TITLE PAGE

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Is a hospital quality policy based on a Triad of accreditation, public reporting and inspection evidence-based? A narrative review.

RUNNING TITLE

Quality-of-Care Triad Evidence

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AUTHOR CONTRIBUTIONS

All authors have contributed substantially to the work. Astrid Van Wilder and Kris Vanhaecht conceived and designed the study; Astrid Van Wilder performed the search strategy and content analysis, which was validated by Jonas Brouwers and Deborah Seys. Astrid Van Wilder, Luk Bruyneel and Kris Vanhaecht wrote the paper, and all authors critically read the manuscript.

KEY WORDS (MeSH terms)

Hospital; Accreditation; Public Reporting of Healthcare Data; Quality Control; Patient Outcome Assessment

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ABSTRACT

BACKGROUND: Since 2009, hospital quality policy in Flanders, Belgium, is built around a Quality-of-Care Triad, which encompasses accreditation, public reporting and inspection. Policy makers are currently reflecting on the added value of this Triad.

METHODS: We performed a narrative review of the literature published between 2009 and 2020 to examine the evidence-base of the impact accreditation, public reporting and inspection, both individually and combined, has on patient processes and outcomes. The following patient outcomes were examined: mortality, length-of-stay, readmissions, patient satisfaction, adverse outcomes, failure-to-rescue, adherence to process measures and risk aversion. The impact of accreditation, public reporting and inspection on these outcomes was evaluated as either positive, neutral (i.e. no impact observed or mixed results reported) or negative.

RESULTS: We identified 69 studies, of which 40 on accreditation, 24 on public reporting, three on inspection and two on accreditation and public reporting concomitantly. Identified studies reported primarily low-level evidence (level-IV, n=53) and were heterogenous in terms of implemented programs and patient populations (often narrow in public reporting research). Overall, a neutral categorization was determined in 30 papers for accreditation, 23 for public reporting and 4 for inspection. Ten of these recounted mixed results. For accreditation, a high number (n=12) of positive research on adherence to process measures was discovered.

CONCLUSION: The individual impact of accreditation, public reporting and inspection, the core of Flemish hospital quality, was found to be limited on patient outcomes. Future studies should investigate the combined effect of multiple quality improvement strategies.

KEY WORDS (MeSH terms)

Hospital; Accreditation; Public Reporting of Healthcare Data; Quality Control; Patient Outcome Assessment

INTRODUCTION

The IOM's *To Err Is Human* (1) served as a global tipping point for hospital quality. Two decades have passed since its publication, resulting in the research and implementation of many quality improvement (QI) initiatives, including accreditation, public reporting (PR) and inspection, stimulating patient safety and hospital quality (2). In Flanders, the northern region of Belgium, a government coalition agreement was established in 2009 (3) that forms the basis of today's 'Quality-of-Care Triad': 1) voluntary announced hospital-wide accreditation by an international external agency, 2) voluntary measurement and PR of quality indicators and 3) mandatory inspection by the Flemish government. The latter consists of an announced systemic inspection of which accredited hospitals are exempt, as well as an unannounced examination of patient trajectories, which occurs on average every year. All 55 Flemish acute-care hospitals have since entered into an accreditation process, defined as an assessment of pre-determined standards (4), by either the USA-based Joint Commission International (JCI) or the Dutch Qualicor. To date, most hospitals (n=35) have either achieved their first-cycle accreditation label or have gone through consecutive cycles. Recently, two hospitals successfully passed third reaccreditation. From 2015 onwards, all but one hospital chose to publicly report quality indicators on cancer survival rates, patient experiences and patient safety measures (5). However, despite the widespread application of each Triad component, a growing number of voices are questioning the added value of current healthcare policy. Several Flemish hospitals have decided to discontinue their accreditation trajectories based on global concerns on its bureaucratic nature, often described as time consuming (6), merely market-driven (7), costly (8), and not promoting what actually matters to patients (9). Furthermore, there is worry that PR leads to risk averse behaviour in physicians (10) that might harm patients, that data can be misinterpreted or gamed (11), that reporting may impose a significant financial and administrative burden (12) and finally that it does not reach the patient (13). Concerning inspection, apprehension exists on the topic of 'decoupling', i.e. the gap between the paper-based reality of rules and guidelines and actual clinical practice (14,15). Lastly, evidence of associations with patient outcomes is

