Drug Availability and Interprofessional Collaboration as Determinants of Quality Control in BPJS Health Partner Facilities

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A B S T R A C T :

Health development in Indonesia is grounded in the fulfilment of the right to health, implemented through preventive, promotive, curative, and rehabilitative efforts supported by a two-way referral system. To enhance service quality for BPJS Kesehatan participants, particularly those with chronic conditions, the Referral Back Program has been strengthened. This study examines the influence of drug availability and interprofessional collaboration on quality control within the Referral Back Program at healthcare facilities partnered with the BPJS Kesehatan Bandung Branch. A cross-sectional design was employed using descriptive and verificative methods, with a saturated sample of 36 respondents representing multiple professional groups. The independent variables were drug availability (X1) and interprofessional collaboration (X2), while the dependent variable was quality control (Y). Data were obtained through questionnaires and documentation, and analysed using multiple regression with a 5% significance threshold. Results indicate that drug availability does not significantly affect quality control ($p = 0.221$), while interprofessional collaboration has a significant positive effect ($p = 0.007$). Together, drug availability and interprofessional collaboration significantly influence quality control ($p = 0.021$), accounting for 20.8% of the variance, with the remaining 79.2% explained by other factors. The study concludes that quality control in the Referral Back Program is primarily determined by interprofessional collaboration rather than drug availability, underscoring the importance of collaborative practice in improving healthcare service quality.

Keywords: Information system, Hospital Management, Evaluation, TAM, HMIS.

1. Introduction

Health development in Indonesia is founded upon the principle of fulfilling every individual's right to health. This principle is operationalized through comprehensive health efforts encompassing preventive, promotive, curative, and rehabilitative interventions, all of which are supported by a referral system designed to ensure access, continuity, and quality of care. According to the Ministry of Health Regulation No. 28 of 2014, the referral system is not merely a transfer of patients but also includes diagnostic services, knowledge exchange, and shared responsibility across facilities, implemented both vertically and horizontally.

The establishment of BPJS Kesehatan as mandated by Law No. 40 of 2004 on the National Social Security System (SJSN) and Law No. 24 of 2011 marked a transformative moment in Indonesia's healthcare system. Through the National Health Insurance (JKN-KIS), BPJS Kesehatan seeks to provide equitable, sustainable, and quality healthcare services to all Indonesians. By early 2022, JKN coverage had expanded to over 236 million people, representing nearly 86 percent of the population, supported by more than 27,500 partner healthcare facilities nationwide. This expansion demonstrates not only significant progress toward universal health coverage but also the increasing demands placed on the healthcare system, especially in managing chronic diseases that require long-term, continuous care.

The JKN system adopts a tiered referral mechanism in which patients are initially treated at primary care facilities (FKTP) and referred to secondary or tertiary care facilities (FKRTL) if specialized treatment is needed. Importantly, the system also incorporates a reverse referral program (Program Rujuk Balik/PRB), where patients with chronic but stable conditions are referred from FKRTL back to FKTP. This mechanism is intended to optimize the role of primary care physicians, facilitate knowledge transfer from specialists, enhance cost-efficiency, and improve patient access to ongoing treatment. Chronic diseases included in PRB such as diabetes mellitus, hypertension, cardiovascular disease, asthma, chronic obstructive pulmonary disease (COPD), epilepsy, stroke, mental health disorders, and systemic lupus erythematosus (SLE) are among the most prevalent and resource-intensive conditions in Indonesia.

Despite the program's importance, the implementation of PRB has been suboptimal. National data from BPJS Kesehatan's Business Intelligence application in 2020 indicated that while the overall target recruitment of PRB participants was met nationally, local-level data from the Bandung Branch showed a discrepancy between targets and actual recruitment, with outcomes only reaching 90.5 percent of the initial target. By 2021, this gap had widened, with new participant recruitment reaching only 48.04 percent of the target. These figures reveal a persistent gap between policy aspirations and field implementation, raising questions about the structural and operational challenges within PRB.

Several studies have identified barriers that compromise the effectiveness of PRB. Sutrisno et al. (2017) found that even with supportive regulations and organizational commitment, PRB targets were not met due to weak implementation mechanisms. Pertiwi et al. (2017) further highlighted problems such

as poor communication between FKRTL and FKTP physicians, the lack of standardized referral-back documentation, and inconsistent application of standard operating procedures. These findings suggest that systemic inefficiencies, rather than policy absence, are the primary obstacles.

One critical issue is drug availability. The effectiveness of PRB relies heavily on the assurance that prescribed medicines are accessible at FKTP or partner pharmacies. However, evidence indicates frequent shortages of PRB drugs due to supply chain delays, incomplete formularies, and logistical constraints (BPJS Kesehatan, 2019). Such shortages often result in patients being referred back to hospitals, undermining the efficiency and cost-containment goals of PRB. Pre-research observations in Bandung also confirm this challenge, with frequent reports of incomplete drug availability at primary facilities and pharmacies, causing patient dissatisfaction and unnecessary referrals.

