

## Effects of Public Reporting Programs: Organizing and Synthesizing the Literature

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*Public Reporting (PR) of quality data is a common instrument to support transparency, accountability, and quality improvement in modern health care systems. Although, programs exist for 30 years, signals for its efficacy are inconclusive and new measurement schemes enjoy great popularity. The aim of this study was a realist view of the current literature dealing with effects of PR and finding answers on the broad and often unquestioned use by health authorities. This review considered literature from relevant databases and included all type of studies. In a kind of map, authors organized the research based on different paradigms and theories. Results indicate, first, patients rarely use the reported data. Second, providers show limited usage as well, but it is the more promising way which could lead to quality improvement. This review suggests that PR is a popular topic in different academic fields and health care policy. Despite of its high use, PR often does not show its full potential. Pure rational approaches to describe the effect of PR fall short. Further research should strive to do better by paying more attention to the breadth, theories, and context of the field as well as collective solution-finding among academia, policy, and practice.*

**Keywords:** quality improvement, delivery of health care, health policy, information dissemination, quality indicators, health care

### Introduction

In nearly all developed health care systems, increasing costs, lack of effectiveness, and poor efficiency of health care provision is in constant public discussion. These improvement potentials are estimated by the OECD (2017) with a cost reduction of about 20%. So, it has become common that elements of the market economy are implemented to control rising costs. Although the evidence on the relationship between quality and cost is inconsistent (Jamalabadi et al. 2020), transparency initiatives of performance and quality are strongly promoted by health authorities. Public reporting (PR) is a commonly established quality strategy (OECD and WHO 2019), whereby the behavior of different stakeholders in the system should be stimulated.

Public reporting is data, publicly available or available to a broad audience free of charge [...], about a health care structure, process, or outcome at any provider level

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[...]. [...] public reporting is generally understood to involve comparative data across providers, [...]. (Totten et al. 2012)

Berwick et al. (2003) described two main target groups of PR. On the one hand, patients could use reports to choose their health professionals or hospital before a therapy. On the other hand, providers could compare with others to start quality improvement.

While primal PR appeared at the end of the 1980s in the United States (Hannan et al. 1994), it is a relatively new topic within most European countries. But today, almost every country in Europe has a PR program, although evidence of its effectiveness lags behind the frequency of its use. Internationally, various reviews showed inconsistent findings to support or not support behavior change on the basis of PR, be it of patients or providers (Campanella et al. 2016, Ketelaar et al. 2011, Metcalfe et al. 2018, Vukovic et al. 2017). These reviews summarized the included studies methodologically in a classical systematic manner. Although the topic has been much researched in classical ways and the results are not clear, PR is almost unquestioned and even increasingly used for years.

To induce awareness of this problematic development, it would be necessary to take stock of the broad knowledge that has been acquired during the last 30 years. Not only scholars in medicine but also others, for example, in sociology, showed interest in researching PR. Therefore, it is a multidisciplinary topic where theories and paradigms from different fields have been applied. Because PR in health care is embedded in a complex web of social interventions and its context, the way it should be looked at is not only a linear one (Pawson et al. 2005). In this situation, utilizing systematic review methods which were particularly developed for summarizing medical treatments are not adequate to give an overview to the current state of the literature in these different fields. Multitheoretic approaches within different research paradigms and non-standardized keywords in other disciplines than nursing, medicine, and economics are reasons which must be considered. Therefore, to the body of knowledge should be looked at in a different manner.

So, the aim of this study is to present a review format based on the proceeding which is normally done for reviews in management and organizational sciences (Rousseau et al. 2008). There usually, an organizing framework to categorize the current state of the literature is presented or developed. In a kind of map, the authors organized research based on different theories and paradigms; completeness is not an explicit goal. Answering the question what effects PR has and synthetization of its literature is conducted by a realist view (Pawson et al. 2005). This study is not about the average effectiveness of interventions, but about asking the right questions and asking the questions right. Moreover, this review is heavily focused on the practice evaluation of PR and its explanations as policy, although the theoretical underpinnings remain an important foundation.