scant, as reported in several reviews (16–19). Our research aims to extend previous literature by investigating the joint impact of various types of QI initiatives (accreditation, PR, inspection) exclusively on several patient outcomes. We aim to provide a systematic identification and narrative synthesis of all empirical research published between January 2009 and February 2020.

METHODS

Study design

We performed a narrative literature review of studies on the effects of hospital accreditation, PR and inspection on patient outcomes. We employed a narrative rather than statistical method because first, the number of interventional studies is limited, second, research methods are heterogeneous and last, because of the considerable complexity and variety in the organisation of different Triad components in multiple jurisdictional and legislative environments. Quantitative comparison of outcomes between studies is problematic due to this context heterogeneity.

Data sources and search strategy

We searched MEDLINE, the premier database for biomedical research, for literature published between January 1st 2009 and February 29th 2020. From three established research questions (What associations can be observed between accreditation/PR/inspection and quality and patient safety outcomes in hospital care?), a PICO-searching strategy for each component was determined, wherein combinations of key words and MESH terms were searched. Each individual search was subsequently combined to find literature on shared components. A detailed transcript of this search strategy can be found in Supplemental File 1. We included original research in English or Dutch, the research team's first language, conducted in high- or middle-income countries

and concerning secondary and tertiary care. We assigned literature to a QI component when the impact of an initiative similar to a Quality-of-Care Triad component was assessed on a patient outcome, i.e. the mere mention of the e.g. term 'accreditation' did not suffice. We excluded literature describing disease-specific accreditation, as this differs vastly from the hospital-wide assessment used in Flanders and therefore falls outside the research scope. This exclusion was not applied to PR and inspection literature, as they contain both hospital-wide and disease-specific components. We included all quantitative original research, i.e. level-II (randomised controlled trials (RCT)), III (quasi-experimental) and IV (case-control and cohort) evidence (20), therefore excluding reviews (level-I and V), original qualitative and descriptive research (level-VI) and expert opinion papers (level-VII). Lastly, we only included papers with full-text availability within our institution. The reference lists of selected articles were searched for potentially relevant studies meeting the inclusion criteria. In addition, we explored search terms on Google Scholar and repeated the search strategy of the Belgian Health Care Knowledge Centre (KCE) on accreditation literature (21) (Supplemental File 1).

Study characteristics

The following study characteristics were identified: country, setting, patient population, design, level of evidence, type of QI initiative, studied patient outcome(s) and reported impact of the initiative on the outcome(s). We performed a manual content analysis to determine the frequency with which eight thematic categories were examined: mortality, length-of-stay, readmissions, patient satisfaction, adverse outcomes, failure-to-rescue, adherence to process measures and risk aversion. The latter was added based on anecdotal evidence of risk aversion occurring in PR (10). It is possible a single publication studied the impact of one or more Triad components on several patient outcomes. The reported direction of impact on patient outcomes was recorded as either positive, neutral or negative, inspired by Deneckere *et al.*'s systematic review on care pathways (22). A neutral impact was defined when either no

associations between the Triad component and the patient outcome were found or when mixed results were reported for several indicators or patient groups of the same patient outcome. Due to the range of different studied patient outcomes and varied designs and quality, we opted to not reach conclusions on the strength of evidence by means of meta-analysis. Alternatively, we provide an overall picture by identifying the frequency of records per outcome and reported impact. The search was executed by AVW and revised and validated by JB, who independently examined a subsample of 25 references. Disagreement between authors occurred in only two studies and was resolved after discussion among the research team.

