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DETERMINANTS OF HOSPITAL COST CONTAINMENT UNDER UNIVERSAL HEALTH COVERAGE: A SYSTEMATIC REVIEW

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ABSTRACT
Universal Health Coverage (UHC) requires effective cost control to ensure the sustainability of health systems. Hospitals account for a large share of healthcare expenditure, and rising costs are driven by increasing service utilization, technological advancement, and inefficiencies in care delivery. Although prospective payment systems such as Diagnosis-Related Groups (DRGs) are widely implemented, their effectiveness in controlling costs remains mixed. This study aims to systematically review empirical evidence on hospital cost containment under UHC, focusing on payment reforms, operational efficiency, and system-level determinants. A systematic review was conducted following PRISMA guidelines. Literature searches were performed in Scopus, PubMed, and Google Scholar for studies published between 2015 and 2025. Primary empirical studies examining hospital cost containment strategies were included. Of the 355 articles obtained at the start of the search, further filtering was carried out according to the criteria so that the final result was 10 suitable articles met the inclusion criteria. Data were extracted and synthesized using a narrative approach. Findings indicate that cost containment is influenced by multiple interrelated factors. DRG-based payment systems were associated with reduced length of stay and, in some cases, lower hospital costs. However, evidence also shows increased service volume and inconsistent effects on quality of care. Operational efficiency, particularly shorter length of stay, emerged as a key driver. System-level factors such as governance, strategic purchasing, and blended payment models further influence cost outcomes. Hospital cost containment under UHC is multidimensional and context-dependent. DRG systems alone are insufficient; effective strategies require integrated approaches combining payment reform, efficiency improvements, and strong governance.

Keywords: DRG; hospital cost containment; hospital efficiency; payment reform; universal health coverage

INTRODUCTION
Universal Health Coverage (UHC) has become a major global agenda in system health for ensure access service equitable health without burden financial for community. UHC does not only aim increase access, but also guarantees sustainability system health through management efficient financing. However, the global implementation of UHC faces challenge significant in the form of improvement cost continued health increased, especially in the sector House Sick as contributor the biggest expenditure health (Peng et al., 2026) .

House Sick is component main in system absorbing health part big budget health national, in particular in system financing based insurance social. Improvement cost House Sick influenced by various factor like complexity disease, use technology increasingly medical sophisticated, as well as improvement utilization service health. In context this, system payment traditional proven fee-for-service based encourage service overutilization and escalation costs that are not under control (H. Zhang et al., 2025b).

As response to problem therefore, many countries have adopted system payment prospective such as Diagnosis-Related Groups (DRG) in UHC framework. System This designed for increase efficiency with set rates still based on diagnostic group, so that push House Sick For control costs. A number of

studies empirical show that implementation of DRG significant capable lower cost care and length of stay (LOS). As example, study home data based Sick show decline cost until around 13% and decrease in LOS after implementation of DRG (Liu et al., 2026).

Besides that, other research with difference-in-differences approach shows that DRG reform can lower cost care stay until around 9.79% and increase efficiency use source Power House Sick (Zhenyu et al., 2024). Findings similar also shows that payment reform DRG based can reduce total costs up to 12.6% and repair indicator quality like decline mortality and readmission rate (Cao et al., 2024b). Although thus, the implementation of cost containment through system payment prospective No always produce full impact positive. Some studies show there is a trade-off between efficiency cost and quality services. For example, the implementation of DRG has been proven lower cost in a way significant, but at the same time can impact on the decline quality services, such as decline level recovery patient (Peng et al., 2026). This show that control cost No can separated from dimensions quality service health.

More furthermore, the determinant of the cost of house containment Sick No only limited to the system payment, but also involves multidimensional factors. Study empirical show that factor clinical such as disease severity and length of stay are determinant main cost House Sick (Skarayadi et al., 2025). Besides that, factor operational like efficiency use source power and management House illness also plays a role important in control costs. At the level system, factors like policy financing health and governance also influence cost effectiveness of containment in UHC system (José et al., 2022).

However thus, the existing literature Still show limitations. Most of study empirical tend focus on one type interventions, such as DRGs, or limited to the context of a particular country. In addition that, not yet Lots studies that are comprehensive integrate various determinant of cost containment from various levels (micro, meso, and macro) in UHC framework. In fact, a comprehensive understanding about driving factors control costs are very important For support sustainability system health. Therefore that, is necessary something synthesis based systematic evidence for identify and analyze determinant main cost containment home Sick in UHC context. The systematic review approach allows integration various findings empirical from various country and system context health, so that can give a clearer picture comprehensive about factors that influence efficiency cost House Sick.

