TECHNICAL COMMENTARY

Obsessive-compulsive disorders

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Introduction

Obsessive-compulsive disorders (OCDs) involve persistent and intrusive thoughts (obsessions) and repetitive actions (compulsions). The DSM-5 (Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition) defines obsessions as recurrent and persistent thoughts, urges, or impulses that are experienced as intrusive and unwanted, with associated anxiety or distress. The individual attempts to suppress these obsessions by performing a compulsion; repetitive behaviours (e.g., hand washing, ordering, checking) or thoughts (e.g., praying, counting, repeating words). The obsessions or compulsions are time-consuming and can cause significant impairment in social, occupational, or other areas of functioning.

Related disorders include hoarding disorder, excoriation disorder (skin-picking), body dysmorphic disorder (obsessive focus on a perceived flaw in appearance) and trichotillomania (hair-pulling).

Method

We have included only systematic reviews with detailed literature search, methodology, and inclusion/exclusion criteria that were published in full text, in English, from the year 2000. Reviews were identified by searching the databases MEDLINE, EMBASE, and PsycINFO. Reviews with pooled data are prioritized for inclusion. Reviews reporting fewer than 50% of items on the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA[1]) checklist have been excluded from the library. The evidence was graded guided by the Grading of Recommendations Assessment, Development and Evaluation (GRADE) Working Group approach[2]. The resulting table represents an objective summary of the available evidence, although the conclusions are solely the opinion of staff of NeuRA (Neuroscience Research Australia).

Results

We found five systematic reviews that met our inclusion criteria[3-7].

- Moderate to high quality evidence suggests the prevalence of OCD in people with schizophrenia is around 13.6% and the prevalence of obsessive-compulsive symptoms is around 30.3%.
- Moderate quality evidence suggests rates are higher in outpatients than in inpatients (17% vs. 11%) and in chronic schizophrenia than in first-episode psychosis (13% vs. 0.8%).
- Moderate to high quality evidence shows that people with schizophrenia and obsessive-compulsive symptoms (but not diagnosis) had more severe global, positive, and negative symptoms of schizophrenia than people with schizophrenia with no obsessive-compulsive symptoms.
- Moderate to high quality evidence found no differences in cognition between people with schizophrenia and OCD and people with schizophrenia without OCD.

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Achim A, Maziade M, Raymond E, Olivier D, Merette C, Roy M

How Prevalent Are Anxiety Disorders in Schizophrenia? A Meta-Analysis and Critical Review on a Significant Association

Schizophrenia Bulletin 2011; 37(4): 811–821

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Comparison	**Prevalence of obsessive-compulsive disorders in people with schizophrenia.**
Summary of evidence	**Moderate quality evidence (large samples, imprecise, inconsistent, direct) suggests the prevalence rate of obsessive-compulsive disorder in people with schizophrenia is around 12%. Rates are higher in outpatients than in inpatients (17% vs. 11%) and in chronic schizophrenia than in first-episode psychosis (13% vs. 0.8%).**
Obsessive-compulsive disorders	
34 studies, N = 3,007, 12.1%, 95%CI 7.0% to 17.1%, $X^2 = 317.98$, $p < 0.001$ OCD prevalence rates were higher in outpatients vs. inpatients (16.9% vs. 10.7%, $p < 0.001$), and in non-first-episode vs. first-episode samples (13.0% vs. 0.8%, $p = 0.002$). No significant differences in rates were reported according to sampling methods (systematic vs. non-systematic), age, gender or diagnosis (schizophrenia vs. schizophrenia spectrum).	
Consistency in results‡	Inconsistent; authors state that not all heterogeneity was explained by the moderators reported above.
Precision in results§	Appears imprecise.
Directness of results‖	Direct

Cunill R, Castells X. Simeon D

Relationships between obsessive-compulsive symptomatology and severity of psychosis in schizophrenia: a systematic review and meta-analysis

