**Original Article**

# Prevalence of Obsessive-Compulsive Disorder and Migraine among University students of big cities of Pakistan: A Cross-Sectional Study

Ameer Hamza Mahmood-ul-Hassan[1], Nehala Nooz [2], Muhammad Amaz Tahir [3], Meriam Luqman [4], Muhammad Hassan Khan[5], Saad Mohamed Khaled[6]

[1,2,4]Final year MBBS Student, Rawalpindi Medical University
[3]Fourth Year MBBS Student, Rawalpindi Medical University
[5]Medical Officer, Allied Hospitals of Rawalpindi Medical University
[6]Third Year MBBS Student, Rawalpindi Medical University

**Author's Contribution**
[1] *Conception of study*
[2] *Analysis/Interpretation/Discussion*
[3] *Manuscript Writing*
[4] *Experimentation/Study Conduction*
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**Corresponding Author**
*Mr. Ameer Hamza Mahmood-ul-Hassan,*
*Medical Graduate,*
*Rawalpindi Medical University,*
*Rawalpindi*
*Email: muhammadamaztahir@gmail.com*

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## Abstract

**Introduction:** Obsessive-compulsive disorder (OCD) is a psychiatric illness manifested in the form of obsessions and compulsions. Migraine is a common illness characterized by intermittent headaches that are episodic causing variable range of disability. Obsessive-compulsive disorder (OCD) is an anxiety disorder that may be associated with migraines.

**Objectives:** This study was conducted to determine the prevalence of migraines and explore the potential association with obsessive-compulsive disorder (OCD).

**Materials and Methods:** 220 subjects enrolled in different universities in Pakistan were approached through an online questionnaire made by using scales for assessment of Migraine (Migraine Screening Questionnaire) and obsessive-compulsive disorder (Y-BOCS). The distribution of data was determined by the Shapiro-Wilk test. The median was calculated for quantitative variables as data was nonparametric. Frequency and percentages were calculated. The p-value <0.05 was taken as statistically significant.

**Results:** Our results determined that Migraine was significantly greater in females. Obsessive-Obsessive-compulsive disorder (OCD) was not significantly different in males and females(p-value>0.05). Cronbach's alpha value indicated significant reliability of the Migraine Screening Questionnaire (MSQ) and Yale-Brown Obsessive Compulsion Scale (YBOCS).

**Conclusion:** According to our study, females are more likely to suffer from migraine while OCD prevails in both genders with varying frequencies in different stages of life.

## Introduction

Migraine is one of the major causes of anguish and suffering worldwide[1]. Migraine is a disorder characterized by intermittent headaches that are episodic, persisting for 4 to 72 hours[2], frequently linked with nausea, vomiting, and photophobia[3]. Studies suggest that migraine due to some genetic variants when coupled with environmental influences, increases vulnerability in individuals[4]. There is an increased frequency of psychiatric illnesses linked with migraine, which, if left unaddressed, can lead to the consolidation of migraine. This consolidation is depicted as a headache that occurs at least 15 days every month, including 8 days with full-blown migraine. Additionally, these psychiatric illnesses negatively impact the quality of life and can also affect treatment outcomes[5].

Obsessive-compulsive disorder (OCD) is a psychiatric illness manifested in the form of obsessions and compulsions. Obsessions are irrational incessant thoughts that compel the individual to implement repeated mental acts or practices called compulsions[6]. Although either obsessions or compulsions are sufficient for the diagnosis of OCD in patients, these conditions often co-exist[7]. Studies suggest that patients suffering from obsessive-compulsive disorder (OCD) were frequently suffering from other co-morbidities[8] which further upset their quality of life[9].

Mood and anxiety disorders are the most reported to coexist with migraine[10]. Obsessive-compulsive disorder (OCD) is a part of the anxiety spectrum disorders and may be linked with migraine as a comorbid condition. However, so far little work has been done regarding this association. Studies have shown that the incidence of obsessive- compulsive disorder (OCD) is five times higher in Migraine subjects as compared to non- migraineurs[12]. It is widely observed that sufficient treatment of psychiatric illnesses confers considerable progress in the quality of life of migraineurs[13].

