Original Article

Prevalence of Obsessive-Compulsive Spectrum Disorders in Obsessive-Compulsive Disorder

Mohammad Aleem Siddiqui, Daya Ram[1], Sanjay Kumar Munda[1], Shazia Veqar Siddiqui[2], Sujit Sarkhel[3]

ABSTRACT

Introduction: There is growing awareness of the heterogeneity of obsessive-compulsive disorder (OCD) and of the multiple systems involved in its pathogenesis. Identification of obsessive-compulsive spectrum disorders (OCSDs) may have important implications in the management and prognosis of OCD, but there is a paucity of research in the domain of identification of OCSD in probands with OCD. There are few studies that have examined OCSD in the first-degree relatives (FDR) of OCD patients, some of these were not controlled, and these studies have no final agreements over outcomes, and therefore, this area needs to be further explored. **Objectives:** The objective of this study was to assess the prevalence of OCSDs in OCD probands; and its relationship to sociodemographic and clinical variables, comparing each aspect by a control group of schizophrenia probands. **Materials and Methods:** Sixty patients each of OCD and schizophrenia, diagnosed by the Diagnostic and Statistical Manual of Mental Disorders IV Text Revision,[1] above 18 years of age and giving informed consent, were interviewed using the Structured Clinical Interview for OCSD, Yale–Brown Obsessive-Compulsive Rating Scale, Hamilton Rating Scale for Depression, and Hamilton Rating Scale for Anxiety. **Results:** In OCD group, 22 OCSDs were found in 11 subjects whereas in schizophrenia group, 2 OCSDs (self-injury) were found in two probands. When the two groups were compared in terms of individual OCSDs, there was no significant difference between them. However, when the comparison was made taking into account all OCSDs taken together, it was significantly higher ($P = 0.016$) in the OCD group compared to the schizophrenia group. **Conclusion:** OCSDs were significantly more in OCD probands as compared to schizophrenia probands. This suggests a familial aggregation of these disorders.

Key words: *Obsessive-compulsive disorder, obsessive-compulsive spectrum, schizophrenia*

INTRODUCTION

The practice of medicine involves a great heterogeneity of clinical presentations, and the clinicians' art rests on the ability to see core manifestations of a given disorder beyond these varied presentations. The prototypes described in textbooks are actually rare, and the modal presentation is atypicality. In this sense, the atypical is the norm. Physicians in most specialties usually

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Department of Psychiatry, Era's Lucknow Medical College and Hospital, [2]Department of Psychology, Healthyminds Neuropsychiatry Clinic, Lucknow, Uttar Pradesh, [1]Department of Psychiatry, Central Institute of Psychiatry, Ranchi, Jharkhand, [3]Department of Psychiatry, Institute of Psychiatry, Kolkata, West Bengal, India

Address for correspondence: Dr. Sujit Sarkhel
12A/13/2, Pasupati Bhattacharjee Road, Charaktola, Kolkata, West Bengal, India.
E-mail: sujitsarkhel@gmail.com

have laboratory tests to validate diagnostic decisions, and when a diagnosis remains in doubt, it is common to begin a therapeutic trial in the hope of validating diagnosis by response to treatment.

The situation is similar for psychiatry, but the officially sanctioned manuals, such as the Diagnostic and Statistical Manual of Mental Disorders (DSM)-IV[1] and International Classification of Diseases (ICD)-10[2] presume that the syndromes they define constitute the real maladies. Laboratory testing is rarely relevant or specific enough for a given mental disorder. In the absence of such tests, we might use distress and dysfunction for the validation of clinical illness. It then becomes obvious that many individuals seek help for distress and dysfunction that involve mental and behavioral problems – especially in primary care clinics – which would be subthreshold to what is described in the official manuals.

The chapter on obsessive-compulsive and related disorders, which is new in DSM 5,[3] reflects the increasing evidence that these disorders are related to one another in terms of a range of diagnostic validators, as well as the clinical utility of grouping these disorders in the same chapter. New disorders include hoarding disorder, excoriation (skin-picking) disorder, substance-/medication-induced obsessive-compulsive and related disorder, and obsessive-compulsive and related disorder due to another medical condition.

