Leadership in Health Services

# Return on investment in healthcare leadership development programs

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Received 6 February 2017
Revised 6 June 2017
Accepted 11 August 2017



## Abstract

**Purpose** – Strong leadership has been shown to foster change, including loyalty, improved performance and decreased error rates, but there is a dearth of evidence on effectiveness of leadership development programs. To ensure a return on the huge investments made, evidence-based approaches are needed to assess the impact of leadership on health-care establishments. As a part of a pan-Canadian initiative to design an effective evaluative instrument, the purpose of this paper was to identify and summarize evidence on health-care outcomes/return on investment (ROI) indicators and metrics associated with leadership quality, leadership development programs and existing evaluative instruments.

**Design/methodology/approach** – The authors performed a scoping review using the Arksey and O'Malley framework, searching eight databases from 2006 through June 2016.

**Findings** – Of 11,868 citations screened, the authors included 223 studies reporting on health-care outcomes/ROI indicators and metrics associated with leadership quality (73 studies), leadership development programs (138 studies) and existing evaluative instruments (12 studies). The extracted ROI indicators and metrics have been summarized in detail.

**Originality/value** – This review provides a snapshot in time of the current evidence on ROI indicators and metrics associated with leadership. Summarized ROI indicators and metrics can be used to design an effective evaluative instrument to assess the impact of leadership on health-care organizations.

**Keywords** Hospitals, Leadership, Transformational leadership, Organizational performance, Health services, Leaders

**Paper type** Literature review

The authors thank Dr Charmaine Roye (Canadian Medical Protective Association, Canada) and Dr John Parker (Hamilton Health Sciences, Canada) for their feedback while conducting the scoping review. All authors have completed the ICMJE uniform disclosure form at www.icmje.org/coi_disclosure.pdf and declare the following: Frank Krupka is a member of the Canadian Health Leadership Network's (CHLNet) Secretariat and its Research and Evaluation Working Group. His organization conducted the scoping review in kind for CHLNet"; Dr Dickson reports personal fees from Canadian Health Leadership Network, outside the submitted work; other authors report no competing interests. No funding was specifically obtained for this study. Dr Zarychanski is the recipient of a New Investigator Award from the Canadian Institutes of Health Research (CIHR). This entity had no role in the design, conduct or reporting of the study.

Leadership in Health Services

1751-1879
DOI 10.1108/LHS-02-2017-0005

## Purpose

The Canadian health-care system, among many worldwide, is a complex, highly decentralized multijurisdictional public health-care system that has undergone major reforms since 1988 (Dixon, 2013; Marchildon, 2013). Also, it is one of the most expensive health-care systems in the world in terms of per capita health-care expenditure and delivers below-average health-care outcomes compared to its Western counterparts (Marchildon, 2013). According to the Advisory Panel on Healthcare Innovation, even though Canada's health-care system is a source of national pride for Canadians, they have deep concerns about their health-care system, and the stakeholders see a need for change in how the health care is legislated, financed, organized and delivered. Many of the provincial governments and associations in Canada are actively seeking "patient-centered change", and this shift will require health-care organizations to work in new ways that involve strong leadership and engagement of staff through training and coaching (Baker, 2014). Thus, adequate leadership will play a central role in Canadian health-care reform moving forward (Dickson, 2016).

Though effective leadership has been identified as one of the key enablers contributing to improving health system performance, leaders need to develop key competencies before embracing new responsibilities related to patient-centered change (Dickson, 2016; Dickson and Tholl, 2013). Effective leaders known for their optimism, transparency, high ethical standards and their ability to inspire and motivate their followers (Avolio and Gardner, 2005; Avolio *et al.*, 2004; Bass, 1985) can have a strong impact on the quality of care provided by the health-care organizations, and training leaders to lead is an important step in creating effective leaders. It is also crucial to assess the impact of training on leaders and, more importantly, on the quality of care provided in the health-care establishment itself. A recent King's Fund (UK) report on health-care leadership reported that there is "very little evidence for the effectiveness of leadership development programmes and evidence-based approaches are needed to ensure a return of huge investments made" (West, 2015). Thus, there is a great need for an evaluative instrument to assess the impact of leadership training on health-care organizations.

To support transformation of the health-care system, the Canadian Health Leadership Network (CHLNet) and its partners have initiated an action plan to gather support internationally to promote leadership development in health-care organizations (Hugh MacLeod and Kelly, 2016). One of the main goals of this international initiative by CHLNet is to develop a simple cost-effective evaluative instrument for determining the *return on investment* (ROI) associated with health-care leadership development programs.

The main goal of our scoping review is to identify health-care outcomes/ROI determinants (indicators and metrics) associated with health-care leadership, leadership development programs and existing evaluative instruments to guide the designing of a simple cost-effective evaluative instrument by CHLNet. In this scoping review, we have used the term ROI to represent not only the financial benefits accrued but also a spectrum of "returns" that are beneficial to the patients and the health-care staff (e.g. physician/patient satisfaction, lower staff intent to leave, etc.), as it is more appropriate in the context of health-care organizations.

The objectives of this scoping review are to identify and synthesize the evidence on health-care outcomes/ROI determinants (indicators and metrics) associated with health-care leadership, health-care leadership development programs and existing ROI evaluative instruments in health care, and also to identify the limitations associated with using an ROI approach.

**Design/methodology/approach**

We conducted a scoping study using guidelines proposed by Arksey and O' Malley's six-stage methodological framework (Arksey and O'Malley, 2005; Levac *et al.*, 2010) to "map" relevant literature by examining the nature, breadth and depth of the existing research on ROI associated with health-care leadership, health-care leadership development programs/tactics and existing ROI evaluative instruments in health care, along with limitations associated with ROI approach. A preliminary review of the literature and discussions with content experts revealed that studies reporting on ROI determinants in health-care leadership could be grouped into three major domains (leadership quality, leadership development programs and existing evaluative tools).

*Stage 1: Identifying research question*

Our scoping review was guided by the following broad research questions:

*RQ1.* What is *known from existing literature* about ROI determinants *(indicators and metrics)* associated with health-care leadership and health-care leadership development programs/tactics?

