ISSN 2394 - 2053 (Print)
ISSN 2394 - 2061 (Online)
RN: ASSENG/2016/70661 (RNI)
www.ojpas.com

ORIGINAL PAPER: RESEARCH ARTICLE Open Journal of Psychiatry & Allied Sciences

Life events and obsessive-compulsive disorder: is there a link?

Abstract

Background: Obsessive-compulsive disorder (OCD) is a chronic disabling anxiety disorder affecting one to three per cent of the population. Among environmental factors affecting the disorder, stressful life events have been hypothesised to play an important role. Studies exploring the role of life events in OCD have reported conflicting results. **Methodology:** Thirty patients fulfilling the Diagnostic Criteria for Research (DCR) of the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10) for OCD were rated with the Yale-Brown Obsessive Compulsive Scale (Y-BOCS), the Hamilton Rating Scale for Depression (HAM-D), the Hamilton Rating Scale for Anxiety (HAM-A), and the Presumptive Stressful Life Events Scale (PSLES). Thirty healthy controls were also rated on PSLES. Both groups were compared in terms of occurrence of life events in last one year and lifetime. **Results:** There were significantly higher life events in the previous one year period (t=2.44, p=0.018) in patient group as compared to controls, whereas there was no difference in lifetime PSLES scores. The perceived stress score in past one year on PSLES was significantly higher for the personal events among the patients as compared to controls (t=2.56, p=0.013), but the difference was not significant for impersonal events. **Conclusion:** Life events were significantly more frequent in OCD patients in last one year as compared to healthy controls. The severity of OC symptoms, however, was not found to be related to the number of life events.

Keywords: Anxiety disorder, Environmental factors, Stress.

Sujit Sarkhel[1], Varun S Mehta[2], Sakshi Rai[3], Samir Kumar Praharaj[4]

[1]Institute of Psychiatry, IPGME&R, Kolkata, West Bengal, India, [2,3]Central Institute of Psychiatry, Ranchi, Jharkhand, India, [4]Department of Psychiatry, Kasturba Medical College, Manipal Academy of Higher Education, Manipal, Karnataka, India

Correspondence:
Dr. Sujit Sarkhel, 12A/13/2 Pasupati Bhattacharjee Road, Charaktola, Kolkata-700034, West Bengal, India.
sujitsarkhel@gmail.com

Received: 21 March 2017
Revised: 24 April 2017
Accepted: 15 May 2017
Epub: 8 January 2025

INTRODUCTION

Obsessive-compulsive disorder (OCD) affects one to three per cent of the population worldwide and is considered to be one of the most disabling anxiety disorders.[1,2] The disorder has a multifactorial mode of inheritance where genetic and biological risk factors interact with the environmental stressors.[3,4] Among the environmental factors, stressful life events have been implicated in the development of the disorder.[5] Although this association has been found to be strong in children,[6] conflicting results have been reported in adults. A significant excess of events in the year prior to onset of the disorder was reported by some studies,[7,8] but this difference was not observed by others.[9] Further, in the context of OCD, most studies have examined the relationship between traumatic life events and the onset of the disorder, e.g. comorbid OCD was reported following exposure to a highly upsetting event in subjects with posttraumatic stress disorder.[10] Vidal-Ribas *et al.*,[11] in a large Swedish population-based cohort of 22,084 twins found "abuse and family disruption" and "sexual abuse" as two common stressful life events which were associated with severity of OC symptoms. However, the role of non-traumatic stressful events in relation to OCD has not been reported by many. Moreover, the number, severity, or the type of life events that occur before the onset of OCD is also unclear.[12]

Few sociodemographic and clinical features of OCD have been found to be associated with stressful events. Bogetto *et al.*[13] found women to have a greater risk of onset of OCD after stressful events. Real *et al.*[14] reported a later onset of the disorder, history of complicated birth, less family history of OCD, and presence of contamination/cleaning symptoms in those subjects who experienced stressful life events. However, a similar association could not be proved where subjects experiencing stressful life events had higher somatic obsessions and greater female subjects.[12]

The association between type of stressful life event and the symptom dimensions of OCD is also lacking. Though traumatic life events have been found to be associated with the aggressive/checking, symmetry/ordering,[15] and hoarding dimensions,[16] the postpartum period being related to aggressive[17] or contamination dimensions,[18] the information regarding the relationship between other non-traumatic life events and distinct symptom dimensions is not available.

The present study was conducted with the aim to estimate the frequency of life events in patients with OCD.

We hypothesised that there would be no significant difference in the frequency of life events in patients with OCD as compared to healthy controls.