This study aims to investigate any significant correlation between Migraine and Obsessive-Compulsive Disorder (OCD) if present and their prevalence in a study setting targeting the general population. We will also determine the extent of the increase in obsessive-compulsive disorder (OCD) of a patient with Migraine and their distribution among both genders. This study is essential in our target population due to the high prevalence of migraine and OCD among university students, which often goes undiagnosed and untreated due to limited health resources and a lack of multidisciplinary care.

The rationale for the study lies in addressing the significant health burdens posed by migraine and obsessive-compulsive disorder (OCD) within the university student population, particularly in the urban areas of Pakistan. In essence, the rationale for this study stems from a pressing need to understand and address the intertwined complexities of migraine and OCD within the university student population of Pakistan, aiming to inform targeted interventions and improve overall health outcomes in this demographic.

## Materials and Methods

A descriptive cross-sectional study was conducted among university students enrolled in Major Cities of Punjab i.e. Lahore, Islamabad, Rawalpindi, and Multan from March to May 2021. It was a cross-sectional study and simple convenient sampling was done. The sample size was calculated using the WHO sample size calculator, by applying Cochrane's formula. A total of 341 subjects were approached for this study, out of which 220 were enrolled to participate.

This study was conducted after obtaining ethical approval from the Ethical review board. In this study, students who were already using antipsychotics, diagnosed with a psychotic disorder, or had a history of neurological or psychiatric disorders (other than migraine and OCD) were excluded.

We assessed obsessive-compulsive disorder (OCD) severity using the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) and determined migraine presence using the Migraine Screening Questionnaire (MSQ). The data was collected through google forms. The questionnaire was structured with basic demographic details and questions prepared from the Yale-Brown Obsessive Compulsive Disorder scale and Migraine screening questionnaire after obtaining permission. Cronbach's alpha was calculated both for Migraine screening questionnaire and the Yale-Brown Obsessive Compulsive scale to determine their reliability.

SPSS v25 was used to analyze the collected data. Median, Range, and percentages were used for descriptive analysis of the data. The spreadsheet of the online responses was auto- generated by Google Forms. Data was imported into the SPSS, after encryption using Microsoft Excel. The Shapiro-Wilk test was applied to detect the departure of data from normality. Mann-Whitney U tests were applied to determine the mean difference between both variables transformed by adding the individual scores of the Yale-Brown Obsessive Compulsion Scale and Migraine Screening Questionnaire individually as per the standard scoring criteria of the scales as the data was non-uniformly distributed. Spearman's rank correlation were performed.

## Results

A total of 220 subjects were guided to fill the questionnaire according to the standard of the respective scales. Variables of Migraine total score and obsessive-compulsive disorder score were transformed into SPSS by adding the individual scores of the questions following the standard scoring systems of the scales and were labeled MSQ and YBOCS respectively. Shapiro-Wilk test was applied to these variables to determine the distribution of data. The following q-q plots show the non-uniform distribution of data (Figure 1).

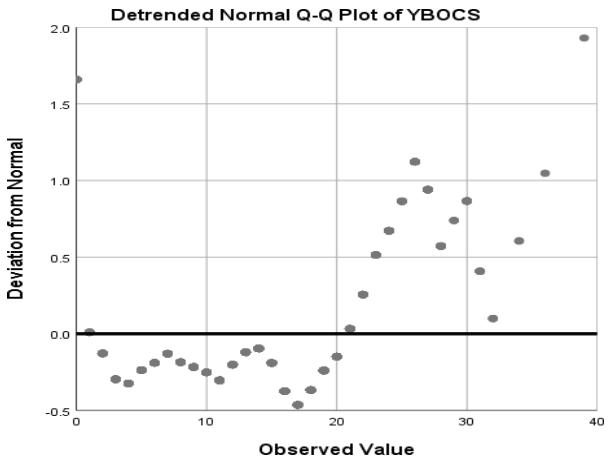


**Figure 1:** q-q plot showing non-normal data of YBOCS and MSQ

Mann-Whitney U tests were applied to determine the mean difference between two groups ($p<0.001$) suggesting the significant difference in the prevalence of Migraine among Males and Females. The median value for Migraine Total Score was significantly greater for females than males. Although the median value for obsessive-compulsive disorder was also greater for females than males it was not statistically significant. The increased Prevalence of Migraine and Obsessive- Compulsive Disorder in Females is shown in Figure 2 .