For several reasons, it may be of heuristic value to conceptualize disorders as lying on a spectrum. Positing a spectrum may encourage clinicians to inquire about comorbidity and researchers to compare the psychobiology of different conditions. Further, a spectrum construct may encourage the adaptation of treatments found effective in one condition for use in another.

The obsessive-compulsive spectrum

As articulated by Hollander,[4] disorders are posited to belong to the OC spectrum based on their similarities with obsessive-compulsive disorder (OCD) in various domains. These domains have been proposed to include the following: symptoms (most notably, obsessions and compulsions), sex ratio, age of onset, course of illness, comorbidity (among disorders within and outside of the spectrum), joint familial loading, treatment response, and presumed etiology. Tourette's disorder, body dysmorphic disorder (BDD), and hypochondriasis come very close to OCD.[5] Patients with Tourette's disorder often have obsessive-compulsive symptoms, patients with OCD often have tics, and there seems to be considerable overlap in the genetics and neurocircuitry of the two conditions.[6] BDD and hypochondriasis have considerable overlap with OCD in the form and function of symptoms (with all these conditions characterized by anxiety-arousing concerns and anxiety-reducing rituals).[7] The relationship between compulsive and impulsive disorders is more complex. Some authors have suggested that compulsivity and impulsivity are orthogonal dimensions and that patients can have both compulsive and impulsive symptoms. Others have argued that compulsive and impulsive disorders lie at opposite ends of a unidimensional spectrum. For example, although serotonin-reuptake inhibitors are a first-line pharmacotherapy for OCD and dopamine-receptor blockers are a first-line pharmacotherapy for Tourette's disorder, there may be value in using antipsychotics as augmenting agents in treatment-refractory OCD and in using serotonin reuptake inhibitors for comorbid OCD in Tourette's disorder. Additional studies of the OCSDs are needed to obtain sufficiently rich data on those conditions and allow careful comparison with the phenomenology and psychobiology of OCD.

Need for the study

There is growing awareness of the heterogeneity of OCD and of the multiple systems involved in its pathogenesis. There is need to delineate the complex psychobiology of OCD in greater detail. Additional studies of the obsessive-compulsive spectrum disorders (OCSDs) are needed to obtain sufficiently rich data on those conditions and allow careful comparison with the phenomenology and psychobiology of OCD. Identification of OCSD may have important implications in the management and prognosis of OCD, but there is a paucity of research in the domain of identification of OCSD in probands with OCD. There are few studies that have examined OCSD in the first-degree relatives (FDR) of OCD patients, some of these were not controlled and these studies have no final agreements over outcomes, and therefore, this area needs to be further explored. There is only a single study from India by Jaisoorya *et al*.[8] regarding OCSD in OCD. Moreover, to the best of our knowledge, there is only one study of OCSD in schizophrenia probands which showed preferential aggregation of OCD spectrum disorders in the schizophrenia patients with OCD.[9] In our study, The Structured Clinical Interview for OCSDs (SCID-OCSDs) by du Toit *et al*.[10] was used to determine the presence of OCSDs in probands. This study assesses the prevalence of OCSDs in OCD probands; and its relationship to sociodemographic and clinical variables, comparing each aspect by a control group of schizophrenia probands.

MATERIALS AND METHODS

The study was conducted in Central Institute of Psychiatry, Kanke, Ranchi, India. Sixty patients each

