

Epidemiology of Obsessive-Compulsive Disorder at High School Students in Edirne City Center

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ÖZET

Edirne ili merkezindeki lise öğrencilerinde obsesif-kompulsif bozukluğun epidemiyolojisi

Amaç: Edirne ili merkezindeki lise öğrencileri arasında obsesif-kompulsif bozukluk (OKB) yaygınlığını araştırmak, OKB'nin sosyodemografik özelliklerini ve OKB belirtilerinin sıklığını saptamak.

Yöntem: Çalışma, Edirne ili merkezindeki liselerde eğitim görmekte olan 1., 2. ve 3. sınıf öğrencileriyle yapıldı. Örneklem büyüklüğünü hesaplamada, toplumda OKB görülme yaygınlığı %3 olarak alındı ve il genelindeki 8037 öğrenciden, OKB yaygınlığını saptamak için, tolerans değeri %0.6 ve %95 güvenle 3107 öğrencinin seçilmesinin yeterli olduğu saptandı. Örneklem, il genelindeki liselerden cinsiyet ve öğrenci sayılarına göre yapılandırılarak tabakalı örnekleme yöntemiyle seçildi. İlki, katılımcının kendisinin dolduracağı sosyodemografik veri formu ve Maudsley Obsesif-Kompulsif Soru Listesi (MOKSL), ikincisi, görüşmeci aracılığıyla doldurulacak CIDI (Composite International Diagnostic Interview) OKB ölçeği ve CIDI'nin depresif bozukluk ve yaygın anksiyete bozukluğu olmak üzere toplam iki alt ölçeği de çalışmamıza dahil edildi. Biyoistatistik uzmanı yardımı ile yapılan çalışmada, normal dağılım kuramından hareketle MOKSL'den 25 ve üstü puan alan 117 öğrenci bir üst değerlendirilmeye alındı. Böylece, önceden OKB açısından değerlendirmeyi hak eden öğrenciler belirlendi. Sonraki aşama olan CIDI ölçeği ile OKB'nin yanı sıra yaygın anksiyete bozukluğu (YAB) ve majör depresyon (MD) eş tanıları da incelendi.

Bulgular: Toplam kırk kişiye OKB tanısı konmuş, OKB'nin nokta yaygınlığı %1.4 olarak bulunmuştur. Vakaların sosyodemografik özellikleri yönünden yapılan karşılaştırmada, vaka grubuyla, toplam 2856 öğrenciden MOKSL'den 25 ve üstü puan alan 117 kişi dışında kalan öğrencilerin eşit aralıklara bölünmesiyle elde edilen kontrol grubu arasında istatistiksel olarak anlamlı farklılık yoktu. En sık, bulaşma obsesyonu (%40) ve kontrol kompulsyonu (%22.5) saptanmış, majör depresyon eş tanısı %47.5, yaygın anksiyete bozukluğu eş tanısı %5 oranında bulunmuştur.

Sonuç: Çalışmamızda sosyodemografik özellikler literatürden farklı bulunmuştur ve bulgular kontrol grubundan istatistiksel olarak anlamlı farklılık göstermemiştir. Ergenlik dönemi, diğer yaş dönemlerinden farklı özellikler taşıyan, hassas bir dönemdir. Bu nedenle, bu yaş grubuyla çalışmanın güçlükleri çalışmamızda da gözlemlenmiştir. Psikiyatrinin tüm toplumda, özellikle ergenlik döneminde daha iyi anlaşılması için daha fazla bilgilendirici çalışmanın yapılması gerektiği öne sürülebilir.

Anahtar kelimeler: Obsesif-kompulsif bozukluk, ergenlik, epidemiyoloji, fenomenoloji, eş tanı

ABSTRACT

Epidemiology of obsessive compulsive disorder at high school students in Edirne city center

Objective: To investigate the prevalence of OCD among high school students in Edirne city center, to determine sociodemographic features of OCD, and to determine frequency of OCD symptoms.