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Journal of Clinical Psychiatry 2009; 70(1): 70-82 View review abstract online	
Comparison	**Symptom severity in schizophrenia patients with comorbid obsessive compulsive symptoms or disorder vs. schizophrenia patients without comorbid obsessive compulsive symptoms (OCS) or disorder (OCD).**
Summary of evidence	**Moderate to high quality evidence (small to medium-sized samples, consistent, precise, direct) shows that people with schizophrenia and obsessive compulsive symptoms had more severe global, positive and negative symptoms of schizophrenia than people with schizophrenia with no obsessive compulsive symptoms. No differences were found between patients with schizophrenia with or without an obsessive compulsive disorder (OCD) diagnosis.**
Obsessive Compulsive Symptoms – dimensional definition	
A small significant effect suggests schizophrenia patients with obsessive compulsive symptoms show increased schizophrenia symptoms compared to schizophrenia patients without obsessive compulsive symptoms; *Global symptoms:* 6 studies, N = 379 (96 with OCS, 283 without OCS), SMD = 0.39, 95%CI 0.14 to 0.64, z = 3.01, *p* = 0.003, I^2 = 16.4%, *p* = 0.31 *Positive symptoms:* 5 studies, N = 208 (92 with OCS, 116 without OCS), SMD = 0.28, 95%CI 0.00 to 0.56, z = 1.98, *p* = 0.05, I^2 = 15.6%, *p* = 0.32 *Negative symptoms:* 6 studies, N = 271 (103 with OCS, 168 without OCS), SMD = 0.36, 95%CI 0.11 to 0.62, z = 2.77, *p* = 0.006, I^2 = 51.6%, *p* = 0.07	
Obsessive Compulsive Disorder – categorical definition	
No difference was reported in schizophrenia symptom severity between schizophrenia patients with obsessive compulsive disorders compared to schizophrenia patients without obsessive compulsive disorder. *Global symptoms:* 4 studies, N = 227 (51 with comorbid OCD, 176 without comorbid OCD), SMD = 0.19, 95%CI -0.14 to 0.51, z = 1.13, *p* = 0.26, I^2 = 48.8%, *p* = 0.12 *Positive symptoms:* 9 studies, N = 580 (152 with OCD, 428 without OCD), SMD = -0.01, 95% -0.20 to 0.19, z = 0.06, *p* = 0.96, I^2 = 1.5%, *p* = 0.42 *Negative symptoms:* 10 studies, N = 608 (165 with OCD, 443 without OCD), SMD = -0.11, 95%CI -0.30 to 0.08, z = 1.14, *p* = 0.25, I^2 = 0%, *p* = 0.48	
Consistency in results	Consistent

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Precision in results	Precise
Directness of results	Direct

Devulapalli KV, Welge JA, Nasrallah HA

Temporal sequence of clinical manifestation in schizophrenia with comorbid OCD: Review and meta-analysis

Psychiatry Research 2008; 161: 105-108

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Comparison	**Temporal onset sequence and age of onset of schizophrenia and comorbid obsessive-compulsive disorder.**
Summary of evidence	**Moderate to low quality evidence (small sample, unable to assess consistency, imprecise, direct) suggests no differences in onset sequence or age of onset.**
Sequence and age of onset of obsessive-compulsive disorder vs. schizophrenia	
No significant differences in the age of onset of OCD (19.8 years) compared to schizophrenia (22.4 years); 4 studies, N = 45, *d* = 1.04, 95%CI -0.67 to 2.15, *p* = 0.066 There were no significant differences in the number of patients diagnosed with OCD prior to schizophrenia (48%) compared to those diagnosed with schizophrenia prior to OCD (30.4%) or diagnosed with schizophrenia and OCD concurrently (21.6%)	
Consistency in results	Unable to assess; no measure of consistency is reported
Precision in results	Imprecise
Directness of results	Direct

Dijkstra L, Vermeulen J, de Haan L, Schirmbeck F

Meta-analysis of cognitive functioning in patients with psychotic disorders and obsessive-compulsive symptoms