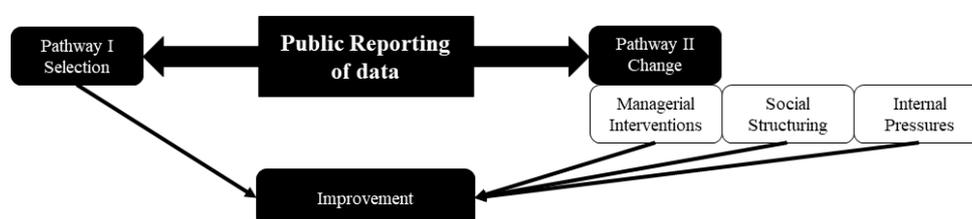
So, the authors firstly present an organizing framework which is followed by methodology. Results show the main evidence for the research question. In the

following section, the results are discussed and synthesized. Conclusions follow as last part.

## Organizing Framework

As indicated, PR has been studied in different fields within or without various paradigms and theories. The concept development begun 15 years after the first programs with Berwick et al.'s (2003) article "Connections Between Quality Measurement and Improvement". Deeper theoretical foundations and clarifications were carried out by Contandriopoulos et al. (2014). For this review, the authors summarized the basics and extensions of the theoretical modes of action (see Figure 1).

**Figure 1.** Structuring Framework



Source: Berwick et al. 2003, Contandriopoulos et al. 2014.

Berwick et al. (2003) described two ways to improve performance: "Pathway I: Improvement Through Selection" and "Pathway II: Improvement Through Changes in Care". In Pathway I, it is supposed that publication of performance data principally influences patient's decision for a particular health care provider which shows better performance (Berwick et al. 2003). Contandriopoulos et al. (2014) expanded the model with the underlying behavioral theories and proposed that Pathway I is the simplest functional form. Thereby, the revealed measurements are an economic understanding and patients behave rationally. Theoretically, this leads to a Darwinian selection of health care providers.

In Berwick et al.'s (2003) view, Pathway II addresses organizations in health care. It informs the managers to analyze their processes and to initialize performance improvements directly. Further research showed a potential loss of reputation that stimulates quality initiatives (Hibbard et al. 2005). Contandriopoulos et al. (2014) suggested splitting Pathway II in three sub-pathways.

Pathway 2a, "Change Through Managerial Interventions" goes back to a rational image of the human being (Contandriopoulos et al. 2014). The management in health care organizations behaves unemotionally; they monitor activities and invest the resources in the goals and outcomes of the company. The released measurements help to achieve them.

Pathway 2b, "Change Through Social Structuring" picks up the complex functioning of the human being and organization's embedding in society

(Contandriopoulos et al. 2014). It describes a neo-institutional understanding. The Neo-Institutionalism views society as a network of values and norms which significantly influence organization's behavior (DiMaggio and Powell 1983). Consciously or unconsciously, organizations incorporate these conceptions to gain legitimacy and resources which are fundamental to survival (Meyer and Rowan 1977).

Pathway 2c, "Change Through Internal Pressures" mainly stimulates internal groups (Contandriopoulos et al. 2014). Especially health professionals could be concerned about loss of reputation (Hafner et al. 2011).

## Methodology

As already stated, PR is looked at from different angles that can be seen by using a broad field of theories, paradigms, and concepts. Preliminary clarifications showed that MESH-terms are not applicable, which was already mentioned by Totten et al. (2012). Due to lack of unity of terms, the search was derived based on the mentioned keywords in previous reviews and the main terms of the concepts (see Table 1).

**Table 1. Search Terms**

	<b>Terms</b>
Health care organization	Health care (organization/ industry)/ Health services OR In/Outpatient OR Provider/ Hospital/ Clinic
Performance measurement	Performance measure*/ data/ indicator/ outcome/ assessment/ evaluation/ information OR Quality measure*/ data/ indicator/ outcome/ assessment/ evaluation/ information OR Outcome measure*/ data/ indicator/ assessment/ evaluation/ information OR Clinical measure*/ data/ indicator/ outcome/ assessment/ evaluation/ information OR Quality assurance OR Patient satisfaction
Public reporting	Public Reporting OR Public Disclosure OR Information Dissemination OR Release of performance data OR Benchmarking OR Mandatory Reporting OR Report/ Score card OR League table OR National quality reporting system OR Performance reporting OR Quality reports OR Comparative performance data OR Quality comparison OR Quality of (health) care reporting OR quality account
Consumer behavior	Consumer/ Patient/ Choice/ Purchaser/ Regulatory behavior/ participation OR Consumer/ Patient/ Stakeholder/ Hospital selection OR Decision making OR Market share OR Case number
Quality improvement	Quality/ Process improvement/ management/ initiatives OR Organizational/ Executives/ Administrators/ Health professional behavior/ reaction/ response
Transparency and Accountability	account* OR transparency OR awareness

