



Frequency of Obsessive-Compulsive Disorder and Its Patterns in Families of Children with OCD in Rafsanjan, 2016

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Abstract

Background: Obsessive-compulsive disorder (OCD) is one of the common psychiatric disorders among children and adolescents that can be created by both genetic and environmental factors.

Objective: The present study aimed to evaluate the frequency of OCD and its patterns in families with OCD children.

Methods: In this cross-sectional study, 95 children and adolescents with OCD who were referred to the Psychology Clinic of Rafsanjan, Iran, in 2016 were enrolled by a convenience sampling method. The research tool was an obsessive-compulsive questionnaire (children form), and interviews were also carried out with the patients to find the deterioration of the symptoms in them and/or their families. Data were presented and analyzed by mean \pm SD, frequency, and Chi-square test. The level of significance was 0.05.

Results: The highest frequency of OCD patterns was washing, Checking, and doubt. 36.7% of fathers and 56.1% of mothers had one of obsessive-compulsive disorder patterns. Meanwhile, the most common pattern observed in the parents was cleaning. In total, 79.6% of the paternal families and 87.7% of the maternal families of the patients had OCD. Moreover, a significant relationship was observed in the levels of OCD between children and mothers ($P = 0.027$), whereas no significant association was detected between the OCD of children and that of their parents.

Conclusions: Family history (especially maternal family) plays a significant role in OCD development, which is indicative of the transmission pattern of multifactorial traits, while the heritability of OCD is still not determined.

Keywords: Children, Obsessive-Compulsive Disorder, Parents

1. Background

Obsessive-compulsive disorder (OCD), which is a disparate psychiatric disorder, is determined by the return of impulses, disturbing thoughts, and images that cause distressing emotions (e.g., anxiety and stress) and repetitive behaviors that are performed to reduce stress. In Iran, the prevalence of OCD in children is 12.2% (1, 2). The symptoms of about 75% of the patients occur before the age of 25 years (3). Besides, OCD occurs due to various causes, including biological (e.g., brain damage, defect in the data processing system, serotonin level changes), genetics, psychological (e.g., memory defect, inability to control thoughts, and excessive accountability), and environmental (e.g., parenting styles and learning from parents) factors (4-11).

Studies conducted on OCD confirm the hypothesis that heredity (as a subgroup of biological factors) plays a significant role in the disorder in a way that the possibility

of occurrence of OCD is three to five times more in relatives of individuals with the disorder compared to the normal population (3). This fact confirms the transmission pattern of multifactorial traits. In this pattern, a heritability number (H^2) is determined in the transfer of features based on the level of the effect of genes and environmental factors (12). This number will be between zero and one, where closer values to one show the intensified effects of the genes. In contrast, closer values to zero represent the impacts of environmental factors on gene expression. Naturally, heritability number one ($H^2 = 1$) implies that the attribute is solely genetic (e.g., thalassemia) whereas heritability zero ($H^2 = 0$) implies that the attribute is solely environmental (like infectious diseases) (13). Determining the heritability number of an attribute requires a prospective study (cohort) with a relatively high volume of normal population or a low number of twin (monozygotic) pop-

ulations. Few studies have been published on the genetic origins of obsessive-compulsive disorder (for more details, refer to e.g., (14)).

Fathers and mothers are not equally involved in the behavioral evolution of their children. This difference might be due to the way the DNA is transmitted from parents to children or the effects of environmental factors faced by parents and children during life. It seems that the transmission pattern of OCD among relatives is so complicated that cannot be described in the form of a simple Mendelian pattern (11). However, in the studies conducted by Hanna et al., they demonstrated a form of a Mendelian pattern of OCD, which just showed the more significant role of mothers in the transmission of OCD, when compared to fathers (15). In this respect, Semnani pointed out a higher maternal transmission pattern of OCD in individuals with this disorder (16). Nevertheless, none of the mentioned studies could confirm a specific gender pattern (hereditary patterns related to gender). Some studies have indicated the heritability of OCD, reporting the percentage of parents with OCD who were also diagnosed with the condition (17, 18). Studies on twins have also shown that genetic factors can be involved in the occurrence of OCD (14, 19). Environmental factors, such as learning and observing patterns play a very effective role in the formation of obsessions. The role of hidden learning in the transmission of obsessive-compulsive behaviors from parents to children should not be overlooked. Children observe and imitate their parents' behavior (3, 5).

