

Predictors of Family Accommodation in Obsessive-Compulsive Disorder

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Background. Obsessive-compulsive disorder (OCD) is a serious, disabling illness. Family members are frequently involved by attempting to stop rituals or by performing rituals for their relative. Factors associated with family accommodation of OCD have been largely overlooked in the literature. This study aims to identify the frequency and clinical predictors of OCD family accommodation behaviors.

Methods. Participants include those with a first admission to the McLean/Massachusetts General Hospital OCD Institute ($N = 110$). The Family Accommodation Scale was completed independently by family members. Univariate relationships between factors and family accommodation were assessed via graphs, parametric and non-parametric testing. Multiple regression analyses modeled relationships between family accommodation and predictor variables.

Results. Family accommodation was reported in 96.9% of cases, and predominantly occurred at least daily (59.1% of cases). Most common behaviors included providing reassurance and waiting for ritual completion. Two of 13 potential predictors were significantly correlated with family accommodation both in univariate regression analysis and in the final regression model ($F = 10.15$; $p < 0.0001$; $R\text{-square} = 0.17$; adjusted $R\text{-Square} = 0.15$). These include OCD severity ($p = 0.0007$) and the cleaning/contamination symptom dimension ($p = 0.03$).

Conclusions. Family accommodation is ubiquitous in OCD. Psychoeducation regarding potential deleterious effects of accommodation must not be overlooked in management of this illness.

Keywords Obsessive-compulsive disorder, Family, Accommodation, Predictor, Severity, Contamination

INTRODUCTION

Obsessive-compulsive disorder (OCD) is an illness in which individuals experience intrusive persistent thoughts, images or impulses and/or perform repetitive behaviors or mental acts (1). This disorder affects all ages and both genders and is the fourth most common psychiatric illness (2). Specific OCD symptoms include obsessions related to contamination, sex, religion, aggression, symmetry, hoarding and somatic concerns and compulsions of washing, checking, repeating, counting, ordering and hoarding. All of these symptom types can impair functioning in domains of work, school, social and family functioning.

Clinical observation demonstrates that families of OCD patients are often involved in attempting to stop the rituals and in performing rituals to decrease their relative's distress (3). "Family accommodation" is a term used to describe the latter behavior. (4) The few research studies on this topic to date also suggest that most OCD patients experience accommodation by family members during the course of their illness. Shafraan and colleagues (5) found that 60% of family members reported "participating" with ritualizing—via avoidance behaviors or via direct participation or observation of rituals. Also, Calvocoressi et al. reported that 88.8% of 34 OCD relatives completing the Family Accommodation Scale reported accommodation behaviors (4).

Many family members do not appreciate that accommodation reinforces OCD symptoms rather than alleviating them. The correlation between compulsion severity and family modification supports this notion (3). A recent study also reported association between refractory OCD and increased family accommodation (6). Negative effects also extend to the relatives, as their distress is proportional to the extent of accommodation (4). Higher levels of accommodation are also associated with poorer family functioning (4).

Although some limited research has been done in small samples, the impact and predictors of OCD family accommodation have been largely overlooked in the literature. The association between OCD characteristics and family accommodation severity remains poorly understood. This study aims to identify the frequency and specific ways in which families accommodate OCD symptoms. It further aims to identify predictors of increased family accommodation. This knowledge may permit earlier intervention in families at high risk for accommodation behaviors that impede treatment efforts. Hypothesized predictors of family accommodation include younger age, the presence of major depression, family history of OCD and increased OCD severity.

MATERIALS AND METHODS

Subjects

The study population comprised participants with a first admission to the McLean/ Massachusetts General Hospital

OCD Institute (OCDI) between July 1999 and June 2003. An OCD diagnosis for each participant was based upon several psychometric measures and confirmed with assessments by both a psychiatrist and a behavior therapist with expertise in OCD. Threshold criteria for admission to the OCDI include the presence of OCD with severe impairment and inadequate past treatment response. These criteria were determined by the Intake Coordinator via admission package information, Y-BOCS scores and collateral information from family members and treating clinicians.

