

Analysis of Indonesian Case-Based Groups with Global Budget Pilot Project Implementation

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Background: Indonesia's pursuit of Universal Health Coverage through Jaminan Kesehatan Nasional (JKN) has faced sustainability challenges, prompting reforms in provider payment systems. **Specific Background:** The introduction of a mixed-methods model combining Indonesian Case-Based Groups (INA-CBG) and global budget represents a pilot effort to stabilize hospital financing. **Knowledge Gap:** While national-level reports highlight variability in implementation outcomes, evidence from individual hospitals remains scarce, limiting understanding of operational challenges in different contexts. **Aims:** This study examined the implementation of the mixed-methods pilot project at 'Aisyiah Purworejo General Hospital, focusing on budget allocation, distribution mechanisms, and discrepancies between projections and actual claims. **Results:** Findings revealed recurrent mismatches between projected budgets and realized claims, driven by declining patient visits, delays in efficiency measures, limited specialist availability, and redistribution of service volume across hospitals. Mid-term utilization reviews reduced the hospital's budget from IDR 8 billion to IDR 6 billion, with both deficits and surpluses observed across quarters. **Novelty:** Unlike previous studies, this research highlights the absence of zoning-based patient control and the non-imposition of expenditure risks, offering unique insights into hospital-level dynamics. **Implications:** These findings inform future health financing policies, particularly regarding risk-sharing models and sustainability of mixed-method payment reforms under JKN.

Highlights:

- Budget projection often mismatched with actual claims due to service shifts.
- Utilization review reduced hospital budget, revealing financial volatility.
- No zoning control and no-risk scheme shaped hospital-level outcomes.

Keywords: INA-CBG, Global Budget, Health Financing, Hospital Management, Mixed Methods

Introduction

The government of the Republic of Indonesia have been aiming for the universal health coverage (UHC) which also a mandate of the 58th World Health Assembly (WHA) and a part of the Sustainable Development Goals (SDG) [1], [2]. To achieve the UHC, the government initiated

Jaminan Kesehatan Nasional (JKN), a universal healthcare system organized by Badan Penyelenggara Jaminan Sosial (BPJS) Kesehatan, the national social security agency for health in Indonesia [3], [4].

During the early years of JKN implementation, BPJS Kesehatan experienced assets deficiency for almost every single year [5], [6], [7]. Fortunately, it came to an end in 2021 as BPJS Kesehatan started gaining assets surplus [8]. The Indonesian government took immediate decision to overcome the financial issue. One of them is the compulsory pilot project of mixed-methods health payment model of global budget and Indonesian Case Base Groups (INA-CBGs).

In the mixed-methods, the budget for the subsequent year was the sum of adjustment factors-modified hospital base rate (HBR) multiplied by projection of case-mix. The projection of cases and services not covered by the INA-CBGs was also added to make the final amount of the budget. The implementation of the pilot project showed variable outcomes throughout the nation, indicating the need to consider the variability of hospital settings [9], [10], [11], [12].

Therefore, the aim of this paper is to provide a comprehensive overview of mixed-methods pilot project implementation in a hospital in Purworejo, 'Aisiyiah General Hospital.

Methods

The study was conducted in qualitative approach. Qualitative data was collected through semi-structured interview in all-purpose room in 'Aisiyiah Purworejo General Hospital which lasting between 30 minutes to 90 minutes each. The interviews were continued until data saturation was reached.

The study participants were five hospital officials (n=5) who overseeing the implementation of the pilot project in the 'Aisiyiah Purworejo General Hospital. The participants were decided by snowball sampling technique.

The study was carried out in 'Aisiyiah Purworejo General Hospital. The location of this study was selected due its accessibility to the researcher in contrast to other centers which dispersed across the country. In the study location, the mixed-methods pilot project was implemented between December of 2021 and December of 2022.