European Archives of Psychiatry and Clinical Neuroscience 2021; 271(4): 689-706 View review abstract online	
Comparison	**Cognition in people with a psychotic disorder (mostly schizophrenia0 and comorbid obsessive-compulsive disorder vs. people with a psychotic disorder without comorbid obsessive-compulsive disorder.**
Summary of evidence	**Moderate to high quality evidence (mostly large samples, inconsistent and precise, direct) found no differences in cognition.**
Cognition	
No significant differences between groups; Processing speed: 17 studies, N = 1,946, SMD = -0.133, 95%CI -0.300 to 0.033, p = 0.117, I^2 = 43% Sustained attention: 7 studies, N = 1,457, SMD = -0.107, 95%CI -0.271 to 0.058, p = 0.205, I^2 = 14% Working memory: 15 studies, N = 1,949, SMD = -0.030, 95%CI -0.201 to 0.141, p = 0.729, I^2 = 44% Immediate visual memory: 11 studies, N = 619, SMD = -0.03, 95%CI -0.277 to 0.216, p = 0.810, I^2 = 51% Delayed visual memory: 4 studies, N = 163, SMD = 0.051, 95%CI -0.263 to 0.365, p = 0.749, I^2 = 0% Verbal memory: 6 studies, N = 445, SMD = 0.224, 95%CI -0.195 to 0.643, p = 0.295, I^2 = 68% Sum of trials verbal memory: 5 studies, N = 1,281, SMD = -0.035, 95%CI -0.302 to 0.232, p = 0.798, I^2 = 50% Delayed verbal memory: 6 studies, N = 1,406, SMD = 0.023, 95%CI -0.115 to 0.162, p = 0.740, I^2 = 0% Fluency: 9 studies, N = 427, SMD = -0.123, 95%CI -0.512 to 0.265, p = 0.534, I^2 = 73% Cognitive inhibition: 10 studies, N = 576, SMD = -0.208, 95%CI -0.489 to 0.074, p = 0.148, I^2 = 58% Cognitive flexibility: 12 studies, N = 805, SMD = -0.150, 95%CI -0.508 to 0.208, p = 0.412, I^2 = 80% Set shifting: 13 studies, N = 1,626, SMD = -0.111, 95%CI -0.429 to 0.206, p = 0.492, I^2 = 80% Abstract thinking: 12 studies, N = 772, SMD = -0.168, 95%CI -0.407 to 0.071, p = 0.169, I^2 = 51% Planning: 4 studies, N = 250, SMD = -0.229, 95%CI -0.802 to 0.345, p = 0.434, I^2 = 76% Reasoning: 6 studies, N = 260, SMD = -0.281, 95%CI -0.776 to 0.214, p = 0.265, I^2 = 73% Facial affect recognition: 5 studies, N = 1,164, SMD = -0.093, 95%CI -0.367 to 0.182, p = 0.507, I^2 =	

34% Visual spatial ability: 6 studies, N = 1,304, SMD = -0.038, 95%CI -0.352 to 0.275, p = 0.810, I^2 = 62% Advanced age was with poorer performance in the comorbid group for processing speed, working memory, cognitive inhibition, and cognitive flexibility. Symptom severity (schizophrenia or OCD) was not associated with cognitive performance.

Consistency in results	Mostly inconsistent
Precision in results	Mostly precise
Directness of results	Direct

Swets M, Dekker J, van Emmerik-van Oortmerssen K, Smid GE, Smit F, de Haan L, Schoevers RA

The obsessive compulsive spectrum in schizophrenia, a meta-analysis and meta-regression exploring prevalence rates

Schizophrenia Research 2014; 152: 458-468

View review abstract online

Comparison	**Prevalence of obsessive compulsive disorder and obsessive compulsive symptoms in people with schizophrenia.**
Summary of evidence	**Moderate to high quality evidence (large samples, consistent, imprecise, direct) suggests the prevalence of obsessive compulsive disorder in people with schizophrenia is around 13.6% and the prevalence of obsessive compulsive symptoms is around 30.3%.**

