The relationship between nursing leadership and patient outcomes: a systematic review update

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Aim Our aim was to describe the findings of a systematic review of studies that examine the relationship between nursing leadership practices and patient outcomes.

Background As healthcare faces an economic downturn, stressful work environments, upcoming retirements of leaders and projected workforce shortages, implementing strategies to ensure effective leadership and optimal patient outcomes are paramount. However, a gap still exists in what is known about the association between nursing leadership and patient outcomes.

Methods Published English-only research articles that examined leadership practices of nurses in formal leadership positions and patient outcomes were selected from eight online bibliographic databases. Quality assessments, data extraction and analysis were completed on all included studies.

Results A total of 20 studies satisfied our inclusion criteria and were retained. Current evidence suggests relationships between positive relational leadership styles and higher patient satisfaction and lower patient mortality, medication errors, restraint use and hospital-acquired infections.

Conclusions The findings document evidence of a positive relationship between relational leadership and a variety of patient outcomes, although future testing of leadership models that examine the mechanisms of influence on outcomes is warranted.

Implications for nursing management Efforts by organisations and individuals to develop transformational and relational leadership reinforces organisational strategies to improve patient outcomes.

Keywords: nursing leadership, patient outcomes, systematic review

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Effective nurse leaders ensure that appropriate staffing and other resources are in place to achieve safe care and optimal patient outcomes. At the organizational level senior nurse executives contribute to strategic directions through their participation in senior level decision-making and their ability to influence how nursing is practised and valued (Huston 2008, Wong et al. 2010). At the department and unit levels, frontline leaders engage nurses in decision-making about patient flow and staffing, quality improvement activities, and continuous learning opportunities to improve overall care delivery (Page 2004, Tregunno et al. 2009, Thompson et al. 2011). The current economic downturn, health and safety concerns associated with stressful work environments, more leaders nearing retirement, and projected workforce shortages are testing the abilities of healthcare leaders in sustaining, let alone improving, the level of patient care. In the challenge for organisations to make practices more cost-effective yet improve outcomes, attract and retain high-performing staff, and be more responsive to patient needs, effective nursing leadership is critical to advance agendas for change (Page 2004, Lowe 2005, Fine et al. 2009).

The purpose of this study was to describe the findings of a systematic review of studies in the literature that examine the relationship between nursing leadership practices and patient outcomes. In a previous review, we searched electronic databases for the 20 years between 1985 and 30 April 2005 and found only seven studies examining the relationship between nursing leadership and patient outcomes (Wong & Cummings 2007). In this review, we updated the evidence by adding the results of studies published between 1 May 2005 and 31 July 2012 to the evidence reported in the previous paper and reviewed the body of research on the relationship between nursing leadership and patient outcomes.

Conceptual framework

A conceptual framework for the study review was developed based on Donabedian’s (1966) structure–process–outcome (SPO) framework (see Figure 1). Three conceptual domains comprise this framework: (1) structure which is concerned with organisational or setting factors, (2) process which is concerned with mechanisms for coordinating and facilitating patient care and (3) outcomes of care. Originally described as a framework for conceptualising the dimensions of health care practice, Donabedian (1966) postulated that each of these core dimensions was a necessary condition for the one that followed. Structures influence processes and processes influence outcomes. The SPO framework has been used extensively in examining relationships among organisational structural features such as nurse staffing (Cho 2001, McGillis-Hall & Doran 2007) or leadership (MacPhee et al. 2010) and nurse (MacPhee et al. 2010) and patient outcomes (Cho 2001, McGillis-Hall & Doran 2007). In this review we describe the SPO framework to examine the linkages between leadership and patient outcomes.

We isolated the leadership style of nurse leaders in organisations as structure. Leadership was defined broadly as ‘the process through which an individual attempts to intentionally influence another individual or a group in order to accomplish a goal’ (Shortell & Kaluzny 2000, p. 109). We further categorised leadership as either relational or task-oriented. Cummings et al. (2010a) explained that leadership styles may be broadly characterised as approaches that focus on people and relationships (relationally oriented) to achieve common goals or as styles that focus on structures and tasks (task-oriented). Leaders differ in the extent to which they pursue a human relations approach and show concern and respect for followers, express appreciation and support, and are genuinely concerned for their welfare (Bass & Stogdill 1990). For example, transformational leadership is a relational leadership style in which followers have trust and respect for the leader and are motivated to go above and beyond normal work expectations to achieve organisational goals (Bass 1985, Bass & Avolio 1994).

Leaders also differ in their attention or focus on the group’s goals and the means to achieve those goals (Bass & Stogdill 1990). Those with a strong task orientation define and organise the roles of followers, are concerned with goals, procedures and production, establish well-defined lines of communication, and are likely to keep their distance psychologically from their followers (Bass & Stogdill 1990). An example of a task-oriented style is transactional leadership that emphasises the transaction or economic exchange that takes place among leaders, colleagues and followers to accomplish work (Bass & Avolio 1994). The transactional leader’s role is primarily that of recognising follower needs and monitoring their role fulfilment (Bass 1985, Bono & Judge 2004).
The process concept in our framework was defined as the leadership processes or mechanisms by which leaders may contribute to patient outcomes. Examples of these processes may include facilitating work conditions that promote optimum safe patient care, creating open communication with staff to support quality care standards, or promoting positive relationships with staff that promote work engagement (Cummings et al. 2010a).

