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The Stakeholder Perspective of the "Mapping/Outreach/Advocacy/Registration" Program to Support the Achievement of Universal Health Coverage in Indonesia

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Abstract

Aims: Indonesia's Universal Health Coverage agenda continues to face enrollment and implementation challenges despite the expansion of the National Health Insurance program. This study explored stakeholder perspectives on the "Mapping/Outreach/Advocacy/Registration" (PESIAR in Indonesian) Program, a community-based initiative designed to support Universal Health Coverage through outreach and enrollment.

Participants & Methods: A qualitative case study was conducted in West Sumatra, Indonesia, between March and July 2026. Semi-structured interviews were conducted with 30 purposively selected participants, including branch management, membership managers, membership officers, and community outreach agents, and were supplemented by non-participant observation and document review. Data were analyzed using thematic analysis informed by the Systems Approach (Input-Process-Output-Outcome), and the Lean Six Sigma Define-Measure-Analyze-Improve-Control framework was used to structure the participants' reflections on the implementation process.

Findings: Input readiness relied on local government commitment and resources. The Define-Measure-Analyze-Improve-Control analysis reframed low enrollment as a systemic issue involving data accuracy, coordination, community understanding, and affordability. Participants attributed growth mainly to the reactivation of inactive members and to sub-district collaboration. Member activeness, rather than total enrollment, was perceived as the greater challenge for long-term sustainability.

Conclusion: Collaboration, data quality, and local implementation capacity are important for achieving sustainable program outcomes, and Lean Six Sigma, particularly the Define-Measure-Analyze-Improve-Control framework, provides a useful lens for understanding implementation processes and identifying opportunities for continuous improvement.

Keywords

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Introduction

The World Health Organization has promoted Universal Health Coverage (UHC) as a means of enabling people to obtain health services without financial hardship [1]. The global commitment to UHC was reinforced through the United Nations General Assembly Political Declaration on Universal Health Coverage in 2019, which emphasized health-system strengthening, reduced inequality, and financial protection for vulnerable groups as the key elements of the UHC agenda [2]. The UHC framework includes three related dimensions, namely population coverage, service coverage, and financial protection, all of which must be achieved at the same time to secure equitable access to healthcare [3].

In Indonesia, UHC is pursued through the National Health Insurance (JKN), managed by the Social Health Insurance Administration Body (BPJS), a government agency set up to provide social health insurance for the Indonesian people [4]. Since JKN was introduced in 2014, participation has increased considerably, with membership rising from 216.5 million in 2019 to 220.2 million in 2022 [5]. Over the same period, the program's revenues rose substantially, reflecting the ongoing growth in enrollment and in the number of contributions collected [6].

Although JKN has made significant strides in expanding access to health services, many challenges remain for UHC sustainability, including inactive membership, inaccurate beneficiary data, uneven implementation across regions, limited public awareness, and ongoing concerns about program sustainability and financial protection [5, 7]. These challenges indicate that labor-market constraints, opportunity costs, administrative barriers, and local service capacity must be addressed to translate coverage into equitable access [8].

To address these challenges, BPJS introduced the Mapping, Outreach, Advocacy, and Registration program, known by its Indonesian acronym PESIAR, in July 2024. PESIAR is a community-based outreach initiative designed to identify uninsured populations, facilitate enrollment, and strengthen community engagement [9]. The program reflects international recommendations that emphasize community engagement, primary healthcare approaches, and local implementation capacity as important strategies for improving equitable access to healthcare and advancing UHC goals [1].

Nevertheless, the early stages of PESIAR implementation have revealed operational difficulties, including inaccurate targeting, poor data quality, inconsistent field performance, and limited program monitoring [10]. Administrative data from the BPJS Bukittinggi Branch (PESIAR Program report, 2025) illustrate these problems. In 2024, insurance coverage (the share of the population in the branch area registered in any JKN scheme) reached 98.24%, against a target of ≥98%, but only 64.34% of registered members remained active, well below the national target of 80%; the same indicator stood at 75.63% in 2025, still below the target. By May 2025, the program had recorded only 167 enrollments against a target of 6,970 mapped individuals (2.40%). The gap between reported coverage and actual member engagement suggests that the core problem lies in how PESIAR is implemented rather than in how it was designed.

