Evaluation Of Capitation Scheme As A Financing Instrument For Primary Services In The National Health Insurance (NHI): A Review Of Health Economics Literature

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Abstract.

The study discuss about the capitation scheme is the main financing mechanism for primary healthcare services in the National Health Insurance (NHI), aimed at expanding access, promoting cost efficiency and strengthening promotive and preventive services at First Level Health Facilities (FLHF). This study aims to evaluate performance and effectiveness of capitation schemes as a strategic financing instrument in NHI's system. Through a narrative- thematic literature review of 20 relevant publications from 2021–2025, this study examines four key aspects: the capitation policy structure, its impact on service quality and coverage, financing efficiency and administrative barriers. The results indicate that while capitation supports financial stability and increases visitation volume, its impact on clinical service quality and promotive-preventive service coverage remains limited. Key barriers include fragmented digital systems (P-Care, SIKDA, e-Kinerja), inadequate managerial capacity and a mismatch between performance indicators and clinical outcomes. This study recommends governance reforms based on output indicators, integration of digital reporting systems, as well as the implementation of a hybrid financing model. Strengthening capitation as a contextual, adaptive and performance-based strategic purchasing instrument is key to sustainable primary service financing within NHI's framework.

Keywords: *Capitation; health financing; NHI; policy evaluation and primary services.*

I. INTRODUCTION

Primary healthcare is the backbone of the national health system that plays an important role in basic promotive, preventive and curative activities. In Indonesia, the implementation of National Health Insurance (NHI) through Social Security Agency on Health (SSAH) conducted since 2014 has positioned Public Health Center (PHC) as the First Level of Health Facilities (FLHF) to reach universal health services effectively and efficiently [1]. Under NHI's scheme, the capitation financing mechanism becomes the main approach in FLHF. The capitation financing, which is a member's monthly fixed payment to health facilities, is aimed at encouraging cost efficiency and financial stability of facilities, as well as maintaining the continuity of services [2].Nonetheless, the effectiveness of this model continues to be highlighted due to the risk of under-provision of care and moral hazard, whereby service providers may potentially reduce the quality of services to save costs. The disparities in the utilization and quality of services between regions also pose a serious challenge in this system, particularly for areas with low infrastructure and resource capacity [3]. Internationally, the capitation model does provide the opportunity for efficiency, yet its success highly relies on the accompanying incentive system. In China, for example, the implementation of a combination of capitation and pay-for-performance (P4P) has been shown to reduce the irrational use of antibiotics by 15% and decrease the cost per visit without reducing the frequency of visits, indicating the positive potential of capitation interventions if designed with the right incentives [3].Similarly, in England, a study on the capitation scheme with population adjustment indicates a positive correlation between higher level of financing and better service quality in FLHFs [4].

Although normatively the capitation scheme is designed to ensure the efficiency and continuity of primary services under NHI's framework, secondary data shows that its implementation still faces various structural and operational constraints. Based on SSAH's evaluation report of 2022, only around 42.3% of

First Level Health Facilities (FHLF) were able to achieve the Performance-Based Capitation (PBC) indicator targets, and more than 30% of capitation funds were used for administrative needs such as stationery and honorariums for non-direct service activities, rather than for promotive and preventive interventions, which are the main objective of the system [3]. In addition, a study by Prasetyo & Harahap (2022) indicates that the average realization of the use of capitation funds for promotive-preventive activities is only 18% of the total funds received, far below the ideal recommendation of at least 40% [5]. Administrative expenses are also a serious issue, as reported by Rinaldi & Hafidz (2024), who noted that around 30–35% of health practitioners' time is spent simply to fill out various non- integrated digital systems, such as P-Care, e-Kinerja, and SIKDA. This not only results in low service efficiency but also causes a shift in focus from clinical tasks to administrative work, as well as reducing the motivation and job satisfaction of health practitioners [6], [7].