of OCD and schizophrenia, diagnosed by DSM-IV TR,[1] above 18 years of age and giving informed consent were selected from the outpatient department of the hospital. The schizophrenia patients were evaluated during the stabilization phase, defined as a clinically stable period lasting at least 1 month, where each item on the positive subscale of the Positive and Negative Syndrome Scale scored <4. In both the patient groups, those with any psychiatric comorbidity (except mild-to-moderate depression in case of OCD) or organicity were excluded from the study. Apart from recording the sociodemographic and clinical characteristics of the subjects, they were interviewed using the SCID for OCSD,[10] which is used to determine the presence of OCSDs. This structured interview is based on the Structured Clinical Interview for DSM-IV Axis I disorders (SCID-I) and consists of nine subscales to determine the presence of Tourette's disorder, intermittent explosive disorder, kleptomania, pyromania, pathological gambling, trichotillomania, compulsive self-injury (e.g., skin-picking), compulsive buying, and sexual compulsions (i.e., hypersexual disorder). The choice of OCSDs measured by the SCID-OCSD is based on the previous literature reviews on putative OCSDs. For putative OCSDs (i.e., binge-eating disorder, anorexia nervosa, hypochondriasis, BDD, and bulimia nervosa), SCID-I modules were used. The first question (i.e., the screening question) of every module is always asked. If particular criteria are not met for a particular disorder, the interviewer proceeds to the next module in a similar manner as in the SCID-I. Responses are coded as follows:? = inadequate information; 1 = absent or false; 2 = subthreshold; and 3 = threshold or true for both present/past disorders. The presence of both current and past disorders is determined. The items of the SCID-OCSD are based on DSM-IV criteria. The subjects were also rated using (YBOCS),[11] Hamilton Rating Scale for Depression (HAM-D),[12] and Hamilton Rating Scale for Anxiety (HAM-A).[13]

Statistical analysis

The data were analyzed with the help of SPSS version 16.0 (IBM, Armonk, New York, USA) for Windows. Normality of the data was assessed using Kolmogorov–Smirnov test, which showed that the data were normally distributed. Comparison of continuous and categorical variables was done using *t*-test and Chi-square tests, respectively. The significance level was kept at 0.05 (two tailed).

RESULTS

The study included 60 subjects each having OCD and schizophrenia, respectively. The sociodemographic characteristics of the groups are shown in Table 1.

Table 1: Sociodemographic characteristics of obsessive-compulsive disorder and schizophrenia probands

Variable	OCD (*n*=60), *n* (%)/mean±SD	SCHIZ (*n*=60), *n* (%)/mean±SD	*P*
Sex			
Male	40 (66.7)	49 (81.7)	0.094
Female	20 (33.3)	11 (18.3)	
Marital status			
Unmarried	30 (50)	27 (45)	0.583
Married	30 (50)	33 (55)	
Socioeconomic status			
Upper + middle U	20 (33.3)	11 (18.3)	0.168
Middle L	22 (36.7)	28 (46.7)	
Lower U + lower L	18 (30.0)	21 (35.0)	
Background			
Rural	32 (53.3)	49 (81.7)	0.001*
Urban	28 (46.7)	11 (18.3)	
Age (years)	29.35±8.12	31.8±78.77	0.106
Education (years)	11.68±3.13	9.22±4.87	0.001*

*$P<0.05$ (two-tailed). OCD – Obsessive-compulsive disorder; SCHIZ – Schizophrenia; SD – Standard deviation

The OCD group was composed of 40 (66.7%) males and 20 (33.3%) females with a mean age of 29.35 ± 8.12 years. Totally 30 (50%) participants in OCD group were married, and other 30 (50%) were either unmarried, widow/widower, or divorced. On assessing for socioeconomic status as per Kuppuswamy's revised classification (which includes income, education, and employment status), 20 (33.3%) were upper + middle (upper) status, 22 (36.7%) were of middle (lower) status, and 18 (30.0%) were of lower economic status. The schizophrenia group was comparable with the OCD group with respect to above parameters. With respect to background, 28 (46.7%) were from urban background in OCD group, which was significantly more than schizophrenia group 11 (18.3%); and 32 (53.3%) were from rural background in OCD group as compared to 49 (81.7%) in patient control group. There was also significant difference in years of education as the patient group had 11.68 ± 3.13 years which was more than 9.22 ± 4.87 years in the patient control group.

Table 2 shows the distribution of individual OCSDs in OCD group versus schizophrenia group. Both subthreshold and threshold disorders of past and present were taken in consideration. In OCD group, 22 OCSDs were found in 11 subjects as follows: compulsive shopping in 4 (most common), followed by stereotypic movement disorder in 3, self-injury in 3, intermittent explosive disorder in 3, kleptomania in 2, Tourette's disorder in 1, pyromania in 1, trichotillomania in 2, hypersexual disorder in 1, and bulimia nervosa in 1. In schizophrenia group,

Table 2: Distribution of individual obsessive-compulsive spectrum disorders in obsessive-compulsive disorder and schizophrenia patients