METHODOLOGY

The study was a hospital-based cross-sectional study conducted at the Central Institute of Psychiatry, Ranchi, India after obtaining the permission of the institutional review board. Thirty patients of either sex between 18-60 years of age fulfilling the Diagnostic Criteria for Research (DCR) of the tenth revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10)[19] for OCD and giving informed consent were selected from the outpatient department of the institute. Those with severe medical illness, mental retardation, or any other comorbid psychiatric disorder, except mild to moderate depression were excluded from the study. Similarly, 30 healthy controls with a five-item General Health Questionnaire (GHQ-5)[20] score of less than one were chosen among the persons accompanying the patients but unrelated to them. The patient group was rated on the Yale-Brown Obsessive Compulsive Scale (Y-BOCS),[21] to assess the severity of OCD, the Hamilton Rating Scale for Depression (HAM-D)[22] to assess the severity of depression, and the Hamilton Rating Scale for Anxiety (HAM-A)[23] to assess the severity of anxiety. Both the groups were assessed for presence of significant life events using the Presumptive Stressful Life Events Scale (PSLES)[24] in the form of a semi-structured interview. It covers 51 defined life events and is scored zero and one for the absence and presence of particular life events (maximum possible score being 51). The scale is well-standardised in the Indian population and has been previously used by the same authors.[8] Using this scale, the patients were interviewed and life events occurring "one year" and over "lifetime" before the onset of illness were recorded.

Statistical analysis

The data obtained were analysed with Statistical Package for the Social Sciences-version 16.0 for Windows® (SPSS Inc., Chicago, IL, USA). Normality of data was assessed using histogram and Shapiro-Wilk test. Both groups were compared using independent t-test and chi-square test (or Fisher's exact test), wherever applicable. Pearson's correlation and point biserial correlation were done between PSLES scores with continuous and categorical sociodemographic and clinical variables respectively. Partial correlation was carried out to examine the relationship between the PSLES variables with Y-BOCS scores after controlling for the HAM-D and HAM-A scores. The alpha level of $p<0.05$ was considered significant.

RESULTS

Sociodemographic and clinical characteristics of the sample have been summarised in Table 1. There was no difference between the two groups in terms of age, education, sex, marital status, habitat, socioeconomic, and employment status. There were significantly higher life events in the previous one-year period (t=2.44, p=0.018, Cohen's d=1.77) in patient group as compared to controls, whereas there was no difference in lifetime PSLES scores. The perceived stress score in past one year on PSLES was significantly higher for the personal events among the patients as compared to controls (t=2.56, p=0.013, Cohen's d=0.66), but the difference was not significant for impersonal events (Table 2). Also, there was a trend towards higher total perceived stress score in past one year on PSLES among the patients as compared to controls (t=1.92, p=0.062, Cohen's d=0.49). There was no difference in the perceived stress scores for desirable, undesirable, and ambiguous events in past year across the groups.

In patient group, total number of life events on PSLES in past one year positively correlated with HAM-D (r=0.43, p=0.019) and HAM-A (r=0.48, p=0.007) scores (Table 3). The perceived stress for personal events in past year correlated positively with HAM-D (r=0.56, p=0.001) and HAM-A (r=0.64, p<0.001) scores. Similarly, the perceived stress for undesirable events in past year correlated positively with HAM-D (r=0.46, p=0.011) and HAM-A (r=0.51, p=0.004) scores. Also, the total perceived stress score in past year correlated positively with HAM-D (r=0.48, p=0.008) and HAM-A (r=0.54, p=0.002) scores. When partial correlation of PSLES with Y-BOCS was done after controlling for HAM-A and HAM-D scores in OCD patients, there was no significant correlation between the PSLES life events or perceived stress with Y-BOCS scores.

DISCUSSION

Our study showed that the number of life events in the previous one-year period was significantly higher in OCD patients compared to controls. This is in agreement with several previous studies that have found increased life events in one month, six months, or one year prior to the onset of the disorder.[6-9,12] The mean number of life events in the year prior to onset of OCD was almost double that of control subjects, with a large effect size suggestive of a true association. Two studies did not find such association between the number of life events in one year preceding the onset of OCD.[17,25] However, Ravizza *et al*.[25] found an excess of life events related to biological aspects in patients with OCD compared to controls (19% vs 5.5%). In Maina *et al*. [17], those with comorbid major depression were excluded from the study, whereas, we have included patients with mild to moderate depression as it is a common comorbid condition. Life events were recorded to be much higher in our study (mean 5.2, standard deviation [SD] 4.3), in contrast to mean 1.6 (SD 1.3) events in past one year in Maina *et al*.[17] study, suggesting a possibility that higher number of life events are observed in those with comorbid depression.