In this regard, Lean Six Sigma (LSS), particularly its Define-Measure-Analyze-Improve-Control (DMAIC) framework, can provide a structured approach to identifying process inefficiencies and the underlying causes of performance gaps [11, 12]. The LSS framework has become well established in manufacturing and hospital settings, but its use in community-based health insurance outreach remains limited [13, 14, 15]. Moreover, little is known about how LSS could support strategies to expand coverage and sustain participation in UHC initiatives [15, 16].

This gap is important to address because sustainable UHC depends not only on expanding coverage but also on maintaining active participation, strengthening data quality, improving cross-sectoral collaboration, and enhancing local implementation capacity [17]. Examining PESIAR through an LSS perspective may provide insights into how community-based outreach programs can address operational inefficiencies and contribute to UHC sustainability [10]. Moreover, combining LSS with a Systems Approach enables the examination of relationships among program inputs, implementation processes, outputs, and outcomes within a single analytical framework [18].

Therefore, this study explored stakeholder perspectives on the implementation of the PESIAR Program and its perceived contribution to supporting UHC in Indonesia. In particular, the study aimed to: 1) examine the readiness of program inputs, including regulation, human resources, infrastructure, and information technology; 2) analyze program implementation through the DMAIC phases of LSS; 3) assess program outputs in terms of JKN membership growth and contribution revenue; and 4) examine program outcomes relevant to UHC sustainability. By integrating the Systems Approach with LSS in a community-based health insurance setting, this study contributes new evidence on the application of continuous improvement principles to support sustainable UHC in Indonesia.

Participants and Methods

Study design

This study employed a qualitative descriptive case study design to explore the implementation of the

PESIAR program and its perceived contribution to supporting UHC in Indonesia. A case study approach was chosen because PESIAR is a complex community-based outreach initiative operating within a dynamic organizational and policy environment. Case study methodology enables an in-depth examination of contemporary programs while accounting for the contextual factors that shape their implementation and outcomes [19]. In this study, participants were invited to share and reflect on their experiences of implementing the PESIAR program, guided by the Systems Approach (Input-Process-Output-Outcome) [20], to understand PESIAR's implementation, performance, and contribution to UHC sustainability. The LSS DMAIC framework was used to structure the analysis of the program's implementation process.

Setting

The study was conducted within the operational area of the BPJS Bukittinggi Branch in West Sumatra Province, Indonesia. The branch oversees the implementation of the PESIAR program across several districts and municipalities with varying levels of UHC achievement, member activeness, and socioeconomic conditions. This setting was selected purposively because it had actively implemented PESIAR and exhibited substantial variation in program performance, providing an information-rich setting for examining factors influencing PESIAR implementation and its contribution to UHC. The case was bounded spatially by the operational area of the branch, which covers one municipality and four regencies, and temporally by the data-collection period (March–July 2026).

Participant sampling and recruitment

Participants were selected using purposive sampling to ensure the inclusion of individuals directly involved in the implementation and management of the PESIAR program. Sampling aimed to capture perspectives from across the full implementation chain, including strategic (Branch Head), managerial (Heads of Membership Division), operational (Membership Officers), and field-level actors (PESIAR Agents), reflecting a criterion-based purposive sampling strategy designed to capture perspectives across organizational levels rather than statistical representativeness [21]. Eligible participants held a formal appointment to a role in the PESIAR program and had been actively involved in its implementation for at least six months.

Thirty participants were approached through formal institutional channels following approval from BPJS, and interviews were arranged at times convenient to them. All invited individuals agreed to participate, with no refusals or withdrawals. Including participants from different organizational levels enabled triangulation of perspectives and facilitated a more comprehensive understanding of how program policies, operational processes, and field activities interacted during implementation. Collecting data from multiple stakeholder groups is recognized as an important strategy for enhancing the credibility and depth of qualitative findings by capturing diverse experiences and validating interpretations across different sources of evidence [22].