The gap in service quality between FHLFs in urban and rural areas is also a challenge, where only 29% of Public Health Centers in underdeveloped areas have sufficient infrastructure and human resources to optimally fulfill PBC indicators [8]. Overall, these data reinforce the urgency of evaluating the effectiveness of capitation schemes in supporting NHI's success and justifying the need for a more contextual and evidence-based approach to primary service financing reform in Indonesia.Various studies in Indonesia show that capitation funds have not been used optimally, especially in supporting promotive and preventive services, as well as in strengthening infrastructure and Human Resources (HR) in Public Health Centers (PHC). A study by Oktapianti et al. (2024) in Deli Serdang reveals that limitations in planning capacity, a lack of professional staff and administrative expenses are serious obstacles to the effective use of capitation funds [9]. Further, high administrative expenses from the reporting system of Social Security Agency on Health and Health Ministry have disturbed the productivity of health practitioners. Pratiwi et al. (2025) notes that non- integrated information systems add up to the work complexity and hinders efficiency, including surveillance services such as Tuberculosis in FLHF [5]. A similar issue is found in the pharmacy services at PHC, where overlapping applications reduce the clinical role effectiveness of pharmacy personnel [6]. Therefore, it is important to evaluate how the financing scheme in NHI – especially capitation and non-capitation funds, affects the quality and coverage of primary services at PHC. This study aims to review the recent literature regarding the impacts of NHI's financing on service output, by considering issues such as the efficiency of fund utilization, administrative expenses and changes in the behavior of healthcare service provider.

II. METHODS

This research is using a descriptive literature review approach to analyse the effectiveness of NHI's capitation financing for primary services, especially at PHC, through health economic framework covering the efficiency, fairness and sustainability of financing. The focus of the study is directed at the impact of capitation on the quality of services, population coverage, technical and allocative efficiency, as well as the potential distortions of incentives such as moral hazard and administrative expenses. Literature sources were obtained from trusted databases such as Google Scholar, PubMed and Scopus, and equipped with accredited national journals and official publications of relevant agencies. Articles were filtered based on inclusion criteria: publications in Indonesian or English, published between 2021–2025, and relevant to NHI's capitation financing. Searching was using keywords such as "capitation financing", "JKN Indonesia", "healthcare financing", and "economic evaluation". Twenty articles were selected from sixty-eight initial findings for narrative and thematic analysis based on four categories: capitation policy structure; impacts on the quality and coverage of services; cost efficiency; and administrative constraints at FLHF.

III. RESULT AND DISCUSSION

The capitation scheme in NHI is a strategic financing policy for primary services aimed to encourage cost efficiency and strengthen FLHF's role, especially PHC. Based on the literature review, there are four main aspects that serve as focal points in evaluating the effectiveness and efficiency of capitation, namely policy structure, its impacts on the quality and coverage of services, the efficiency of fund utilization, and administrative constraints in its implementation. These four aspects reflect the complexity of the interactions

between policy design, provider's behavior and system governance, which ultimately determine the success of capitation implementation in supporting the sustainability objectives of NHI's system in both economic and service terms.

1. Capitation Policy Structure and Payment Model

The capitation policy structure in NHI's system is designed as a prospective payment model which provides fixed funds per member to FLHF. The objectives are to create financing efficiency and encourage service providers to prioritize preventive and promotive actions. Since 2016, the Government through Social Security Agency on Health (SSAH) has implemented Performance-Based Capitation (PBC) Model, which links the disbursement of capitation funds to the achievement of certain service indicators. However, the effectiveness of this model is still debated.In England, the Global Sum scheme with population adjustment becomes one of main instruments of capitation system for primary services. Studies show that an increase in capitation funding allocation is positively related to the quality of services indicated by the Care Quality Commission (CQC) rankings, displaying the importance of adequate financial support to ensure the quality of primary practices [4]. Nevertheless, the English experience also teaches that performance-based incentives need to be carefully designed. The Quality and Outcomes Framework (QOF) program, which is one of the most extensive pay-for-performance schemes, has proven to have a limited impact on long-term cost efficiency and sustainable clinical quality [9]. This highlights the importance of a combination of capitation and outcome-based incentives, instead of solely the quantity of services.The study of Sambodo et al. (2023) shows that although PBC manages to increase visitation to FLHF to forty-eight percent, it is not along with the decrease of referrals to hospitals or the increase of the quality of clinical services significantly. This raises questions about the accuracy of the indicators used and whether this system encourages service providers to pursue quantity over quality [7]. The success of PBC highly depends on structural factors such as internal management, readiness of information technology system, and human resource capacity.