During the data collection we utilize interview guidelines to keep the interview on track, pen to note important findings, and smartphone built-in voice recorder to record the interview. Qualitative data was collected through semi-structured interview. The participants were informed of the anonymity and confidentiality of the participants. Permission to record the interviews were obtained. Interviews were continued until data saturation was reached.

The interview recordings were transcribed for more efficient data analysis. Main idea of the data was identified and organized to generate key concepts, categories, and themes. The transcribed data were systematically coded, synthesized, and analysed to provide insightful interpretation of the findings. The data from each participant were triangulated. Furthermore, member checking and peer debriefing were done to validate the findings of the study.

This study was approved by the PKU Muhammadiyah Gamping Hospital Ethics Committee (No. 113/EC-KEPK FKIK UMY/IV/2025).

Results and Discussion

A. Results

General overview of mixed methods pilot project implementation. 'Aisyiyah Purworejo General Hospital, along with all BPJS Kesehatan-affiliated hospital in Purworejo, was appointed to implement a compulsory mixed methods pilot project in December 2021 to November 2022.

"If I recall correctly, it started in 2021." N2

The pilot project combined the previous health payment model of Indonesian universal healthcare system, Indonesian DRG, with global budget. The Indonesian DRG, better known as INA-CBG, was maintained as the medical diagnosis and procedure classification system for submitting claim to BPJS Kesehatan. The global budget played a role to determine the projected budget to the hospital and the method for its distribution.

"The claim submission and coding system remain the same. However, with the global budget model, payments are not made every month. Previously, we submitted claims monthly—January claims were submitted in February, and once verification was complete, the payment was processed right away. But with the global budget model, we have to wait first—how many months was it again? I think about three months." N3

The budget in the pilot project mixed methods was determined based on the hospital's actual reimbursement metrics. The reimbursement metrics data from the past three years was needed to conclude the total budget. In the mixed-methods approach, the budget for the following year was determined by summing the adjustment factor-modified hospital base rate (HBR) multiplied by the projected case-mix. Additionally, the projection of cases and services not covered by the INA-CBG was incorporated to finalize the total budget amount. The budget was distributed periodically every 3 months.

"Basically, the global budget calculation is based on projections of the cases we've handled in the past. Initially, the guideline was to use historical case projections." N2

"Yes. As far as I know, the global budget is more or less determined by the number of patients from the previous year. Then, the payment is adjusted and made in the following year. So, the amount of the global budget payment depends on the patient volume from the past." N3

"With the global budget, it takes data from the previous year—how many cases there were—and then that is used to determine the budget for the following year. That's how it works." N4

"The global budget calculation is based on data from the past three years. All patient data, including the total number of cases, is compiled and factored into the budget." N5

The pilot project was implemented without imposing expenditure risk on the affiliated hospital. Any financial loss related to the pilot project will be covered by BPJS Kesehatan. However, if any financial loss was incurred in the pilot project, no fines would be imposed on BPJS Kesehatan for any delays in budget distribution.

"The plan is for it to involve risk in the future, but for now, it's still a no-risk model." N2

"Yes, that's correct." N2, in response to researcher's inquiry, "Fortunately, this mixed-methods pilot project is being implemented with no risk, even though it's no longer virtual, since the funds have already been paid by BPJS, right?" N2

Monitoring and evaluation of the pilot project was performed periodically at six months interval. In the setting of the pilot project, this monitoring and evaluation activity was referred to as utilization review. Results of this review lead to revision of the projected budget. This is due to the shifts of the hospital's actual reimbursement metrics during the implementation of the pilot project. The revised budget was agreed upon in the addendum of the payer agreement.

"So, in the middle of the term, for example, if our case volume decreases in the first period, an addendum will be issued. That addendum serves as a revision to the global budget we will receive." N2

"Oh no, this is actually routine—it happens every period, every six months." N2

Budget Projection and Its Distribution. The figure of the projected budget was stated in the payer agreement. The hospital's actual reimbursement metrics, case-mix and hospital base rate, needed to determine the total budget. The hospital base rate was adjusted based on the hospital level of care, hospital ownership status, and hospital geographical setting. In allocating the total budget for inpatient care, the hospital base rate further adjusted by ward class.

