Preliminary findings of visual hallucinations in organic psychosis: A meta-analysis

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Introduction

Distinguishing an 'organic' from a 'non-organic' cause of psychosis is critical, as appropriate treatment may reverse the underlying cause of organic psychosis (Zahodne & Fernandez, 2010). At present there are no agreed 'red flags' to help a clinician identify a patient likely to have an organic cause based on their psychiatric features. The literature suggests that visual hallucinations may occur more commonly in organic psychosis than non-organic psychosis.

Aims

- To quantitatively affirm the association between visual hallucinations and organic psychosis.
- To explore the content of visual hallucinations in organic psychosis.

References

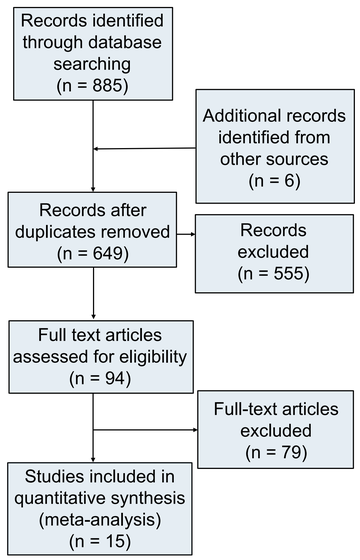
Wells, G., Shea, B., O'Connell, D., Peterson, J., Welch, V., Losos, M. & Tugwell, P. (2013). The Newcastle-Ottawa Scale (NOS) for assessing the quality of nonrandomised studies in meta-analyses. Available from http://www.ohri.ca/programs/clinical_epidemiology/oxford.asp.

Zahodne, L., & Fernandez, H. (2010). Parkinson's Psychosis. *Current Treatment Options In Neurology*, *12*(3), 200-211.

Method

- A meta-analysis of case-control studies was conducted using Review Manager version 5.3.
- The databases PubMed, OVID, MEDLINE, Embase, PsychINFO, and Global Health were searched without date restrictions by two researchers.
- Inclusion criteria were: (a) case-control studies in English (b) with patients diagnosed with organic psychosis and compared to a non-organic psychosis control group (c) reporting the presence of visual hallucinations in both cohorts (Figure 1).
- The Newcastle-Ottawa Scale was used to assess the risk of bias of each study (Wells et al., 2013).
- A random-effects model was used pool data using the DerSimonian and Laird inverse variance method and calculate odds ratios (OR) with 95% confidence intervals (CI).
- A meta regression was carried out using the difference in the mean age of patients with organic psychosis and non-organic psychosis as a predictor in the model.
- Chi-square tests were then run in simple and complex visual hallucinations and animate and inanimate visual hallucinations between patients with organic psychosis and non-organic psychosis to assess whether there were significant differences for the secondary analyses.

Figure 1. Study Flow (PRISMA) diagram



Results

- 15 studies were included (n = 890 organic psychosis patients; n = 955 non-organic psychosis patients).
- Most studies scored low quality in their risk of bias assessment (n = 10).
- A significant association was observed between visual hallucinations and organic psychosis (OR = 3.17, 95% CI = 1. 92-5.24) (Figure 2).
- Between-study heterogeneity was moderate (χ^2 = 46.79, p < 0.01, I^2 = 70%).
- Age was not found to have a significant effect on the association between visual hallucinations and organic psychosis (QM (df = 1) = 0.333, p = 0.564) (Figure 3).
- 4 studies reported the content of visual hallucinations (n = 158 organic psychosis; n = 52 non-organic psychosis).
- Inanimate hallucinations were experienced significantly more in organic psychosis patients than non-organic psychosis patients ($\chi^2(1)$ = 5.44, p = 0.020) (Figure 4).

Figure 2. Forest plot displaying the meta-analysis results

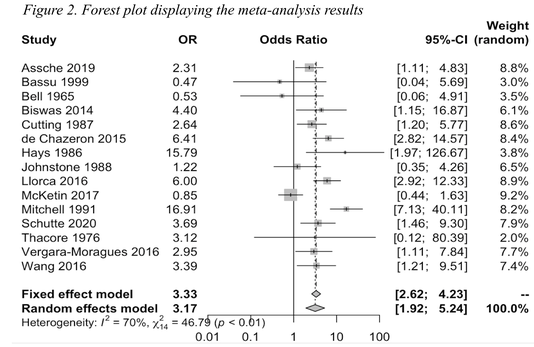


Figure 4. Bubble plot displaying the meta regression results

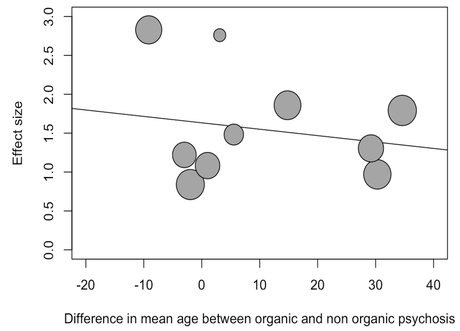
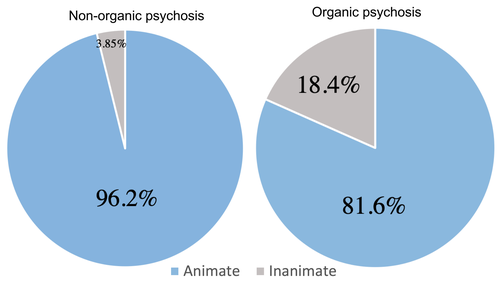


Figure 4. Frequency of animate and inanimate visual hallucinations



Conclusions

- Patients with organic psychosis are significantly more likely to experience visual hallucinations than those with non-organic psychosis (OR=3.17).
- Patients with organic psychosis are more likely to experience inanimate visual hallucinations than those with non-organic psychosis.
- Visual hallucinations may serve as a 'red flag' in organic psychosis and aid in the distinction from non-organic psychosis.