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RESEARCH ARTICLE

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Implementation process and quality of a primary health care system improvement initiative in a decentralized context: A retrospective appraisal using the quality implementation framework

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Summary

Background: Effective implementation processes are essential in achieving desired outcomes of health initiatives. Whereas many approaches to implementation may seem straightforward, careful advanced planning, multiple stakeholder involvements, and addressing other contextual constraints needed for quality implementation are complex. Consequently, there have been recent calls for more theory-informed implementation science in health systems strengthening. This study applies the quality implementation framework (QIF) developed by Meyers, Durlak, and Wandersman to identify and explain observed implementation gaps in a primary health care system improvement intervention in Nigeria.

Methods: We conducted a retrospective process appraisal by analyzing contents of 39 policy document and 15 key informant interviews. Using the QIF, we assessed challenges in the implementation processes and quality of an improvement model across the tiers of Nigeria's decentralized health system.

Results: Significant process gaps were identified that may have affected subnational implementation quality. Key challenges observed include inadequate stakeholder engagements and poor fidelity to planned implementation processes. Although needs and fit assessments, organizational capacity building, and development of

implementation plans at national level were relatively well carried out, these were not effective in ensuring quality and sustainability at the subnational level.

Conclusions: Implementing initiatives between levels of governance is more complex than within a tier. Adequate preintervention planning, understanding, and engaging the various interests across the governance spectrum are key to improving quality.

KEYWORDS

decentralization, health policy, implementation science, Nigeria, primary health care

1 | BACKGROUND

Many definitions of implementation exist in the literature. These vary with respect to context, discipline, and other viewpoints. For example, while Damschroder and Hagedom[1] define implementation as "efforts designed to get evidence-based programmes or practices of known dimensions into use via effective change strategies," DeLeon[2] broadly refers to implementation as "what happens between policy expectations and (perceived) policy results." The difference between policy design and actual delivery is known as implementation variance or gap.[3,4] The extent of this variance depends on implementation quality.

Implementing policies in health systems is complex and interactive, as numerous actors (local and international) try to influence agenda setting, policy formulation, and execution.[3] Interactions among these actors and within contextual environments are largely responsible for implementation gaps observed between policy/program designs and implementation outcomes in real-world settings.[4,5] Effective implementation processes that involve careful advanced planning, multiple stakeholder involvements, and address other contextual constraints are needed.[4] Consequently, there have been recent calls for the use of better implementation science in health systems strengthening initiatives.[6]

Implementing initiatives between levels of governance is more complex than within a tier. A number of frameworks have been developed to understand governance within decentralized health systems.[7-9] Data from a recent systematic review shows that most of these are either determinant frameworks (seeking to understand or explain influences on implementation outcomes), classic theories, or evaluation frameworks.[10] Abimbola et al[7] framework, based on the theory of common pool resources, conceptualizes at three levels of PHC governance: operational governance (individuals and providers within the local health market), collective governance (community coalitions), and constitutional governance (governments at different levels). Mikkelsen-Lopez et al[11] assess governance with respect to preidentified problems in a health system using systems thinking approach in relation to each tier of decentralized systems. Whereas these frameworks focus on the governance relations among different health system actors, they are limited in explaining quality implementation process of policies as a function of the interaction of actors between tiers of "constitutional governance." Thus, a gap exists in the literature regarding how to improve implementation processes within such contexts. Nonetheless, some top-down theorists have proposed conditions for ideal implementation in multilevel governance contexts.

Sabatier and Mazmanian[12] opine that optimal subnational implementation quality of national initiatives requires clear and logically consistent policy objectives; adequate causal theory linking specific activities to desired outcomes; committed and adequately skilled implementers; existence of measures (such as incentives

and sanctions) to ensure adherence by implementers; support from interest groups, lawmakers, and other stakeholders; and stable socioeconomic situations that will not undermine political support or the causal theory essential to the policy. Hogwood and Gunn[13] expand on this list of preconditions to include the availability of adequate time and required resource combinations for implementation. They further posit that a direct relationship between cause and effect must be established and that policymakers are empowered to ensure perfect compliance with the process design. Some theorists have argued, however, that these conditions are unlikely to be met at the same time and context, particularly in low- and middle-income countries LMICs, due to resource constraints.[3] Consequently, frameworks and models to guide and optimize implementation in such contexts may be helpful.

Several models and frameworks have been developed to explain, improve, and evaluate implementation of intervention. "Process models" aim at describing and/or guiding the process of translating evidence into practice by specifying steps (stages and phases) involved.[14] This study applies one of these models, the quality implementation framework (QIF) developed by Meyers et al,[15] to identify and explain gaps in the implementation of a policy to improve the primary health care (PHC) system in Nigeria's multilevel governance context.