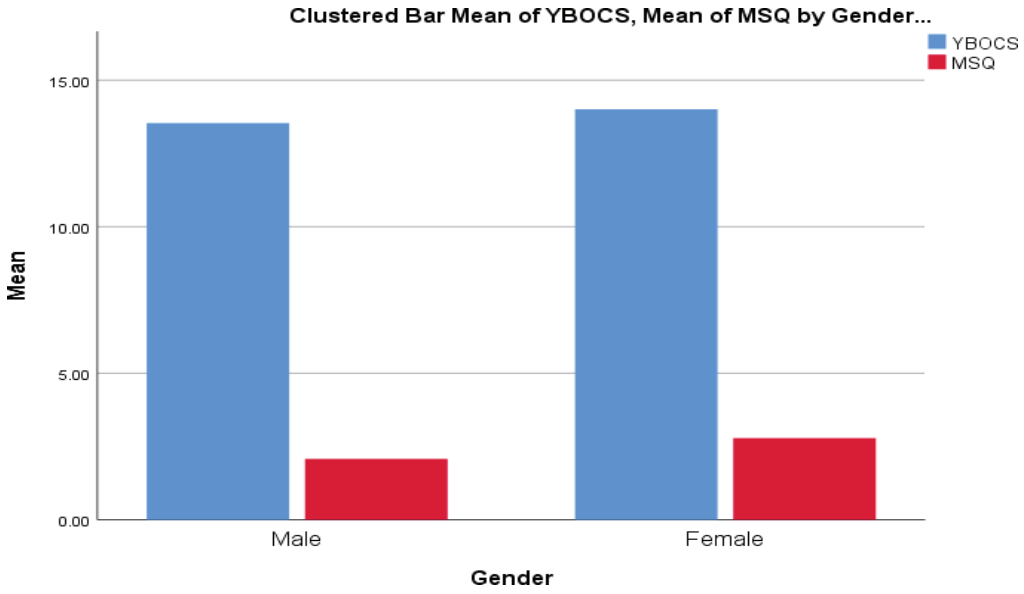


**Figure 2:** Means of genders by YBOCS and MSQ.

**Table-I** Association of migraine and OCD with sociodemographic variables

| | | YBOCS | without-Migraine | | With Migraine | |
|---|---|---|---|---|---|---|
| | | Median Scores | n | % | n | % |
| Gender | Male | 13.53 | 112 | 51 | 61 | 28 |
| | Female | 14.01 | 108 | 49 | 159 | 72 |
| Age | 17-24 | 13.91 | 197 | 89.5 | 148 | 67.1 |
| | 25-32 | 12.44 | 5 | 2.2 | 48 | 21.8 |
| | 33-40 | 9.67 | 18 | 8.1 | 24 | 11.1 |
| City | Lahore | 14.76 | 50 | 22.7 | 168 | 76.3 |
| | Rawalpindi | 12.05 | 44 | 20 | 29 | 13.1 |
| | Islamabad | 14.71 | 71 | 32 | 12 | 5.4 |
| | Multan | 14.24 | 55 | 25 | 14 | 5.6 |

The prevalence of Migraine and OCD was also determined in different age groups by using the Mann-Whitney U test. However, no significant difference in distribution was observed (p-value>0.05). The reliability of the Yale-Brown Obsessive Compulsive Scale (Y-BOCS) was found to be significant (Cronbach's alpha=0.882) which shows the excellent credibility of the data collected, while the Migraine screening questionnaire also indicated statistically acceptable reliability of the questions used for screening of Migraine (Cronbach's alpha=0.670). The Spearman correlation between Migraine and Obsessive-Compulsive disorder was positive and statistically significant. (0.292, p=0.000).

