

University of Northern Iowa  
**UNI ScholarWorks**

---

Graduate Research Papers

Student Work

---


2009

## Olanzapine vs. conventional and other atypical antipsychotics in response and side effects for the treatment of schizophrenia

Jade A. Knutson  
*University of Northern Iowa*

Copyright ©2009 Jade A. Knutson

Follow this and additional works at: <https://scholarworks.uni.edu/grp>

 Part of the [Education Commons](#), and the [Mental Disorders Commons](#)

*Let us know how access to this document benefits you*

---

### Recommended Citation

Knutson, Jade A., "Olanzapine vs. conventional and other atypical antipsychotics in response and side effects for the treatment of schizophrenia" (2009). *Graduate Research Papers*. 1012.  
<https://scholarworks.uni.edu/grp/1012>

This Open Access Graduate Research Paper is brought to you for free and open access by the Student Work at UNI ScholarWorks. It has been accepted for inclusion in Graduate Research Papers by an authorized administrator of UNI ScholarWorks. For more information, please contact [scholarworks@uni.edu](mailto:scholarworks@uni.edu).

---

## Olanzapine vs. conventional and other atypical antipsychotics in response and side effects for the treatment of schizophrenia

### Abstract

The efficacy and side effects of olanzapine (an atypical antipsychotic) for the treatment of Schizophrenia were compared over ten different studies. The methods, findings, and limitations of olanzapine treatment when compared to conventional antipsychotics, monotherapy atypical antipsychotics, and combination atypical antipsychotics were addressed. These studies looked at populations of people with first-episode Schizophrenia, chronic cases, and resistant positive and negative symptoms. Olanzapine showed to have an equal to or greater decrease in negative symptoms and also an equal to or greater reduction in positive symptoms. Olanzapine also showed to have a reduction in extrapyramidal symptoms and an increase in neurocognitive functioning, response rates, compliance, and quality of life. However, olanzapine did have negative side effects such as: significant weight gain, increase in blood pressure and cholesterol, and a decrease in liver function.

Running head: OLANZAPINE TREATMENT FOR SCHIZOPHRENIA

Olanzapine vs. Conventional and Other Atypical Antipsychotics in  
Response and Side Effects for the Treatment of Schizophrenia

Jade A. Knutson

University of Northern Iowa

This Research Paper by: Jade A. Knutson

Entitled: OLANZAPINE VS. CONVENTIONAL AND OTHER ATYPICAL  
ANTIPSYCHOTICS IN RESPONSE AND SIDE EFFECTS FOR  
THE TREATMENT OF SCHIZOPHRENIA

has been approved as meeting the research paper requirements for the Degree of Master  
of

Arts.

**Jan Bartlett**

4/3/2009

Date Approved Adviser/Director of Research Paper

**Michael D. Waggoner**

4.3.09

Date Received Head, Department of Educational Leadership,  
Counseling, and Postsecondary Education

## Abstract

The efficacy and side effects of olanzapine (an atypical antipsychotic) for the treatment of Schizophrenia were compared over ten different studies. The methods, findings, and limitations of olanzapine treatment when compared to conventional antipsychotics, monotherapy atypical antipsychotics, and combination atypical antipsychotics were addressed. These studies looked at populations of people with first-episode Schizophrenia, chronic cases, and resistant positive and negative symptoms. Olanzapine showed to have an equal to or greater decrease in negative symptoms and also an equal to or greater reduction in positive symptoms. Olanzapine also showed to have a reduction in extrapyramidal symptoms and an increase in neurocognitive functioning, response rates, compliance, and quality of life. However, olanzapine did have negative side effects such as: significant weight gain, increase in blood pressure and cholesterol, and a decrease in liver function.

## Olanzapine vs. Conventional and Other Atypical Antipsychotics in Response and Side Effects for the Treatment of Schizophrenia

Olanzapine is a new-generation (atypical) antipsychotic agent that is hypothesized to have superior efficacy. This medication is sold under the brand name Zyprexa. This research update will discuss the findings, methods, and limitations of the treatment outcomes of olanzapine versus other atypical and conventional agents. This paper will compare results of studies with topics such as treatment of; first-episode schizophrenia, chronic cases of schizophrenia, and resistant positive and negative symptoms. It will also contrast the information to understand the results and determine if olanzapine does have greater efficacy based on the presented studies.

