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ORIGINAL ARTICLE

Severity and risk factors associated with comorbid depression, anxiety, and stress in adults with obsessive-compulsive disorder in Peshawar, Pakistan

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ABSTRACT

Objectives: To examine the severity and risk factors associated with co-morbid depression, anxiety, and stress in adults with obsessive-compulsive disorder (OCD) in Peshawar, Pakistan.

Methods: This cross-sectional study was conducted from August 2022 to January 2023 at Psychiatry Department, Lady Reading Hospital, Peshawar. Through purposive sampling, 104 patients (aged 18-45 years; mean±SD= 29.15±8.18) with DSM-5 diagnosed OCD were enrolled. Severity of OCD was assessed with Yale-Brown Obsessive-Compulsive Scale (Y-BOCS), and co-morbid depression, anxiety, and stress were measured with Depression, Anxiety and Stress Scale (DASS-21). Data were analyzed using descriptive statistics, Pearson correlation, regression analysis, and odds ratios (OR) for associated risk factors at $p<0.05$.

Results: Among participants, 79% had co-morbid depression, 76% anxiety, and 51% stress. On Y-BOCS, 54.8% had extremely severe and 35.6% severe OCD symptoms. Depression was mostly moderate (54.8%), while anxiety was moderate (34.6%) to severe (26%), and stress was mild (33.7%) to moderate (17.3%). Y-BOCS scores showed significant positive correlation with DASS-21 depression ($r=.345$, $p<0.01$) and stress ($r=.285$, $p<0.01$). Regression analysis revealed depression ($\beta=.247$, $p<0.05$), anxiety ($\beta=-.368$, $p<0.001$), and stress ($\beta=.397$, $p<0.001$) as predictors of OCD severity. Significant risk factors for co-morbidities included age ≤30 years, marital status, past psychiatric history, and illness duration > 1 year.

Conclusion: High rates of co-morbid depression, anxiety, and stress were observed among OCD patients, with significant associations to illness duration, marital status, and psychiatric history. These findings highlight the importance of early screening and integrated management strategies to improve treatment outcomes and quality of life in OCD patients.

Keywords: Obsessive-Compulsive Disorder (MeSH); Depression (MeSH); Anxiety (MeSH); Stress disorder (MeSH); Stress (MeSH); Comorbidity (MeSH); Risk Factors (MeSH).

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INTRODUCTION

Obsessive-Compulsive Disorder (OCD) is a chronic psychiatric illness characterized by obsessions, compulsions, or both. According to the American Psychiatric Association, approximately 1–2% of people in the United States suffer from OCD,[1] while its estimated prevalence in Pakistan is higher, at 4.1%.[2] As the illness progresses, avoidance behaviors often emerge; individuals may avoid objects or situations that trigger obsessive fears.[3] This avoidance can significantly interfere with daily activities such as eating, shopping, or reading, sometimes rendering patients housebound.[4]

The severity of OCD varies across individuals, but in many cases, it substantially impairs social and occupational functioning. The illness is linked to family conflicts, marital dissatisfaction, and even separation or divorce.[5] Educational and occupational attainment are also affected, leading to limited career opportunities and unemployment.[4] Gender differences and marital status appear to influence symptom patterns,[6] with men more likely to report aggressive or sexual obsessions, while women more frequently report contamination and symmetry-related symptoms.[7]

Although OCD-like symptoms have been described for centuries, the DSM-5 reclassified OCD into its own category of "Obsessive-Compulsive and Related Disorders," separating it from anxiety disorders.[8] This distinction is important, as the anxiety seen in OCD is specifically tied to obsessions and compulsions, while general anxiety may occur as a co-morbid condition. Intrusive, ego-dystonic thoughts can cause marked distress, often leading to depression as a common co-morbidity.[9] Studies report high co-morbidity rates, ranging from 67–92%, with lifetime rates approaching 90%.[8,10,11] OCD with co-morbidity tends to be more severe and is frequently resistant to treatment.[12]

Psychosocial stress is a well-recognized factor that exacerbates OCD symptoms, with co-morbid stress reported in up to 34% of OCD cases and frequently linked to anxiety (46%) and mood disorders (64%), leading to significant impairment in daily functioning.[8] Given the high prevalence of co-morbid depression, anxiety, and stress, and their impact on illness severity and treatment response, further investigation is essential. To the best of our knowledge, this is the first study from district Peshawar to explore

the severity, co-morbid conditions, and psychosocial risk factors associated with OCD. Findings from this study may provide insights into better management strategies, aiming to improve outcomes and quality of life for individuals living with OCD.