Outcome considers the measurable results of care and we focused exclusively on patient outcomes. Patient outcomes were defined as outcomes describing patient mortality, patient safety outcomes such as the incidence of adverse events involving patients (e.g. falls, nosocomial infections) or complications during hospitalisation, patient perceptions of satisfaction with care, and healthcare utilisation such as length of stay (Doran & Pringle 2011).

**Methods**

**Inclusion criteria for studies**

Following the same inclusion criteria used in the previous review, we included research studies that examined the relationship between nursing leadership in all types of health care settings and one or more patient outcomes. Leadership or aspects of leadership including leadership styles, behaviours, competencies, or practices were measured as self-reported by leaders, direct observation of leaders or ratings of leader behaviours made by followers. A leader was defined as a nurse in a formal leadership role at any level in a health care organisation (e.g. first line, middle and/or senior leadership/management roles) and who supervises other nurses. Studies of clinical leadership in staff nurses, evaluation of leadership development programmes or the testing of leadership instruments were excluded. We included only those studies that examined the association between leadership and patient outcomes reported as direct observation of patient outcomes or extracted from administrative databases. Studies of nurse- or staff-reported patient outcomes were excluded. There was no restriction on study design and published English-only articles were reviewed. We also required that the relationship between leadership and patient outcomes(s) be expressed quantitatively and tested statistically.

**Search strategy and data sources**

We searched the following eight online bibliographic databases for the period 1 May 2005 to 31 July 2012: ABI Inform Dateline, Academic Search Complete, Cochrane Database of Systematic Reviews (CDSR), MEDLINE, CINAHL, EMBASE, ERIC and PsycINFO. Table 1 includes a summary of the search strategy. Some of the databases have changed since the previous review, however, we were careful to include all the same sources as in the last review. We also hand searched the journals, *Journal of Nursing Management*, *Nursing Research*, *Nursing Leadership*, *The Leadership Quarterly*, *Journal of Nursing Administration* and *Journal of Organizational Behavior* as well as the bibliographies of articles identified for inclusion in the review. As in the last review we searched research websites for relevant research reports.

**Study identification and quality review**

The primary author and a research assistant screened the titles and abstracts of the articles identified by the search strategy. Articles that potentially met our inclusion criteria, and where there was insufficient information to make a decision regarding inclusion, were retrieved and assessed for relevance by the primary author and a research assistant. To assess the methodological quality of the final set of articles, we used the...
same quality assessment tool which was adapted and used in the initial review (Wong & Cummings 2007) and also used in several published systematic reviews (Cummings & Estabrooks 2003, Estabrooks et al. 2003, Lee & Cummings 2008). Each study was reviewed for quality twice by the lead author. The adapted tool was used to assess the research design, sampling, measurement and statistical analysis of each study. Thirteen criteria comprise the tool and a total of 14 possible points can be assigned for all 13 criteria (Table 2). 12 items were scored as 0 = not met or 1 = met and the item related to outcome measurement was scored as 2. Based on summed point values, studies were then classified as: weak (0–4), moderate (5–9) and strong (10–14).

**Data extraction and analysis**

The lead author extracted data from all included articles that were double-checked by a research assistant for accuracy. Data were extracted on the study author, journal, country, research purpose and questions, theoretical framework, design, setting, subjects, sampling method, measurement instruments, reliability and validity, analysis, leadership measures, measures

| Table 1 |
| Literature search: electronic databases |

<table>
<thead>
<tr>
<th>Database</th>
<th>Search terms</th>
<th>Number of articles</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABI Inform Dateline</td>
<td>all(nurse*) AND all(leader*) AND all(patient outcomes)</td>
<td>59</td>
</tr>
<tr>
<td>Academic Search Complete</td>
<td>(MM leadership OR TI leader*) AND (TI outcome*) OR MM ‘Outcomes (Health Care)’ OR MM ‘Nursing outcomes’) AND TX nurs*</td>
<td>2892</td>
</tr>
<tr>
<td>CINAHL</td>
<td>(MM leadership OR TI leader*) AND (TI outcome* OR MM ‘Outcomes (Health Care)’) OR MM ‘Nursing outcomes’) AND TX nurs*</td>
<td>4592</td>
</tr>
<tr>
<td>Cochrane</td>
<td>‘nurse* AND Administr* OR manag* OR leader* AND patient satisfaction OR patient safety OR patient outcome* OR outcome* OR safety OR infection* OR fall* OR medication error* OR incident report*</td>
<td>643</td>
</tr>
<tr>
<td>EMBASE</td>
<td>Leadership (MESH) AND nurs* tiab) AND Quality of Healthcare (MESH) AND research (tiab)</td>
<td>3444</td>
</tr>
<tr>
<td>ERIC</td>
<td>‘leadership’ AND ‘quality of health care’ OR ‘outcomes of treatment’</td>
<td>214</td>
</tr>
<tr>
<td>MEDLINE</td>
<td>Leadership (MESH) AND nurs* (tiab) AND Quality of Healthcare (MESH) AND research (tiab)</td>
<td>6627</td>
</tr>
<tr>
<td>PsychINFO</td>
<td>Leadership (MESH) AND nurs* (tiab) AND Quality of Care (MESH) AND research (tiab)</td>
<td>1902</td>
</tr>
<tr>
<td>Manual Search</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>20383</td>
</tr>
<tr>
<td>Total Minus Duplicates</td>
<td></td>
<td>15180</td>
</tr>
<tr>
<td>Papers reviewed</td>
<td></td>
<td>121</td>
</tr>
<tr>
<td>Final Selection</td>
<td></td>
<td>13</td>
</tr>
</tbody>
</table>