An extended literature search was performed during summer 2020 mainly at the University of St. Gall/Switzerland. Considered databases were: Business Source Ultimate, Emerald, Scopus, Wiso, Econlit, Web of Science, Socindex, and Social Sciences Citation Index. At the Private University for Health Sciences, Medical Informatics and Technology (UMIT), Hall in Tirol/Austria, an expanded search was conducted on the databases of Medline, Embase, CINAHL, and Cochrane-Library. A supplementary manual search and screening reference lists of important reviews completed the procedure.

Articles published between January 1990 and December 2019 were included. All study types and outcome measures were considered. Only publications in English and German were selected. There were no further search restrictions. A flowchart of the study selection was not presented because completeness was not an explicit goal of this review. Due to heterogeneity of the field and studies, a standardized quality assessment was not applied and not applicable, as e.g., in organization and management no methods assessing studies' quality exist. The organizing framework (see Figure 1) served as base for the subsequent assignment and presentation of the body of knowledge.

## Results

The included studies revealed major differences concerning settings and interventions. Heterogeneity between them was substantial. Regarding Berwick et al.'s (2003) pathways, the vast majority of studies corresponded to Pathway I. There were fewer studies matching Pathway II and its subgroups.

### *Pathway I: Improvement through Selection*

Studies were performed in different settings and particularly in the Anglo-American area. In the last decade, work to this topic appeared also in Continental Europe. Considering different outcomes, there are studies showing inconsistent effects on market share and case numbers (Dunt et al. 2018, Grabowski and Town 2011, Vukovic et al. 2017, Wang et al. 2011). For the assumption that better rated hospitals show an increasing number of cases and bad ones a decreasing, were also found not more than small indications (Pope 2009, Romano et al. 2011, Wübker et al. 2008). Furthermore, there is a range of qualitative studies on the question of awareness of PR and the effects on selection of providers by patients and their relatives. Most of the work showed that only few patients (8-45%) know about an existing publication and a group of patients (28%) is not interested in these (Aryankhesal and Sheldon 2010, Khang et al. 2008, Mazor and Dodd 2009, Patel et al. 2018, Pope 2009, Prang et al. 2018). Younger and better skilled people have more knowledge of it (Khang et al. 2008). But by present, PR does not influence patients' choice of providers essentially (Mazor and Dodd 2009, Merle et al. 2009). The distance to providers (Pope 2009), the influence of family members, relatives, and treating medical doctors (Merle et al. 2009, Schwartz et al. 2005), or own

experiences with providers (De Cruppé and Geraedts 2017, de Groot et al. 2011) are factors which have more influence on the decision where the patients finally go for treatment. Another problem is that released information is not always understood (Kang et al. 2009), for example, sections about risk adjustment and confidence intervals seem to be difficult for laymen (Mazor and Dodd 2009).

#### *Pathway II and its Subgroups: Improvement through Changes in Care*

Studies assigned to *Pathway 2a (Change Through Managerial Interventions)* were numerous (Contandriopoulos et al. 2014). Some quantitative studies investigated the effects of PR of hospitals' (Hibbard et al. 2003, Jang et al. 2011) and long-term care institutions' quality data (Mukamel et al. 2010, Zinn et al. 2010) on their treatment processes. They reported an increase of quality initiatives. Hibbard et al. (2005) and Kraska et al. (2016) found a significant performance improvement of hospitals which took part in a PR compared to none or private reporting. Other studies showed little or no effect of PR on quality activities or performance improvement on provider level (Dahlke et al. 2014, Jang et al. 2011, Ryskina et al. 2018, Yamana et al. 2018). Systematic reviews demonstrated mostly consistent evidence. PR stimulates quality improvement on provider level but not on individual level of a single health professional (Campanella et al. 2016, Fung et al. 2008, Ketelaar et al. 2011). Qualitative research studied the perception, attitude, acceptance, and activities of quality management towards existing or planned PR of executives and administrative staff. Some studies showed that a considerable proportion of those were not aware of an existing program (Greenhalgh et al. 2014, Waelli et al. 2016). Further, hospital leaders expressed negative attitudes and resistances against some parts of the reports (Lindenauer et al. 2014, Mannion et al. 2005, Reeves and Secombe 2008). On the other side, there are studies which demonstrated that certain aspects of the reports are meaningful, interorganizational dissemination occurs, launch of quality initiatives takes place, or improvements were reported (Barr et al. 2006, Castle 2005, Chassin 2002, Hafner et al. 2011, Laschober et al. 2007, Mukamel et al. 2007, Vallance et al. 2018). In this regard leadership skills were emphasized (Guerrero et al. 2016).