*RQ2.* What are the *key ROI determinants (indicators and metrics)* used in existing ROI evaluative instruments in health care?

*RQ3.* What are the *limitations* associated with using an ROI approach? What can the instrument not measure (in terms of effect(s)/impact(s))?

*Stage 2: Identification of relevant studies*

To identify relevant studies, we conducted a comprehensive systematic literature search of bibliographic databases, including Business Source Premier (EBSCOhost), Cochrane Library (Wiley), PsycInfo (ProQuest), JSTOR (jstor.org), PubMed (National Library of Medicine), Medline (Ovid), EMBASE (Ovid) and CINAHL (EBSCOhost), in consultation with an experienced information specialist. We limited our search to only English language publications from the following countries, published from 2006 to 2016, United Kingdom, Canada, USA, Australia and New Zealand. The search strategies were peer-reviewed (McGowan *et al.*, 2016). To identify potentially relevant studies, the bibliographies from all included studies were searched. We used EndNote™ (Version X7, Thomson Reuters) for reference management.

*Stage 3: Study selection*

Two reviewers independently, and in duplicate, screened the titles and abstracts of citations identified by our search strategy using customized, piloted screening forms. Full text screening of potentially relevant citations was performed independently by two reviewers based on our inclusion criteria (determined based on the review questions and the main objective of the scoping review, in consultation with members of CHLNet) in Appendix Table AI. Disagreements were resolved through consensus and with input from a third reviewer if consensus could be not obtained.

*Stage 4: Charting information from selected publications*

As suggested by Levac and Colquhoun (Levac *et al.*, 2010), we initially developed a data charting form with key variables listed in Tables I-III. Using an iterative process, we

**Table I.** Distribution of publications reporting ROI determinants associated with health-care leadership ($n$ = 73) or leadership development programs/tactics ($n$ = 150 (138 + 12))

| | Health-care leadership $N$ (%) | Health-care leadership development programs/tactics/interventions $N$ (%) |
|---|---|---|
| *By country of origin* | | |
| USA | 40 (55) | 90 (60) |
| Canada | 25 (34) | 24 (16) |
| UK | 4 (6) | 23 (15) |
| Australia | 4 (6) | 12 (8) |
| New Zealand | 0 (0) | 1 (1) |
| *By study design* | | |
| Case study | 0 (0) | 14 (9) |
| Cluster randomized controlled trial | 0 (0) | 5 (3) |
| Interrupted time series | 1 (1) | 1 (1) |
| Longitudinal study | 2 (3) | 2 (1) |
| Mixed method study | 1 (1) | 5 (3) |
| Pre-post study | 3 (4) | 105 (70) |
| Qualitative study | 2 (3) | 7 (5) |
| Randomized post-test design | 0 (0) | 1 (1) |
| Retrospective study | 0 (0) | 2 (1) |
| Survey | 64 (88) | 8 (5) |
| *By type of leader* | | |
| CEO | 4 (6) | 2 (1) |
| Dental fellows | 0 (0) | 1 (0.7) |
| Director | 3 (4) | 2 (1) |
| Executive | 3 (4) | 2 (1) |
| Leader | 3 (4) | 29 (19) |
| Manager | 2 (3) | 3 (2) |
| Nurse leader | 54 (74) | 75 (49) |
| Pharmacy leader | 0 (0) | 1 (0.7) |
| Physician leader | 3 (4) | 37 (24) |
| *By Management* | | |
| All leaders | 4 (5) | 18 (11) |
| Emerging leader | 1 (1) | 36 (22) |
| Executive leader | 11 (15) | 10 (6) |
| Frontline leader | 57 (76) | 63 (39) |
| Mid-level leader | 2 (3) | 34 (21) |
| *Context of delivery* | | |
| Individual development | 0 (0) | 79 (53) |
| Individual and organizational purpose | 0 (0) | 66 (44) |
| Broader organizational purpose | 0 (0) | 6 (4) |
| *By study setting* | | |
| Hospital | 37 (51) | 100 (67) |
| Unit/Ward | 14 (20) | 0 (0) |
| Nursing home | 2 (3) | 9 (6) |
| Provincial level | 14 (19) | 3 (2) |
| National level | 5 (7) | 0 (0) |
| General practice | 0 (0) | 10 (7) |
| University | 0 (0) | 6 (4) |
| Unclear/Not reported | 0 (0) | 22 (14) |

(*continued*)

| | Health-care leadership *N* (%) | Health-care leadership development programs/tactics/interventions *N* (%) |
|---|---|---|
| *By leadership quality/style* | | |
| Transformational leadership | 26 (29) | 21 (14) |
| Effective leadership | 18 (20) | 56 (37) |
| Authentic leadership | 12 (13) | 1 (1) |
| Transactional leadership | 8 (9) | 3 (2) |
| Clinical Nurse Leader impact | 4 (4) | 0 (0) |
| Laissez-faire leadership | 4 (4) | 0 (0) |
| Leadership practices | 3 (4) | 0 (0) |
| Emotionally intelligent leadership | 2 (2) | 0 (0) |
| Management by exception | 2 (2) | 0 (0) |
| Leader–Member exchange | 2 (2) | 0 (0) |
| Leadership walk-rounds | 2 (2) | 0 (0) |
| Managerial exclusion | 1 (1) | 0 (0) |
| Passive leadership | 1 (1) | 0 (0) |
| Relational leadership | 1 (1) | 0 (0) |
| Passive-avoidant | 1 (1) | 0 (0) |
| Abusive leadership | 1 (1) | 0 (0) |
| Visible nursing leadership | 1 (1) | 0 (0) |
| Focused visionary | 1 (1) | 0 (0) |
| Change-oriented leadership | 1 (1) | 0 (0) |
| Exemplary leadership | 1 (1) | 0 (0) |
| Adaptive leadership | 0 (0) | 1 (1) |
| Unclear/Not reported | 0 (0) | 68 (45) |

**Table I.**



continually revised and updated the form as we became familiar with the evidence. Data were extracted by one reviewer and confirmed by a second reviewer.

