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Does the Implementation of Value-based payment Improve the Quality of Health Care?

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Abstract: *The fee-for-service payment model in the US healthcare system had significant limitations, and the shift toward a value-based payment model to increase quality care and lower costs has occurred. Implementing this newer model to improve the quality of care and reduce healthcare costs has come with significant challenges and varied outcomes. The systematic literature review aimed to determine what value-based payment system enhances healthcare quality and patient satisfaction and lowers healthcare costs compared to a fee-for-service model. The systematic review utilized the Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist (PRISMA). The study used the Medical Literature Analysis and Retrieval System academic databases and Cumulative Index to Nursing and Allied Health Literature indexes to conduct a thorough literature search. Data from 29 related articles were thematically analyzed using a process of constant comparing of notes, information screening, and categorizing criteria to help answer the research question. Of the four themes that emerged from the analysis, 24% of the articles indicated a direct impact on healthcare quality, while 52 % showed a mixed result. In addition, 28% directly impact the cost of health care, while 48% show a mixed effect. The findings demonstrated that the availability and accessibility of data collection, reporting, and sharing must support the payment mode to impact healthcare quality and cost-effectively. The results showed that healthcare providers' collaboration and integration help avoid unnecessary costs within a system. The systematic review revealed that the value-based payment system produced mixed results regarding its effect on the quality of care and the cost of services. The outcomes displayed that critical barriers and conditions appeared to constrain this payment system from achieving adequate effectiveness and results.*

Keywords—Value-based payment, Healthcare Quality, Healthcare costs.

1. INTRODUCTION

The fee-for-service payment model in the US healthcare system has significant limitations and drawbacks. These inadequacies include but are not limited to incentivizing service volume versus quality of care, less emphasis on preventative care, fragmented care delivery, a decline in a clinician-patient relationship, and contributing to rising healthcare expenses (Aviki et al., 2018). The growing concerns lead to providing an alternative payment model that moves far away from incentivizing sickness over health, reduction of preventive measures, implementation of rigid standards to treat advanced illnesses, and uncoordinated, fragmented, and expensive care (Joynt Maddox et al., 2020), towards quality care, increased health outcomes and reducing overall costs. The problem is that it is unknown whether using a value-based payment system improves healthcare quality, enhances patient satisfaction, and reduces healthcare costs compared to the fee-for-service model.

The shift toward a value-based care model has transpired. Value entails improving the balance between the quality of health outcomes and the costs to achieve those outcomes (Volk et al., 2019). The benefits of value-based health care are (a) patients spending less for better outcomes, (b) increased patient satisfaction, (c) improved care coordination, (d) reduced health care costs and improved care, and (e) more substantial cost control and reduced risk to payers (Horstman et al., 2022). Thus, value-based care motivates providers to be more accountable for improving patient outcomes by linking the amount they earn to the quality, equity, and cost of the care they provide. In addition, the shift in payment models promotes collaboration and integrated care between teams and encourages providers to spend more time on services such as counseling or examining social needs (Lewis et al., 2023; Abunnur & Shaw, 2023). Components include the effectiveness of care, the efficiency of resource use, equity of care, patient satisfaction, the safety of treatment, and timeliness are measures of achieving quality (Harrison et al., 2021). Medicare and other healthcare payers are increasingly shifting toward introducing the new system to achieve value-based models to improve healthcare quality and outcomes (Husaini et al., 2020). However, health informatics leaders still need help implementing value-based payment models.

Does using a value-based payment system improve healthcare quality, enhance patient satisfaction, and reduce healthcare costs compared to the fee-for-service model? When new systems models are often introduced to enhance the quality of care and l healthcare costs, results have been mixed (Lewis et al., 2023). Scholars have various viewpoints regarding the transition to value-based care since its introduction. According to Liao et al. (2020), the value-based model displayed some cost reductions in Medicare spending without apparent concessions in quality (Liao et al., 2020). However, other authors argue that significant barriers in

transitioning to value-based care models include financial challenges to organizations' healthcare professionals' resistance to change, interoperability concerns, and regulatory and policy concerns, all affect health outcomes (Counts et al., 2019; Norton et al., 2018). This systematic literature review aims to analyze whether using a value-based payment system improves healthcare quality, enhances patient satisfaction, and reduces healthcare costs compared to the fee-for-service model.