Equally central is interprofessional collaboration. PRB requires close coordination among specialists, general practitioners, pharmacists, nurses, and other healthcare professionals. Effective collaboration is expected to ensure continuity of care, patient education, adherence monitoring, and overall quality of service delivery. However, fragmented communication, lack of integrated teamwork, and unclear role delineation have been reported as persistent barriers (Pertiwi et al., 2017; Sutrisno et al., 2017). The absence of a strong collaborative framework reduces efficiency and negatively affects patient outcomes, which contradicts the patient-centered approach envisioned in JKN.

These issues have broader implications. According to Mosadeghrad (2014), healthcare quality is influenced by multiple dimensions including provider competence, system management, and patient-related factors. When drug shortages and weak professional collaboration occur simultaneously, the result is diminished service quality, increased patient dissatisfaction, and higher systemic costs. This aligns with Naidu (2009), who emphasized that patient satisfaction directly influences patient behaviour and loyalty to healthcare systems. Therefore, the underperformance of PRB risks not only financial inefficiency but also patient disengagement from primary healthcare services.

From an Islamic ethical perspective, healthcare provision also embodies moral and spiritual responsibility. The concept of *khidmah* (service) highlights healthcare as both social duty and religious devotion. Hadiths emphasizing that "the leader of a people is their servant" (HR. Ad-Dailami) and that "the best of people are those who bring the most benefit to others" (HR. Ahmad, ath-Thabrani, ad-Daruqutni) underscore the importance of service as a form of worship. The Qur'anic principle in Surah Al-Qashash (28:77) further calls for balance between worldly responsibilities and spiritual accountability, reinforcing healthcare as both a professional and ethical mandate.

In summary, while PRB is a strategic program for optimizing chronic disease management and ensuring sustainability within JKN, its implementation remains challenged by two critical factors: drug availability and interprofessional collaboration. These factors directly affect quality control, efficiency, and patient satisfaction. Addressing these gaps is essential for strengthening the performance of PRB, ensuring financial sustainability of BPJS Kesehatan, and upholding healthcare as a right, a professional duty, and a moral responsibility. This research, therefore, seeks to analyze the influence of drug availability and interprofessional collaboration on quality control within PRB at healthcare facilities under the BPJS Kesehatan Bandung Branch, with the aim of providing empirical evidence to support policy refinement and service improvement.

2. Literature Review

2.1. Health Insurance Management

Healthcare financing in Indonesia relies on two primary insurance mechanisms: social health insurance and commercial health insurance. Both aim to mitigate financial risks arising from illness, yet differ in objectives, governance, and participation. Social health insurance operates on the principle of solidarity, where mandatory contributions from participants are pooled to provide protection against health risks. This form of insurance, often referred to as public insurance, is managed for the collective benefit of society and operates on a non-profit basis (Rachmat, Muhardi, & Dadang, 2022). In contrast, commercial health insurance functions within a profit-oriented framework, with voluntary participation determined by individual or group decisions. Its primary aim is to deliver financial protection tailored to consumer demand while simultaneously generating returns for shareholders (Rachmat, Muhardi, & Dadang, 2022).

In social health insurance, membership is compulsory and typically implemented in stages, beginning with specific population groups, such as formal workers, before gradually extending to broader populations. Benefit packages also expand progressively, from limited inpatient coverage to more comprehensive health services (Thabrany, 2005). Meanwhile, commercial health insurance remains voluntary, market-driven, and increasingly positioned as a profitable sector for private investors. While it contributes to healthcare financing, its limited population coverage underscores the continued importance of social health insurance as the backbone of equitable health protection in Indonesia.

Indonesia's efforts to institutionalize health insurance began in the colonial era and evolved significantly during the post-independence period. The establishment of the Health Maintenance Fund Management Agency (BPDPK) in 1968, tasked with providing healthcare for civil servants and their families, marked the first formal step toward structured social health insurance. Subsequent regulatory reforms transformed BPDPK into the state-owned enterprise Husada Bhakti (PHB) Public Company in 1984, later becoming PT Askes (Persero) in 1992.

PT Askes expanded coverage to state-owned enterprise employees and later undertook the administration of government-financed schemes for the poor, such as *Askeskin*; Health Insurance for the Poor in 2005, targeting around 60 million low-income citizens. Complementary schemes such as the Public Health Insurance Program and regional health insurance were also developed to fill gaps in coverage.