Data collection

Data were collected between March and July 2026 using three complementary methods: in-depth semi-structured interviews, non-participant observation, and document review, to support methodological and data-source triangulation. The data set comprised 30 in-depth interviews, 12 non-participant observation sessions (approximately 20 hours in total), and 18 administrative documents. Semi-structured interviews served as the primary data source. An interview guide consisting of 32 open-ended questions was developed by the research team and organized around the study objectives and analytical framework. The interview questions explored input readiness, implementation processes, program outputs, and perceived outcomes related to UHC sustainability. The guide was pilot-tested prior to data collection and refined for clarity and relevance.

Individual interviews with BPJS personnel were held in private meeting rooms at branch offices, while interviews with PESIAR Agents were conducted in private locations at sub-district offices or participants' workplaces to ensure confidentiality and privacy. The open-ended questions encouraged participants to share their thoughts, feelings, and personal experiences. Each interview lasted 45–60 minutes and was conducted in Indonesian in a well-ventilated room with adequate lighting and comfortable seating. To ensure accuracy, each interview was recorded using two audio recorders. Following the interviews, the first author transcribed each recording verbatim for subsequent analysis.

Non-participant observations were conducted during selected PESIAR outreach activities to obtain contextual information on program implementation, stakeholder interactions, and operational challenges encountered during field activities. Detailed field notes were recorded during and immediately after each observation.

The documents reviewed included technical guidelines, memoranda of understanding (MoU), cooperation agreements, UHC action plans, dashboard reports, membership reports, and monitoring documents, which were used to verify and contextualize findings obtained through interviews and observations. Data collection continued until thematic saturation was reached, that is, until no new themes, codes, insights, or patterns emerged from the interviews [23]; saturation was confirmed through review of the analysis by the co-investigators [24].

Data analysis

Data were analyzed using thematic analysis following the approach described by Braun and Clarke [25], which involved six iterative stages: familiarization with the data, generation of initial codes, construction of categories, development of themes, review of themes, and definition and naming of themes.

A hybrid coding technique was applied, combining data-driven and concept-driven categories for a comprehensive view. The coding process analyzed interview transcripts, observation notes, and documentary evidence concurrently using the Systems Approach and the DMAIC framework. Deductively, the four Systems Approach domains (Input, Process, Output, Outcome) were established a priori as the four themes [20]; within the Process theme, the five DMAIC phases (Define, Measure, Analyze, Improve, Control) were used a priori as sub-categories. Inductively, categories and codes within each theme and DMAIC phase were derived from participants' accounts and supporting documents [25]. The framework was treated as revisable rather than fixed; where inductive coding produced content that did not fit the a priori structure, the structure was reconsidered. For example, an affordability/capacity-to-pay theme emerged inductively from field agents' accounts; because it lies outside the process-improvement scope of DMAIC, it was retained as a boundary condition of the framework and is examined as such in the Discussion, rather than being forced into a DMAIC phase. Because coding was undertaken by more than one researcher, using independent coding of an initial subset, consensus discussion, and a shared codebook, the analysis followed a codebook-oriented variant of thematic analysis rather than a fully reflexive thematic analysis. This hybrid approach was chosen to combine the consistency and transparency needed in multi-researcher analysis with the interpretive openness of thematic analysis; reflexivity was retained through the reflexive journal described below.

Two researchers independently coded the first four transcripts and compared their coding line by line to establish a shared coding framework (codebook). Differences were resolved through discussion and consensus, and the agreed coding framework was subsequently applied to the remaining data. Given the manageable volume of data, coding was conducted manually using Microsoft Word and Microsoft Excel rather than specialist qualitative software. Themes and interpretations were refined through iterative discussion among the authors until consensus was reached. Representative quotations were translated from Indonesian into English by the first author and reviewed for conceptual accuracy.

Researcher reflexivity

The first author conducted all interviews and observations. He is a male PhD candidate in Management with over 20 years of experience in Indonesia's National Health Insurance system. At the time of the study, he served as Head of the Membership Division and had formal training in qualitative research methods and interviewing techniques. As an insider researcher in the organization under study, the first author recognized both the advantages and the potential risks associated with insider status. While organizational familiarity facilitated access and contextual understanding, it also created the possibility of assumptions and bias. To mitigate these risks, participants were informed before each interview that the study was being conducted for academic purposes rather than for organizational evaluation or audit. The researcher maintained a reflexive journal throughout the study, used open-ended and non-leading interview questions, actively sought divergent viewpoints, and discussed emerging interpretations with the supervisory team. The second and third authors, who were not involved in data collection, independently reviewed coding decisions and contributed to analytical discussions.