| Table 2 |
| Summary of quality assessment – 20 included quantitative papers |

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>Design</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prospective studies</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Used probability sampling</td>
<td>5</td>
<td>15</td>
</tr>
<tr>
<td>Sample</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Appropriate/justified sample size</td>
<td>6</td>
<td>14</td>
</tr>
<tr>
<td>Sample drawn from more than one site</td>
<td>15</td>
<td>5</td>
</tr>
<tr>
<td>Anonymity protected</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Response rate &gt;60%</td>
<td>8</td>
<td>12</td>
</tr>
<tr>
<td>Measurement</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reliable measure of leadership</td>
<td>20</td>
<td>0</td>
</tr>
<tr>
<td>Valid measure of leadership</td>
<td>19</td>
<td>1</td>
</tr>
<tr>
<td>Effects (outcomes) were observed rather than self-reported*</td>
<td>14</td>
<td>6</td>
</tr>
<tr>
<td>Internal consistency ≥ 0.70 when scale used</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Theoretical model/framework used</td>
<td>13</td>
<td>7</td>
</tr>
<tr>
<td>Statistical analyses</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Correlations analysed when multiple effects studied</td>
<td>18</td>
<td>2</td>
</tr>
<tr>
<td>Management of outliers addressed</td>
<td>5</td>
<td>15</td>
</tr>
</tbody>
</table>

Weak (0–4), moderate (5–9), strong (10–14), moderate (n = 3), strong (n = 17).

*This item scored 2 points. All others scored 1 point.
of effects on patients, significant and non-significant results, discussion and recommendations. Appendix S1 includes data extraction for the 13 studies retained in this updated review along with the data from the seven studies identified in the previous review.

Using content analysis and the conceptual framework as a guide, leadership was categorised as relationship or task-oriented and patient outcomes were sorted into thematic categories based on their common characteristics and our previously defined outcome categories (Doran & Pringle 2011). Second, within each thematic category we identified the pattern of relationships between relational or task focused styles of leadership and changes in specific patient outcomes. For example, we looked at which leadership styles were predominantly associated with specific outcomes such as patient satisfaction and if patient satisfaction increased or decreased as a result of leadership style. We then analysed the reported relationships between the specific leadership styles or practices and the outcomes by category and significance ($P < 0.05$). We also reviewed studies for the processes by which leadership influenced outcomes that were either tested or discussed in studies and organised into themes based on common characteristics.

Results

Description of studies

Article selection for this review is summarised in Figure 2. Database and hand searches yielded 20 383 titles/abstracts and of these, 121 were identified as potentially relevant after title and abstract review. One of the 121 studies was a published journal article (McCutcheon et al. 2009) of one of the retained seven studies in our previous review (Doran et al. 2004) which we obtained as a research report from a research website. We excluded that article plus 107 others, leaving only 13 studies meeting our selection criteria after article reviews.

We added these 13 articles to the seven articles retained in our previously reported systematic review (Wong & Cummings 2007) and described the characteristics of all 20 included studies. These articles represent 20 original studies with the exception of the Capuano et al. (2005) paper which built on the Houser (2003) study by using the same conceptual model, collecting data on the same variables in another setting and then adding the data to the Houser (2003) database and re-tested the model. All 20 studies were published between 1999 and July 2012 and all but five were conducted in the United States, the others being conducted in Canada ($n = 4$) and Norway ($n = 1$). The studies represented a variety of care settings: inpatient acute care units of hospitals ($n = 12$), nursing homes ($n = 4$), dialysis facilities ($n = 1$), emergency units ($n = 1$), home healthcare agencies ($n = 1$) and neonatal intensive care ($n = 1$). The findings were combined despite the variety of settings. The study samples represented nurses ($n = 10$), nurses and managers ($n = 6$), a cross-section of healthcare professionals including nurses ($n = 2$), a combination of nurses, auxiliary nurses and unlicensed care staff ($n = 1$) and directors of nursing ($n = 1$). Further details on the characteristics of all 20 included studies can be found in Appendix S1.

Methodological quality of included studies

The methodological quality of the included articles is summarised in Table 2. All articles used a cross-sectional design and of the 20 included articles, 17 (85%) were rated as strong and 3 (15%) as moderate. Strengths of the studies included the fact that the majority ($n = 19$, 95%) used reliable and valid measures, were multi-sited studies ($n = 15$, 75%), had acceptable sample sizes ($n = 17$, 85%) and reported correlations of multiple effects ($n = 18$, 90%). In all but one study, leadership was measured by asking followers to rate the leadership style of their formal leader. Observed leadership behaviours assessed by a leader’s followers contributes to the construct validity of the measurement of leadership more effectively than leader self-report (Dunham 2000, Xin & Pelled 2003), because self-report measures are subject to social desirability response bias (Polit & Beck 2011). Six (30%) studies used only self-report measures for patient outcomes, specifically satisfaction with care. All other patient outcome measures were collected prospectively in the study or extracted from administrative databases. Eighteen (90%) studies reported using multivariate analysis including multiple regression, logistic regression, hierarchical linear modelling (HLM), or structural equation modelling (SEM). The unit of analysis for leadership and patient outcomes was the unit/organisational level in 17 studies.