Variable	OCD (*n*=60), *n* (%)	SCHIZ (*n*=60), *n* (%)	*P*
Compulsive shopping#			
Subthreshold	2 (3.3)	0	0.244
Threshold	1 (1.7)	0	
Past compulsive shopping #			
Subthreshold	1 (1.7)	0	1.000
Threshold	0	0	
Self-injury #			
Subthreshold	1 (1.7)	2 (3.3)	0.619
Threshold	2 (3.3)	0	
Past self-injury			
Subthreshold	0	0	-
Threshold	0	0	
Stereotypic movement disorder #			
Subthreshold	3 (5)	0	0.244
Threshold	0	0	
Past stereotypic movement disorder #			
Subthreshold	1 (1.7)	0	1.000
Threshold	0	0	
IED #			
Subthreshold	1 (1.7)	0	0.496
Threshold	1 (1.7)	0	
Past IED #			
Subthreshold	1 (1.7)	0	1.000
Threshold	0	0	
Tourettes disorder #			
Subthreshold	0	0	1.000
Threshold	1 (1.7)	0	
Past Tourettes disorder			
Subthreshold	0	0	-
Threshold	0	0	
Kleptomania #			
Subthreshold	1 (1.7)	0	0.496
Threshold	1 (1.7)	0	
Past kleptomania			
Subthreshold	0	0	-
Threshold	0	0	
Pyromania #			
Subthreshold	0	0	1.000
Threshold	1 (1.7)	0	
Trichotillomania #			
Subthreshold	1 (1.7)	0	1.000
Threshold	0	0	
Past trichotillomania #			
Subthreshold	0	0	1.000
Threshold	1 (1.7)	0	
Hypersexual disorder #			
Subthreshold	1 (1.7)	0	1.000
Threshold	0	0	
Past hypersexual disorder			
Subthreshold	0	0	-
Threshold	0	0	
Bulimia nervosa #			
Subthreshold	1 (1.7)	0	1.000
Threshold	0	0	
Past bulimia nervosa			
Subthreshold	0	0	-
Threshold	0	0	

**P*<0.05 (two-tailed), #Stands for Fisher's exact test.
OCD – Obsessive-compulsive disorder; SCHIZ – Schizophrenia; IED – Intermittent explosive disorder

2 OCSDs (Self-injury) were found in two probands. When the two groups were compared in terms of individual OCSDs, there was no significant difference between them. However, when the comparison was made taking into account all OCSDs taken together [Table 3], it was significantly higher (P = 0.016) in the OCD group compared to the schizophrenia group. The OCD group was subdivided based on the presence of OCSDs (n = 11) and absence of OCSDs (n = 49), and these groups were compared in terms of age, sex, education, marital status, socioeconomic status, and background, and there was no significant difference between the two groups. Similarly, the groups were also found comparable in terms of YBOCS, HAM-A and HAM-D scores.

DISCUSSION

The index study was conducted at the Central Institute of Psychiatry on a total of 120 probands, of which 60 subjects were OCD patients which composed the patient group, 60 schizophrenia patients serving as patient control group and all of their FDRs over the age of 18 years, i.e., 298 FDRs of OCD probands, and 333 FDRs of schizophrenia probands were assessed, with the aims of estimating the occurrence of OCSD in all the probands and all the FDRs across both the groups, in accordance with the criteria developed by du Toit *et al*.[10]

The index study was driven by the recent interest in the spectrum concept in psychiatry. The concept of bipolar spectrum, schizophrenia spectrum and "obsessive-compulsive spectrum" of disorders is still in its infancy and is being avidly researched.