Our study did not find an excess of life events in OCD patients over lifetime as compared to healthy controls, which strengthens the observation that life events have a more temporal relation with onset of OCD, i.e. it probably plays a role in precipitating OCD rather than having a cumulative, long-term effect. Overall, the strong association between the proximal life events and onset of OCD is in keeping with the stress-diathesis model,[26] which suggests that psychosocial stress interacts with genetic vulnerability which precipitates the illness, i.e. those with higher vulnerability requires lower stress as compared to those with lesser vulnerability. It has been reported that 25 to 67% of OCD patients have experienced stressful life events prior to the onset of their OCD.[27]

Table 1: Sociodemographic and clinical characteristics

Variables	Patients N=30 Mean (SD)	Controls N=30 Mean (SD)	t (df=58)	p
Age	30.90 (8.32)	30.27 (8.30)	0.29	0.769
Education years	10.43 (4.06)	11.10 (4.70)	-0.59	0.559
Duration of illness in years	4.88 (4.65)	-	-	-
Y-BOCS total score	9.57 (4.68)	-	-	-
Y-BOCS obsession score	9.30 (5.08)	-	-	-
Y-BOCS compulsion score	18.57 (8.53)	-	-	-
HAM-D total score	13.97 (9.80)	-	-	-
HAM-A total score	13.53 (10.58)	-	-	-
PSLES number of events (1 year)[1]	5.17 (4.34)	3.00 (2.21)	2.44*	0.018
PSLES number of events (lifetime)	7.73 (3.99)	7.10 (5.80)	0.49	0.624
	N (%)	**N (%)**	χ^2	**p**
Sex				
Male	15 (50)	14 (46.7)	0.07	0.796
Female	15 (50)	16 (53.3)		
Occupation[†]				
Unemployed	18 (60)	15 (50)	Fisher's exact P=0.840	
Employed	10 (33.3)	10 (100)		
Housewife or student	2 (6.7)	2 (6.7)		
Marital status				
Single	9 (30)	13 (43.3)	0.30	0.584
Married	21 (70)	19 (63.3)		
SES[†]				
Lower	5 (16.7)	12 (40)	Fisher's exact P=0.171	
Middle	21 (70)	15 (50)		
High	4 (13.3)	3 (10)		
Habitat				
Rural	17 (56.7)	18 (60)	0.07	0.793
Urban	13 (43.3)	12 (40)		
Family psychiatric illness	4 (13.3)	-	-	
Family medical illness	2 (6.7)	-	-	
Past medical illness	1 (3.3)	-	-	
Drug naïve or drug free	21 (70)	-	-	

*p<0.05 (2-tailed)
SD: Standard deviation; df: Degree of freedom; Y-BOCS: Yale-Brown Obsessive Compulsive Scale; HAM-D: Hamilton Rating Scale for Depression; HAM-A: Hamilton Rating Scale for Anxiety; PSLES: Presumptive Stressful Life Event Scale; SES: Socioeconomic status
[1]Effect size Cohen's d=1.77
[†]Fisher's exact test statistic was computed as more than 20% cell had expected count less than five.

Specific life events have also been linked to the onset of OCD in several studies, including physical and sexual abuse, adverse childhood experiences, obstetric complications, and traumatic events.[27] In our study, the perceived stress score in past one year was significantly higher for the personal events among OCD patients as compared to controls. The personal events are those life events to which the patient owns personal responsibility, and likely to get affected by them. In contrast, impersonal events were not higher among patients. Furthermore, the undesirable events were not more in the patient group, in contrast to other studies that found relationship with traumatic events.[27] Thus it is likely that the effects of life events are nonspecific, and it is the number of life events, rather than particular type of life events, which is associated with onset of OCD. However, those experiencing stressful life events at the onset of OCD may have different expression of illness with distinct clinical patterns.[14]

A significant positive correlation was found between life events in past one year and HAM-A and HAM-D scores among OCD patients. A positive correlation was also found between perceived stress from undesirable life events and HAM-A and HAM-D scores. This is in agreement with