The most significant transformation occurred with the enactment of Law No. 40/2004 on the National Social Security System (SJSN) and Law No. 24/2011 on Social Security Administering Bodies (BPJS), which mandated the restructuring of PT Askes into BPJS Kesehatan. Since January 1, 2014, BPJS Kesehatan has operated the National Health Insurance Program (JKN-KIS), with the mission of achieving universal health coverage. By unifying previously fragmented schemes under one national framework, BPJS Kesehatan represents the institutional backbone of Indonesia's social health insurance system, ensuring comprehensive, equitable, and sustainable protection for the entire population (BPJS Kesehatan, 2023).

Cost containment and service quality in the JKN system are largely maintained through a tiered referral mechanism. Participants are required to seek treatment initially at primary healthcare facilities (FKTP) before being referred to advanced referral facilities (FKTL) if specialized care is necessary. This structured referral pathway distributes responsibilities across service levels, optimizes resource utilization, and enhances system efficiency.

The reverse referral program constitutes a key innovation within this system. It allows patients with stable chronic conditions, such as diabetes mellitus, hypertension, asthma, cardiovascular disease, chronic obstructive pulmonary disease (COPD), epilepsy, stroke, and mental health disorders, to receive continued treatment and medications at FKTP, based on specialist recommendations. The program serves multiple objectives: ensuring continuity of care, improving patient access to essential medicines, reducing unnecessary hospital visits, and strengthening the role of primary care facilities as gatekeepers. The benefits of PRB extend across stakeholders. For patients, PRB improves access to care, supports holistic management through promotive, preventive, curative, and rehabilitative approaches, and facilitates sustained medication availability. For FKTPs, the program reinforces professional capacity through specialist guidance, enhances continuity in patient follow-up, and promotes evidence-based primary care practice. For FKTLs, PRB alleviates patient congestion, reduces waiting times, and allows specialists to concentrate on complex cases, while maintaining their role as coordinators and consultants within the health system.

Nevertheless, the effectiveness of PRB depends on two interrelated factors: the consistent availability of prescribed medications at FKTP or partner pharmacies, and the quality of interprofessional collaboration across healthcare providers. Weaknesses in either domain risk undermining PRB's objectives, leading to patient dissatisfaction, inefficiencies, and increased systemic costs. Thus, analysing these determinants is crucial for assessing the sustainability and quality outcomes of PRB within Indonesia's national health insurance framework.

2.2. Drug Inventory

Inventory refers to materials or goods stored for specific purposes, whether for production, assembly, or resale. Jacobs and Chase (2015) define inventory as various types of goods or resources utilized within an organization, while broader definitions emphasize that inventory includes goods, materials, or assets held for future use. In operations management, inventory policy is generally considered a tactical issue, designed within a medium-term framework and aligned with overall production planning, marketing strategies, and distribution systems (Azrul, 1996).

In the healthcare sector, medicines represent a critical component, serving roles in diagnosis, prevention, treatment, and rehabilitation of diseases and health disorders (Anief, 2006). The effectiveness of drugs depends on both dosage and the sensitivity of human organs, which varies among individuals (Kasibu, 2017). Consequently, the availability of medicines within health services is not merely a logistical concern but also a determinant of patient safety, continuity of therapy, and overall service quality.

Drug inventory, therefore, can be understood as the stock prepared to ensure continuity of treatment and patient access to necessary therapies. Schroeder (2000) describes inventory as stock that facilitates production or meets customer demand, while Rangkuti (2004) highlights inventory as assets encompassing goods for sale, work in progress, and raw materials awaiting utilization. In healthcare contexts, drug inventory is essential to guarantee uninterrupted treatment, as stockouts may hinder therapy and lower patient satisfaction.

Drug management is an integral component of healthcare logistics, requiring systematic implementation to ensure the consistent availability of medicines across all levels of service delivery. According to Yohanes and Waluyo (2015), drug management follows a cycle of activities that includes planning, budgeting, procurement, receipt, storage, distribution, maintenance, disposal, and inventory control. Thus, drug inventory should not be viewed as static stockpiling but as a dynamic process directly tied to efficiency and quality in healthcare delivery.

In management theory, Prawirosentono (2001) categorizes inventory as a current asset comprising raw materials, work-in-process goods, and finished goods. In healthcare, medicines can be mapped according to this classification: raw materials in pharmaceutical production, drugs in the process of distribution, and finished products ready for patient use at health facilities.

The dimension of availability is particularly critical in evaluating inventory quality. Conlon and Mortimer (2010) stress that availability refers to the ease with which customers can obtain the products or services they require. Within the pharmaceutical context, this translates into indicators such as the continuous presence of medicines, ease of access, product completeness, and equitable distribution across service points (Utama, 2012). An effective drug management system must therefore encompass not only selection, procurement, distribution, and use (Cornor, 2012), but also guarantee that essential medicines are accessible in adequate quantities and varieties. Ultimately, drug availability influences not only patient access to therapy but also public perceptions of healthcare quality.

