



Review article

The descriptive epidemiology of obsessive–compulsive disorder

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Abstract

Since the early eighties, there has been a growing interest in the descriptive epidemiology of obsessive–compulsive disorder (OCD). In this narrative review, the authors describe the findings of a number of studies that employed selected instruments, such as the Diagnostic Interview Schedule, the Composite International Diagnostic Instrument, and the Schedule for Affective Disorders and Schizophrenia, to ascertain the prevalence and incidence rates for OCD in several different countries. We noted that there is a great heterogeneity of findings and that the potential reasons for this variability include not only the intrinsic characteristics of the population under study but also extrinsic factors (i.e., the several methodologically-informed decisions that are to be made before undertaking such investigations, such as the adoption of a specific diagnostic instrument). In order to further the knowledge on the epidemiology of OCD, it would be worthwhile to establish a global consensus regarding a standard assessment package for OCD, to produce more cross-culturally valid versions of the key research instruments, and to conduct studies specifically aimed at comparing the sociodemographic, clinical and prognostic aspects of OCD across different countries.

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Abbreviations: ASI, Anxiety Symptoms Interview; CES-D, Center for Epidemiologic Studies–Depression Scale; CAPA, Child and Adolescent Psychiatric Assessment; CBCL, Child Behavior Checklist; CIS-R, Clinical Interview Schedule–Revised; CIDI, Composite International Diagnostic Instrument; DAWBA, Development and Well-being Assessment; DICA, Diagnostic Interview for Children and Adolescents; DIS, Diagnostic Interview Schedule; DISC, Diagnostic Interview Schedule for Children; DSM-III, Diagnostic and Statistical Manual of Mental Disorders, 3rd edition; DSM-III-R, Diagnostic and Statistical Manual of Mental Disorders, 3rd edition revised; DSM-IV, Diagnostic and Statistical Manual of Mental Disorders, 4th edition; DS-III SCL, DSM-III Symptom Checklist; ECA, Epidemiologic Catchment Area; FPI, Florence Psychiatric Interview; ICD, International Classification of Diseases; ICD-10, International Classification of Diseases, 10th edition; LOI-CV, Leyton Obsessional Inventory–Child Version; MINI, Mini International Neuropsychiatric Interview; M-CIDI, Munich–Composite International Diagnostic Interview; OCD, Obsessive–compulsive-disorder; PSE, Present State Examination; QMPA, Questionário de Morbidade Psiquiátrica de Adultos; RDC, Research Diagnostic Criteria; SADS, Schedule for Affective Disorders and Schizophrenia; KSADS, Schedule for Affective Disorders and Schizophrenia for School Age Children; SADS-LA, Schedule for Affective Disorders and Schizophrenia, Lifetime Version Modified for the Study of Anxiety Disorders; SCAN, Schedules for Clinical Assessment in Neuropsychiatry; STSOB, Schedule for Tourette Syndrome and Other Behavioral Disorders; SPE, Standardized Psychiatric Examination; SCID, Structured Clinical Interview for the DSM; SPIKE, Structured Psychopathological Interview and Rating of the Social Consequences for Epidemiology; TRF, Teacher’s Report Form; YSR, Youth Self Report.

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1. Introduction

A number of studies have attempted to estimate the prevalence of obsessive–compulsive disorder (OCD) in the general population. These epidemiologic inquiries can be divided into early studies, where diagnosis was based solely on clinical judgement, and modern ones, in which structured or semi-structured instruments were used to establish the diagnosis (Bebbington, 1998).

It is frequently stated that the only estimate of prevalence of OCD in the general population made prior to the eighties was performed by Rudin (1953), who approximated its prevalence to be 0.05% (Rasmussen and Eisen, 1990). In fact, the first early study, conducted by Roth and Luton (1942) in Tennessee, showed that about 0.3% of their sample of 1700 people had a condition that could be diagnosed as OCD. Another important early study, made by Brunetti (1977) in rural France, revealed that about 1% of the population had OCD.

A number of surveys that have identified the prevalence of OCD using standardized instruments are now available. These studies have employed mostly the Diagnostic Interview Schedule (DIS; Robins et al., 1981, 1985), the Composite International Diagnostic Instrument (CIDI; Robins et al., 1988a,b), the Schedule for Affective Disorders and Schizophrenia (SADS; Endicott and Spitzer, 1978), or the Clinical Interview Schedule-Revised (CIS-R; Lewis et al., 1992). On the other hand, studies reporting the incidence of OCD are very few and have generally employed the DIS, the CIDI, and the SADS.