These conditions are characterized as similar to OCD in terms of phenomenology, associated features (age of onset, clinical course, and comorbidity), presumed etiology, familial transmission, and/or response to selective pharmacologic or behavioral treatments.[4] Many psychiatric conditions are included under this rubric, including, but not limited to, somatoform disorders (hypochondriasis and BDD), eating disorders (e.g., anorexia nervosa, and bulimia nervosa), pathologic "grooming" habits (e.g., pathologic nail biting or onychophagia, pathologic skin picking,

Table 3: Distribution of all obsessive-compulsive spectrum disorders as a group in obsessive-compulsive disorder and schizophrenia groups

Variable	OCD (n=60), n (%)	SCHIZ (n=60), n (%)	χ^2	df	P
All OCSDs					
Absent	49 (81.66)	58 (96.66)	6.988	1	0.016*
Subthreshold + threshold	11 (18.33)^	2 (3.3)^^			

^22 OCSDs in 11 probands, ^^2 OCSDs in 2 probands, *P<0.05. OCD – Obsessive-compulsive disorder; SCHIZ – Schizophrenia; OCSDs – Obsessive-compulsive spectrum disorders

and trichotillomania), and other impulse control disorders (e.g., kleptomania, pathologic gambling, and pyromania).[4,14] Although many of these conditions appear highly comorbid with OCD, there is, thus far, little data on familial relationships between most of them and OCD.[15]

Methodological issues

The index study undertook identification of the OCSD in the probands having OCD. The previous studies[15,16] used normal individuals free from psychopathology as controls. We made the between-group comparison more stringent by taking schizophrenia patients as controls. Since we were studying psychiatric morbidity in probands and their family members, a group of patients would be more suitable to serve as controls rather than normal individuals as this increased the homogeneity of comparison with regard to morbidity. The OCSDs are well-validated constructs by themselves and less likely in general population, so patient control increased the robustness of our study. The expression of significant difference between two groups means excess morbidity from a baseline of some degree of morbidity.

We used a structured interview schedule (SCID-OCSD) to interview probands as well as FDRs. It has been specially designed for the measurement of various OCSDs and is based on DSM-IV Axis I disorders which enhances the diagnostic reliability of the given disorders. This is an improvement over studies[15,16] which have used clinical interview rather than any structured instrument to yield diagnoses. It is also an improvement over study by Jaisoorya *et al*.[8] which used only hypochondriasis, BDD, and eating disorders section of SCID. Responses were coded as follows:? = inadequate information; 1 = absent or false; 2 = subthreshold; and 3 = threshold or true. The presence of both current and past disorders was determined, thus covering the maximum possible dimensions of disorders. The use of structured interview schedule when used with family history method also increases the reliability of family history method. Depression of more than moderate level as per HAM-D (score ≥19) was excluded, thus making the sample more homogenous and free of confounding effect of severe depression.

Sociodemographic and clinical characteristics

Our sample was composed of 40 (66.7%) males and 20 (33.3%) females. This reflects the general pattern of referral in our setup. In other Indian studies also, males were overrepresented.[8,17] This could be reflection of our social milieu where males are the bread earners and hence seek treatment early. In Western studies, both sexes were almost equally represented, for example, 48.57% males in Lochner *et al*.,[18] 44.7% in du Toit *et al*.,[10]and 51.28% in Pauls *et al*.[16]

The illness duration was 68.13 ± 53.59 months in OCD group which is comparable to median duration of 72 months in Jaisoorya *et al*.[8] The cost-of-medication was significantly higher in OCD group ($P \leq 0.05$) at Rs. 719.55 ± 674.47 per month as compared to Rs. 454.92 ± 292.50 per month in schizophrenia Group. The reason might be that our schizophrenia group was in remission as chosen by the selection criteria, whereas OCD cases were not necessarily in remission, many in active phase and thus higher treatment cost may reflect the increased burden of treatment.

Comparison of OCD and schizophrenia across the scores of Y-BOCS, HDRS, and HAM-A:

YBOCS obsessions score was 10.67 ± 5.45, compulsions score 8.03 ± 6.128, total being 18.72 ± 10.551. The score on HDRS and HAM-A were significantly higher ($P \leq 0.05$) in OCD group (4.87 ± 3.56 and 4.87 ± 3.568, respectively) as compared to schizophrenia group (2.58 ± 1.89 and 2.12 ± 1.76, respectively). This could be a reflection of symptomatic presentation in OCD, and it being a nonpsychotic illness leading to more depression and anxiety due to intact contact with reality.