2. METHOD

Several academic databases were used to identify related literature articles that helped to explain the research problem and answer the research question. The research plan started using Google Scholar to identify the available articles related to the research topic and question. The research question was designed as follows: Does using a value-based payment system improve healthcare quality, enhance patient satisfaction, and reduce healthcare costs compared to the fee-for-service model? Examination through various databases provided a primary basis for discovering the research subject. After topic selection, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines (Moher et al., 2009; Page et al., 2021) framework was followed by conducting a comprehensive literature search using Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases and Public Medline and Medical Literature Analysis and Retrieval System Online [PubMed (MEDLINE)] and The search included the following keywords, value-based payment, healthcare quality, Healthcare costs, and the fee-for-service model. Of the two databases, PubMed (MEDLINE and CINAHL, 256 articles were identified for the systematic review.

2.1 Exclusion Criteria

The research questions were examined after collecting and organizing 256 articles from PUBMED (including Medline) and CINAH. Filters were applied to determine the articles that meet the required publication time frame of 2018 - 2022 (n = -137). Then, selected articles with full and free text available with abstracts were specified (n = - 40). Some selected articles were out of context and unrelated to our study's research questions; therefore, they were excluded. Finally, after applying the exclusion criteria, 29 articles remained (see Figure 1).

3. RESULTS

The systematic review aims to answer the primary research question of, does using a value-based payment system improves healthcare quality, enhances patient satisfaction, and reduces healthcare costs compared to the fee-for-service model. In-depth literature was searched and reviewed using PubMed (including MEDLINE) and CINAHL databases to identify relevant articles. The paper format followed the PRISMA framework to guide a systematic literature review to select academic resources to answer research questions (Moher et al., 2009). Of the 256 articles identified, 29 were chosen for their relevance to the study questions. Articles were screened and determined sufficient for data analysis (See Figure 1).

Figure 1: Exclusion Criteria

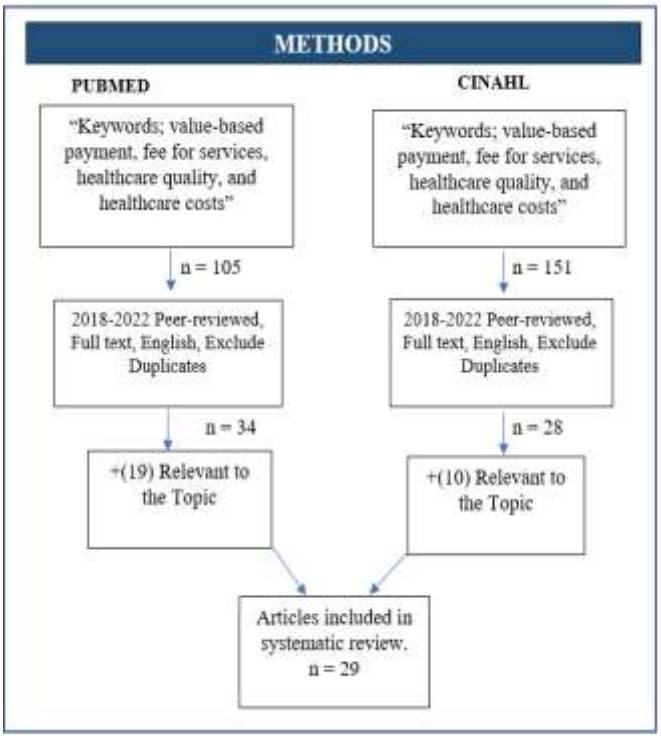

Table 1: Summarized findings of the literature.

Table 1 illustrates the titles, key summaries, and total of the 29 articles chosen for the systematic literature review.