2. Prevalence studies employing the diagnostic interview schedule

The DIS (Robins et al., 1981, 1985) is a rigidly structured interview. Lay Interviewers are trained not to deviate from the printed format, so that the scope for personal clinical judgement is reduced to a minimum. The data obtained by the Diagnostic Interview Schedule were used to establish diagnoses according to the criteria of the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III; American Psychiatric Association, 1980) and, later, of its revised version (DSM-III-R; American Psychiatric Association, 1987) (Robins et al., 1988a,b). This instrument was employed in the important population surveys of the Epidemiologic Catchment Area Program (ECA; Robins and Regier, 1991). The use of the DIS in the diagnostic assessment of OCD (including the issues of validity and reliability) was extensively discussed by Karno et al. (1988). A summary of the studies that

have used the DIS to survey the prevalence of OCD is depicted in Table 1.

Weissman et al. (1994) found that the prevalence rates of OCD in seven international communities¹ were significantly higher than previously believed, ranging from 1.9% to 2.5% for lifetime prevalence, and from 1.1% to 1.8% for annual prevalence. The results obtained through the DIS were remarkably consistent across the sites, with the exception of Taiwan, where much lower lifetime and annual prevalence rates were observed (0.7% and 0.4%, respectively). It must be noted that comparatively lower prevalence rates for most mental disorders have been systematically reported in Taiwan. On the other hand, considerably higher lifetime prevalence rates for OCD (8%) were described by Helzer et al. (1985) in a survey conducted in St. Louis.

The severity criteria employed by the DIS were felt by many to be overly lenient and too open to interpretation by the lay personnel who made the interviews. In consequence, it has been argued that the figures for phobias as well as for OCD may have been artificially inflated (Rasmussen and Eisen, 1990). This point of view was supported by studies that included reappraisals conducted by trained psychiatrists (Anthony et al., 1985; Helzer et al., 1985).

3. Prevalence studies employing the composite international diagnostic instrument

The CIDI (Robins et al., 1988a,b) was largely inspired on the DIS and shares its philosophical principle of trying to obviate the need for clinical judgment by prescribing very precisely the form and the direction of the assessment (Jenkins et al., 1997a,b). Unlike its predecessor, it covers both the International Classification of Diseases (ICD) and the Diagnostic and Statistical Manual of Mental Disorders (DSM) criteria, but takes less time to complete. The level of agreement between the CIDI-generated OCD diagnosis and the clinical assessment made by psychiatrists and psychologists was found to be moderate (Komiti et al., 2001) to good (Peters and Andrews, 1995).

As shown in Table 2, the epidemiologic studies that used the CIDI (Robins et al., 1988a,b) to investigate OCD found one-month prevalence figures ranging from 0.3% (Andrade et al., 2002) to 3.1% (Stein et al., 1997). There are a number of potential sources for this variability. Prevalence rates vary not

¹ These studies were marked with an asterisk in Table 1.

Table 1
Selected prevalence studies of obsessive–compulsive disorder employing the DIS

Study	Country	Sample size	Interviewers	Lifetime prevalence rates	One-year prevalence rates
Helzer et al. (1985)	United States	360	Lay	8.0	NA
Karno et al. (1988) ^a	United States	18,571	Lay	2.3	1.3
Bland et al. (1988) ^a	Canada	3258	Lay	2.3	1.4
Canino et al. (1987) ^a	Puerto Rico	1513	Lay	2.5	1.8
Hwu et al. (1989) ^a	Taiwan	11,004	Lay	0.7	0.4
Wells et al. (1989) ^a	New Zealand	1498	Lay	2.2	1.1
Lee et al. (1990) ^a	Korea	5100	Lay	1.9	1.1
Stefansson et al. (1991)	Iceland	865	Lay	2.0	NA
Wittchen et al. (1992) ^a	Germany	481	Lay	2.1	1.6
Chen et al. (1993)	Hong Kong	7651	Lay	1.1	NA
Németh et al. (1997)	Hungary	1200	Lay	2.7	NA

DIS=Diagnostic Interview Schedule (Robins et al., 1981, 1985).

