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Institutional Alignment and Policy Gaps in Adolescent Maternal Healthcare: A Health Administration Perspective on Reproductive Service Delivery

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Abstract. *Adolescent maternal healthcare remains a critical challenge in many health systems, particularly in ensuring effective service delivery amid complex administrative and policy environments. This study aims to examine the influence of institutional alignment and policy gaps on service delivery performance from a health administration perspective. A quantitative approach was employed using Partial Least Squares Structural Equation Modeling (SEM-PLS) with data collected from 215 healthcare professionals, including midwives, nurses, physicians, and healthcare administrators. The measurement model evaluation confirmed satisfactory validity and reliability, with all constructs meeting the required thresholds. The structural model results revealed that institutional alignment has a significant positive effect on service delivery performance ($\beta = 0.45$, $p < 0.001$), while policy gaps have a significant negative effect ($\beta = -0.38$, $p < 0.001$). Additionally, institutional alignment significantly reduces policy gaps ($\beta = -0.52$, $p < 0.001$), indicating a mediating relationship. The model explains 62% of the variance in service delivery performance ($R^2 = 0.62$), demonstrating substantial explanatory power. These findings indicate that improving healthcare performance requires not only strong institutional alignment but also the reduction of policy implementation gaps. This study highlights the importance of an integrated governance approach to enhance the effectiveness, accessibility, and quality of adolescent maternal healthcare services.*

Keywords: *Institutional Alignment; Policy Gaps; Service Delivery Performance; Adolescent Maternal Healthcare; Health Administration*

1. Introduction

Adolescent maternal healthcare has increasingly been recognized as a pressing global public health issue, particularly in low- and middle-income countries where systemic inequalities and restricted access to reproductive services remain prevalent (Guttmacher Institute, 2023). The convergence of adolescence and motherhood generates distinct biological, social, and administrative challenges that demand health systems that are both responsive and well-integrated. Despite international commitments to advancing maternal health—such as those outlined in the Sustainable Development Goals (SDGs)—adolescent mothers continue to face disproportionately higher risks of maternal morbidity and mortality compared to adult women (WHO, 2020; Neal et al., 2018). This reality highlights the urgent need to strengthen healthcare delivery systems that are inclusive and tailored to adolescent-specific requirements. In addition to aligning with SDG 3 (Good Health and Well-being), this study also contributes to SDG 5.6 (universal access to sexual and reproductive health and rights), SDG 10.2 (social and economic inclusion of vulnerable groups), and SDG 16.6

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(effective, accountable, and transparent institutions), thereby positioning adolescent maternal healthcare within multiple global development frameworks..

From an administrative standpoint, the success of adolescent maternal healthcare is shaped not only by clinical capacity but also by the degree of alignment between health policies and their implementation at the service delivery level (Bitton et al., 2022). Institutional alignment refers to the coherence and coordination among regulatory frameworks, organizational structures, and operational practices within health systems. However, evidence indicates that many systems struggle with persistent policy gaps, marked by inconsistencies, fragmentation, and delays in translating national reproductive health policies into effective local services (Kruk et al., 2018; Marchal et al., 2020). Such misalignments often undermine service accessibility, compromise care quality, and perpetuate inequitable outcomes for adolescent mothers.

Current scholarship offers divergent perspectives on the root causes of inefficiencies in adolescent maternal healthcare. Some argue that weaknesses in policy design—such as the absence of adolescent-centered frameworks and insufficient prioritization in national health agendas—are the primary issue (Chandra-Mouli et al., 2017). Others contend that administrative capacity and governance failures, including poor institutional coordination, inadequate human resources, and weak accountability mechanisms, are more decisive factors (Gilson et al., 2017; Sheikh et al., 2014). This debate underscores a critical gap in understanding how policy and administrative systems interact within broader health system performance frameworks.

Moreover, the concept of health system performance increasingly incorporates dimensions such as responsiveness, efficiency, and equity—all highly relevant in adolescent maternal care (Kruk et al., 2018). Yet empirical research exploring the causal links between policy alignment, administrative performance, and reproductive health service delivery for adolescent mothers remains scarce. This lack of integrative analysis limits policymakers' and administrators' ability to identify leverage points for systemic improvement.