Based on description said, research This aim for study in a way systematic proof empirical about determinants of hospital cost containment in Universal Health Coverage framework in various countries. Research results This expected can give contribution in development policy financing health and management strategies House more pain efficient and sustainable.

METHOD

Research design

Review systematic This done For synthesize proof scientific latest regarding control strategies cost House pain below coverage health universe , from results studies previously with question study in PICO format as following : (1) Population : hospital in the system management costs; (2) Intervention: control strategy costs; (3) Comparison : Without control strategy costs; and (4) Output: efficiency costs, sustainability financial hospital, and under control expenditure health without lower quality service. Study This done in accordance with PRISMA (Preferred Reporting Items for Systematic Reviews) guidelines.

Criteria eligibility

Research included in review systematic This fulfil criteria following: (1) research This own design primary research; (2) population study is hospital; (3) its predictors is a strategy strategy control costs at hospital; (4) articles text complete available in Language English.

Search strategy literature
For do study this, search done in Language English with focus on strategy control costs at hospital through the Scopus, PubMed, Google Scholar databases 2015 to 2025 with keywords (" cost containment" OR "cost control") AND "hospital" AND ("universal health coverage" OR "UHC") AND ("drivers" OR "determinants" OR "factors").

Criteria eligibility
We determine criteria inclusion use framework PICO work, which is version modification from framework PICO work. Framework PICO work takes into account population, phenomenon of interest, context, and design study (Methley et al., 2014). Study This covers studies involving factor driver or control strategy costs at the management level hospital below framework Universal Health Coverage (UHC). Selected articles must available in text format complete.

Election studies
Filtering process done by all writer in studies This in a way independent. At this stage first, title and abstract filtered for get information potential from relevant studies. Studies filtered potential Then to be continued to stage second for review text complete. Article text complete assessed and evaluated based on criteria inclusion that has been determined. Finally, studies that meet the criteria This included for data extraction and assessment quality.

Data extraction
Extract the following data from every study : name author, year publication, country of publication studies done, design study, statistical test, measure sample, PICO (population, intervention, comparison, outcome), weaknesses, and findings.

Statement ethics
Article This No is original primary studies, but rather review systematic using extracted secondary data from article original that has been published, each of which has fulfil condition permission ethics. Therefore that, permission ethics addition No required.

RESULT
Search article in study This through a database that includes Scopus, PubMed, Google Scholar. With keywords among others: key (" cost containment" OR "cost control") AND "hospital" AND ("universal health coverage" OR "UHC") AND ("drivers" OR "determinants" OR "factors"). Selection process literature in studies this done in a way systematic follow PRISMA protocol. At this stage beginning identification, found a total of 355 relevant articles from results search in the database for studies published between 2015 and 2025. After doing inspection duplication, as many as 75 articles deleted, so that leaving 280 articles for processed to stage screening. At the stage screening beginning based on titles and abstracts, totaling 210 articles excluded because no fulfil criteria beginning research. Next, it was carried out evaluation deep against 70 articles text full -text articles for ensure its suitability with criteria eligibility that has been determined. Based on evaluation said, 60 articles issued because reason specific (not fulfil criteria inclusion), so that leaving 10 studies the stated end worthy for included in review systematic. Can seen in Figure 2 that article research originating from from 2 continents namely Asia and Europe.