Based on the data analysis offered by the selected papers, four common themes were identified as reasonable approaches for the research question (See Table 2). Two themes indicate the introduction of a value-based system impact on the quality of health care and the cost of health care. The other two themes represent requirements for the value-based payment system to achieve its purposes: collaboration and integration in healthcare among healthcare providers and the accessibility of data collection and sharing. From the research findings, 24 % of studies provide the best evidence of changes in the payment system by introducing the value-based payment [7, 8, 13, 15, 16, 18, & 21] delivers a direct impact on the quality of care, while 52% of studies [1, 3, 5, 6, 9, 14, 17, 19, 20, 22, 23, 24, 26, 27, &29] show a mixed impact on the quality of care. 24% of studies [2, 4, 10, 12, 21, 25, &28] show the possibility that the payment model will create value that improves the quality of care.

Title	Findings
[1] (Expected) value-based payment: From total cost of care to net present value of care.	Results showed mixed effects on improving healthcare quality or reducing costs with the need to establish practical targets and measures to create adequate incentive systems. In addition, it is essential to align the purpose of cost-effectiveness with better values.
[2] A Roadmap for Value-Based Payment Models Among Patients with Cirrhosis.	The model may achieve a potential improvement in quality while reducing costs. However, the type of patients served, and the lack of coordination may influence the model.
[3] Accountable Care Organizations Performance in Depression: Lessons for Value-Based Payment and Behavioral Health.	The model does not motivate better outcomes due to the lack of alignment between payments and performance measures.
[4] Advancing Value-Based Models for Heart Failure: A Call to Action from the Value in Healthcare Initi-ative's Value-Based Models Learning Collaborative.	Fee-for-service rewards volume over healthcare value, leading to fragmented and uncoordinated care. Value-based payment models require data to deliver better results.
[5] Alternative payment and care-delivery models in oncology: A systematic review.	The study findings demonstrated an unclear impact on quality outcomes but may lead to cost reduction.
[6] Are value-based incentives driving behavior change to improve value?	The model revealed mixed results, and its incentive systems should be modified to encourage participants to change their practices.
[7] Development of Episode-Based Cost Measures for the US Medicare Merit-based Incentive Payment System.	The system provides appropriate incentives to improve the quality of care and reduce costs. Still, it will depend on maintaining effective data and reducing system complexity while enhancing providers' coordination.
[8] Envisioning a Better U.S. Health Care System for All: Health Care Delivery and Payment System Reforms.	A robust quality improvement system, but it has a complex measurement system and requires valid data with an effective communication system between healthcare providers.
[9] Financial Incentives and Physician Practice Participation in Medicare's Value-Based Reforms.	The model indicated mixed results regarding their impact on quality or costs. It involves a complex incentive system that requires practical experience and effective data collection and analysis.
[10] Hospital value-based payment programs and disparity in the United States: A review of current evidence and future perspectives.	The model is a complex program that shows a potential improvement in quality or cost reduction.
[11] How Did Orthopaedic Surgeons Perform in the 2018 Centers for Medicaid & Medicare Services Merit-based Incentive Payment System?	The model is impractical for small clinics that deal with complex patients as it increases the chance of obtaining lower rates or penalties. Administrative burden, data measuring, and reporting complexity may affect costs and healthcare quality.
[12] How Value-Based Medicare Payments Exacerbate Health Care Disparities.	It is not ideal for quality improvement and needs to consider the work conditions and the kind of patients that clinics serve. It also applied complicated incentive systems.
[13] Improving The Medicare Physician Fee Schedule: Make It Part Of Value-Based Payment.fee-for-service inherently rewards the provision of services, needed or not, and pays the same amount whether or not the services were provided with high quality.	The model presented an opportunity to improve the quality and address the fee-for-service model limitations. However, it needs comprehensive data using information technology to update data frequently.
[14] Making the Case for Value-Based Payment Reform in Children's Health Care.	The model showed a potential cost reduction but a mixed impact on quality improvement with the need for a better data collection system.
[15] Maximizing Performance in Medicare's Merit Based Incentive Payment System: A Financial Model to Optimize Health Information Technology Resource Allocation.	The model provided substantial incentives for only large health providers to invest in improving quality.