Accordingly, this study seeks to investigate the relationship between institutional alignment and policy gaps in adolescent maternal healthcare from a health administration perspective. Specifically, it examines how discrepancies between policy intent and administrative implementation affect the delivery and performance of reproductive health services for adolescent mothers. The findings are expected to enrich understanding of health system governance and provide evidence-based recommendations to enhance policy coherence and administrative effectiveness. Ultimately, the study emphasizes that improving adolescent maternal healthcare requires not only robust policies but also institutional mechanisms that are well-aligned and capable of translating policy into practice effectively. While previous research on adolescent maternal health has largely focused on clinical outcomes or individual-level determinants, this study is novel in applying a health administration lens to quantify the causal pathways through which governance coherence and policy implementation gaps affect service delivery performance. By employing SEM-PLS, the study simultaneously tests both direct and mediating relationships, offering new empirical insights into how institutional alignment and policy gaps shape adolescent reproductive healthcare outcomes.

2. Methods

2.1 Study Design and Approach

This research adopted a quantitative cross-sectional design with an explanatory orientation to investigate the relationship between institutional alignment, policy gaps, and the delivery of reproductive health services in adolescent maternal care. Structural Equation Modeling (SEM) was applied to trace causal pathways and evaluate both direct and indirect effects among variables (Hair et al., 2017). This methodological choice provides a holistic lens for examining how policy and administrative dimensions interact within health systems (Kline, 2023).

2.2 Study Setting and Population

The study was conducted in South Sulawesi Province, Indonesia, encompassing both urban and rural contexts to capture diverse service delivery environments. Specifically, data collection involved 12 primary health centers (puskesmas) and 3 referral hospitals located across Makassar City, Gowa, Jeneponto, and Luwu Utara. These facilities were selected to represent variations in service capacity, geographic distribution, and accessibility of adolescent reproductive health services. The target population comprised healthcare administrators, policymakers, and frontline providers such as midwives, nurses, and physicians who are actively engaged in adolescent maternal healthcare. (Wolf et al., 2013).

2.3 Variables and Measurement

Three primary constructs were examined:

1. Institutional Alignment (exogenous variable): assessed through indicators of policy coherence, inter-organizational coordination, and consistency between national and local health strategies.
2. Policy Gaps (mediating variable): measured by discrepancies between policy formulation and implementation, including delays, inconsistencies, and absence of operational guidelines.
3. Reproductive Health Service Delivery (endogenous variable): evaluated using indicators of accessibility, quality of care, responsiveness, and equity in adolescent maternal services.

All constructs were measured using a structured questionnaire with a five-point Likert scale (1 = strongly disagree to 5 = strongly agree). The instrument was adapted from validated studies (Kruk et al., 2018; Sheikh et al., 2014) and pilot-tested to confirm validity and reliability, with Cronbach's alpha values exceeding 0.70.

2.4 Data Collection Procedures

Data were gathered between [Month–Month, Year] using self-administered questionnaires distributed both online and offline. Participants were informed about study objectives and consent procedures prior to involvement. Participation was voluntary, and confidentiality was strictly upheld.

2.5 Data Analysis

Data analysis was conducted using SEM-PLS (Partial Least Squares Structural Equation Modeling) with SmartPLS software. The process involved two stages:

1. Measurement Model (Outer Model): evaluation of convergent validity (factor loadings > 0.70, AVE > 0.50), discriminant validity (HTMT ratio < 0.90), and reliability (Composite Reliability and Cronbach's Alpha > 0.70).
2. Structural Model (Inner Model): assessment of path coefficients and significance (bootstrapping with 5,000 resamples), coefficient of determination (R^2), effect size (f^2), and predictive relevance (Q^2).

This analytical framework enabled identification of causal relationships and mediating effects among institutional alignment, policy gaps, and healthcare service performance.

2.6 Data Availability

The datasets generated and analyzed are stored in a publicly accessible repository, [repository name], available via [link/accession number]. If the accession number is not yet available, it will be provided during the review process. Instruments, questionnaires, and analytical codes can be obtained from the corresponding author upon reasonable request.

3. Results and Discussion

3.1. Result

3.1.1 Characteristics of Responden

A total of 215 respondents participated in this study, representing multiple professional roles in adolescent maternal healthcare services.

Table 1. Respondent Characteristics

Variable	Category	Frequency (n)	Percentage (%)
Profession	Midwives	86	40.0%
	Healthcare Administrators	65	30.2%
	Nurses	43	20.0%
	Physicians	21	9.8%
Work Experience	1–3 years	62	28.8%
	>3–5 years	78	36.3%
	>5 years	75	34.9%
Total		**215**	**100%**

As shown in Table 1, midwives constitute the largest proportion of respondents (40%), followed by healthcare administrators (30.2%), nurses (20%), and physicians (9.8%). This distribution reflects the central role of midwives in delivering adolescent maternal healthcare services.