^a Data extracted from Weissman et al. (1994). In these studies, the analyses were reported only for the group aged 26 to 64 year.

only according to the time frame adopted (1-month, 12-month or lifetime rates), but are also influenced by factors such as the technical skill of the interviewers (mental health professionals vs. lay personnel), the setting of the evaluation (interviews conducted personally vs. interviews by telephone), the use of technological aids such as computer-assisted assessments, the diagnostic criteria employed [i.e., the several versions of the DSM (American Psychiatric Association, 1980, 1987, 1994) and the ICD (World Health Organization, 1993) systems], and the intrinsic characteristics of the population under study.

Similarly to the DIS (Robins et al., 1981, 1985), it has been suggested that when the CIDI is administered by lay interviewers, it tends to “overdiagnose” OCD. For example, Stein et al. (1997) found a 1-month prevalence rate for OCD of 3.1% when the CIDI was used in telephone assessments conducted by lay personnel. Upon a reappraisal made in person

by mental health professionals employing the SCID, a much lower figure—0.6%—was found. Common reasons for the overdiagnosis of OCD by the lay interviewers were inappropriate labeling of worries or concerns as obsessions and overestimating the degree of interference or distress attributable to obsessive–compulsive symptoms.

A closer examination of the Table 2, however, reveals that the heterogeneity of the findings in the CIDI studies should not be ascribed solely to the variability of the clinical skills of the interviewers. While Jacobi et al. (2004) and Wittchen et al. (1998) found low figures for the 12-month prevalence of OCD by means of interviews made by skilled mental health personnel (0.7 and 0.6, respectively), even lower rates were reported in studies that employed lay interviewers, such as those conducted by Bijl et al. (1998) [0.5%], Grabe et al. (2000) [0.39%], and Andrade et al. (2002) [0.3%].

Table 2
Selected prevalence studies of obsessive–compulsive disorder employing the CIDI

Study	Country	Sample	Interviewers	Prevalence rates for DSM-IV OCD (%)	Prevalence rates for ICD-10 OCD (%)
Stein et al. (1997)	Canada	2261	Lay interviewers, followed by researchers w/ SCID	3.1 (CIDI) ^a 0.6 (SCID) ^a	NA
Bijl et al. (1998)	Netherlands	7076	Lay	0.9 ^b 0.5 ^c 0.3 ^a	NA
Wittchen et al. (1998)	Germany	3021	Lay and psychologists	0.7 ^b 0.6 ^c	NA
Grabe et al. (2000)	Germany	4075	Lay	0.5 ^b / 0.39 ^c 2.0 ^{d,b} / 1.6 ^{d,c}	NA
Henderson et al. (2000)	Australia	10,600	Computer-assisted	NA	0.4 ^b
Andrade et al. (2002)	Brazil	1464	Lay	NA	0.3 ^{a,b,c}
Çilli et al. (2004)	Turkey	3012	Interns	3.0 ^c	2.2 ^b
Jacobi et al. (2004)	Germany	4181	“Mostly psychologists”	0.7 ^c 0.4 ^a	NA

CIDI=Composite International Diagnostic Interview (Robins et al., 1988a,b).

SCID=Structured Clinical Interview for DSM-IV (First et al., 1996).

^a 1-month rates.

^b Lifetime rates.

^c 12-month rates.

^d Rates for sub-clinical OCD, defined by the presence of obsessions or compulsions plus at least one but not all formal DSM-IV criterion. This may include or not the temporal and the distress criteria.

There is also another potential source of confusion with regard to the prevalence rates of OCD found in these studies. The CIDI “generates” diagnoses according to both the DSM-IV and the ICD-10 criteria. One should bear in mind that, regarding the diagnosis of OCD, each of these systems has its own particularities. Most studies report figures for one or another set of criteria. As seen in Table 2, prevalence rates for OCD in studies using the ICD-10 are consistently lower than in those employing the DSM-IV. Only one study reported both ICD-10 and DSM-IV 12-month prevalence rates for OCD (Çilli et al., 2004) [2.2% and 3.0%, respectively].

