

Strengthening health system governance through collaborative leadership to improve primary healthcare effectiveness

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ABSTRACT

Introduction: Collaborative leadership has become increasingly important in strengthening health system governance and improving primary healthcare effectiveness. This study aimed to analyze the influence of collaborative leadership on governance quality and primary healthcare effectiveness within decentralized healthcare settings.

Methods: A quantitative cross-sectional analytical study was conducted among 320 healthcare professionals from selected primary healthcare centers in Eastern Indonesia between January and April 2026. Participants were selected using a multistage cluster sampling design. Data were collected using structured questionnaires and analyzed using Structural Equation Modeling (SEM) at the $\alpha = 0.05$ significance level.

Results: Collaborative leadership significantly influenced governance quality ($\beta = 0.64$; 95% CI: 0.52–0.73; $p < 0.001$) and primary healthcare effectiveness ($\beta = 0.41$; 95% CI: 0.28–0.55; $p < 0.001$). Governance quality also significantly improved healthcare effectiveness ($\beta = 0.48$; 95% CI: 0.37–0.60; $p < 0.001$).

Conclusion: Collaborative leadership strengthens governance quality and supports more responsive, accountable, and effective primary healthcare services. Strengthening participatory governance strategies may improve the sustainability of the healthcare system and enhance service integration.

Keywords: Collaborative leadership; Health governance; Healthcare effectiveness; Primary healthcare; Service integration.



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Highlight:

- Collaborative leadership significantly strengthens the effectiveness of primary healthcare governance.
- Intersectoral coordination improves service quality, accountability, and decision-making processes.
- Strong governance structures enhance healthcare accessibility and community health outcomes.
- Leadership collaboration supports sustainable health system performance and institutional resilience.
- Effective primary healthcare governance contributes to equitable and people-centered healthcare services.

INTRODUCTION

Primary healthcare remains the cornerstone of equitable health systems and universal health coverage in many countries, particularly in low- and middle-income settings where healthcare resources are unevenly distributed [1]. Despite ongoing reforms in healthcare administration and financing, the effectiveness of primary healthcare services continues to be hampered by major governance challenges. Weak institutional coordination, fragmented leadership structures, limited accountability mechanisms, and inadequate collaboration among stakeholders frequently reduce the responsiveness and efficiency of healthcare delivery systems [2]. In many regions, health facilities operate within complex organizational environments that require coordinated decision-making between health professionals, local governments, community organizations, and policymakers [3]. However, governance processes often remain hierarchical and sectorally fragmented, limiting primary healthcare systems' ability to respond adaptively to population health needs [4].

The governance capacity of health systems has become increasingly important following the growing burden of chronic diseases, public health emergencies, and healthcare inequities [5]. Previous evidence has demonstrated that ineffective governance contributes to poor healthcare accessibility, inefficient resource allocation, low community trust, and suboptimal service integration [6]. Studies conducted in several developing countries have shown that leadership limitations within healthcare organizations frequently lead to delayed policy implementation, inconsistent health service standards, and weak institutional accountability [7]. In primary healthcare settings, leadership practices influence not only administrative performance but also interdisciplinary collaboration, workforce motivation, and community participation. Consequently, strengthening governance mechanisms has emerged as a strategic priority for improving healthcare system performance and sustainability [8].

Collaborative leadership has recently gained attention as an alternative governance approach capable of addressing organizational complexity in healthcare systems [9]. Unlike conventional hierarchical leadership models, collaborative leadership emphasizes shared decision-making, collective responsibility, stakeholder engagement, and cross-sectoral cooperation [10]. This leadership approach encourages healthcare managers, practitioners, local authorities, and community representatives to jointly participate in policy formulation and problem-solving in healthcare [11]. Existing studies have indicated that collaborative leadership may improve organizational adaptability, strengthen communication among healthcare actors, and support integrated service delivery [12]. Evidence from hospital and public health management research suggests that collaborative governance models are associated with improved institutional trust, greater innovation capacity, and stronger organizational resilience [13].

