Outcome of pharmacological treatments of pathological gambling: a review and meta-analysis


CRD summary
The authors concluded that pharmacological interventions may be an adequate treatment alternative for pathological gambling. Given the unclear quality of included studies and the potential for error and bias in the review process, the authors conclusions should be treated with caution.

Authors’ objectives
To determine the effectiveness of pharmacological treatments for pathological gambling and to identify factors that may influence the efficacy of treatment.

Searching
PubMed and PsycINFO were searched from 1966 to July 2006 for English-language articles. Search terms were reported. Reference lists of retrieved articles were handsearched.

Study selection
Studies of pharmacological treatments for pathological gambling were eligible for inclusion. Studies of psychotherapy alone or psychotherapy in conjunction with pharmacotherapy were excluded. Single case studies, conference presentations and reviews were excluded. Included studies were of Bupropion, Fluvoxamine, Topiramate, Paroxetine, Nalmefene, Escitalopram, Lithium carbonate, valproate, Naltrexone, Nefazodone, Sertraline and Citalopram in varying doses. Control conditions in controlled trials were placebo, fluvoxamine and naltrexone. Duration of intervention ranged from six weeks to six months. All included studies were of participants with a formal diagnosis of pathological gambling. The mean age ranged from 29.1 years to 55.8 years. The proportion of males ranged from 33.3% to 100%. Outcomes eligible for inclusion were measures of gambling. Included studies used a variety of standardised scales, the most common of which were the Clinical Global Impression (improvement scale, severity of illness scale or modified version for pathological gambling) and Yale-Brown Obsessive Compulsive Scale modified for pathological gambling. Other outcomes in included studies were visual analogue scales (VAS) that measured gambling craving, severity, frequency and amount gambled, money spent or lost weekly and measures of time spent gambling or frequency of gambling. Study designs included for review were double blind parallel and crossover trials, single blind, open label and within-subjects designs. Information was not provided about randomisation.

The authors stated neither how the studies were selected for review nor how many reviewers performed the study selection.

Assessment of study quality
The authors did not appear to assess validity.

Data extraction
Data extracted were mean and standard deviation of control and treatment groups at post treatment, or mean and standard deviation of treatment group pre- and post-treatment for within subject designs. These were used to calculate an effect size for each study. Where more than one outcome measure was used in a study, individual effect sizes were calculated for each outcome and a mean effect size was then calculated for the study as a whole. Where outcomes were measured at several time points, effect sizes were calculated only for treatment end points.

The authors stated neither how the data were extracted for the review nor how many reviewers performed the data extraction.

Methods of synthesis
A pooled effect size with 95% confidence intervals (CI) was calculated using the inverse variance weighting scheme of Hedges and Olkin to weight by sample size. Heterogeneity was assessed using the Q statistic. The weighted least square regression model was used to calculate sources of variance with the following variables entered: study design, class or drug and proportion of male participants.

**Results of the review**

Sixteen studies were included for review (n=597): seven double blind parallel controlled trials (n=428); one double blind crossover trial (n=15); three single blind studies (n=87); and five open label studies (n=67). Figures were only available for numbers of participants included in the analysis and not for participants enrolled in trials.

Pharmacological treatments were associated with more positive outcomes on measures of pathological gambling compared to placebo or pre-treatment scores (pooled effect size was 0.78, 95% CI: 0.64 to 0.92, p<0.01). The number of negative findings needed to produce a non-significant result was calculated at 431. There was evidence of significant heterogeneity (Q=71.1, p<0.01). Using a weighted squares regression model, it was found that studies with a placebo design yielded smaller effect sizes than those with within subjects designs (B=-1.023, p<0.01) and that studies with a high proportion of males showed smaller effect sizes (B=0.019, p<0.01). The class of drug used was not associated with the size of effect.

**Authors’ conclusions**

Pharmacological interventions may be an adequate treatment alternative for pathological gambling.

**CRD commentary**

The review addressed a clear question. Inclusion criteria for participants, intervention, outcomes and study design were well defined. Just two databases were searched for only English-language articles and the search appeared to be restricted to published articles, so language and publication biases may have been introduced. Publication bias was assessed, but the reviewers used a method that may have been unreliable. It was unclear whether the study selection and data extraction processes were carried out independently by more than one reviewer, so the possibility or reviewer error and bias cannot be ruled out. No formal validity assessment was carried out and there was insufficient information on the details of individual studies to determine aspects of methodological quality such as randomisation, blinding and allocation concealment. Attrition rates for most studies were high. Few studies used intention to treat analysis. Many studies specifically excluded placebo responders or people with other co-morbid disorders. Therefore, the potential for bias in the findings was high. It was unclear whether the statistical methods used were appropriate. Heterogeneity was assessed and sources of variance were explored using a priori mediator variables. Given the unclear quality of included studies and the potential for error and bias in the review process, the authors conclusions should be treated with caution.

**Implications of the review for practice and research**

**Practice:** The authors did not state any implications for practice.

**Research:** The authors stated that there was a need for further large-scale controlled studies in people with pathological gambling and other co-morbid conditions with long-term follow up periods. Future studies may investigate newer drugs such as dopamine D2 and D2 receptor antagonists, NMDA receptor modulator Acamprosate, calcium channel inhibitor Isradipine and 5-HT3 receptor antagonists.

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