Behavioral intervention for cancer treatment side effects
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Authors' objectives
To evaluate the clinical impact of behavioural interventions in patients undergoing cancer treatment.

Searching
PubMed and PsycLIT were searched from 1979 to January 2000 for reports published in the English language, using the following search terms in combination with 'cancer': 'behaviour', 'intervention', 'pain', 'nausea', 'vomit', 'distress', 'depression', 'anxiety', 'fatigue', 'neuro', 'cognitive', 'menopause', 'sex', 'post-traumatic stress disorder'. In addition, the terms 'prostate', 'vaginal' and 'impotence' were used individually and the search algorithm set to accept plurals. The list of identified studies was checked against reference lists in previous literature reviews.

Study selection
Study designs of evaluations included in the review
Randomised controlled trials (RCTs), within-subject studies, and case reports were eligible for inclusion.

Specific interventions included in the review
Behavioural interventions were eligible. The actual interventions included the following behavioural components, either alone or in combination: relaxation; cognitive or attentional distraction; hypnosis; desensitisation; rehearsal modelling; contingency management; emotive imagery; and cognitive restructuring. The interventions were carried out on an individual, group, or family basis. The number of sessions per intervention ranged from one to twelve.

Participants included in the review
Patients with cancer who were undergoing, or who had undergone traditional cancer treatment were eligible. The included patients were children and adults of both sexes with the following: lymphoma; leukaemia; stomach cancer; skin cancer; breast cancer; neural tumours; and mixed cancers.

Outcomes assessed in the review
Studies that assessed treatment-related effects were eligible. The actual outcomes assessed were: nausea and vomiting; anxiety and distress; and pain.

How were decisions on the relevance of primary studies made?
The three authors independently screened the identified studies according to the inclusion criteria.

Assessment of study quality
No formal assessment of validity was undertaken.

Data extraction
The authors do not state how the data were extracted for the review, or how many of the reviewers performed the data extraction. The following information were tabulated: the author(s); the characteristics of the patients; the number of patients in the intervention and control groups; study design; intervention details; and outcomes.

Methods of synthesis
How were the studies combined?
A narrative synthesis was undertaken.

How were differences between studies investigated?
The authors do not state how differences between the studies were investigated.

**Results of the review**

A total of 54 studies were included, of which 23 were RCTs (at least 924 patients).

Nausea and vomiting (23 studies, including 13 RCTs with 401 patients).

Studies supported the effectiveness of behavioural interventions in controlling anticipatory nausea and vomiting. Twelve of the 13 RCTs reported a statistically-significant benefit from behavioural interventions when compared with a no treatment or attention control interventions. Modest results were found in the 4 studies that assessed behavioural interventions in post-chemotherapy side-effects.

Anxiety and distress (19 studies, including 5 RCTs with at least 380 patients).

Four of the 5 RCTs reported a significant benefit from behavioural interventions when compared with a no treatment or attention control intervention. Thirteen of the 14 studies of a non-RCT design found a significant benefit for behavioural interventions.

Cancer treatment-related pain (12 studies, including 5 RCTs with at least 143 patients).

Four of the 5 RCTs reported a significant benefit in reducing acute cancer treatment-related pain from behavioural interventions, compared with a no treatment or attention control. All 7 of the studies of non-RCT design found a reduction in pain post-intervention.

No studies were identified that addressed the effectiveness of behavioural interventions in prolonged pain.

**Authors' conclusions**

It is clear that the application of behaviour therapy and methods has an important place in the care of patients undergoing invasive cancer treatments. Behavioural interventions integrating several methods can ameliorate anxiety and distress associated with invasive medical treatments; although a variety of behavioural methods have been shown to reduce treatment-related pain, there is increasing evidence that these methods are not equally effective. Research is scant on the use of behavioural interventions to control prolonged pain associated with invasive medical procedures.

**CRD commentary**

The aims were stated, and the inclusion criteria were broadly defined in terms of the study design, participants, interventions, and outcomes. Two databases were searched and the methods used to select the studies were described. By restricting the included studies to reports published in the English language, other relevant studies may have been omitted and the possibility of publication bias cannot be excluded. The included studies were not limited by study design and validity was not formally assessed. Some relevant information on the individual studies was tabulated, but the methods used to extract the data were not described. Studies were combined in a narrative review; the results were discussed separately for RCTs and studies of a less rigorous design. In the absence of a formal assessment of validity, it is not possible to comment on the strength of the evidence presented. Hence, caution must be advised when considering the authors' conclusions.

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

Practice: The authors state that behavioural interventions can effectively control anticipatory nausea and vomiting in adult and paediatric patients undergoing chemotherapy. However, the evidence for the efficacy of behavioural interventions in controlling post-chemotherapy nausea and vomiting is less clear. Hypnotic-like methods, involving relaxation, suggestion, and distracting imagery hold the greatest promise for pain management.

Research: The authors state that further research is required. This needs to identify the active components of effective behavioural interventions; to assess the effectiveness of behavioural interventions to control prolonged cancer treatment-
related pain; to identify new methods of managing treatment side-effects by systematically surveying patients, survivors, and families, systematically; and investigate alternative methods to control side-effects.

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