### Article Summaries

*Robinson, D. G., et al.*

In a stratified, randomized controlled trial treatment in two non-for-profit facilities who both serve low-to-middle class and one serving mostly minority population, Robinson et al. compared treatment outcomes for comparable doses (open-label) of either olanzapine or risperidone. Symptom response (response rates, positive and negative symptoms) and side effects (weight gain and extrapyramidal symptoms) were compared between the two medications for four months on 112 subjects in their first episode of schizophrenia. Response rates were similar between both olanzapine and risperidone with almost twice as many subjects who responded to olanzapine later not meeting criteria for substantial improvement. There were no significant differences between medications for positive symptoms, both improving over time. Negative symptoms showed no significant differences in medications over time and only showed

improvement in avolition-apathy and asociality-anhedonia showing improvement.

Olanzapine showed somewhat more favorable to risperidone in the appearance and treatment of extrapyramidal symptoms (rate of parkinsonism and akathisia). Although both medications showed significant weight increase overtime, olanzapine had a substantially greater increase than risperidone. Whether the reserved advantages in less extrapyramidal symptoms with olanzapine is worth the weight gain risks over risperidone need to be considered. One limitation of this study is that open-label assignment allows for possible patient or investigator bias.

*Buchanan, R. W.*

In a double-blind, parallel group comparison with subjects from two research programs, Buchanan et al. compared the effect on either positive or negative residual symptoms, social and functional outcomes, and side effects of treatment with comparable dosages (open-label) of either haloperidol (with prophylactic benztropine) and olanzapine (with a benztropine placebo). The study consisted of a 16-week treatment for 63 outpatients experiencing residual positive or negative symptoms of schizophrenia or schizoaffective disorder. In biweekly assessments there was no overall significant difference between olanzapine and haloperidol in their effects on positive or negative symptoms, or on the measures of social and functional outcome. Olanzapine treated subjects showed a significant decrease in extrapyramidal symptom specific to dry mouth and stiffness. The olanzapine group also had significant increases in systolic blood pressure and weight compared to haloperidol. Whether the advantages in decreased extrapyramidal symptoms in olanzapine are worth the weight gain and increase in

systolic blood pressure over haloperidol need to be considered. One limitation of this study is the number of subjects is relatively small.

*Bilder, R. M.*

In a double blind, four comparison group study with subjects from four state psychiatric hospitals, Bilder et al. compared the neurocognitive effects of comparable dosages of either clozapine, olanzapine, risperidone or haloperidol (with prophylactic benztropine, placebo benztropine or a combination of both). The study consisted of a 14-week treatment for 101 inpatients diagnosed with either schizophrenia or schizoaffective disorder. Despite changes in symptoms (clozapine, olanzapine, and risperidone all yielded significant decreases in symptoms), side effects, or blood levels, patients treated with olanzapine and risperidone had a significant improvement in neurocognitive function. Olanzapine showed to have the greatest improvement in the general and attention domains, risperidone with memory, and clozapine with motor function. Patients seemed to show an increase in neurocognitive functioning with the atypical antipsychotics as opposed to conventional and even different cognitive effects between the atypical antipsychotics. Which improvements would be most beneficial for each individual patient should be considered. One limitation to this study is how well it will generalize to patients who are more likely to have positive outcomes to treatment.

*Gurpegui, M.*

In a randomized, parallel group study in 21 centers in Spain Gurpegui et al. compared neurocognitive functioning, clinical symptoms, and social functioning with flexible dosages (open-label) of either olanzapine or risperidone. The study consisted of a one-year trial in 235 outpatients with chronic schizophrenia with prominent negative



symptoms. There was an increase in neurocognitive functioning (while not significant) and a decrease in negative symptoms in both groups although there was not a significant difference between the risperidone group and the olanzapine group. Whether the decrease of negative symptoms alone is enough to proceed with an atypical antipsychotic needs to be determined. One limitation of this study is that the subjects had previous treatment with FGA that could have enhanced or reduced the outcomes was not counted for in the results.

*Bitter, I., Czobor, P., Dossenbach, M. and Volavka, J.*

In a non-interventional, prospective observational study Bitter, Czobor, Dossenbach and Volavka compared hostile and aggressive behavior in monotherapy treatment groups prescribed clozapine, olanzapine, quetiapine, risperidone, or haloperidol. The study consisted of a 3-year trial (with data available on the first 6 months) on 3135 outpatients with schizophrenia from over 27 countries from the International Schizophrenia Outpatient Health Outcomes (IC-SOHO). Hostile and aggressive behaviors were reduced in all treatment groups with olanzapine and risperidone having a significant decrease over haloperidol and the other atypical antipsychotics. The results were consistent when baseline was adjusted for differences in age, gender, age of onset, and substance abuse. This study contradicts previous research stating clozapine has a significant decrease in aggressive behavior. Further research should be considered for the optimal treatment of schizophrenia, especially in patients with hostile/aggressive behavior. One limitation of this study is that open-label assignment allows for possible patient or investigator bias.