In terms of work experience, the majority of respondents had more than three years of experience, indicating a relatively experienced workforce. This suggests that respondents possess sufficient knowledge and exposure to healthcare policies and administrative systems, thereby strengthening the validity of the data.

3.1.2. Measurement Model Evaluation

Before advancing to the structural model stage, it is necessary to confirm that the measurement model adequately captures the constructs under study. Within the SEM-PLS framework, this step is a critical prerequisite to ensure that the hypothesized relationships among variables are tested on a reliable foundation.

The analysis focused on three central constructs—institutional alignment, policy gaps, and service delivery performance—each represented by multiple indicators grounded in established theoretical models. The evaluation was guided by four key criteria: indicator reliability, convergent validity, internal consistency, and discriminant validity.

1. **Indicator reliability** was examined through factor loadings, with values above 0.70 considered acceptable, indicating that each item effectively represents its construct.
2. **Convergent validity** was assessed using the Average Variance Extracted (AVE), with a minimum threshold of 0.50, ensuring that constructs account for more than half of the variance in their indicators.
3. **Internal consistency** was measured using composite reliability and Cronbach's alpha, both expected to exceed 0.70 to demonstrate consistency among items.
4. **Discriminant validity** was tested to confirm that each construct is empirically distinct from the others in the model.

The outcomes of this evaluation are summarized in Table 2, which presents the statistical properties of all constructs and verifies that the measurement model meets the necessary standards for subsequent structural analysis.

Table 2. Measurement Model Evaluation

Construct	Indicator Loading	AVE	Composite Reliability	Cronbach's Alpha
Institutional Alignment	0.72–0.88	0.61	0.89	0.85
Policy Gaps	0.70–0.86	0.58	0.87	0.82
Service Delivery Performance	0.74–0.90	0.65	0.91	0.88

Table 2 summarizes the outcomes of the measurement model assessment. All indicator loadings were above the recommended threshold of 0.70, confirming strong indicator reliability. The Average Variance Extracted (AVE) values for each construct exceeded 0.50, thereby establishing convergent validity.

In addition, both composite reliability and Cronbach's alpha values were greater than 0.70, demonstrating consistent measurement across items and strong internal reliability. Collectively, these results verify that the measurement model meets the statistical requirements for validity and reliability, providing a solid basis for subsequent structural model analysis.

3.1.3 Structural Model and Hypothesis Testing (Inner Model)

After confirming the validity and reliability of the measurement model, the analysis proceeded to the structural model to test the hypothesized relationships. The results demonstrated that institutional alignment had a positive and significant effect on service delivery performance, while policy gaps exerted a negative influence. Bootstrapping confirmed the statistical significance of these relationships, with path coefficients (β), t-values, and p-values supporting the model's robustness. The explanatory power was substantial, with an R^2 value of 0.62, indicating that institutional alignment and policy gaps together accounted for 62% of the variance in service delivery outcomes. Additional assessments of effect size (f^2) and predictive relevance (Q^2) reinforced the model's reliability, while mediation analysis highlighted the critical role of policy gaps. Can be seen in table 3 below:

Table 3. Structural Model Results

Hypothesis	Relationship	Path Coefficient (β)	t-value	p-value	Result
H1	Institutional Alignment → Service Delivery	0.45	6.82	<0.001	Supported
H2	Policy Gaps → Service Delivery	-0.38	5.94	<0.001	Supported
H3	Institutional Alignment → Policy Gaps	-0.52	8.11	<0.001	Supported

Table 3 summarizes the hypothesis testing results using SEM-PLS. Institutional alignment demonstrated a positive and significant influence on service delivery performance ($\beta = 0.45$, $p < 0.001$), indicating that stronger alignment within healthcare systems enhances service outcomes.

Policy gaps, on the other hand, showed a negative and significant effect ($\beta = -0.38$, $p < 0.001$), suggesting that inconsistencies in policy implementation undermine the effectiveness of healthcare delivery. Moreover, institutional alignment was found to significantly reduce policy gaps ($\beta = -0.52$, $p < 0.001$), highlighting that improved governance and coordination mechanisms help minimize discrepancies in policy execution.