Prevalence of obsessive-compulsive spectrum disorders in obsessive-compulsive disorder

Hospital-based prevalence was seen by taking both subthreshold and threshold disorders (lifetime diagnosis) taken in consideration. In OCD group, 22 OCSDs were found in 11 Probands as follows: compulsive shopping and stereotypic movement disorder in four as the most common, followed by self-injury in three, intermittent explosive disorder in three, trichotillomania in two, kleptomania in two, Tourettes disorder, pyromania, hypersexual disorder and bulimia nervosa in one each. This was in agreement with study by du Toit *et al*.[10] which found the most common comorbid conditions in OCD being compulsive self-injury in 22.4%, compulsive buying in 10.6%, and intermittent explosive disorder in 10.6%. Pathological gambling and pyromania were

seen only rarely. Only 2.4% patients had comorbid tourette's disorder, and 11.8% participants had a lifetime history of motor and/or vocal tics. Pathological nail biting (30%) and skin picking (20%) were similarly found to be occurring more commonly in study Bienvenu *et al*.[15] further supporting our findings of stereotyped movements and self-injurious behavior (which include pathological grooming behavior) as common OCSDs. However, our findings were not in agreement with study Jaisoorya *et al*.,[8] which found tic disorders (40%) and hypochondriasis (15.06%) as most common disorders. Again, many studies have not found hypochondriasis to be elevated in OCD patients.

Our finding of low rate of comorbidity in eating disorders is in accordance with study Jaisoorya *et al*.[17] but in variance with previous findings of high rates of eating disorders in female subjects with OCD.[19,20] This variance should be viewed in the light of rare reporting of eating disorders in studies from developing countries including India[21] and could be a correlate of cultural beliefs and attitudes.

There was significantly increased ($P \leq 0.05$) occurrence of OCSDs "as a group" in OCD probands as compared to schizophrenia probands. Only two schizophrenia probands had subthreshold "self-injury" while 11 OCD probands had 22 spectrum conditions. This finding is supported by Bienvenu *et al*.[15] It indicates a possibility of preferential aggregation of OCD and OCSDs and is supportive of the spectrum concept. On considering individual spectrum disorders, the difference between groups was not significant. In a partly similar study[9] comparing OCD and schizophrenia population regarding individual OCD spectrum disorders, it did not find a significant difference between groups in the rate of BDD, eating disorders, or hypochondriasis; however, schizophrenia group had a lower rate of tic disorders. This study did not assess all possible OCD spectrum disorders and also excluded subsyndromal forms of the disorders, so our study is an improvement over it. Other studies[8,15] compared OCD group with normal controls, while du Toit *et al*.[10] did not have a control group. There is possibility of individual disorders turning out to be significant in OCD probands if the sample size is increased appropriately.

The OCD group was subdivided based on the presence of OCSDs ($n = 11$) and absence of OCSDs ($n = 49$), and these groups were comparable on age, sex, education, religion, marital status, socioeconomic status, and background which means the presence of OCSDs was not related to these factors. In a similar study, du Toit *et al*.,[10] the two groups did not differ significantly with regard to employment status and level of education. However, the sex ratio of the two groups differed significantly, comorbid OCSDs being more common in females. In addition, the group without comorbid OCSDs was significantly older than the group with comorbid OCSDs.

Compliance, past medical history, past psychiatric history, premorbid personality traits, illness duration, and treatment duration were comparable between the OCD with and without OCSD groups, which means the presence of OCSDs was not related to these factors.

The cost of medication was significantly more ($P \leq 0.05$) in OCSD present group as compared to OCSD absent group which indicates a need of more medications and cost of treatment as an indirect burden of morbidity with OCSDs.

On comparison of scores of Y-BOCS, HDRS, and HAM-A between OCSD present and absent groups, no significant difference was found between the two groups. In study du Toit *et al*.,[10] the two groups did not differ significantly with regard to Y-BOCS totals, the prevalence rates of various axis I conditions. This indicates that despite raising the cost of treatment OCSDs may be present without altering the overall picture as inferred from the currently used tools. This unearths the need for a tool more sensitive than currently available ones to confirm the observed trend.

Limitations and conclusion

Inspite of various methodological improvements over previous studies, our effort was not free from limitations. A hospital-based study with small sample size of 60 patients limits the generalizability of our findings. Family history method may be affected by recall bias. However, our findings point to the preferential familial aggregation of OCSDs in patients with OCD which needs to be replicated in larger, community-based samples.