This finding clarifies that the payment scheme is not enough; the success of PBC implementation requires systemic readiness from each FLHF unit [8].Umakaapa and Sjaaf (2021) highlights the weak technical understanding in the field as well as the lack of policy socialization, which put many health practitioners in confusion in understanding incentive indicators and mechanism [10]. Similar issue is revealed by Fadila and Katmini (2022), stating that most indicators on PBC are administrative and quantitative, without directly assessing patients' clinical results [2]. This deficiency opens the door for provider-induced demand and administrative manipulation practices to achieve indicator targets.Another criticism arises from the imbalance in implementation across regions. FHLFs in urban areas tend to have better capacity in managing capitation funds due to better access to technology and adequate human resources. On the other hand, FLHFs in underdeveloped areas face challenges in meeting performance indicators due to structural and operational limitations [11], [12]. The internal evaluation report of Social Security Agency on Health (2022) also affirms that PBC's success is more affected by FLHFs' internal governance than macro policy variables. These findings generally describe that the capitation policy structure in NHI has still put more emphasis on the payment mechanism and has not yet sufficiently paid attention to the readiness of institutions and supporting ecosystems at the primary service level [13].Thus, from the health economic perspective, the sustainability and effectiveness of capitation policy should not only be directed towards improving the payment model but also towards strengthening the design of indicators, integrating information systems and synchronizing policies among stakeholders. This reform is important so that the capitation system can optimally achieve cost efficiency without compromising the quality of services and the principle of equitable access throughout Indonesia.

2. Capitation Impacts on the Quality and Coverage of Primary Services

The capitation implementation in NHI scheme is basically designed to expand the coverage of primary healthcare services while maintaining the quality of services efficiently. However, findings from various studies indicate that its impact on the quality and coverage of services is dualistic and greatly influenced by the context of its implementation. In Indonesia, the study of Sambodo et al. (2023) shows that Performance-Based Capitation (PBC) scheme can increase the frequency of visitation to PHCs, including for promotive services such as visits of pregnant women and patients with hypertension [7]. Nonetheless, this

increasing volume has not yet been significantly accompanied by an improvement in clinical quality, therapeutic effectiveness, or patient satisfaction [7].A similar phenomenon also occurred in Brazil through the Brazil Previne Program, which has implemented a weighted capitation model since 2020. This policy has successfully increased population registration in primary services by 76.1% and recorded an increase in hypertension screening coverage from 2% to 11% and diabetes from 5% to 23% within the first two years of implementation [14], [15]. Although there has been an increase in quantitative indicators, the evaluation conducted by Massuda (2023) shows that the quality of chronic disease management has not improved evenly, particularly in areas with limited institutional capacity and infrastructure [8], [16].

This finding corroborates that the expansion of access through capitation must be balanced with the empowerment of support systems at the primary service level.In Indonesia, the challenges also include administrative expenses and workload imbalances. A study by Pay and Febrianti (2023) indicates that incentive schemes that are not proportionate to the workload reduce healthcare practitioners' motivation and disrupt the quality of clinical interactions [17]. This is in line with the report by Rosadi and Widyaningsih (2023), which highlights the decline in service quality due to administrative pressures and limitations in human resources [18]. In fact, many increases in visitation volume are recorded as return visits that do not add value to clinical outcomes [19], [20].In terms of health economics, the imbalance between cost efficiency and service quality is a fundamental issue in the capitation model. When performance indicators emphasize quantitative aspects over clinical outcomes, the risk of under-provision of care increases. In such situations, service providers tend to avoid complex interventions to maintain cost efficiency within capitation limits, which negatively impacts service quality, especially in areas with limited human resources and logistics [21].Therefore, both in Indonesia and Brazil, the effectiveness of capitation in improving service quality highly depends on the integration of outcome-based indicators, FLHFs' managerial readiness as well as training continuity and information system support. Reforms of indicators and incentives which align efficiency with clinical outcomes have become an urgent need to optimize the role of capitation in improving the quality of primary services.