Briefly, the OCDI provides specialized intensive behavioral, medication and milieu OCD treatment (7). It comprises residential and "day patient" levels of care provided by a multidisciplinary team of psychiatrists, behavior therapists, social workers, nurses and counselors, with a highly structured program. The effectiveness of this program and outcome predictors are described in more detail elsewhere (8). This was a retrospective chart review in which the hypothesized predictors were measured by the patient and OCDI staff. The family accommodation scale was completed independently by a family member.

Psychometric Measures

The Family Accommodation Scale (FAS) for Obsessive-Compulsive Disorder is a 12-item measure in which family members of individuals with OCD are asked to list and describe the type and frequency of accommodating behavior by relatives (9). This was administered as a self-report measure. Each item is rated according to frequency between 0 and 4, with a cumulative family accommodation score ranging between 0 and 48. Types of accommodation listed include: providing reassurance, assisting in rituals, watching the patient complete rituals, waiting for the patient, refraining from saying/doing things, facilitating avoidance, facilitating compulsions, participating in patient's compulsions, helping with simple decisions, tolerating aberrant behavior, and/or modifying personal routine. The FAS has demonstrated good internal consistency and excellent inter-rater reliability (9).

The Yale-Brown Obsessive-Compulsive Scale (Y-BOCS) is a 10-item measure of OCD severity rating each item between 0 (lowest severity) and 4 (highest severity) (10,11). The Y-BOCS symptom checklist measures the current and lifetime presence of 15 categories of obsessions and compulsions, including miscellaneous obsessions and compulsions. The Beck Depression Inventory (BDI) is a 21-item depression severity scale with a reliability of 0.92, a construct validity correlation with the Symptom Checklist 90-Revised of 0.76, sensitivity of 100% and specificity of 89% with a cutoff score of 16 (12,13).

Statistical Analyses

The outcome of interest was the degree of family accommodation as captured by the total score from 12 scale component

measures (rated from 0 to 4). Subjects with more than three missing component scores were excluded from analyses. A total family accommodation score was calculated by extrapolating for the remaining missing values under the assumption of equivalent mean scores for missing and non-missing components within an individual. The total score was then used as the outcome variable in a linear regression analysis to determine predictors of family accommodation.

The following 13 variables were considered as potential predictors of family accommodation: age, gender, BDI score, presence of major depression (from BDI scores ≥ 16), Y-BOCS total severity score, family history of OCD, employment status, current alcohol use, history of receiving behavior therapy, and presence of symptoms from each of four OCD symptom dimensions (individual composites of Y-BOCS checklist categories). These four symptom dimensions reported for adult OCD populations (14,15) have been validated by treatment studies (15), functional neuroimaging studies, (16,17) genetic studies (18) and comorbidity studies (19). Subjects with more than three missing variables were excluded from analyses. For the remaining missing data, the sample size was allowed to float in order to maximize the power for each analysis.

Prior to building the regression model, distribution of the outcome variable was assessed. Next, univariate relationships between each potential predictor and the outcome were assessed via graphs and both parametric and nonparametric testing to determine variable coding and inform model building. Scatter plots, Pearson and Spearman correlation coefficients, and univariate regression models assessed relationships with continuous predictors. Binary variables were evaluated versus the outcome using box plots, Wilcoxon rank sum tests, univariate regression, and Pearson (point biserial) correlations. Relationships between predictors were evaluated for those with suggestive or significant results on univariate testing to anticipate possible collinearity and confounding effects.

The stepwise selection procedure was used to create a primary regression model. Variables with p -values less than 0.1 were entered as candidate predictors. Excluded candidate predictors were tested for confounding effects to determine whether covariates altered beta coefficients in the primary model by more than 20%. Finally, predictors in the final model were tested for potential interactions. After model building, distribution of the residuals was examined to test normality assumptions and residuals were plotted against predicted values to test equal variance assumptions. Studentized residuals, jackknifed residuals, and Cook's D results identified potential outliers and influential values.

