

## *Impact of payment model on healthcare quality: A bibliometric study*

Silvia Helena Sauaia Bianchini<sup>1</sup>, Universidade de São Paulo, Escola Politécnica, Depto. de Engenharia de Produção  
Fernando Tobal Berssaneti<sup>2</sup>, Universidade de São Paulo, Escola Politécnica, Depto. de Engenharia de Produção  
Ana Maria Saut<sup>3</sup>, Universidade de São Paulo, Escola Politécnica, Depto. de Engenharia de Produção  
Simone Berger<sup>4</sup>, Universidade de São Paulo, Escola Politécnica, Depto. de Engenharia de Produção

### **ABSTRACT**

*Demographic and epidemiological changes require different healthcare management systems to treat chronic diseases, rather than acute illnesses with short-term costs. This scenario, added to the technological advances in medicine, contributed to the beginning of a global crisis in healthcare that forces improvements in cost and quality management. Therefore, this article aims to provide an overview of the research related to the impact of performance-related payment models in healthcare quality, through a bibliometric study. The adopted methodological approach mixes techniques of bibliometrics, keyword networks, co-authorship and co-citation networks and content analysis. The results show a stability in the number of publications in the past years, with a concentration of scientific production in the United States and the United Kingdom and in the field of medical knowledge. In Brazil, the issue is still nascent and represents an important gap to be explored, as well as studies that prove the long-term outcomes and the sustainability of the quality improvements after the removal of the incentive.*

**Editor Responsável:** Prof.  
Dr. Hermes Moretti Ribeiro da  
Silva

**Keywords:** *Pay for performance. Healthcare quality. Quality assurance. Reimbursement incentive.*

1. Av. Prof. Luciano Gualberto, 1380 - Butantã, São Paulo - SP, 05508-010, silvia.sauaia@usp.br; 2. fernando.berssaneti@usp.br; 3. ana.saut@usp.br; 4. sibberger@usp.br.

BIANCHINI, S.H.S.; BERSSANETI, F.T.; SAUT, A.M.; BERGER, S. Impact of payment model on healthcare quality: A bibliometric study **GEPROS. Gestão da Produção, Operações e Sistemas**, v. 15, n. 1, p. 228 - 255, 2020.

**DOI:** 10.15675/gepros.v15i1.2286

## 1. INTRODUCTION

The population pyramid transformation, added to the epidemiological changes and the continuous technological advances in healthcare, have led to increases in health costs worldwide. In Brazil, from 2004 to 2014, public health expenses grew at an average rate of 7%, which increased public health expenses proportionally to GDP by 0.5 percentage point. In supplementary health, which represents 51.8% of total health expenses in Brazil (BANK, 2017), the Medical-Hospital Costs Variation Index, the main cost indicator, increased by 19.4% in the 12 months ending September 2016 (IESS, 2017). This tendency of a rising medical inflation induces questions about the sustainability of public and private health systems and makes it urgent to reconsider the practices that have been applied, searching better management of the resources and of the healthcare quality offered to patients. These solutions go through changes in the compensation model and the creation of quality indicators that demonstrate transparency (IESS, 2016) and attract beneficiaries to institutions with better quality of service.

In 2001, the Institute of Medicine published a report proposing a complete redesign strategy for the American healthcare system aimed at quality improvement and cost reduction. The IOM proposal highlighted the need to promote changes in the structure, processes and the way institutions and professionals act (IOM, 2001). Almost 10 years later, the World Health Organization published the World Health Report with practical indications on how to finance health care, with the aim of placing all countries on the path towards universal coverage, even in scenarios of financial scarcity. One of the tools provided to promote the increase and improvement in health access is the review of how health service providers are paid, pursuing to generate incentives for efficiency and the adoption of quality practices. (WHO, 2010).

This study addresses a subject of worldwide relevance in its initial phases of study. The main objective of this research is to delineate an overview of the academic literature about pay for performance models on the healthcare industry through a bibliometric study that allows the identification of publications standards evolution over the years; analyze the relationship between most mentioned references, through citation and co-authorship networks, map trends and research gaps, identifying the core areas related to the subject.

## 2. BIBLIOGRAPHIC REVIEW

To review payment policies by implementing performance-driven incentive programs aiming at improvements in healthcare quality has become a popular strategy in public and private healthcare systems around the world. In Brazil, in 2015, the National Supplementary Health Agency (ANS) introduced the use of accreditation programs, as well as quality programs and indicators as a factor for contractual adjustments. In 2016, a Technical Remuneration Group was formed to deepen the debate about new performance-related pay models for service providers (ANAHP, 2016).

Pay for performance (P4P) programs provide financial rewards or penalties for healthcare providers, provider groups, or institutions according to their performance, based on key quality indicators (MENDELSON *et al.*, 2017). Remuneration has always been considered important for healthcare system managers, however, the concern related to the relationship between the remuneration model and the care provided is relatively recent. Two factors seem to be preponderant in the quality of health professionals' clinical care: the way the professional acts and the way he is paid. The way he acts is related to the ethical and technical considerations that determine actions that the professional will judge as appropriate to take, while the remuneration, when combined with performance, would be an incentive to the professional to achieve goals or optimize his work processes. (NETO *et al.*, 2016).

Pay for performance programs can help providers improve the quality of care, reduce unnecessary services, and improve patient health outcomes when properly oriented. Ju Kim identified that improvements in quality indicators not only resulted in real improvements in patient care, but also in lower rates of postoperative infection and complications, leading to reductions in medical costs (JU KIM *et al.*, 2017).

Despite the intuitive appeal, the advancements promised by pay for performance programs have not been empirically proven. The greatest benefits were observed in areas where the baseline performance was poor and the most significant outcomes were perceived in the early years of program implementation, but the rate of improvement declined over time and there is no clear evidence of progress in patient outcomes (MENDELSON *et al.*, 2017). There are several reasons why it is difficult to get empirical data to prove P4P results, for example the simultaneity of actions implemented in healthcare for quality enhancements, such as audits, public reports, and implementation of performance indicators. Another reason

would be the framework diversity of the different programs, producing a heterogeneity of results that are hard to compare (ROSENTHAL *et al.*, 2016). Another remark is the difficulty of establishing an ideal structure that is fair and effective, taking into account the various aspects to consider, what, who and how to encourage. (EIJKENAAR, 2013).

Pay for performance programs can be a tool to reach a new quality care level, in such a way that the outcomes initially obtained continue sustainable, even with the removal of the incentive, once new processes have been introduced, in the absence of opposite triggers for a regression (BENZER *et al.*, 2014).

### 3. METHODOLOGY

The methodological approach combines bibliometric techniques, content investigation, keyword networks, co-authorship and co-citation networks and content analysis. Bibliometrics is a quantitative and statistical technique to measure the rates of production and dissemination of scientific knowledge (FONSECA, 1986). Such technique offers objective information in a concise and understandable way, regardless of how extensive the research field is examined (DIEM; WOLTER, 2013). Bibliometrics emerged in the early twentieth century as a method of measuring the productivity of scientists - Lotka (1926), the dispersion of knowledge - Bradford (1934) and the distribution and frequency of words - Zipf (1949). These analyses allow an objective assessment of the scientific production, through statistical techniques that enables the identification of trends in the number of publications, authors and keywords (ARAUJO, 2006).

