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### Financial Management in Hospitals: Literature Review

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#### Abstract

The purpose of this study is to systematize previous studies on financial management in hospitals. Research data was collected and analyzed from the PubMed database on VOSviewer 1.16.19 software with 75 articles for the keywords "financial management" and "hospital" filtered in summary form. Statistical research on the year of publication and the number of publishers with many articles

related to financial management in hospitals. The study also performed keyword network analysis and co-authorship analysis. The research results have contributed to synthesizing a system of research documents on financial management in hospitals. The results suggest future research directions.

**Keywords:** Financial Management, Hospital, Vosviewer

#### 1. Introduction

Singh, S. R., & Wheeler, J. (2012) <sup>[6]</sup> have researched hospital financial management: what is the link between revenue cycle management, profitability, and not-for-profit hospitals' ability to grow equity? Effective revenue cycle management—from appointment scheduling and patient registration at the front end of the revenue cycle to billing and cash collections at the back end—plays a crucial role in hospitals' efforts to improve their financial performance. Using data for 1,397 bond-issuing, not-for-profit US hospitals from 2000 to 2007, this study analyzed the relationship between hospitals' performance at managing the revenue cycle and their profitability and ability to build equity capital. Hospital-level fixed effects regression analysis was used to model four different measures of profitability and equity capital as functions of two key financial indicators of revenue cycle management—amount of patient revenue and speed of revenue collection. The results indicated that higher amounts of patient revenue in relation to a hospital's assets were associated with statistically significant increases in operating and total profit margins, free cash flow, and equity capital ( $p < 0.01$  for all four models); that is, hospitals that generated more patient revenue per dollar of assets invested reported improved financial performance. Likewise, a statistically significant link existed between lower revenue collection periods and all four indicators of hospital financial performance ( $p < 0.01$  for three models;  $p < 0.05$  for one model). Hospitals that collected faster patient revenue reported higher profit margins and larger equity values. For revenue cycle managers, these findings represent good news: Streamlining a hospital's management of the patient revenue cycle can advance the organization's financial viability by improving profitability and enabling equity growth.

Kourtis, M., Curtis, P., Haniyas, M., & Kourtis, E. (2021) <sup>[4]</sup> evaluated strategic financial management based on the effectiveness and efficiency of private hospitals in sustainable financing. The purpose of the study is to evaluate the performance of private hospitals and identify conditions that secure sustainable financing for the sector. Data Envelopment Analysis (DEA) was used as the main tool to measure efficiency and effectiveness among fifteen (15) major private hospitals in Greece. Audited financial statement data were analyzed as a basis for the assessment of their performance. An input-oriented model was applied due to the fact that assets and employee expenses are more likely to be under the control of management in private hospitals compared to revenues and CFFO. The latter were used as outputs that represent measures of effectiveness and efficiency, respectively, which secure sustainability. They opted for the Variable Return to Scale (VRS) version of DEA (in connection with the CRS one), since hospital systems are extremely dependent on human capital and knowledge management as a means of creating value and are characterized by non-linear dynamics. The great majority of the hospitals in the sample exhibit an increasing and decreasing return scale. Inefficiencies were found to emanate from the non-optimal scale of the hospitals rather than from management's lack of capability to transform inputs into outputs. The study aspires to frame options and help management make informed choices that promote sustainable development in the private sector, which is also applicable to the public sector. It is essential for public authorities to judge the meaningful performance of private hospitals, to administer accordingly the level of their subsidies through public insurance funds, the clawback and rebate

policies in a period of fiscal austerity, and to act accordingly to attract or deter the inflow of scalable private funds in healthcare to promote human wellbeing.

Dong, G. N. (2015) <sup>[1]</sup> studied good financial management and quality of care: evidence from hospital measures for cardiovascular disease. Fiscal constraints faced by U.S. hospitals as a result of the recent economic downturn are leading to business practices that reduce costs and improve financial and operational efficiency in hospitals. There naturally arises the question of how this finance-driven management culture could affect the quality of care. This paper attempts to determine whether the process measures of treatment quality are correlated with hospital financial performance. Panel study of hospital care quality and financial condition between 2005 and 2010 for cardiovascular disease treatment at acute care hospitals in the United States Process measures for condition-specific treatment of heart attack and heart failure and hospital-level financial condition ratios were collected from the CMS databases of Hospital Compare and Cost Reports. There is a statistically significant relationship between hospital financial performance and the quality of care. Hospital profitability, financial leverage, asset liquidity, operating efficiency, and costs appear to be important factors in determining health care quality. In general, public hospitals provide lower quality care than their nonprofit counterparts, and urban hospitals report a better-quality score than those located in rural areas. Specifically, the first-difference regression results indicate that the quality of treatment for cardiovascular patients rises in the year following an increase in hospital profitability, financial leverage, and labor costs. The results suggest that, when a hospital made more profit, had the capacity to finance investment using debt, and paid higher wages, presumably to attract more skilled nurses, its quality of care would generally improve. While the pursuit of profit induces hospitals to enhance both the quantity and quality of services they offer, a lack of financial strength may result in a lower standard of health care services, implying the importance of monitoring the quality of care among those hospitals with poor financial health.