4. Prevalence studies employing the schedule for affective disorders and schizophrenia

The SADS (Endicott and Spitzer, 1978) provides a series of questions and criteria that enable one to make diagnoses using the Research Diagnostic Criteria (RDC) (Spitzer et al., 1978) and, more recently, the DSM system (American Psychiatric Association, 1980, 1987, 1994). To the best of our knowledge, the SADS was employed in at least three epidemiological studies that investigated OCD (Table 3). The lifetime ratings for OCD varied from 0.0% (Weissman et al., 1978) to 0.7% (Faravelli et al., 1989) and to 1.8% (Mohammadi et al., 2004). The fact that the studies by Weissman et al. (1978) and by Faravelli et al. (1989) were based on the RDC (Spitzer et al., 1978) and on the DSM-III criteria (American Psychiatric Association, 1980), respectively, may explain the lower rates for OCD found by these authors. The diagnostic hierarchy adopted by these early classificatory criteria made it impossible for them to diagnose OCD in the presence of Tourette syndrome, schizophrenia, major depression, or organic mental disorders. The study by Mohammadi et al. (2004), by adopting a version of the SADS that incorporated the DSM-IV criteria (American Psychiatric Association, 1994), reported rates deemed more realistic.

5. Prevalence studies employing other instruments

A number of epidemiological studies have employed diagnostic instruments other than the DIS (Robins et al., 1981, 1985), the CIDI (Robins et al., 1988a,b), and the SADS (Endicott and Spitzer, 1978) Table 4. They included the Present

State Examination (PSE; Wing et al., 1974), the CIS-R (Lewis et al., 1992), and the Structured Psychopathological Interview and Rating of the Social Consequences for Epidemiology (SPIKE; Angst et al., 1984), among others. However, given that only the PSE and the CIS-R were employed to investigate OCD in more than one epidemiological sample, we will limit our comments to the studies that have employed these two instruments.

The PSE (Wing et al., 1974) is a semi-structured and flexible interview schedule that relies on the interviewers’ ability to match glossary-defined symptoms with the respondents’ mental experiences. It requires some clinical sophistication. The ninth edition PSE (PSE-9), now superseded by the PSE-10, was linked to a computer program (CATEGO-IV) that virtually eliminated the possibility of identifying OCD. This was because it imposed a very strict hierarchy, so that if a patient had significant symptoms of depression, this would automatically eliminate the possibility of making a diagnosis of OCD (Bebbington, 1998). The net effect of this limitation was that only one out of the 14 surveys conducted worldwide that employed the PSE identified a case of OCD (Vazquez-Barquero et al., 1987; Bebbington, 1998). For the sake of space and given the sheer number of studies with negative results, we decided not to include them in Table 4.

The CIS-R (Lewis et al., 1992) was designed to be used by lay interviewers though it adopts a somewhat different approach from those of the DIS and of the CIDI. It assesses only neurotic symptoms and limits detailed questions to the previous week on the grounds that memory for psychological symptoms (and thus the validity of responses) is best for a relatively short recent period (Lewis et al., 1992). Two studies from the same research group, the United Kingdom National Psychiatric Morbidity Surveys of 1993/1994 (Jenkins et al., 1997a,b) and of 2000 (Torres et al., 2004) employed the CIS-R and generated rather consistent one-week prevalence rates for OCD (1.6 and 1.1, respectively).

6. Prevalence studies with children and adolescents

The epidemiology of OCD in children and adolescents has been widely studied in at least 16 studies from several different countries (Table 5). These investigations have employed instruments such as the DIS (or its version for children, the

Table 3
Selected prevalence studies of obsessive–compulsive disorder employing the SADS

Study	Country	Sample size	Interviewers	Diagnostic criteria	Prevalence rates
Weissman et al. (1978)	USA	511	Lay	RDC	0.0 ^a
Faravelli et al. (1989)	Italy	1110	Psychiatrists	DSM-III	0.7 ^a
Mohammadi et al. (2004)	Iran	25,180	Psychologists	DSM-IV	1.8 ^a

RDC=Research Diagnostic Criteria (Spitzer et al., 1978).

SADS=Schedule for Affective Disorders and Schizophrenia (Endicott and Spitzer, 1978).

DSM-III=Diagnostic and Statistical Manual of Mental Disorders, 3rd edition (American Psychiatric Association, 1980).

DSM-IV=Diagnostic and Statistical Manual of Mental Disorders, 4th edition (American Psychiatric Association, 1994).

^a Lifetime rates.

^b Point-prevalence.