RESULTS

The final study sample contained 110 individuals. This sample was 52.7% male, and had a mean age of 30.8 years old (SD 11.2; range 16–68). Over half (64.9%) were employed, 31.5%

reported current alcohol use and 70.9% had BDI scores greater than 16, indicating a diagnosis of MDD. Characteristics of the family and living environment are presented in Table 1. On average, subjects were living with nearly two other individuals. Approximately one quarter were married (26.9%), 16.7% were living with a child and nearly one half (47.5%) were still living with their parents. Altogether, nearly three quarters of subjects (74.7%) lived with at least one first degree relative (e.g., parent, sibling, spouse or child). Very few were living with a friend or roommate (4%).

OCD characteristics are described in Table 2. Nearly one third had a family history of OCD (30.8%). The mean OCD Y-BOCS scores indicated moderate to severe OCD (26.5; SD = 6.0), with similar mean severity scores for obsessions (13.9; SD = 3.1) and compulsions (13.2; SD = 3.2). The least common types of symptoms reported were hoarding symptoms (21.8%), whereas the majority of the sample reported symptoms from all three other symptom dimensions.

The frequency of family accommodation behaviors are reported in Table 3. Those reporting any accommodating behavior at any frequency comprised nearly all of the sample (96.9%), and those reporting daily accommodating behavior of any type comprised a majority of the sample (59.1%). The

Table 1 Family and Living Environment Characteristics

	% (N)
Number of people living with subject [mean (SD) range]	1.98 (2.14) 0–17
Married or living with a significant other [% (N)]	26.9 (29)
Number of children [mean (SD) range]	0.39 (0.88) 0–5
Living with a spouse or partner [% (N)]	24.8 (25)
Living with a child [% (N)]	16.7 (17)
Living with a parent [% (N)]	47.5 (47)
Living with a sibling [% (N)]	19.2 (19)
Living with a friend/roommate [% (N)]	4.0 (4)
Family accommodation score [mean (SD)]	20.6 (12.2)
Family history of OCD [% (N)]	30.8 (32)

^aAll data were not available for each subject; numbers represent descriptive statistics on present data.

Table 2 OCD Characteristics of the Study Sample

Y-BOCS ^a OCD severity score [mean (SD)]	26.5 (6.0)
Y-BOCS ^a obsession severity subscore [mean (SD)]	13.9 (3.1)
Y-BOCS ^a compulsion severity subscore [mean (SD)]	13.2 (3.2)
OCD symptom onset age in years [mean (SD)]	15.0 (7.7)
Currently taking OCD medications [% (N)]	71.8 (79)
History of behavior therapy [% (N)]	66.7 (66)
Cleaning or contamination symptoms present [% (N)]	68.9 (73)
Hoarding symptoms present [% (N)]	21.8 (24)
Symmetry, ordering, repeating or counting symptoms present [% (N)]	68.5 (74)
Sexual, religious, aggression, somatic or checking symptoms present [% (N)]	81.0 (85)