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Conflicts of interest

There are no conflicts of interest.

REFERENCES

1. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders IV. Text Revision. Washington (DC): American Psychiatric Association Press; 2000.
2. World Health Organization. The ICD-10 Classification of Mental and Behavioral Disorders: Clinical Descriptions and Diagnostic Guidelines. Geneva: World Health Organization; 1992.

3. American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders 5. Washington (DC): American Psychiatric Association Press; 2013.
4. Hollander E. Introduction. In: Obsessive-Compulsive Related Disorders. Washington (DC): American Psychiatric Press Inc.; 1993. p. 1-16.
5. Stein DJ, Lochner C. Obsessive-compulsive spectrum disorders: A multidimensional approach. Psychiatr Clin North Am 2006;29:343-51.
6. Stein DJ. Neurobiology of the obsessive-compulsive spectrum disorders. Biol Psychiatry 2000;47:296-304.
7. Abramowitz JS, Deacon BJ. The OC spectrum: A closer look at the arguments and the data. In: Abramowitz JS, Houts AC, editors. Concepts and Controversies in Obsessive-Compulsive Disorder. New York: Springer Science and Business Media; 2005.
8. Jaisoorya TS, Reddy YC, Srinath S. The relationship of obsessive-compulsive disorder to putative spectrum disorders: Results from an Indian study. Compr Psychiatry 2003;44:317-23.
9. Poyurovsky M, Fuchs C, Faragian S, Kriss V, Weisman G, Pashinian A, *et al*. Preferential aggregation of obsessive-compulsive spectrum disorders in schizophrenia patients with obsessive-compulsive disorder. Can J Psychiatry 2006;51:746-54.
10. du Toit PL, van Kradenburg J, Niehaus D, Stein DJ. Comparison of obsessive-compulsive disorder patients with and without comorbid putative obsessive-compulsive spectrum disorders using a structured clinical interview. Compr Psychiatry 2001;42:291-300.
11. Goodman WK, Price LH, Rasmussen SA, Mazure C, Fleischmann RL, Hill CL, *et al*. The Yale-Brown Obsessive Compulsive Scale. I. Development, use, and reliability. Arch Gen Psychiatry 1989;46:1006-11.
12. Hamilton M. A rating scale for depression. J Neurol Neurosurg Psychiatry 1960;23:56-62.
13. Hamilton M. The assessment of anxiety states by rating. Br J Med Psychol 1959;32:50-5.
14. McElroy SL, Phillips KA, Keck PE Jr. Obsessive compulsive spectrum disorder. J Clin Psychiatry 1994;55 Suppl 3:33-51.
15. Bienvenu OJ, Samuels JF, Riddle MA, Hoehn-Saric R, Liang KY, Cullen BA, *et al*. The relationship of obsessive-compulsive disorder to possible spectrum disorders: Results from a family study. Biol Psychiatry 2000;48:287-93.
16. Pauls DL, Alsobrook JP 2nd, Goodman W, Rasmussen S, Leckman JF. A family study of obsessive-compulsive disorder. Am J Psychiatry 1995;152:76-84.
17. Jaisoorya TS, Reddy YC, Srinath S, Thennarasu K. Sex differences in Indian patients with obsessive-compulsive disorder. Compr Psychiatry 2009;50:70-5.
18. Lochner C, Hemmings SM, Kinnear CJ, Niehaus DJ, Nel DG, Corfield VA, *et al*. Cluster analysis of obsessive-compulsive spectrum disorders in patients with obsessive-compulsive disorder: Clinical and genetic correlates. Compr Psychiatry 2005;46:14-9.
19. Castle DJ, Deale A, Marks IM. Gender differences in obsessive compulsive disorder. Aust N Z J Psychiatry 1995;29:114-7.
20. Noshirvani HF, Kasvikis Y, Marks IM, Tsakiris F, Monteiro WO. Gender-divergent aetiological factors in obsessive-compulsive disorder. Br J Psychiatry 1991;158:260-3.
21. Tükel R, Polat A, Genç A, Bozkurt O, Atli H. Gender-related differences among Turkish patients with obsessive-compulsive disorder. Compr Psychiatry 2004;45:362-6.