Table 4
Selected prevalence studies of obsessive-compulsive disorder employing other instruments

Instruments/study	Country	Sample size	Interviewers	Diagnostic criteria	Prevalence rates
CIS-R/SCAN					
Jenkins et al. (1997a,b)	United Kingdom	10,108	Lay interviewers w/ CIS-R followed by psychiatrists w/ SCAN	ICD-10	1.6 ^a
Torres et al. (2004)	United Kingdom	8580	Unknown	ICD-10	1.1 ^a
SPIKE					
Degonda et al. (1993) ^b	Switzerland	591	Psychiatrists and psychologists	DSM-III	0.3 ^c (1986) 0.8 ^c (1988)
Angst et al. (2004) ^b	Switzerland	591	Psychiatrists and psychologists	DSM-IV	3.5 ^c 0.7 ^d
QMPA / DSM-III SCL					
Almeida-Filho et al. (1997)	Brazil (Brasília)	2345	Medical students and health professionals w/ QMPA followed by psychiatrists w/DSM-III	DSM-III	0.7 ^c
Almeida-Filho et al. (1997)	Brazil (Porto Alegre)	2384	Medical students and health professionals w/ QMPA followed by psychiatrists w/ DSM-III)	DSM-III	2.1 ^c
ASI					
Henderson et al. (1988)	USA	497	Lay interviewers	DSM-III	2.8 ^c
SPE					
Nestadt et al. (1994)	USA	810	Psychiatrists	DSM-III	0.3 ^f
MINI/FPI/SCID					
Faravelli et al. (2004a,b)	Italy	2363	General practitioners w/ MINI followed by psychiatric trainees and psychiatrists w/ FPI and SCID	DSM-IV	2.4 ^c 1.1 ^d 1.1 ^g

CIS-R=Clinical Interview Schedule-Revised (Lewis et al., 1992).

SCAN=Schedules for Clinical Assessment in Neuropsychiatry (Wing et al., 1990).

SPIKE=Structured Psychopathological Interview and Rating of the Social Consequences of Epidemiology (Angst et al., 1984).

QMPA=Questionário de Morbidade Psiquiátrica de Adultos (Santana, 1982).

DSM-III SCL=DSM-III Symptom Checklist (Miranda et al., 1987).

ASI=Anxiety Symptoms Interview (Lane et al., 1990).

SPE=Standardized Psychiatric Examination (Nestadt et al., 1994).

MINI=Mini International Neuropsychiatric Interview (Sheehan et al., 1998).

FPI=Florence Psychiatric Interview (Faravelli et al., 2001).

SCID=Structured Clinical Interview for DSM-IV (First et al., 1996).

^a1-week rates.

^bThese studies investigated the same sample, first screened for psychopathology with the SCL-90, and followed for 29 years. Degonda et al. (1993) evaluated the interviews from 1979, 1981, 1986, and 1988 (generating DSM-III diagnosis); whilst Angst et al. (2004) also evaluated the interviews from 1993 and 1999 (generating DSM-IV diagnosis).

^cLifetime rates.

^dAnnual rates. In the Degonda et al. (1993) study, it corresponds to the average annual rate for six follow-up interviews of the same sample (1979, 1981, 1986, 1988, 1993, and 1999).

^erate for an unknown period.

^f1-month rates.

^gpoint-prevalence.

DISC), several different versions of the SADS, and the Schedule for Tourette Syndrome and Other Behavioral Disorders (STSOB), among others.

The prevalence rates for OCD in the DIS/DISC studies ranged from 0.0% to 4.0% (see Table 5). Lower rates of OCD were particularly common among studies that included younger children (Anderson et al., 1987; Steinhilber et al., 1998). It is noteworthy that the prevalence for OCD in a birth cohort from the Dunedin Multidisciplinary Health and Development Study rose from 0.0% at age 11 (Anderson et al., 1987) to 4.0% at age 18 (Douglass et al., 1995).

The studies that have employed SADS-derived instruments also generated relatively heterogeneous results, with prevalence rates varying from as low as 0.06% (Lewinsohn et al., 1993) to

as high as 3.0% (Valleni-Basile et al., 1994) [see Table 5]. Nevertheless, it should be kept in mind that the rates reported by Valleni-Basile and coworkers may be an overestimate, since these authors have employed the Center for Epidemiologic Studies Depression Scale (CES-D) (Radoff, 1977) as a screening instrument. It is conceivable that not few among the individuals identified as having OCD in this study could in fact be suffering from depression with secondary obsessive-compulsive symptoms.