2.3. Collaboration in Healthcare Service

Collaboration in healthcare refers to a cooperative process aimed at achieving agreed-upon outcomes, supported by a shared philosophy accepted by all parties involved. Understanding individual characteristics, such as competence, knowledge, personality, and behaviour, is crucial for successful collaboration (Dimitriadou, 2008).

The concept of profession within healthcare carries a particular definition. Etymologically, the term "profession" originates from the English word *profession* or the Latin *profecus*, meaning recognition, acknowledged capability, or expertise in performing a task (Danin, 2002). Terminologically, a profession is a type of work that requires advanced education and emphasizes intellectual rather than manual labour. Kanter (2011) further explains that a profession is an occupation practiced by a select group of individuals with specialized skills obtained through training or experience. These professionals possess the ability to guide, advise, and serve others within their field of expertise.

Teamwork, according to Xyrinchis and Ream (2008), is a dynamic process involving two or more healthcare professionals with complementary backgrounds and skills. Team members share a common care goal and engage jointly in the physical and cognitive efforts of assessing, planning, and evaluating patient care. Effective teamwork is achieved through independent yet coordinated collaboration, open communication, and joint decision-making, ultimately generating added value for patient services.

Interprofessional collaboration in healthcare is a cooperative effort involving different health professions to achieve optimal patient care outcomes. This collaboration emphasizes effective communication across professions, joint decision-making, and mutual respect for each professional's role and competence. The primary objective of interprofessional collaboration is to enhance service quality, efficiency, and patient safety through the integration of knowledge, skills, and professional responsibilities in a synergistic manner (Weaver, 2008).

According to Weaver (2008), the effectiveness of teamwork is influenced by three major factors: antecedent factors, process factors, and outcome factors. These dimensions can either facilitate or hinder interprofessional collaboration in healthcare.

Antecedent factors include social and intrapersonal considerations, physical environment, and organizational or institutional factors. Social considerations arise from the awareness that individuals need to form groups in order to work effectively and efficiently. Intrapersonal considerations are equally important, as personal characteristics shape one's ability to collaborate. The work environment and the degree of proximity among professionals may either support or obstruct collaboration. A supportive work environment enhances the team's ability to collaborate optimally. Meanwhile, institutional policies play a critical role in reducing barriers to collaboration. Policies must encourage interaction, coordination, and integration across professional lines.

Process factors involve behaviours, interpersonal interactions, and intellectual aspects. Collaborative behaviour among professionals is a key to overcoming barriers, while interpersonal aspects relate to the ability to build relationships with other professionals. Effective interprofessional communication serves as the cornerstone of healthy professional relationships, fostering trust, clarity, and coordination.

Outcome and opportunity factors concern the results and potential innovations generated through interprofessional collaboration. These include the creation of new ideas, strategies, and practices in program implementation. For example, Indonesia's reverse referral program under BPJS Health Insurance involves multiple professions, supported by regulations, healthcare facility commitment, medicine availability, and professional organization involvement. The program's success demonstrates that effective interprofessional collaboration is essential for achieving sustainable improvements in healthcare delivery.

2.4. Quality Assurance in Healthcare Service

Quality, according to Goetsh and Davis (1994), is a dynamic condition related to products, services, people, processes, and environments that can meet or even exceed expectations. Quality is subjective in nature because it depends heavily on perception, value systems, social background, education, economics, culture, and various other factors inherent in individuals or communities connected to a given service or product. In an organizational context, quality is often associated with customer satisfaction, which serves as the main determinant of competitiveness and sustainability. The implementation of Total Quality Management (TQM) is one recognized approach to ensure quality, driven by the needs and expectations of customers. Quality functions as an organizational tool to increase productivity, reduce waste, lower costs, and enhance financial outcomes (Sabarguna, 2004).

In healthcare, quality of service is multidimensional. Robert and Prevest (2001) argue that from the perspective of healthcare users, quality is reflected in responsiveness to patient needs, smooth communication during service delivery, humility, and genuine commitment to care. From the perspective of healthcare providers, quality relates more closely to the alignment of service delivery with advances in medical science and technology, as well as the autonomy of providers in tailoring services to patient needs.

Service quality plays a critical role in shaping patient experience, improving efficiency, and strengthening institutional reputation. Zeithaml et al. (1990) identified ten dimensions of service quality: (1) Tangibles, covering physical facilities, medical equipment, and communication materials; (2) Reliability, the ability to deliver promised service dependably and accurately; (3) Responsiveness, the willingness and readiness to help patients; (4) Competence, the skills and knowledge of healthcare personnel; (5) Courtesy, politeness and friendliness; (6) Credibility, patient trust in the provider's reputation; (7) Security, freedom from danger or risk; (8) Access, ease of approach in terms of location and waiting time; (9) Communication, the ability to maintain effective dialogue with patients; and (10) Understanding the Customer, efforts to recognize and respond to patient needs. These were later streamlined into five primary dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy.