Weaknesses of studies identified in the quality assessment related mainly to sample representativeness, treatment of outliers, explicit inclusion of a conceptual or theoretical framework, response rates and reporting study reliabilities for measures used. Only five (10%) of studies reported using random sampling and 12 (60%) had response rates less than 60%. Six (60%) addressed outliers in their data, while seven
Table 3

Summary of study outcomes: relationship between leadership and patient outcomes

<table>
<thead>
<tr>
<th>Patient outcomes</th>
<th>Source</th>
<th>Significant findings</th>
<th>Comment – relational (¬R) or task-oriented leadership (¬T)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient satisfaction</td>
<td>Doran et al. (2004)</td>
<td>Increased</td>
<td>Transactional leadership style (R)</td>
</tr>
<tr>
<td></td>
<td>Larrabee et al. (2004)</td>
<td>NS</td>
<td>Transformational leadership (R)</td>
</tr>
<tr>
<td></td>
<td>McNeese-Smith (1999)</td>
<td>Increased</td>
<td>Transformational leadership practices (R)</td>
</tr>
<tr>
<td></td>
<td>Gardner et al. (2007)</td>
<td>NS</td>
<td>Manager ability and support (R)</td>
</tr>
<tr>
<td></td>
<td>Kroposki &amp; Alexander (2006)</td>
<td>Increased</td>
<td>Supervisors work collaboratively with staff (R)</td>
</tr>
<tr>
<td></td>
<td>Raup (2008)</td>
<td>NS</td>
<td>Transformational leadership (R)</td>
</tr>
<tr>
<td></td>
<td>Havig et al. (2011)</td>
<td>Increased</td>
<td>Task-oriented leadership (T)</td>
</tr>
<tr>
<td>Patient mortality</td>
<td>Houser (2003)</td>
<td>Decreased</td>
<td>Transformational leadership practices through increased staff expertise and stability (R)</td>
</tr>
<tr>
<td></td>
<td>Pollack and Koch (2003)</td>
<td>NS</td>
<td>Higher leadership (only respiratory therapists’ ratings were significant (R) &amp;(T)</td>
</tr>
<tr>
<td></td>
<td>Boyle (2004)</td>
<td>NS</td>
<td>Inverse association with manager ability and support (R)</td>
</tr>
<tr>
<td></td>
<td>Capuano et al. (2005)</td>
<td>Decreased</td>
<td>Transformational leadership practices through increased staff expertise (R)</td>
</tr>
<tr>
<td></td>
<td>Cummings et al. (2010b)</td>
<td>Decreased</td>
<td>High resonant leadership (R)</td>
</tr>
<tr>
<td></td>
<td>Tourangeau et al. (2007)</td>
<td>Increased</td>
<td>Manager ability and support (R)</td>
</tr>
<tr>
<td>Patient safety:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(a) Adverse events</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Behaviour problems</td>
<td>Anderson et al. (2003)</td>
<td>Decreased</td>
<td>Participative leadership (R)</td>
</tr>
<tr>
<td></td>
<td>Anderson et al. (2003)</td>
<td>Decreased</td>
<td>Communication openness (R)</td>
</tr>
<tr>
<td></td>
<td>Castle &amp; Decker (2011)</td>
<td>Decreased</td>
<td>Consensus leadership (R)</td>
</tr>
<tr>
<td>Restraint use</td>
<td>Anderson et al. (2003)</td>
<td>Decreased</td>
<td>Relationship-oriented leadership and less formalisation (R)</td>
</tr>
<tr>
<td>Complications of immobility</td>
<td>Anderson et al. (2003)</td>
<td>Decreased</td>
<td>Relationship-oriented leadership (R)</td>
</tr>
<tr>
<td>Fractures</td>
<td>Anderson et al. (2003)</td>
<td>Decreased</td>
<td>Relationship-oriented leadership (R)</td>
</tr>
<tr>
<td>Medication errors</td>
<td>Houser (2003)</td>
<td>Decreased</td>
<td>Transformational leadership practices through increased staff expertise and stability (R)</td>
</tr>
<tr>
<td></td>
<td>Boyle (2004)</td>
<td>NS</td>
<td>Manager ability and support (R)</td>
</tr>
<tr>
<td></td>
<td>Capuano et al. (2005)</td>
<td>Decreased</td>
<td>Transformational leadership practices through increased staff expertise (R)</td>
</tr>
<tr>
<td></td>
<td>Paquet et al. (2013)</td>
<td>Decreased</td>
<td>Unit manager support through reduced absenteeism, overtime and nurse–patient ratio (R)</td>
</tr>
<tr>
<td></td>
<td>Vogus &amp; Sutcliffe (2007b)</td>
<td>Decreased</td>
<td>Trust in leadership increased the effect of safety organising behaviours (R)</td>
</tr>
<tr>
<td>Patient falls</td>
<td>Houser (2003)</td>
<td>Decreased</td>
<td>Transformational leadership practices through greater staff expertise and stability (R)</td>
</tr>
<tr>
<td></td>
<td>Boyle (2004)</td>
<td>NS</td>
<td>Manager support ability and support</td>
</tr>
<tr>
<td></td>
<td>Capuano et al. (2005)</td>
<td>Decreased</td>
<td>Transformational leadership practices through greater staff expertise (R)</td>
</tr>
<tr>
<td></td>
<td>Taylor et al. (2012)</td>
<td>NS</td>
<td>Positive perceptions of hospital management (R)</td>
</tr>
<tr>
<td>Catheter use</td>
<td>Castle and Decker (2011)</td>
<td>Decreased</td>
<td>Consensus leadership (R)</td>
</tr>
<tr>
<td>Pressure ulcers</td>
<td>Boyle (2004)</td>
<td>NS</td>
<td>Inverse association with manager ability and support (R)</td>
</tr>
<tr>
<td></td>
<td>Castle and Decker (2011)</td>
<td>Decreased</td>
<td>Consensus leadership (R)</td>
</tr>
<tr>
<td></td>
<td>Flynn et al. (2010)</td>
<td>NS</td>
<td>Inverse association with manager ability and support (R)</td>
</tr>
<tr>
<td></td>
<td>Taylor et al. (2012)</td>
<td>NS</td>
<td>Positive perceptions of hospital management (R)</td>
</tr>
<tr>
<td>Inadequate pain management</td>
<td>Castle and Decker (2011)</td>
<td>Decreased</td>
<td>Consensus leadership (R)</td>
</tr>
<tr>
<td>(pneumonia and UTI)</td>
<td>Houser (2003)</td>
<td>Decreased</td>
<td>Transformational leadership practices through greater staff expertise (R)</td>
</tr>
<tr>
<td></td>
<td>Boyle (2004)</td>
<td>NS</td>
<td>Nurse manager ability and support (R)</td>
</tr>
<tr>
<td></td>
<td>Capuano et al. (2005)</td>
<td>Decreased</td>
<td>Transformational leadership practices through greater staff expertise (R)</td>
</tr>
</tbody>
</table>
(35%) failed to include explicit theoretical or conceptual frameworks to guide the research and seven (35%) failed to achieve or report acceptable ($\alpha > 0.70$) alpha reliabilities of the measures used in their studies.