Seventy percent of the budget was distributed periodically every 3 months. This indicates that a year is divided into four quarters. The remaining thirty percent of the budget, termed withhold, were only distributed if the seventy percent was insufficient to cover the healthcare cost.

"For example, based on the global budget calculation, last time we were allocated 10 billion rupiah for the year. That amount is paid in four instalments, but initially, we only receive 70% of it. The remaining 30% is paid in December." N2

"For the global budget, as far as I know, not 100% of the budget is paid within the 3 monthly installment. Around 23% or 30% is held back first and then paid at the end of the year, at the end of the claim payment period." N3

"Yes, that's also stated in the addendum and the payer agreement. So, during the final evaluation at the end of the term, the remaining 30% is assessed. Essentially, if the budget exceeds the actual expenses, the second party must return the excess to the first party. Conversely, if there is a shortfall, the first party will cover the difference for the second party." N2

The initial projected budget for the 'Aisyiyah Purworejo General Hospital was 8 billion rupiah. The budget was then reduced to 6 billion rupiah after utilization review. This is due to a decreased trend of hospital's actual reimbursement metrics during the first 6 months of the pilot project.

In the first and second quarters of the pilot project, a budget (70% of the budget, excluding the withheld portion) deficit occurred, with claim realization exceeding the projected budget by +22.45% and +12.59%, respectively. However, this was not the case in the subsequent quarter. We found a budget surplus with claim realization falling short of the projected budget by 1.50% in the third quarter. Unfortunately, we were unable to obtain claim realization data for the fourth quarter. This was due to the discontinuation of the pilot project, resulting in the absence of both utilization review and claim realization recap for the final quarter.

The discrepancy between the projected budget and the realized claims at RSU 'Aisyiyah Purworejo can be attributed to several factors, including a decline in patient visits, delays in the efficiency process, a reduction in the availability of specialist medical services, and the redistribution of service volume among multiple hospitals.

"At the end of 2022, the projection did show a decline. However, according to my colleagues, earlier in the year—both in the middle and at the beginning of 2022—there was a discrepancy between the actual service costs and the projected budget. But by the end of the year, based on the latest data I received, the 1.5-billion-rupiah figure reflected an actual decline in patient volume, including inpatient cases, which aligned with the projections." N1

"The discrepancy between the projected and realized budget primarily stems from the fact that, in my opinion, hospitals should have anticipated the global budget allocation for each term and implemented strict efficiency measures accordingly. This should have included thorough reviews of

tariffs, medical service fees for doctors, and medication costs from the outset. However, in this hospital, these measures were not carried out, leading to a significant gap between the realized budget and actual claims. When I inquired about tariff reviews, it was revealed that no such review had been conducted since 2017.” N1

“Oh, clearly, both inpatient and outpatient volumes have declined.” N2

“Yes, because the doctors moved—they transferred to the neighbouring hospital. Additionally, two new hospitals have started collaborating with BPJS, so naturally, our patient volume has declined. The cases we used to handle are now being treated there.” N2

In the mixed-methods pilot project, a zoning-based patient volume control system has not yet been enforced among the appointed hospitals. As a result, patient admissions remain unrestricted by residential area, which led to inequitable distribution of patient volume among them.

“No, the zoning system has not been implemented yet.” N1

“I don't think the zoning system is in place yet because patients from distant areas should ideally go to the nearest hospital.” N2

B. Discussion

This qualitative study provides a comprehensive overview of the mixed methods pilot project implementation in 'Aisyiyah Purworejo General Hospital. Our findings enhance the current understanding of the pilot project implementation in Indonesia.