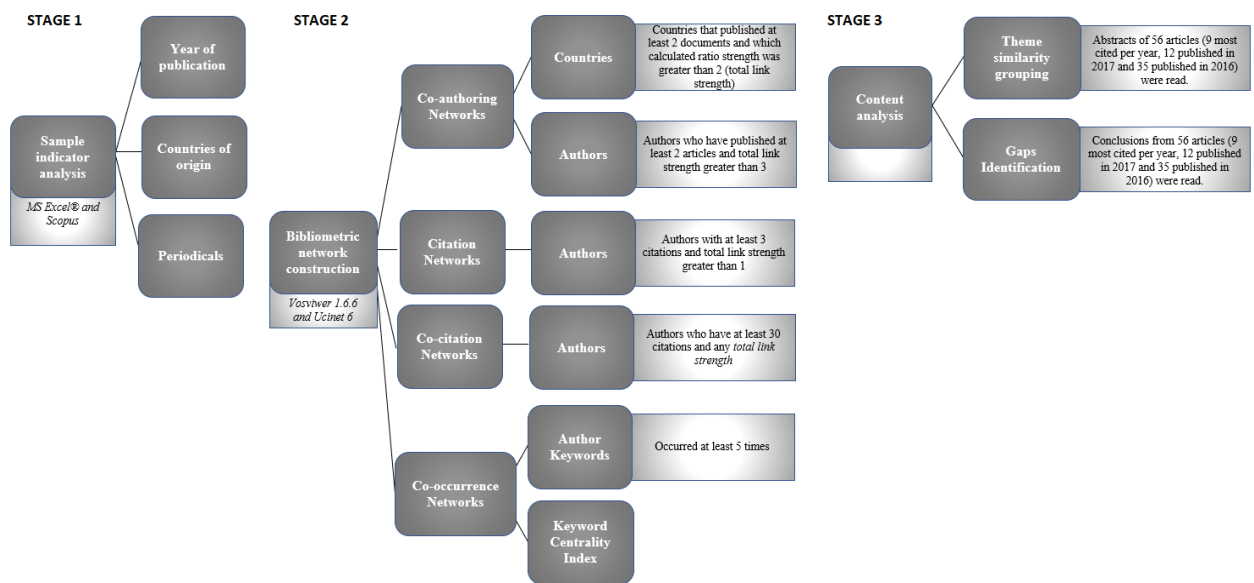
The study was developed in three phases, as shown in picture 1. The first one corresponds to a data sample analysis through *Scopus* platform indicators and *Microsoft Excel*® spreadsheets to organize articles by year of publication, country of origin, and periodicals. Subsequently, the *Vosviewer 1.6.6* and *Ucinet 6* bibliometric data processing software were used to construct the networks analyzed in the discussion section, namely: co-authorship networks with countries that published at least 2 documents and which the total link strength calculated by the software was greater than 2; co-authorship networks between authors, also with a minimum of 2 published articles and total link strength higher than 3; citation networks between authors with at least 3 citations and total link strength higher than 1; co-citation networks constructed with at least 30 citations and any value of total link

strength; finally a keyword co-occurrence network was analyzed based on the author's keywords that occurred at least 5 times.

These networks provide the graphic visualization of links between related areas, illustrating the formation of clusters and enabling the identification of the most relevant publications.

By the use of *Ucinet*, the keyword centrality index was calculated, supporting the analysis of the existing interrelationship.

**Picture 1 – Methodology illustration**



Source: Formulated by the authors.

In the last stage, the abstracts, conclusions and discussions of the 56 most cited articles from 2010 to 2017 were read, as well as 35 articles published in 2016 and 12 articles published until August, 2017, in order to identify recommendations for future studies and to group the themes by similarity.

The articles selected were obtained as a result of a first search executed in August, 2017 and a complementary search in August, 2019 in *Scopus* and *Web of Science* databases through the keywords “quality”, “healthcare”, “pay for performance”, “capitation”, “shared saving” and “bundled payment” in which 839 articles were identified. *Pubmed* database was

searched through the “reimbursement, incentive” and “quality assurance, healthcare” *MeSH* terms. In the first scan, restricted to the years from 2007 to 2017, 646 articles were found.

Only articles published from 2010 onwards were considered in accordance with the year of publication of the World Health Report: Health Systems Financing - The Pathway to Universal Coverage (WHO, 2010), leaving a total of 953 publications. Solely articles written in English, Portuguese and Spanish were considered, eliminating book chapters, conference articles and articles written in other languages. The complementary scan followed the same methodology described above, including the years of 2018 and 2019. After duplicates elimination and concept analysis of adherence through titles, 259 articles from the first search and 102 articles from the complementary search remained for the bibliometric networks assemble as shown in Table 1.

**Table 1** –Articles sample selection for bibliometric analysis

	SCOPUS	WOS	PUBMED
Publications from 2007 to 2017	530	309	658
Publications from 2010 onwards	295	225	433
Removal of non-article documents	221	190	
Removal of duplicates	221	87	
Title selection	122	47	129
Final selection by language and non-article documents	298		
Bibliometric network	259		
Publications from 2017 to 2019	116	125	36
Selection by language and documents other than articles or reviews	102	121	36
Removal of duplicates	102	49	36
Title selection	67	30	18
Articles from January to August of 2017, included in the first search	13		
Total bibliometric network (2007 to 2019)	361		

Source: Formulated by the authors.

## 4. RESULTS AND DISCUSSION

In this section are shown the results obtained through the analysis of the selected articles in order to outline an overview of how researches that discuss the impact of remuneration models in the quality of health services are conducted.

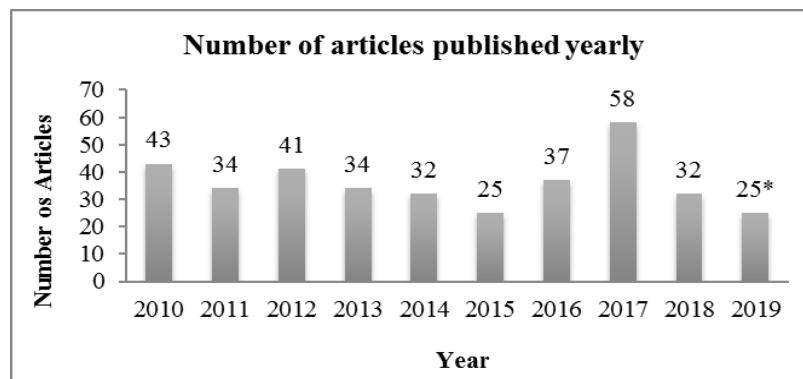
### 4.1 Bibliometric analysis

Picture 2 illustrates the stability in the number of articles published about the subject, demonstrating that the theme holds a constant academic interest, seeking to fill knowledge

GEPROS. Gestão da Produção, Operações e Sistemas, v. 15, nº 1, p. 228 - 255, 2020.

gaps. Despite this steadiness, there is a peak of publications in 2017, with 75% more articles published than the average of other years. In the present year of 2019, the monthly average of publication has been around 3 articles, as observed in the other years, except for 2017.

**Picture 2 – Publications by year**



Formulated by the authors. Source: *MS Excel*. \*Database until Aug/19.

Considering the countries that have published the most in recent years, it is possible to notice the predominance of the United States, with 207 publications, followed by the United Kingdom, with 53. The subsequent publications are scattered in several European countries such as the Netherlands (15), Germany (15), France (9), plus Canada (13), Taiwan (12) and Australia (7). This concentration of studies in the United States and United Kingdom may be related to their healthcare initiatives. The United States has been undergoing a reform since President Barack Obama sanctioned the healthcare reform law in 2010, while the United Kingdom implemented in 2004 Quality and Outcomes Framework (*QOF*) the broadest strategy implemented in a national level for adoption of performance-related pay model in primary care.

In contrast, Brazil has 3 articles published in the period (POLI NETO *et al.*, 2016), (NORMAN; RUSSELL; MERLI, 2016) and (SORANZ; PISCO, 2017), demonstrating incipient research on the topic, even though ANS has led discussions focused on supplementary health (ANAHP, 2016).

Furthermore, it is also revealed the relationship between the subject and the Medical field by the concentration of 75% of publications indexed in this area, followed by the Nursing field (6%). A dispersion in the consolidated areas of business studies such as Finance and Economics (3%), Administration (2%) and Engineering (1%) it is also perceived.



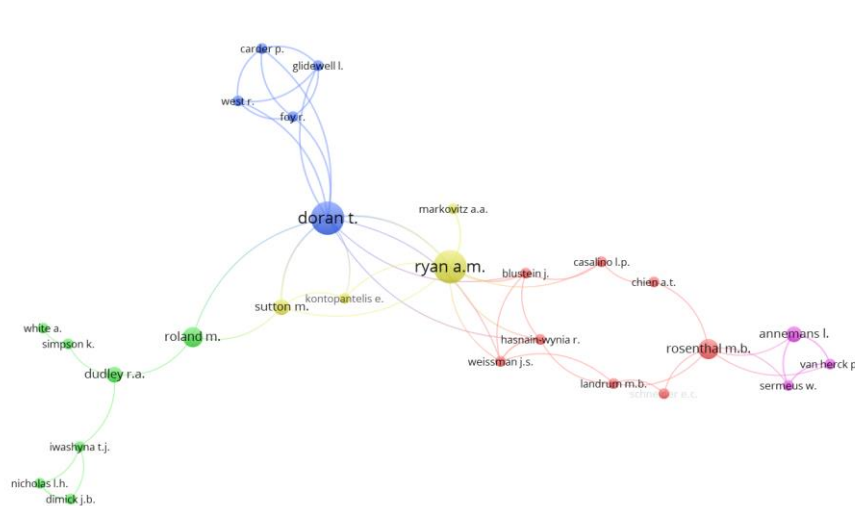
The medical concern in studying the relationship between remuneration and service quality aims to understand if financial incentives can change professional behavior, offering patients better care, once performance measurements and monitoring are established (CAMPBELL *et al.*, 2007).

