

# [Recurrent episodes of paraphilic behavior possibly associated with olanzapine and...](https://assignbuster.com/recurrent-episodes-of-paraphilic-behavior-possibly-associated-with-olanzapine-and-aripiprazole-treatment-in-a-patient-with-schizophrenia/)

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## Background

Hypersexual disorder is a relatively common clinical entity ( [1](#B1) ), characterized by excessive preoccupation with sexual fantasies, urges, and behaviors, and is associated with significant volitional impairment, disinhibition, impulsivity, compulsivity, or behavioral addiction ( [2](#B2) ). While hypersexual disorder refers to an excessive or disinhibited engagement in culturally adapted normophilic sexual behaviors, paraphilic disorders (e. g., exhibitionism, frotteurism, voyeurism, fetishism, sadism) ( [3](#B3) ) are characterized by abnormal or socially deviant forms of sexual preference and arousal, accompanied by clinically significant personal distress and psychosocial impairment ( [4](#B4) , [5](#B5) ).

Both hypersexual and paraphilic disorders have been frequently reported in association with concomitant psychiatric diseases, including bipolar disorder (i. e., hypomanic or manic syndromes) and schizophrenia ( [6](#B6) , [7](#B7) ). The dopamine hypothesis, which proposes that a preponderance of dopaminergic activity is implicated in psychosis propagation ( [8](#B8) ), is considered a plausible model for sexual disinhibition in psychotic patients ( [9](#B9) ). Interestingly though, a growing number of published cases has recently indicated that hypersexuality may also arise in conjunction with treatment with second-generation antipsychotics (SGA) ( [10](#B10) – [17](#B17) ).

Olanzapine is a widely prescribed SGA, which has been associated with sexual dysfunction (i. e., decreased libido, erectile dysfunction, impaired arousal, delayed orgasm) in up to 35% of treated patients ( [18](#B18) – [20](#B20) ). Nonetheless, a handful of recently published cases have reported olanzapine-associated hypersexuality ( [21](#B21) – [23](#B23) ), indicating that SGA-related sexual dysregulation remains currently ill-understood. Here, we present the case of an adult patient with schizophrenia, who presented with compulsive sexual behavior (CSB) and exhibitionism in association with olanzapine and aripiprazole treatment. A written informed consent was obtained from the patient.

## Case Presentation

A 29-year old male Caucasian patient presented with delusions of persecution and reference, auditory hallucinations, and negative symptoms, including avolition, flat affect, and social withdrawal (and symptom-duration of more than 3 months), and was diagnosed with paranoid-hallucinatory schizophrenia (ICD-10: F20. 0). The patient had a previously unremarkable medical history and no history of substance abuse. The childhood developmental stages had been uneventful, but since adolescence he had been increasingly introverted and socially insecure. At the age of 29 years, he reported having had no previous relationships or sexual experiences. There were no psychiatric or neurologic diseases in the family history. On neuropsychological assessment, he presented mild cognitive deficits (i. e., impairment in concentration, attention, working memory, and executive function). A thorough diagnostic workup, including brain magnetic resonance imaging (MRI), cerebrospinal fluid analysis, electroencephalography, hematological investigations, and toxicological screening, was normal. The patient received antipsychotic treatment with risperidone (initially 5 mg/day orally, later switched to risperidone depot 37. 5 mg/2 weeks intramuscularly). His symptoms improved rapidly, and at discharge, a complete remission of the psychosis had been achieved. Due to sleep disturbances, which the patient attributed to risperidone treatment, he decided to discontinue the medication directly after discharge. Seven months later, he was readmitted to the hospital with recurrent delusions of persecution, tactile, and visual hallucinations. Due to the severity of clinical presentation, he was administered haloperidol (20 mg/day orally), which led to complete remission of positive symptoms within 2 weeks. After thorough consideration of treatment options, a switch of treatment to olanzapine was decided (initially 15 mg/day orally, later switched to olanzapine depot 405 mg/4 weeks intramuscularly). In parallel to olanzapine titration, haloperidol was gradually tapered-off and eventually discontinued. One and a half months later, the patient was urgently admitted to the acute psychiatric ward with CSB having been charged with exhibitionism. Police records reported that the patient had sexually harassed several women in the preceding days (i. e., kissing them against their will or touching their genitalia). On admission day, the police reported that the patient had undressed himself and masturbated in public. On clinical examination, he showed uncontrolled sexual urges, overfamiliarity, and hypersexual behavior (e. g., with fixation on masturbation, sexual propositioning, harassment of non-consenting nursing and medical staff). Recurrent episodes of public exhibitionism were also recorded. Concurrently, he presented with disorganization, delusions of control (e. g., experiencing his body as being externally controlled) and delusions of telepathic communication skills, but no hallucinations were noted. There were no signs of akathisia. The patient had no prior arrests, indictments, or convictions, and his hypersexual behavior was in marked contrast to his premorbid personality of being shy and introverted. He reported having had increased libido and irresistible urge to masturbate during the preceding few weeks. There was no evidence of other substance abuse. The serum concentration of olanzapine was within the therapeutic range (29. 1 μg/l). Because the CSB developed shortly after initiation of olanzapine, a causal relation to SGA treatment was suspected, and olanzapine was withdrawn. Treatment was changed back to haloperidol (20 mg/day orally) and initially supplemented with lorazepam (4 mg/day orally). Under this regimen, the hypersexual behavior diminished rapidly and disappeared after 1 week. The patient consented to rechallenge with risperidone (initially 5 mg/day orally, later switched to risperidone depot 37. 5 mg/2 weeks intramuscularly), while haloperidol and lorazepam were tapered-off and eventually discontinued. Under treatment with risperidone, the patient developed a secondary hyperprolactinemia (prolactin 46. 9 μg/l) and a decreased libido was suspected. To ensure treatment adherence, the combination of risperidone with low-dose aripiprazole (5 mg/day orally) was decided. Two weeks after initiation of aripiprazole, the patient presented with a severe CSB relapse with uncontrolled hypersexual behavior. Aripiprazole was immediately withdrawn and additive treatment with haloperidol (20 mg/day orally) and lorazepam (4 mg/day orally) was initiated. The hypersexual behavior diminished rapidly and disappeared after 1 week, while treatment was gradually changed to monotherapy with haloperidol (at discharge 75 mg/2 weeks intramuscularly with further scheduled tapering). The libido level of the patient remained normal, and no recurrence of psychotic symptoms was noted till his discharge from hospital, 5 months later.