Leadership


In nine studies (45%), an explicit leadership theory was used as the basis for the leadership variable. Bass and Avolio’s (1994) transformational leadership theory was used in three studies (Doran et al. 2004, Larrabee et al. 2004, Raup 2008) and Kouzes and Posner’s (1995) transformational leadership practices model was used in another three studies (McNeece-Smith 1999, Houser 2003, Capuano et al. 2005). Goleman et al.’s (2002) resonant leadership (Cummings et al. 2010b), the Bonoma-Slevin leadership model (Castle & Decker 2011) and Bass and Stogdill’s (1990) conceptualisation of task vs. relations-oriented leadership (Havig et al. 2011) were each used in one of three studies. Thirteen different tools were used to measure leadership and the most frequently used tools were Bass and Avolio’s (1995, 2000) Multifactor Leadership Questionnaire (MLQ) ($n = 3$ studies), and Kouzes and Posner’s (1995) Leadership Practices Inventory (LPI) ($n = 3$ studies). In two studies measures of leadership were developed for the study: one used items of other standardised measures to assess task-and relationship-oriented leadership (Havig et al. 2011) and the other developed items to measure trust in leadership (Vogus & Sutcliffe 2007b).

Leadership was measured using a component or subscale of multi-dimensional measures of the work context in seven studies. In fact this trend was evident in six of the 13 retained studies in the more recent search. The most commonly used ($n = 4$ studies) measure was the manager ability and support subscale of Aiken and Patrician’s (2000) Nursing Work Index-Revised (NWI-R) (Boyle 2004, Gardner et al. 2007, Tourangeau et al. 2007, Flynn et al. 2010) while in four studies manager support subscales of Singer et al.’s (2009) Patient Safety Climate in Healthcare Organizations (PSCHO) survey (Hansen et al. 2011), Sexton et al.’s (2000) Safety Attitudes Questionnaire (SAQ) (Taylor et al. 2012), Karasek et al.’s (1998)
Job Content Questionnaire (Paquet et al. 2013) and Shortell et al.’s (1991) Organisational Assessment Scale (Pollack & Koch 2003) were used to assess leadership.

Process

As outlined in our conceptual framework, leadership influences patient outcomes indirectly through processes such as making changes in the work context or influencing staff attitudes, behaviour or performance that may facilitate patient care. In three of the reviewed studies, the mechanisms or processes by which leadership was indirectly related to patient outcomes were explicitly tested using structural equation modelling (Houser 2003, Capuano et al. 2005, Paquet et al. 2013). Houser (2003) found that transformational leadership practices were positively related to staff expertise and negatively related to staff turnover, both of which contributed to reduced patient mortality, hospital acquired infections, medication errors and patient falls. Capuano et al. (2005) added to these findings by showing that transformational leadership practices were also associated with staff expertise, which in turn decreased the same adverse patient outcomes. Both authors postulated that strong leaders tend to retain higher ratios of competent and proficient staff. Paquet et al. (2013) findings also revealed the indirect effect of leadership on patient outcomes (decreased medication errors and patient length of stay) through reduced absenteeism, overtime and nurse/patient ratios. In one study relational leadership (trust) was examined as a moderator variable, which increased the strength of the negative relationship between staff safety organising behaviour and the incidence of medication errors (Vogus & Sutcliffe 2007b).