*Stage 5: Collating, summarizing and reporting the results*

We conducted and reported Stage 5 of the framework in three distinct steps as previously suggested (Levac *et al.*, 2010): analyzing data, reporting results and applying meaning to the results. We used the vote counting method (Rikke *et al.*, 2015) to inform analyses and reported findings using graphs and tables.

*Stage 6: Consultation with stakeholders to inform/validate study findings*

While conducting this scoping review, we had regular meetings (including 2016 LEADS day and a CHLNet roundtable) with leaders from various sectors of the health-care system (most of whom were also members of CHLNet) for consultation purposes, where we presented the evidence and requested that they share their knowledge, prior experience, interpretation of the review findings and insights regarding anything beyond what we found in the literature.

## Findings

A detailed description of the study selection process for this scoping review is depicted using a PRISMA flowchart (Figure 1).

Of the 11,816 citations reviewed, 223 studies met our inclusion criteria and were included. The 223 studies were divided into three major categories based on our objectives: Health-

| Study | Intervention | Country | ROI indicators |
|---|---|---|---|
| Cookson *et al.* (2011) | LEAN | UK | A mean reduction of 20 min from emergency department arrival to initial nurse assessment |
| Fine *et al.* (2009) | LEAN | Canada | Decreased emergency wait times<br>Decreased patient length of stay<br>Improved operating room usage<br>More radiology procedures per time period<br>Better infection control outcomes |
| Donahuet *et al.* (2013) | Improving performance in practice (IPIP) | USA | *Diabetes measures* (percentage of sampled diabetes patients with a hemoglobin A1c level of less than 9%, blood pressure less than 130/80 mm Hg, low-density lipoprotein cholesterol level less than 100 mg/dL, yearly eye examinations and annual nephropathy screening), *Asthma measures* (percentage of asthma patients with an asthma control assessment, controller medicine use, influenza vaccination and a bundled patient measure including all three. Monthly practice change ratings by the coach |
| Maynard *et al.* (2012) | Mentored implementation Program (MIP) | USA | *Glycemic control:*<br>Day-weighted mean blood glucose<br>Percentage of glucose readings in desired range over patient-stay<br>Percentage of patient-days or patient-stays with hypoglycemia (< 70 mg/dL) or severe hypoglycemia (< 40 mg/dL)<br>Mean time to documented resolution of a hypoglycemic event Percentage of hypoglycemic patients suffering from recurrent hypoglycemia<br>*Project BOOST:*<br>Average length of stay<br>30-day readmissions rate<br>Patient satisfaction parameters (HCAHPS)<br>*Venous Thromboembolism prevention*<br>Prophylaxis type: anticoagulant (green), mechanical (yellow) and prophylaxis (red)<br>Adequacy of prophylaxis in each category (green/yellow/red) Overall measure: percentage of patients with adequate VTE prophylaxis |

**Table II.**
ROI indicators reported in the evaluative instruments of included studies



care outcomes/ROI indicators and metrics associated with leadership quality/style ($n$ = 73), leadership development programs ($n$ = 138) or existing evaluative instruments ($n$ = 12).

## Objective 1: ROI indicators and metrics associated with leader quality/style

*Study characteristics*

Details of the 73 included studies reporting health-care outcomes associated with health-care leadership quality/style are summarized in Table I. A majority of studies were surveys (88 per cent), from the USA (55 per cent), on frontline (76 per cent) nurse (34 per cent) leaders, conducted in a hospital setting (51 per cent). Leadership styles varied among the included studies. A majority of studies reported on transformational (29 per cent), effective (20 per cent), authentic (13 per cent), transactional (9 per cent) or *laissez-faire* leadership styles (4 per cent) (Table I).

| Study | Intervention | Country | ROI Metrics |
|---|---|---|---|
| McNally and Lukens (2006) | Professional coaching (24 weeks) | USA | "Through the course of our coaching, a minimum of 4 clinical leaders stated unequivocally that their engagement in the professional coaching prevented them from resigning from their positions. The average annual salary of a director is US$90,000. The approximate cost of providing the professional coaching program for 64 leaders was US$85,000. This figure is based on the external coach's fees and the portion of the internal coach's salary (one third of her full-time equivalent) dedicated to the program. Thus, it could be viewed that the cost of the coaching program would be budget neutral if only 1 director was retained as a result of the coaching" |
| Johnson *et al.* (2010) | Professional coaching (16 weeks) | USA | "Fall rate reduction from 6.45 to 3.8 per 1000 patient days $67,749. (This figure assumes a 30% injury rate.). Hospital-acquired pressure ulcer rate reduction from 1.62 to 1.12 per 1000 patient days $115,720. Patient satisfaction improvement priceless" |
| Stone *et al.* (2010) | Establishing Evidence-Based practice (E-EBP) (A fellowship for staff nurses) (10 weeks) | USA | "To calculate the ROI metrics for sending nurses to the E-EBP program, Manager Jones estimates that for a $14,000 investment, the hospital would save $36,000, translating to an ROI of 257%" |
| Moffatt-Bruce *et al.* (2014) | Crew Resource Management (CRM) training (104 weeks) | USA | "Between July 2010 and July 2013 3,000 health system employees across 12 areas had been trained at an estimated cost of $3,557,000. The total number of adverse events avoided was 759 and savings ranged from a conservative estimate of $11,285,300 to as much as $24,634,140. Additionally, reimbursement bonuses totaled $4,971,700 and included third party payer incentives and Value Base Purchasing results. Therefore the overall impact had a net return in the range of $12,700,000 to $26,048,840" |
| Taylor-Ford and Abell (2015) | Leadership Practice Circle Program (LPCP) (40 weeks) | USA | "The ANM turnover rate prior to intervention was 23%. At the conclusion of the intervention, ANM turnover was at 13% in the first year, which includes all ANMs within and outside of the LPCP. This represents a 10 percentage point reduction in overall turnover and a cost savings of approximately $585,000 per year using Jones and Gate methods. Additionally, no program participants left their positions while in the program or at six months post-program, which represents a 0% turnover rate of those within the program. One participant was awarded a promotion within the organization at six months post-program" |