## Discussion

The neurobiological mechanisms underlying regulation of sexual desire remain to date only partially understood. The interaction between brain monoaminergic (i. e., adrenergic and serotoninergic) receptors and sex hormones (i. e., testosterone) is considered pivotal for sexual responses and behaviors ( [2](#B2) , [9](#B9) ). Enhanced dopaminergic neurotransmission is typically associated with sexual excitation, while enhanced serotoninergic neurotransmission with sexual inhibition ( [2](#B2) , [24](#B24) ). Some of the brain regions implicated in physiological sexual arousal, attention, and motivation, include the hypothalamus, substantia nigra, ventral striatum, pallidum, amygdala, anterior insula, anterior cingulate cortex, inferior frontal cortex, fusiform gyrus, precentral gyrus, and parieto-occipital cortices ( [25](#B25) – [28](#B28) ).

In patients with primary hypersexual disorders, pathological alterations in frontal lobe, hypothalamus, amygdala, hippocampus, anterior cingulate cortex, and brain regions of the reward circuitry have been reported ( [25](#B25) , [29](#B29) ). Secondary drug-induced hypersexuality, which is a well-established complication of dopamine-enhancing medications (e. g., antiparkinsonian drugs) ( [30](#B30) , [31](#B31) ), has also been associated with enhanced activation in similar regions, including the ventral striatum, cingulate, and orbitofrontal cortices ( [32](#B32) ). As only few clinical cases of SGA-induced hypersexuality have been reported in the medical literature, no evidence on neurobiological or imaging correlates of SGA-induced hypersexuality exists ( [10](#B10) – [17](#B17) ). Nevertheless, an SGA-mediated increase in dopaminergic neurotransmission, a blockade of serotoninergic neurotransmission or a combined effect, have been suggested as possible pathways for SGA-induced hypersexuality ( [17](#B17) ).

Consistent with these hypotheses, several cases of hypersexual disorders under SGA with partial agonistic effects at dopamine D2 receptors [e. g., aripiprazole ( [10](#B10) , [14](#B14) , [15](#B15) )] have been reported. Partial D2 agonists are considered to enhance dopaminergic drive at the mesolimbic system, thereby resulting in aberrant sexual excitation ( [10](#B10) ). Similar increases in dopamine activity in the mesocortical-dopamine pathways may be elicited by serotonin blockade ( [21](#B21) ). In particular, at receptor level, activation of the 5-HT2 receptor impairs sexual functioning, whereas 5-HT1A receptor stimulation facilitates sexual function ( [9](#B9) ). Thus, drugs with properties of 5-HT1A partial agonism and 5-HT2 partial antagonism, such as aripiprazole, may induce hypersexuality ( [10](#B10) ). In addition to the receptor profiles, the reduced risk for hyperprolactinemia of these drugs may facilitate emergence of hypersexual behaviors ( [33](#B33) ).

Conversely, the receptor binding profile of olanzapine is consistent with antidopaminergic activity (high affinity for dopamine D1, D2, D4 receptor subtypes), antiserotonergic activity (high affinity for serotonin (5-HT2A, 5-HT2C, 5-HT3 receptor subtypes), anti-α1-adrenergic, and antimuscarinic activity ( [34](#B34) ). The blockade of serotoninergic neurotransmission, that results in increase in dopamine activity in the mesocortical dopamine pathways, is considered a possible underlying mechanism for occurrence of hypersexuality in patients under olanzapine monotherapy ( [21](#B21) ). Longitudinal treatment with olanzapine has also been associated with enhancement in dopaminergic activity of the prefrontal cortex and attenuation of amygdala reactivity in emotional processing ( [35](#B35) ). However, the association of these effects and sexual function in patients with schizophrenia has not been investigated.

Another etiological hypothesis is that olanzapine-mediated α1-adrenergic and anticholinergic antagonism in the peripheral nervous system may also affect erectile, orgasmic, and ejaculatory function, with two cases reporting olanzapine-induced priapism ( [36](#B36) ) and spontaneous ejaculations ( [37](#B37) ) in adult and pediatric patients, respectively. Furthermore, one reported case of a patient presenting with exhibitionism (i. e., masturbation in public) after intramuscular application of olanzapine, described concomitant akathisia (i. e., motor restlessness), suggesting a possible overlap between hypersexuality and akathisia ( [22](#B22) ).