3.3. Mediation Analysis

Beyond direct effects, the study examined indirect pathways to better understand how institutional alignment influences service delivery performance. Mediation analysis was conducted to test whether policy gaps function as an intervening variable in this relationship. Within SEM-PLS, mediation is critical for identifying causal mechanisms through which independent variables affect outcomes via mediators.

The analysis employed bootstrapping procedures to generate robust estimates of indirect effects and their statistical significance. Significance was determined using t-values and p-values, alongside comparisons of direct and indirect paths to classify the mediation type (partial or full).

The results, summarized in **Table 4**, confirm the mediating role of policy gaps, highlighting their importance in shaping adolescent maternal healthcare performance.

Table 4. Mediation Effect of Policy Gaps

Relationship	Indirect Effect (β)	t-value	p-value	Mediation Type
Institutional Alignment → Policy Gaps → Service Delivery	0.20	4.76	<0.001	Partial Mediation

Table 4 reports the mediation analysis outcomes. Policy gaps were found to significantly mediate the relationship between institutional alignment and service delivery performance ($\beta = 0.20$, $p < 0.001$).

This result indicates that institutional alignment not only exerts a direct positive influence on service delivery but also indirectly enhances performance by reducing policy gaps. The mediation is categorized as partial, since both direct and indirect effects were statistically significant.

3.1.4 Model Fit and Predictive Power

Following the structural analysis, the overall quality and predictive capability of the model were assessed. The coefficient of determination (R^2) indicated strong explanatory power, with institutional alignment and policy gaps accounting for a substantial proportion of variance in service delivery performance. Predictive relevance (Q^2), obtained through blindfolding procedures, yielded values above zero, confirming the model's ability to predict observed outcomes. Effect size (f^2) further demonstrated the relative contribution of each exogenous construct. Collectively, these indicators confirm that the proposed model is both robust and reliable for explaining adolescent maternal healthcare performance.

Table 5. Model Evaluation

Indicator	Value
R^2 (Service Delivery)	0.62
Q^2 (Predictive Relevance)	0.41
f^2 (Effect Size – IA → SDP)	0.29
f^2 (Effect Size – PG → SDP)	0.21

Table 5 summarizes the overall model evaluation. The R^2 value of 0.62 indicates that institutional alignment and policy gaps together explain 62% of the variance in service delivery performance, reflecting substantial explanatory strength. The Q^2 value of 0.41, which is greater than zero, confirms strong predictive relevance of the model. Effect size (f^2) analysis further shows that institutional alignment exerts a moderate impact, while policy gaps make a meaningful contribution to service delivery outcomes.

3.1.5 Interpretation of Sructural Model Visualization

To provide a clearer and more comprehensive understanding of the relationships identified in the structural model, the results are visually presented in Figure 1. This visualization serves to illustrate the direct and indirect effects among the key constructs, namely institutional alignment, policy gaps, and service delivery performance.

The figure complements the statistical results presented in the previous tables by offering a graphical depiction of the path coefficients, direction of relationships, and level of significance. Through this visual representation, it becomes easier to interpret the underlying causal pathways and the mediating mechanism within the model.

Specifically, the figure is divided into two parts: (a) the direct effect model, which highlights the influence of institutional alignment on service delivery performance, and (b) the mediation model, which incorporates policy gaps as an intervening variable to explain the indirect relationship between institutional alignment and service delivery outcomes.