Few studies used a *neo-institutional understanding of PR (Pathway 2b)* (Contandriopoulos et al. 2014). Chang (2006) showed that external factors are key requirements for change processes. Thereby, receipt of legitimacy and resources from politics and society are central. This was confirmed by Nielsen and Riiskjær (2013), who said that the released data have a diagnostic aspect and on the other hand external forces are necessary to stimulate change. Monteduro (2017) concluded that the size of an organization has an influence on visibility in the public and raises the pressure to deal with the data to increase legitimacy from stakeholders. But, the presence of external rankings and equally the missing of meaningful reporting for providers could subvert management's responsibility to improve (Rasche and Gilbert 2015).

*Pathway 2c (Change Through Internal Pressures)* was also rarely focused (Contandriopoulos et al. 2014). One study found that different experts showed

significant variability in the interpretation of PR metrics, especially risk adjustment seems to be difficult (Govindan et al. 2017). Further, immaturity of PR was criticized by medical directors and therefore clinicians should be involved in development of measurements to make them more meaningful for the stakeholders (Canaway et al. 2018). Moreover, cardiologists had more trust in a not publicized vs. published program (Morrison et al. 2019). Last but not least, PR triggered reputational concerns and focus check in the definition of hospitals' objectives (Hibbard et al. 2005, Hafner et al. 2011).

## Discussion

This study categorizes research in the field of PR considering a review format from management, organizational behavior, or sociology. A comprehensive literature search in relevant databases along common keywords found lots of different studies. They showed the heterogeneity in the current literature to the topic of PR.

Studies assigned to *Pathway I (Improvement Through Selection)* are in the forefront, but quality improvements are rare (Berwick et al. 2003). Patients often do not know about an existing PR and orientate much more on own experiences, recommendations of relatives, and referring physicians (Merle et al. 2009, Schwartz et al. 2005). For the underlying theory that patients behave rationally, only small indications can be found. Possible interpretations for that are the regulated health market, the information asymmetry in the system, and the complexity of the reports and system itself (Berwick et al. 2003, Govindan et al. 2017). Like Contandriopoulos et al. (2014), authors emphasize that Pathway I does not seem to be the most promising way to explore, explain, and hope for positive effects of PR.

Hence, there is more hope in Berwick et al.'s (2003) *Pathway II (Improvement Through Changes in Care)*. Looking at the framework, the simplest functioning form is the rational behavior of the management in "Change Through Managerial Interventions" (Contandriopoulos et al. 2014). Qualitative studies showed that a considerable proportion of managers in health care organizations are not aware of an existing PR program (Waelli et al. 2016). Furthermore, systematic reviews followed that PR promoted only somewhat patient outcomes (Ketelaar et al. 2011, Metcalfe et al. 2018). In this view, PR is minimized to a mechanistic and pure rational tool that could inform provider's management to better assure that scarce resources would be allocated in all conscience. Rindova et al. (2018) call this perspective "information mediation". But indeed, it seems that managers – like patients – do not behave rationally.

Discussion to the other subgroups of PR is hard to carry out. There is a large gap between literature with and without theoretical basis. The early studies – these are the majority – performed within medical disciplines and are mostly atheoretical. In past studies, the linear, rationalistic, and atheoretical thinking, together with narrow inspection, do not adequately show the broadness of the phenomena.