On the other hand, only very few cases of risperidone-induced hypersexuality have been reported in the medical literature ( [16](#B16) ), while results from a randomized clinical trial showed less sexual dysfunction in patients treated with olanzapine compared to risperidone ( [38](#B38) ). Moreover, accumulating epidemiological evidence suggests that among the currently available antipsychotics, risperidone is the antipsychotic most frequently related to hyposexuality, amenorrhoea, and galactorrhoea, and is closely followed by haloperidol ( [39](#B39) , [40](#B40) ).

Here we presented a patient with schizophrenia, who developed CSB and paraphilic behavior (without signs of akathisia) shortly after initiation of treatment with olanzapine. Although a causal relation between the behavioral changes and olanzapine cannot be definitely established, the temporal association between the emergence of hypersexuality and the initiation of SGA treatment with olanzapine, as well as the full remission of the hypersexual behavior 1 week after olanzapine discontinuation suggest a possible link between olanzapine and hypersexuality. Additionally, the recurrence of identical CSB symptoms shortly after initiation of aripiprazole (i. e., a drug with well-established risk for hypersexuality) and the resolution of the hypersexual behavior 1 week after aripiprazole discontinuation support the hypothesis of a drug-related hypersexuality in this patient. Nonetheless, as during the phase of CSB concomitant psychotic symptoms (e. g., delusions and disorganization) were noted, it could be possible that SGA simply unmasked or failed to control (e. g., after discontinuation of haloperidol and lorazepam) hypersexual symptoms in the context of psychosis.

Crucially, “ overshooting” phenomena, including new, severe positive psychotic symptoms ( [41](#B41) ), along with paradoxical effects, including symptom worsening after switch of treatment or treatment discontinuation/reduction ( [42](#B42) , [43](#B43) ) have been previously reported, and are currently considered to reflect a drug-induced dopamine hypersensitivity in schizophrenic patients. As the manifestation of CSB in our patient occurred on both occasions (i. e., under olanzapine and under aripiprazole) after modification of the antipsychotic treatment, an antipsychotic-induced hypersensitivity psychosis or a paradoxical effect (e. g., serotonin withdrawal syndrome with autonomic and sexual symptoms) should be considered in the differential diagnosis ( [41](#B41) , [42](#B42) ).

To the best of our knowledge, only four previously published reports have discussed the occurrence of hypersexuality under olanzapine treatment ( [21](#B21) – [23](#B23) , [36](#B36) ). Thus, if an association between olanzapine and hypersexuality exists, the probability of this side-effect should be considered very rare. Pointing towards a causal relation between hypersexuality and olanzapine, a previous report of a child, who developed CSB and excessive masturbation after initiation of olanzapine treatment, describes a complete resolution of the hypersexual behavior 1 week after olanzapine discontinuation and reemergence of CSB after rechallenge with olanzapine ( [21](#B21) ). For this reason, in our patient, a rechallenge was not attempted and switch of SGA treatment was decided. Interestingly, besides emergence of hypersexuality, a *de novo* manifestation or exacerbation of CSB in patients with schizophrenia treated with olanzapine has also been previously reported ( [44](#B44) , [45](#B45) ). In accord with all reported cases of olanzapine-induced hypersexuality, the hypersexual behavior of our patient resolved completely within few days after olanzapine discontinuation ( [21](#B21) – [23](#B23) , [36](#B36) ). Similar was the course of the CSB after discontinuation of aripiprazole.

In conclusion, this case indicates that hypersexuality may occur under SGA treatment with olanzapine and aripiprazole. Although aripiprazole is a drug with a well-established risk for hypersexuality, the question of whether a causal association between hypersexuality and olanzapine exists remains currently unresolved. In our patient, an alternative explanation could be that olanzapine unmasked or failed to control hypersexual symptoms in the context of psychosis. Nonetheless, based on this case, we suggest, that it would be advisable to consider modification of SGA treatment if hypersexuality under olanzapine arises. Furthermore, in patients presenting with hypersexual behavior under any SGA (including olanzapine), avoidance of subsequent treatment with partial dopamine agonists, including aripiprazole, might be advisable. As the currently limited amount of available evidence precludes any definitive conclusions, additional research is warranted to delineate the true incidence and the possible neurobiological substrates of hypersexual and paraphilic disorders in patients treated with SGA medication.

## Ethics Statement

Written informed consent was obtained for the publication of this case report.

## Author Contributions

M-IS and DW created concept and design of the study, and jointly wrote the manuscript. DV, IW, and SK provided the clinical data and critically reviewed the manuscript.

## Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## References

1. Fong TW. Understanding and managing compulsive sexual behaviors. *Psychiatry (Edgmont)* (2006) 3(11): 51–8.

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=20877518) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=TW+Fong&publication_year=2006&title=Understanding and managing compulsive sexual behaviors&journal=Psychiatry+(Edgmont)&volume=3&pages=51-8)

2. Kafka MP. Hypersexual disorder: a proposed diagnosis for DSM-V. *Arch Sex Behav* (2010) 39(2): 377–400. doi: 10. 1007/s10508-009-9574-7

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=19937105) | [CrossRef Full Text](https://doi.org/10.1007/s10508-009-9574-7) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=MP+Kafka&publication_year=2010&title=Hypersexual disorder%3A a proposed diagnosis for DSM-V&journal=Arch+Sex+Behav&volume=39&pages=377)

3. American Psychiatric Association. Diagnostic and statistical manual of mental disorders. *BMC Med* (2013) 17: 133–7. doi: 10. 1176/appi. books. 9780890425596

[CrossRef Full Text](https://doi.org/10.1176/appi.books.9780890425596) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=American Psychiatric Association&publication_year=2013&title=Diagnostic and statistical manual of mental disorders&journal=BMC+Med&volume=17&pages=133-7)

4. Moser C. DSM-5 and the Paraphilic Disorders: Conceptual Issues. *Arch Sex Behav* (2016) 45(8): 2181–6. doi: 10. 1007/s10508-016-0861-9

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=27658918) | [CrossRef Full Text](https://doi.org/10.1007/s10508-016-0861-9) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=C+Moser&publication_year=2016&title=DSM-5 and the Paraphilic Disorders%3A Conceptual Issues&journal=Arch+Sex+Behav&volume=45&pages=2181-6)

5. First MB. DSM-5 and paraphilic disorders. *J Am Acad Psychiatry Law* (2014) 42(2): 191–201.

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=24986346) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=MB+First&publication_year=2014&title=DSM-5 and paraphilic disorders&journal=J+Am+Acad+Psychiatry+Law&volume=42&pages=191)

6. Moore SL, May M. Satyriasis from a contemporary perspective: A review of male hypersexuality. *Hillside J Clin Psychiatry* (1982) 4(1): 83–93.

[Google Scholar](http://scholar.google.com/scholar_lookup?author=SL+Moore&author=M+May&publication_year=1982&title=Satyriasis from a contemporary perspective%3A A review of male hypersexuality&journal=Hillside+J+Clin+Psychiatry&volume=4&pages=83)

7. Allison JB, Wilson WP. Sexual behavior of manic patients: a preliminary report. *South Med J* (1960) 53: 870–4. doi: 10. 1097/00007611-196007000-00009

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=13792827) | [CrossRef Full Text](https://doi.org/10.1097/00007611-196007000-00009) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=JB+Allison&author=WP+Wilson&publication_year=1960&title=Sexual behavior of manic patients%3A a preliminary report&journal=South+Med+J&volume=53&pages=870-4)

8. Howes OD, Kapur S. The dopamine hypothesis of schizophrenia: version III–the final common pathway. *Schizophr Bull* (2009) 35(3): 549–62. doi: 10. 1093/schbul/sbp006

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=19325164) | [CrossRef Full Text](https://doi.org/10.1093/schbul/sbp006) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=OD+Howes&author=S+Kapur&publication_year=2009&title=The dopamine hypothesis of schizophrenia%3A version III–the final common pathway&journal=Schizophr+Bull&volume=35&pages=549-62)

9. Meston CM, Frohlich PF. The neurobiology of sexual function. *Arch Gen Psychiatry* (2000) 57(11): 1012–30. doi: 10. 1001/archpsyc. 57. 11. 1012

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=11074867) | [CrossRef Full Text](https://doi.org/10.1001/archpsyc.57.11.1012) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=CM+Meston&author=PF+Frohlich&publication_year=2000&title=The neurobiology of sexual function&journal=Arch+Gen+Psychiatry&volume=57&pages=1012-30)

10. Cheon E, Koo BH, Seo SS, Lee JY. Two cases of hypersexuality probably associated with aripiprazole. *Psychiatry Invest* (2013) 10(2): 200–2. doi: 10. 4306/pi. 2013. 10. 2. 200

[CrossRef Full Text](https://doi.org/10.4306/pi.2013.10.2.200) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=E+Cheon&author=BH+Koo&author=SS+Seo&author=JY+Lee&publication_year=2013&title=Two cases of hypersexuality probably associated with aripiprazole&journal=Psychiatry+Invest&volume=10&pages=200-2)

11. Lam MH, Fong SY, Wing YK. Sexual disinhibition in schizophrenia possibly induced by risperidone and quetiapine. *Psychiatry Clin Neurosci* (2007) 61(3): 333. doi: 10. 1111/j. 1440-1819. 2007. 01667. x

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=17472606) | [CrossRef Full Text](https://doi.org/10.1111/j.1440-1819.2007.01667.x) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=MH+Lam&author=SY+Fong&author=YK+Wing&publication_year=2007&title=Sexual disinhibition in schizophrenia possibly induced by risperidone and quetiapine&journal=Psychiatry+Clin+Neurosci&volume=61&pages=333)

12. Thomson SR, Patil N, Ommurugan B, Bhandary RK. A Case of Hyper Sexuality Probably Associated with Clozapine. *Psychopharmacol Bull* (2018) 48(4): 20–4.