3. Financing Efficiency in the Capitation Scheme

From the perspective of health economics, capitation scheme is designed to increase financing efficiency by shifting the cost risk burden from the guarantor (SSAH) to service providers (FLHFs), as well as encouraging cost control through a fixed payment mechanism. This efficiency is dual in nature: technical (optimal allocation of resources) and allocation (use of resources according to public health needs). However, the realization of this efficiency at the primary service level still faces significant implementation challenges. A study from Thailand shows that the implementation of capitation financing in the context of Universal Health Coverage (UHC) successfully improves the technical efficiency of provincial hospitals which also act as primary service providers through a Data Envelopment Analysis (DEA) approach. However, this achievement of efficiency is not uniform and highly depends on managerial capacity and local institutional readiness [22]. Meanwhile, experiences in China through a pilot program in Ningxia Province demonstrate that the combination of capitation payment models with pay-for-performance has successfully reduced irrational antibiotic use by up to 15%, lowered expenditure per visit, and improved the quality of primary services without decreasing patient visit numbers [23]. This model shows that financing efficiency can be achieved if the capitation system is accompanied by structured and measurable performance incentive mechanism.

In the context of Indonesia, studies by Ardiansyah (2023) and Sutaryo & Adi (2024) note that PHCs with Regional Public Service Agency (RPSA) status have the advantage of budget flexibility, which allows for the utilization of capitation funds for innovative activities and investment in preventive services [24], [25]. However, most FLHFs are still trapped in the use of funds for routine operations, such as contract salaries and office supplies purchases, with minimal allocation for preventive interventions and capacity building of human resources [20], [26]. Furthermore, structural constraints also disrupt efficiency. A time-motion study by Rinaldi & Hafidz (2024) finds that more than 30% of health practitioners' time is spent on filling out non- integrated digital systems such as P-Care, e-Kinerja, and SIKDA. This administrative burden is a significant hidden cost and reduces time for direct services also impacts the quality of primary services.

Based on those findings, it can be concluded that although theoretically the capitation scheme has high efficiency potential, its achievement greatly depends on reforms of reporting system, design of outcome-based incentives, as well as strong financial management capacity at FLHF level. International evidence from Thailand and China confirms that a capitation system can be effective if supported by an incentive framework that aligns with clinical goals and a mature managerial structure.

4. Administrative Constraints at Primary Service Level

One of the main constraints in optimizing the capitation scheme in primary services is the excessive administrative expenses and the governance system that is not yet fully integrated. From the perspective of health economics, administrative constraints are a form of transaction cost that can reduce system efficiency and decrease service productivity. A number of national and international studies highlight that these constraints are systemic in nature, covering fragments of information system, overlapping of reporting, and a lack of managerial capacity in FLHFs. A study by Pratiwi and Hidayati (2025) notes that health practitioners at PHCs should perform at more than five different application systems (e.g. P-Care, e-Kinerja, SIKDA, SITB, and e-RM), which are not integrated towards each other [6]. This issue does not only rise administrative workloads but also enhances the risks of data error and reduces the direct service time to patients. Time-motion study by Rinaldi and Hafidz (2024) corroborates this finding, indicating that around 30–35% of medical practitioners' working hours is allocated to filling out administrative data, which directly impacts service efficiency and patients' satisfaction [27].A similar finding is also reported in an international context, such as in the evaluation of Brazil Previne program the new capitation scheme in Brazil which reveals that burdensome performance indicators on administrative reporting hinders the effectiveness of clinical services, especially in areas with limited resources [28]. Aside from the burden of information system, the budget flexibility given through the status of Regional Public Service Agency (RPSA) also causes a new challenge in the management of capitation funds. In a context of weak institutions, fiscal freedom can create opportunities for the misappropriation of funds and moral hazard practices, especially if it is not accompanied by a transparent financial reporting system and uniform audit standards [29]. On the other hand, SSAH's report (2022) shows that the implementation of PBC indicators still faces a significant gap between central design and local information system readiness.