Methods: The study was conducted with 9th, 10th, and 11th grade high school students in the Edirne city center. The frequency of OCD among the entire population was accepted on 3% in the calculation of sample size and 3107 students among 8037 province-wide students were enrolled to the study with a 0.6% tolerance and a 95% confidence level. The sample was selected from province-wide high schools using stratified sampling by weighing according to gender and the number of students. The sociodemographic data form and the Maudsley Obsessive-Compulsive Inventory (MOCI), which will be filled out by the participant, and the Composite International Diagnostic Interview (CIDI) and two subscales of the CIDI concerning major depression (MD) and generalized anxiety disorder (GAD), which were filled out by the interviewer, were used. In the study, conducted together with a biostatistician, 117 students who had a MOCI score of ≥ 25 were enrolled into the next stage of the assessment with respect to the normal distribution. Thus, the students who were eligible for assessment of OCD were also diagnostically-assessed in terms of co-morbid GAD and MD by the CIDI.

Results: A total of 40 students were diagnosed with OCD, and the point prevalence of OCD was found to be 1.4%. Sociodemographic features of the cases were not statistically significantly different compared to the control group included students selected from the 2856 students, except 117 students who had a MOCI score of ≥ 25 , obtained after dividing into equal intervals. Contamination obsessions and control compulsions were most frequently encountered (40% and 22.5%, respectively), and the frequency of co-morbid MD and GAD were 47.5% and 5%, respectively.

Conclusion: In the present study, the sociodemographic features were different from the literature and the results were not statistically different compared to the control group. Puberty is a sensitive period that has different features from other age groups. Therefore, difficulties of working with such an age group were also observed in the present study. It is suggested that there is a need for more informative studies for a better understanding of psychiatric disorders in the population, particularly in adolescence.

Key words: Obsessive-compulsive disorder, adolescence, epidemiology, phenomenology, co-morbidity

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INTRODUCTION

OCD is a neuropsychiatric and chronic anxiety disorder which consists of obsessions or compulsions or both. Obsessions are intrusive, inappropriate and stubborn thoughts, ideas, imaginations or impulses which causes distress. Compulsion are repetitive behaviours, ideas or attitudes to relieve the anxiety related with the obsessions (1).

For many years, OCD was mainly investigated in patients who applied to psychiatry clinics. Initial phases, symptoms and the natural course of this disorder in people who were neither diagnosed nor treated among general public were not known (2). To understand the mental health of the general public and to increase public awareness, appropriate mental health policies should be developed by epidemiological studies determining the prevalence, risk groups and causative factors of mental disorders. In this context most reliable method for realistic prevalence studies is field research. It was found out that OCD, which was thought to be rare, is more prevalent than it was previously thought by the help of these field studies. (2).

Children and adolescents tend to hide their complaints for years due to embarrassment and fear caused by OCD symptoms. Few children were treated professionally and many of them live without treatment (3).

Various results were found in epidemiological studies done in various countries and prevalence rates were between 1-4% (2). For example, in US lifelong prevalence in adults was found 2.5% in Epidemiologic Catchment Area Study (4-7). In a study done in Turkey, one year prevalence was found to be 1.5% and lifelong prevalence was found 3% (8). Lifelong prevalence of OCD was generally accepted as 2-3% (9-11).

This rate was found 0.1-1.9% and 4.1% in childhood and adolescence, consecutively (2,11-14). In a study done with 5000 high school students, only 0.35% were found to meet OCD criteria (15). Children and adolescents tend to hide their symptoms. For this reason, information taken from families remain inadequate to understand the real OCD diagnosis and its severity (13). One-third to half of the adult OCD cases are thought to

be started in childhood or adolescence.

At least one comorbid condition is thought to be present in 70% of childhood OCD cases. (13).