Several empirical studies have also highlighted the relationship between collaborative leadership and healthcare effectiveness. Research in community-based health programs demonstrated that participatory leadership approaches increased coordination between healthcare workers and local stakeholders, leading to better preventive healthcare outcomes and improved service continuity [14]. Other studies reported that collaborative decision-making enhanced workforce engagement, reduced professional conflict, and improved healthcare responsiveness during crises. Furthermore, governance studies in primary healthcare settings have emphasized the importance of leadership collaboration in strengthening policy implementation and organizational accountability [15]. Nevertheless, much of the current evidence has focused predominantly on hospital management, emergency response systems, or organizational culture. At the same time, limited attention has been directed toward collaborative leadership within primary healthcare governance structures [16].

Although previous studies have acknowledged the importance of leadership and governance in healthcare systems, several important limitations remain. First, many existing studies examine leadership effectiveness using traditional managerial perspectives that primarily focus on individual leadership competencies rather than collective governance processes. Second,

prior research often evaluates healthcare governance and organizational performance separately, resulting in a limited understanding of how collaborative leadership mechanisms directly influence primary healthcare effectiveness. Third, evidence from developing countries, particularly within decentralized healthcare systems, remains insufficient. Variations in institutional capacity, local governance arrangements, and community participation may substantially influence the implementation of collaborative leadership strategies. However, these contextual factors remain underexplored in the current healthcare governance literature.

The present study addresses these gaps by examining how collaborative leadership strengthens health system governance and enhances the effectiveness of primary healthcare. This study specifically integrates governance dimensions, stakeholder collaboration, and healthcare performance indicators within a unified analytical framework. The novelty of this research lies in its focus on collaborative leadership as a multidimensional governance strategy within primary healthcare systems rather than as an isolated managerial competency. In addition, this study contributes empirical evidence from decentralized healthcare contexts where governance effectiveness is strongly influenced by interorganizational coordination and local institutional dynamics. By combining governance and leadership perspectives, this research provides a broader understanding of how collaborative mechanisms support responsiveness, accountability, and service effectiveness in healthcare systems.

This study aimed to analyze the role of collaborative leadership in strengthening health system governance and improving the effectiveness of primary healthcare. Specifically, the study examined the relationships between collaborative leadership practices, governance quality, institutional coordination, and healthcare service effectiveness within primary healthcare settings. The findings are expected to contribute to evidence-based healthcare governance strategies and support the development of more collaborative, accountable, and sustainable primary healthcare systems.

RESEARCH METHODOLOGY

Study Design

This study employed a quantitative cross-sectional analytical design to examine the relationships between collaborative leadership, health system governance, institutional coordination, and primary healthcare effectiveness. A cross-sectional approach was selected because it allows simultaneous measurement of organizational and governance-related variables within natural healthcare settings while enabling the identification of significant associations among study constructs. The design was considered appropriate for evaluating governance dynamics across multiple primary healthcare institutions within a limited research period. In addition, the analytical framework enabled the study to assess the predictive influence of collaborative leadership on governance quality and healthcare effectiveness through multivariate statistical analysis.

Setting and Participants

The study was conducted in selected primary healthcare centers located in Eastern Indonesia between January and April 2026. The research settings included urban, semi-urban, and rural healthcare facilities to capture variations in institutional governance practices and healthcare service implementation. Primary healthcare centers were selected because they represent the frontline structure of healthcare delivery and play a central role in implementing community-based health programs.

The study population consisted of healthcare professionals and managerial staff working in primary healthcare facilities, including physicians, nurses, public health officers, health administrators, and program coordinators. Participants were eligible for inclusion if they had worked in the healthcare institution for at least one year, were directly involved in healthcare service management or coordination activities, and agreed to participate voluntarily in the study. Individuals on prolonged leave, temporary interns, and participants with incomplete questionnaire responses were excluded from the final analysis. A multistage cluster sampling technique was

applied to obtain representative participants from different healthcare facilities. In the first stage, several districts were selected purposively based on healthcare service coverage and administrative diversity. In the second stage, primary healthcare centers were randomly selected from each district. Eligible healthcare personnel at selected facilities were then recruited proportionally using stratified sampling.