Obsessive Compulsive Disorder (OCD)
36 studies, N = 3,308, prevalence = 12.3%, 95%CI 9.7% to 15.4%, I^2 = 79.9%, p < 0.001 Adjusted OCD prevalence = 13.6%, 95%CI 11.8% to 15.8%, I^2 = 33.4%, p > 0.05 Adjusted for the use of the Diagnostic Interview for Genetic Studies (DIGS) instrument, Sub-Saharan African studies, and recent onset schizophrenia samples, which were all associated with lower rates of OCD; adjusted for the use of the Yale-Brown Obsessive Compulsive scale, and DSM-IV diagnoses, which were associated with higher prevalence rates. No associations were found with age, percentage of males, Western or Asian studies, present vs. lifetime diagnosis, or setting.

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A subgroup analysis revealed that studies using the Yale-Brown Obsessive Compulsive scale or the Obsessive-Compulsive Inventory reported significantly higher prevalence of OCD than studies not using these scales. Studies using these scales: 19 studies, N not reported, prevalence = 16.9%, 95%CI 13.25% to 21.0%, I^2 = 63.8% Studies not using these scales: 18 studies, N not reported, prevalence = 8.0%, 95%CI 5.3% to 11.9%, I^2 = 82.9%, p < 0.05 Q_B p < 0.05
Obsessive Compulsive Symptoms (OCS)
15 studies, N = 1880, prevalence rate = 30.7%, 95%CI 23.0% to 39.6%, I^2 = 92.2%, p < 0.001 Adjusted OCS prevalence rate = 30.3%, 95%CI 24.2% to 37.3%, I^2 not reported, but authors report heterogeneity remained high. Adjusted for the use of Yale-Brown Obsessive Compulsive scale and the Obsessive-Compulsive Inventory. No associations were found with age, percentage of males, Western or Arabic/Turkish studies, primary setting, DSM edition, or first episode vs. non-first episode schizophrenia. Authors state that there was a clear pattern of high OCS prevalence at lower Yale-Brown Obsessive Compulsive scale thresholds and lower estimates in studies using a more stringent cut-off, which explains the high heterogeneity. The OCS prevalence decreases from 35.3% with scores 1 to 5, to 30.7% with scores 6 to 9, to 20.5% with scores 10 to 13, and to 14.8% with scores 14 to 17.

Consistency in results	Consistent in adjusted analyses of OCD, OCS inconsistency may be explained by different cut-off thresholds used when measuring symptoms.
Precision in results	Appears imprecise
Directness of results	Direct

Explanation of acronyms

CI = Confidence Interval, *d* = Cohen's *d* and *g* = Hedges' *g* = standardised mean differences (see below for interpretation of effect size), I^2 = the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance), N = number of participants, OCD = Obsessive Compulsive Disorder, OCS = Obsessive Compulsive Symptoms, *p* = statistical probability of obtaining that result (p < 0.05 generally regarded as significant), SMD = standardised mean difference, vs. = versus

Explanation of technical terms

* Bias has the potential to affect reviews of both RCT and observational studies. Forms of bias include; reporting bias – selective reporting of results; publication bias - trials that are not formally published tend to show less effect than published trials, further if there are statistically significant differences between groups in a trial, these trial results tend to get published before those of trials without significant differences; language bias – only including English language reports; funding bias - source of funding for the primary research with selective reporting of results within primary studies; outcome variable selection bias; database bias - including reports from some databases and not others; citation bias - preferential citation of authors. Trials can also be subject to bias when evaluators are not blind to treatment condition and selection bias of participants if trial samples are small[8].

† Different effect measures are reported by different reviews.