METHODS

The cross-sectional study was conducted on OCD patients at the Psychiatry Department of the Medical Teaching Institute Lady Reading Hospital Peshawar, Khyber Pakhtunkhwa, Pakistan. Ethical approval was obtained from the Institutional Review Board of MTI-Lady Reading Hospital and University of Peshawar (letter #: B-2041/Psy/PhD dated: July 20, 2022). Prior to participation, informed consent was obtained from all participants by trained research staff. Data collection occurred from August 2022 to January 2023. Before data collection, it was ensured that proper rapport was established with the participants who were assessed one-on-one in the psychiatry outpatient and inpatient department, as well as the participants who were referred to us by psychiatrists after OCD diagnosis.

Assessment instruments: The Diagnostic and Statistical Manual of Mental Disorders (DSM-5) OCD criteria were used to confirm the diagnosis. A purposive sampling technique was used. Sample size was calculated by using the Raosoft sample size calculator based on 4.1% estimated prevalence of OCD in Pakistan.[2] The study included 104 patients aged 18-45 years (mean±SD=29.15±8.18). While both Yale-Brown Obsessive-Compulsive Scale and Depression, Anxiety and Stress Scale (DASS-21) are self-report measures, given the cultural and ethnic heterogeneity, the scales were administered in interview format by bilingual screeners who were proficient in English and the local language to ensure that no critical pieces of information were lost in translation.

Yale-brown obsessive-compulsive scale (Y-BOCS): Patients were assessed for OCD severity using the Y-BOCS developed by Goodman et al. (1989).[13] Comprising two sub-scales, obsession (5 items) and compulsion (5 items), the scale has a total of 10 items. With a 5-point Likert scale, where 0 represents "*no symptoms*" and 4 represents "*severe symptoms,*" on a scale of 0 to 4. The cutoff scores for depression, anxiety, and stress are 9, 7, and 14, respectively, and the maximum score is 63.

Depression anxiety and stress scale (DASS-21): The DASS-21 scale's Cronbach's alpha was 0.74. DASS-21 comprises 21 items that are divided into three self-reported sub-scales that evaluate the emotional states of anxiety, stress, and depression. Using a Likert scale of 0 to 3, with 0 denoting "Did not apply to me at all" and 3 denoting "Applied to me very much most of the time," each sub-scale consists of 7 items. The sum of the relevant items from the sub-scales measuring stress, anxiety, and depression is used to compute total scores.[14] The data was collected from one teaching hospital in Peshawar. Patients with the age range of 18-45 years were included in the study.

Statistical Analyses as well as data entry were conducted using Statistical Software for Social Science (SPSS) version 25. Descriptive statistics for percentages and frequencies were used in the analysis of the basic variables. Inter-scale correlation using the Pearson correlation coefficient was applied to find the relationship between YBOCS, DASS-21, and its sub-scales. Simple linear regression and univariate analysis using cross tabulation were used for finding associated risk factors. Test results at $p<0.05$ level were considered significant.

RESULTS

Table I shows the demographic characteristics of the study participants. The study had a total enrollment of 104 OCD patients. The mean age of the study sample was 29.15±8.18 years, with an age range from 18 to 45 years, 52.9% were male, 57.5% were married, and 83.7% had a history of past psychiatric treatment. The total duration of illness was 2-5 years (38.5%), more than 20 years (38.5%), and the present duration of illness is less than 3 months (17.3%). Results indicated that 79% of OCD patients reported co-morbid depression, 76% reported co-morbid anxiety and 51% reported co-morbid stress. Table II illustrates different types of OCD symptoms endorsed by the participants, with contamination reported by most participants (n=63; 60%), followed by mixed symptoms (n=27; 26%). Mixed symptoms refer to patients presenting with multiple types of obsessions and compulsions.

Table III indicates the severity of OCD on the Y-BOCS scale mean score (31.90±6.479) and the severity of depression, anxiety, and stress on DASS-21 scale (39.17±11.744). On the Y-BOCS scale 54.8% of patients reported extremely severe OCD symptoms and 35.6% severe OCD symptoms. The result reveals 54.8% moderate depression in OCD patients on DASS-21 depression sub-scale. And 34.6% moderate and 26% severe anxiety and 33.7% mild and 17% moderate stress in OCD patients on DASS-21 anxiety and stress sub-scales respectively. Results show the relationship between OCD, depression, anxiety, and stress. Most of the patients reported moderate to severe depression, anxiety, and stress with OCD.