Continue Table 1

[16] Medicare and Medicaid Programs; CY 2019 Home Health Prospective Payment System Rate Update and CY 2020 Case-Mix Adjustment Methodology Refinements; Home Health Value-Based Purchasing Model; Home Health Quality Reporting Requirements; Home Infusion Therapy Requirements.	The model delivers a consistent improvement in healthcare quality.
[17] Medicare's Bundled Payment Initiatives for Hospital-Initiated Episodes: Evidence and Evolution.	The model demonstrated a mixed, modest, or unclear impact on quality and healthcare expenditures with the necessity for data reporting.
[18] Moneyball in Medicare.	The method provided a practical incentive system for large clinics focusing on data collection, coordination, and integration in the healthcare setting.
[19] Pay for performance for hospitals.	The model revealed mixed, modest, unclear, or no improvement in quality and cost of care. It is a complex system that requires the establishment of effective coordination in the healthcare setting.
[20] Paying for Performance Improvement in Quality and Outcomes of Cardiovascular Care: Challenges and Prospects.	The model was introduced to resolve fee-for-service constraints but still provides mixed and limited results. The administrative burden of data collection and reporting and the need for more information affect the standardization of the model.
[21] Promoting Health Equity and Eliminating Disparities Through Performance Measurement And Payment.	The payment system delivered a great incentive to improve quality. However, there is a great need to monitor performance constantly.
[22] The Impact of Bundled Payment on Health Care Spending, Utilization, And Quality: A Systematic Review.	The model produced mixed results with a significant impact on specific groups. However, it involves a complex system that affects costs.
[23] The Impact of Medicare's Alternative Payment Models on the Value of Care.	The method has mixed or unclear outcomes on the quality and costs of care. Clinic coordination and data collection are critical to achieving practical results.
[25] Translating clinical evidence into value-based payment models: pooled analyses of innovative real-world outcomes agreements for ticagrelor in the United States.	A complex system that has a potential impact on the quality and costs of care and requires alignment between parties.
[26] Value-Based Care and Kidney Disease: Emergence and Future Opportunities.	The payment system produces mixed or unclear effects. It requires effective data collection, reporting systems, coordination, and sharing between care settings to improve patient experience and satisfaction.
[27] Value-Based Payment Reforms in Cardiovascular Care: Progress to Date and Next Steps.	Mixed results on quality and care costs with complex measurement techniques produce an expensive method.
[28] Value-Based Payments: Intellectual and Developmental Disabilities Quality Indicators Associated With Billing Expenditures.	Potential effect on cost reduction and service improvement. The necessity of sharing data and having the appropriate staff to support services.
[29] Defining and Implementing Value-Based Health Care: A Strategic Framework	The model provides a mixed effect of achieving better results, lower costs, and patient satisfaction. The need to share data among healthcare providers.

Table 2: Frequency of occurrence in the literature.

Themes	Frequency of Occurrence		Percentage* (%)
Impact on the quality of health care	Direct impact	7, 8, 13, 15, 16, 18, & 21	24%
	Mixed impact	1, 3, 5, 6, 9, 14, 17, 19, 20, 22, 23, 24, 26, 27, &29	52 %
	Potential impact	2, 4, 10, 12, 21, 25, &28	24%
Impact on the cost of health	Direct impact	7, 8, 11, 13, 15, 16, 18, &21	28%
	Mixed impact	1, 5, 6, 9, 14, 17, 19, 20, 22, 23, 24, 26, 27, &29	48%
	Potential impact	2, 4, 10, 12, 21, 25, &28	24%
Necessity of coordination and integration in healthcare		2, 7, 18, 19, 20, 23, 24, 26, &27	31%
Necessity of data collection and sharing		4, 7, 8, 9, 14, 18, 20, 23, 26, 28, &29	38%

*Percentage rounded to the nearest whole number

The results displayed 28 % of the articles [7, 8, 11, 13, 15, 16, 18, 21, &28] indicated that a value-based payment system directly impacts the cost of healthcare services. In contrast, 48% of studies [1, 5, 6, 9, 14, 17, 19, 20, 22, 23, 24, 27, &29] suggested that introducing a new method of payment has a potential impact on the cost of healthcare services. 24% of studies [2, 4, 10, 12, 21, 25, &28] show a potential opportunity for the implementation of a payment model to curb health spending. 20, 23, 24, 26, &27] among health care providers for the new method to achieve its goals.