Theoretically, a more realistic understanding and social anchoring of PR would be promising. Nowadays, there are few studies which consider sociological theories and would correspond to “Change Through Social Structuring” (Contandriopoulos et al. 2014). The neo-institutional view emerged out of the pure economic and rational ones. Socially constructed values and norms influence the behavior of organizations (DiMaggio and Powell 1983). To gain legitimacy and resources, it is necessary that health care organizations do what the public is expecting (Meyer & Rowan 1977). So, PR exercises a stimulus effect on the behavior of organizations. Something similar could be assumed for “Change Through Internal Pressures” on health professionals’ level (Contandriopoulos et al. 2014). Potential loss of reputation is thereby relevant (Hafner et al. 2011, Hibbard et al. 2005). But even looking at PR from a different perspective, many questions remain. It seems that organizations and professionals do have design spaces and are not completely dependent from their environment. This would correspond to the strategic choice theory (Child 1972). Under this aspect, evidence on reactions to PR could be seen more as continuum and multifaceted. For example, PR demonstrated more benefit when markets are competitive and measured baseline performance is low (OECD and WHO 2019). But, as a tool toward quality improvement and fulfilling demanding expectations, PR should be able to do more. Most countries in the industrialized world have several initiatives, measure various indicators at different levels, and address varying target audiences (OECD and WHO 2019). Investments in PR seem to outweigh its benefit (Blanchfield et al. 2018, Carpenter-Hubin and Crisan-Vandeborne 2016). For this discrepancy, Brunsson (2006) names “Mechanisms of Hope” to establish rational organizations to be key drivers for such initiatives. Hope that continued efforts with the same approach will bring the intended benefit (Watzlawick 1993). But, decision-making and cognitive processing research revealed that rationality in health care is difficult to perform (Djulbegovic and Elqayam 2017). However, this does not imply a negative conclusion for PR. Authors see the findings out of this review not as final and much more as part of a learning process to better understand that complex interventions in complex environments, such as PR in health care, need to be looked at in a different manner. So, following implications for health policy and recommendations for further research could be made.

### *Implications for Health Policy*

The authors conclude that PR initiatives were developed to the best knowledge and belief. Nevertheless, it is recommended to see engagement in PR in the longer term and reviewing it constantly for fine-tuning (OECD and WHO 2019). Ongoing efforts are necessary to improve benefit for specific target groups, for example, patients or providers. Adaption of reporting programs to specific expectations and needs would be advisable (Canaway et al. 2018, Shuker et al. 2018). Therefore, patients and providers should be involved when developing reporting schemes. PR that functions like a panacea is not realistic.

### *Recommendations for Further Research*

This study showed that phenomena in health care are studied within different disciplines. As a result, the range of methods is huge and studies' validity could be criticized upon researcher's perspective (Kuhn 2012). Recognition of complexity and acceptance of diversity in the field of health care should be drivers for a broader view and strategy to overcome these problems. Therefore, research in PR should take increased notice of underlying human behavior and organizational theories. Regarding the stimulus potential, further research in PR should consider embedding in society. Then, "the relationship between evidence and policy is complex and not a rational, linear one" (Hunter 2016). Furthermore, the context of PR initiatives and the mechanisms behind it should increasingly be focused when studying effects of PR (Pawson et al. 2005, Totten et al. 2012).

### *Strength and Limitations*

The new and contribution to the body of knowledge is the conducted review format applied to the topic of PR. It tried to organize and summarize the literature with a realist view (Pawson et al. 2005). It represents a move away from one-size-fits-all methods opening the eyes to a realer world view and addressing improvements for PR as policy strategy.

However, this review has several limitations to notice. Standardized keywords and definitions in the field of PR do not exist. The multifaceted approach within several disciplines made it impossible to conduct a classical systematic review how it is used, for example, in medical or nursing sciences. By contrast, for scholars in management or sociological sciences the used review format conforms to the usual approach. An existing conceptual framework served as basis for studies' allocation. Unfortunately, theoretical anchoring was not reported equally in all included work. Finally, the conducted review method lets room for interpretation and is not as clear as systematic ones (Pawson et al. 2005).

### **Conclusions**

This review suggests that PR is a popular topic in different academic fields and in health care policy. Despite of its high use, PR often does not show its full potential. Pure rational approaches to describe the effect of PR fall short. Further research should strive to do better by paying more attention to the breadth, theories, and context of the field as well as collaborative solution-finding between academia, policy, and practice.

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