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=30618473) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=SR+Thomson&author=N+Patil&author=B+Ommurugan&author=RK+Bhandary&publication_year=2018&title=A Case of Hyper Sexuality Probably Associated with Clozapine&journal=Psychopharmacol+Bull&volume=48&pages=20-4)

13. Menon A, Williams RH, Watson S. Increased libido associated with quetiapine. *J Psychopharmacol* (2006) 20(1): 125–7. doi: 10. 1177/0269881106059732

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=16354735) | [CrossRef Full Text](https://doi.org/10.1177/0269881106059732) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=A+Menon&author=RH+Williams&author=S+Watson&publication_year=2006&title=Increased libido associated with quetiapine&journal=J+Psychopharmacol&volume=20&pages=125-7)

14. Reddy B, Ali M, Guruprasad S, Das S. Hypersexuality induced by Aripiprazole: Two case reports and review of the literature. *Asian J Psychiatr* (2018) 38: 57–9. doi: 10. 1016/j. ajp. 2017. 10. 008

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=29107566) | [CrossRef Full Text](https://doi.org/10.1016/j.ajp.2017.10.008) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=B+Reddy&author=M+Ali&author=S+Guruprasad&author=S+Das&publication_year=2018&title=Hypersexuality induced by Aripiprazole%3A Two case reports and review of the literature&journal=Asian+J+Psychiatr&volume=38&pages=57-9)

15. Das S, Chatterjee SS, Bagewadi V. Aripiprazole induced hypersexuality, when we should be cautious? *Asian J Psychiatr* (2017) 29: 162–3. doi: 10. 1016/j. ajp. 2017. 05. 023

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=29061419) | [CrossRef Full Text](https://doi.org/10.1016/j.ajp.2017.05.023) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=S+Das&author=SS+Chatterjee&author=V+Bagewadi&publication_year=2017&title=Aripiprazole induced hypersexuality%2C when we should be cautious&journal=Asian+J+Psychiatr&volume=29&pages=162-3)

16. Davidson CK, Johnson T, Jansen K. Risperidone-induced hypersexuality. *Br J Psychiatry* (2013) 203(3): 233. doi: 10. 1192/bjp. 203. 3. 233

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=23999483) | [CrossRef Full Text](https://doi.org/10.1192/bjp.203.3.233) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=CK+Davidson&author=T+Johnson&author=K+Jansen&publication_year=2013&title=Risperidone-induced hypersexuality&journal=Br+J+Psychiatry&volume=203&pages=233)

17. Reddy B, Das S, Ali M. A Case of Hypersexuality Probably Associated With Lurasidone. *J Clin Psychopharmacol* (2018) 38(5): 537–9. doi: 10. 1097/JCP. 0000000000000934

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=30106878) | [CrossRef Full Text](https://doi.org/10.1097/JCP.0000000000000934) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=B+Reddy&author=S+Das&author=M+Ali&publication_year=2018&title=A Case of Hypersexuality Probably Associated With Lurasidone&journal=J+Clin+Psychopharmacol&volume=38&pages=537-9)

18. La Torre A, Conca A, Duffy D, Giupponi G, Pompili M, Grozinger M. Sexual dysfunction related to psychotropic drugs: a critical review part II: antipsychotics. *Pharmacopsychiatry* (2013) 46(6): 201–8. doi: 10. 1055/s-0033-1347177

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=23737244) | [CrossRef Full Text](https://doi.org/10.1055/s-0033-1347177) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=A+La Torre&author=A+Conca&author=D+Duffy&author=G+Giupponi&author=M+Pompili&author=M+Grozinger&publication_year=2013&title=Sexual dysfunction related to psychotropic drugs%3A a critical review part II%3A antipsychotics&journal=Pharmacopsychiatry&volume=46&pages=201-8)

19. Kelly DL, Conley RR. Sexuality and schizophrenia: a review. *Schizophr Bull* (2004) 30(4): 767–79. doi: 10. 1093/oxfordjournals. schbul. a007130

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=15954189) | [CrossRef Full Text](https://doi.org/10.1093/oxfordjournals.schbul.a007130) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=DL+Kelly&author=RR+Conley&publication_year=2004&title=Sexuality and schizophrenia%3A a review&journal=Schizophr+Bull&volume=30&pages=767-79)

20. Bobes J, Garc APMP, Rejas J, Hern Ndez G, Garcia-Garcia M, Rico-Villademoros F, et al. Frequency of sexual dysfunction and other reproductive side-effects in patients with schizophrenia treated with risperidone, olanzapine, quetiapine, or haloperidol: the results of the EIRE study. *J Sex Marital Ther* (2003) 29(2): 125–47. doi: 10. 1080/713847170

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=12623765) | [CrossRef Full Text](https://doi.org/10.1080/713847170) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=J+Bobes&author=APMP+Garc&author=J+Rejas&author=G+Hern Ndez&author=M+Garcia-Garcia&author=F+Rico-Villademoros&publication_year=2003&title=Frequency of sexual dysfunction and other reproductive side-effects in patients with schizophrenia treated with risperidone%2C olanzapine%2C quetiapine%2C or haloperidol%3A the results of the EIRE study&journal=J+Sex+Marital+Ther&volume=29&pages=125-47)

21. Herguner S. Excessive masturbation associated with olanzapine in a pediatric case. *Prog Neuropsychopharmacol Biol Psychiatry* (2010) 34(7): 1349–50. doi: 10. 1016/j. pnpbp. 2010. 06. 017

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=20600465) | [CrossRef Full Text](https://doi.org/10.1016/j.pnpbp.2010.06.017) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=S+Herguner&publication_year=2010&title=Excessive masturbation associated with olanzapine in a pediatric case&journal=Prog+Neuropsychopharmacol+Biol+Psychiatry&volume=34&pages=1349-50)

22. Jang F-L, Cheng C-J. Another Case Report of Olanzapine-related Masturbation: Is It Associated with Akathisia? *Taiwanese J Psychiatry* (2017) 31(2): 177–9.