The mixed-methods pilot project at 'Aisyiyah General Hospital was a mandatory program implemented by BPJS Kesehatan. The application of global budget model in the mixed-methods served the role to calculate the projected budget and the method for its distribution, while the INA-CBG model remained as the foundation for the medical coding system. We did not find similar findings in existing studies regarding the same topic. However, other studies found that hospitals participating in the pilot project also implemented no-risk and non-virtual model of the mixed-methods [11], [12], [13]. We also further discovered from our findings that when financial loss was incurred, no delay fines would be imposed on BPJS Kesehatan, which would normally amount to 1% of the distributed budget for the period.

We found consistent findings with existing studies indicating that the adjustment factor-modified HBR and case-mix were essential in determining the allocated budget. The hospital base rate was adjusted based on the hospital's level of care, ownership status, and geographical setting [9], [11], [12]. Additionally, we learned that cases and services not covered by the INA-CBG were also included to calculate the total allocated budget. Our findings also suggested that in allocating the total budget for inpatient care, the HBR was further adjusted according to ward class.

Seventy percent of the budget was distributed periodically every three months, while the remaining withhold 30% would only be released if the initial allocation was insufficient to cover the healthcare cost. We found similar results to those in existing studies [9], [11], [12].

The utilization review of the pilot project was conducted every six months. This result is consistent with previous research [9], [11], [12]. We also discovered that the utilization review resulted in revised budget which was then agreed upon in the addendum. The utilization review after 6 months implementation of the pilot project led to a revision of the initial hospital budget allocation, reducing it from 8 billion to 6 billion rupiah. The budget revision was due to a decreased trend of hospital's actual reimbursement metrics.

In the first and second quarters of the pilot project, a budget shortfall occurred. However, this

trend shifted in the third quarter, where a budget surplus was observed. Unfortunately, claim realization data for the fourth quarter was unavailable.

Our findings identify several factors contributing to the discrepancy between the projected budget and realized claims, including a decline in patient visits, delays in the efficiency process, reduced availability of specialist medical services, and the redistribution of service volume across multiple hospitals. This expands upon the insights provided by earlier research, including pandemic, hospital bed capacity adjustment, hospital reclassification, and an increased in inbound referred patient [11], [12]. The pilot project did not implement a zoning-based patient volume control system, which may have contributed to an unequal distribution of patient volume among participating hospitals. One study also highlighted this issue [12].

While findings on the mixed-methods pilot project in Indonesia remain limited, insights from global budget implementations in other countries may offer conceptual reference points. Given the structural similarities between the global budget and DRG mixed-methods model implemented in China and the Indonesian pilot, findings from China warrant close consideration. Several studies have demonstrated the model's success in containing costs across various medical conditions [13], [14], [15]. Moreover, in multiple regions, global budget models that incorporate pay-for-performance (PFP) components have shown promise in balancing cost control with the maintenance of care quality, suggesting that performance-based incentives may play a key role in upholding service standards [13], [16], [17], [18].

However, positive outcomes are not universal across all global budget applications. For example, studies assessing the risk-adjusted global budget model in Oregon yielded mixed results, with no clear consensus on its overall effectiveness [19], [20]. Similarly, Hong Kong's global budget model, structured around targeted service volumes, was associated with increased length of stay (LOS) [21]. Turkey's implementation of mixed methods, which also combines global budget with DRG, has raised concerns over physician autonomy and ethical dilemmas due to stringent cost controls.

The Taiwanese hard-cap, fee-for-service (FFS)-based global budget model has also shown mixed outcomes. Multiple studies across different patient populations reported associations with longer LOS and increased healthcare cost [22], [23], [24]. Additionally, two studies noted a rise in drug prescription volumes which may be a direct consequence of the reimbursement structure and incentive design of the model [25], [26].

However, these models are shaped by vastly different healthcare systems, financing structures, and regulatory contexts. Thus, while these international experiences cannot be directly compared or replicated, they may serve as valuable points of reflection in shaping the future direction and policy refinement of Indonesia's mixed-methods payment reform.