Garvin (1994) further refined service quality into dimensions such as performance (e.g., speed and ease of administration), features (added characteristics that provide value), reliability (consistency of service), conformance to specifications (adherence to standards), durability (sustainability of service outcomes), serviceability (competence and responsiveness in handling complaints), aesthetics (service appeal), and perceived quality (public image and reputation). Strengthening these dimensions leads to greater patient satisfaction, loyalty, organizational reputation, operational efficiency, and institutional growth.

From a regulatory standpoint, Law No. 17 of 2023 on Quality Control establishes a national framework for quality control of goods, services, processes, systems, and personnel. The law regulates the National Quality Control System, standardization, conformity assessment, accreditation, and metrology. The SKMN integrates quality assurance mechanisms by harmonizing national standards with international benchmarks. Conformity assessment is conducted through testing, inspection, and certification to ensure compliance. Accreditation provides formal recognition of competence through the National Accreditation Committee (KAN), while metrology guarantees measurement accuracy in trade, industry, and research.

The government plays a key role in policy formulation, supervision, and fostering the implementation of the SKMN, as well as promoting international cooperation and mutual recognition agreements. Violations of this law are subject to administrative and criminal sanctions. Overall, Law No. 17 of 2023 strengthens Indonesia's national quality control system, enhances competitiveness, and protects consumer and environmental interests.

3. Research Method

This study used a quantitative approach with descriptive and verificative purposes in a cross-sectional design. The research was carried out at healthcare facilities partnered with BPJS Health under the Bandung Branch, focusing on the implementation of the Referral Back Program. The study population

consisted of healthcare professionals directly involved in the program, including physicians, pharmacists, nurses, and administrative staff. A saturated sampling technique was applied, resulting in 36 respondents, thus ensuring that all eligible professionals were represented.

The research examined two independent variables, namely drug availability and interprofessional collaboration, with quality control as the dependent variable. Indicators for drug availability included adequacy of stock, timeliness of distribution, and completeness of essential medicines. Interprofessional collaboration was measured through aspects of communication, shared decision-making, and role clarity, while quality control was assessed using dimensions such as reliability, responsiveness, assurance, empathy, and tangibles. All variables were measured through a structured Likert-scale questionnaire supported by documentation review to strengthen validity.

Data collection was conducted through direct distribution of questionnaires to respondents and examination of relevant documents related to drug management and service quality. Prior to analysis, the data were screened for completeness and consistency. The analysis employed Partial Least Squares (PLS) regression using SmartPLS software, which is particularly suitable for small sample sizes and for testing complex models with latent variables. The analysis process involved assessing the measurement model to test validity and reliability, using convergent and discriminant validity tests as well as composite reliability and Cronbach's alpha. The structural model was then evaluated by examining path coefficients and significance values obtained through bootstrapping at a 5 percent significance level. The strength of the model was assessed using the coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2), which together determined the explanatory power and predictive accuracy of the model.

This research was conducted in accordance with ethical research principles. Informed consent was obtained from all respondents, participation was voluntary, and confidentiality of responses was guaranteed. All data collected were used solely for academic purposes.

4. Results and Discussion

The results provide a nuanced and multi-layered understanding of how drug availability and interprofessional collaboration function within the Referral Back Program (PRB) at BPJS partner facilities in Bandung, and how these factors together influence the effectiveness of quality control mechanisms. Respondents assessed overall drug availability at a moderately high level with a mean score of 3.41. However, a closer examination of the underlying dimensions reveals important deficiencies that clarify why drug availability did not emerge as a significant determinant of quality control in the statistical model.

The raw drug-stock dimension received a mean score of 3.07, which falls into the adequate category and indicates that the volume and types of medicines provided by the facilities are not yet sufficient to meet patient needs comprehensively. The indicator of formulary completeness further highlights this challenge. While the availability of medicine quantity relative to prescriptions scored 3.61, the availability of different types of medicines received only 2.92. This discrepancy shows that although core or commonly used medicines are adequately supplied, patients with chronic conditions requiring specialized formulations or less frequently prescribed items often face shortages. This leads to situations in which patients must return to referral hospitals to obtain a complete course of medication, undermining the continuity of care that PRB is intended to support.

In contrast to these shortages, operational aspects of access received consistently high evaluations. The ease of obtaining medicines scored 3.83, while the speed of dispensing scored 3.56. These scores suggest that once medicines are available at the facility, patients can obtain them without significant bureaucratic or procedural obstacles. This is further supported by the very high score of 4.25 for staff competence at PRB dispensing points, which indicates that healthcare personnel, including pharmacists and administrative staff, possess the skills and commitment to ensure efficient service delivery. This finding resonates with observations from previous studies on PRB implementation in other regions of Indonesia, which noted that human resource capacity and professionalism often compensate for weaknesses in logistics and inventory systems.