The systematic literature review provides evidence 38% of articles about the necessity of data collection and sharing [4, 7, 8, 9, 14, 18, 20, 23, 26, 28, &29] and 31% of articles about the necessity of coordination and integration in healthcare [2, 7, 18, 19, 20, 23, 24, 26, &27] among health care providers in order for the new method to achieve its goals.

4. DISCUSSION

This systematic literature review aimed to determine whether using a value-based payment system improves healthcare quality, enhances patient satisfaction, and reduces healthcare costs compared to the fee-for-service model. The data results shown in Table 2 display the main themes that emerged from the literature analysis. The four themes indicate that the introduction of the value-based model produced mixed results related to its effect on the quality of care and the cost of services. [1, 3, 5, 6, 9, 14, 17, 19, 20, 22, 23, 24, 26, 27, &29]. Existing models' weaknesses include the need for more alignment between payments and health performance metrics [3]. Also, the model is considered a complicated intervention with complex incentive systems [7, 8, 9, 11, 12, 18, 25, &27]. The introduction of new payment methods can be accompanied by other interventions, such as an advanced information system for data collection and sharing that enables the monitoring of health outcomes, which makes the prediction even more efficient [4, 7, 8, 9, 14, 18, 20, 23, 26, 28, &29]. In addition, for the payment model to be more effective, it is necessary to establish an efficient network that allows transitions between different care sites, encouraging coordination and integration in healthcare [2, 7, 18, 19, 20, 23, 24, 26, &27]. Value-based payment models are primarily based on an underlying fee-for-service infrastructure [4, 20]. In addition, CMS's Medicare and private insurance companies still consider Fee for service as a substantial component of patient volume and use as a method for payment systems, minimizing healthcare providers' incentives to improve care delivery [7].

The fee-for-service needs to provide incentives to improve healthcare delivery methods by rewarding volume over healthcare value, incentivizing healthcare providers to deliver more services than high-quality care.[13]. The reimbursement system needs to incentivize the quality of care; thus, Fees for services lead to an expensive healthcare system with uncoordinated, fragmented healthcare care [4]. The fee for service model monitoring and reporting system undervalues some services' complexity relative to procedures provided by highly skilled healthcare specialists [8]. The system produced fragmented and expensive care delivery with outcomes that does not meet the patient's satisfaction [4]. Thus, Value-based payment models were introduced to improve quality by addressing the FEE model's limitations [13]. The system offers incentives for clinicians to enhance their quality to help to reduce their costs by managing the burden of the Fee-for-services model [7, 8, 13, 15, 16, 18, &21]. However, numerous studies examining these models found that they are associated with small amounts of savings and do not consistently show improvements in outcomes or lead to unintended consequences such as avoiding practices in poorer areas [9, 13, &20]. It also criticized that the model may incentivize providers to reduce their quality to reduce their costs [7].

Other studies show a potential improvement in patient outcomes, or the improvement was at most very small [1, 3, 5, 6, 9, 14, 17, 19, 20, 22, 23, 24, 26, 27, &29]. The effect of the implementation of the model on healthcare savings was more than the cost of intervention; the model requires a variety of data sources and transparency to support the model and incentivize healthcare providers to practice improving the value and driving down healthcare costs [1, 4]. Other reasons related to patients' insurance coverage by Medicaid or serving in low-income communities with limited access to healthcare services or converted by low reimbursement rates leading to insufficient incentives for providers to increase healthcare quality and lower the rehospitalization rates [2]. The lack of coordination, integration, and alignment among different care sites with a limited providers' network increases unnecessary