This study was conducted in a single hospital setting, 'Aisyiyah Purworejo General Hospital, which may limit the transferability of the findings to other healthcare facilities with different operational characteristics, levels of care, ownership statuses, and geographical settings. As a qualitative study, the findings are based on the perspectives of a limited number of participants (n=5), all of whom were officials from 'Aisyiyah Purworejo General Hospital. As such, the results may not fully capture the broader context of the pilot project implementation, particularly since the perspectives of BPJS Kesehatan officials were not included. Additionally, the absence of claim realization data for the fourth quarter, due to the early discontinuation of the pilot project, restricted our ability to assess the financial impact of the mixed-methods throughout the entire one-year implementation period. Recall bias may have also occurred, as the interviews were conducted retrospectively. Furthermore, since the pilot project was implemented without imposing expenditure risk on the hospital, the findings may not reflect future scenarios in which financial risk-sharing or full-risk is applied.

Future research is encouraged to involve multiple hospitals across various operational

characteristics, levels of care, ownership statuses, and geographical settings to explore the broader applicability of the mixed-methods health payment model. Studies using a combination of qualitative and quantitative approaches would be valuable in assessing the financial, operational, and clinical impacts of the model. Comparative research between hospitals that showed budget surpluses versus those with budget deficits could help identify contributing factors and effective efficiency strategies. Furthermore, exploring scenarios where expenditure risk is shared between BPJS Kesehatan and healthcare providers could offer insights into the sustainability and fairness of the mixed-methods model if adopted as the national payment system. Longitudinal studies following hospitals beyond the pilot period would also be beneficial in evaluating the long-term effects of this payment reform.

Conclusion

This study provides an in-depth overview of the implementation of the mixed-methods pilot project combining Indonesian Case-Based Groups (INA-CBG) and global budget at 'Aisyiyah Purworejo General Hospital. The findings detail how the projected budget was determined based on actual reimbursement metrics, adjusted hospital base rate (HBR), and projected case-mix, as well as the mechanism of periodic budget distribution and utilization review.

Although the pilot project was implemented under a no-risk scheme for the hospital, several challenges emerged during the implementation. These included discrepancies between projected budgets and realized claims, delays in efficiency process, reduced availability of specialist services, and the absence of a zoning-based patient volume control system leading to an inequitable distribution of service volume among hospitals. The unavailability of claim realization data in the fourth quarter due to early project discontinuation also limited a comprehensive year-end analysis.

These findings contribute to a better understanding of the practical implementation of the mixed-methods health payment model under JKN. Further evaluation is needed, particularly regarding budget projection methods, revision mechanisms, and risk-sharing or full-risk scheme, especially if the mixed-methods model is to be adopted as the official health payment system nationwide.

Kesimpulan menggambarkan jawaban dari hipotesis dan/atau tujuan penelitian atau temuan ilmiah yang diperoleh. Kesimpulan bukan berisi perulangan dari hasil dan pembahasan, tetapi lebih kepada ringkasan hasil temuan seperti yang diharapkan di tujuan atau hipotesis. Bila perlu, di bagian akhir kesimpulan dapat juga dituliskan hal-hal yang akan/perlu dilakukan terkait dengan gagasan selanjutnya dari penelitian tersebut.

Kesimpulan dinyatakan sebagai paragraf. *Numbering* atau *itemize* tidak diperkenankan di bab ini. Subbab (misalnya 7.1 Kesimpulan, 7.2 Saran) juga tidak diperkenankan dalam bab ini.

Author's Contribution Statement

MJA contributed in conceptualization, formal analysis, investigation, data curation, writing - original draft, visualization, and project administration. FP contributed in supervision, methodology, validation, resources, writing - reviewing and editing. All authors have critically reviewed and approved the final draft and are responsible for the content and similarity index of the manuscript.

Acknowledgements

We gratefully acknowledge the support of all parties involved, with special thanks to the Master Program of Hospital Administration at Universitas Muhammadiyah Yogyakarta for the resources and support provided, which were instrumental to the completion of this paper.

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