RESULTS

Search results

We identified 59 694 records via the MEDLINE database. Screening of title and abstract led to the exclusion of a vast amount of records that did not relate to the impact of accreditation, PR and inspection on patient outcomes. Subsequently, 93 full-text articles were read for accreditation, 70 for PR and 5 for inspection. The search on combined components led to duplicates of the search on individual components and did not provide additional studies on either individual or combined components. An overview of the search results is visualised in Figure 1 and further detailed in Supplemental File 1. Concerning accreditation, the main reason for excluding publications was the description of disease-specific accreditation (n=26). After chain searching (n=7), the final number of studies included for accreditation totalled 42. Two of these discussed the impact of both accreditation and PR on patient outcomes. Out of the 70 papers read on PR, 48 were excluded and four chain references included, leading to a final sample of 26 papers on PR, of which two aforementioned publications acknowledged both PR and accreditation. Finally, three of the five papers on inspection were excluded and one added through chain referencing, leaving a final sample of three publications. No studies encompassing all three components of the Quality-of-Care Triad could be identified.

Supplemental File 2 provides an overview of the excluded fully-read articles. Lastly, no additional studies could be discovered from the Google Scholar search engine and repeated KCE strategy.

Characteristics of included studies

A summary and full reference list of 69 included publications can be found in Supplemental File 3, including first author, publication year, journal, country, setting and patient population, objectives, research design, level of evidence, studied QI initiative with its specified program description, studied patient outcome(s) and impact of the component on this outcome. The gathered evidence was quite evenly spread across the study years and conducted in 24 countries across North-America (n=33), Europe (n=20), Asia (n=13) and Australia (n=3). All inspection literature (n=3) was UK-based, while studies on PR were predominantly conducted in the USA (n=21). Included publications reported mainly level-IV evidence (n=53), while five papers reported level-III studies and one recounted a RCT. The research settings varied largely, ranging between the study of just one hospital and over 1000 hospitals. As detailed in Supplemental File 3, a plethora of programs was assessed. Accreditation programs were primarily developed nationally (n=29), while five publications reported on international programs. Concerning PR, different levels of reporting were observed, such as individual-level (n=5) or hospital-wide (n=2). However, the majority recounted disease-specific (n=16) and unit-based (n=6) levels of reporting. Finally, many different patient populations were studied. In general, most accreditation literature reported hospital-wide outcomes or assessed a wide spectrum of diseases to reflect overall care. In contrast, PR literature predominantly surveyed narrow patient groups, of which the fields of cardiology (n=17) and respiratory disease (n=6) were observed most frequently. Concerning inspection literature, one study assessed a hospital-wide patient sample, while the other two studied a more restricted sample (maternity and emergency room).

Study categorisation

An overview of the number of identified papers categorised according to type of QI initiative, patient outcome and direction of impact can be found in the heatmap displayed in Figure 2. The most frequently studied patient outcomes are adherence to process measures (n=27), followed by mortality (n=26), whereas only few studies (n=4) assessed failure-to-rescue. For PR specifically, mortality is most frequently explored (n=15), followed by the impact on risk aversion (n=11). Inspection papers have only addressed adherence to processes (n=2), adverse outcomes (n=1) and readmission rates (n=2). Overall, a neutral impact was observed in 30 papers for accreditation, 23 for PR and 4 for inspection. The neutral category includes ten studies reporting mixed results (see Supplemental File 3). For accreditation, 26 papers narrate a positive impact on patient outcomes, primarily due to the high number (n=12) of positive results on adherence to process measures. Several papers (see Figure 2) reported inconsistent directions of impact for multiple patient outcomes, as exemplified by Gupta *et al.* (23) or Lam *et al.* (24). Two studies researched the impact of both accreditation and PR on process measures (25,26). Schmaltz *et al.* (26) found that accredited hospitals already outperformed non-accredited hospitals prior to PR and the difference between the two groups increased after PR. Howell *et al.* (25), however, found no association between the PR of accreditation standards and maternal morbidity.