[Google Scholar](http://scholar.google.com/scholar_lookup?author=F-L+Jang&author=C-J+Cheng&publication_year=2017&title=Another Case Report of Olanzapine-related Masturbation%3A Is It Associated with Akathisia&journal=Taiwanese+J+Psychiatry&volume=31&pages=177-9)

23. Huang K-L, Chen C-Y, Kuo C-L. Olanzapine-related hypersexuality: a case report. *Taiwanese J Psychiatry* (2016) 30(2): 139–40.

[Google Scholar](http://scholar.google.com/scholar_lookup?author=K-L+Huang&author=C-Y+Chen&author=C-L+Kuo&publication_year=2016&title=Olanzapine-related hypersexuality%3A a case report&journal=Taiwanese+J+Psychiatry&volume=30&pages=139-40)

24. Mas M, Fumero B, Fernandez-Vera JR, Gonzalez-Mora JL. Neurochemical correlates of sexual exhaustion and recovery as assessed by in vivo microdialysis. *Brain Res* (1995) 675(1-2): 13–9. doi: 10. 1016/0006-8993(95)00029-p

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=7540927) | [CrossRef Full Text](https://doi.org/10.1016/0006-8993%2895%2900029-p) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=M+Mas&author=B+Fumero&author=JR+Fernandez-Vera&author=JL+Gonzalez-Mora&publication_year=1995&title=Neurochemical correlates of sexual exhaustion and recovery as assessed by in vivo microdialysis&journal=Brain+Res&volume=675&pages=13-9)

25. Voon V, Mole TB, Banca P, Porter L, Morris L, Mitchell S, et al. Neural correlates of sexual cue reactivity in individuals with and without compulsive sexual behaviours. *PloS One* (2014) 9(7): e102419. doi: 10. 1371/journal. pone. 0102419

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=25013940) | [CrossRef Full Text](https://doi.org/10.1371/journal.pone.0102419) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=V+Voon&author=TB+Mole&author=P+Banca&author=L+Porter&author=L+Morris&author=S+Mitchell&publication_year=2014&title=Neural correlates of sexual cue reactivity in individuals with and without compulsive sexual behaviours&journal=PloS+One&volume=9&pages=e102419)

26. Mouras H, Stoleru S, Bittoun J, Glutron D, Pelegrini-Issac M, Paradis AL, et al. Brain processing of visual sexual stimuli in healthy men: a functional magnetic resonance imaging study. *Neuroimage* (2003) 20(2): 855–69. doi: 10. 1016/S1053-8119(03)00408-7

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=14568457) | [CrossRef Full Text](https://doi.org/10.1016/S1053-8119%2803%2900408-7) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=H+Mouras&author=S+Stoleru&author=J+Bittoun&author=D+Glutron&author=M+Pelegrini-Issac&author=AL+Paradis&publication_year=2003&title=Brain processing of visual sexual stimuli in healthy men%3A a functional magnetic resonance imaging study&journal=Neuroimage&volume=20&pages=855-69)

27. Paul T, Schiffer B, Zwarg T, Kruger TH, Karama S, Schedlowski M, et al. Brain response to visual sexual stimuli in heterosexual and homosexual males. *Hum Brain Mapp* (2008) 29(6): 726–35. doi: 10. 1002/hbm. 20435

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=17636559) | [CrossRef Full Text](https://doi.org/10.1002/hbm.20435) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=T+Paul&author=B+Schiffer&author=T+Zwarg&author=TH+Kruger&author=S+Karama&author=M+Schedlowski&publication_year=2008&title=Brain response to visual sexual stimuli in heterosexual and homosexual males&journal=Hum+Brain+Mapp&volume=29&pages=726-35)

28. Bocher M, Chisin R, Parag Y, Freedman N, Meir Weil Y, Lester H, et al. Cerebral activation associated with sexual arousal in response to a pornographic clip: A 15O-H2O PET study in heterosexual men. *Neuroimage* (2001) 14(1 Pt 1): 105–17. doi: 10. 1006/nimg. 2001. 0794

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=11525320) | [CrossRef Full Text](https://doi.org/10.1006/nimg.2001.0794) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=M+Bocher&author=R+Chisin&author=Y+Parag&author=N+Freedman&author=Y+Meir Weil&author=H+Lester&publication_year=2001&title=Cerebral activation associated with sexual arousal in response to a pornographic clip%3A A 15O-H2O PET study in heterosexual men&journal=Neuroimage&volume=14&pages=105-17)

29. Kuhn S, Gallinat J. Neurobiological Basis of Hypersexuality. *Int Rev Neurobiol* (2016) 129: 67–83. doi: 10. 1016/bs. irn. 2016. 04. 002

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=27503448) | [CrossRef Full Text](https://doi.org/10.1016/bs.irn.2016.04.002) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=S+Kuhn&author=J+Gallinat&publication_year=2016&title=Neurobiological Basis of Hypersexuality&journal=Int+Rev+Neurobiol&volume=129&pages=67)

30. Jimenez-Jimenez FJ, Alonso-Navarro H, Valle-Arcos D. Hypersexuality Possibly Associated With Safinamide. *J Clin Psychopharmacol* (2017) 37(5): 635–6. doi: 10. 1097/JCP. 0000000000000762