## Discussion

Over the world, a large portion of people suffer from the extremely common ailment known as migraine. Numerous research has been carried out over the years to examine the relationship between migraine and potential co-morbid diseases, as well as their varying prevalence, detrimental effects on quality of life, and genetic susceptibility. Numerous psychological conditions have been linked to migraines, which may affect the frequency and intensity of migraine attacks[14]. The focus of this study was to understand the association, if any, between migraine and OCD while keeping in view the gender differences of the affected individuals.

Our research found a favorable relationship between OCD, a mental health condition marked by obsessions and repeated behavior patterns, and migraines. It has been demonstrated statistically that a person's likelihood of developing OCD rose 1.4 significantly with rise in migraine frequency.

The risk of obsessive-compulsive disorder (OCD) rose five times in migraine sufferers, according to prior research [15]. Patients with co-morbid mental diseases and physical health issues have worsening quality of life and increased impairment[16].

Our study revealed that a higher proportion of females than males suffer from migraines. This might be explained by the changes in hormones that occur in females at different phases of their lives. Prior research revealed that while both genders were equally at risk before puberty, females had a threefold higher likelihood of migraine after puberty[17]. Moreover, it has been reported that women are more likely to suffer from mood and anxiety disorders[18], which have been shown to increase the frequency of migraine headaches[19]. Also, headache symptoms were observed to be more severe in females[20] thus supporting the results of our study setting. Our study sets the basis for more research to determine that hormones and greater odds of mental health issues in females might be contributing to the increased tendency of migraine.

On the other hand, there was no discernible gender difference in OCD sufferers. Research has revealed different risk profiles for the two sexes, with men experiencing a higher prevalence of OCD in childhood and females experiencing a higher likelihood of late-onset OCD[21,22] The thought processes in the disease also revealed gender variation as males were more likely to have symptoms of a religious or sexual nature contrary to females, whose symptoms were more likely to be contamination-related[23]. Therefore, although equally prevalent in both genders, OCD might show diversification in symptoms and stage of life when the onset occurs.

However, the gender-related difference for OCD was not determined in our subjects.

Migraine co-morbid mental health disorders may be treated to relieve migraine symptoms and lessen the frequency and intensity of migraine attacks. Research has demonstrated that OCD was a contributing factor to migraineurs' chronicity and resistance to therapy [24]. Patients were reluctant to seek help unless necessary either due to shame associated with symptoms or due to lack of awareness regarding this condition[25]. Moreover, patients were hesitant to speak of their symptoms due to the fear that they might be deemed dangerous or insane due to the nature of their symptoms[26]. This leads us to the understanding that early evaluation and management of psychiatric co-morbid disorders along with proper counseling and reassurance to alleviate fear and reluctance in patients can help improve treatment outcomes and the quality of life in migraine patients.

## Conclusion

Females are more likely to suffer from migraine while obsessive-compulsive disorder (OCD) prevails in both genders with varying frequencies at different stages of life. This study highlights the need for early screening and management to prevent chronic headaches in migraine patients.

## Limitations

There was the use of convenience sampling, which may lead to data distribution discrepancies. Reliance on self-reported scales without clinical psychiatric assessments to confirm OCD and migraine diagnoses. There was limited generalizability.

## Suggestions

There is a need for large-scale studies with diverse populations to enhance generalizability. For such studies, we use clinical psychiatric assessments to confirm OCD and migraine diagnoses. Increased awareness campaigns to reduce stigmatization and encourage help-seeking behavior in individuals experiencing obsessions or compulsions with headache symptoms. Integration of mental health services with primary care to facilitate early screening and management of co-morbid disorders.

## Conflict of Interest

The authors have no conflict of interest to reveal and have no confounding. There are no conflicting financial interests, misuse of position and representation.

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