The result shows correlation between the Y-BOCS, DASS-21, and its sub-scales for OCD, depression, anxiety, and stress. Each cell of the correlation matrix shows the strengths of the relationship. The result table reveals a positive correlation between Y-BOCS (obsession and compulsion sub-scales), DASS-21, and its sub-scales (depression, anxiety, and stress). The result indicates a statistically significant difference at 0.01 level between Y-BOCS (Obsessions ($r=.921$, $p<.01$), & compulsions ($r=.923$, $p<.01$), DASS-21($r=.269$, $p<.01$), and its sub-scales depression, ($r=.345$, $p<.01$), and stress ($r=.285$, $p<.01$), using Pearson correlation (Table IV).

The linear regression model was statistically significant ($F(3,104)=7.219$, $p<0.001$), explaining 17.8% of the variance in OCD severity ($R^2=0.178$). Depression ($\beta=.247$, $p<0.05$) and stress ($\beta=.397$, $p<0.001$) were significant positive predictors of OCD severity, while anxiety showed a significant negative association ($\beta=-.368$, $p<0.001$). Complete details are given in Table V. Results of Table VI show that the risk factors for

Table I: Demographic characteristics of study participants (n=104)

Variable		Frequency	Percentage	Variable		Frequency	Percentage
Age (years)	18-25	50	48.1	Occupation	Govt. Job	5	4.8
	26-35	35	33.7		Doctors	2	1.9
	36-45	19	18.3		Other	14	13.5
Gender	Male	55	52.9	Past Psychological History	Yes	87	83.7
	Female	49	47.1		No	17	16.3
Marital Status	Single	43	41.3	Total Duration of illness (years)	< 1	10	9.6
	Engaged	7	6.7		2-5	40	38.5
	Married	50	48.1		6-10	18	17.3
	Divorced	2	1.9		11-15	23	22.1
	Widow	2	1.9		16-20	5	4.8
Education	No formal education	31	29.8		≥20	7	6.7
	Primary	13	12.5	Present Duration of illness	< 3months	50	48.1
	Middle	10	9.6		3 - < 6 months	23	22.1
	Matric	19	18.3		6 - < 9 months	8	7.7
	Intermediate	13	12.5		9 < 12 months	5	4.8
	Undergraduate + graduation + post-graduation	18	17.3		≥ 12 months	18	17.3
Occupation	Housewife/house lady	42	40.4	Depression, Anxiety, & Stress scale (DASS-21)	Depression	82	79
	Student	27	26.0		Anxiety	79	76
	Jobless	6	5.8		Stress	53	51
	Business	5	4.8				

Table II: Distribution of obsessive-compulsive symptom types among study participants (n=104)

Type of Obsessive-Compulsive Symptom	Frequency	Percentage
Contamination	63	60
Mixed symptoms	27	26.0
Rumination	6	5.8
Checking/Rechecking	5	4.8
Order/symmetry	3	2.9

co-morbid depression was younger age (≤30 years) (OR=.183, 95% CI=0.40 - 0.838, p<0.05), married patients Odds Ratio (OR)=0.324, 95% CI =0.115-0.911, p<0.05), past psychiatric history present (OR=8.929, 95% CI = 2.850 - 27.975, p < 0.001), total duration of OCD more than 1 year (OR=0.036, 95% CI = 0.007-0.186, p <0.001) were found statistically significant associated risk factors for co-morbid depression in OCD patients. Risk factors for co-morbid anxiety were Married patients (OR=.232, 95% CI = 0.084-0.640, p <0.05), Past psychiatric history (OR=6.339, 95% CI=2.094-19.193, p <0.01) present, and total duration of OCD more than 1 year (OR=9.793, 95% CI = 2.074-19.193, p <0.01). These were found to be statistically highly significant. Statistically significant risk factors for co-morbid stress were found that most of the patients were educated (OR=.302, 0.122 - 0.745, p<0.001), Married patients (OR=.421, 95% CI=0.192-0.926, p < 0.05), Past psychiatric history (OR=4.191, 95% CI = 1.265-13.887, p<0.05) present, and total duration of OCD more than 1 year (OR=2.325, 95% CI=1.840-2.938, p < 0.001).