## 4.2 Networks analysis

### 4.2.1 Co-authorship network

Picture 3 shows the co-authorship network, illustrating the cooperating authors.

**Picture 3** – Authors who publish together



Formulated by the authors. Source: *VosViewer 1.6.6*

Doran, T. and Ryan A.M are the authors with the greatest weight, characterized by the largest circle of the network, followed by Rosenthal M.B.

Ryan A.M. and Doran T. have their publishing networks connected, in addition the connection of authors who published with Ryan A.M. can be also found in Rosenthal M.B. network. Finally, stands out a third group with Roland M. and Dudley R.A. as the largest nodes of their network, also in connection with Doran, T.

Among the most cited authors of the research are Doran, T., Ryan AM, Damberg, CL, Majeed, A., Millett, C., Duszak, R., Eijkenaar, F., Iorio, R., Jha., AK, and Rosenthal, MB, whose research are introduced in Appendix 01.

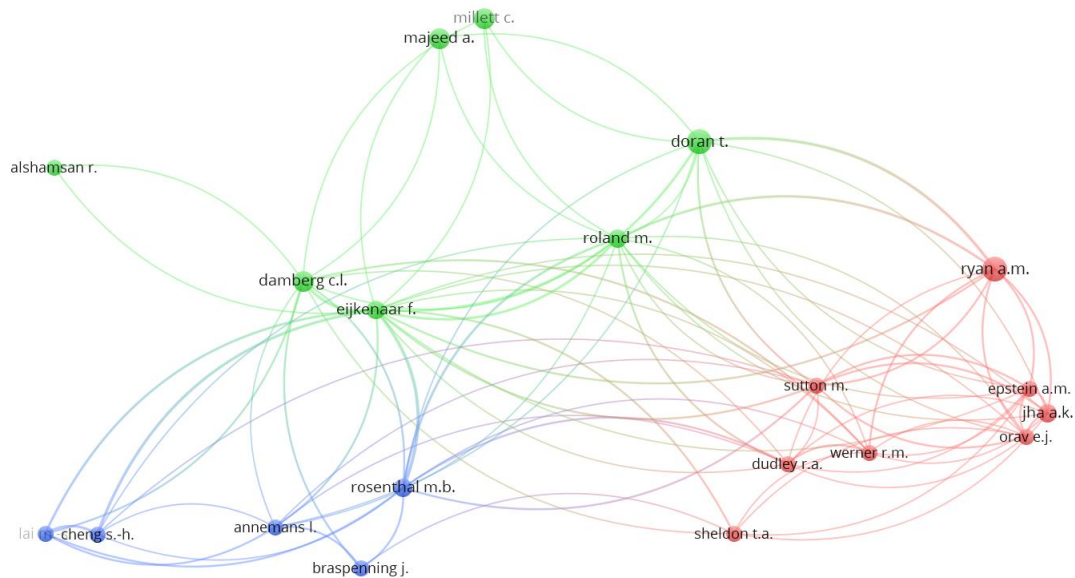


#### 4.2.2 Citation network

Citation networks allow the analysis of the number of times authors cite each other and co-citation networks the number of times they are cited together.

Thus, it is possible to detect the most cited authors, as well as those who collaborate with each other.

**Picture 4 – Citation Network**

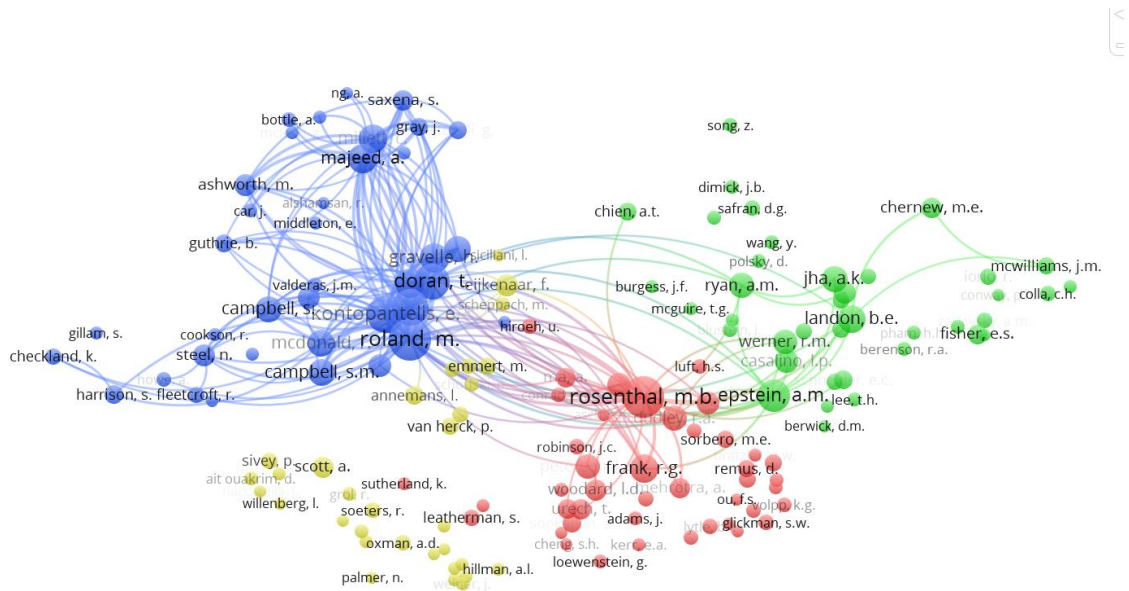


Formulated by the authors. Source: *VosViewer 1.6.6*

Figure 4 shows 3 clusters of authors who cite each other in their work, the first group consists of 8 authors around Werner, R.M.; followed by a group of 7 authors with the central node in Eijkenaar, F.; and a third group composed of 5 authors with central node in Annemans, L.

Some authors are connectors between clusters, such as Roland, M., which connects to both the Werner, RM cluster, citing Ryan AM, Sutton M. and Dudley RA, as well as Annemans L. cluster, through citations to Rosenthal MB and Annemans L. himself, Doran, T. and Rosenthal MB are also authors connecting clusters.

**Figure 5 - Co-citation Network**



Formulated by the authors. Source: *VosViver 1.6.6*

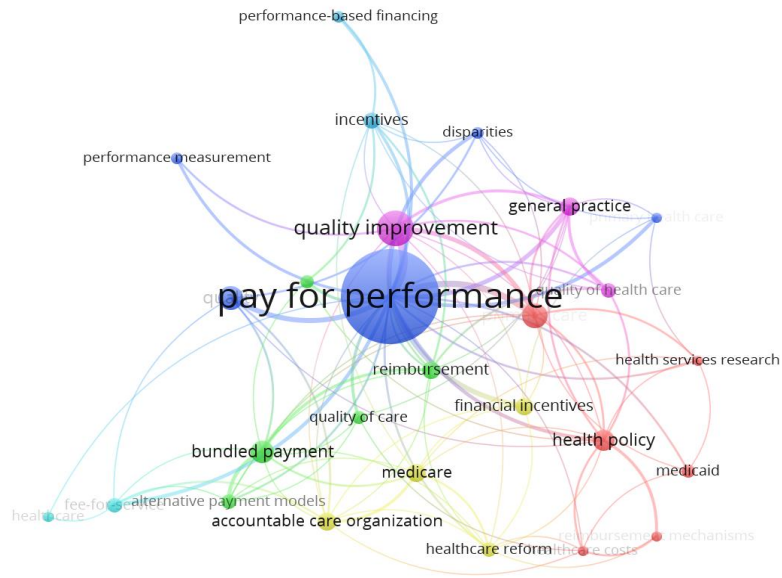
Figure 5 shows that the most influential authors create polarity around themselves. It is possible to identify three groups of researchers, one around Rosenthal, MB, a second, more polarized, with Doran, T. and Roland, M. and a third group with Epstein, AM as the central node.

The higher the volume of citations the higher the number of rows in the bundle. There is a large volume of citations in the polarized group around Roland M., as well as in the Rosenthal M.B. group. In the Epstein A.M. grouping the number of lines is the smallest.

#### 4.2.3 Occurrence network

The occurrence network demonstrates the clusters created around keywords, making clear that the keyword “pay for performance” stands out in the studied articles.