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=28796020) | [CrossRef Full Text](https://doi.org/10.1097/JCP.0000000000000762) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=FJ+Jimenez-Jimenez&author=H+Alonso-Navarro&author=D+Valle-Arcos&publication_year=2017&title=Hypersexuality Possibly Associated With Safinamide&journal=J+Clin+Psychopharmacol&volume=37&pages=635-6)

31. Nakum S, Cavanna AE. The prevalence and clinical characteristics of hypersexuality in patients with Parkinson's disease following dopaminergic therapy: A systematic literature review. *Parkinsonism Relat Disord* (2016) 25: 10–6. doi: 10. 1016/j. parkreldis. 2016. 02. 017

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=26923525) | [CrossRef Full Text](https://doi.org/10.1016/j.parkreldis.2016.02.017) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=S+Nakum&author=AE+Cavanna&publication_year=2016&title=The prevalence and clinical characteristics of hypersexuality in patients with Parkinson's disease following dopaminergic therapy%3A A systematic literature review&journal=Parkinsonism+Relat+Disord&volume=25&pages=10-6)

32. Politis M, Loane C, Wu K, O'Sullivan SS, Woodhead Z, Kiferle L, et al. Neural response to visual sexual cues in dopamine treatment-linked hypersexuality in Parkinson's disease. *Brain* (2013) 136(Pt 2): 400–11. doi: 10. 1093/brain/aws326

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=23378222) | [CrossRef Full Text](https://doi.org/10.1093/brain/aws326) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=M+Politis&author=C+Loane&author=K+Wu&author=SS+O'Sullivan&author=Z+Woodhead&author=L+Kiferle&publication_year=2013&title=Neural response to visual sexual cues in dopamine treatment-linked hypersexuality in Parkinson's disease&journal=Brain&volume=136&pages=400-11)

33. Cosi C, Carilla-Durand E, Assie MB, Ormiere AM, Maraval M, Leduc N, et al. Partial agonist properties of the antipsychotics SSR181507, aripiprazole and bifeprunox at dopamine D2 receptors: G protein activation and prolactin release. *Eur J Pharmacol* (2006) 535(1-3): 135–44. doi: 10. 1016/j. ejphar. 2006. 01. 051

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=16554049) | [CrossRef Full Text](https://doi.org/10.1016/j.ejphar.2006.01.051) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=C+Cosi&author=E+Carilla-Durand&author=MB+Assie&author=AM+Ormiere&author=M+Maraval&author=N+Leduc&publication_year=2006&title=Partial agonist properties of the antipsychotics SSR181507%2C aripiprazole and bifeprunox at dopamine D2 receptors%3A G protein activation and prolactin release&journal=Eur+J+Pharmacol&volume=535&pages=135-44)

34. Bymaster FP, Calligaro DO, Falcone JF, Marsh RD, Moore NA, Tye NC, et al. Radioreceptor binding profile of the atypical antipsychotic olanzapine. *Neuropsychopharmacology* (1996) 14(2): 87–96. doi: 10. 1016/0893-133X(94)00129-N

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=8822531) | [CrossRef Full Text](https://doi.org/10.1016/0893-133X%2894%2900129-N) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=FP+Bymaster&author=DO+Calligaro&author=JF+Falcone&author=RD+Marsh&author=NA+Moore&author=NC+Tye&publication_year=1996&title=Radioreceptor binding profile of the atypical antipsychotic olanzapine&journal=Neuropsychopharmacology&volume=14&pages=87)

35. Blasi G, Popolizio T, Taurisano P, Caforio G, Romano R, Di Giorgio A, et al. Changes in prefrontal and amygdala activity during olanzapine treatment in schizophrenia. *Psychiatry Res* (2009) 173(1): 31–8. doi: 10. 1016/j. pscychresns. 2008. 09. 001

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=19428222) | [CrossRef Full Text](https://doi.org/10.1016/j.pscychresns.2008.09.001) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=G+Blasi&author=T+Popolizio&author=P+Taurisano&author=G+Caforio&author=R+Romano&author=A+Di Giorgio&publication_year=2009&title=Changes in prefrontal and amygdala activity during olanzapine treatment in schizophrenia&journal=Psychiatry+Res&volume=173&pages=31-8)

36. Deirmenjian JM, Erhart SM, Wirshing DA, Spellberg BJ, Wirshing WC. Olanzapine-induced reversible priaprism: a case report. *J Clin Psychopharmacol* (1998) 18(4): 351–3. doi: 10. 1097/00004714-199808000-00023

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=9690708) | [CrossRef Full Text](https://doi.org/10.1097/00004714-199808000-00023) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=JM+Deirmenjian&author=SM+Erhart&author=DA+Wirshing&author=BJ+Spellberg&author=WC+Wirshing&publication_year=1998&title=Olanzapine-induced reversible priaprism%3A a case report&journal=J+Clin+Psychopharmacol&volume=18&pages=351-3)

37. Yektas C, Tufan AE. Spontaneous Ejaculations in an Adolescent With Olanzapine Use: Case Report. *Clin Neuropharmacol* (2016) 39(3): 157–8. doi: 10. 1097/WNF. 0000000000000143

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=26882319) | [CrossRef Full Text](https://doi.org/10.1097/WNF.0000000000000143) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=C+Yektas&author=AE+Tufan&publication_year=2016&title=Spontaneous Ejaculations in an Adolescent With Olanzapine Use%3A Case Report&journal=Clin+Neuropharmacol&volume=39&pages=157-8)