DISCUSSION

The study aimed to explore the severity and risk factors associated with co-morbid depression, anxiety, and stress in adults with obsessive-compulsive disorder. According to the findings of this study, 79% of depression was reported by OCD patients, 76% anxiety, and 51% stress symptoms

Table III: Severity of obsessive-compulsive disorder and co-morbid symptoms among study participants (n=104)

Scale/ Subscale	Normal [n (%)]	Mild [n (%)]	Moderate [n (%)]	Severe [n (%)]	Extremely Severe [n (%)]	Mean±SD
Y-BOCS Total	0 (0)	1 (1.0)	9 (8.7)	37 (35.6)	57 (54.8)	31.90±6.48
DASS-21 Depression	22 (21.2)	22 (21.2)	57 (54.8)	3 (2.9)	0 (0)	13.61±4.67
DASS-21 Anxiety	25 (24.0)	13 (12.5)	36 (34.6)	27 (26.0)	3 (2.9)	11.32±5.12
DASS-21 Stress	51 (49.0)	35 (33.7)	18 (17.3)	0 (0)	0 (0)	14.25±4.49

Y-BOCS: Yale Brown Obsession and Compulsion scale: DASS-21: Depression, Anxiety, and Stress Scale

Table IV: Inter-scale correlation using Pearson correlation coefficient between Y-BOCS and DASS-21 and its subscales (n=104)

S.no	Variables	M	SD	I	II	III	IV	V	VI	VII
I	Y-BOCS	31.90	6.479	1	—	—	—	—	—	—
II	Obsession	16.08	3.472	.921**	1	—	—	—	—	—
III	Compulsion	15.85	3.530	.923**	.701**	1	—	—	—	—
IV	DASS-21	39.17	11.744	.269**	.260**	.241*	1	—	—	--
V	Depression	13.61	4.666	.345**	.279**	.359**	.783**	1	—	—
VI	Anxiety	11.32	5.124	.053	.84	.02	.865**	.506**	1	—
VII	Stress	14.25	4.491	.285**	.293**	.236*	.814**	.432**	.596**	—

**Correlation is significant at the 0.01 level (2-tailed), Y-BOC: Yale Brown Obsession and Compulsion scale; DASS-21: depression, anxiety and stress scale

Table V: Linear regression analysis of depression, anxiety, and stress questionnaire as a predictor of OCD severity (n=104)

Variables	B	SE B	β	t	95% CI	p	R	R^2	F
Depression	.201	.091	.247	2.205	.020 -.382	.030	.422	.178	7.219 (.000)
Anxiety	-.216	.070	-.368	-3.083	-.355- -.077	.003			
Stress	.366	.096	.397	3.801	.175-.556	.000			

Note. Dependent variable. Y-BOCS (Yale-Brown Obsessive Compulsive Scale); OCD: Obsessive Compulsive Disorder

(Table I), which align with established literature showing comorbidity between OCD and other psychiatric conditions. However, we found a higher prevalence of psychiatric co-morbidities as compared to previously reported by the DSM-5 at 70% for co-morbid anxiety and 63% for depression (American Psychological Association, 2013),[8] which can be explained by the 25% increase in depression and anxiety after the COVID-19 pandemic, according to the World Health Organization.[15] The most common obsession and compulsions was contamination (60%), as reported in a study (62.9%),[16] mixed symptoms of obsessions and compulsions (26%), checking rechecking (4.8%), rumination (5.8%) and order and symmetry (2.9%) [Table II]. Our findings are somewhat different from the findings of other studies, where they have reported that the most common compulsions were arranging/symmetry (56%), counting (41%), and washing (17%).[17] According to another study, contamination was found in (39%), checking rechecking (27%), and order (7%).[18]

Several mental diseases frequently coexist with obsessive-compulsive disorders. Most research on OCD has found 50% to 60% comorbidity with other Axis I illnesses. Among OCD co-morbidities, anxiety, and depression disorders are the most prevalent (Table III, Table V). Major depressive disorder (MDD) incidence in OCD patients has varied from 13% to 78%. Other anxiety disorders have been seen in OCD patients at rates ranging from 24% to 70%.[19] Co-morbid OCD and anxiety rates were quite high, at 15.5% and 60.5%, respectively.[20] Many anxiety disorders are therefore strongly co-morbid with one another [21] as found in this study. The co-occurrence of OCD, stress[22] and depression is quite prevalent, and a complicated and multifaceted association exists between OCD, stress, and depression. This underscores the importance of thorough assessment and integrated treatment strategies to effectively address both disorders in affected individuals.[22]

The strong correlations between Y-BOCS scores and DASS-21 subscales (depression $r=0.345$, $p<0.01$; stress $r=0.285$, $p<0.01$) suggest that as OCD severity increases, patients experience greater general psychological distress (Table IV). This finding has important clinical implications, as it indicates that effective OCD treatment should address not only obsessive-compulsive symptoms but also broader emotional difficulties.