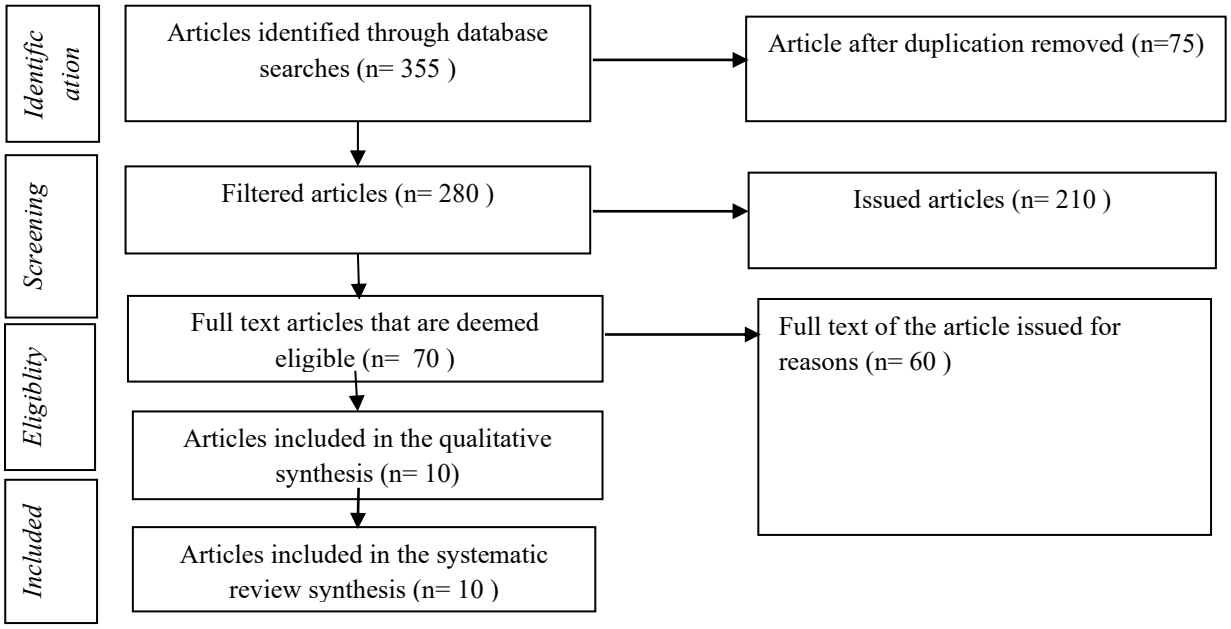

Figure 1. Diagram flowchart

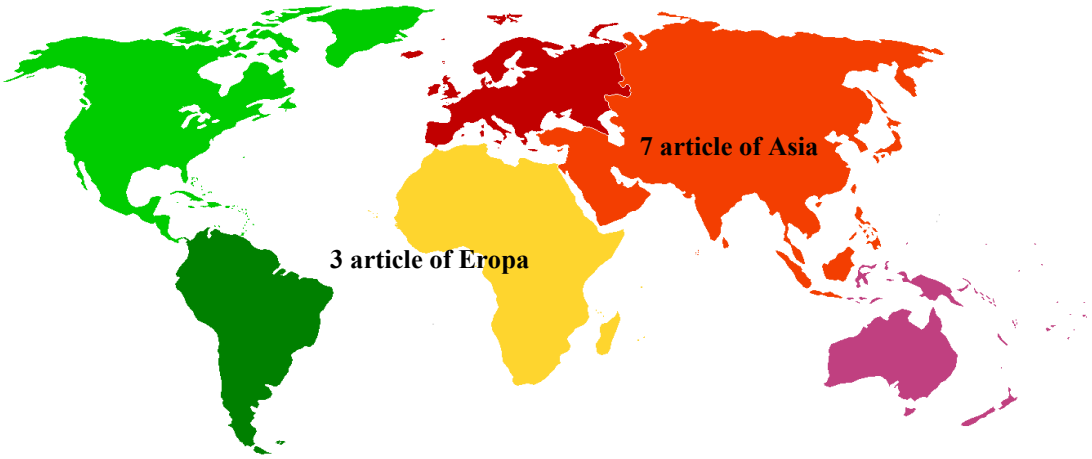

Figure 2. Map of the research area

Table 1.
Description Primary Study of Determinants of Hospital Cost Containment Under Universal Health Coverage

Title	Author (Year)	Country	Population	Method	Results
Effects of a DRG-based hospital reimbursement on the health care utilization and costs in Swiss primary care	Al-khalil et al., (2020)	Switzerland	Claim data of 60 insurers, covering ±76% of the Swiss population	Quasi-experimental (regression discontinuity & mixed regression)	No found change significant on the trend amount GP visits and costs after DRG implementation
Beijing's DRG payment reform pilot: Impact on quality of AMI care	Jian et al., (2019)	China	6 pilot hospitals vs 8 control hospitals (AMI patients)	Difference-in-differences	DRG no increase quality AMI service without mechanism quality addition
Hospital response to a new case-	X. Zhang et al., (2024)	China	Patients (2017–2021)	Difference-in-differences	House Sick tend accept patient more weight and increase intensity therapy