(*continued*)

**Table III.** ROI Indicators and metrics reported in the evaluative instruments of included studies

| Study | Intervention | Country | ROI Metrics |
|---|---|---|---|
| Kooker and Kamikawa (2011) | The New Nurse Fellowship training (24 weeks) | USA | "Using the updated Nursing Turnover Cost Calculation Methodology, the per RN true cost of nurse turnover is calculated to be 1.2-1.3 times the RN annual salary (Jones 2005). The findings indicate that the three highest cost categories were vacancy, orientation and training and newly hired RN productivity. At The Queen's Medical Center, the annual salary of an experienced RN is currently $91,520. Therefore, using the Updated Nursing Turnover Cost Calculation Methodology, the per RN turnover cost is $109,824-118,976. As there was turnover of 62 RNs in 2006, their total turnover cost can be estimated at $6.8 and $7.4m. Strategies to prevent or minimize external turnover clearly would have a positive financial impact on the organization in addition to the minimizing human capital costs and losses" |
| Latham *et al.* (2008) | Nurses Supporting Nurses (156 weeks) | USA | "Overall, the mentors prevented more than 24 RNs form leaving the 2 hospitals, with a cost savings of almost $2.5m using a $100,000 per RN replacement charge" |
| Harris and Ott (2008) | Charge nurse impact | USA | "Cost Benefit Summary Before CNL After CNL<br>Cancelled GI procedures 30% 10%<br>Loss in revenue $195,000 $39,000<br>CNL annual cost $70,000<br>Total savings realized by CNL introduction $86,000" |

**Table III.**

*Health-care outcomes associated with leadership quality/style*

We classified the outcomes either as patient-oriented, staff-oriented or organizational outcomes. A list of all the health-care outcomes associated with leadership style/quality is reported in the Appendix (Healthcare outcomes associated with leadership quality/style). Most prevalent patient-oriented outcomes (e.g. patient satisfaction, patient adverse events, patient mortality and infection rates) are reported in Appendix Figure A1. Most prevalent staff-related outcomes (e.g. job satisfaction, turnover intention, organizational commitment, work effectiveness, effective team work and burn-out) are reported in Appendix Figure A2. Most prevalent organizational outcomes (e.g. patient care quality, patient safety, work and safety climate, reduction in medical errors, organizational productivity and effectiveness and patient complaints) are reported in Appendix Figure A3. Healthcare outcomes associated with leadership quality/style, reported by studies conducted at a provincial level (job satisfaction, burn-out, staff turnover intention, patient care quality, cynicism, workplace bullying organizational commitment, inter-professional collaboration, work engagement, job performance, patient satisfaction, patient safety, changes to build environment [staff, structure and strategy] and inter-agency and cross-sector collaborations) are reported in Appendix Figure A4. Healthcare outcomes associated with leadership quality/style, reported by studies conducted at a national level (patient complaints, staff turnover intention, staff absenteeism, patient satisfaction, job satisfaction, organizational

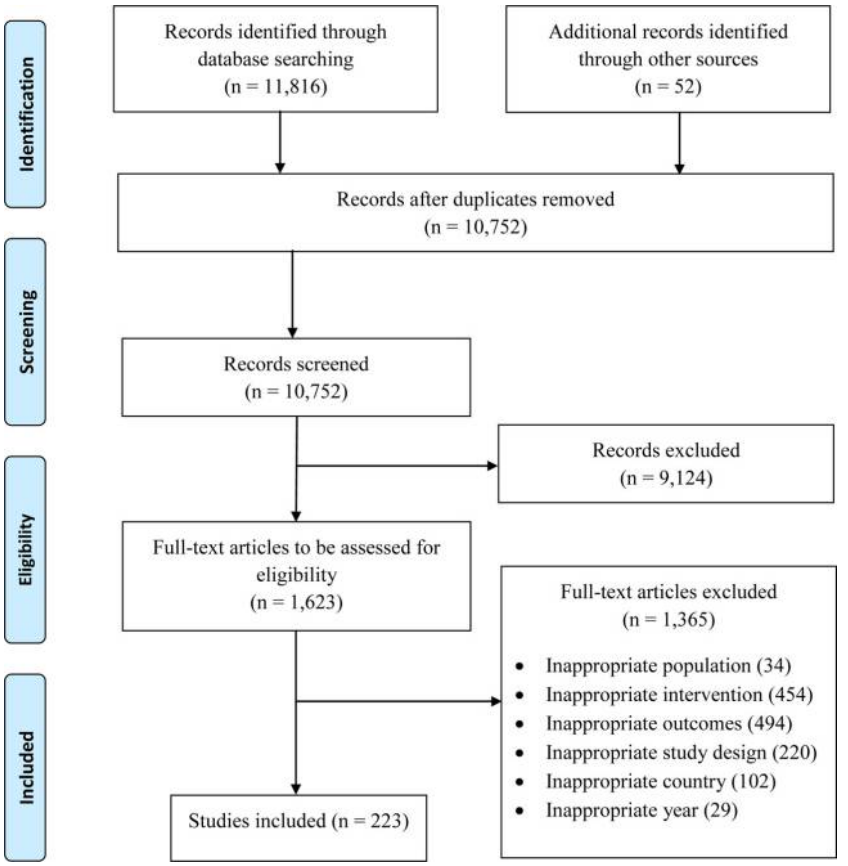


**Figure 1.** PRISMA flow diagram depicting study selection process



performance [quality improvement, customer satisfaction increase, net cost savings, reduced frequency of errors and reduction in the severity of errors {Gowen *et al.*, 2009}], number of drug errors and degree of their severity, Commission for Health Improvement star rating, Clinical Governance Review rating and perceived quality of care) are reported in Appendix Figure A5.