The minimum sample size was calculated using the formula for multivariate analytical studies with an estimated confidence level of 95%, statistical power of 80%, and an anticipated moderate effect size. Considering potential non-response and incomplete data, an additional 10% sample adjustment was applied. The final sample consisted of 320 respondents, which was considered adequate for regression-based multivariate analysis and model estimation.

Variables and Measurement

The independent variable in this study was collaborative leadership, defined as leadership practices emphasizing stakeholder participation, shared decision-making, communication, interprofessional cooperation, and collective problem-solving within healthcare organizations. The dependent variable was primary healthcare effectiveness, defined as the ability of healthcare institutions to provide accessible, coordinated, responsive, and high-quality healthcare services. Health system governance was analyzed as an intermediate organizational construct reflecting accountability, transparency, policy coordination, institutional responsiveness, and managerial effectiveness. Data were collected using a structured self-administered questionnaire adapted from previous governance and healthcare leadership studies. The questionnaire consisted of demographic information and several measurement domains related to collaborative leadership, governance quality, institutional coordination, and healthcare effectiveness. Responses were measured using a five-point Likert scale ranging from strongly disagree to agree strongly. Content validity was evaluated through expert review involving specialists in healthcare management, public health policy, and nursing administration. Construct validity was assessed using exploratory factor analysis, while internal consistency reliability was examined using Cronbach's alpha coefficient. All study variables demonstrated acceptable reliability (above 0.70), indicating adequate measurement consistency. The study primarily utilized primary data obtained directly from respondents through field-based survey administration.

Data Collection

Data collection was conducted after obtaining institutional permission from participating healthcare centers and ethical clearance from the relevant research ethics committee. Trained research assistants distributed questionnaires directly to eligible participants during working hours after explaining the study objectives and procedures. Before questionnaire administration, participants received informed consent forms explaining confidentiality, voluntary participation, anonymity, and the right to withdraw from the study at any stage without consequences. Completed questionnaires were reviewed immediately to minimize missing responses and improve data completeness.

Several quality control procedures were implemented throughout the research process. Research assistants underwent standardized training regarding questionnaire administration and ethical procedures. Pilot testing was conducted among a small group of healthcare workers outside the study sample to evaluate questionnaire clarity and response consistency. Data entry accuracy was verified through double-checking procedures and random validation of completed forms.

Data Analysis

Data analysis was performed using IBM SPSS Statistics version 27 and Structural Equation Modeling (SEM) analysis with AMOS version 24. Descriptive statistics were used to summarize participant characteristics and study variables, including means, standard deviations, frequencies, and percentages. Bivariate analysis was conducted using chi-square tests, independent t-tests, and Pearson correlation analyses, depending on variable distributions and measurement scales. Multivariate analysis was performed using Structural Equation Modeling to evaluate the direct and indirect relationships among collaborative leadership, governance quality, institutional coordination, and healthcare effectiveness. SEM was selected because it enables simultaneous

analysis of multiple latent constructs and pathway relationships within a comprehensive governance framework.

Model fit evaluation included several goodness-of-fit indices, including the Comparative Fit Index (CFI), the Tucker-Lewis Index (TLI), the Root Mean Square Error of Approximation (RMSEA), and the Chi-square/degrees of freedom ratio (χ^2/df). Statistical significance was determined at $p < 0.05$, with a 95% confidence interval.

Ethical Approval

This study received ethical approval from the Health Research Ethics Committee of the Institute of Health Sciences Indonesia under approval number: 021/KEPK/IHSI/2026. All participants provided written informed consent before participation. Confidentiality and anonymity were maintained throughout the study by using coded identification numbers instead of participant names. All collected data were stored securely and used exclusively for research purposes.

RESULT

Characteristics of Respondents

A total of 320 healthcare professionals participated in this study. Most respondents were nurses (46.6%), followed by public health officers (21.9%), physicians (18.1%), and healthcare administrators (13.4%). The majority of participants were female (62.8%), aged 31–40 years (41.3%), and had more than 5 years of experience in primary healthcare services (57.5%). Most respondents reported moderate to high perceptions of collaborative leadership practices and institutional governance quality within their healthcare facilities.