Table 2: PSLES perceived stress scores in patients and controls

PSLES perceived stress scores	Patients N=30 Mean (SD)	Controls N=30 Mean (SD)	t (df=58)	p
Personal events (1 year)†	28.00 (3.96)	25.83 (2.42)	2.56*	0.013
Impersonal events (1 year)	30.80 (3.91)	29.93 (3.11)	0.95	0.346
Desirable events (1 year)	11.43 (2.16)	10.77 (1.17)	1.49	0.142
Undesirable events (1 year)	37.67 (5.42)	35.53 (4.66)	1.64	0.107
Ambiguous events (1 year)	10.90 (1.35)	10.53 (0.73)	1.31	0.195
Total score (1 year)	58.80 (7.21)	55.77 (4.90)	1.92	0.062
Personal events (lifetime)	28.77 (3.99)	28.53 (4.81)	0.20	0.839
Impersonal events (lifetime)	34.40 (4.30)	34.30 (8.48)	0.06	0.954
Desirable events (lifetime)	12.43 (2.53)	12.47 (3.06)	-0.05	0.963
Undesirable events (lifetime)	39.50 (5.10)	40.03 (9.13)	-0.28	0.781
Ambiguous events (lifetime)	12.53 (2.53)	11.80 (2.50)	1.13	0.263
Total score (lifetime)	63.17 (6.45)	62.83 (12.69)	0.13	0.898

*p<0.05 (2-tailed)
PSLES: Presumptive Stressful Life Event Scale; SD: Standard deviation; df: Degree of freedom
†Effect size Cohen's d=0.66

Table 3: Pearson correlation coefficient showing association of PSLES with HAM-D and HAM-A in OCD patients (N=30)

PSLES	HAM-D		HAM-A	
	r	p	r	p
Number of life events (1 year)	0.43*	0.019	0.48**	0.007
Perceived stress for personal events (1 year)	0.56**	0.001	0.64**	<0.001
Perceived stress for impersonal events (1 year)	0.31	0.092	0.35	0.057
Perceived stress for desirable events (1 year)	0.29	0.119	0.36	0.055
Perceived stress for undesirable events (1 year)	0.46*	0.011	0.51**	0.004
Perceived stress for ambiguous events (1 year)	0.28	0.128	0.29	0.112
Total perceived stress score (1 year)	0.48**	0.008	0.54**	0.002

*p<0.05
**p<0.01
HAM-D: Hamilton Rating Scale for Depression; HAM-A: Hamilton Rating Scale for Anxiety; PSLES: Presumptive Stressful Life Events Scale; OCD: Obsessive-Compulsive Disorder

previous study[8] showing relationship between anxiety, depression, and life events. However, partial correlation revealed no relation between Y-BOCS scores and PSLES scores when the effects of HAM-A and HAM-D scores were removed. This is in contrast to our previous study[8] which found a direct correlation between YBOCS scores and PSLES scores. It is difficult to conclude the effects of depression and anxiety on the association between life events and OCD severity in cross-sectional studies. Longitudinal studies are essential to clarify these relationships.

The strengths of our study include using PSLES scale which is standardised to the Indian population and also categorises life events into personal and impersonal, desirable and undesirable. This gives a greater insight into the nature of life events and their influence on OCD and related disorders. However, the inherent problem of recall involved in life event research remained a limitation in our study as well. Recall bias may have been particularly problematic in recalling life events that have occurred in lifetime of a person, though our study did not reveal any significant difference between the two groups in this domain. Hospital-based sample limits generalisability to community subjects which may have milder severity of illness. Also, small sample in our study was underpowered to detect the differences in specific subtypes of life events.

To conclude, the number of life events, rather than the type of events in past one-year have a strong association with onset of OCD. However, further studies, preferably community-based longitudinal cohorts with sufficiently large sample are required to delineate the relationship between life events and OCD onset.

REFERENCES

1. Kessler RC, Berglund P, Demler O, Jin R, Merikangas KR, Walters EE. Lifetime prevalence and age-of-onset distributions of DSM-IV disorders in the National Comorbidity Survey Replication. Arch Gen Psychiatry. 2005;62:593-602.
2. Ruscio AM, Stein DJ, Chiu WT, Kessler RC. The epidemiology of obsessive-compulsive disorder in the National Comorbidity Survey Replication. Mol Psychiatry. 2010;15:53-63.
3. Pauls DL. The genetics of obsessive-compulsive disorder: a