*Ritchi et al.*

In a randomized open label study Ritchi et al. compared motor side effects, efficacy, safety and quality of life in treatment groups switched from their conventional antipsychotics to either olanzapine or risperidone. The study consisted of a time period for preparation to switch medications and a switching stage in 66 elderly patients with schizophrenia in eight centers in Australia. Both the olanzapine and risperidone groups had an improvement of negative symptoms and Parkinsonism with no significant difference between groups. Olanzapine was shown to significantly decrease dyskinetic symptoms, increase response rate, and improve the quality of life over risperidone. Switching from a conventional antipsychotic to either olanzapine or risperidone show improvement in elderly patients with schizophrenia, but the lack of testing and discussion on other side effects emphasize the need from further research. One limitation of this study is that there was a high rate of comorbid illness and concurrent, non-psychiatric medication use.

*Wood et al.*

In a randomized, double blind parallel group study Woods et al. compared prodromal symptoms, extrapyramidal symptoms, and side effects in treatment groups prescribed either fixed-flexible doses of olanzapine or placebo. The study consisted of an 8-week trial in 60 patients who met the criteria for schizophrenic prodromal symptoms in four separate sites in North America. There was a significantly greater improvement in symptoms with the olanzapine group than the placebo group. Both groups had similar minimal extrapyramidal symptoms and the differences between groups were not significantly different. Olanzapine did have a significant increase in weight gain over the placebo group. Additional research with a longer time frame needs to be assessed before

routine treatment is implemented. An important limitation of this study is the small sample size.

*Green et al.*

In a randomized, double blind international study Green et al. compared symptom severity, compliance, and remission rates in treatment groups prescribed either olanzapine or haloperidol. This study consisted of a 2-year trial on 263 patients with first-episode psychosis from 14 academic medical centers. Decreases in symptom severity in both haloperidol and olanzapine were significant and comparable to each other. Treatment with olanzapine showed significant increase compared to haloperidol in compliance and remission rates. Haloperidol showed an increase in extrapyramidal side effects while olanzapine showed an increase in weight gain, cholesterol level and a decrease in liver functions. Whether the compliance and remission rate advantages of olanzapine over haloperidol outweigh the side effects of the medications should be carefully considered. One limitation of this study is that after randomization the groups at baseline were not equal on the duration of their illness, which the researchers deemed important.

*Hofer, A. et al.*

In a between-group comparison study Hofer et al. compared positive and negative symptoms, neurocognitive functioning, functionality and subjective outcomes in treatment groups who had been prescribed either amisulpride or olanzapine for at least 6 months. This study consisted of 60 outpatients with chronic schizophrenia. Treatment in both the amisulpride and olanzapine groups were comparable in functional and subjective outcomes. Results were also similar in the scores of positive, negative, and

cognitive symptoms. Although comparable, olanzapine did show lower scores in depression/anxiety and excitement components and amisulpride in verbal fluency. Although both atypical antipsychotics were similar, depending on specific treatment outcomes desired, more research is required. One limitation of this study is the number of subjects is relatively small.

*Ohleier, M. D., Jahn, K., Welhelm-Gossling, C., Godecke-Koch, T., and Hoffman, J.*

In a between-group comparison study Ohleier, Jahn, Welhelm-Gossling, Godecke-Koch, and Hoffmann compared positive and negative symptoms and neuropsychological state in treatment groups prescribed either perazine in combination with carbamazepine or olanzapine (as a monotherapy). This study consisted of 3-week trial on 23 patients meeting the DSM-IV criteria for schizophrenia that were assessed 3 times throughout the study. Negative symptoms and performance on cognitive tests improved in both groups and there was no significant difference between the groups. Olanzapine did show a superior response over the perazine in combination with carbamazepine group to positive symptoms. Although this research suggest a significant decrease in positive symptoms with olanzapine as a monotherapy, more research is needed to see if combination treatment is ideal for overall outcomes to treatment of schizophrenia. One limitation of this study is the relatively small duration of time and number of subjects.

### Synthesis

In the ten studies presented olanzapine was the overall most effective treatment compared to conventional antipsychotics, monotherapy atypical antipsychotics, and combination atypical antipsychotics for patients with schizophrenia (even in elderly

patients, patients with resistant symptoms, and patients suffering from chronic cases of schizophrenia.) In all of the studies (which used negative symptoms as one of the dependant variables, 9 of the 10 studies) olanzapine showed an equal to or greater than decrease in negative symptoms. In the seven studies that used positive symptoms as a dependant variable all seven showed olanzapine to be equal to or greater than the other medications or placebo in reducing the patients positive symptoms. The studies looking at extrapyramidal symptoms found that olanzapine was equal to or greater than the other groups in the reductions of these symptoms, with specific references to dyskinetic symptoms, Parkinsonism, stiffness and dry mouth. Olanzapine also showed a significant increase in neurocognitive functioning, with one study showing specific increase in general and attention domains. Olanzapine also showed an increase in response rates, remission rates, compliance, and quality of life. Two studies showed an increase in social, functional, and subjective outcomes. One study also found a significant decrease in hostility/aggression factors.