^aY-BOCS: Yale-Brown Obsessive Compulsive Scale

Table 3 Frequency of OCD Accommodation Behaviors by Family Members

	None valid % (N)	Mild (1/wk) valid % (N)	Moderate (2–3/wk) valid % (N)	Severe (4–6/wk) valid % (N)	Extreme (daily) valid % (N)
Reassurance	11.9 (12)	9.9 (10)	17.8 (18)	14.9 (15)	45.5 (46)
Watching rituals	53.7 (58)	9.3 (10)	7.4 (8)	8.3 (9)	21.3 (23)
Waiting	25.0 (27)	3.7 (4)	19.4 (20)	21.3 (23)	30.6 (33)
Refraining	38.0 (38)	7.0 (7)	11.0 (11)	16.0 (16)	28.0 (28)
Facilitating avoidance	42.1 (45)	10.3 (11)	16.8 (18)	17.8 (19)	13.1 (14)
Facilitating compulsions	47.1 (49)	11.5 (12)	12.5 (13)	11.5 (12)	17.3 (18)
Participating in compulsions	57.9 (62)	6.5 (7)	11.2 (12)	9.3 (10)	15.0 (16)
Helping decisions	36.2 (38)	10.5 (11)	13.3 (14)	16.2 (17)	23.8 (25)
Tolerating	33.0 (34)	7.8 (8)	15.5 (16)	18.4 (19)	25.2 (26)
Modifying personal routine	28.6 (30)	8.6 (9)	15.2 (16)	27.6 (29)	20.0 (21)
Modifying family routine	39.8 (39)	13.3 (13)	13.3 (13)	14.3 (14)	19.4 (19)
Taking on subject responsibilities	30.4 (28)	5.4 (5)	17.4 (16)	23.9 (22)	22.8 (21)

most frequently reported behaviors include providing reassurance and waiting for the individual, both of which occurred at least four times weekly in the majority of cases. Those behaviors occurring least frequently were participating in compulsions and watching rituals, which were reported only by a minority of family members.

Prior to model building the distribution of the outcome variable was assessed and found to be borderline to slightly non-normal, thus not requiring transformation. A linear relationship was found between family accommodation and Y-BOCS score, but not between family accommodation and age or BDI score. After model building, statistical tests found a slight departure from normality, considered to be acceptable given the sample size and the robustness of linear regression to normality assumption violations. The statistical assumption of equal variance confirmed that the equal variance assumption was met. Residuals were plotted against the Y-BOCS score, confirming the appropriateness of using the continuous form of this predictor in the model.

Univariate regression analyses determined that 2 of the 13 potential predictors had a significant correlation with the family accommodation score (Table 4). These included OCD severity as measured by Y-BOCS total score ($p = 0.0003$) and the presence of cleaning or contamination symptoms ($p = 0.007$). To further test whether these variables remain significantly associated with family accommodation, they were entered into regression analyses via stepwise selection. The p -values were determined to be 0.0007 and 0.03 for OCD severity and for the presence of cleaning/contamination symptoms, respectively. These remained significant on further analyses and were not found to have any interactions. Furthermore, the excluded candidate predictors were tested and found to have no significant confounding effects.

The final regression model F-value was equal to 10.15 ($p < 0.0001$) and accounted for 0.17 of the family accommodation score variance (R -square). The adjusted R -Square, which takes into consideration the number of included variables, was equal to 0.15. One potentially outlying subject was found to have a strong influence on the regression according to these diagnostics.

Table 4 Univariate Associations Between Potential Predictors and Family Accommodation Score

Predictor	Pearson correlation coefficient (p -value)
Age	−0.085 (0.38)
BDI score	0.087 (0.38)
Y-BOCS score	0.35 (0.0003)
Gender	0.13 (0.18)
Family history of OCD	−0.098 (0.32)
Employment status	−0.046 (0.66)
Alcohol use	0.002 (0.98)
History of behavior therapy	0.17 (0.10)
Depression status	0.083 (0.39)
Cleaning or contamination symptoms	0.26 (0.007)
Hoarding symptoms	0.042 (0.66)
Symmetry, ordering, repeating or counting symptoms	0.045 (0.65)
Sexual, religious, aggressive, somatic or checking symptoms	0.15 (0.13)

Upon removal, there were relatively small changes to coefficients and p -values. This subject was subsequently added again so that final results would represent all available data.

Specific types of accommodating behaviors that were increased among those with versus without contamination or cleaning symptoms included facilitating compulsions [58% (40) versus 35.5% (11); $p = 0.04$], helping decisions [72.9% (51) versus 41.9% (13); $p = 0.003$] and tolerating [74.3% (52) versus 46.7% (14); $p = 0.008$] OCD. The only accommodation behavior that significantly differed with versus without other OCD symptom types was that of helping decisions, which was significantly higher among those with [69.1% (56)] versus without [42.1% (8)] sexual, religious, aggressive, somatic or checking symptoms ($p = 0.03$).