Interprofessional collaboration emerged as the strongest domain in this study, with an overall mean of 4.19. All three sub-dimensions demonstrated strong performance, with antecedents scoring 4.21, process scoring 4.27, and outcomes scoring 4.08. These high scores reveal that health workers across different professional backgrounds, including physicians, pharmacists, and nurses, perceive collaboration within the PRB framework as effective and synergistic. This is reflected in strong communication channels, coordinated workflows, and a shared commitment to achieving the program's objectives of patient-centered continuity of care. These results are consistent with earlier research on collaborative care models, which have shown that effective teamwork is associated with improved patient satisfaction, reduced duplication of services, and better adherence to treatment regimens.

The statistical analysis further confirms these empirical observations. Drug availability alone did not exhibit a statistically significant effect on quality control, with a regression coefficient of 0.170 and a p-value of 0.221. This finding underscore that while the availability of medicines is an important structural requirement, it is not by itself sufficient to guarantee high-quality care within the PRB. Conversely, interprofessional collaboration displayed a strong and significant effect, with a regression coefficient of 0.572 and a p-value of 0.007. This demonstrates that collaboration among healthcare professionals is the dominant proximate factor driving perceptions of quality control. When both variables were tested together, they explained 20.8 percent of the variance in quality control ($F = 4.341$, $p = 0.021$). The combined effect suggests that although drug availability may not directly and independently shape quality control, its contribution becomes meaningful when supported by robust interprofessional collaboration.

These findings reflect the real-world operational context of BPJS partner facilities in Bandung. Reports from patients and healthcare workers indicate that while logistical challenges remain in ensuring equitable drug distribution across facilities, effective teamwork and communication between health professionals have mitigated the negative consequences of these shortages. For example, when certain specialized medicines are unavailable, doctors and pharmacists collaborate to identify appropriate therapeutic alternatives or to streamline referral processes so that patients can obtain their medication with minimal delay. In such cases, the strength of interprofessional collaboration directly offsets the weaknesses in drug availability, thereby sustaining high-quality care.

From a policy perspective, these results are also consistent with the goals of Indonesian health regulations. The Ministry of Health, through various regulations including Indonesian Health Minister Regulation No. 71 of 2013 on Health Service in National Health Insurance and related technical guidelines, emphasizes the importance of integrating pharmaceutical services with clinical care in order to support the objectives of the referral system. The emphasis on collaboration in the present findings supports the government's policy direction, particularly in relation to the National Health Insurance

(JKN) framework, which requires health facilities to form effective teams for managing continuity of care. Furthermore, BPJS internal guidelines for PRB stress the need for coordination between primary care providers (FKTP) and referral hospitals (FKRTL), as well as clear communication pathways among different healthcare professionals.

The findings also align with international literature on quality management in health systems. The Total Quality Management (TQM) perspective argues that quality improvement is not only a matter of ensuring resources but also of fostering organizational culture, communication, and teamwork. In the case of PRB, the evidence shows that while adequate drug supplies are necessary, they are not sufficient to guarantee high-quality service delivery. Instead, the active engagement of professionals across disciplines in collaborative practice creates resilience within the system, allowing it to function effectively even under conditions of resource limitation.

The study highlights that quality control within the PRB at BPJS partner facilities in Bandung is shaped more strongly by interprofessional collaboration than by drug availability alone. While shortages of specific medicines remain a structural challenge that must be addressed through stronger supply chain management and equitable distribution strategies, these weaknesses are substantially mitigated by the high level of collaboration among healthcare professionals. This collaboration ensures that patient care remains continuous, efficient, and patient-centered. Going forward, policy and management efforts should therefore prioritize not only improvements in pharmaceutical logistics but also the institutionalization of interprofessional collaboration mechanisms, such as regular case conferences, integrated patient records, and standardized communication protocols. Such strategies will ensure that both drug availability and teamwork function synergistically to enhance quality control and patient outcomes within the PRB framework.

Two complementary explanations, grounded in both the study data and the local implementation context, help to interpret these findings. The first concerns operational resilience at the facility level. The high scores for access procedures and staff competence suggest that first-level healthcare facilities and their partner pharmacies are administratively and operationally efficient in dispensing whatever medicines are available in stock. Skilled and coordinated human resources appear to compensate for weaknesses in logistics by optimizing stock rotation, prioritizing high-need patients, implementing therapeutic substitutions where clinically appropriate, and maintaining communication with referring specialists to close medication gaps. This capacity to adapt ensures that patients continue to receive care that is perceived as reliable even when certain medicines are intermittently unavailable. Respondents perceive such adaptive performance as evidence of strong quality control, which helps explain why drug availability by itself does not emerge as a statistically significant predictor of quality.