Researches done about the socioeconomic level were also somewhat contradictory. Some studies indicated that OCD patients are from higher socioeconomic classes but on the other hand some others could not show any relationship with socioeconomic level (2,16).

In this study, we aim to determine the prevalence, sociodemographic characteristics and prevalence of the symptoms of OCD among high school students in Edirne city center.

METHODS

Universe of the study and sample selection

Universe of the study was the first, second and third grade high school students studying in Edirne city center in 2006-2007 school term. To calculate the sample size, OCD prevalence was estimated 3% in the general population (9,10). 3107 students among 8037 province-wide students were enrolled to the study to detect OCD prevalence with a 0.6% tolerance and a 95% confidence level. The sample was selected from province-wide high schools using stratified sampling by weighing according to gender and the number of students.

The sociodemographic data form and the Maudsley Obsessive-Compulsive Inventory (MOCI), which will be filled out by the participant, and the Composite International Diagnostic Interview (CIDI) and two subscales of the CIDI concerning major depression (MD) and generalized anxiety disorder (GAD), which were filled out by the interviewer, were used in this study.

Although validity and reliability study of MOCI was done in Turkey, cut-off point has not been determined yet. For this reason, while working with the statistician a cut-off point to determine the abnormal condition by MOCI using normal distribution rule was calculated. This score was calculated as 25 consequently. Students scored ≥ 25 were taken into subsequent CIDI interview. Thus, the students who were eligible for assessment

of OCD were also diagnostically-assessed in terms of co-morbid GAD and MD by the CIDI.

Data collection

Total number of students and classrooms and number of boys and girls at each classroom at the high schools in city center were obtained from National Education Administration of Edirne. Although a total number of 3300 students were targeted including the absent ones, 2681 students in total filled the form. One hundred and seventeen students whom scored ≥ 25 from MOCI which was calculated statistically were taken into subsequent interview. This time, students whom names were determined according to scale results were recalled and CIDI was applied. Data collection for first and second steps was done in April-June 2007.

Data collection tools

In the study, MOCI was used to evaluate obsessive-compulsive symptoms and OCD section of Composite International Diagnostic Interview (CIDI), 2.1 was used as diagnostic scale. To evaluate the relationship between OCD and sociodemographic risk factors, "Sociodemographic Information Form" prepared by us was also used.

Sociodemographic Information Form: It is a form consists of 21 questions to determine the sociodemographic characteristics of subjects enrolled in the study and conditions which may be risk factors of OCD. By this form, characteristics such as gender, birth date, number of children and siblings, profession, educational level, income level and family history of mental illness were examined.

Maudsley Obsessive Compulsive Inventory: It is a self-report scale used for measuring the type and prevalence of obsessive-compulsive symptoms in healthy subjects and psychiatric patients. Instructions were given in the introduction section of the scale and subjects tick the correct/incorrect answer which fits them while filling the form. Cut-off point was not calculated in the Turkish validity and reliability study. Scale can be applied to children 9 years or older. In our

study, this scale was only used for determining the adolescents having obsessive-compulsive symptoms.

CIDI: CIDI is a comprehensive and fully structured diagnostic interview which evaluates according to definitions and criteria of DSM-IV and ICD-10. CIDI was developed to implement at various cultures and environments. Its main goal is research about the epidemiology of mental disorders. As CIDI is a fully-structured interview, interviewer has not to be a psychiatrist. However, interviewers should be trained in order to implement it. It also has a computerized version. CIDI 2.1 contains 17 main diagnostic area.