## Objective 2: ROI determinants associated with leadership development programs

*Study characteristics*

Details of the 138 included studies reporting ROI determinants associated with health-care leadership development programs are summarized in Table I. A list of all the health-care outcomes associated with leadership development programs are reported in the Appendix (Healthcare outcomes associated with leadership development program/tactics). A majority of studies obtained their data from pre-post study designs (70 per cent), from the USA (60 per cent), on frontline (39 per cent) nurse (49 per cent) leaders. Leadership development programs were usually offered for the purpose of individual development (development of leader competencies; 52 per cent), but in some studies it was offered for a broader

organizational purpose only (4 per cent) or for both individual development and organizational development (44 per cent).

*Health-care outcomes reported by leadership development programs*

Healthcare outcomes reported by various leadership development programs are depicted in Appendix Figure A6. While 70 per cent ($n$ = 129) of the studies reported the impact of leadership development program on leadership competencies/skill of the leaders who participated in the program, few studies ($n$ = 56, 30 per cent) reported some health-care outcomes impacted by the leadership development programs, such as patient satisfaction (8 per cent), staff turnover rate (7 per cent), job satisfaction (5 per cent), organizational change (5 per cent), hospital length of stay (2 per cent), nurse satisfaction (2 per cent) or patient complaints (2 per cent).

The impact of leadership development programs on various leadership competencies/skills is represented in Appendix Figure A7. While considerable variability existed in the nature (quality and duration) of the programs, leadership development programs appear to be consistenty associated with enhanced leadership skills such as communication, self-awareness, personal qualities, conflict resolution, confidence, team work, assertiveness, negotiation skills and decision-making skills.

## Objective 3: ROI determinants (indicators and metrics) used in evaluative instruments

Twelve studies reported measuring ROI to assess the impact of specific interventions on their health-care organization, using evaluative instruments containing indicators and metrics. The list of all indicators and metrics extracted from these evaluative instruments are reported in Tables II and III.

Four studies reported various ROI indicators such as emergency department arrival to initial nurse assessment, emergency wait times, hospital length of stay, asthma measures, operating room usage, diabetes measures, infection control outcomes and radiology procedures per time period (Table II). Two of the four studies used LEAN (Cookson *et al.*, 2011; Fine *et al.*, 2009), one study used Improving Performance in Practice (IPIP) (Donahue *et al.*, 2013) and another study used the Mentored Implementation Program (MIP) (Maynard *et al.*, 2012). The remaining eight studies (Harris and Ott, 2008; Johnson *et al.*, 2010; Kooker and Kamikawa, 2011; Latham *et al.*, 2008, McNally and Lukens, 2006; Moffatt-Bruce *et al.*, 2014; Stone *et al.*, 2010; Taylor-Ford and Abell, 2015) reported ROI financial metrics (Table III).

*Consultation*

The aforementioned findings identified a need for further expert consultation, as much of the ROI data may be unpublished or in grey literature. Evidence deficiencies identified by stakeholders included senior leaders and physicians.

## Originality/value

In this scoping review, all health-care outcomes/ROI indicators and metrics linked to leadership quality, leadership development programs and existing evaluative instruments assessing the impact of specific interventions (LEAN [Fine *et al.*, 2009], MIP [Maynard *et al.*, 2012], etc) in current literature have been summarized in detail to guide the design of an effective evaluative instrument to assess impact of leadership on health-care organizations.

Leadership development programs varied widely in duration and quality, and they reported enhanced leadership skills among participants and improved outcomes in their health-care organization. It is important to note that in the majority of these programs, the improved outcomes were self-reported. Thus, the findings of our scoping review confirms the findings of the recent King's Fund report (West, 2015) on the need for evidence-based approaches to assess the impact of leadership on health-care organizations to ensure an ROI made. We further identified ROI indicators and metrics, which could be used to guide the designing of an effective evaluative tool by CHLNet to measure the impact of leadership development programs on health-care organizations across Canada.

The strength of the scoping study is determined by the breadth and depth or the comprehensiveness of the current evidence in a given field (Davis *et al.*, 2009). The strengths of this scoping review are that we used an appropriate methodological framework for conducting a scoping review as suggested by Arksey and O'Malley (2005) and the comprehensive search strategy that we used to identify relevant articles to answer our questions. Also, the evidence was gathered from health-care organizations of countries that use either public, private or hybrid models of health systems, and thus the review findings may be applicable and transferable between organizations that operate under different health systems. But this review also has some limitations. Though we did a comprehensive literature search of a variety of databases, we did not search grey literature, so it is possible we may have missed some of the relevant studies. Further expert consultation will be required to access evidence not found in peer-reviewed literature. For feasibility and applicability, we only used evidence from limited number of countries, as health-care organizations are similar and comparable across these countries, and the results can be more applicable in the Canadian context than evidence from other regions (e.g. Asia or Sub-Saharan Africa). In addition, we only gathered evidence on ROI indicators and metrics from health-care organizations (from public, private and hybrid models of health systems), as we believed that the applicability of indirect evidence from other sectors (non-health care) is uncertain, given unique complexities of health-care organizations that could have a direct impact on the nature of leadership environments. We also did not assess the quality of included studies, as the research designs varied quite widely to allow comparisons of quality across studies.

## Conclusions and future directions

In this scoping review, we identified and summarized important health-care outcomes/ROI indicators and metrics linked to leadership quality, leadership development programs or existing evaluative instruments. Moving forward, the ROI indicators and metrics identified in this scoping review may be used to help design a simple, cost-effective evaluative tool to assess impact of leadership in health-care organizations.

Future research should focus on collecting and summarizing the results of the impact of implementing leadership evaluative tools across various health-care organizations, their impact on the health-care system and identifying any practical challenges associated with implementing these evaluative tools.

