The effect of positioning on the severity of sleep apnea syndrome and its relevance in the avoidance of hypoxia in acute stroke

Nightingale P

CRD summary
This review evaluated sleep positioning to treat sleep apnoea syndrome (SAS). The author concluded that adopting a side lying or sitting position may reduce the incidence of apnoeic attacks in some SAS patients. This review had several methodological limitations in relation to the review process and quality of the included studies, therefore the reliability of the author's conclusion is unclear.

Authors' objectives
To evaluate the effect of sleep positioning as a treatment for sleep apnoea syndrome (SAS). The author also assessed non-intervention studies to determine the patient characteristics of those showing a positional effect. This abstract focuses on the intervention studies.

Searching
MEDLINE (1966 to 2003), PsycINFO (1966 to 2003), EMBASE (1982 to 2003), CINAHL (1996 to 2003), PEDro (1980 to 2003), EBM Reviews, the Cochrane Database of Systematic Reviews, the Cochrane CENTRAL Register and DARE (up to Issue 4, 2002), and the Scottish Intercollegiate Guidelines Network (www.sign.ac.uk) were searched for relevant studies reported in the English language; the search terms were reported. References lists were screened for additional studies.

Study selection
All study designs (except for case studies) reporting on the effects of sleep positioning in adults, and focusing on the severity or incidence of obstructive sleep apnoea (OSA) were eligible for inclusion. Studies assessing the effects on airway dimensions, closing pressures or lung volumes in sleep apnoea patients were excluded. All of the included studies used OSA patients as their own controls, with some patients described as obese; most were in positional effect OSA patients. The majority of trials included interventions to avoid a supine sleeping position, including the use of an alarm, a tongue-retaining device and other preventive aids. Some studies were conducted in conjunction with continuous positive airway pressure (CPAP), weight loss and alcohol management. The primary outcome of interest was the index of severity of the apnoea in relation to time (apnoea and hypopnoea index: A and HI) measured by polysomnography. Other outcomes included central apnoea events and oxygen saturation.

It appears that one reviewer selected studies for inclusion in the review.

Assessment of study quality
Study quality was assessed using an established checklist (Downes and Black). Items applicable to the evaluation of randomised and non-randomised studies included quality of reporting, internal validity (including confounding factors) and external validity; full details were given.

One reviewer assessed the quality of the studies.

Data extraction
One reviewer extracted the data, highlighting where percentage changes had occurred and whether these were significant. In some cases p-values were given, but full numerical data were not provided for the majority of studies.

Methods of synthesis
The results were combined in a narrative.

Results of the review
Six intervention trials (n=107) were included in the wider review and are reported below. One trial was a randomised single-blind crossover trial (n=13).

The author reported that study quality was largely poor, with no power calculations, a lack of definitions for apnoea, hypopnoea and OSA, and poor reporting in general.

One trial (n=13) involving obese, male, moderate-to-severe OSA patients showed an 80% reduction in A and HI in more obese hypoxaemic patients who slept in an upright position at 60°. The remaining five trials (n=94) used a variety of methods to avoid a supine sleeping position and found that, on the whole, side lying was an effective method in improving the severity of SAS. The randomised crossover trial (n=13) showed significant reductions in A and HI, as well as improvements in oxygen saturation with CPAP and positioning, although the difference favoured CPAP.

**Authors' conclusions**
The adoption of a side lying or sitting sleeping position may benefit some SAS patients in terms of reduced incidence of apnoeic attacks.

**CRD commentary**
The review question was supported by clear inclusion criteria. The search strategy included several relevant sources, but the restriction to studies reported in English and the apparent failure to seek unpublished material may mean that some studies were missed and language and publication biases cannot be ruled out. The reliance on a single reviewer represents a significant limitation in terms of judging the transparency of the review process. The validity assessment criteria were appropriate for the included study designs. However, the general poor quality of small-sized trials means that the reliability of any conclusions drawn would inevitably be unclear. This review had several methodological limitations, some of which the author acknowledged, and broad recommendations for future research are proposed.

**Implications of the review for practice and research**
Practice: The author stated that the avoidance of supine sleep positioning may represent a simple, inexpensive alternative (or adjunct) to the current treatments of choice for SAS.

Research: The author stated that further studies are needed to determine the effect of sleep positioning on different patient subgroups, and to investigate the effect of avoiding supine sleep positioning on post-stroke hypoxaemia.

**Funding**
The author stated that support was provided by the Physiotherapy Department of North Manchester General Hospital.

**Bibliographic details**
Nightingale P. The effect of positioning on the severity of sleep apnea syndrome and its relevance In the avoidance of hypoxia in acute stroke. Physical Therapy Reviews 2004; 9(3): 161-172

**Indexing Status**
Subject indexing assigned by CRD

**MeSH**
Hypoxia-Ischemia, Brain; Posture; Sleep Apnea, Obstructive; Stroke

**AccessionNumber**
12004008888

**Date bibliographic record published**
09/08/2008

**Date abstract record published**
01/12/2008
Record Status
This is a critical abstract of a systematic review that meets the criteria for inclusion on DARE. Each critical abstract contains a brief summary of the review methods, results and conclusions followed by a detailed critical assessment on the reliability of the review and the conclusions drawn.