Statistical evaluation of data

Data obtained from 2856 students due to invalidity of the data obtained from 5 students. Sociodemographic data form and MOCI results were uploaded to 'SPSS for Windows 15.5' program. Our second goal is to find out the OCD cases and compare their sociodemographic characteristics. Computer program determined 117 students whom scored ≥ 25 . Second phase of the study was performed with 114 students out of 117. One student did not accept the interview and 2 students left the school meanwhile. At this point, CIDI was implemented by a trained psychiatrist by one-to-one interview. Results of these interviews were evaluated according to DSM-IV-TR and ICD-10 criteria and 40 students were diagnosed OCD. Distributions were evaluated by transferring data of this second phase to SPSS for Windows 15.0 program. In order to evaluate the difference between OCD cases and control group, Pearson chi-square analysis (and Fisher's Exact test when needed) was used for numeric variables and Student's t-test was used for non-parametric variables; $p < 0.05$ was taken as significance value.

RESULTS

Forty out of 114 students diagnosed OCD by CIDI. Point prevalence of OCD was found 1.4%. Mean age of the participants diagnosed as OCD were 16.70 ± 1.04 and participants consisted of 27 girls (%67.5) and 13 boys (%32.5). Control group consisted of 51 students

Table 1: Sociodemographic characteristics

Sociodemographic Information	OCD Group (n=40)	Control Group (n=51)	Statistical Test	p
	n (%)	n (%)		
Gender			$\chi^2=3.12$	0.077
Female	27 (%67.5)	25 (%49)		
Male	13 (%32.5)	26 (%51)		
Mother's Education			$\chi^2=0.70$	0.152
Illiterate/Primary	30 (%75)	31 (%60.8)		
High School/University	10 (%25)	20 (%39.2)		
Mother's employment			$\chi^2=0.02$	0.864
Currently working	5 (%12.5)	7 (%13.7)		
Housewife/retired	35 (%87.5)	44 (%86.3)		
Father's employment			$\chi^2=0.97$	0.323
Illiterate/Primary	23 (%57.5)	24 (%47.1)		
High School/University	17 (%42.5)	27 (%52.9)		
Father's employment			$\chi^2=0.49$	0.482
Currently working	33 (%82.5)	39 (%76.5)		
Housewife/retired	7 (%17.5)	12 (%23.5)		
Income			$\chi^2=0.02$	1.000
1829 TL and less	27 (%67.5)	30 (%58.8)		
1830 TL and more	4 (%10)	5 (%9.8)		
School performance			$\chi^2=0.97$	0.324
Very good-good	26 (%65)	38 (%74.5)		
Medium-failed	14 (%35)	13 (%25.5)		
Mental disorder among evaluated cases*			-	0.164
Yes	4 (%10)	1(%2)		
No	36 (%90)	49(%96.1)		
Treatment due to mental disorder*			-	
Yes	3 (%7.5)	2 (%3.9)		
No	37 (%92.5)	49 (%96.1)		
	Mean±S.S.	Mean±S.S.		
Mean age	16.70±1.04	16.41±1.03	t=1.32	0.187
MOCI total mean score	26.50±1.65	12.89±5.72	t=14.56	<0.001

MOCI: Maudsley Obsessive-Compulsive Question List, χ^2 : Chi-square test, t: Student t test, *: Fischer's Exact test

Table 2: Number and proportion of cases by the content of obsession and compulsion

	Content of the obses./comp.	OCD Group
Obsessions	Contamination	16 (%40)
	Persecution	9 (%22.5)
	Symmetry	1 (%2.5)
	Combined	8 (%20)
	No obsession	6 (%15)
Compulsions	Washing	4 (%10)
	Control	9 (%22.5)
	Counting-symmetry	2 (%5)
	Combined	25 (%62.5)

(25 girls and 26 boys) corresponding to numbers from 2739 people (except 117) selected from second phase and divided equally out of 2856 people which first phase was implemented.

In both obsessive-compulsive and control groups, mothers were generally primary school graduate and retired or housewives. Educational levels of fathers

Table 3: Number and proportion of combined obsessions among cases

Type of combined obsession	Number (%)
Contamination-persecution	5 (%62.5)
Contamination-symmetry	1 (%12.5)
Contamination-persecution-symmetry	1 (%12.5)
Contamination-mystic	1 (%12.5)
Total	8 (%100)

were similar to mothers' and primary school graduates were the majority. In both obsessive-compulsive and control groups, majority of the fathers were actively working.