Trustworthiness

Member checking was not conducted, given the limited fieldwork period and participants' operational workloads. Credibility was instead established through methodological triangulation (interviews, observation, and document review), source triangulation across four organizational levels, peer debriefing with the supervisory team, an audit trail of coding decisions, and the reflexive journal maintained throughout the study.

Findings

Participant characteristics

Thirty participants were purposively selected to represent the complete implementation chain of the PESIAR Program at the BPJS Bukittinggi Branch Office, spanning the strategic, managerial, operational, and field levels in line with the Systems Approach (Input-Process-Output-Outcome) that framed the study. Of these, 17 (56.7%) were male and 13 (43.3%) were female (Table 1). At the strategic level, a male Branch Head (coded KC) served as the officer with overall responsibility for implementing the PESIAR program. He acted as the main decision-maker, guiding strategic direction, distributing resources, and aligning branch operations with national UHC objectives.

At the managerial level, four Heads of the Membership Division (coded KBK), comprising three males and one female, were included. Their role centered on ensuring the program's operational implementation, translating strategic directives into actionable work plans, overseeing day-to-day coordination, and monitoring the progress of enrollment activities across their respective units. At the operational level, eight Membership Staff (coded

SK), three males and five females, served as the personnel directly executing the program. Their responsibilities encompassed the administrative and technical processes underpinning participant registration, data verification, and the routine tasks required to sustain program delivery. At the field level, seventeen PESIAR Agents (coded AP), ten males and seven females, served as the program's frontline actors. Acting simultaneously as agents and field officers, they carried out community-level outreach, direct engagement with prospective and existing participants, and on-the-ground recruitment activities.

This multi-level configuration was intended to triangulate perspectives across the program hierarchy, enabling the study to capture both the intended policy logic articulated at the strategic and managerial tiers and the enacted practices observed at the operational and field tiers.

Integration of the PESIAR program and UHC achievements

Thematic analysis identified four themes and sixteen categories; the coding structure is shown in Table 2. Quotations are marked with role codes and participant numbers (e.g., KC1, AP3) and were translated from Indonesian by the first author.

Table 1. Characteristics of the participants by organizational level (n=30)

Code	Role	n	Male	Female	Role in the PESIAR program
KC	Branch Head	1	1	0	Officer with overall accountability for program implementation
KBK	Head of Membership Division	4	3	1	Ensuring operational realization of the program
SK	Membership Staff	8	3	5	Executing the program
AP	PESIAR Agent	17	10	7	Serving as agents and field officers delivering the program
Total		30	17	13	

Table 2. Themes, categories, and codes derived from the interviews, observations, and document review