Accreditation impact

The majority of identified publications reported that accreditation had no observable impact on patient outcomes. Numerous studies reported an unsustainable impact. In e.g. several adherence to process measures studies (27–32), it was reported how compliancy with processes improved steadily in the build-up towards an accreditation survey, but continued at a slower rate after the survey or even returned to baseline. Similarly, Barnett *et al.* (33) observed a significant decrease in 30-day mortality in the week of the survey visit, which was nullified within the next three weeks. While a consecutive

accreditation cycle reduced variation in compliancy with processes, it could not deliver more improvement than the first visit (31). At baseline, hospitals with lower performance improved at greater rates (34,35) than those with higher performance. The positive associations found between accreditation and patient satisfaction were primarily due to a better observed satisfaction of hospital structures (36,37). Conversely, Lam *et al.* (24), reported superior patient satisfaction in non-accredited hospitals, despite readmission rates being better in accredited centres. The type of accreditation program had no apparent influence on patient outcome impact, although the reported impact of national Magnet-accreditation was positive in all (38–41) but one (42) study.

PR impact

A duality was observed in Gupta *et al.* (23), where the PR of readmission rates led to reduced readmissions, but increased mortality. Several publications (n=11) studied whether PR led to risk-avoidant behaviour, which was contested in the majority of them (43–49). However, evidence of risk-avoidance by physicians was found in some of the cardiology reports (50–52) and was even demonstrated to increase mortality rates (53). Only one RCT was identified, which could not find any impact of PR on cardiac process indicators. Consistent with accreditation literature, hospitals with low baseline performance had the largest quality gains (54) and the repeated release of data (55) had no further impact on outcomes, despite improvements gained from the initial PR. Hospitals with a higher baseline performance were most likely to make use of PR (56).

Inspection impact

No associations were found between hospital inspection and emergency department processes and readmissions (57,58), while rates of falls and pressure ulcers (59) were negatively associated with inspection.

DISCUSSION

Healthcare policy in Flanders on the quality of hospital care is based on initiatives commonly concurring worldwide. However, no evidence exists on the impact of the complex intervention that combines both accreditation, PR and inspection on patient outcomes. This review identified 67 studies that investigated the impact on patient outcomes of one single improvement initiative and two studies that investigated the impact of both accreditation and PR. Only three studies were found on the impact of inspection. The majority of publications could not find evidence of associations between policy components and patient outcomes and some even described a negative impact. The latter needs to be nuanced as studied patient populations were narrow (primarily cardiology) in most of the negative studies. As the focus of accreditation is primarily on processes within their accreditation standards, it comes as no surprise that impact on adherence to process measures is predominantly positive. However, one could inquire whether achieving formal compliance is truly an indication of QI in clinical practice or merely a required cornerstone from which improvement can be built. Despite the lack of high-level evidence on patient measures, international reports suggest current policy has benefited other healthcare segments, with accreditation promoting change and professional development (6) and PR stimulating QI activity and altering hospital selection by the patient (19). Along with inspection, accreditation and PR have provided a solid foundation for monitoring and promoting healthcare organisation performance and achieving quality of care, particularly in low baseline performers. However, the reported lack of further improvement in consecutive accreditation and PR cycles, suggests a rethink of the current policy is required. Potential opportunities for next steps lie in introducing unannounced (60), short-notice (61) or mandatory (62) accreditation programs, although the evidence remains inconclusive. Additional initiatives could be considered that have shown promise, such as internal audits (63), total-quality-management (64) or peer-review (50,65). Multiple Flemish hospitals have already implemented initiatives besides the Quality-of-Care Triad, like ISO-certifications, Magnet-accreditation or disease-specific accreditation. The latter is consistently associated with more favourable results on patient outcomes

(66), including mortality (67), length-of-stay (67), care processes (68), patient satisfaction (68) and adverse outcomes (67). Additionally, all Belgian hospitals have been subject to a pay-for-performance scheme since 2018. How this financial incentivisation impacts Flemish hospitals, remains to be seen. International evidence suggests equivocal results (69).