38. Knegtering H, Boks M, Blijd C, Castelein S, van den Bosch RJ, Wiersma D. A randomized open-label comparison of the impact of olanzapine versus risperidone on sexual functioning. *J Sex Marital Ther* (2006) 32(4): 315–26. doi: 10. 1080/00926230600666378

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=16709552) | [CrossRef Full Text](https://doi.org/10.1080/00926230600666378) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=H+Knegtering&author=M+Boks&author=C+Blijd&author=S+Castelein&author=RJ+van den Bosch&author=D+Wiersma&publication_year=2006&title=A randomized open-label comparison of the impact of olanzapine versus risperidone on sexual functioning&journal=J+Sex+Marital+Ther&volume=32&pages=315-26)

39. Baggaley M. Sexual dysfunction in schizophrenia: focus on recent evidence. *Hum Psychopharmacol* (2008) 23(3): 201–9. doi: 10. 1002/hup. 924

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=18338766) | [CrossRef Full Text](https://doi.org/10.1002/hup.924) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=M+Baggaley&publication_year=2008&title=Sexual dysfunction in schizophrenia%3A focus on recent evidence&journal=Hum+Psychopharmacol&volume=23&pages=201-9)

40. Knegtering H, van der Moolen AE, Castelein S, Kluiter H, van den Bosch RJ. What are the effects of antipsychotics on sexual dysfunctions and endocrine functioning? *Psychoneuroendocrinology* (2003) 28 Suppl 2: 109–23. doi: 10. 1016/s0306-4530(02)00130-0

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=12650685) | [CrossRef Full Text](https://doi.org/10.1016/s0306-4530%2802%2900130-0) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=H+Knegtering&author=AE+van der Moolen&author=S+Castelein&author=H+Kluiter&author=RJ+van den Bosch&publication_year=2003&title=What are the effects of antipsychotics on sexual dysfunctions and endocrine functioning&journal=Psychoneuroendocrinology&volume=28 Suppl 2&pages=109-23)

41. Chouinard G, Samaha AN, Chouinard VA, Peretti CS, Kanahara N, Takase M, et al. Antipsychotic-Induced Dopamine Supersensitivity Psychosis: Pharmacology, Criteria, and Therapy. *Psychother Psychosom* (2017) 86(4): 189–219. doi: 10. 1159/000477313

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=28647739) | [CrossRef Full Text](https://doi.org/10.1159/000477313) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=G+Chouinard&author=AN+Samaha&author=VA+Chouinard&author=CS+Peretti&author=N+Kanahara&author=M+Takase&publication_year=2017&title=Antipsychotic-Induced Dopamine Supersensitivity Psychosis%3A Pharmacology%2C Criteria%2C and Therapy&journal=Psychother+Psychosom&volume=86&pages=189)

42. Fava GA, Cosci F. Understanding and Managing Withdrawal Syndromes After Discontinuation of Antidepressant Drugs. *J Clin Psychiatry* (2019) 80: 6. doi: 10. 4088/JCP. 19com12794

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=31774947) | [CrossRef Full Text](https://doi.org/10.4088/JCP.19com12794) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=GA+Fava&author=F+Cosci&publication_year=2019&title=Understanding and Managing Withdrawal Syndromes After Discontinuation of Antidepressant Drugs&journal=J+Clin+Psychiatry&volume=80&)

43. Fava GA, Offidani E. The mechanisms of tolerance in antidepressant action. *Prog Neuropsychopharmacol Biol Psychiatry* (2011) 35(7): 1593–602. doi: 10. 1016/j. pnpbp. 2010. 07. 026

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=20728491) | [CrossRef Full Text](https://doi.org/10.1016/j.pnpbp.2010.07.026) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=GA+Fava&author=E+Offidani&publication_year=2011&title=The mechanisms of tolerance in antidepressant action&journal=Prog+Neuropsychopharmacol+Biol+Psychiatry&volume=35&pages=1593-602)

44. Fonseka TM, Richter MA, Muller DJ. Second generation antipsychotic-induced obsessive-compulsive symptoms in schizophrenia: a review of the experimental literature. *Curr Psychiatry Rep* (2014) 16(11): 510. doi: 10. 1007/s11920-014-0510-8

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=25256097) | [CrossRef Full Text](https://doi.org/10.1007/s11920-014-0510-8) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=TM+Fonseka&author=MA+Richter&author=DJ+Muller&publication_year=2014&title=Second generation antipsychotic-induced obsessive-compulsive symptoms in schizophrenia%3A a review of the experimental literature&journal=Curr+Psychiatry+Rep&volume=16&pages=510)

45. Kulkarni G, Narayanaswamy JC, Math SB. Olanzapine induced de-novo obsessive compulsive disorder in a patient with schizophrenia. *Indian J Pharmacol* (2012) 44(5): 649–50. doi: 10. 4103/0253-7613. 100406

[PubMed Abstract](http://www.ncbi.nlm.nih.gov/sites/entrez?Db=pubmed&Cmd=ShowDetailView&TermToSearch=23112432) | [CrossRef Full Text](https://doi.org/10.4103/0253-7613.100406) | [Google Scholar](http://scholar.google.com/scholar_lookup?author=G+Kulkarni&author=JC+Narayanaswamy&author=SB+Math&publication_year=2012&title=Olanzapine induced de-novo obsessive compulsive disorder in a patient with schizophrenia&journal=Indian+J+Pharmacol&volume=44&pages=649-50)