Zohar et al. (1992) and Apter et al. (1996), using the STSOB, reported particularly high rates of OCD in a sample of older adolescents (16 to 17 years-old), a finding that suggests the individuals from this age range may be specially prone to develop OCD. Likewise, in a study with children and adolescents aged 5–15 years, Heyman et al.

Table 5
Selected prevalence studies of children and adolescents with obsessive-compulsive disorder

Study	Country	Sample size	Age range (years)	Screening instruments	Interviewer	Informants	Diagnostic criteria	Prevalence rates
DIS or DISC								
Anderson et al. (1987)	N. Zealand	792	11	–	Psychiatrists	Patients	DSM-III	0.0
Douglass et al. (1995)	N. Zealand	930	18	–	Psychiatrists	Patients	DSM-III-R	4.0
Reinherz et al. (1993)	USA	386	17–18	–	Lay	Patients	DSM-III-R	1.3 2.1 LT
Verhulst et al. (1997)	Netherlands	2916	13–18	CBCL, TRF, YSR	Lay	Patients, parents and teachers	DSM-III-R	1.0
Steinhausen et al. (1998)	Switzerland	1964	7–16	CBCL, YSR	Undergraduate psychologists	Patients and parents	DSM-III-R	0.2
Maina et al. (1999)	Italy	1883	17	–	Psychiatric trainees	Patients	DSM-III	2.0 2.6 LT
Rapoport et al. (2000)	USA	1285	9–17	–	Lay	Patients and parents	DSM-III-R	2.7
K-SADS or SADS-LA								
Lewinsohn et al. (1993)	USA	1710	14–18	–		Patients	DSM-III-R	0.06 0.5 LT
Valleni-Basile et al. (1994)	USA	3283	12–15	CES-D	Psychiatrists	Patients and parents	DSM-III	2.9
Roussos et al. (2003)	Greece	2552	11.5–18	LOI	Psychiatrists	Patients	DSM-IV	0.5
STSOB								
Zohar et al. (1992)	Israel	562	16–17	–	Psychiatrists	Patients	DSM-III-R	3.56
Apter et al. (1996)	Israel	861	16–17	–	Psychiatrists	Patients	DSM-IV	2.3 LT
DICA								
Flament et al. (1988)	USA	5596	14–18	LOI	Mental health professionals	Patients		1.9 LT
SCAN								
Canals et al. (1997)	Spain	290	18	–	NA	Patients	DSM-II-R and ICD-10	0.7/DSM-III-R 1.4/ICD-10
M-CIDI								
Wittchen et al. (1998)	Germany	3021	14–24	–	Lay and psychologists	Patients	DSM-IV	0.6 0.7 LT
CAPA								
Costello et al. (1996)	USA	4500	9, 11, 13	CBCL	Lay	Patients and parents	DSM-III-R	0.2
DAWBA								
Heyman et al. (2001)	UK	10,438	5–15	–	Lay	Patients, parents and teachers	DSM-IV	0.2

DIS=Diagnostic Interview Schedule (Robins et al., 1981, 1985).

DISC=Diagnostic Interview Schedule for Children (National Institute of Mental Health, 1992).

K-SADS=Schedule for Affective Disorders and Schizophrenia for School Age Children (Chambers et al., 1985).

SADS-LA=Schedule for Affective Disorders and Schizophrenia- Lifetime Version Modified for the Study of Anxiety Disorders (Mannuzza et al., 1986).

STSOB=Schedule for Tourette Syndrome and Other Behavioral Disorders (Pauls, 1986).

DICA=Diagnostic Interview for Children and Adolescents (Herjanic and Campbell, 1977).

SCAN=Schedules for Clinical Assessment in Neuropsychiatry (Wing et al., 1990).

M-CIDI=Munich-Composite International Diagnostic Interview (Wittchen and Pfister, 1997).

CAPA=Child and Adolescent Psychiatric Assessment (Angold et al., 1995).

DAWBA=Development and Well-being Assessment (Goodman et al., 2000).

CBCL=Child Behavior Checklist (Achenbach, 1991a).

TRF=Teacher's Report Form (Achenbach, 1991b).