Although Olanzapine is shown to be equal to or superior to conventional or other atypical antipsychotics on many important factors it also showed to have a significant weight gain across studies as well as an increase in blood pressure and cholesterol and a decrease in liver function.

Not unlike other studies, these studies have limitations and there is a need for further research. Whether the efficacy of olanzapine overshadows the negative side effects should be determined on a physician/patient basis. These studies do show olanzapine should be a highly recommended treatment medication for patients with schizophrenia for a wide range of improvement of symptoms.

## References

- Bilder, R. M., Goldman, R. S., Volavka, J., Czobor, P., Hoptman, M., & Sheitman, B., et al. (2002). Neurocognitive effects of clozapine, olanzapine, risperidone, and haloperidol in patients with chronic schizophrenia or schizoaffective disorder. *American Journal of Psychiatry*, *159*:6, 1018-1028. Retrieved November 11, 2008 from PsychINFO database.
- Bitter, I., Czobor, P., Dossenbach, M., & Volavka, J. (2005). Effectiveness of clozapine, olanzapine, quetiapine, risperidone, and haloperidol monotherapy in reducing hostile and aggressive behavior in outpatients treated for schizophrenia: A prospective naturalistic study (IC-SOHO). *European Psychiatry*, *20*, 403-408. Retrieved November 11, 2008 from PsychINFO database.
- Buchanan, R. W., Ball, M. P., Weiner, E., Kirkpatrick, B., Gold, J. M., & McMahon, R. P., et al. (2005). Olanzapine treatment of residual positive and negative symptoms. *American Journal of Psychiatry* *162*:1, 124-129. Retrieved November 12, 2008 from PsychINFO database.
- Green, A. I., Lieberman, J. A., Hamer, R. M., Glick, I. D., Gur, R. E., & Kahn, R. S., et al. (2006). Olanzapine and haloperidol in first episode psychosis: Two-year data. *Schizophrenia Research*, *86*, 234-243. Retrieved November 12, 2008 from PsychINFO database.
- Gurpegui, M., Alvarez, E., Bousona, M., Ciudad, A., Gomez, J. C., Olivares, J. M. (2007). Effect of olanzapine or risperidone treatment on some cognitive functions in a one-year follow-up of schizophrenia outpatients with prominent negative

- symptoms. *European Neuropsychopharmacology*, 17, 725-734. Retrieved November 11, 2008 from PsychINFO database.
- Hofer, A., Rettenbacher, M. A., Edlinger, M., Huber, R., Bodner, T., & Kemmler, G. et al. (2007). Outcomes in schizophrenia outpatients treated with amisulpride or olanzapine. *Pharmacopsychiatry*, 40(1), 1-8.
- Ohlmeier, M. D., Jahn, K., Welhalm-Gossling, C., Godecke-Koch, T., & Hoffmann, J. (2007). Perazine and carbamazepine in comparison to olanzapine in schizophrenia. *Neuropsychobiology*, 55(2), 81-88.
- Ritchie, C. W., Chiu, E., Harrigan, S., Hall, K., Hassett, A., & Macfarlane, S. et al. The impact upon extra-pyramidal side effects, clinical symptoms and quality of life of a switch from conventional to atypical antipsychotics (risperidone or olanzapine) in elderly patients with schizophrenia. *International Journal of Geriatric Psychiatry*, 18, 432-440.
- Robinson, D. G., Woerner, M. G., Napolitano, B., Patel, R. C., Sevy, S. M., & Gunduz-Bruce, H., et al. (2006) Randomized comparison of olanzapine versus risperidone for the treatment of first-episode schizophrenia: 4-month outcomes. *American Journal of Psychiatry*, 163, 2096-2102. Retrieved November 11, 2008 from PsychINFO database.
- Woods, S. W., Breier, A., Zipursky, R. B., Perkins, D. O., Addington, J., & Miller, T. J., et al. (2003). Randomized trial of olanzapine versus placebo in the symptomatic acute treatment of the schizophrenic prodrome. *Society of Biological Psychiatry*, 54, 453-464. Retrieved November 11, 2008 from PsychINFO database.