In the other studies, leadership was examined in direct association with outcomes and the authors discussed possible mechanisms by which leadership styles may have affected outcomes. Cummings et al. (2010b) pointed to the positive effect on staff performance outcomes when leaders present a clear leadership style, convey unambiguous expectations and engage in open and transparent communication practices. Other studies suggested that positive leadership behaviours may be associated with outcomes through facilitation of more effective teamwork or a clear vision for quality care (McNeese-Smith 1999, Anderson et al. 2003, Pollack & Koch 2003, Doran et al. 2004). Relational leadership styles may also facilitate higher levels of staff participation in care decision-making (Boyle 2004, Kroposki & Alexander 2006, Cummings et al. 2010b, Castle & Decker 2011). Finally, the current focus on patient safety in healthcare organisations was evident in three studies that identified the effect of work climate factors including leadership on safety awareness and organising processes as possible mediators of patient safety outcomes (Vogus & Sutcliffe 2007b, Hansen et al. 2011, Taylor et al. 2012).

Relationship between leadership and patient outcomes

In this review we found 19 patient outcome variables which were grouped into five categories using content analysis: relationship between leadership and (1) patient satisfaction, (2) patient mortality, patient safety outcomes, (3) adverse events and (4) complications, and (5) patient healthcare utilisation. A summary of findings is presented in Table 3. In 30% (n = 6) of studies patient outcomes, primarily patient or family satisfaction, were collected prospectively by researchers. In one study (Pollack & Koch 2003) patient mortality and complications were collected from clinical charts and in all other studies patient
outcomes were collected from administrative databases. Of the individual outcomes, patient mortality \((n = 6\) studies\) and medication errors \((n = 5\) studies\) were the most frequently examined outcomes. Over all studies, a total of 43 relationships between leadership and patient outcomes were examined and 63\% \((n = 27)\) of these were significant. While 26 relationships between leadership and positive patient outcomes were significant, one relationship showed the opposite of the expected results.

**Patient satisfaction**

The number of studies \((n = 7)\) relating leadership practices to patient satisfaction was more than doubled in this review. The results showed significant associations between leadership and increased patient satisfaction in four studies (McNeese-Smith 1999, Doran *et al.* 2004, Kroposki & Alexander 2006, Havig *et al.* 2011). In three others (Larrabee *et al.* 2004, Gardner *et al.* 2007, Raup 2008) the results were not significant. One of these studies had a small sample and had the lowest quality rating (Raup 2008). Relational leadership was associated with patient satisfaction in two studies (McNeese-Smith 1999, Kroposki & Alexander 2006) while Havig *et al.* (2011) found that family satisfaction with resident care was significantly positively related to task-oriented leadership style of nursing home ward managers. Similarly, Doran *et al.* (2004) found that the transactional leadership style, which can also be categorised as task-oriented, was related to increased patient satisfaction. Doran *et al.* offered the explanation that transactional leaders may facilitate patient care by providing direction, clarification of tasks and clear work expectations.

**Patient mortality**

In four of six studies leadership was significantly associated with patient mortality (Houser 2003, Capuano *et al.* 2005, Tourangeau *et al.* 2007, Cummings *et al.* 2010b). Transformational and resonant leadership were associated with lower patient mortality in three studies while, contrary to hypothesis, leadership was associated with higher mortality in one study (Tourangeau *et al.* 2007). Tourangeau *et al.* suggested that managers with larger spans of control may have been hampered in their ability to provide direct support to nursing staff. However, there was another contradictory finding in that lower mortality was associated with higher nurse burnout.

**Patient safety outcomes: adverse events**

A total of nine studies addressed ten types of outcomes in this category. The strongest relationship was between leadership and medication errors, as four of five studies showed significant negative relationships. Transformational leadership (Houser 2003, Capuano *et al.* 2005), manager support (Paquet *et al.* 2013) and trust in leadership (Vogus & Sutcliffe 2007b) were all associated with lower medication errors. Patient falls were examined in four studies and the results were mixed since two studies (Houser 2003, Capuano *et al.* 2005) showed significantly decreased patient falls related to transformational leadership, while in two other studies (Boyle 2004, Taylor *et al.* 2012) manager support was not significantly related to fall rates. A lower incidence of pressure ulcers was significantly associated with leadership in only one of three studies (Castle & Decker 2011). Two studies (Anderson *et al.* 2003, Castle & Decker 2011) found significant relationships between positive leadership
styles (consensus and participative) and lower restraint use in nursing homes. In two of three studies examining hospital-acquired infections (pneumonia and urinary tract infections) transformational leadership was associated with lower infection rates (Houser 2003, Capuano et al. 2005).

Patient safety outcomes: complications
Three types of complication outcomes were addressed in two studies and thus there were few studies for each type of complication limiting the ability to draw conclusions. Pollack and Koch’s (2003) study conducted in neonatal intensive care settings found a reduced incidence of neonatal periventricular haemorrhage/periventricular leukomalacia (PIVH/PVL) associated with higher leadership ratings. Taylor et al. (2012) found no relationship between leadership and pulmonary embolism/deep vein thrombosis.