Furthermore, the relationship between OCD and depression, anxiety, and stress is complex and multifaceted. Our analysis identified several significant risk factors for these comorbid conditions. Younger age (≤30 years), marital status, past psychiatric history, and illness duration >1 year were consistently associated with higher rates of comorbid depression, anxiety and stress in OCD patients (Table VI). Higher rates of depression, anxiety, and stress[22] comorbidity with OCD is associated with marital status,[23] early age onset [24,25] and longer duration of illness,[24,26] and past psychiatric treatment history.[23,27] Our findings

Table VI: Risk factors for co-morbid depression, anxiety and stress in OCD patients

Risk factors	Co-morbid depression	Co-morbid anxiety	Co-morbid stress
	OR (95% CI) p-value	OR (95% CI) p-value	OR (95% CI) p-value
Gender	1.088 (.423- 2.799) .860	2.493 (.970--.408) .054	1.873 (.858--4.086) .113
Male vs Female			
Age	0.183 (0.40 - .838) .017	0.343 (0.107-1.099) .063	.964 (.416-2.233) .931
≤ 30 years vs >30 years			
Educational status	0.305 (0.083-1.118) .062	0.343 (.107-1.099) .063	.302 (.122-.745) .008
Educated vs Uneducated			
Marital status	.324 (.115- .911) .028	.232 (0.084-.640) .003	.421 (.192-.926) .030
Single vs Married			
Past psychiatric history	8.929 (2.850-27.975) .000	6.339 (2.094-19.193) .000	4.191 (1.265-13.887) .013
Present duration of illness	0.720 (.280 -1.851) .494	1.108 (.455-2.698) .821	1.108 (.455-2.698) .821
< 3 months vs >3 months			
Total duration of illness	0.036 (.007-.186) .000	9.793 (2.074--19.193) .002	2.325 (1.840-2.938) .000
< 1 year vs >1 year			

OCD: Obsessive Compulsive Disorder, OR: Odds Ratio

further highlight that certain demographic and clinical characteristics may predispose OCD patients to developing additional psychological difficulties and therefore acknowledgement of these risk factors can help clinicians identify individuals who may be at increased risk of developing OCD and tailor interventions accordingly. Clinically, a co-morbid or dual diagnosis can unfortunately make creating a successful treatment plan quite difficult. This is because a complete recovery from OCD requires treating all underlying problems. It can increase the chances of receiving treatment and leading a happy, healthy, and productive life by getting a proper diagnosis of OCD and other mental illnesses.[28]

Limitations of the study

This study has several limitations. First, its cross-sectional design restricts causal inferences between OCD severity and co-morbid conditions. Second, data collection from a single teaching hospital limits the generalizability of findings to other settings, including rural and socioeconomically diverse populations in Pakistan. Third, the use of purposive sampling, despite efforts to minimize bias, may have introduced selection bias.

CONCLUSION

The study concludes that multiple factors contribute to the severity of OCD. Key risk factors include younger age, marital status, educational background, past psychiatric history, illness duration exceeding one year, and the presence of co-morbid depression, anxiety, and stress. The high prevalence of these co-morbid conditions highlights the importance of adopting comprehensive treatment strategies that address both obsessive-compulsive symptoms and associated emotional difficulties. Early intervention, particularly for younger patients, those with a longer illness course, and individuals with prior psychiatric history, may enhance treatment outcomes and improve overall quality of life.

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AUTHORS' CONTRIBUTION

The Following authors have made substantial contributions to the manuscript as under:

SM: Conception and study design, acquisition, analysis and interpretation of data, drafting the manuscript, approval of the final version to be published

FJ & EI: Study design, analysis and interpretation of data, drafting the manuscript, critical review,approval of the final version to be published

AK: Conception and study design, analysis and interpretation of data, critical review, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

CONFLICT OF INTEREST

Authors declared no conflict of interest, whether financial or otherwise, that could influence the integrity, objectivity, or validity of their research work.

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DATA SHARING STATEMENT

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