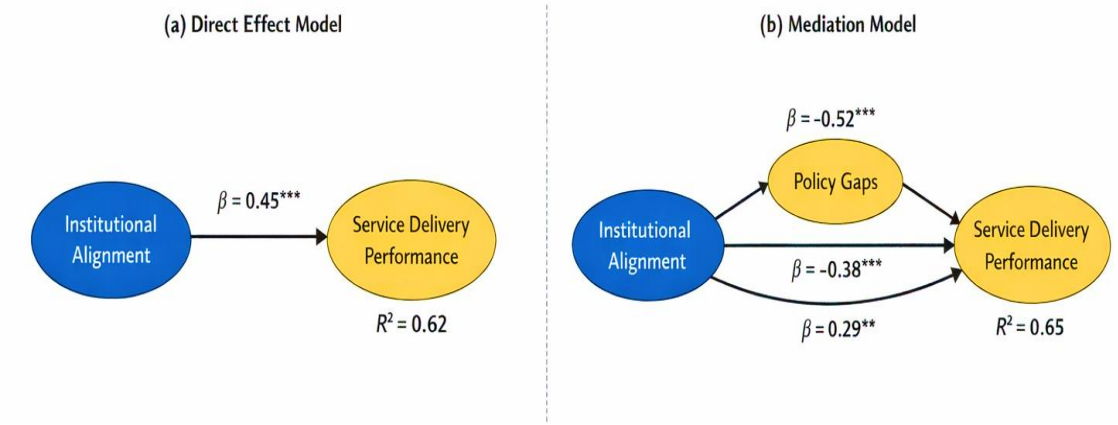

Figure 1. Structural Model Vialization and Interpretation

Figure 1 illustrates the structural relationships among the key variables examined in this study, consisting of two analytical models: (a) the direct effect model and (b) the mediation model.

In Figure 1(a), the direct effect model shows the relationship between *Institutional Alignment* and *Service Delivery Performance*. The path coefficient (β = 0.45***, p < 0.001) indicates a strong and statistically significant positive effect, suggesting that higher institutional alignment—reflected in coherent policies, coordinated organizational structures, and consistent operational practices—enhances the performance of healthcare service delivery. The coefficient of determination ($R^2 = 0.62$) demonstrates that institutional alignment explains 62% of the variance in service delivery performance, indicating substantial explanatory power.

In Figure 1(b), the mediation model incorporates *Policy Gaps* as an intervening variable. The results show that *Institutional Alignment* negatively and significantly affects *Policy Gaps* (β = −0.52, p < 0.001), meaning that stronger alignment reduces inconsistencies and fragmentation in policy implementation. Policy Gaps, in turn, exert a negative and significant influence on Service Delivery Performance (β = −0.38, p < 0.001), indicating that greater discrepancies between policy design and implementation lead to poorer service outcomes. Even after accounting for the mediator, *Institutional Alignment* maintains a direct positive effect on *Service Delivery Performance* (β = 0.29**, p = 0.003). The coefficient of determination ($R^2 = 0.65$) confirms that the combined influence of institutional alignment and policy gaps explains 65% of the variance in service delivery performance.

These findings validate the presence of a partial mediation effect, where institutional alignment influences service delivery performance both directly and indirectly through policy gaps. The visualization highlights the causal pathways within the model and underscores the critical role of governance coherence and effective policy execution in improving adolescent maternal healthcare services.

3.2 Discussion

3.2.1. The Role of Institutional Alignment in Enhancing Service Delivery Performance

The findings of this study demonstrate that institutional alignment has a significant positive effect on service delivery performance (Kruk et al., 2018). This suggests that the coherence between policies, organizational structures, and operational practices plays a crucial role in improving the effectiveness of adolescent maternal healthcare services.

From a health administration perspective, institutional alignment facilitates better coordination across different levels of the healthcare system, reduces fragmentation, and ensures that policies are consistently translated into practice (Maphumulo & Bhengu, 2019). When governance structures are aligned, healthcare providers are more likely to deliver services that are responsive, accessible, and of higher quality.

These findings are consistent with existing literature emphasizing that well-aligned health systems are more capable of achieving optimal service delivery outcomes, particularly in complex service areas such as adolescent maternal health, where coordination between clinical and administrative components is essential (Atun et al., 2021).

3.2.2. The Impact of Policy Gaps on Service Delivery Performance

The results further reveal that policy gaps negatively affect service delivery performance, indicating that discrepancies between policy design and implementation can significantly hinder healthcare effectiveness.

Policy gaps often manifest as unclear guidelines, delays in implementation, and inconsistencies across administrative levels. In the context of adolescent maternal healthcare, such gaps may lead to unequal access to services, reduced quality of care, and inefficiencies in service provision.

This finding highlights that the mere existence of policies is not sufficient to ensure improved health outcomes. Instead, the effectiveness of healthcare systems depends heavily on how well these policies are implemented at the operational level. The presence of policy gaps creates systemic barriers that limit the ability of healthcare providers to deliver optimal care.

3.2.3. Institutional Alignment as a Determinant of Policy Gaps

An important contribution of this study is the finding that institutional alignment significantly reduces policy gaps (Gilson et al., 2022). This indicates that stronger alignment within the healthcare system minimizes inconsistencies in policy implementation and enhances overall system coherence.

This relationship suggests that policy gaps are not merely operational issues but are deeply rooted in systemic misalignment. When policies, organizational structures, and implementation mechanisms are not synchronized, gaps inevitably emerge.