Nigeria operates a federal system of government with considerable political and administrative decentralization. The health system is modeled after this structure, with multitiered governance for PHC. Although PHC policy thrusts mostly originate from the national level, implementation is largely the responsibility of the local government authorities (LGAs), although coordinated and supervised by the state governments.[5,7,16] Consequently, in order for a national PHC policy or initiative to be implemented at the LGA level, the policy needs to be deployed in a way that is appropriate for the state context and is adopted by the state. Then, it needs to be implemented with quality in the state and LGAs. Both these conditions are necessary for successful policy outcomes. Primary health care policies commonly experience implementation bottlenecks along this cascade.[5]

In 2012, Nigeria's National PHC Development Agency (NPHCDA) initiated "the PHC Reviews" to improve integrated PHC planning by LGAs using a four-step quality improvement model: diagnose-intervene-verify-adjust (DIVA).[17] DIVA is a variant of the well-known plan-do-study-act (PDSA) framework adapted by the United Nations Children's Fund (UNICEF) to strengthen decentralized district health systems in LMICs.[18,19] The framework has been implemented in several sub-Saharan African countries and has been found to be helpful in health systems strengthening.[17] Although approved by the National Council for Health (NCH) for implementation across all 36 states and 774 LGAs in Nigeria, implementation of DIVA was not widely sustained.[20] Only Kaduna state in Central Nigeria has continued implementation to date. This paper retrospectively examines the translation process of the PHC review policy from national to subnational levels using the QIF. The aim is to identify possible process gaps that may explain the implementation variance. The guiding theory of this research is that "a good process in the translation of policies from national to subnational tiers is important for acceptability, fidelity and sustainability of implementation."

1.1 | The quality implementation framework

Meyers et al[15] developed the QIF from a synthesis of common elements in frameworks guiding implementation found in the literature. They posit that quality implementation—defined as "putting an innovation into practice in such a way that it meets the necessary standards to achieve the innovation's desired outcomes"—is a systematic process of coordinated steps that can be achieved with careful planning, requiring diverse activities and skills. The QIF (Figure 1) consists of six themes with 14 steps to quality implementation, clustered into a four-phase temporal sequence. Using this framework, we retrospectively examined the DIVA policy deployment from the national to the subnational levels in order to identify process gaps, so as to inform more effective program redesign and scale-up.

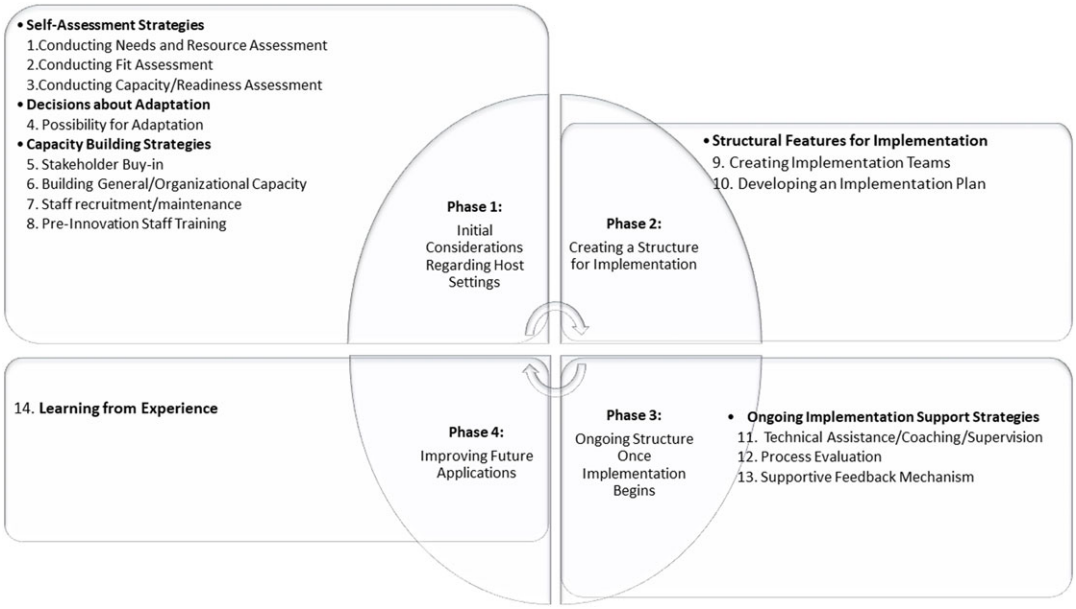

FIGURE 1 Shows the quality implementation framework, highlighting the phases, themes, and steps