Prevalence refers to how many existing cases there are at a particular point in time. Incidence refers to how many new cases there are per population in a specified time period. Incidence is usually reported as the number of new cases per 100,000 people per year. Alternatively some studies present the number of new cases that have accumulated over several years against a person-years denominator. This denominator is the sum of individual units of time that the persons in the population are at risk of becoming a case. It takes into account the size of the underlying population sample and its age structure over the duration of observation.

Reliability and validity refers to how accurate the instrument is. Sensitivity is the proportion of actual positives that are correctly identified (100% sensitivity = correct identification of all actual positives) and specificity is the proportion of negatives that are correctly identified (100% specificity = not identifying anyone as positive if they are truly not).

Weighted mean difference scores refer to mean differences between treatment and comparison groups after treatment (or occasionally pre to post treatment) and in a randomised trial there is an assumption that both groups are comparable on this measure prior to treatment. Standardised mean differences are divided by the pooled standard deviation (or the standard deviation of one group when groups are homogenous) that allows results from different scales to be combined and compared. Each study's mean difference is then given a weighting depending on the size of the sample and the variability in the data. Less than 0.4 represents a small effect, around 0.5 a medium effect, and over 0.8 represents a large effect[8].

Odds ratio (OR) or relative risk (RR) refers to the probability of a reduction (< 1) or an increase (> 1) in a particular outcome in a treatment group, or a group exposed to a risk factor, relative to the comparison group. For example, a RR of 0.75 translates to a reduction in risk of an outcome of 25% relative to those not receiving the treatment or not exposed to the risk factor. Conversely, a RR of 1.25 translates to an increased risk of 25% relative to those not receiving treatment or not having been exposed to a risk factor. A RR or OR of 1.00 means there is no difference between groups. A medium effect is considered if RR > 2 or < 0.5 and a large effect if RR > 5 or < 0.2[9]. lnOR stands for logarithmic OR where a lnOR of 0 shows no difference between groups. Hazard ratios

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measure the effect of an explanatory variable on the hazard or risk of an event.

Correlation coefficients (eg, r) indicate the strength of association or relationship between variables. They can provide an indirect indication of prediction, but do not confirm causality due to possible and often unforseen confounding variables. An r of 0.10 represents a weak association, 0.25 a medium association and 0.40 and over represents a strong association. Unstandardised (*b*) regression coefficients indicate the average change in the dependent variable associated with a 1 unit change in the independent variable, statistically controlling for the other independent variables. Standardised regression coefficients represent the change being in units of standard deviations to allow comparison across different scales.

‡ Inconsistency refers to differing estimates of effect across studies (i.e. heterogeneity or variability in results) that is not explained by subgroup analyses and therefore reduces confidence in the effect estimate. I^2 is the percentage of the variability in effect estimates that is due to heterogeneity rather than sampling error (chance) - 0% to 40%: heterogeneity might not be important, 30% to 60%: may represent moderate heterogeneity, 50% to 90%: may represent considerable heterogeneity and over this is considerable heterogeneity. I^2 can be calculated from Q (chi-square) for the test of heterogeneity with the following formula[8];

$$I^2 = \left(\frac{Q - df}{Q}\right) \times 100\%$$

§ Imprecision refers to wide confidence intervals indicating a lack of confidence in the effect estimate. Based on GRADE recommendations, a result for continuous data (standardised mean differences, not weighted mean differences) is considered imprecise if the upper or lower confidence limit crosses an effect size of 0.5 in either direction, and for binary and correlation data, an effect size of 0.25. GRADE also recommends downgrading the evidence when sample size is smaller than 300 (for binary data) and 400 (for continuous data), although for some topics, these criteria should be relaxed[10].

‖ Indirectness of comparison occurs when a comparison of intervention A versus B is not available but A was compared with C and B was compared with C that allows indirect comparisons of the magnitude of effect of A versus B. Indirectness of population, comparator and/or outcome can also occur when the available evidence regarding a particular population, intervention, comparator, or outcome is not available and is therefore inferred from available evidence. These inferred treatment effect sizes are of lower quality than those gained from head-to-head comparisons of A and B.

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