The relationship between nursing leadership and patient outcomes: a systematic review
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CRD summary
The authors concluded that the few available studies suggest that transformational nursing leadership improves patient satisfaction with care and reduces adverse events and complications. In view of the lack of controlled evidence, high potential for confounding in the primary studies and lack of statistical data to support the review findings, it is difficult to assess the reliability of these conclusions.

Authors' objectives
To assess the relationship between nursing leadership and patient outcomes.

Searching
CINAHL, ABI/INFORM, EMBASE, ERIC, HealthSTAR, MEDLINE, PsycINFO, Sociological Abstracts, Academic Search Premier and The Cochrane Library were searched from 1985 to April 2005; the search terms were reported. Four relevant journals were handsearched. The following websites were also searched: the Canadian Health Services Research Foundation, Nursing Health Services Research Unit, the Institute for Clinical Evaluative Services, the Canadian Policy Research Network, the Centre for Health Economics and Policy Analysis, the American Association of Nurse Executives, the Agency for Healthcare Research and Quality and the National Institute for Nursing Research. The search was restricted to studies published in English.

Study selection
Quantitative or qualitative studies of nursing leadership were eligible for inclusion, provided that leadership qualities were measured (e.g. by self-report, direct observation or reports of followers). Leadership was defined as the process whereby an individual attempts to influence others to accomplish a goal. Nursing leaders in eligible studies held a formal leadership role in any health care organisation (e.g. first line, middle or senior level managers) and had nurses reporting to them. There were no specific inclusion criteria with respect to other participant groups (e.g. staff nurses and patients). Eligible studies were required to report the association between leadership and one or more of the following patient outcomes: well-being, satisfaction with care and incidence of adverse events. Studies of staff nurse clinical leadership, leadership development programmes and leadership instruments were excluded.

In the included studies, leadership was described in terms of practices, styles, behaviours and competencies, referencing a variety of theoretical models (e.g. transformational leadership, the leadership practices model, the complex adaptive systems model, the Aiken et al. (1997) conceptual model of organisational characteristics). Health professional demographics (where reported) were as follows: registered nurses had a mean duration of nursing experience of 13 years; managers and nursing directors had a mean duration of experience of 10 years. The included studies took place in a variety of settings: nursing homes, neonatal intensive care units, and acute or long-term in-patient care units at both teaching and non-teaching hospitals.

The included studies reported 14 different outcomes relating to patient satisfaction, mortality adverse events and complications. A wide variety of assessment tools were used to measure management practices (e.g. the Multifactor Leadership Questionnaire, the Leadership Practices Inventory). Patient outcomes were measured using items from the Patient Judgements of Hospital Quality Questionnaire, or by clinical outcomes and/or adverse events documented in patient records and administrative databases.

A research team screened titles and abstracts and one of the authors, who selected studies for inclusion, reviewed those potentially relevant. A second author independently reviewed about 20% of potentially relevant titles and abstracts.

Assessment of study quality
Study quality was assessed using a rating tool for correlational studies adapted from previous publications. It measured the following: design (prospective or retrospective), use of probability sampling, sample size, centre (single/multiple), anonymity protection, response rate, measurement tool reliability and validity, objectivity of measure, internal consistency, use of theoretical model, analysis of correlations, and management of outliers. Studies were allocated
points out of a possible maximum of 14.

One reviewer conducted the validity assessment and a second reviewer checked it.

**Data extraction**

Descriptive data were extracted and reported in a table, which indicated where there was evidence of a statistically significant association between the intervention and the patient outcome. The outcomes were grouped into four categories: patient satisfaction, mortality and safety outcomes, adverse events and complications.

The authors did not state how the data were extracted for the review, or how many reviewers performed the data extraction.

**Methods of synthesis**

The studies were combined in a narrative, organised by the type of outcome. The studies were not combined statistically because of clinical and methodological heterogeneity. Heterogeneity was discussed in the text.

**Results of the review**

Seven prospective quantitative cross-sectional and/or descriptive studies were included. A total of 15,222 patients were included in the five studies that reported this information. Across all seven studies, 2,014 nurses, 73 physicians and 77 respiratory therapists were involved. All studies were rated strong for quality (score range: 10 to 13 points).

Two of three relevant studies found a statistically significant association between patient satisfaction and components of leadership (a transactional leadership style and positive leadership behaviours, respectively). The positive effects of a transactional style decreased as the number of staff reporting to the manager increased.

One of three relevant studies reported a statistically significant but indirect association between patient mortality and effective leadership, mediated through staff expertise and staff stability.

Four studies reported on safety outcomes (adverse events and complications). Among nursing home residents there was a statistically significant association between reduced rates of adverse events (e.g. behaviour problems, restraint use, complications of immobility, fractures) and positive leadership qualities (e.g. communication openness, formalisation, participation in decision-making and relationship-orientated leadership). A second study reported a statistically significant association between reduced rates of falls and medication errors and increased staff expertise and stability, as well as a reduced incidence of pneumonia and urinary tract infections associated with positive leadership. The third study reported a significantly reduced rate of neonatal periventricular haemorrhage/leukomalacia associated with higher ratings for leadership. A fourth study reported no statistically significant findings with respect to adverse events or complications.

**Authors' conclusions**

The few studies currently available suggest that transformational nursing leadership improves patient satisfaction with health care and reduces adverse events and complications.

**CRD commentary**

The review objectives and inclusion criteria were clear. Relevant sources were searched but the language restriction and exclusion of unpublished studies means that some studies might have been missed. Steps were taken to minimise the risk of error and bias in the study selection and validity assessment processes by having more than one reviewer involved, but it is unclear whether this also applied to the data extraction. The decision not to combine the results statistically was appropriate given the heterogeneity between the studies. The results were rather difficult to interpret as no clear evidence of cause and effect was presented and/or the outcomes were attributed to indirect mechanisms mediated through nurse behaviour. Moreover, statistically significant findings were not supported by any measures of effect (such as p-values) and no measures of variability were reported. Specific components and descriptors of leadership (such as transformational) were not clearly defined within the review. Given the limitations of the search, the lack of controlled evidence, the high potential for confounding in the primary studies and lack of clarity about specific components of leadership, it is difficult to assess the reliability of the authors' conclusions.
Implications of the review for practice and research

Practice: The authors stated that an organisational focus on developing transformational nursing leadership may improve patient outcomes.

Research: The authors stated that longitudinal intervention studies using random sampling and conducted in a variety of settings are needed to further investigate the relationship between nursing leadership and patient outcomes. Moderators and mediators such as organisational context and nurse performance should be explored, and multiple data sources should be used to measure outcomes.

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