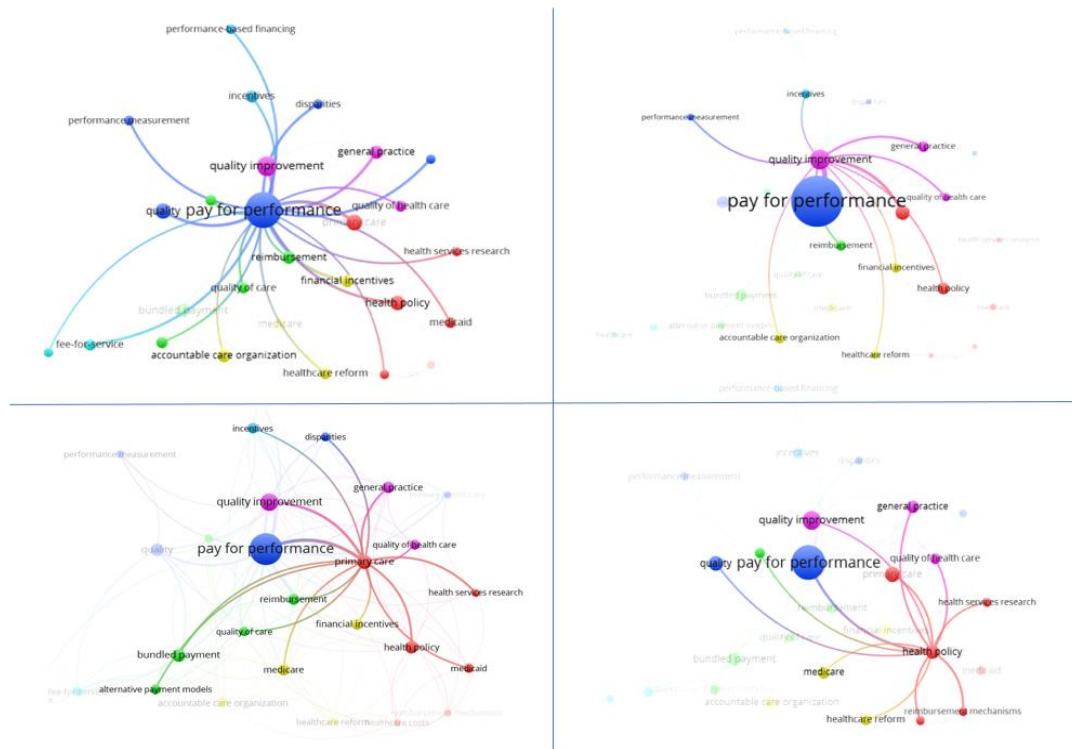
**Figure 6 – Keyword clusters**



Formulated by the authors. Source: *VosViewer 1.6.6*

Figure 6 exhibits the largest circles for the most cited keywords, which are “pay for performance”, “quality improvement”, “primary care”, and “health policy”.

**Figure 7 – Clusters detail of the most cited keywords**



Formulated by the authors. Source: *VosViewer 1.6.6*

Figure 7 illustrates the relationship between the most cited keywords in the sample against the others. In the first frame of picture 7 is verified the connection between the word “pay for performance” with the different payment models such as “fee for service” and “accountable care organization”, as well as the terms related to “quality”, “performance” and “payment”.

The second frame shows the connection of the expression “quality improvement” with words related to remuneration. In the third frame, the term “primary care” is connected to quality and incentives, and in the last frame “health policy” is strongly connected to “quality”.

The calculation of the keyword centrality index shows the words “pay for performance” (0.294), “quality improvement” (0.115), “primary care” (0.101) and “health policy” (0.073) as the most central terms, interconnecting the others and proving a substantial correlation between the subject “payment” and “quality” in the articles analyzed.

### 4.3 Content analysis

The quest for patterns and gaps pointed out to the most relevant publications, it was read the summary, conclusion and discussion of 9 articles that are the most cited from 2010 to 2017, listed in Appendix 01, as well as 12 articles, published in 2017, and 35 published in 2016.

**Table 3 – Articles grouping by theme similarity**

Groups	Number of articles	References
Analysis of program impact on quality measures	22 (39%)	(CHAUDHURI et al., 2016), (KRISTENSEN et al., 2014), (GILLAM; SIRIWARDENA; STEEL, 2012), (JHA et al., 2012), (WERNER et al., 2011), (SICSIC; FRANC, 2017), (JU KIM et al., 2017), (ANGIER et al., 2017), (COX et al., 2016), (ROSENTHAL et al., 2016), (MICHEL-LEPAGE; VENTELOU, 2016), (CHI et al., 2016), (POLI NETO et al., 2016), (DAS; GOPALAN; CHANDRAMOHAN, 2016), (WU et al., 2016), (GLEESON; KELLEHER; GARDNER, 2016), (CHEN; CHENG, 2016), (BASTIAN et al., 2016a), (ELLIOTT et al., 2016b), (CHAUDHURI et al., 2016), (BASTIAN et al., 2016b), (MURPHY et al., 2016)
Descriptive analysis, advantages and disadvantages and points of attention	13 (23%)	(FROIMSON et al., 2013b), (EIJKENAAR, 2013), (VAN HERCK et al., 2010a), (CARLSON et al., 2010), (ELBULUK; O’NEILL, 2017), (MILLER et al., 2017), (TABRIZI et al., 2017), (ANOUSHIRAVANI; IORIO, 2016), (CHEE et al., 2016), (KRETZSCHMAR et al., 2016), (KONDO et al., 2016), (KAZBEROUK; MCGUIRE; LANDON, 2016), (DORAN et al., 2016)

Behavioral and opinion analysis of health professionals and patients about programs	8 (14%)	(HAUSWALD; SKLAR, 2017), (FICHERA; PEZZINO, 2017), (RUDASINGWA; UWIZEYE, 2017), (NORMAN; RUSSELL; MERLI, 2016), (DALE; MYINT; COMPTON-PHILLIPS, 2016), (CHIU et al., 2016), (ALQASIM et al., 2016), (YÉ et al., 2016)
Design assessment of measured indicators, targets and unwanted effects	5 (9%)	(LOWRIE et al., 2017), (MUNYISIA; REID; YU, 2017), (GLANCE; LI; DICK, 2016), (WERNER; SKIRA; KONETZKA, 2016), (TAO; AGERHOLM; BURSTRÖM, 2016)
Other subjects	8 (14%)	(SCHULZ; DECAMP; BERKOWITZ, 2017), (FIGUEROA; WANG; JHA, 2016), (ASHCROFT et al., 2016), (KADIOGLU, 2016), (LIU; WU, 2016), (BERLIN; DUSZAK, 2016), (MARCIARILLE, 2016), (CREWS et al., 2016)

Source: Formulated by the authors.

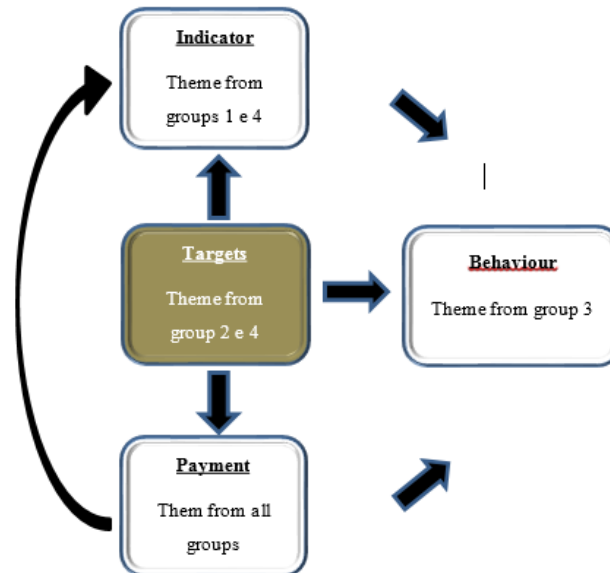
By arranging the articles by similarity of themes, as shown in table 3, it was observed that most of the studies analyzed (39%) evaluate the impact of performance-related pay programs on quality indicators. These studies generally make comparisons of groups under incentive influence against control groups without the incentive, comparing indicators before and after program implementation.

Following, it was observed that 23% of the analyzed articles bring descriptive characteristics of the payment models, emphasizing their advantages and disadvantages, the difficulties of implementation and the points of attention to transition from the current model to the new one.

The third batch of examined articles (14%) addresses the behavioral and motivational side of the incentive for professionals, bringing qualitative studies explore the perception of professionals, as well as patients, regarding the benefits and difficulties that performance-related pay brings.

Lastly, the fourth collection of articles (9%) focuses on studying the indicators adopted to assess the program quality results and their possible unwanted effects. According to Kondo (2016), poorly defined indicators, as well as inadequate context or an unsatisfactory implementation can result in undesirable effects such as gaming, patient selection, care negligence or processes not monitored by the program.

**Figure 8** – Relationship model among the subjects covered



Source: Formulated by the authors.

Figure 8 presents the entity relationship diagram between the main themes addressed in the articles analyzed.

The theoretical model shows the targets influence on all items addressed, from the behavior of those involved in the programs to the direct impact on the indicators that are the base for the pay for performance systems.