In the obsessive-compulsive group, two people had a family history of mental disorders while 38 people did not have. None of the people in the control group had family history of mental disorder.

Baseline income level was taken 1829 TL which was accepted as the poverty line and covering the basic

Table 4: Number and proportion of combined compulsions among cases

Types of combined compulsion	Number (%)
Washing-control	9 (%36)
Washing-symmetry	1 (%4)
Control-counting	10 (%40)
Washing-counting	1 (%4)
Counting-symmetry/organizing	4 (%16)
Total	25 (%100)

needs of a family with four people in April 2006; values over this level were considered relatively good and values below this level were considered as relatively low income level.

Although school performance showed inter-group variability, performance level among groups were between very good and good.

Mean total MOCI scores of the OCD group was 26.50 ± 1.65 and control group was 12.89 ± 5.72 . Difference between the mean scores of the groups were found significant ($p < 0.001$) (Table 1).

While most prevalent single obsession was contamination in the OCD group, all cases having combined obsessions had contamination obsession. Second most prevalent obsession was persecution and symmetry (Table 2 and Table 3).

Most prevalent single compulsion was control compulsion. Single washing compulsion was the second most prevalent compulsion. Most prevalent compulsion was control among combined compulsions and washing was the second most prevalent one (Table 2 and Table 4).

Three students declared in the sociodemographic form that they had previously received psychiatric care. However, after face-to-face interview, 8 people from OCD group (20%) were found to have received psychiatric care while 32 people (80%) have not. Comorbid MD and GAD diagnoses were investigated in the OCD group. MD comorbidity was observed in 19 people (47.5%) and MD and GAD in 2 people (5%). No comorbid diagnoses could be found in the remaining 19 students with OCD.

DISCUSSION

Forty OCD cases in our study make up the 1.4% of

the group at the first phase. Point prevalence of OCD has been reported 0.2-4% and lifelong prevalence has been reported 0.7-13.8% among children and adults in the literature (3,17-21). In ECA studies monthly prevalence was reported 1.3% and lifelong prevalence was reported 2-3% in adults (22,23). Although there are studies which found lower rates, there can be various reasons of the lower results of our study. (3,24). For example, it was observed that students were tense and worried to get involved in a psychiatric examination and tend to hide their symptoms at the face-to-face interview of the second phase. No student came to their appointments given after the study and this situation supported this view. It is widely known that children and adolescents hide their OCD symptoms for several years due to their worry of being funny and when they seek help they get depression or anxiety disorder diagnoses due to these hidden symptoms (25). On the other hand, if one remembers that OCD starts at the age of 19 in men and at 22 in women, mean onset age of 16 in our study is below. This can be another reason of the lower rate found.

Mean age of OCD cases in our study was 16.70 ± 1.04 and our group consisted of 27 girls (67.5%) and 13 boys (32.5%) and female-to-male ratio was approximately 2. Obsessive-compulsive disorder tend to occur mainly in boys in childhood and adolescence, however, it was shown in many studies that male/female ratio is equal in adults or women tend to have more (2,5,26-29). There are studies which found OCD more prevalent in adolescent girls similar to our study (24,30).

In our study, majority of the mothers were primary school graduates or housewives. Majority of the fathers were actively working and were primary school graduates, however, there were no significant differences between groups in terms of the sociodemographic characteristics of parents. For this reason, educational level and employment status of the parents were thought not to have an impact on OCD occurrence in these children. Previous research did not show any influence of the educational level and employment status of the parents on OCD development as well (24,29,31).

There are only a few studies showing the relationship

between the income level of the family and OCD (3,32). Although previous studies showed that OCD condenses in middle-high socioeconomic class, ECA studies say that most of the patients are from lower socioeconomic class (2,22,33). In our study, monthly income level of the majority of OCD group was found to be below 1829 TL . According to this data, although OCD group was mainly from the low income level, this result was not found to be statistically significant. In other words, no correlation between income level and OCD was shown.