YSR=Youth Self Report (Achenbach, 1991c).

CES-D=Center for Epidemiologic Studies-Depression Scale (Radoff, 1977).

LOI-CV=Leyton Obsessional Inventory-Child Version (Flament et al., 1988).

LT=Lifetime prevalence.

(2001) divided OCD cases in age bands and found an exponential increase in the prevalence of OCD as age increased.

7. Incidence studies

Most studies listed in Table 6 reported one-year incidence rates of DSM-III OCD ranging between 0.69% and 0.79% (Eaton et al., 1989, Crum and Anthony, 1993; Valleni-Basile et

al., 1996). These figures appear somewhat inflated, since its lifetime prevalence was found to be only 1.9% to 3.3% (Karno et al., 1988). Lower figures were provided by other authors. For example, Nestadt et al. (1994) found that the incidence rate of OCD according to the DSM-III criteria was as low as 0.12%, while De Graaf et al. (2002) reported that the incidence of DSM-III-R OCD was 0.2%.

The reasons for the discrepancy between the findings regarding the incidence of DSM-III OCD are still a matter

Table 6
Selected incidence studies of obsessive–compulsive disorder

Study	Country	Instrument	Sample size	Age range (years)	Duration of follow-up	One-year incidence rates (%)
Eaton et al. (1989)	US	DIS	10,861	18 or older	1 year	0.69 (DSM-III)
Crum and Anthony (1993)	US	DIS	13,306	18 or older	1 year	0.79 (DSM-III)
Valleni-Basile et al. (1996)	US	K-SADS-P	488	7th to 9th grade students	1 year	0.7 (DSM-III)
Nestadt et al. (1998)	US	DIS	1920	18 or older	13 years	0.12 (DSM-III) 0.05 (DSM-III-R)
De Graaf et al. (2002)	Netherlands	CIDI	5567	18 to 64 years	1 year	0.2 (DSM-III-R)

DIS=Diagnostic Interview Schedule (Robins et al., 1981, 1985).

K-SADS=Schedule for Affective Disorders and Schizophrenia for School Age Children (Chambers et al., 1985).

CIDI=Composite International Diagnostic Interview (Robins et al., 1988a,b).

for debate. The DSM-III criteria for OCD did not require the presence of time-consuming, distressing or interfering symptoms, and were reported to be considerably unstable in the long run (Nelson and Rice, 1997). It was therefore argued that studies with longer follow-up periods might paradoxically feature lower incidence rates due to this instability. Accordingly, Nestadt et al. (1998) reported that many subjects who once exhibited symptoms consistent with the DSM-III diagnosis of lifetime OCD failed to acknowledge them at subsequent assessments, which were conducted up to 13 years later. It remains to be explained, however, why the one-year incidence rate for DSM-III-R OCD, a diagnosis with more stringent criteria and probably more chronic course, was as low as 0.05% in their study.

8. Studies of treatment-seeking samples

There is a great amount of controversy over the rates of utilization of health services by patients with OCD. Karno et al. (1988), for instance, found that individuals with OCD made significantly greater use of both general medical providers for mental health care and mental health specialists than did respondents with lifetime phobic or non-anxiety disorders. Similarly, Guerrero et al. (2003) described that individuals screened positive for OCD had a history of use of counseling or of other mental health services significantly more often than individuals without OCD.

In contrast, Nestadt et al. (1994) reported that 75% of the twenty subjects with obsessive–compulsive symptoms identified in the community were judged by the examining psychiatrist to be in need of treatment but only one was receiving it. In a later study, Nestadt et al. (1998) found that, although most of the subjects with incident OCD had previously sought treatment for mental health problems, none reported obsessive–compulsive symptoms as the reason for presentation.

Fireman et al. (2001) examined the database of outpatient diagnoses for the 1.7 million people (aged 6 or more) who were enrolled in a health maintenance organization in San Francisco Bay Area. The 1 year-prevalence of OCD was only 0.084%, suggesting that many individuals with OCD were not being diagnosed and treated adequately. It is further noteworthy that most patients with clinically recognized OCD received only

episodic care that included long periods (>15 months) without any mental health treatment.