2 | METHODS

2.1 | Data collection

This study is part of a research series aimed at understanding and improving policy implementation in Nigeria.[5,16,17] The overarching approach comprised the use of embedded research; a method that enhances collaboration between researchers, policymakers, and implementers to improve the use of contextual evidence in real-world policy processes.[21] The first author was part of the national implementation team. We collected data on the process for the implementation of the PHC policy between 2012 and 2016 using participatory action research, key informant interviews, and document analysis. Details of the process are described in other papers.[5,17] Data were obtained by analyzing contents of 39 document (Table 1) and 15 key informant interviews (R1-R15) to identify the design and implementation processes of the PHC reviews/DIVA in Nigeria. The documents comprise policies, guidelines, and implementation reports from national and subnational levels. We identified the documents from the researchers' knowledge as well as interviews with four subject matter experts (R1 and R3–R5) who participated in the initial policy processes. Further, we interviewed 11 other stakeholders working at different levels of the health system, including national level, Kaduna (implementing state), and in Nasarawa and Edo states (nonimplementing states), totaling 15 key informants (Table 2).

This paper summarizes the implementation data using the QIF as an analysis framework to assess the extent to which the implementation followed the most common implementation steps from which the QIF was created. The analyses in this paper focuses on national to state-level deployment of the policy.

2.2 | Qualitative analysis of implementation data

Data analysis was conducted using a deductive thematic analytic approach. NVIVO 11 was used in the data analysis. We coded data from documents and transcribed interviews using the 14 steps of the QIF using criteria and questions

TABLE 1 Documents analyzed

Code	Document	Status	Source
D1	Integrating primary health care governance in Nigeria (2013)	Published	NPHCDA
D2	Institutionalization of the primary health care reviews in Nigeria: Status and progress (2013)	Published	NPHCDA
D3	Revised national health policy.	Published	FMOH
D4	Guidelines for the training of resource persons and implementation of quarterly primary health care planning & Implementation Review: Bottleneck analysis methodology (2012)	Published	NPHCDA
D5	Primary health care under one roof implementation scorecard III report (2016)	Published	NPHCDA
D6	National strategic health development plan 2010–2015.	Published	FMOH
D7	National guidelines for the development of PHC system in Nigeria (2012)	Published	NPHCDA
D8-12	NPHCDA annual reports: 2010–2014 (5 documents)	Published	NPHCDA
D13	Assessment of NSHDP progress, status and indicators through PHC reviews: missions report (2013)	Unpublished	
D14-39	Presentations and minutes of stakeholder meeting on PHC reviews (27 documents)	Unpublished	NPHCDA

TABLE 2 Key informants interviewed

Code	Affiliation	Level of Operation
R1	NPHCDA (senior manager)	National
R2	NPHCDA (senior manager)	National
R3	National Consultant	National/subnational (state)
R4	National Consultant	National/subnational (state)
R5	UNICEF	International/national
R6	SPHCDA	Subnational (Kaduna state)
R7	SPHCDA	Subnational (Edo state)
R8	PHC manager	Subnational (Kaduna)
R9	PHC manager	Subnational (Kaduna)
R10	PHC manager	Subnational (Kaduna)
R11	PHC manager	Subnational (Kaduna)
R12	PHC manager	Subnational (Kaduna)
R13	PHC manager	Subnational (nonimplementing)
R14	PHC manager	Subnational (nonimplementing)
R15	PHC manager	Subnational (nonimplementing)

proposed my Meyers et al[15] in their paper. Two researchers independently coded the data into the steps. A third researcher validated the categorization by reviewing and harmonizing the results of the other researchers. At a consensus/harmonization meeting, all three researchers agreed on the categorization and interpretation of findings based on the process questions and criteria stipulated in the QIF.

2.3 | Quantitative methods

The categorization of the review data into the QIF steps provided a rough initial assessment of the steps that were followed and those that were not. However, just because an interview transcript or document reviewed mentioned

an implementation activity that could be nominally mapped to a QIF step, it did not automatically imply that the activity was completely aligned with all the requirements for the step. To assess the level of alignment between the data and the QIF step, we created a scorecard. The aim was to give a quantitative score measuring the extent to which the reported or documented policy implementation activity aligned with the intent of the QIF step. An iterative consensus-building approach was used to discuss and finalize scores.

Guided by the description of the QIF steps, a 4-point Likert-type scale using values from 0 to 3 (representing nonalignment, poor alignment, fair alignment, and good alignment, respectively) was created to evaluate alignment of the implementation activity to the QIF step. Three evaluators with expertise on the policy implementation and knowledge of the QIF criteria independently reviewed the qualitative data associated with each of the 14 QIF steps and assigned a score. Two rounds of scoring reconciliation, facilitated by a nonrater, were conducted to achieve convergence. The convergence criteria were that disparities between each rater scores on any step must not exceed 1 point. Thus, any rating disparity greater than 1 point was discussed and reevaluated in the next round. The mean, rounded up to whole numbers, was used as the final score for each step.