School performance of 2/3 of the students with OCD were found very good-good but this finding was not statistically significant. In our study, we aimed to evaluate the school functionality and cognitive skills by examining the academic performance of the students. Findings on this issue at the previous literature were conflicting. Some studies showed higher IQ in OCD patients whereas some of them found lower IQ levels (26,33,34).

In the OCD group, only 4 people answered “yes” to the question “Do you have any mental disorder?” and 3 of them declared that they received treatment. The main aim of this question was to understand the awareness and acceptance of adolescents about their disorder. When treatment findings in Table 1 are evaluated, it can be seen how misleading answers they have given. At the sociodemographic data table which was implemented in the first step, only 3 students accepted that they received psychiatric treatment; however, at the second step data it can be seen that 8 people received treatment. Furthermore, none of the cases told about OCD diagnoses or symptoms and all of them described their symptoms as depression. At this point, two options are possible: First, OCD symptoms might not have been realized as a disorder and adequate information about the disorder might also have been lacking. Second, there might have been symptoms hiding, feelings of embarrassment and being ridiculous which have been observed in studies worldwide. In our study, second factor seemed more probable. Due to these reasons, OCD patients are generally misdiagnosed as depression or anxiety disorder (25).

At the first step evaluation, total MOCI score of

the OCD group was 26.50 ± 1.65 and was the only statistically significant value when compared with the control group. This may be an expected finding but the reason, why only 40 students out of 114 whom have received high MOCI scores at the first step, got OCD diagnoses can be discussed. As Rachman mentioned in his studies (35,36), in the general population presence of obsessive thoughts but not being functionally impairing “abnormal obsessions” meeting OCD diagnoses can be indicated as an explanation for our patients. On the other hand, in some studies it was shown that OCD symptoms seen in children and adolescents are temporary and are expected to relieve in time and these symptoms are part of normal mental development (17,37).

When obsessions and compulsions from second step of our study were evaluated, most prevalent single obsession was found to be contamination obsession as consistent with the literature. Combined obsessions were found in 8 cases and all of them also had contamination obsession. Highest prevalence of control compulsion among single compulsions complied with the literature. The most prevalent compulsions among combined compulsions were control and counting ones. Dirtiness and washing compulsion were most prevalent in a study done in adults in Turkey (38). Research showed that obsessions and compulsions in children and adults are similar to ones seen in adults and washing and control are the most prevalent ones followed by obsessions like counting, lucky and unlucky numbers (12,39).

Comorbid GAD and MD diagnoses were searched and MD was detected as the most prevalent one. On the other hand, comorbid GAD was found to be relatively low. Obsessive-compulsive disorder is considered as having the highest comorbid diagnoses among anxiety disorders. Most prevalent comorbid diagnoses were depression and anxiety disorder. In some studies comorbid anxiety disorders, in some others comorbid MD was found to be most prevalent (2,3,20,23,26,29,33,40-44).

Sociodemographic characteristics were found different from the literature in our study and findings were not statistically significantly different from the

control group. Adolescence is a sensitive period having different characteristics from other ages. Working with this age group causes difficulties like hiding the symptoms due to this. It can be concluded that more informative work has to be done to increase awareness of psychiatry especially in adolescents. Some findings of our study differs from previous OCD studies. This may be due to symptom hiding tendency of adolescents. Lower mean age compared to mean OCD onset age due to coverage of only high school students

of our study may be another reason. Further studies on this subject should cover higher age groups besides high school students. Additionally, contributing to the epidemiological data of OCD, this study might also showed that negative view to psychiatry is continuing among general public and this might also have a negative influence on adolescents. In conclusion, there is need to enlighten general public about psychiatry and need for further studies on adolescence which is the most important and sensitive period of life.

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