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## Further reading

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## Appendix

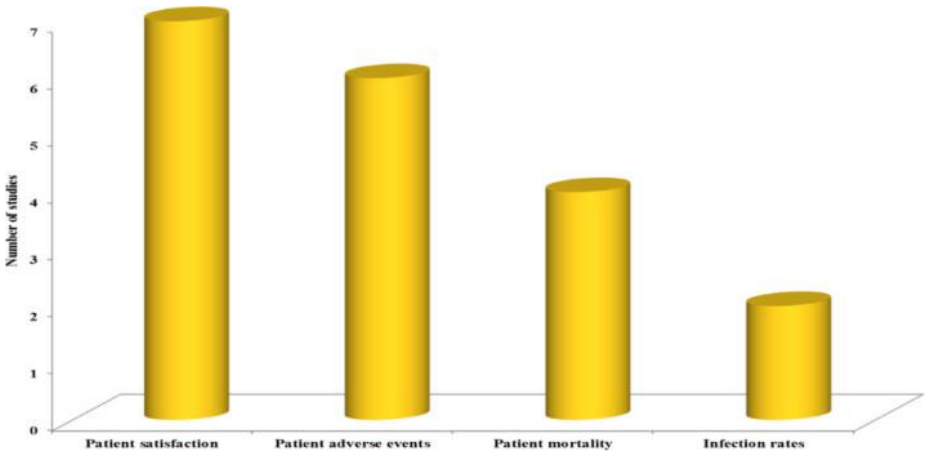


**Figure A1.** Patient-related health-care outcomes most reported by studies on leadership quality/style

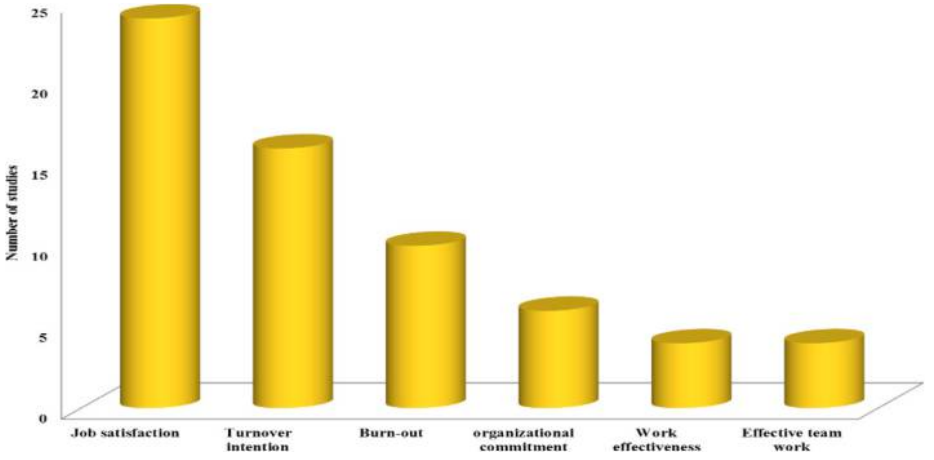


**Figure A2.** Staff-related health-care outcomes most reported by studies on leadership quality/style

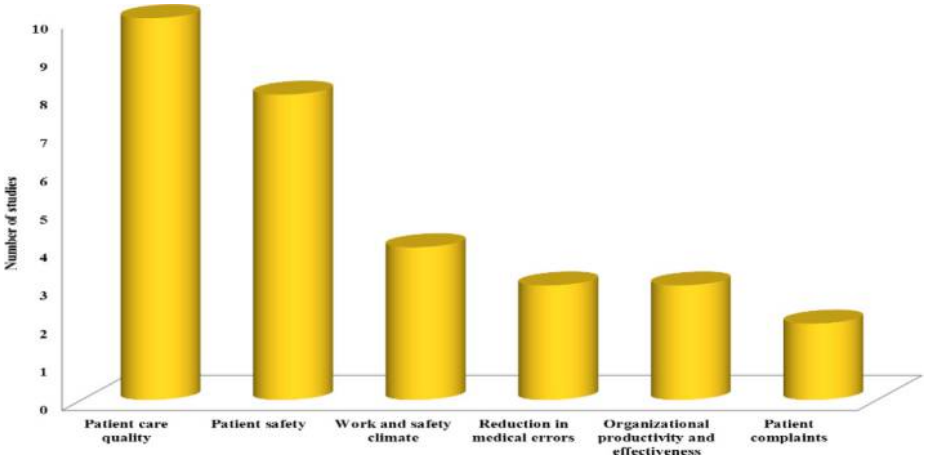


**Figure A3.**
Organizational health-care outcomes most reported by studies on leadership quality/style

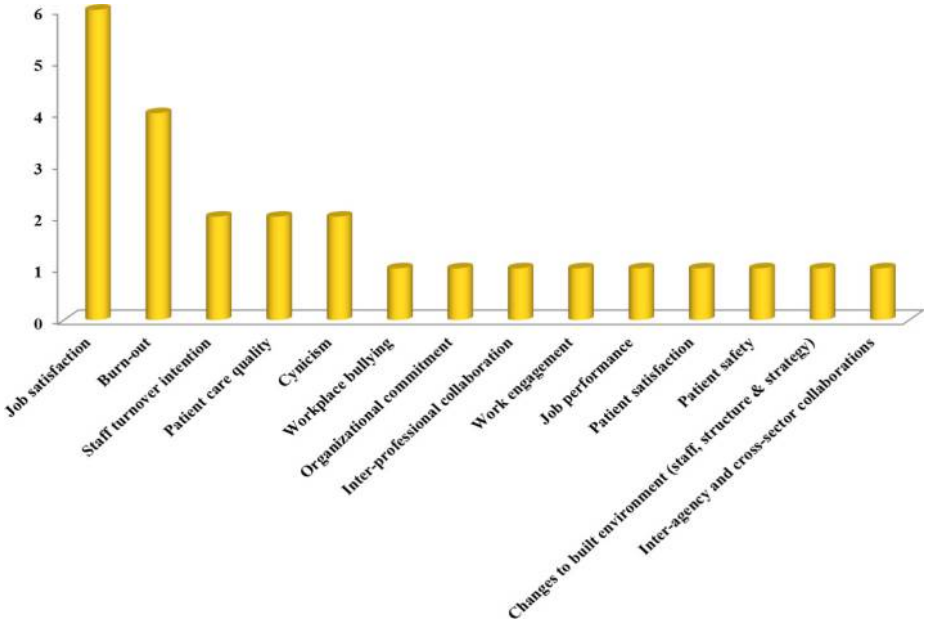


**Figure A4.**
Health-care outcomes reported by studies on leadership quality/style conducted at provincial level

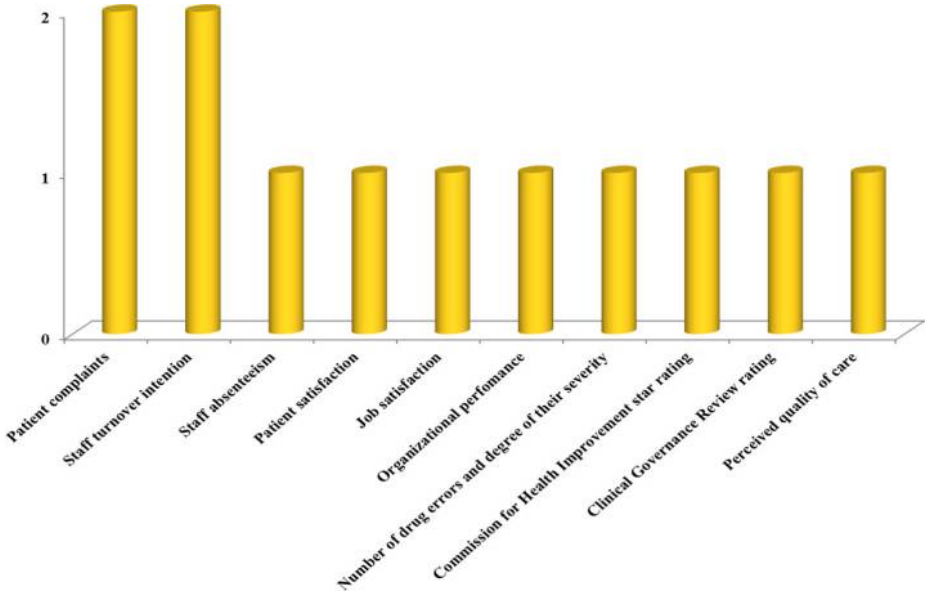


**Figure A5.** Health-care outcomes reported by studies on leadership quality/ style conducted at a national level

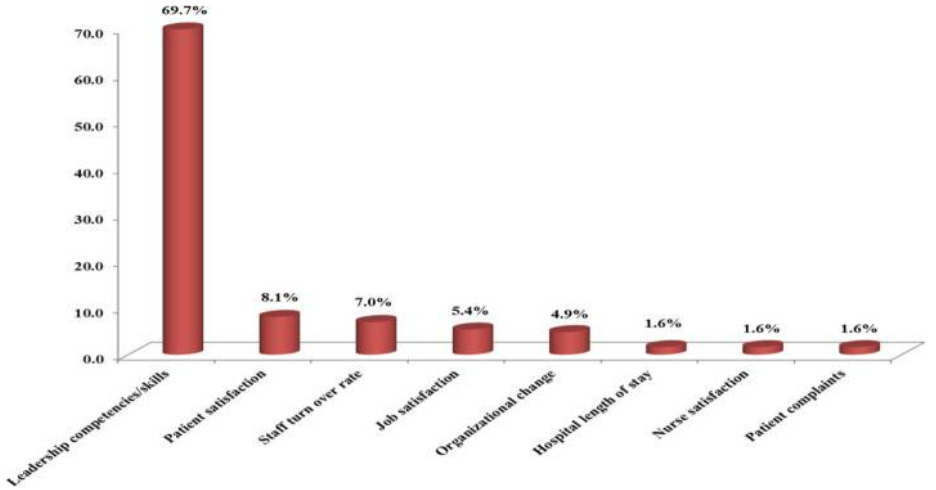


**Figure A6.** Distribution of outcomes that were most reported by the leadership development programs

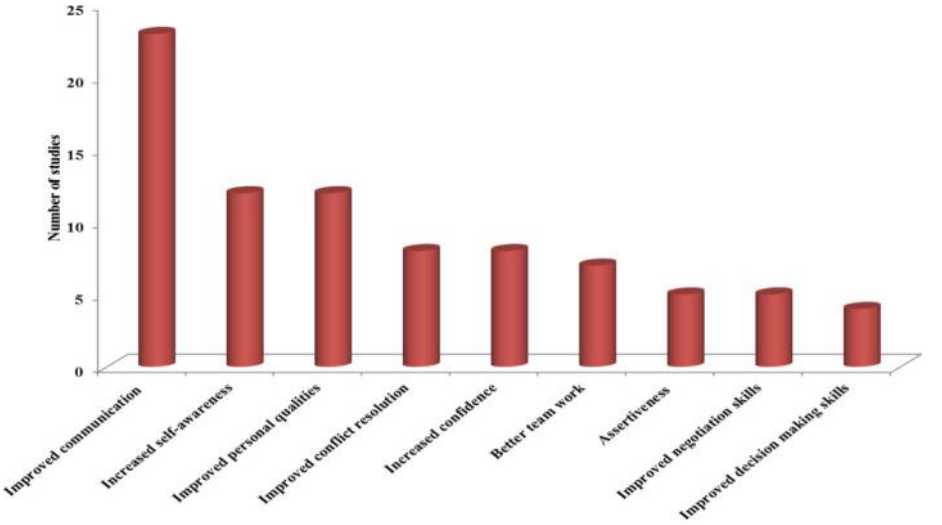


**Figure A7.**
Distribution of leadership skills reported by leadership development programs

| Inclusion criteria | |
|---|---|
| All studies on ROI associated with health-care leadership and health-care leadership development programs or developmental tactics (e.g. coaching and mentoring) | |
| Population | Any health-care leader (e.g. nurse leaders, physician/medical leaders, managers, citizens, community members, CEO, etc.) |
| Intervention | Any health-care leadership programming or developmental tactic (mentorship, coaching, etc.) |
| Outcomes | All outcomes that reflect the ROI associated with health-care leadership and leadership development programs (including, but not limited to, patient experience, patient mortality/morbidity, quality of care, staff turnover or financial performance) |
| Settings | Any health-care organization (regions and institutions), national jurisdictions |
| Study design | Primary studies (quantitative, qualitative and mixed-methods studies) |
| Publication status | Only data from published studies |
| Language restrictions | Only English language publications |
| Country restrictions | Only publications from countries such as United Kingdom, Canada, USA, Australia and New Zealand |
| Years considered | All relevant publications from 2006 until 2016 were included |

