewed, 12 papers were found to be pertinent. The inclusion criteria include all primary source and peer-reviewed reports on factors contributing towards cervical cancer among women. The review included all the literature from 2012 to 2022 to capture all the work that was written in the English language and reported during this period. And all the other work that did not conform with the above requirement and those which are not written in the English language are excluded. The methodological quality, informative usefulness, and legitimacy of the records gathered in this way were assessed. First, the names of the articles were used to pick all records. The relevance and significance of the shortlisted titles' abstracts to the research question were then evaluated. Following that, only abstracts that highlighted factors contributing towards cervical cancer in women and those published between the study's time period (i.e., 2012 and 2022) were thoroughly reviewed. The full-text entries that didn't fit the requirements for inclusion were taken out and omitted out of the review. The data was analyzed using the content analysis approach, with the data acquired from all of these records serving as the unit of analysis. The analysis's ideas and concepts are now provided as findings and recommendations that might have an impact on policymakers, the government, and Non-Governmental Organizations(NGO).

## RESULTS

From literature review, there are some factors identified most commonly causing cervical cancer among women. The main risk factors for cervical cancer in women are STDs, multiple sexual partners, marriage before the age of 18, multiple pregnancies, oral contraceptive use, smoking, obesity, and low socioeconomic position. Infection with high-risk or oncogenic HPV strains is the main contributor to precancerous and cancerous cervical lesions. Moreover, eight records including grey literatures were included in the review as summarized in table 1 and appendix 1. Eight factors emerged: sexually transmitted disease; multiple

sexual partner; marrying before age 18 years and multiple childbirths; use of oral contraceptives; smoking; obesity; nutritional and dietary factors; and low socioeconomic status.

No.	Author & Year	Country	Study type	Factors Identified	Effect on Cervical Cancer
1	Venkatas & Singh (2020)[A1]	Worldwide	Review	Sexually Transmitted Diseases (STD)	The paper show a pre-cancerous and malignant cervical lesions are primarily brought on by infection with high-risk or oncogenic HPV strains.[13]
2	Liu et al., (2015) [A2]	Worldwide	Review & meta- analysis	Multiple Sexual partners	This paper estimate multiple sexual partners increase a person's risk of developing cervical cancer.[15]
3	Laan et al., (2017)[A3]	Netherland	Quantitative study	Marrying before age 18 years and multiple childbirths	The work highlight that starting sexual activity earlier and with more stable relationships both raise the risk of cervical cancer.[16]
4	Denny & Prendiville (2015)[A4]	South Africa	Descriptive	Oral Contraceptive Pills (OCP)	This article focuses on use of the OC technique for five years or more can increase cancer risk by twofold. However, individuals who took just injectable progesterone for five years or more experienced a small increase in the prevalence of invasive cervical cancer.[17]
5	Roura et al., (2014)[A5]	Europe	Cohort & case control	Smoking	The paper assay smoking is one of the major risk factors for invasive cervical cancer. Smoking can increase the risk of cervical neoplasia in a variety of ways.[18]
6	Poorolajal & Jenabi (2016)[A6]	Iran	Meta- analysis	Obesity	This study identified that obesity influences the incidence of cervical adenocarcinoma linked to hormonal risk factors and raises the risk of cervical carcinoma.[19]
7	Momenimovahed & Salehiniya (2017)[A7]	Iran	Review	Nutritional and dietary factors	The study discovers higher intakes of the nutrients vitamin C, folate, vitamin E, beta-carotene, vitamin A, lycopene, and vegetarian meals are associated with a lower risk of cervical cancer.[20]
8	Kashyap et al., (2019) [A8]	India	Case control	Low socioeconomic status	The paper highlighted that women from low socioeconomic backgrounds and those who are poor do not get screened for cervical cancer. They are unaware of these medical services, and some people choose to ignore the symptoms out of shyness.[21]

**Table 1:** Summary of the Included Studies.

## DISCUSSION

Cervical cancer (CC) is a public health issue as there is a greater prevalence and mortality rates of cervical cancer in reproductive-age women from lower socioeconomic strata [22]. It is the main factor in female morbidity and mortality. Globally, GLOBOCAN 2018 reports that there were 18 million new instances of cancer and over 9.6 million cancer-related deaths in 2018 [23]. There are several factors that contribute to the advanced state of the

disease when it is presented, but ignorance is still the biggest one [1]. Unprotected and early sex, low socioeconomic status, early menstrual cycles and multiparty relationships, HPV infection, co-infections, hormonally changed immune system, smoking, low education level, etc. are all risk factors of cervical cancer [4]. According to Nausheen et al., 50% of smokers all over the world experience dysplasia [24]. According to a cross-sectional study done at three hospitals in Punjab, Pakistan, impoverished people (72.7%) and persons who resided in

rural regions (59%) were more likely to develop cancer [25]. Based on a study released in June 2013, patients with cervical intraepithelial neoplasia had a higher frequency and percentage of low socioeconomic class (58.33%) than those with other risk factors [26]. At Karachi's Aga Khan University Hospital (AKUH), Jahan et al. evaluated the risk factors for 103 female patients. Young females were shown to suffer from early marriages, and the likelihood of abnormality dropped as age beyond 26. Male circumcision was thought to protect against the development of cervical tumour in women, and that study found that 17.6 % of patients were below the matric level, increasing the risk. Additionally, education has an impact on parity, perineal hygiene, and contraceptive choice to assess health opportunity and health-seeking behaviour [27]. Young girls are now more at danger than ever before, and a high incidence rate was seen, particularly in younger women who had disease that was well advanced in stage [28]. The social prohibition on all sex-related activities and the counting of sexually transmitted illnesses presents a significant challenge in assessing the epidemiology of HPV in Pakistan. Additionally, there is a dearth of population-wide screening. Cervical cancer incidence is rising daily as a result of a lack of understanding and awareness regarding its causes and risk factors. The majority of studies demonstrate that having more stable partners and beginning sexual activity at a younger age increases the risk of cervical cancer [14,15]. Through a number of ways, smoking can raise the risk of cervical neoplasia. The local stimulation of immune suppression by cigarette metabolites is one of the mechanisms. Additionally, tobacco-related substances like nicotine and its metabolites can harm squamous cells' DNA [17]. Obesity influences the incidence of cervical adenocarcinoma linked to hormonal risk factors and raises the risk of cervical carcinoma [18]. The risk factors and screening procedures for cervical cancer are also poorly understood by women. Women from low socioeconomic backgrounds and those who are poor do not get screened for cervical cancer (such as Pap tests). They are unaware of these health services, and some people disregard the symptoms out of shyness. Furthermore, they do not receive sufficient screenings or care for cervical cancer [20]. Therefore, there is a need to increase public awareness of cervical cancer risk factors and prevention.

## CONCLUSIONS

The burden of cervical cancer has increased as a result of the condition's rising prevalence, its early detection, rising treatment costs with low success rates, and inadequate screening information. Although Pakistan has a lower prevalence of cervix carcinoma than other western

nations, mortality rates are high as a result of inadequate awareness, poor follow-up, and late presentation of cervical malignancies. Implementing a countrywide screening programme and improving public health education are required for late-stage diagnosed conditions in order to save Pakistani women's lives.

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