Hu, X., Jin, W., Yang, A., & Hu, Z. (2022) <sup>[3]</sup> studied capital payment management in public hospitals during the COVID-19 epidemic situation. The epidemic of COVID-19 has had a great impact on the lives and safety of people around the world. As the main force in the fight against COVID-19, the financial management of public hospitals will provide a strong guarantee for the diagnosis and treatment behavior of medical staff. The financial department needs to recognize the extent of the impact of COVID-19 on hospital finance, quantify and predict the potential risk factors, and develop reasonable financial management strategies. As an important part of assessing the financial health of public hospitals, capital liquidity can be used as the focus of hospital managers. In this study, we determine the effects of COVID-19 on the finances of public hospitals. Subsequently, we investigated the conception, components, and risk factors of capital liquidity in public hospitals. In addition, we provided some management strategies for capital liquidity in public hospitals under the COVID-19 epidemic. We deemed that good capital liquidity can ensure that medical staff have enough confidence and mentality to face the risk of death from COVID-19.

## 2. Theoretical Basis

Until the 1960s, financial management in all industries was generally viewed as descriptive in nature, with its primary role being to secure the financing needed to meet a business's operating objectives. A business's marketing, or planning, department would project demand for the firm's goods or services; facilities managers would estimate the assets needed to meet the projected demand; and the finance department would raise the money needed to purchase the required plant, equipment, and supplies. The study of financial management concentrated on business securities and the markets in which they are sold and on how businesses could access the financial markets to raise capital. Consequently, financial management textbooks of that era were almost totally descriptive in nature. Today, financial management plays a much larger role in the overall management of a business. Now, the primary role of financial management is to plan for, acquire, and utilize funds (capital) to maximize the efficiency and value of the enterprise. Because of this role, financial management is also known as capital finance. The specific goals of financial management depend on the nature of the business, so we must postpone that discussion until later. In larger organizations, financial management and accounting are separate functions, although the accounting function typically is carried out under the direction of the organization's chief financial officer (CFO) and hence falls under the overall category of "finance." In general, the financial management function includes the following activities:

- Evaluation and planning First and foremost, financial management involves evaluating the financial effectiveness of current operations and planning for the future.
- Long-term investment decisions although more important to senior management, managers at all levels must be concerned with the capital investment decision process. Such decisions, which focus on the acquisition of new facilities and equipment (fixed assets), are the primary means by which businesses implement strategic plans, and hence they play a key role in a business's financial future.
- Financing decisions. All organizations must raise funds to buy the assets necessary to support operations. Such decisions involve the choice between internal and external funds, the use of debt versus equity capital, and the use of long-term versus short-term debt. Although senior managers typically make financing decisions, these decisions have ramifications for managers at all levels.
- Working capital management an organization's current, or short-term, assets, such as cash, marketable securities, receivables, and inventories, must be properly managed both to ensure operational effectiveness and to reduce costs. Generally, managers at all levels are involved, to some extent, in short-term asset management, which is often called working capital management.
- Contract management. In today's healthcare environment, health services organizations must negotiate, sign, and monitor contracts with managed care organizations and third-party payers. The financial staff typically has primary responsibility for these tasks,

but managers at all levels are involved in these activities and must be aware of their effect on operating decisions.

- Financial risk management Many financial transactions that take place to support the operations of a business can, themselves, increase a business's risk. Thus, an important financial management activity is to control financial risk.

### 3. Research Methods

The systematic literature review approach (SLR) of Tranfield *et al.* (2003) is used in this work. PRISMA (priority items for systematic reviews and meta-analyses) was first introduced by Liberati *et al.* (2009) and revised by Page *et al.* (2021) as the basis for selecting the study's sample.