The introduction of performance measures for health professionals results in changes in behavior regarding treatment choices and reducing the volume of inappropriate or unnecessary procedures (CHAUDHURI *et al.*, 2016). Moreover, professionals who are remunerated according to their performance dedicate greater efforts in care, since they can be better rewarded monetarily (RUDASINGWA; UWIZEYE, 2017).

Assessing the relationship between goals and indicators, it is noted that different designs result in heterogeneous effects that vary from program to program (ROSENTHAL *et al.*, 2016), however, the adoption of performance-related pay systems by itself impacts indicators causing change in their results (KRISTENSEN *et al.*, 2014). Absolute or relative, individual or joint goals, generate different forms of encouragement and collaboration among team members (EIJKENAAR, 2013).

In a content analysis of the articles was identified three major gaps to be explored, as described below:



**Pay for performance in medical specialties not studied:** Due to the wide range of health care practices, most studies are limited to particular specialties and cannot be generalized, leaving gaps in untested specialties.

According to CHEN; CHENG (2016), the findings on the impacts of performance-related payment programs on different health systems are still inconsistent.

Even in studies of specific payment systems, such as Medicare, it is unlikely to find samples that allow a system behavior generalization in different geographic regions or specialties (ROSENTHAL *et al.*, 2016).

**Long-term results analysis of pay for performance programs:** There are few studies that prove the maintenance of the initially obtained improvements in the long term, as well as the sustainability of these developments after the incentive withdrawal.

CHI *et al.* (2016), CHEE *et al.* (2016), SCHULZ; DECAMP; BERKOWITZ (2017), and TABRIZI *et al.* (2017) recommend the arrangement of future studies to explore the long-term effects of performance-related pay systems.

**Pay for performance in the Brazilian healthcare system:** The small number of publications on the subject in Brazil, even after ANS initiatives to lead studies on the topic, demonstrates a large academic gap to be explored in the country.

In his studies on pay for performance in Brazil and Portugal, POLI NETO *et al.* (2016) states that further research is needed to evaluate the effectiveness of these experiences in Brazil.

## 5. CONCLUSION

The goal of this paper was to provide an overview of the research regarding to the impact of performance-related payment models in healthcare quality through a bibliometric study to identify evolutionary patterns of publications over the years, authors and most relevant works, as well as to map research trends and gaps, collaborating to identify future study opportunities.

The studied sample included articles and reviews published between 2010 and 2019 from the *Pubmed*, *Scopus* and *Web of Science* databases.

A stability in the volume of articles published annually was observed, except for a peak of publications in 2017, and a concentration of publications in the United States and the



United Kingdom. It was observed that the volume of publications in Brazil is small, limited in 3 during the studied period, indicating an incipient research on the topic and suggesting a gap to be explored in future studies led in the country, mainly due to the unique combination of public and private systems, in which the public system proposes to offer universal healthcare access, but allows the private system to provide the same services in a complementary manner, trying to remedy deficiencies left by public healthcare.

The publications are concentrated in the area of Medicine, however, as being a very broad area of knowledge, the articles are scattered in several journals. The most influential authors, corroborating the analysis of the countries that publish the most, are from American and British universities.

The keyword analysis of the articles indicated a robust connection of the theme “pay for performance” with quality, payment and health policies.

By analyzing the content of the most recent and most relevant articles, studies were grouped into four broad categories representing the focus given by them. Most studies fall into the group focused on descriptive analysis of remuneration models, followed by the group that explores the impact of programs on quality measurement, followed by the group that evaluates the indicators and targets designs. Finally, the fourth category, studies the opinions and behavior of healthcare professionals and patients regarding the programs.

Gaps to be explored in future studies were recognized, such as the impact of the implementation of performance-based payment programs in the various medical specialties not yet studied, the maintenance of long-term results, and, finally, the implementation of this kind of compensation program in Brazil.

This study has limitations from methodological choices. The first one is related to the restricted period of publication of the articles, between 2010 and 2019. Another limitation refers to the *Web of Science*, *Scopus* and *Pubmed* databases, which, despite being comprehensive, have a limited number of titles. Thus, relevant work may be out of the sample. Lastly, citation analysis generates a time bias, as older articles tend to be more cited than newer ones.

## References

AHLUWALIA, S. C. et al. How are medical groups identified as high-performing? The effect of different approaches to classification of performance. **BMC health services research**, v. 19, n. 1, p. 500, 2019.

ALQASIM, K. M. et al. Physicians' views on pay-for-performance as a reimbursement model: a quantitative study among Dutch surgical physicians. **Journal of Medical Economics**, v. 19, n. 2, p. 158–167, 6 fev. 2016.

ALSHAMSAN, R. et al. Effect of a UK Pay-for-Performance Program on Ethnic Disparities in Diabetes Outcomes: Interrupted Time Series Analysis. **The Annals of Family Medicine**, v. 10, n. 3, p. 228–234, 1 maio 2012.

ANAHP. **Observatório Anahp 2016**. [s.l.: s.n.]. Disponível em: <<http://anahp.com.br/produtos-anahp/observatorio/observatorio-2016>>.

ANGIER, H. et al. Evaluating community health centers' adoption of a new global capitation payment (eCHANGE) study protocol. **Contemporary Clinical Trials**, v. 52, p. 35–38, jan. 2017.

ANOUSHIRAVANI, A. A.; IORIO, R. Alternative payment models: From bundled payments for care improvement and comprehensive care for joint replacement to the future? **Seminars in Arthroplasty**, v. 27, n. 3, p. 151–162, set. 2016.

ARAUJO, C. A. Bibliometria: evolução histórica e questões atuais. **Em questão**, p. 11–32, 2006.

ASHCROFT, R. et al. Incentives and disincentives for treating of depression and anxiety in Ontario Family Health Teams: protocol for a grounded theory study. **BMJ Open**, v. 6, n. 11, p. e014623, 14 nov. 2016.

BANK, W. **Um Ajuste Justo: Análise da eficiência e equidade do gasto público no Brasil**. [s.l.: s.n.]. Disponível em: <<http://documents.worldbank.org/curated/en/884871511196609355/pdf/121480-REVISED-PORTUGUESE-Brazil-Public-Expenditure-Review-Overview-Portuguese-Final-revised.pdf>>.

BASTIAN, N. D. et al. Measuring the effect of pay-for-performance financial incentives on hospital efficiency in the military health system. **IIE Transactions on Healthcare Systems Engineering**, v. 6, n. 1, p. 33–41, 2 jan. 2016a.

BASTIAN, N. D. et al. The Impact of a Pay-for-Performance Program on Central Line-Associated Blood Stream Infections in Pennsylvania. **Hospital Topics**, v. 94, n. 1, p. 8–14, 2 jan. 2016b.

BENZER, J. K. et al. Sustainability of Quality Improvement Following Removal of Pay-for-  
GEPROS. *Gestão da Produção, Operações e Sistemas*, v. 15, nº 1, p. 228 - 255, 2020.

Performance Incentives. **Journal of General Internal Medicine**, v. 29, n. 1, p. 127–132, 9 jan. 2014.

BERLIN, J. W.; DUSZAK, R. The role of the radiologist in new payment systems. **Abdominal Radiology**, v. 41, n. 3, p. 461–465, 10 mar. 2016.

BLUSTEIN, J. et al. Analysis Raises Questions On Whether Pay-For-Performance In Medicaid Can Efficiently Reduce Racial And Ethnic Disparities. **Health Affairs**, v. 30, n. 6, p. 1165–1175, 1 jun. 2011.

CAMPBELL, S. et al. Quality of Primary Care in England with the Introduction of Pay for Performance. **New England Journal of Medicine**, v. 357, n. 2, p. 181–190, 12 jul. 2007.

CARLSON, J. J. et al. Linking payment to health outcomes: A taxonomy and examination of performance-based reimbursement schemes between healthcare payers and manufacturers. **Health Policy**, v. 96, n. 3, p. 179–190, ago. 2010.

CHAUDHURI, D. et al. Effectiveness of Quality Improvement Interventions at Reducing Inappropriate Cardiac Imaging. **Circulation: Cardiovascular Quality and Outcomes**, v. 9, n. 1, p. 7–13, jan. 2016.

CHEE, T. T. et al. Current State of Value-Based Purchasing Programs. **Circulation**, v. 133, n. 22, p. 2197–2205, 31 maio 2016.

CHEN, C.-C.; CHENG, S.-H. Does pay-for-performance benefit patients with multiple chronic conditions? Evidence from a universal coverage health care system. **Health Policy and Planning**, v. 31, n. 1, p. 83–90, fev. 2016.