Category	Codes derived from the data
Theme 1: Input readiness	
Regulation	National policy gives clear direction for JKN expansion and UHC; local government commitment, budget, and local regulation determine field success; MoUs, cooperation agreements, and UHC work plans available, but technical regulation needs strengthening; cross-sectoral coordination and sub-district involvement facilitated by policy support
Human resources	Number of personnel not proportional to target and coverage area; basic competence adequate, with gaps in data analysis, IT, and advocacy skills; training and technical guidance provided but not yet continuous; high workload across mapping, outreach, advocacy, and registration
Infrastructure	Smartphones and tablets support data capture and reporting; limited operational vehicles constrain field mobility; uneven internet connectivity in remote sub-districts; delays in real-time reporting
Information technology	PESIAR dashboard supports target identification and monitoring; system data not always consistent with field conditions and requires re-verification; system use depends on user competence and connectivity; improved communication between BPJS, agents, and local government
Theme 2: DMAIC process	
Define	Membership problems identified from coverage gap and inactive-member data; priority sub-districts determined from coverage data and field conditions; targets aligned with UHC acceleration
Measure	Achievement of mapping, outreach, advocacy, and registration activities measured; data sources: BPJS system, dashboard, agent reports, and sub-district data; gap between target and achievement used to prioritize
Analyze	Root-cause analysis via team discussion, coordination meetings, and dashboard monitoring; system data compared against field reality (moved, deceased, not found); root causes: inactive members, unregistered residents, arrears, and inaccurate data; low community understanding of JKN and limited ability to pay premiums; field validation and sub-district confirmation strengthen the analysis
Improve	Strengthened collaboration with local government and sub-districts; agent training and mentoring intensified; data validation and update mechanisms improved; persuasive community education and advocacy strategies
Control	Routine monitoring and periodic evaluation meetings; dashboard monitoring and regular performance reporting; field supervision involving BPJS staff and sub-district officials; SOP and quality-control guidance applied
Theme 3: Program output	
New membership	Gradual growth in new JKN members over the last 2–3 years; mapping and outreach identify previously unprotected residents; sub-district collaboration eases identification and communication; consistent follow-up of targets determines conversion to registration
Premium revenue	Registration through agents raises premium collection; reactivation of inactive members contributes to revenue; premium arrears remain a constraint
Agent productivity and enablers	Agent productivity varies by area and mentoring intensity; sub-district and local government roles decisive in achievement; data quality and registration efficiency improved
Theme 4: UHC sustainability outcome	
Coverage	Contribution to accelerating coverage toward the ≥98% UHC target; previously unregistered residents identified and enrolled
Member activeness	Improved activeness through education, mentoring, and reactivation; activeness, not enrollment alone, is the harder outcome to sustain
Cross-sectoral collaboration	Synergy of BPJS, local government, sub-districts, agents, and the community; sustained local government commitment and budget allocation required
Sustainability requirements	Periodic data validation and stronger information systems; routine monitoring and evaluation; continuous education, advocacy, and agent capacity building

BPJS, Social Health Insurance Administration Body; DMAIC, Define-Measure-Analyze-Improve-Control; IT, information technology; JKN, National Health Insurance; MoU, memorandum of understanding; SOP, standard operating procedure; UHC, Universal Health Coverage.

Input readiness

Across all levels, participants described national policy as offering clear direction for JKN expansion, while local government commitment was what ultimately determined whether that direction produced results in the field. Supporting local regulation, budget allocation, and the engagement of sub-district administrations came up repeatedly as the factors that made the difference.

"National policy already gives a clear direction for accelerating UHC, but local government support is the key to mobilizing the sub-district, the regional apparatus and the community so the program can run effectively." (KC1)

"The national basis is strong enough because PESIAR is aligned with JKN expansion policy. Success in the field, however, depends heavily on the local government's commitment to providing supporting regulation, target data, and cross-sectoral coordination." (KBK1)

Formal instruments, including MoUs, cooperation agreements, and UHC work plans, were in place, though participants felt that technical regulation and operational commitment still needed strengthening so that PESIAR could function as a shared undertaking rather than a BPJS initiative alone.

"Support at national and local level is adequate, but it needs to be strengthened into a more operational commitment, so that PESIAR is not only a BPJS *program but a joint movement."* (KBK4)

Human resources stood out as the most frequently cited constraint. Staffing levels did not match the size of the target population or the geographic spread of the working area, which left mapping, outreach, advocacy, and registration concentrated among a relatively small number of personnel. Participants generally considered basic competence adequate but pointed to gaps in data analysis, information technology, and advocacy skills, noting that while training and technical guidance were provided, they had not yet become a continuous process. Infrastructure proved only partially enabling. Smartphones and tablets worked well for data capture and reporting, but limited operational vehicles and inconsistent internet connectivity in remote sub-districts constrained field mobility and slowed real-time reporting.

The PESIAR dashboard helped with target identification and membership monitoring and improved communication among BPJS, agents, and local government. At the same time, participants were clear that system data did not always match conditions on the ground and needed re-verification before advocacy or registration could move forward, an issue that resurfaces as a root cause in Theme 2.

DMAIC process implementation

Define. Membership problems surfaced through the gap between coverage targets and actual results, along with data on inactive and unregistered residents. Priority sub-districts were identified by combining coverage data with field conditions reported by agents and sub-district officials.