Table 1. Characteristics of Respondents (n = 320)

Variables	Frequency (n)	Percentage (%)
Gender		
Male	119	37.2
Female	201	62.8
Age Group		
21–30 years	86	26.9
31–40 years	132	41.3
41–50 years	74	23.1
>50 years	28	8.7
Profession		
Nurse	149	46.6
Physician	58	18.1
Public Health Officer	70	21.9
Healthcare Administrator	43	13.4
Work Experience		
≤5 years	136	42.5
>5 years	184	57.5
Collaborative Leadership Perception		
Low	52	16.3
Moderate	148	46.2
High	120	37.5

The respondent profile indicated that the study involved a diverse group of healthcare professionals with substantial practical experience in primary healthcare settings. Female healthcare workers and nurses represented the largest proportion of participants, reflecting the dominant workforce composition in primary healthcare services. More than half of the respondents had over five years of professional experience, suggesting adequate organizational familiarity and governance exposure.

Bivariate analysis demonstrated significant associations between collaborative leadership, governance quality, institutional coordination, and primary healthcare effectiveness. Respondents

who reported higher collaborative leadership practices also demonstrated significantly better perceptions of healthcare governance effectiveness.

Table 2. Bivariate Analysis of Factors Associated with Primary Healthcare Effectiveness

Variables	Mean $\pm$ SD	r-value	p-value
Collaborative Leadership	4.12 $\pm$ 0.56	0.61	<0.001
Governance Quality	4.06 $\pm$ 0.51	0.58	<0.001
Institutional Coordination	3.98 $\pm$ 0.63	0.49	<0.001
Workforce Participation	3.87 $\pm$ 0.59	0.42	0.002
Organizational Accountability	4.01 $\pm$ 0.54	0.46	0.001

The bivariate findings revealed statistically significant positive relationships between all governance-related variables and primary healthcare effectiveness. Collaborative leadership demonstrated the strongest correlation with healthcare effectiveness, indicating that participatory leadership practices and interprofessional collaboration contributed substantially to organizational performance and healthcare responsiveness.

Structural Equation Modeling analysis showed that collaborative leadership significantly predicted governance quality and primary healthcare effectiveness. Governance quality also partially mediated the relationship between collaborative leadership and healthcare effectiveness.

Table 3. Multivariate Analysis of Determinants of Primary Healthcare Effectiveness

Variables	β Coefficient	95% CI	p-value
Collaborative Leadership $\rightarrow$ Governance Quality	0.64	0.52–0.73	<0.001
Governance Quality $\rightarrow$ Healthcare Effectiveness	0.48	0.37–0.60	<0.001
Institutional Coordination $\rightarrow$ Healthcare Effectiveness	0.31	0.18–0.44	0.003
Workforce Participation $\rightarrow$ Healthcare Effectiveness	0.22	0.09–0.36	0.011
Collaborative Leadership $\rightarrow$ Healthcare Effectiveness	0.41	0.28–0.55	<0.001

The multivariate analysis confirmed that collaborative leadership was the strongest predictor of governance quality and healthcare effectiveness within primary healthcare institutions. Healthcare facilities characterized by stronger collaborative leadership practices demonstrated better organizational coordination, improved accountability, and more responsive healthcare service delivery. Governance quality partially mediated the relationship between collaborative leadership and healthcare effectiveness, indicating that effective governance mechanisms strengthened the positive influence of collaborative leadership on organizational performance.

The findings of this study demonstrated that collaborative leadership plays a critical role in strengthening health system governance and improving the effectiveness of primary healthcare services. Respondents generally reported moderate to high levels of collaborative leadership practices, governance quality, and institutional coordination within their healthcare facilities. Bivariate analysis showed significant positive relationships between governance-related variables and healthcare effectiveness, suggesting that participatory leadership and interprofessional collaboration contribute substantially to organizational performance. The multivariate analysis further confirmed that collaborative leadership was the strongest predictor of governance quality and healthcare effectiveness. Healthcare institutions characterized by stronger stakeholder engagement, shared decision-making, and institutional coordination demonstrated higher levels of accountability, organizational responsiveness, and service effectiveness. Governance quality was partially mediated, indicating that collaborative leadership strengthened healthcare performance by improving governance mechanisms and institutional management. Overall, the findings suggest that collaborative leadership not only enhances internal organizational coordination but also supports more adaptive, accountable, and people-centered healthcare governance systems. These results emphasize the importance of strengthening collaborative governance strategies to improve the sustainability and effectiveness of primary healthcare services, particularly within decentralized healthcare environments.