Patient healthcare utilisation
A new category of patient outcomes was added since three studies addressed patient healthcare utilisation indicators, specifically the number of hospitalisations, hospital readmissions and hospital length of stay as outcomes related to work environment factors including leadership (Gardner et al. 2007, Hansen et al. 2011, Paquet et al. 2013). Healthcare utilisation measures reflect services or resources consumed in managing patients’ health-related needs (Clarke 2011). Gardner et al. (2007) proposed that patient hospitalisations are considered important indicators of the general health status of patients who are on dialysis and may be considered a reasonable nurse-sensitive quality indicator in dialysis settings. Hansen et al. (2011) claimed that the frequency of hospital readmission rates reflected an inadequate patient safety process which means that hospitals with poorer safety cultures would be expected to exhibit higher levels of hospital readmissions. Manager support was included as one element of patient safety culture. Both studies did not demonstrate significant findings for the effects of leadership on these two healthcare utilisation outcomes. However, Paquet et al. (2013) found that manager support was associated with a lower patient length of stay through the human resource indicators of lower absenteeism, overtime and nurse to patient ratio.

Discussion
In this systematic review we examined empirical evidence on the connections between nursing leadership and patient outcomes by extending the search criteria of the previous review to include studies published between 1985 and 30 July 2012. The 13 additional studies published after our first systematic review almost triples the number of studies specifically examining the relationship between nursing leadership and a variety of patient outcomes. The totality of the 20 included studies reflects positive trends in terms of research design and methods. Most studies were multi-sited, incorporated multiple levels of analysis, used more advanced statistical procedures (e.g. HLM, SEM) and examined the relationship leadership and patient outcomes in a wider variety of clinical settings, although the majority were conducted in acute care. What was disappointing was that less than half of the studies used explicit leadership models, very few studies examined mechanisms of leadership influence on outcomes, there was an over-reliance on cross-sectional designs and considerable heterogeneity of patient outcomes and clinical settings precluding greater synthesis of findings.

The findings provide support for the assertion that relational leadership practices are positively associated with some categories of patient outcomes. The Donabedian (1966) SPO model provided a useful approach to organising findings which are summarised in a diagram depicting suggested linkages between relational or task oriented leadership, processes of leadership and three of the patient outcomes where findings were supported in terms of number of studies and direction of effect (Figure 3). The findings highlighted a key relationship between relational leadership and the reduction of adverse events, specifically, medication errors, possibly through leaders’ influence on human resource variables that may be connected to patient care outcomes, staff expertise, turnover, absenteeism, overtime and nurse to patient ratios. There were also promising trends in findings for restraint use and hospital-acquired infections. Findings on mortality outcomes were strong showing a significant negative relationship between leadership and patient mortality in three of six studies. This important connection may suggest that effective nursing leadership is essential to the creation of practice environments, with appropriate staffing levels, resources and care processes that support nurses in preventing unnecessary deaths (Wong & Cummings 2007). Finally, there was a significant positive relationship between both relational and task-oriented leadership and patient satisfaction. This finding may indicate that some elements of each style are needed to ensure care processes that contribute to satisfied patients such as clear standards of care and role expectations as well as collaborative working relationships.
Implications for leadership theory

Despite progress in acknowledging the inclusion of leadership as an important factor in theoretical and analytical models of antecedents to patient outcomes, there is a pressing need for much stronger conceptualisations of leadership that clearly define leadership practices and specify possible direct and indirect mechanisms by which leaders affect individuals and outcomes (Avolio 2007, Gilmartin & D’Aunno 2007). Although some of the studies included multi-level analyses of individual-, unit- and organisational-level variables, the articulation of mechanisms by which leadership influences the various levels was often inadequate. While an important concept, the definition and measurement of leadership as manager ability or support is a somewhat narrow notion of leadership, as opposed to more complex explanations of leadership behaviour and influence strategies suggested in other theories such as transformational or resonant leadership theory.

Transformational leadership was the most frequently applied leadership theory in the reviewed studies. Attention to other leadership theories that may have relevance to nursing and healthcare are worthy of further application for the potential mediating processes they propose between leadership and outcomes (Mark et al. 2004, Gilmartin & D’Aunno 2007). For example, authentic leadership (Avolio et al. 2004) is an emergent leadership approach from the field of positive organisational behaviour that highlights the importance of examining the context and the influence of followers in the leader–follower dynamic. This relational leadership approach is grounded in the leader’s positive psychological capacities, honesty and transparency, strong ethics and behavioural integrity (Avolio et al. 2004, Wong & Cummings 2009). The utility of this theory is that it emphasises possible mechanisms through which leadership influences performance, and how followers shape leadership within and between various organisational contexts, climates and cultures (Peterson et al. 2012). Testing of various propositions about mechanisms of leader influence on individual, unit and organisational outcomes suggested by the theory might include the effects of leader positivity on followers’ engagement and performance in new workplace initiatives that promote patient safety and better outcomes.

Resonant leadership theory (Boyatzis & McKee 2005) based on the concept of emotional intelligence (Goleman et al. 2002) is also worthy of greater application in healthcare. These theories focus on the leader’s ability to attend to the individual’s emotions and the outcomes of these behaviours for individual’s well-being and performance (Cummings 2004). Likewise, leader–member exchange (LMX) theory has received little attention in healthcare despite a large empirical base in other disciplines and the potential to increase understanding of the linkages between leadership, processes and patient outcomes (Graen & Uhl-Bien 1995). In this theory, the nature and quality of the relationship between the leader and the follower that forms over time is posited to play a vital role in employee responses to their work environments. Research has linked LMX quality to positive individual and organisational outcomes, including job performance (Laschinger et al. 2007).