review. Dialogues Clin Neurosci. 2010;12:149-63.
4. Nicolini H, Arnold P, Nestadt G, Lanzagorta N, Kennedy JL. Overview of genetics and obsessive-compulsive disorder. Psychiatry Res. 2009;170:7-14.
5. Hettema JM, Neale MC, Kendler KS. A review and meta-analysis of the genetic epidemiology of anxiety disorders. Am J Psychiatry. 2001;158:1568-78.
6. Gothelf D, Aharonovsky O, Horesh N, Carty T, Apter A. Life events and personality factors in children and adolescents with obsessive-compulsive disorder and other anxiety disorders. Compr Psychiatry. 2004;45:192-8.
7. McKeon J, Roa B, Mann A. Life events and personality traits in obsessive-compulsive neurosis. Br J Psychiatry. 1984 Feb;144:185-9.
8. Sarkhel S, Praharaj SK, Sinha VK. Role of life events in obsessive compulsive disorder. Isr J Psychiatry Relat Sci. 2011;48:182-5.
9. Khanna S, Rajendra PN, Channabasavanna SM. Life events and onset of obsessive compulsive disorder. Int J Soc Psychiatry. 1988;34:305-9.
10. Gershuny BS, Baer L, Radomsky AS, Wilson KA, Jenike MA. Connections among symptoms of obsessive-compulsive disorder and posttraumatic stress disorder: a case series. Behav Res Ther. 2003;41:1029-41.
11. Vidal-Ribas P, Stringaris A, Rück C, Serlachius E, Lichtenstein P, Mataix-Cols D. Are stressful life events causally related to the severity of obsessive-compulsive symptoms? A monozygotic twin difference study. Eur Psychiatry. 2015;30:309-16.
12. Rosso G, Albert U, Asinari GF, Bogetto F, Maina G. Stressful life events and obsessive-compulsive disorder: clinical features and symptom dimensions. Psychiatry Res. 2012;197:259-64.
13. Bogetto F, Venturello S, Albert U, Maina G, Ravizza L. Gender-related clinical differences in obsessive-compulsive disorder. Eur Psychiatry. 1999;14:434-41.
14. Real E, Labad J, Alonso P, Segalàs C, Jiménez-Murcia S, Bueno B, *et al*. Stressful life events at onset of obsessive-compulsive disorder are associated with a distinct clinical pattern. Depress Anxiety. 2011;28:367-76.
15. Cromer KR, Schmidt NB, Murphy DL. An investigation of traumatic life events and obsessive-compulsive disorder. Behav Res Ther. 2007;45:1683-91.
16. Cromer KR, Schmidt NB, Murphy DL. Do traumatic events influence the clinical expression of compulsive hoarding? Behav Res Ther. 2007;45:2581-92.
17. Maina G, Albert U, Bogetto F, Vaschetto P, Ravizza L. Recent life events and obsessive-compulsive disorder (OCD): the role of pregnancy/delivery. Psychiatry Res. 1999;89:49-58.
18. Labad J, Alonso P, Segalas C, Real E, Jimenez S, Bueno B, *et al*. Distinct correlates of hoarding and cleaning symptom dimensions in relation to onset of obsessive-compulsive disorder at menarche or the perinatal period. Arch Womens Ment Health. 2010;13:75-81.
19. World Health Organization. The ICD-10 classification of mental and behavioural disorders: diagnostic criteria for research. Geneva: World Health Organization; 1993.
20. Shamasunder C, Sriram TG, Murali Raj SG, Shanmugham V. Validity of a short 5-item version of the General Health Questionnaire (G.H.Q.). Indian J Psychiatry. 1986;28:217-9.
21. 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.
22. Hamilton M. A rating scale for depression. J Neurol Neurosurg Psychiatry. 1960;23:56-62.
23. Hamilton M. The assessment of anxiety states by rating. Br J Med Psychol. 1959;32:50-5.
24. Singh G, Kaur D, Kaur H. Presumptive stressful life events scale (PSLES): a new stressful life events scale for use in India. Indian J Psychiatry. 1984;26:107-14.
25. Ravizza L, Bogetto F, Maina G, Manfredi A, Vaschetto P. Stressful life-events and onset of obsessive-compulsive disorder. Clinical study. Minerva Psichiatrica. 1996;37:109-16.
26. Adams TG, Kelmendi B, Brake CA, Gruner P, Badour CL, Pittenger C. The role of stress in the pathogenesis and maintenance of obsessive-compulsive disorder. Chronic Stress (Thousand Oaks). 2018;2:2470547018758043.
27. Brander G, Pérez-Vigil A, Larsson H, Mataix-Cols D. Systematic review of environmental risk factors for obsessive-compulsive disorder: a proposed roadmap from association to causation. Neurosci Biobehav Rev. 2016;65:36-62.

Sarkhel S, Mehta VS, Rai S, Praharaj SK. Life events and obsessive-compulsive disorder: is there a link? Open J Psychiatry Allied Sci. 2025 Jan 8. Epub ahead of print.

Source of support: Nil. **Declaration of interest:** None.