Compensatory fluid administration for preoperative dehydration: does it improve outcome?

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Authors' objectives
To examine the association between peri-operatively administered fluids that aim to correct dehydration and clinical outcome.

Searching
MEDLINE was search from inception to November 2001 for studies published in the English language; the search terms were reported. Additional studies were identified from retrieved articles and review articles. Non-published data, abstracts and letters to the editor were not included.

Study selection
Study designs of evaluations included in the review
Only randomised controlled trials (RCTs) were eligible for inclusion.

Specific interventions included in the review
Studies that investigated pre- and intra-operative fluid therapy to avoid dehydration were eligible. The studies had to include a no treatment control group. Studies evaluating peroral versus intravenous fluid therapy, additional fluid intake, or comparing different sorts of hydration fluid without a control group were not included. Studies with post-operative fluid administration were not eligible.

The types of fluids administered included water, orange juice, electrolyte infusion, sodium lactate and dextrose.

Participants included in the review
Studies in adult patients undergoing surgery were eligible. The types of surgery included elective surgery, minor gynaecologic, minor dental surgery, elective abdominal surgery and general minor surgery.

Outcomes assessed in the review
All types of clinical outcome, with the exception of paraclinical outcomes, were evaluated. The outcomes were grouped as pre-operative, early (less than 0 to 6 hours) and late (more than 1 day).

How were decisions on the relevance of primary studies made?
The authors do not state how the papers were selected for the review, or how many of the reviewers performed the selection.

Assessment of study quality
The authors do not state that they assessed validity.

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.

Methods of synthesis
How were the studies combined?
The results of the included studies were discussed in a narrative manner.

How were differences between studies investigated?
The studies were divided according to the level (high and low) of fluid administration. Differences between the studies were discussed within the text of the review.

Results of the review
Seventeen RCTs were included. Nine studies (n=1,390) evaluated peri-operative fluid administration with less than 1 litre, while eight studies (n=1,046) evaluated the administration of at least 1 litre of fluid.

Fluid administration of less than 1 litre.
Pre- and post-operative clinical outcome was the primary outcome parameter in only 2 of the 9 studies. The incidence of pre-operative thirst was improved in all 6 studies that assessed this outcome. Post-operative thirst was shown to be reduced in one study. The authors state that they could not draw conclusions on post-operative outcomes such as nausea, vomiting, headache and pain, due to limited data.

Fluid administration of greater than or equal to 1 litre.
There was improvement in some post-operative outcome parameters including drowsiness and dizziness. The authors state that the effect on other outcomes such as post-operative nausea, vomiting, headache and thirst, were less clear.

Authors' conclusions
The administration of fluids to compensate for pre-operative dehydration improves symptoms related to dehydration. The authors conclude that based on the available data, the administration of about 1 litre fluid pre- or intra-operatively in patients undergoing minor surgery seems rational.

CRD commentary
The authors posed a suitable review question and set out clear inclusion criteria. The search was fairly limited; only one database was searched with searches restricted to English language publications. Therefore, it is possible that important studies were missed. The authors also chose to exclude unpublished data. The study selection and data extraction processes were not described, and the authors did not carry out a validity assessment of the included studies. Details of the studies details were adequately presented in tabular format, although data about the patients' characteristics were lacking. The outcomes of the studies were not pooled, which was appropriate given the nature of the included studies. The authors' conclusions follow from the data presented, but should be approached with caution. A more comprehensive review of the area could potentially come to a very different conclusion.

Implications of the review for practice and research
Practice: The authors state that until further data are available, the administration of about 1 litre of fluid, pre- or intra-operatively, in patients who have fasted pre-operatively before minor surgical procedures, seems rational and is to be considered.

Research: The authors state that further studies of the post-operative effects of pre- and intra-operative glucose administration are needed.

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