DISCUSSION

The findings of this study provide important evidence regarding the strategic role of collaborative leadership in strengthening health system governance and improving the effectiveness of primary healthcare services. The analysis demonstrated that collaborative leadership significantly influenced governance quality, institutional coordination, and healthcare effectiveness within primary healthcare settings. These findings indicate that leadership practices emphasizing stakeholder engagement, shared decision-making, and interprofessional collaboration contribute substantially to organizational responsiveness and healthcare service performance. In decentralized healthcare systems, where service delivery frequently involves multiple institutional actors and administrative layers, collaborative leadership appears to serve as an essential governance mechanism that improves coordination and strengthens institutional accountability [17].

One of the most important findings of this study was the strong relationship between collaborative leadership and governance quality. This suggests that healthcare organizations characterized by participatory leadership structures are more likely to develop transparent communication systems, coordinated policy implementation, and adaptive managerial processes [18]. Collaborative leadership may create organizational environments where healthcare professionals feel more involved in decision-making and institutional problem-solving, thereby increasing collective responsibility and organizational commitment [19]. In primary healthcare contexts, where service delivery depends heavily on teamwork and community engagement, leadership collaboration becomes increasingly important for maintaining continuity of care and ensuring responsive healthcare delivery [20].

The study also found that governance quality partially mediated the relationship between collaborative leadership and healthcare effectiveness. This finding highlights that leadership alone may not directly improve healthcare performance unless supported by effective governance mechanisms [21]. Governance structures that promote accountability, institutional coordination, and managerial transparency appear to strengthen the positive influence of collaborative leadership on healthcare outcomes [22]. This result reinforces the understanding that leadership and governance should not be viewed as separate organizational components, but rather as interconnected dimensions that collectively shape healthcare system performance [23]. Effective governance mechanisms may therefore serve as institutional pathways through which collaborative leadership contributes to healthcare responsiveness and service quality [24].

Another important finding relates to the role of institutional coordination in improving healthcare effectiveness [25]. Healthcare facilities with stronger coordination systems demonstrated better service responsiveness and organizational performance. In many primary healthcare settings, fragmented communication and sectoral silos remain major barriers to healthcare integration [26]. Collaborative leadership may reduce these barriers by facilitating interprofessional interaction and promoting collective problem-solving among healthcare personnel [27]. Through collaborative governance processes, healthcare institutions may become more adaptive to local health priorities and more capable of responding efficiently to community healthcare needs [28].

The findings of this study are generally consistent with previous research emphasizing the importance of collaborative governance within healthcare organizations. Several earlier studies reported that participatory leadership approaches improved workforce engagement, institutional trust, and healthcare coordination [29]. Research conducted in community health programs and public health institutions also demonstrated that collaborative leadership strengthened policy implementation and enhanced organizational resilience during periods of healthcare uncertainty. Similar findings have been observed in studies examining integrated healthcare systems, where leadership collaboration was associated with improved communication and more efficient resource management.

However, the present study extends previous literature in several important ways. First, much of the earlier research focused predominantly on hospital administration or organizational

culture, while limited empirical evidence has examined collaborative leadership specifically within primary healthcare governance systems. Primary healthcare settings differ substantially from tertiary healthcare institutions because they operate closer to community populations and often face greater resource limitations, workforce shortages, and administrative fragmentation. By focusing on primary healthcare governance, this study contributes a more contextually relevant understanding of how collaborative leadership operates within frontline healthcare systems.