Some FLHFs experience difficulties in reporting due to unstable network connections, differences in indicator interpretation and a lack of ongoing training for executors [30].Therefore, administrative constraints in the capitation scheme are not merely technical issues but also a reflection of unsolved structural and institutional problems. Data fragmentation, overlapping reporting, and unclear budget management standards lead to increased hidden costs and decreased service efficiency. Hence, reforms of the primary health information system must be a national priority, through the integration of digital platforms, simplification of PBC indicators, and capacity building of human resources through competency-based training and integrated digitalization.An effective capitation fund management strategy to support the success of NHI's program requires a multi-level approach that includes improvement of FLHFs' internal governance, incentive structure reform, and information system integration in order to support transparency and accountability of fund usage. Strengthening strategic purchasing is a crucial foundation, namely purchasing health services tailored to local needs and oriented toward results, instead of just volume [31], [32]. In Indonesia, Ardiansyah's research (2023) shows that FLHFs that have implemented RPSA Financial Management Pattern are more flexible and innovative in the use of capitation funds, especially in financing promotional and preventive activities as well as HR training [25]. However, management effectiveness is still hampered by the fragmentation of central regional policies, low managerial capacity and high administrative expenses due to overlapping reporting systems [33].

To address this issue, a reform of the capitation system is needed through a hybrid approach, namely combining the basic capitation system with fee-for-service on complex curative services and performance- based incentives, as the one that has been successfully implemented in Thailand and Rwanda [33], [34], [35], [36]. In Brazil, modification of weighted capitation based on social vulnerability index and service outcome indicators has been proven to encourage increased immunization coverage and maternal-child services in poor areas [37]. In addition, decentralization of Performance-Based Capitation (PBC)

indicators to be adapted to the local epidemiological context, as well as digitalization of real-time monitoring dashboards can increase efficiency and accountability [38], [39]. Other urgent interventions include intensive trainings of evidence-based financial management for heads of PHCs, managerial and clinical function segregation, as well as the formation of a cross-professional capitation governance team to prevent single-person dominance in decision-making [40]. These strategies, if adopted systematically and integrated within national and regional policy frameworks, have the potential to address the stagnation in primary service productivity and ensure the optimization of capitation funds as the backbone of value-based public health financing.

IV. CONCLUSION

This study investigates critically evaluates the effectiveness of capitation payment scheme under NHI's framework in Indonesia, with focus on its implementation at FLHFs. Four main dimensions were analyzed: (1) capitation structure, (2) impacts on the quality and coverage of services, (3) efficiency of resources, and (4) administrative constraints. Although capitation theoretically supports cost efficiency and rational resource allocation, findings show that its success greatly relies on institutional readiness, fiscal autonomy, and alignment of performance incentives with clinical outcomes.Even though Performance-Based Capitation (PBC) increases patient visitation, there has been no evidence indicating any improvements in the quality of clinical services, chronic disease management, or increased utilization of preventive promotive services. Inconsistent performance indicators that focus on inputs and processes rather than outputs limit the scheme's ability to drive meaningful improvement. Furthermore, fragmented health information systems (such as P-Care, e-Kinerja, SIKDA) and high administrative expenses create hidden costs and reduce service productivity.

These constraints particularly occur in non-RPSA FLHFs that have limited fiscal flexibility and managerial capacity.In order to address such issues, this study recommends five policy strategies: (1) redesigning performance indicators focusing on clinical outcomes, disease prevention, and patient satisfaction; (2) implementing differential capitation rates based on service load and facility performance; (3) strengthening governance capacity through RPSA status expansion and data-based financial management training; (4) integrating digital information systems to simplify reporting and support real-time decision-making; as well as (5) exploring hybrid payment models that combine capitation with pay-for- performance or value-based purchasing mechanisms.Ultimately, capitation reform in Indonesia must be contextual, performance- oriented, and based on institutional strengthening. Cross-sector collaboration and a robust monitoring system are keys to improving transparency, accountability and equity of services. Although this study is based on secondary literature, its results provide an important foundation for further research using longitudinal, mixed methods approaches and international comparative studies to assess the impacts of capitation on health system financing efficiency and outcomes.

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