"We identify the membership problems by looking at JKN coverage, how active the participants are, and which areas have not yet reached the UHC target, and then we analyze that data to decide which villages become the priority for intervention." (KC1)

Measure. Progress on mapping, outreach, advocacy, and registration was tracked using the BPJS system, the PESIAR dashboard, agent activity reports, and sub-district data, with the gap between targets and achievements guiding prioritization.

"We measure achievement by recapping the data in the application and the dashboard; every activity is recorded, from the target data and visit results to participant status and follow-up registration." (SK1)

Analyze. Root causes were traced through team discussion, coordination meetings, dashboard monitoring, data analysis, field validation, and confirmation with sub-district officials. Comparing system records against field reality often revealed outdated information, such as participants who had moved, died, or could not be located at their recorded address. Beyond data quality, participants pointed to limited community understanding of JKN and limited ability to pay premiums as substantive underlying causes.

"Root causes are often found through direct visits, brief conversations, confirmation with residents, and house-to-house outreach—that is how we learn about the low ability to pay premiums and the reluctance to register or reactivate." (AP3)

Improve. Improvement efforts centered on stronger collaboration with local government and sub-districts, more intensive agent training and mentoring, better data validation and updating mechanisms, and more persuasive approaches to community education and advocacy.

"The improvement that has the biggest effect is strengthening the coordination between BPJS*, local government, and the villages, so that PESIAR in the field becomes more directed and faster."* (KBK3)

Control. Oversight relied on routine monitoring, periodic evaluation meetings, dashboard monitoring, regular performance reporting, field supervision involving both BPJS staff and sub-district officials, and standard operating procedures for quality control.

"Monitoring and evaluation is carried out in stages and on a regular basis: achievement data is monitored daily, discussed with the team weekly, and evaluated monthly to make sure PESIAR stays on target." (KBK1)

Program output

Participants described new membership as growing gradually over the past two to three years, although the administrative indicators available for this study cover only 2024 and 2025 and are not sufficient to establish a trend. Mapping and outreach activities identified residents who had not previously been

covered by JKN, and collaboration with sub-district administrations made these targets easier to reach and follow up. Participants were clear that identification alone was not enough: converting a mapped target into an actual member depended on consistent follow-up through to registration.

Participants perceived that premium revenue was supported both by new registrations facilitated by agents and, notably, by the reactivation of previously inactive members, a contribution they felt was often overlooked. According to the branch's administrative records, PESIAR-related contribution revenue in May 2025 was IDR 25,620,000 against a target of IDR 318,389,000 (8.05%). Premium arrears, however, remained a persistent constraint, reflecting the affordability concerns raised earlier in the Analyze phase.

Agent productivity varied by area and by the intensity of mentoring received, and participants consistently pointed to the role of sub-district officials and local government as decisive in achieving results. Secondary improvements were also reported in data quality and registration efficiency.

UHC sustainability outcome

Participants judged PESIAR to contribute to accelerating coverage toward the ≥98% UHC target by identifying and enrolling previously unregistered residents. They were consistent, however, in stating that coverage alone was not the outcome that mattered; member activeness, sustained through education, mentoring, and reactivation of dormant members, was the harder achievement to maintain. Sustainability was described as resting on synergy among BPJS, the local government, sub-district administrations, agents, and the community, as well as on the continuity of the local government's commitment and budget allocation.

"The outcome can be sustained through stronger local government commitment, policy support and continuous budget allocation." (KC1)

Participants also pointed to periodic data validation, stronger information systems, routine monitoring and evaluation, and continuous education, advocacy, and capacity building for agents as necessary to sustain these outcomes over the long term. However, accounts were not entirely uniform. While most participants framed the problem in terms of process and data, a minority, particularly field agents who deal directly with households, saw low enrollment and premium arrears primarily as an economic issue: the capacity of informal-sector households to afford monthly premiums. This interpretation falls outside the LSS lens, since no process improvement can raise household income, and it is taken up again in the Discussion.

A second divergence concerned data quality. Managerial participants tended to describe system data as broadly adequate, requiring only routine updates, whereas field agents pointed to a more fundamental mismatch between system records and field reality, including unclear addresses, members who had moved or died, and targets that could not be found. This gap between managerial and field perspectives is itself a finding and suggests that dashboard-based monitoring alone may understate the extent of verification work at the field level.