The second explanation concerns distributional inequities in drug supply across facilities. While the overall distribution dimension received a relatively high mean score of 3.62, the sub-indicator for equity scored only 3.00, reflecting uneven geographic and facility-level availability of medicines. This shows that shortages remain significant in some areas, particularly where smaller or peripheral first-level healthcare facilities serve larger patient loads with limited storage and procurement capacity. Nevertheless, because most respondents experience strong local procedures, collaborative teamwork, and efficient service delivery, these shortages do not dominate the overall perception of quality. In statistical terms, collaboration functions as an enabling or moderating condition. When interprofessional collaboration is strong, the negative effect of limited inventory on perceived quality control is mitigated. If collaboration were weak, the same supply gaps would likely result in a more substantial decline in quality outcomes.

These interpretations are consistent with findings from earlier empirical studies of the Referral Back Program in other regions of Indonesia. Research by Sutrisno and colleagues as well as Pertiwi and colleagues documented recurring challenges, including shortages or mismatches in formulary items, inconsistent documentation of referral-back procedures, and weak communication between referral-hospital specialists and general practitioners at first-level facilities. Both studies emphasized that formal regulations and institutional frameworks cannot ensure effective program outcomes without mechanisms that translate policy into practice through communication, teamwork, and adaptive capacity. The present study advances this insight by providing quantitative evidence of how collaboration and inventory interact in shaping perceived quality control, and by demonstrating that collaboration is the dominant factor in ensuring high-quality implementation.

The findings also align with the systems and quality frameworks established in Indonesian health policy and BPJS Kesehatan governance. Regulations from the Ministry of Health, particularly Indonesian Health Minister Regulation No. 71 of 2013 on health services within the National Health Insurance and Indonesian Health Minister Regulation No. 52 of 2016 on the standards of pharmaceutical services, establish the structural requirements of the referral and pharmacy-service system that underpins the program. At the same time, BPJS regulations such as Director Decree No. 15 of 2019 and internal guidelines emphasize utilization review, continuity of care, formulary standardization, and systematic monitoring of patient participation. These policy instruments address both the supply-side logistics of drug provision through formularies, pharmacy partnerships, and capitated reimbursement mechanisms, and governance elements such as referral documentation, integration of data through VClaim, and compliance oversight.

The present results suggest that the impact of these policies is maximized when implemented within organizational cultures that foster interprofessional communication, clear delineation of roles, and rapid feedback loops between referral hospitals and first-level facilities. This empirical interaction supports the policy emphasis on multidisciplinary Quality and Cost Control Teams as mandated in BPJS Regulation No. 8 of 2016, and highlights their practical value in everyday program management. By embedding collaboration as a structural and cultural norm, these teams ensure that shortages in drug inventory, while persistent, do not translate into deterioration of perceived service quality.

Overall, the evidence underscores that the sustainability of quality control in the Referral Back Program depends less on the absolute availability of medicines and more on the organizational capacity to integrate logistics, clinical decision-making, and collaborative problem-solving. This conclusion has both theoretical and policy significance. From a theoretical perspective it confirms that health system quality emerges from the interaction of structural and relational factors. From a policy perspective it reinforces the importance of investing in professional collaboration alongside strengthening the supply chain.

From a managerial and policy perspective, several actionable implications can be drawn from these findings. The first priority is reinforcing interprofessional collaboration as a structural element of the Referral Back Program. Mechanisms such as standardized referral-back templates, mandatory medication reconciliation notes, and scheduled multidisciplinary case conferences for chronic PRB patients will sustain the high collaboration levels observed in this study and ensure that available inventories are used more effectively. Establishing formalized channels for rapid clinical queries between specialists and primary-care practitioners would further strengthen continuity of care and prevent medication errors or treatment gaps.

The second implication concerns logistics and formulary management. Improving forecast accuracy for high-use PRB medicines, supported by routine data analysis from BPJS BI/VClaim systems, would allow facilities to anticipate recruitment-driven demand shifts. Emergency redistribution protocols among nearby first-level facilities and partner pharmacies should be institutionalized to reduce the incidence of localized shortages. Equity in drug distribution can be supported through the allocation of buffer stocks to facilities with higher patient loads or weaker supply chains, combined with systematic audits of partner pharmacy coverage and travel distances that patients must bear.

The third managerial implication is the integration of professional development into program strengthening. Cross-professional shadowing, joint training sessions, and team-based workshops that focus on shared roles and responsibilities can magnify the positive impact of collaboration. The data demonstrate that the collaborative process itself exerts the strongest influence on perceived quality control, which suggests that investments in mutual understanding and role appreciation directly contribute to more resilient service delivery.