services that improve their spending [2, 7, 18, 19, 20, 23, 24, 26, &27]. Integrated hospitals are more responsive to the incentive for the efficiency measure [20, 24]. Other reasons related to the complexity associated with the system implementation and the requirement for measuring quality increase the responsibility for sourcing, administrating, collecting, programming, monitoring, analyzing, and reporting results [7, 8, 11, 12, 18, 25, &27]. Smaller clinics' use of Merit-based Incentive Payment System (MIPS) to treat complex patients increased their chance of receiving penalties and earning imperfect MIPS scores [11]. Increasing the complexity of the information reporting system led to rising costs, especially for practices with less experience, reducing their spending on quality improvement [4, 9]. Targets and measures used by value-based payments are essential factors that create a sufficient incentive system; unrealistic targets might act as barriers to the design of value-based payment models. They may lead clinicians to be evaluated and rated based on one condition (the cost of care) without fully being reported based on the quality of service provided [1]. In addition, the model may assess clinicians who provide similar care by using different types of measurement and procedures [7]

The reporting systems needed by the model created an administrative burden on practices that demanded policymakers to act to relieve the cost burden by providing unsophistication details and standardized lists of procedures to allow providers to focus on the quality of care and patient satisfaction [11]. There is a need to evaluate all health care policies to ensure that they have reached their intended goals without unintended consequences [27]. Studies show that for the value-based payment model to achieve its goals, necessary changes in its design must be considered. These changes include the availability and accessibility to information technology that makes data collection and sharing effective communication in healthcare settings, providing more details on the designed incentives to release the complexity of the incentives system, and Increasing physician cost awareness. [3, 6]. In addition, Value-based payment models need to capture the patient's voice and experience to achieve patient satisfaction [4].

Our systematic review had limitations that are worth mentioning. First, the quality of the chosen studies could have improved our conclusions. The selection shows no studies that directly compared each model component, highlighting its benefits, performance changes, and implementation difficulty. Second, our studies had a significant limitation; studies were selected for the last five years, 2018-2022, and this period emphasized the Value-based model with the most negligible Fee for services. Our research methods collected fewer articles on Fee for services model, limiting our ability to provide more details on these models, precisely the foundation for the new models.

To mitigate some of the limitations, the study followed the PRISMA-based systematic review guidelines (Page et al., 2021). A total of 256 articles were gathered, and filters were applied from the PubMed and CINAHL databases until additional data did not exist to advance the research. A comprehensive review of each article occurred to ensure it could help answer the research question.

Future researchers can build on the findings of this systematic literature review by applying more in-depth research methods or designs to understand the research topic further and produce new knowledge about the use of fee-for-service and value-based payment models. Based on the findings, healthcare leaders can apply this new knowledge in developing practical strategies to improve healthcare quality and the cost of healthcare services for their patients. Healthcare leaders need to provide more detail on incentives designed to release the complexity of the incentive system and increase clinician awareness of cost. [3, 6]. In addition, value-based payment models must capture the patient's voice and experience to achieve patient satisfaction [4]. Scientists may also decide to directly compare each model component, highlighting its benefits, performance changes, and implementation difficulties. Finally, researchers can work with other healthcare leaders in different parts of the industry to collectively address any issues within each model, bringing a different perspective and looking for solutions to any downside to using these payment models.

5. Conclusion

Despite solid evidence that the objective of introducing value-based payment is to develop effective interventions that alleviate the limitation of the Fee for services by focusing on improving quality and reducing healthcare spending, the goal has yet to be achieved entirely. The fee-for-service needs to incentivize the needed care delivery approaches by rewarding volume over healthcare value, leading to an expensive healthcare system with uncoordinated, fragmented healthcare care. However, the selected studies show that the payment system often produces unclear or mixed outcomes. Barriers and requirements are presented as constraints for the applications' effectiveness and achieving better results. The affordability and accessibility to information systems are essential aspects of efficient monitoring and reporting systems that support the application of the model and reduce the administrative burden. Data sharing and coordination among providers are necessary for avoiding unintended consequences that raise healthcare expenses.

The model must relieve the system's complexity and consider the environment clinicians practice in, especially for those who serve low-income, or communities covered by low reimbursement rates. Thus, the development of accurate financial incentives (bounces and penalties) models that encourage clinics to implement the intervention and to participate, especially for small and less experience practices, is needed.

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