CHI, M.-J. et al. Effects and Factors Related to Adherence to A Diabetes Pay-for-Performance Program: Analyses of a National Health Insurance Claims Database. **Journal of the American Medical Directors Association**, v. 17, n. 7, p. 613–619, jul. 2016.

CHIEN, A. T. et al. Impact of a pay for performance program to improve diabetes care in the safety net. **Preventive Medicine**, v. 55, p. S80–S85, nov. 2012.

CHIU, H.-C. et al. Patient assessment of diabetes care in a pay-for-performance program. **International Journal for Quality in Health Care**, v. 28, n. 2, p. 183–190, abr. 2016.

COX, J. C. et al. Incentivizing cost-effective reductions in hospital readmission rates. **Journal of Economic Behavior & Organization**, v. 131, p. 24–35, nov. 2016.

CREWS, H. R. et al. The Use of Claims-Based Data in Inpatient Public Reporting and Pay-for-Performance Programs: Is There Opportunity for Improvement? **Journal for Healthcare Quality**, v. 38, n. 6, 2016.

DALE, C. R.; MYINT, M.; COMPTON-PHILLIPS, A. L. Counting Better — The Limits and Future of Quality-Based Compensation. **New England Journal of Medicine**, v. 375, n. 7, p.

609–611, 18 ago. 2016.

DALTON, A. R. H. et al. Exclusion of patients from quality measurement of diabetes care in the UK pay-for-performance programme. **Diabetic Medicine**, v. 28, n. 5, p. 525–531, maio 2011.

DAMBERG, C. L.; ELLIOTT, M. N.; EWING, B. A. Pay-for-performance schemes that use patient and provider categories would reduce payment disparities. **Health Affairs**, v. 34, n. 1, p. 134–142, 2015.

DAS, A.; GOPALAN, S. S.; CHANDRAMOHAN, D. Effect of pay for performance to improve quality of maternal and child care in low- and middle-income countries: a systematic review. **BMC Public Health**, v. 16, n. 1, p. 321, 14 dez. 2016.

DIEM, A.; WOLTER, S. C. The Use of Bibliometrics to Measure Research Performance in Education Sciences. **Research in Higher Education**, v. 54, n. 1, p. 86–114, 6 fev. 2013.

DORAN, J. P. et al. Implementation of Bundled Payment Initiatives for Total Joint Arthroplasty: Decreasing Cost and Increasing Quality. **Instructional course lectures**, v. 65, p. 555–566, 2016.

DORAN, T. et al. Setting performance targets in pay for performance programmes: What can we learn from QOF? **BMJ (Online)**, v. 348, 2014.

DORAN, T. Incentivising improvements in health care delivery: A response to Adam Oliver. **Health Economics, Policy and Law**, v. 10, n. 3, p. 351–356, 2014.

DORAN, T.; ROLAND, M. Lessons from major initiatives to improve primary care in the United Kingdom. **Health Affairs**, v. 29, n. 5, p. 1023–1029, 2010.

DUSZAK JR., R. et al. Medicare's physician quality reporting system: Early national radiologist experience and near-future performance projections. **Journal of the American College of Radiology**, v. 10, n. 2, p. 114–121, 2013.

EIJKENAAR, F. Pay for performance in health care: An international overview of initiatives. **Medical Care Research and Review**, v. 69, n. 3, p. 251–276, 2012.

EIJKENAAR, F. Key issues in the design of pay for performance programs. **The European Journal of Health Economics**, v. 14, n. 1, p. 117–131, 1 fev. 2013.

ELBULUK, A. et al. The surgical hip and femur fracture treatment model: Medicare's next orthopaedic bundle. **JBJS Reviews**, v. 5, n. 10, 2017.

ELBULUK, A. M.; O'NEILL, O. R. Private Bundles: The Nuances of Contracting and Managing Total Joint Arthroplasty Episodes. **The Journal of Arthroplasty**, v. 32, n. 6, p. 1720–1722, jun. 2017.

ELLIOTT, M. N. et al. Understanding the role played by medicare's patient experience points system in hospital reimbursement. **Health Affairs**, v. 35, n. 9, p. 1673–1680, 2016a.

ELLIOTT, M. N. et al. Understanding The Role Played By Medicares Patient Experience Points System In Hospital Reimbursement. **Health Affairs**, v. 35, n. 9, p. 1673–1680, 1 set. 2016b.

EMMERT, M. et al. Economic evaluation of pay-for-performance in health care: a systematic review. **European Journal of Health Economics**, v. 13, n. 6, p. 755–767, 2012.

EPSTEIN, A. M.; JHA, A. K.; ORAV, E. J. The impact of pay-for-performance on quality of care for minority patients. **American Journal of Managed Care**, v. 20, n. United States eISSN-1936-2692 (Electronic) PT-Journal Article PT-Research Support, Non-U.S. Gov't LG-English DC-20141122 OVID MEDLINE UP 20151217, p. e479–e486, 2014.

FICHERA, E.; PEZZINO, M. Pay for performance and contractual choice: the case of general practitioners in England. **Health Economics Review**, v. 7, n. 1, p. 6, 31 dez. 2017.

FIGUEROA, J. F.; WANG, D. E.; JHA, A. K. Characteristics of hospitals receiving the largest penalties by US pay-for-performance programmes. **BMJ Quality & Safety**, v. 25, n. 11, p. 898–900, nov. 2016.

FONSECA, E. N. DA. **Bibliometria: teoria e prática**. [s.l.] Cultrix, 1986.

FROIMSON, M. I. et al. Bundled payments for care improvement initiative: The next evolution of payment formulations: AAHKS bundled payment task force. **Journal of Arthroplasty**, v. 28, n. 8 SUPPL, p. 157–165, 2013a.

FROIMSON, M. I. et al. Bundled Payments for Care Improvement Initiative: The Next Evolution of Payment Formulations. **The Journal of Arthroplasty**, v. 28, n. 8, p. 157–165, set. 2013b.

GILLAM, S. J.; SIRIWARDENA, A. N.; STEEL, N. Pay-for-Performance in the United Kingdom: Impact of the Quality and Outcomes Framework--A Systematic Review. **The Annals of Family Medicine**, v. 10, n. 5, p. 461–468, 1 set. 2012.

GLANCE, L. G.; LI, Y.; DICK, A. W. Quality of Quality Measurement. **Anesthesiology**, v. 125, n. 6, p. 1092–1102, dez. 2016.

GLEESON, S.; KELLEHER, K.; GARDNER, W. Evaluating a Pay-for-Performance Program for Medicaid Children in an Accountable Care Organization. **JAMA Pediatrics**, v. 170, n. 3, p. 259, 1 mar. 2016.

GLIDEWELL, L. et al. Does a local financial incentive scheme reduce inequalities in the delivery of clinical care in a socially deprived community? A longitudinal data analysis. **BMC Family Practice**, v. 16, n. 1, 2015.

GLOVER, M. et al. Participation and payments in the PQRS Maintenance of Certification Program: Implications for future merit based payment programs. **Healthcare**, v. 6, n. 1, p. 28–32, 2018.

HACKETT, J. et al. `Just another incentive scheme`: a qualitative interview study of a local pay-for-performance scheme for primary care. **BMC Family Practice**, v. 15, n. 1, p. 168, 25 dez. 2014.

HAMILTON, F. L. et al. Impact of a Pay-for-Performance Incentive Scheme on Age, Sex, and Socioeconomic Disparities in Diabetes Management in UK Primary Care. **Journal of Ambulatory Care Management**, v. 33, n. 4, p. 336–349, 2010.

HAUSWALD, E.; SKLAR, D. Will the “Fixes” Fall Flat? Prospects for Quality Measures and Payment Incentives to Control Healthcare Spending. **Southern Medical Journal**, v. 110, n. 4, p. 249–254, abr. 2017.

HUGHES, D. R. et al. An Empirical Framework for Breast Screening Bundled Payments. **Journal of the American College of Radiology**, v. 14, n. 1, p. 17- 23.e1, 2017.

IESS. **Conjuntura Saúde Suplementar**. Disponível em: <[http://iess.org.br/?p=publicacoes&id\\_tipo=2](http://iess.org.br/?p=publicacoes&id_tipo=2)>. Acesso em: 18 out. 2017.

IESS. **Variação dos Custos Médico-Hospitalares**. Disponível em: <[http://iess.org.br/?p=publicacoes&id=853&id\\_tipo=13](http://iess.org.br/?p=publicacoes&id=853&id_tipo=13)>. Acesso em: 18 out. 2017.

IOM. **Crossing the Quality Chasm**. Washington, D.C.: National Academies Press, 2001.

JHA, A. K. et al. The Long-Term Effect of Premier Pay for Performance on Patient Outcomes. **New England Journal of Medicine**, v. 366, n. 17, p. 1606–1615, 26 abr. 2012.