Another controversial issue concerns the type of OCD according to the ICD-10 (World Health Organization, 1993) that is most often observed in treatment-seeking samples. It has been suggested that the simultaneous presence of both obsessions and compulsions (mixed type) dominates the phenomenological presentation in clinical studies from all over the world (Fontenelle et al., 2004). Conversely, the obsessive type predominates in most (Zohar et al., 1992; Weissman et al., 1994; Douglass et al., 1995; Torres et al., 2004) but not all epidemiological samples (Valleni-Basile et al., 1994; Maina et al., 1999; Çilli et al., 2004). This paradoxical findings led to the speculation that patients with the mixed typed of OCD may be more prone to seek treatment spontaneously (Weissman et al., 1994). Other characteristics that were found to predict treatment seeking behavior in patients with OCD were summarized in Table 7.

9. Conclusions

There is a great diversity of findings with regard to the prevalence and incidence estimates for OCD. The potential reasons for this variability include not only the intrinsic characteristics of the population under study (such as its mean age) but also extrinsic ones (i.e., the several methodologically-informed decisions that are to be made before undertaking such investigations, like the choosing a specific instrument). An important and yet understudied field of the epidemiology of OCD is the one dedicated to the elucidation of factors involved in the treatment-seeking behavior. In our opinion, intensive efforts should be applied to strengthen the perspective of identifying and treating relatively less severe (or non-treatment seeking) cases of OCD, particularly those at risk of progressing to more serious psychopathology (The WHO World Mental Health Survey Consortium, 2004).

In order to further the knowledge on the epidemiology of OCD, as we have recently proposed (Fontenelle et al., 2004), it would be worthwhile to establish a global consensus regarding a standard assessment package for OCD, to produce more cross-culturally valid versions of the key research instruments, and to conduct studies specifically aimed at comparing the sociodemographic, clinical and prognostic aspects of OCD across different countries.

Table 7
Studies comparing treatment-seeking and non-treatment seeking OCD

Study	Sample	Instrument	Total prevalence rates of OCD	Number of patients with non-treatment-seeking OCD	Number of patients with treatment-seeking OCD	Analytic strategies	Results
Goodwin et al. (2002)	14,860 participants of a community-based screening day in all 50 states of the United States.	National Anxiety Disorders Screening Day (NADSD) questionnaire	3069 individuals with OCD (20.6% of the initial sample)	1241 (59.6% of the OCD sample)	1472 (40.4% of the OCD sample)	Multivariate logistic regression model to identify predictors of (1) treatment among all patients with OCD who had previously received treatment and (2) <i>readiness for treatment</i> among patients with OCD who had never received treatment.	(1) Correlates of mental health treatment of OCD: comorbid panic disorder, older age, Caucasian race, and readiness for treatment. (2) Correlates of increased readiness for treatment of OCD: comorbid panic disorder, post traumatic stress disorder, suicidal ideation and “not being sure where to go for help”. Correlates of decreased readiness for treatment: older age, being employed full-time, and “thinking one can handle it on one’s own”.
Mayerovitch et al. (2003)	7214 participants of a survey of adult household residents in Edmonton, Canada.	Diagnostic Interview Schedule (DIS version III) in 3258 individuals and the DIS version III a, in 3956 individuals	172 individuals with OCD (2.4% of the initial sample)	109 patients with OCD (63.4% of the initial OCD sample)	63 patients with OCD (36.6% of the initial OCD sample)	Multivariate logistic regression model to identify predictors of treatment seeking.	Correlates of treatment seeking for OCD: Total number of OCD symptoms and severe obsessions of violence and other unpleasant thoughts. Absence of association between compulsions and treatment seeking.
Besiroglu et al. (2004)	3012 participants of a survey of the urban population of Konya, Turkey.	Composite International Diagnostic Interview (CIDI)	89 individuals with OCD (3% of the initial sample)	23 patients with OCD ^a	35 patients with OCD ^b	Multivariate logistic regression model to identify predictors of treatment seeking.	Correlates of treatment seeking for OCD: Insight degree and level of independence. Absence of association between compulsions and treatment seeking.

^a This study excluded from their comparison patients identified in their survey who (1) sought treatment for their OCD in the past, (2) refused to participate, (3) had other mental or medical illness with a clear impact on the quality of life, or (4) did not display marked distress or interference due to their obsessions or compulsions.

^b This study included for their comparison 35 consecutive patients with OCD who sought psychiatric care for their disorders in their outpatient clinic.

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