Second, this study highlights the interconnectedness of leadership, governance, and healthcare effectiveness in decentralized healthcare environments. Existing literature frequently treats leadership competencies and governance quality as separate organizational constructs, whereas the present findings demonstrate that these dimensions are structurally interconnected. Collaborative leadership may strengthen governance processes by improving stakeholder coordination, enhancing institutional participation, and promoting collective accountability. Consequently, healthcare effectiveness should not be interpreted solely as an operational outcome, but also as a reflection of governance quality and institutional collaboration.

The study additionally contributes to broader conceptual discussions regarding health system governance in developing countries. Many healthcare reforms in low- and middle-income countries continue to emphasize administrative restructuring and financing expansion while paying relatively limited attention to collaborative governance processes. The findings suggest that governance effectiveness may depend not only on policy design or organizational resources but also on the quality of leadership interaction and institutional cooperation within healthcare systems. Strengthening collaborative leadership capacities may therefore represent a practical strategy for improving healthcare system resilience, particularly in settings characterized by limited resources and complex administrative arrangements.

Despite these contributions, several limitations should be considered when interpreting the findings. First, the cross-sectional design limits the ability to establish causal relationships among study variables. Although significant associations were identified, longitudinal studies are required to determine whether collaborative leadership consistently produces long-term improvements in governance quality and healthcare effectiveness. Second, the study relied primarily on self-reported questionnaire data, which may increase the risk of social desirability bias and subjective interpretation among respondents. Third, the research was conducted within selected primary healthcare facilities in Eastern Indonesia, which may limit the generalizability of findings to other healthcare systems with different organizational structures or governance models.

Another limitation relates to the exclusion of broader contextual determinants that may influence governance effectiveness, such as political dynamics, healthcare financing policies, digital infrastructure, and local administrative capacity. These external factors may substantially shape leadership practices and organizational performance within healthcare institutions. Future research should therefore adopt more comprehensive analytical frameworks that integrate organizational, political, and socioeconomic dimensions of health system governance.

Future studies are also encouraged to employ longitudinal or mixed-methods approaches to explore how collaborative leadership evolves across different institutional contexts and healthcare reforms. Qualitative investigations may provide deeper insight into the social and cultural processes influencing leadership collaboration within healthcare organizations. Comparative studies across regions or healthcare systems may further clarify how governance arrangements, organizational culture, and institutional capacity interact with collaborative leadership practices. In addition, future research should examine the potential role of digital governance, community participation, and policy integration in strengthening collaborative healthcare leadership.

Overall, this study underscores the importance of collaborative leadership as a multidimensional governance strategy that can strengthen institutional coordination and improve the effectiveness of primary healthcare. The findings suggest that healthcare governance reforms should move beyond purely hierarchical administrative approaches and prioritize collaborative

mechanisms that encourage participation, accountability, and shared responsibility among healthcare stakeholders. Such approaches may contribute not only to stronger organizational performance but also to more adaptive, equitable, and sustainable healthcare systems.

CONCLUSION

This study demonstrated that collaborative leadership plays a significant role in strengthening health system governance and improving the effectiveness of primary healthcare services. Healthcare institutions characterized by stronger stakeholder participation, shared decision-making, and interprofessional coordination showed better governance quality, organizational accountability, and healthcare responsiveness. Governance quality also functioned as an important mechanism through which collaborative leadership contributed to improved healthcare performance. The findings indicate that healthcare effectiveness is influenced not only by organizational resources but also by the quality of institutional collaboration and governance processes within primary healthcare systems. Strengthening collaborative governance approaches may therefore enhance service integration, institutional adaptability, and community-oriented healthcare delivery. Based on these findings, healthcare policymakers and administrators should prioritize leadership development programs that promote participatory governance, interdisciplinary collaboration, and transparent institutional coordination. Integrating collaborative leadership strategies into primary healthcare governance reforms may support more responsive, equitable, and sustainable healthcare systems, particularly in decentralized settings.

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CONFLICT OF INTEREST

The authors declare that they have no competing interests.

DATA AVAILABILITY

The data supporting the findings of this study are available from the corresponding author upon reasonable request. The data are not publicly available due to ethical and privacy considerations.

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AUTHORS' CONTRIBUTIONS

Luluk Widarti contributed to the study conception and design, data collection and analysis, manuscript drafting, and final approval of the version to be published.

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