2. Objectives

Despite various studies on twins, there is still no determined heritability number for OCD, and research in this area has only confirmed the multifactorial traits of this condition (20). Therefore, in the present investigation, we evaluated the frequency of OCD in the families of children and adolescents with OCD and the correlation of the patterns.

3. Methods

The population of the present cross-sectional study included 7 - 17 years-old children and adolescents with OCD who were referred to the Psychology Clinic of Rafsanjan University of Medical Sciences, Iran, in 2016. All subjects were enrolled in the study by a convenience sampling method (N = 98). Clinical interviews were then applied based on the Diagnostic and Statistical Manual of Mental

Disorders, Fifth Edition (DSM-5) for the definitive diagnosis of OCD. Inclusion criteria included other psychiatric illnesses on treatment, history of head trauma, incurable physical illness, and cancer. Exclusion criteria included dissatisfaction with continuing the study.

After explaining the goals of research, the participants or parents signed informed consent forms and then completed a demographic checklist including age, gender, and the presence of OCD patterns in the relatives (first-degree relatives such as parents, or second-degree family members such as grandparents, uncles, and aunts). During the research process, the Obsessive-compulsive Inventory, Child Version (OCI-CV), designed by Foa et al. (2010), was applied (21). It contained 21 items to evaluate OCD and its patterns in the age group of 7 - 17 years. The questionnaire contained six subscales of washing, obsessing, hoarding, ordering, checking, and neutralizing. The reliability coefficients of Cronbach's alpha for the Persian version of questionnaire components reported between 0.63% and 0.84%. It was also found that the reliability coefficients ranged between 0.58 and 0.79, which all were significant at $\alpha = 0.01$ (22). Cronbach's alpha was estimated at 0.85 for the total survey and 0.83, 0.83, 0.88, 0.83, 0.82, and 0.81 for washing, obsessing, hoarding, ordering, checking, and neutralizing, respectively.

To clarify the research, children and adolescents who were referred to the clinic received the structured clinical interview to identify those with actual OCD, and then, the objectives of the research were explained to the participants or their companions. The diagnosed individuals or their companions filled the OCI-CV along with the demographic characteristics checklist to confirm their diagnosis and determine the pattern of OCD. We asked the parents about the occurrence of OCD and its patterns in paternal or maternal families. To remove the ambiguities of the occurrence of the disorder in some relatives, the recorded information was checked with other family members via phone calls. For the observed cases of OCD in parents (or grandparents) or companions of the participants, a free-of-charge visit was arranged with the physician for confirming the disorder. As a result, the presence of OCD or its signs in each generation of the maternal or paternal family could be regarded as a type of hereditary transmission model. No one was excluded from the study. Finally, the recorded data were analyzed by SPSS version 16. In the descriptive part, the mean and frequency of variables and in the analytical part, the chi-square test was applied. A p value of less than or equal to 0.05 was considered significant.

4. Results

The mean age of the children was 12.62 ± 3.07 years where 62 (63.3%) of them were males. The highest calculated frequency of OCD patterns was washing ($n = 39$, 39.8%), whereas the lowest one was ordering and obsessing patterns ($n = 7$, 7.1% for each category). The results of the chi-square analyses showed the lack of a significant relationship between OCD patterns and the gender of children and adolescents with this disorder ($P = 0.556$) (Table 1).

Out of 98 fathers with confirmed OCD, 36 (36.7%) had some signs of the disorder, while among 98 mothers, 56 (56.1%) had OCD symptoms. Therefore, the frequency of OCD symptoms was significantly higher in mothers than in fathers of children with OCD ($P = 0.004$) (Table 2). The OCD was confirmed for 78 (79.6%) members of the paternal family whereas it was recognized for 87 (87.7%) members of the maternal family. No significant difference was observed between the maternal and paternal families of children with OCD in terms of the frequency of OCD symptoms ($P = 0.224$) (Table 3). Out of 62 males with OCD, 46 (74.2%) maternal family relatives had a history of OCD. On the other hand, 21 (58.3%) maternal family members of 62 female subjects had a history of OCD ($P = 0.104$). Moreover, out of 62 male subjects with OCD, 31 (50%) paternal family relatives had OCD, whereas 23 (63.9%) paternal family members of 36 female subjects with OCD had a history of OCD, which showed that this difference was not significant ($P = 0.183$) (Table 4).