Remarkably, no research was discovered conducted in a Flemish setting. With the passing of the 10-year anniversary of the Quality-of-Care Triad, we would argue it is high time to study how well each independent QI initiative is integrated within participating hospitals and evaluate its synergistic effects, both within the Triad as well as with other implemented initiatives. The detected evidence-base in this paper found only a limited individual impact of accreditation, PR and inspection on patient outcomes. Flanders should look at the added value of the current system by further investigating the combined effect of multiple improvement strategies. First, the implementation of Triad components and other initiatives should be mapped out historically and studied for associations with patient outcomes. Additionally, how healthcare professionals perceive current policy should be studied within the Flemish setting, as current views are primarily based on international evidence and hearsay. The financial impact on hospitals of present policy should be considered and we recommend further research into perspectives of national and international stakeholders to decide the appropriate and supported next steps. Finally, the sustainability of current and future policy should be assessed and improved upon. This review brought to light how accreditation and PR might have failed to leave a durable impact. Future research into both internal and external QI initiatives should therefore focus on the solid anchoring of quality policy.

Several study limitations merit attention. First, despite the systematic search strategy, we might have missed other relevant research. Nevertheless, the reported method aimed to encompass a broad range of articles and the narrative nature of this review is not hindered by an inexhaustive list of papers.

Second, we did not formerly assess the quality of papers or tested categorisation validity. However, we feel this would not be meaningful considering the large heterogeneity of identified records and the unambiguous characterisation. Third, considering the paucity of inspection literature, our results remain limited to the effects of accreditation and PR on patient outcomes. Further research is thus required to study how inspections affect patient outcomes. Fourth, the described evidence-base did often not disclose the context in which patient outcome improvement could (not) be discovered, such as financial and staff support or baseline quality level. Therefore, implementation science remains an area for future research. Fifth, we could not attempt a statistical meta-analysis due to the heterogeneous research contexts and study designs. Future research could provide more robust analyses for each individual component. Nonetheless, our narrative synthesis has provided valuable insight into the impact accreditation, PR and inspection has on patient outcomes.

CONCLUSION

The discovered evidence-base on how accreditation, PR and inspection - the core of Flemish hospital quality - impacts patient outcomes, primarily reported no overall effect. Still, accreditation was discovered to positively influence processes of care. Further studies should investigate the combined impact of multiple QI strategies. We recommend a thorough policy revision in Flanders to determine the added value of the current system and move towards a sustainable future quality system that benefits the patient above all.

AUTHOR CONTRIBUTIONS

All authors have contributed substantially to the work. Author 1, Author 2, Author 3 and Author 8 conceived and designed the study. Author 1 performed the literature search, which was revised by Author 4. Content analyses were performed by Author 1 and Author 5 and revised and validated by all authors. The original draft was prepared by Author 1. Finally, all authors critically reviewed the manuscript.

CONFLICTS OF INTEREST

The authors declare no conflict of interest.

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DATA AVAILABILITY

The data underlying this article will be shared on reasonable request to the corresponding author.

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FIGURES

- 1) Figure 1: Flowchart of search strategy
- 2) Figure 2: Heatmap of number of identified records on the impact of accreditation, public reporting and inspection on patient outcomes.

IN SUPPLEMENT

- 1) Supplemental File 1: Detailed transcript of search strategy
- 2) Supplemental File 2: Summary of excluded articles
- 3) Supplemental File 3: Summary of included articles

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Figure 1: Flowchart of literature search

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Figure 2: Heatmap of number of identified records on the impact of accreditation, public reporting and inspection on patient outcomes.

Heatmap displaying the number of identified papers, classified according to type of quality improvement initiative, patient outcome, and impact of quality improvement initiative on said outcome (negative impact = “-”, neutral impact = “0”, positive impact = “+”). A darker color indicates a higher number of publications. Quality improvement initiatives and patient outcomes are sorted according to the total number of publications for each (represented by the grey bars). The references added to each number of identified papers refer to the summary of included articles, displayed in Supplemental File 3. When a reference is followed by an asterisk in the neutral category, the reference makes notice of mixed results in either multiple patient populations or multiple outcome indicators for that particular patient outcome.