The writers started by choosing a database from which to gather papers for the research. The selected database is PubMed, which gained notoriety as a free and easily available resource due to its collection of references and abstracts covering areas related to science and life sciences. biologic. This is a very scientific database to get information from since the research examines hospital financial management. On September 12, 2023, information was gathered using the keywords "hospital" and "financial management." The search query inserts the boolean operator AND in between the terms. From 2003 to 2023, a total of 75 results were retrieved from the PubMed website.

Using both technical and content screening, the author group removed unsuitable papers in the second phase of the process. Documents in the following formats will be selected for technical screening: Encyclopedias, editorials, brief messages, mini-reviews, and book chapters. Even if they include search terms, papers are pre-read for content filtering in order to exclude those that have irrelevant information. Following filtering, the findings showed that every one of the 75 outcomes satisfied the requirements for inclusion in the research.

Following the two stages, the remaining papers were examined using a summary of the systematic literature review (SLR) document system and added to the VosViewer program for co-citation and keyword analysis. Tables and graphs are used to display the SLR analysis findings. A visual presentation of the bibliometric analysis findings will be made. The study identifies the research directions, identifies popular research paths, and makes recommendations for future research directions based on the analysis findings.

## 4. Results

### 4.1 Statistics on Year of Publication

From 2003 to 2023, a total of 75 articles on financial management in hospitals were indexed in PubMed, with an average of 3.8 articles published per year. The lowest number of articles published in 2003, 2009, 2010, 2012, 2014, 2016, and 2019 was 2 articles. And in 2005, the year

with the highest number of articles published was 11 articles.

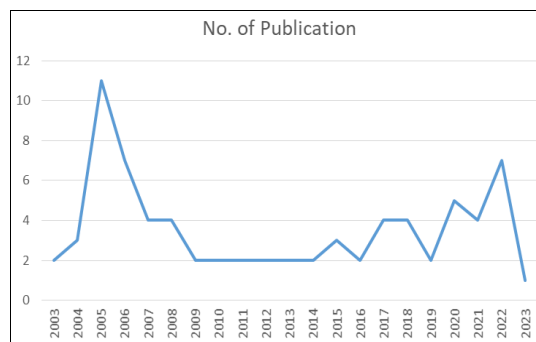


Fig 1: Chart of the number of studies over the years

### 4.2 Magazine Publishing Statistics

Direct extraction of the published journal list occurs from the database. Figure 2 displays the list of journals that have published twice or more on the subject of hospital financial management. Numerous magazines have published two or more pieces on this topic, according to data on magazine publishing; Health Econ is one journal that has published four articles.

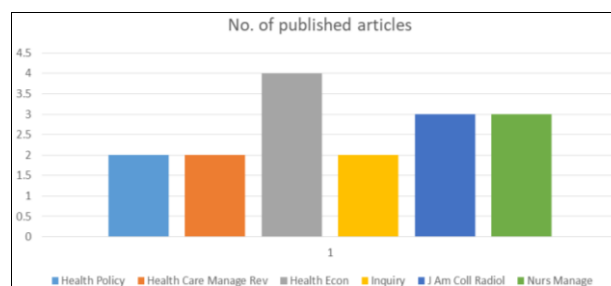


Fig 2: Chart of the number of published journals

### 4.3 Keyword Analysis Results

Look for and choose keywords that occur six times or more in the keyword analysis area. The program analyzes keywords according to their overall connection strength and number of occurrences. The output of a keyword analysis may be exported as an image file. The following is the results table for the keyword analysis:

Table 1: Statistics of keywords appearing

Keyword	Occurrences	Total link strength
humans	64	124
financial management	35	85
united states	23	51
financial management, hospital	26	46
health care reform	7	32
male	6	27
outcome assessment, health care	6	27
reimbursement mechanisms	7	26
female	6	25
health policy	7	25
developing countries	6	17
efficiency, organizational	6	15