Title	Author (Year)	Country	Population	Method	Results
based payment system (DIP)					
How do inpatients' costs, LOS, and quality vary across age groups after reform	Chen et al., (2023)	China	Patient care stay (shared) group age)	Interrupted Time Series (ITS)	Cost increased in the elderly , LOS decreased in the group young , quality (mortality) is not changed significant
Impact analysis of DRG payment reform on lung cancer inpatients	M. Chen et al., (2025)	China	1,076 patients cancer lungs	Interrupted Time Series (ITS)	No There is decline significant total cost & LOS; occurred improvement diagnosis & medication costs
The Impact of DRG-Based Payment Reform on Inpatient Healthcare Utilization	H. Zhang et al., (2025a)	China	66,533 patient data care stay	RDD + ITS (natural experiment)	LOS down , costs down , quality increased (readmission & mortality decreased), but OOP increased
Impacts of DRG-Based Prepayment Reform on Neurologic Disorders	Cao et al., (2024a)	China	Patient data neurology in 53 hospitals	Difference-in-differences	Cost down , LOS down , quality increased ; there is indication change behavior (patient selection)
The trade-off between cost containment and quality under DRG	Peng et al., (2026)	China	256,438 patients	Difference-in-differences	Cost decreased , but quality decreased (recovery rate decreased)
Country-level effects of diagnosis-related groups: evidence from Germany's comprehensive reform of hospital payments	Messerle & Schreyögg, (2024)	German	Country - level panel data from OECD & European Union countries (1994–2015) with German as an intervention unit	Quasi-experimental (Difference-in-Differences, Synthetic Control, Synthetic Difference-in-Differences)	Implementation of DRG improves amount of household discharge sick >20% in 10 years (±2% per year), but No found effect significant on length of stay inpatient (LOS)
The long-run effects of diagnosis related group payments on hospital lengths of stay	Aragón et al., (2022)	English	200 million treatments	DiD , Synthetic Control, ITS	Reduce length of stay hospital stay (LOS) and increased term long

DISCUSSION

Control cost House illness (hospital cost containment) in Universal Health Coverage (UHC) framework is issue important Because House Sick absorb proportion big of total expenditure health. WHO emphasizes that key control cost No just restrictions budget , but through strategic purchasing, namely How financing designed For create incentive efficiency at a time guard quality service (Mathauer et al., 2017) .

One of factor the main driving force control cost is a reform of the method payment House sick , especially use system payment Diagnosis Related Groups (DRG) based study by Milstein & Schreyögg (2024) show that many OECD countries are starting reduce dependence on pure DRGs and switching to system combination such as global budget, episode-based payment, and incentives quality . This is show that DRG only No Enough For control costs, but rather need combined with other mechanisms for balance efficiency and control expenditure.

Besides that, efficiency operational hospital, especially through reduction in length of stay length of stay (LOS), becomes driver important cost containment. Research Aragón et al (2022) find that implementation of DRG in the UK in a way significant reduce LOS and effects the increase in term long . The decrease in LOS reflects use source more power efficient, although indicator This No always reflect cost in a way direct.

However thus, control cost No only determined by efficiency, but also by control of service volume. The study Messerle & Schreyögg (2024) show that DRG implementation in Germany precisely increase activity hospital until around 20%. This is indicates that system payment based case can push hospital For increase amount patient use increase income. Findings This in line with Moreno-Serra & Wagstaff (2010) who showed that payment reform hospital can increase service volume and expenditure health if no accompanied by adequate control.

Next, the use of system payment blended payment system factor important in cost containment. Some countries combine DRG with the global budget to reduce incentive increase in service volume. As example, norway use combination payment for balance efficiency and control cost (Milstein & Schrey, 2024) . Approach this assessed more effective compared to use One method payment just because can reduce distortion incentives.

Factors that contribute push control cost is shift service to more settings efficient, such as care road or maintenance episode -based. This reform aim reduce dependency on care relatively expensive accommodation. However , studies Al-khalil et al. (2020) show that DRG implementation in Switzerland is not give impact significant to cost primary services, so that show that the effect of cost containment is not always evenly throughout sector service health.

Besides in addition, governance and oversight mechanisms also play a role. role important. The DRG system can cause behavior opportunistic such as upcoding or return patient more beginning. Therefore that, is necessary mechanism supervision quality, adjustment based performance, as well as evaluation sustainable for ensure that control cost no sacrifice quality service (Palmer et al., 2014). In a way overall, the factors that drive hospital cost containment are in UHC context includes system design strategic payments, efficiency operational hospital, service volume control, combination method payments, integration and shifting services, governance and supervision quality.

CONCLUSION

With thus, it can concluded that control cost hospital no can achieved through one policy single, but rather through combination mutually beneficial policies complete. DRG can become instrument important, but must combined with other mechanisms to be effective in support sustainability UHC system.

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