DISCUSSION

There are several emergent findings from this study. First, our results expand upon past reports of OCD outpatients (4).

We demonstrate that family accommodation is also extremely common (in 88.8% of cases) among relatives of individuals with severe OCD requiring residential treatment. Predictors of increased family accommodation include OCD severity, and the presence of contamination obsessions or cleaning compulsions. The pervasiveness of family accommodation is relevant for treatment reasons, as this phenomenon may enable and reinforce compulsive and ritualistic behaviors.

Our results suggest that higher levels of family accommodation are associated with greater symptom severity in individuals with OCD. This is also consistent with previous research (3). Whether family accommodation is a precursor or a consequence of OCD severity is unknown at present. Given that neither study to date on this topic has been prospective in design, it is not possible to determine the direction of association between these two factors. It could be conceived that individuals with more severe OCD may elicit increased accommodation behaviors from their loved ones in an attempt to alleviate their suffering. Conversely, individuals living in environments that reinforce OCD behaviors may develop a worsening of OCD severity. The latter scenario would be explained by a central tenet of cognitive-behavior theory for OCD, which purports that severity worsens when rituals are permitted to be repeated and reinforced. Thus, when "response prevention" (or ritual prevention) does not follow "exposure" to an OCD stimuli due to family accommodation, then extinction of OCD-related fears is less likely to occur.

Unlike the relationship with severity, the direction of significant association between the presence of contamination or cleaning symptoms and family accommodation in this study is more certain. Increased accommodation is unlikely to lead to specific OCD symptoms, as accommodation temporally follows the emergence of symptoms. According to these results, clinicians should make concerted efforts among relatives of those with cleaning or contamination-related symptoms to counsel against facilitating, helping or tolerating these behaviors.

In this study sample, a family history of OCD (30.8%) was very common. This may theoretically have been a contributing factor to the high degree of accommodation that was reported. For example, relatives with identical obsessions may accommodate others' OCD while conducting their own rituals. In contrast to our hypothesis, this was not found to be a significant predictor of family accommodation. No statistical differences or trends were seen ($t = 0.58$, $p = 0.56$) in comparing family accommodation scores between those with (mean = 19.8; SD = 9.9) and without (mean = 21.8; SD = 12.7) a family history of OCD. It is possible that family OCD history may have differential positive and negative effects that were diluted in analyses. For example, relatives with CBT-treated OCD may be aware of negative effects of accommodation and limit these behaviors, whereas those with similar OCD symptoms and limited insight may be more likely to participate in accommodating behaviors.

Other hypothesized predictors that were not significantly associated with family accommodation include young age and the presence of major depression. It was hypothesized that

younger individuals and those suffering with depression may have a greater ability to elicit "helping" behaviors from family members, but this was not supported by the data. Although the prevalence of accommodation did not differ by age, specific types of accommodating behaviors may be associated with the age of the OCD patient or with comorbid illnesses. This would be an area of interest for future studies.

Limitations of this study should be acknowledged. Although diagnoses were carefully conducted by experts in OCD, structured instruments were not used. Furthermore, interpretation of the findings is hampered by the fact that this was not prospective in design. It is not possible to determine whether OCD severity led to increased family accommodation, or vice-versa. However, the association between symptom severity and accommodation is clinically pertinent for those treating severely ill OCD patients and may also guide future research in this area. Also, the adjusted R -square value of 0.15 suggests that several other factors not included in this study also play a role in the severity of family accommodation.

In conclusion, results of our study on residential OCD patients accord with past reports of OCD outpatients by demonstrating that accommodation of OCD symptoms by family members is extremely common (4) and associated with greater symptom severity (3). Moreover, our findings suggest that accommodation is more likely to occur in the families of patients with primary contamination and cleaning symptoms. This has important clinical relevance since accommodation may potentially worsen manifestations of the illness and interfere with treatment approaches. Determining contributory familial factors in OCD and developing a plan for family psychoeducation must not be overlooked in the management of this illness.

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