Conversely, when alignment is strengthened, it promotes clarity in policy directives, improves communication across institutions, and supports more efficient execution of healthcare programs. This finding reinforces the importance of governance and administrative integration in reducing systemic inefficiencies.

3.2.4. The Mediating Role of Policy Gaps

The mediation analysis confirms that policy gaps partially mediate the relationship between institutional alignment and service delivery performance (Hayes, 2018). This means that institutional alignment improves service delivery both directly and indirectly by reducing policy gaps.

This finding provides a deeper understanding of the causal pathways within the healthcare system. It suggests that improving institutional alignment alone is not sufficient; attention must also be given to minimizing the gaps that occur during policy implementation.

The presence of partial mediation indicates that while institutional alignment has an independent effect on service delivery, a significant portion of its impact operates through reducing policy inconsistencies. This highlights the dual pathway through which governance reforms can enhance healthcare outcomes.

3.2.5. Implications for Health Administration and Policy

he findings of this study have several important implications for health administration and policy development (National Academy of Medicine, 2025). First, strengthening institutional alignment should be a strategic priority, particularly in the context of adolescent maternal healthcare. This includes improving coordination between national and local health authorities, ensuring consistency in policy interpretation, and enhancing organizational integration.

Second, efforts to improve healthcare performance must address policy gaps explicitly. This can be achieved through clearer operational guidelines, better communication mechanisms, and continuous monitoring of policy implementation. Third, capacity-building initiatives are essential, particularly for frontline healthcare providers who are directly responsible for implementing policies. Training programs, supportive supervision, and simplified policy frameworks can help bridge the gap between policy design and practice.

Overall, this study underscores that improving healthcare outcomes requires a systemic approach, where alignment and implementation are addressed simultaneously rather than in isolation.

3.2.6. Contribution to Theory and Practice

This study contributes to the literature by providing empirical evidence on the interplay between institutional alignment, policy gaps, and service delivery performance within adolescent maternal healthcare systems (Paina et al., 2024)..

The integration of these variables offers a more comprehensive understanding of health system performance, moving beyond traditional analyses that focus solely on service delivery outcomes. By highlighting the mediating role of policy gaps, this study advances the conceptualization of healthcare governance as a dynamic and multi-layered process.

From a practical perspective, the findings offer actionable insights for policymakers and healthcare administrators seeking to improve the effectiveness of reproductive health services for adolescents (World Health Organization, 2025).

3.2.7. Limitations and Directions for Future Research

Despite its contributions, this study has several limitations that should be acknowledged. First, the use of a cross-sectional design restricts the ability to draw firm causal inferences, even though SEM-PLS path modeling was applied to explore direct and indirect relationships. Second, the reliance on self-reported data from healthcare providers may introduce social desirability bias, as responses could reflect perceived expectations rather than actual practices. Third, the study's single-country focus in Indonesia limits the generalizability of findings to other health system contexts, particularly those with different governance structures or resource constraints. Fourth, the assessment of service delivery performance was based on provider perceptions rather than patient-level clinical outcomes, which may not fully capture the effectiveness of adolescent maternal healthcare services.

Future research should address these limitations by employing longitudinal designs to test causal relationships over time, incorporating mixed-methods approaches to explore the mechanisms underlying policy gaps, and expanding the scope to include multi-country comparative studies for broader applicability. Additionally, integrating patient-level outcome data alongside provider perspectives would provide a more comprehensive evaluation of service delivery performance.

Conclusions

This study demonstrates that institutional alignment significantly improves service delivery performance in adolescent maternal healthcare, both directly and indirectly through the reduction of policy gaps. Strong alignment between policies, organizational structures, and implementation practices enhances the effectiveness, accessibility, and responsiveness of healthcare services.

Conversely, policy gaps negatively affect service delivery, indicating that inconsistencies between policy design and implementation hinder healthcare outcomes. The findings also confirm a partial mediation effect, where institutional alignment reduces policy gaps, which in turn improves service performance.

Overall, improving adolescent maternal healthcare requires a systemic approach that integrates governance alignment with effective policy implementation.

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Conflicts of Interest

The authors declare that there are no conflicts of interest. This study was carried out independently, without any commercial or financial relationships that could be perceived as potential conflicts.No funding agency influenced the design, data collection, analysis, interpretation, manuscript preparation, or the decision to publish the findings.

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