These recommendations must, however, be interpreted with an awareness of study limitations. The sample size was modest, limited to 36 respondents from partner facilities in the Bandung branch, which restricts the generalizability of the findings. The cross-sectional design precludes causal inferences beyond the statistical associations observed in the partial least squares' regression model. Furthermore, the study relied on perception-based measures rather than objective indicators. Inclusion of audit data such as stock records, dispensing logs, completeness rates of referral-back documentation, and claims data would provide a more comprehensive picture and allow testing of statistical moderation or mediation effects, for instance whether collaboration modifies the impact of inventory levels on quality control. Future research should incorporate longitudinal designs, patient-level outcome measures such as adherence or hospital readmissions, and intervention studies that evaluate the effectiveness of specific collaborative or logistical strategies.

In conclusion, the study shows that quality control in the Referral Back Program is influenced more strongly by the way healthcare professionals collaborate than by the sheer volume of available inventory. Operational strengths such as efficient dispensing procedures and highly competent staff enable facilities to provide high-quality care despite occasional shortages or formulation gaps. National and local policies should therefore follow a dual-track strategy: strengthen the medication supply chain and formulary access while simultaneously institutionalizing interprofessional collaboration. Pursued together, these strategies will better position the Referral Back Program to achieve its central objectives of continuity of care, patient-centeredness, and cost containment.

5. Conclusion

The study findings highlight several important aspects of drug availability, interprofessional collaboration, and quality control within the Referral Back Program (PRB) at BPJS Kesehatan partner facilities. Drug availability is generally categorized as high, with an average score of 3.41. Dimension-based analysis indicates that access and distribution procedures are already effective, yet the dimensions of raw stock and formulary completeness remain only moderate. This situation reflects real-world conditions, where most essential medicines are available at primary healthcare facilities but certain specialized or limited-stock items are sometimes missing, requiring patients to return to hospitals to complete their prescriptions. Thus, while overall availability is sufficient, stock management and distribution coordination between facilities still need improvement to ensure timely and complete patient access.

Interprofessional collaboration is rated very high, with an overall mean score of 4.19. This strength is driven largely by the antecedent and process dimensions, which fall in the very high category, while outcomes are rated high. In practice, this is reflected in the establishment of effective working teams, clear communication across professions, synergistic behaviour among health workers, and the capacity for program-related innovation. Despite this strong performance, some antecedent aspects such as interpersonal decision-making and institutional policy support still require reinforcement to further optimize collaboration. Quality control within PRB is also rated very high, with an overall mean of 4.26 across the five SERVQUAL dimensions: tangibles, reliability, responsiveness, assurance, and empathy. These results demonstrate that BPJS partner facilities are providing adequate infrastructure, reliable procedures, competent human resources, responsive and accessible services, and patient-centered care. This strong performance contributes directly to patient satisfaction, adherence to referral follow-up, and overall program effectiveness.

Regression analysis shows that drug availability does not have a significant partial effect on quality control, with a significance value of 0.221. This suggests that quality control is shaped more strongly by other factors such as health worker competence, service procedures, and interprofessional coordination. In contrast, interprofessional collaboration has a significant positive effect on quality control, with a significance value of 0.007. Effective collaboration enables smooth patient referral flows, rapid resolution of distribution or medication issues, and innovative approaches to program management. When considered simultaneously, drug availability and interprofessional collaboration significantly influence quality control, with a combined significance value of 0.021. Although drug availability alone is not significant, in combination with collaboration it contributes to achieving optimal outcomes. These findings suggest that service quality improvement strategies should focus on strengthening teamwork, clear communication, integrated operational procedures, and efficient stock management.

Based on these conclusions, several recommendations are proposed. First, BPJS Kesehatan should enhance the usability of the Mobile JKN application by providing interactive guides, simplified help menus, and chatbot features that respond quickly to participant queries. Second, healthcare facilities need to improve stock management, particularly for specialized and limited-formulation medicines, through more accurate forecasting, real-time monitoring, and facility-to-facility coordination to prevent temporary shortages. Third, drug distribution must be made more equitable by establishing integrated logistics systems and mapping patient needs across facilities to reduce stock disparities and improve access for referred patients. Fourth, interprofessional collaboration should be strengthened through joint training, workshops, and team-building activities that emphasize cross-professional communication, shared decision-making, and role understanding. Fifth, institutions should review and update policies that support interprofessional collaboration, including referral coordination procedures, clear role allocation, and decision-making mechanisms, so as to minimize barriers and increase service efficiency. Sixth, even though responsiveness is already high, healthcare facilities should continue to improve patient access through application-based queue systems, simplified administrative processes, and monitoring of patient waiting times to further increase satisfaction and program effectiveness. Finally, facilities are advised to conduct regular evaluations of all quality control dimensions, including tangibles, reliability, responsiveness, assurance,

and empathy. Such periodic assessments will help identify areas requiring improvement, maintain high service standards, and support the sustainability of the Referral Back Program.

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