Implications for future research

Future studies need to include longitudinal, quasi-experimental or experimental designs that address the effects of leadership on patient outcomes. In order to examine the causal association between leadership and patient outcomes, interventional and/or longitudinal studies with multiple observations are essential. It is concerning that even though there was a substantial increase in the number of studies addressing leadership and patient outcomes all of the studies were cross-sectional in design. The trend seen in this review for studies examining leadership and patient outcomes in other than acute care settings, e.g. nursing home, home healthcare and community settings needs to be continued. The majority of studies were multi-sited which is important for obtaining adequate sample sizes for multi-level analysis. However, these studies also present a significant challenge in terms of collecting reliable and valid data from multiple sites. Likewise, the use of random sampling procedures would significantly strengthen studies. In this review the majority of studies used convenience sampling. One notable issue was that only eight (40%) of studies had a response rate of 60% or more, despite convenience sampling. Additional activities to increase response rates would improve the reliability of the results and strengthen data analysis, although the challenge of accessing subjects in increasingly complex, dynamic and fast-paced healthcare settings must be acknowledged.

Implications for practice

The findings from this review underscore the value of relational leadership styles in the modern healthcare...
workplace and align with findings from other reviews where relational leadership styles were positively and indirectly related to nurse’s motivation to perform (Brady-Germain & Cummings 2010), improved work environments and outcomes for nurses (Cummings et al. 2010a) and nurse retention (Cowden et al. 2011). These findings suggest that a complex interplay of associations between the relational practices of formal nursing leaders to provide vision, support, staffing resources (Kane et al. 2007) and leadership, with the health, competencies, abilities, knowledge, skills and motivation of nurses, are integral to the achievement of better patient outcomes.

Thereby, recruiting and retaining individuals into leader roles with the requisite emotional intelligence competencies that underpin relational leadership styles are critical to effective performance at all levels of organisations (Cummings 2004, Young-Ritchie et al. 2009). Relationally oriented leaders contribute to positive practice settings and staff work engagement by providing support and encouragement, positive and constructive feedback, open and transparent communication and individual consideration. Creating opportunities for meaningful dialogue between leaders and clinical nurses is necessary to discuss patient care issues that could impede patient safety. While this is challenging in the current high-paced, and heavy meeting-laden managerial roles, it remains a priority that cannot be overlooked. Nurses must be provided with the opportunity and staffing resources to monitor patients’ conditions and address their education needs regarding self-care, symptom management and other factors related to patient empowerment.

The connection noted between supportive leadership styles and positive patient safety outcomes may point to the importance of unit leaders’ understanding of patient care processes and the role of nurses and other healthcare providers in promoting better outcomes. Thompson et al.’s (2011) recent study provided evidence that when leaders demonstrated higher relational leadership, the staff on their units reported more positive patient safety climates. The ability of leaders to promote a safe workplace is governed by their knowledge of patient care needs, their level of relational skills and their capacity to recognise and implement effective safety practices (Tregunno et al. 2009, Thompson et al. 2011). Additionally, the development of safety cultures through leadership interventions, which include managers’ interdisciplinary walkabout safety rounds, have been linked to improved outcomes (Ginsburg et al. 2005).

**Limitations**

Even though meticulous methods were employed in this review there were limitations. First, the variety of leadership and outcome measures and the heterogeneity of samples and settings precluded meta-analysis procedures and limited the consolidation of findings. While an attempt was made to review some grey literature (e.g. searching research websites) we did not search all grey literature and did not include unpublished dissertations, and, as such, this review update may not be representative of all the relevant work in the field. The inclusion of studies published only in the English language may have also excluded other potentially informative studies. Studies may have been excluded that contained leadership data but because it was not purposely hypothesised or differences in outcomes by leadership style were not examined those results were not accessible. The variability in the conceptualisation and measurement of leadership across studies may limit the validity and generalisability of findings. All of the studies included were cross-sectional in design, limiting interpretations of causality to the evidence of co-variation in the study variables and foundational theoretical associations. The theoretical underpinnings and causal understandings of studies were not reported by all researchers, which may have influenced appropriate synthesis of findings.

**Conclusion**

In this systematic review update we identified an increasing body of research findings relating to the relationship between nursing leadership and patient outcomes. However, the prominence of cross-sectional designs and the heterogeneity in patient outcome variables, samples/settings and leadership measures mean that robust evidence to support specific leadership styles that predict specific patient outcomes is limited. The current evidence reinforced findings from the previous review with respect to the positive relationships between relational leadership styles and patient satisfaction and improved patient safety outcomes. Specifically, the current evidence suggests a clear relationship between relational leadership styles and lower patient mortality and reduced medication errors, restraint use, and hospital-acquired infections. Future studies of a longitudinal and interventional nature must be conducted in a variety of settings with more diverse and randomly selected samples. In addition, the development and testing of stronger conceptual models...
of leadership and the mechanisms of influence on patient outcomes is warranted to advance knowledge of the complex contextual and multivariate influences on the relationship between leadership and patient outcomes.

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Ethical approval

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Supporting information
Additional Supporting Information may be found in the online version of this article:
Appendix S1. Characteristics of included studies.