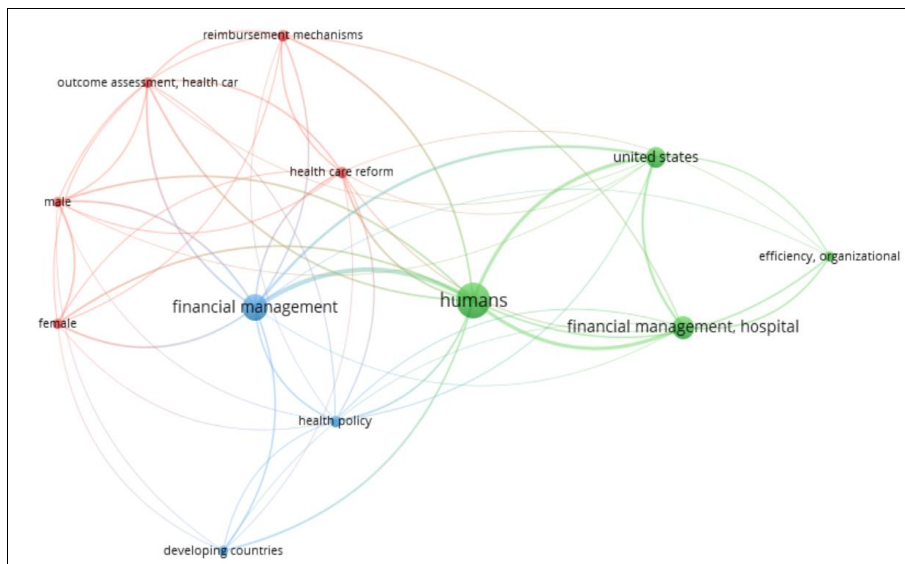


Fig 3: Keyword network

Just 12 keyword-out of 442 total-meet the requirement to appear at least six times. The terms "hospital" and "financial management" came up 26 times each, while the term "humans" occurred 64 times most often. Keep in mind that a bigger circle indicates more occurrences, and a longer line connecting two terms indicates more occurrences overall. Groups of related terms are created, and each group has its own color. It is evident from the graphic that the keywords are separated into three categories. Group 1 is characterized by 11 green connections totaling 124 link strengths, all of which center around the phrase "humans." Blue links with the main term "financial management" as its representation, totaling 85 links, make up Group 2. With 11 links and a total link strength of 32, Group 3 is represented by red-colored links that have the term "health care reform" at their core. The findings indicate that there is a lack of comprehensiveness in the research on hospital financial management, with three study paths and twelve prominent

keywords (Figure 3). On the basis of it, further study might decide on ways to close the gap in knowledge or conduct in-depth analysis.

**4.4 Co-Authorship Analysis**

This study examined the trend of cooperation in financial management research in hospitals by examining co-authorship ties between organizations and individual writers. Benoit *et al.* (2018) state that the analysis's findings contribute to a better understanding of research cooperation and the identification of significant researchers. The network map of co-authorship is shown in Figure 5. The collaborative connection between the two writers is represented by the link between two nodes, with the thickness of the link indicating the degree of cooperation. The writers seen in the image below comprise the group of writers who collaborate the closest. Over the years, this cooperative organization has released several articles.

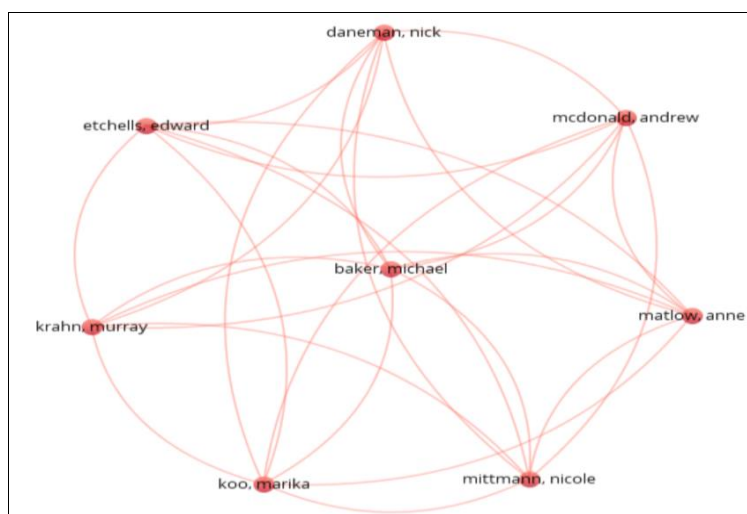


Fig 4: Co-authorship analysis by units of authors

**5. Conclusion**

In this study, we evaluated global publications on hospital financial management indexed in the PubMed database published between 2003 and 2023 to provide insight into number publishing, journal publishing, keyword networks,

and co-author networks. This study used bibliometric methods with the help of several statistical and data visualization applications to explore research trends in financial management content in hospitals.

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