JHA, A. K.; ORAV, E. J.; EPSTEIN, A. M. The effect of financial incentives on hospitals that serve poor patients. **Annals of Internal Medicine**, v. 153, n. 5, p. 299–306, 2010.

JU KIM, S. et al. Pay-for-performance reduces healthcare spending and improves quality of care: Analysis of target and non-target obstetrics and gynecology surgeries. **International Journal for Quality in Health Care**, v. 29, n. 2, p. 222–227, abr. 2017.

KADIOGLU, F. G. An Ethical Analysis of Performance-Based Supplementary Payment in Turkey’s Healthcare System. **Cambridge Quarterly of Healthcare Ethics**, v. 25, n. 03, p. 493–496, 27 jul. 2016.

KAZBEROUK, A.; MCGUIRE, K.; LANDON, B. E. A Survey of Innovative Reimbursement Models in Spine Care. **SPINE**, v. 41, n. 4, p. 344–352, fev. 2016.

KONDO, K. K. et al. Implementation Processes and Pay for Performance in Healthcare: A Systematic Review. **Journal of General Internal Medicine**, v. 31, n. S1, p. 61–69, 7 abr. 2016.



KRETZSCHMAR, R. et al. Pulling together: Team-based performance sharing. **Nursing Management**, v. 47, n. 4, 2016.

KRISTENSEN, S. R. et al. Long-Term Effect of Hospital Pay for Performance on Mortality in England. **New England Journal of Medicine**, v. 371, n. 6, p. 540–548, 7 ago. 2014.

LEE, J. T. et al. The Effects of Pay for Performance on Disparities in Stroke, Hypertension, and Coronary Heart Disease Management: Interrupted Time Series Study. **PLoS ONE**, v. 6, n. 12, p. e27236, 15 dez. 2011.

LIU, P.; WU, S. An agent-based simulation model to study accountable care organizations. **Health Care Management Science**, v. 19, n. 1, p. 89–101, 9 mar. 2016.

LOWRIE, R. et al. Incentivised chronic disease management and the inverse equity hypothesis: findings from a longitudinal analysis of Scottish primary care practice-level data. **BMC Medicine**, v. 15, n. 1, p. 77, 11 dez. 2017.

MARCIARILLE, A. M. Managing Our Microbial Mark. **American Journal of Law & Medicine**, v. 42, n. 2–3, p. 393–428, 22 maio 2016.

MARKOVITZ, A. A. et al. Financial Incentives and Physician Practice Participation in Medicare's Value-Based Reforms. **Health Services Research**, v. 53, p. 3052–3069, 2018.

MARKOVITZ, A. A. et al. Performance in the Medicare Shared Savings Program after Accounting for Nonrandom Exit: An Instrumental Variable Analysis. **Annals of Internal Medicine**, v. 171, n. 1, p. 27–36, 2019.

MEHROTRA, A.; SORBERO, M. E. S.; DAMBERG, C. L. Using the lessons of behavioral economics to design more effective pay-for-performance programs. **American Journal of Managed Care**, v. 16, n. 7, p. 497–503, 2010.

MENDELSON, A. et al. The effects of pay-for-performance programs on health, health care use, and processes of care: A systematic review. **Annals of Internal Medicine**, v. 166, n. 5, 2017.

MICHEL-LEPAGE, A.; VENTELOU, B. The true impact of the French pay-for-performance program on physicians' benzodiazepines prescription behavior. **The European Journal of Health Economics**, v. 17, n. 6, p. 723–732, 25 jul. 2016.

MILLER, B. F. et al. Payment reform in the patient-centered medical home: Enabling and sustaining integrated behavioral health care. **American Psychologist**, v. 72, n. 1, p. 55–68, 2017.

MULLEN, K. J.; FRANK, R. G.; ROSENTHAL, M. B. Can you get what you pay for? Pay-for-performance and the quality of healthcare providers. **The RAND Journal of Economics**, v. 41, n. 1, p. 64–91, mar. 2010.



MUNYISIA, E. N.; REID, D.; YU, P. Accuracy of outpatient service data for activity-based funding in New South Wales, Australia. **Health Information Management Journal**, v. 46, n. 2, p. 78–86, maio 2017.

MURPHY, D. J. et al. Using Incentives to Improve Resource Utilization. **Critical Care Medicine**, v. 44, n. 1, p. 162–170, jan. 2016.

NORMAN, A. H.; RUSSELL, A. J.; MERLI, C. The Quality and Outcomes Framework: Body commodification in UK general practice. **Social Science & Medicine**, v. 170, p. 77–86, dez. 2016.

POLI NETO, P. et al. Remuneração variável na Atenção Primária à Saúde: relato das experiências de Curitiba e Rio de Janeiro, no Brasil, e de Lisboa, em Portugal. **Ciência & Saúde Coletiva**, v. 21, n. 5, p. 1377–1388, maio 2016.

ROBERTS, E. T.; ZASLAVSKY, A. M.; MCWILLIAMS, J. M. The value-based payment modifier: Program outcomes and implications for disparities. **Annals of Internal Medicine**, v. 168, n. 4, p. 255–265, 2018.

ROSENTHAL, M. B. et al. Pay for Performance in Medicaid: Evidence from Three Natural Experiments. **Health Services Research**, v. 51, n. 4, p. 1444–1466, ago. 2016.

RUDASINGWA, M.; UWIZEYE, M. R. Physicians' and nurses' attitudes towards performance-based financial incentives in Burundi: a qualitative study in the province of Gitega. **Global Health Action**, v. 10, n. 1, p. 1270813, 27 jan. 2017.

RYAN, A. M. Has pay-for-performance decreased access for minority patients?: Hospitals and nursing homes. **Health Services Research**, v. 45, n. 1, p. 6–23, 2010a.

RYAN, A. M. Has Pay-for-Performance Decreased Access for Minority Patients? **Health Services Research**, v. 45, n. 1, p. 6–23, fev. 2010b.

RYAN, A. M.; BLUSTEIN, J.; CASALINO, L. P. Medicare's flagship test of pay-for-performance did not spur more rapid quality improvement among low-performing hospitals. **Health Affairs**, v. 31, n. 4, p. 797–805, 2012.

RYAN, A.; SUTTON, M.; DORAN, T. Does winning a pay-for-performance bonus improve subsequent quality performance? Evidence from the hospital quality incentive demonstration. **Health Services Research**, v. 49, n. 2, p. 568–587, 2014.

SCHULZ, J.; DECAMP, M.; BERKOWITZ, S. A. Regional cost and experience, not size or hospital inclusion, helps predict ACO success. **Medicine**, v. 96, n. 24, p. e7209, jun. 2017.

SICSIC, J.; FRANC, C. Impact assessment of a pay-for-performance program on breast cancer screening in France using micro data. **The European Journal of Health Economics**, v. 18, n. 5, p. 609–621, 21 jun. 2017.

SIDDIQI, A. et al. Effect of Bundled Payments and Health Care Reform as Alternative Payment Models in Total Joint Arthroplasty: A Clinical Review. **Journal of Arthroplasty**, v. 32, n. 8, p. 2590–2597, 2017.

SORANZ, D.; PISCO, L. A. C. Primary health care reform in the cities of Lisbon and Rio de Janeiro: Context, strategies, results, learning and challenges . **Ciencia e Saude Coletiva**, v. 22, n. 3, p. 679–686, 2017.

TABRIZI, J. S. et al. Design and implementation of pay-for-quality in primary healthcare. **Australasian Medical Journal**, v. 10, n. 6, 2017.

TAO, W.; AGERHOLM, J.; BURSTRÖM, B. The impact of reimbursement systems on equity in access and quality of primary care: A systematic literature review. **BMC Health Services Research**, v. 16, n. 1, p. 542, 4 dez. 2016.

VAN HERCK, P. et al. Systematic review: Effects, design choices, and context of pay-for-performance in health care. **BMC health services research**, v. 10, n. 1, p. 247, 2010a.

VAN HERCK, P. et al. Systematic review: Effects, design choices, and context of pay-for-performance in health care. **BMC Health Services Research**, v. 10, n. 1, p. 247, 23 dez. 2010b.

VLAANDEREN, F. P. et al. Design and effects of outcome-based payment models in healthcare: a systematic review. **European Journal of Health Economics**, v. 20, n. 2, p. 217–232, 2019.

WERNER, R. M. et al. The Effect Of Pay-For-Performance In Hospitals: Lessons For Quality Improvement. **Health Affairs**, v. 30, n. 4, p. 690–698, 1 abr. 2011.