**Table AI.**
Inclusion criteria for this scoping review

**Healthcare outcomes associated with leadership quality/style**

(1) Patient outcomes (n)
- Infection rates (2)
- Patient adverse events (6)
- Patient health-care utilization (1)
- Patient mortality (4)
- Patient satisfaction (7)

(2) Staff outcomes (n)
- Burn-out (10)
- Effective communication (2)
- Effective teamwork (4)
- Emotional stress (2)
- Increased understanding and awareness of errors (1)
- Job satisfaction (24)
- Organizational commitment (6)
- Perceived inter-professional collaboration (1)
- Staff absenteeism (1)
- Staff incidents (1)
- Turnover intention (16)
- Work effectiveness (4)
- Work place bullying (1)

(3) Organizational outcomes (n)
- Hospital unit safety climate (1)
- Organizational productivity and effectiveness (3)
- Organizational work climate (1)
- Patient care quality (10)
- Patient complaints (2)
- Patient safety (8)
- Reduced costs of care (1)
- Reduction in medical errors (3)
- Work and safety climate (4)

**Healthcare outcomes associated with leadership development program/tactics**

(1) Patient outcomes (n)
- Patient satisfaction (15)

(2) Staff outcomes (n)
- Absenteeism (1)
- Charge nurse promotion to other nurse leader roles (1)
- Future work life (1)
- Impact on home life (1)
- Improved transition (1)
- Job satisfaction (10)
- New employee onboarding to institutional culture (1)
- Nurse vacancy and retention rates (1)
- Organizational commitment (1)
- Overtime hours (1)
- Perceived organizational support (1)
- Physician satisfaction with nursing (1)

- Recruitment (number of new permanent employees/total permanent workforce) (1)
- Retention of staff (1)
- Staff nurse engagement at the unit level (1)
- Staff satisfaction (1)
- Staff structural empowerment (1)
- Staff turnover rate (13)
- Work life quality (1)

(3) Organizational outcomes (n)

- Care quality and safety (1)
- Central line infection rates (1)
- Communication patterns within the facility (1)
- Completing surgical site infection bundle: Completing pre-operative assessments; Ensuring admissions on day of surgery; completing antibiotic stop, start, review, date and indication reviews; assessing risk of venous thromboembolism; marking operation sites; giving safety briefings at start of theatre list; and cancellations on day of surgery per month (1)
- Compliance (100 per cent) with pneumonia and flu vaccine administration (1)
- Consumer complaints to the ombudsman (1)
- Cost per patient day (1)
- Critical care (1)
- Cultural diversity of staff (1)
- Customer satisfaction drivers (access/turnaround time/quality of time) (1)
- Ensuring time from diagnosis of cancer to referral is no more than 31 days (1)
- Ensuring time from diagnosis of cancer to treatment is no more than 62 days (1)
- Family satisfaction with health communications in the mother–baby unit of an academic medical center (1)
- Financial stewardship drivers (Operating margin/productivity) (1)
- Formal grievances (1)
- Hospital length of stay (3)
- Implementation of heart failure patient education (1)
- Implementation process effectiveness (1)
- Improving critical operations (for example, reducing specimen transportation time) (1)
- Inappropriate referrals to a regional antenatal unit (1)
- Increased reporting of occurrences and near-misses (1)
- Increasing compliance with passive motion following knee arthroplasty (1)
- Introducing daily rest period for post-ICU surgical patients (1)
- Introducing telephone follow-up for orthopedic patients (1)
- Meeting estimated dates of discharge (1)
- Movement coordination of ICU patients into a new bed tower (1)
- Nosocomial decubitus ulcer rate (1)
- Nosocomial pressure ulcer development (1)
- Numbers of adverse events (1)

- Nurse satisfaction (3)
- Nurse sensitive patient outcomes (falls; medication incidents) (1)
- Organizational change (9)
- Organizational infrastructure and capacity (1)
- Patient complaints (3)
- Patient fall rate (1)
- Patient outcomes (e.g. number of infections, cardiac surgery outcomes) (1)
- Patient safety (for example, reducing falls; improving patient access to services and coordination across units (for example, scheduling follow-up appointments for patients at the time of discharge) (1)
- Patient safety and improvement during night hours and weekends (1)
- People engagement drivers (OSHA recordable injuries/HAT scores for wellness/employee engagement index) (1)
- Performance measures such as time to FAST, time to CT scan and time to hemorrhage control (1)
- Pressure ulcer occurrence (1)
- Promoting a safe environment for patients (1)
- Promoting a safe environment for staff (1)
- Proportion of people with healed ulcers (1)
- QI outcomes (encompassing process outcomes, bed turnaround time, operating room throughput) (1)
- Quality measured by rates of falls, falls with injury and the percentage of patients reporting excellent in response to a pain management item in a patient survey (1)
- Rates of blood-borne catheter-induced infections (pediatric population) (1)
- Rates of nosocomially acquired decubitus ulcers (adult population) (1)
- Reduction in clinical inventory value in day surgery (1)
- Reduction in patient wait for discharge (1)
- Reorganization of a newly acquired ambulatory clinic (1)
- Reporting of patient care errors (1)
- Safety and quality drivers (preventable mortality/medication errors) (1)
- Smoking cessation counseling (1)
- Theatre efficiency (1)
- Unit improvements (1)
- Use of contract nursing staff (1)
- Variable direct labor cost (1)

For more information on characteristics of included studies reporting on leadership development program or tactic and characteristics of included studies reporting on leadership quality/style please contact the corresponding author.