Discussion

This case study found that input readiness was necessary but not sufficient. Regulation and information technology were in place, yet the gaps that kept recurring, namely staffing disproportionate to targets, uneven connectivity, limited vehicles, and system data that did not match field reality, were exactly the root causes that resurfaced later in the Analyze phase. This tight coupling between inputs and process problems supports the LSS premise that process quality is bounded by input quality [15, 26] and aligns with health-workforce evidence pointing to workforce capacity as the binding constraint on service expansion more broadly [27].

The DMAIC framework proved workable even in a community outreach setting quite different from the hospital contexts where LSS is usually studied [16, 28, 29]. Its value showed most clearly in the Analyze phase, where root-cause reasoning reframed low enrollment from what looked like an agent-performance problem to a systemic one spanning data accuracy, cross-sectoral coordination, community understanding, and affordability. This extends the existing evidence base by showing that LSS can transfer meaningfully to social health-insurance administration, not just clinical settings [11, 15].

Moreover, the growth in program outputs was driven largely by the reactivation of dormant members rather than by new enrollments alone. This finding highlights the importance of active membership as an indicator of effective UHC participation [17]. The substantial gap between coverage and active participation observed in the Bukittinggi Branch, where coverage reached 98.24% while activeness remained at only 75.63%, identifies inactive membership as a persistent challenge for JKN sustainability and effective population coverage [5].

Furthermore, field agents' concerns about affordability highlight the limitations of the LSS approach. Process improvements can enhance data accuracy, coordination, and registration efficiency, but they cannot increase a household's capacity to pay [8, 17]. When arrears result from income constraints rather than process issues, subsidy mechanisms, such as regionally sponsored membership segments, are more appropriate than DMAIC [17, 30]. Recognizing this boundary clarifies the types of problems LSS can address without

diminishing its value [17]. These insights underpin a conceptual framework in which properly prepared inputs facilitate a DMAIC-driven process, yielding measurable results aligned with sustainable UHC objectives, with the Control phase providing feedback to refine inputs and complete the cycle [12, 20].

This study has some limitations. The findings reflect the perspectives of BPJS personnel and agents in a single branch, member checking was not conducted, and the first author was an insider researcher; community members and JKN beneficiaries were not interviewed. In addition, the administrative indicators available cover only 2024 and 2025, so the findings describe perceived operational contributions and implementation mechanisms rather than causal effects of PESIAR on enrollment, member activeness, or revenue.

Conclusion

Based on stakeholder perspectives, PESIAR was perceived as a useful operational mechanism for supporting UHC acceleration in the Bukittinggi Branch, with a perceived contribution that depends on two things working together: prepared inputs (regulation, human resources, infrastructure, and information technology) and an LSS DMAIC structure guiding implementation. Participants reported that applying DMAIC helped them trace root causes, improve membership data quality, strengthen cross-sectoral coordination, and base decisions on evidence rather than assumption, and they perceived these practices as contributing to new enrollment, member reactivation, and premium collection. Sustaining these perceived gains will require continued effort: local government commitment and budget allocation need to hold steady, data validation should be periodic rather than a one-off exercise, and monitoring, evaluation, and capacity building for field agents need to continue over time. BPJS and local governments should prioritize refining technical regulation, building workforce capacity, strengthening digital infrastructure, and deepening cross-sectoral collaboration, while recognizing that premium affordability is better addressed through subsidy instruments than through further process improvement. Future research should incorporate the perspectives of community members and JKN beneficiaries directly, evaluate the program's effects with verified trend data on enrollment, activeness, and revenue, and test this model across branches with different geographical and socioeconomic profiles.

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Conflicts of Interest: The corresponding author (Maihendra M.) was employed as Head of the Membership Division, BPJS Bukittinggi Branch Office, during the study period. This research was conducted independently as part of his doctoral studies and in accordance with institutional ethics. The authors declared no conflicts of interest.

Authors' Contribution: Maihendra M (First Author), Main Researcher/Methodologist/Data Collector/Qualitative Analyst/Original Draft Writer (50%); Veloo A (Second Author), Methodologist/Supervisor/Critical Reviser (30%); Fazali bin Ghazali M (Third Author), Data Curator/Formal Analyst/Final Reviewer/Editor (20%)

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