WERNER, R. M.; SKIRA, M.; KONETZKA, R. T. An Evaluation of Performance Thresholds in Nursing Home Pay-for-Performance. **Health Services Research**, v. 51, n. 6, p. 2282–2304, dez. 2016.

WHO. **Relatório Mundial de Saúde: Financiamento dos Sistemas de Saúde – O caminho para a cobertura universal**. [s.l.: s.n.]. Disponível em: <<http://www.who.int/portuguese/publications/WHR2010.pdf>>.

WU, J. et al. The impact of a bundled policy intervention on improving the performance of rural healthcare in China. **International Journal for Equity in Health**, v. 15, n. 1, p. 46, 10 dez. 2016.

YÉ, M. et al. Health worker preferences for performance-based payment schemes in a rural health district in Burkina Faso. **Global Health Action**, v. 9, n. 1, p. 29103, 5 dez. 2016.

**Appendix 1 - Most Cited Authors**

Author		Publications of these authors existent in the sample	Year	Article Citations
Doran, T.	Health Policy Professor at York University. Research in the areas of health services, health policies, health inequalities. He has 3083 citations in Google Scholar since 2009, peaking at 455 and 454 citations in the years 2015 and 2016 respectively.	Lessons from major initiatives to improve primary care in the United Kingdom(DORAN; ROLAND, 2010)	2010	43
		Setting performance targets in pay for performance programmes: What can we learn from QOF?(DORAN et al., 2014)	2014	24
		Does winning a pay-for-performance bonus improve subsequent quality performance? Evidence from the hospital quality incentive demonstration(RYAN; SUTTON; DORAN, 2014)	2014	12
		Incentivising improvements in health care delivery: A response to Adam Oliver(DORAN, 2014)	2014	2
		Does a local financial incentive scheme reduce inequalities in the delivery of clinical care in a socially deprived community? A longitudinal data analysis (GLIDEWELL et al., 2015)(GLIDEWELL et al., 2015)	2015	3
		'Just another incentive scheme': A qualitative interview study of a local pay-for-performance scheme for primary care (HACKETT et al., 2014)	2014	8
		Analysis raises questions on whether pay-for-performance in Medicaid can efficiently reduce racial and ethnic disparities (BLUSTEIN et al., 2011)	2011	21
Ryan, A.	Health Management and Policy Professor at Michigan University. Research in the areas of financial incentives, payment policies and quality of care. He has 2386 citations in Google Scholar since 2009, peaking at 508 citations in the year 2016.	Medicare's flagship test of pay-for-performance did not spur more rapid quality improvement among low-performing hospitals(RYAN; BLUSTEIN; CASALINO, 2012)	2012	42
		Current state of value-based purchasing programs (CHEE et al., 2016)	2016	30
		Has pay-for-performance decreased access for minority patients?: Hospitals and nursing homes (RYAN, 2010b)	2010	24
		Financial Incentives and Physician Practice Participation in Medicare's Value-Based Reforms (MARKOVITZ et al., 2018)	2018	2
		Performance in the Medicare Shared Savings Program after Accounting for Nonrandom Exit: An Instrumental Variable Analysis (MARKOVITZ et al., 2019)	2019	0

Damberg, C.L.	President and Principal Researcher on Healthcare Payment Policies at RAND Corporation. Her research explores the impact of the strategies implemented to promote cost and quality improvements in healthcare. She has 3042 citations in Google Scholar since 2009, peaking at 326 citations in the year 2018.	Using the lessons of behavioral economics to design more effective pay-for-performance programs (MEHROTRA; SORBERO; DAMBERG, 2010)	2010	56
		Implementation Processes and Pay for Performance in Healthcare: A Systematic Review (KONDO et al., 2016)	2016	24
		Understanding the role played by medicare's patient experience points system in hospital reimbursement (ELLIOTT et al., 2016a)	2016	13
		Pay-for-performance schemes that use patient and provider categories would reduce payment disparities (DAMBERG; ELLIOTT; EWING, 2015)	2015	11
		How are medical groups identified as high-performing? The effect of different approaches to classification of performance (AHLUWALIA et al., 2019)	2019	0
Majeed, A.	Professor of Primary Care at Imperial College London. Research in international health, health systems, primary care and health policies. He has 18,374 citations on Google Scholar since 2009, having over 1000 citations per year since 2011 and peaking at 2243 citations in 2016.	Effect of a UK pay-for-performance program on ethnic disparities in diabetes outcomes: Interrupted time series analysis (ALSHAMSAN et al., 2012)	2012	32
		The effects of pay for performance on disparities in stroke, hypertension, and coronary heart disease management: Interrupted time series study (LEE et al., 2011)	2011	29
		Exclusion of patients from quality measurement of diabetes care in the UK pay-for-performance programme (DALTON et al., 2011)	2011	33
		Impact of a pay-for-performance incentive scheme on age, sex, and socioeconomic disparities in diabetes management in UK primary care (HAMILTON et al., 2010)	2010	33
		Has pay for performance improved the management of diabetes in the GBR?(RYAN, 2010a)	2010	21
Duszak, R.	Health Policy and Practice Professor at Emory University School of Medicine. Research in the area of health policies and systems for radiology. He has had 2,661 citations on Google Scholar since 2009, peaking at 617	Medicare's physician quality reporting system: Early national radiologist experience and near-future performance projections(DUSZAK JR. et al., 2013)	2013	14
		An Empirical Framework for Breast Screening Bundled Payments(HUGHES et al., 2017)	2017	6
		The role of the radiologist in new payment systems(BERLIN; DUSZAK, 2016)	2016	2

	citations in 2018.	Participation and payments in the PQRS Maintenance of Certification Program: Implications for future merit based payment programs(GLOVER et al., 2018)	2018	0
Eijkenaar, F.	Assistant Professor at the Institute of Health Policy and Management (iBMG) at Erasmus University Rotterdam. Her research focuses on the design and implementation of innovative payment models for healthcare providers, as well as performance measurement and risk adjustment. She has 398 Scopus citations since 2012, reaching a peak of 86 citations in 2016.	Key issues in the design of pay for performance programs(GLOVER et al., 2018)	2013	69
		Pay for performance in health care: An international overview of initiatives(EIJKENAAR, 2012)	2012	63
		Economic evaluation of pay-for-performance in health care: a systematic review(EMMERT et al., 2012)	2012	51
		Design and effects of outcome-based payment models in healthcare: a systematic review(VLAANDEREN et al., 2019)	2019	3
Iorio, R.	Professor at New York University Langone Medical Center. His research focuses on orthopedics and the study of the Bundled payment model. He has had 6,262 citations in Google Scholar since 2009, peaking at 1,001 citations in 2018.	Bundled payments for care improvement initiative: The next evolution of payment formulations: AAHKS bundled payment task force(FROIMSON et al., 2013a)	2013	101
		Alternative payment models: From bundled payments for care improvement and comprehensive care for joint replacement to the future?(ANOUSHIRAVANI; IORIO, 2016)	2016	8
		Implementation of Bundled Payment Initiatives for Total Joint Arthroplasty: Decreasing Cost and Increasing Quality(DORAN et al., 2016)	2016	7
		The surgical hip and femur fracture treatment model: Medicare's next orthopaedic bundle(ELBULUK et al., 2017)	2017	1
Jha, Ashish K.	Harvard School of Public Health Professor. Health policy research. He has had 20,250 citations on Google Scholar since 2009, having over 1000 citations per year since 2010 and peaking at 3007 citations in 2016.	The long-term effect of premier pay for performance on patient outcomes(JHA et al., 2012)	2012	203
		The effect of financial incentives on hospitals that serve poor patients(JHA; ORAV; EPSTEIN, 2010)	2010	54
		Characteristics of hospitals receiving the largest penalties by US pay-for-performance programmes (FIGUEROA; WANG; JHA, 2016)(FIGUEROA; WANG; JHA, 2016)	2016	9
		The impact of pay-for-performance on quality of care for minority patients (EPSTEIN; JHA; ORAV, 2014)	2014	1

Rosenthal, Meredith	Professor at Harvard School of Public Health. Research in health economics and health policies. She has 8669 citations on Google Scholar since 2009, peaking at 956 citations in 2016.	Systematic review: Effects, design choices, and context of pay-for-performance in health care (VAN HERCK et al., 2010b)	2010	353
		Can you get what you pay for? Pay-for-performance and the quality of healthcare providers (MULLEN; FRANK; ROSENTHAL, 2010)	2010	156
		Impact of a pay for performance program to improve diabetes care in the safety net (CHIEN et al., 2012)	2012	31
		Pay for Performance in Medicaid: Evidence from Three Natural Experiments (ROSENTHAL et al., 2016)	2016	7

Source: Formulated by the authors.