5. Discussion

This study aimed to evaluate the frequency of OCD and its patterns in the families of children with OCD. Based on the results, 36.7% of the children and adolescents with OCD had fathers with the disorder, whereas 56.1% of the participants had mothers with this condition. In total, the OCD patterns were observed in 73 of the parents (74.5%). Riddle et al. marked that 71% of the parents of children with OCD either were diagnosed with this disorder or declared apparent obsessive traits, which agrees with our findings (23). Conversely, Rasmussen pointed out the diagnosis of 4.5% of parents with OCD and the detection of distinctive obsessive traits in 11% of the parents (24). A study demonstrated that the prevalence of the disorder could be up to 20% in families of children (25). In a study conducted by Lewis, it has been found that 37.2% of the parents of children with OCD had histories of the disorder in family relatives (26). It seems that the prevalence of OCD is

higher in children with parents diagnosed with the condition. The current research had the relatively highest number of parents with OCD, and this difference might be due to different sampling methods, tools, or implementation techniques. However, all of the studies mentioned above have indicated the higher prevalence of the traits of OCD in the first- or second-degree relatives. More importantly, it seems that some factors other than genetic components may be involved in the divergent results. One of these factors is OCD-related behavior learning by observing the same acts of parents or being forced by parents to perform those behaviors (11, 27). In the current research, the symptoms of OCD were observed in 68.4% and 55.1% of the maternal and paternal family members, respectively, which was independent of the gender of the participants. In this regard, Maroufi found no significant difference in the frequency of OCD in the paternal and maternal families of children (11). Nevertheless, it should be mentioned that the results obtained by Nicolini et al. were inconsistent with our findings in this respect (28). In the research conducted by Lenane et al., it was demonstrated that 25% and 9% of the fathers and mothers of children with severe OCD had similar disorders, respectively (29). This study also detected the hereditary transmission of OCD as the Mendelian inheritance model. Therefore, it could be concluded that while a definitive Mendelian model could not be presented in the current research, we could show a higher possibility of hereditary transmission of OCD in the maternal family.

According to the results of our study, the highest frequency of OCD patterns in the participants was for washing (39.8%), which also had the highest frequency in the parents of children with OCD (29.6% in mothers and 18.4% in fathers). Regarding various factors involved in the formation of OCD and compulsive actions in this disorder and referring to the implementation of the research, it might not be stated that this similarity is due to the hereditary transmission model. It might be acknowledged that the patterns of learning from parents and social and cultural features are responsible for the occurrence of the sort of obsessive or compulsive act. In this regard, Hudziack marked that learning had 45% interference with the disorder (30). According to the results found in the present study, no significant difference was observed between female and male individuals with OCD in terms of the frequency of this disorder. Moreover, no significant difference was observed between the paternal and maternal families in the frequency of OCD. In this respect, Mathis et al. conducted a study in 2011 based on research performed in the past 20 years on the gender-related differences of OCD in clinical, genetic, and family aspects. In the men-

Table 1. Frequency of Patterns of Obsessive-Compulsive Disorder in Children and Adolescents^a

| | Washing | Checking | Obsessing | Hoarding | Ordering | Neutralizing |
|------------------------|-------------------------------------|-----------|-----------|----------|----------|--------------|
| Gender | | | | | | |
| Male (n = 62) | 24 (61.5) | 14 (51.9) | 7 (70.0) | 6 (85.7) | 5 (71.4) | 6 (75.0) |
| Female (n = 36) | 15 (38.5) | 13 (48.1) | 3 (30.0) | 1 (14.3) | 2 (28.6) | 2 (25.0) |
| Total | 39 (100) | 27 (100) | 10 (100) | 7 (100) | 7 (100) | 8 (100) |
| Chi-square test | $\chi^2 = 3.951, df = 5, P = 0.556$ | | | | | |

^a Values are expressed as No. (%).**Table 2.** Frequency of Obsessive-Compulsive Disorder in Parents^a

| | Normal | OCD | Total |
|------------------------|-------------------------------------|-----------|----------|
| Father | 62 (63.3) | 36 (36.7) | 98 (100) |
| Mother | 42 (42.9) | 56 (56.1) | 98 (100) |
| Chi-square test | $\chi^2 = 8.194, df = 2, P = 0.004$ | | |

^a Values are expressed as No. (%).**Table 3.** Frequency of Obsessive-Compulsive Disorder in Children and Adolescents' Families

| Father's Family | No. (%) | Mother's Family | No. (%) |
|------------------------|-------------------------------------|---------------------|-----------|
| Father | 36 (36.7) | Mother | 56 (56.1) |
| Grandfather | 9 (9.2) | Grand father | 6 (6.1) |
| Grandmother | 8 (8.2) | Grand mother | 7 (7.1) |
| Cousin | 14 (14.3) | Uncle | 10 (10.2) |
| Aunt | 11 (11.2) | Aunt | 8 (8.2) |
| Total | 78 (79.6) | Total | 87 (87.7) |
| Chi-square test | $\chi^2 = 8.194, df = 2, P = 0.004$ | | |

Table 4. Frequency of Obsessive-Compulsive Disorder in Maternal and Paternal Families Based on the Gender of Offspring with OCD^a

| | Gender of Offspring | | |
|-------------------------------|-------------------------------------|-----------|-----------|
| | Male | Female | Total |
| OCD in maternal family | | | |
| Yes | 46 (74.2) | 21 (58.3) | 67 (68.4) |
| No | 16 (25.8) | 15 (41.7) | 31 (31.6) |
| Total | 62 (100) | 36 (100) | 98 (100) |
| Chi-square test | $\chi^2 = 2.649, df = 1, P = 0.104$ | | |
| OCD in paternal family | | | |
| Yes | 31 (50.0) | 23 (63.9) | 54 (55.1) |
| No | 31 (50.0) | 13 (36.1) | 44 (44.9) |
| Total | 62 (100) | 36 (100) | 98 (100) |
| Chi-square test | $\chi^2 = 1.776, df = 1, P = 0.183$ | | |

^a Values are expressed as No. (%).

tioned research, no significant difference was observed between men and women with OCD in terms of genetics and family. However, gender could have a possible role in the occurrence of the disease (31). In the research carried out by Semnani, it was concluded that the presence of the maternal pattern in OCD patients was not only related to gender. In other words, the results showed that in the case of greater OCD hereditary transmission pattern in the maternal family, it was impossible to apply a simple model for gender chromosomes. This provoked that more complicated hereditary mechanisms could be responsible for OCD (16).

One of the major limitations of the present study was to convince the families to attend the clinic or office of the physician to evaluate their OCD symptoms. In the case of the lack of cooperation of the family members to attend, the information was collected by phone calls. In addition, despite the presence of OCD symptoms in some parents or their relatives, they resisted cooperating.

It is suggested that similar studies be conducted on larger populations with the assistance of geneticists in order to evaluate the genetic patterns precisely. It is also suggested that the family history of children and adolescents with OCD be assessed more professionally for a better diagnosis and treatment of the disease.

5.1. Conclusions

The family history, especially maternal family history, plays an important role in the occurrence of OCD. In other words, there is a higher possibility of OCD in individuals who have at least one first-degree relative (especially from the maternal family) diagnosed with the disorder. A multifactorial transmission model can be considered for the processes of transmission. According to the results of this study, future research needs to examine the role of genes and/or learning in the transmission of obsessions from parents to children. As the present study was conducted in Rafsanjan city, Iran, it is necessary to be careful in generalizing the results.

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Footnotes

Authors' Contribution: Parvin Agha Mohammad Hasani: Scientific advisor. Mohammad Nazer: Patient se-

lection and interview conduct. Mohammadreza Mokhtaree: Data analysis. Mohammadreza Mirzaie: Scientific advisor for genetics.

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