3 | RESULTS

Table 3 highlights implementation along the 14 QIF steps using qualitative data. Sources of data are embedded within the table as quotes coded 1 to 25 (Appendix A), documents (D), and observation (O). A more detailed qualitative process analysis is attached as Appendix B.

Figure 2 shows that eight of 14 QIF steps have a score of 1 or lower, meaning that the policy implementation was poorly aligned with what was recommended in the QIF. The weakest alignment with the QIF was with the process evaluation step (score: 0); the needs assessment and staff recruitment/maintenance process steps seemed optimally aligned having scored the maximum 3 points. Thus, preparation for implementation primarily involved doing a needs and fit assessment and staff hiring and training; however, there was poor assessment of local context and readiness to implement. This indicates an assumption that because the intervention is needed and is a good fit, it will automatically work without consideration of context or readiness. An implementation plan was created, but there were poor support/resources for implementation. This indicates an assumption is that implementation will happen by itself and no support or guidance was needed to ensure adherence to the plan. Supportive feedback mechanism was poor, and there was no process evaluation during implementation. Thus, opportunity to learn and to improve implementation process was very limited.

3.1 | Phase one: initial considerations regarding host setting

This phase includes activities assessing organizational (health system) needs, innovation-organizational fit, and a capacity or readiness assessment. Our study found poor alignment of this phase with the QIF. Needs and resource assessments were conducted in purposively selected states that identified the need to strengthen LGA level capacity for evidence-informed health system bottleneck analysis, and improvement was identified, thus necessitating the introduction of DIVA. This earned the needs assessment step the highest QIF alignment rating of 3. However, there was poor engagement of critical subnational stakeholders. This was responsible for the poor alignment rating (score of 1) on this step. Further, subnational capacity building for implementation was suboptimal (scored 2), as it captured a limited spectrum of stakeholders. The trainings targeted mainly at managers domiciled at the state ministries of health, whereas key implementers at the LGA level were not included. This may have compromised adaptation with implications on implementation quality.

> *[The implementers] cannot [Implement effectively] because they've not been trained; their capacity has not been built on this. You know there was a state training on this bottleneck analysis by NPHCDA some years ago and it was expected that we should come back to the state to bring it down but that didn't work. R5*

TABLE 3 Deductive analysis of DIVA implementation process using the QIF steps

QIF STEPS	Identified implementation processes
1. Conducting a needs and resources assessment	• National needs and resource assessment were conducted in purposively selected states. The need to strengthen LGA level capacity for evidence-informed health system bottleneck analysis and improvement was identified. (Quotes 1, 2; D2, 3, 13)
2. Conducting a fit assessment	• DIVA is considered adaptable to the Nigerian context given that it was designed to strengthen decentralized (Devolved) health systems, such as Nigeria's. (D2,13) • Although DIVA's guiding principles include community and private sector involvement, however adaptation to community systems was not sufficiently evaluated, rather adaptations were largely based on supply-side assessments (Quote 2; D2, 13)
3. Conducting a capacity/readiness assessment	• While the implementation plan includes readiness assessments prior to each quarterly cycle, there is no evidence that these were/are conducted. (Quote 3, D2, 13-39)
4. Possibility for adaptation	• Annual national and biannual state review meetings were planned as platforms for feedback and programme modification. However, national meetings held only in 2012 and 2013 while state level meetings were inconsistent. (D2, 10-12)
5. Obtaining explicit buy-in from critical stakeholders and fostering a supportive community/organizational climate	• Various stakeholder meetings were held between 2012 and 2013 to get buy-in from other agencies of the federal government (besides the NPHCDA and FMOH); state ministries of health and PHC agencies; as well as development partners. However, there was no direct consultation with the implementing tier (LGAs), community structures (beneficiaries), or private sector (D2,10–12)
6. Building general/organizational capacity	• The needs assessment conducted identified the following as key items for capacity enhancement across the governance tiers: Routine data systems; Human resources to implement DIVA; Communication systems (e.g. internet infrastructure) (D13)
7. Staff recruitment/maintenance	• Existing PHC managers and workers across the governance spectrum are expected to be used, given that DIVA is designed to build on existing systems and structures. National managers are to serve as initiators and coordinators of the initiative nationwide. State managers are to provide direct coordination, supervision and coaching for implementers at the LGAs. (D13)
8. Effective pre-innovation staff training	• A phased cascaded approach to training was planned, however poor adherence to the plan constrained implementation quality. (Quotes 3; D2, 13)
9. Creating implementation teams	• The number of resource persons mobilized to conduct the trainings did not match the scale of the exercise, consequently knowledge and skill may not have been effectively translated to implementation teams (D2, 10-12, 14-18)
10. Developing an implementation plan	• A national rollout plan was developed in 2012. The plan detailed tasks and timelines, including accountability/responsibility frameworks. However, the roll out plan was not adhered to. (D2,13)
11. Technical assistance/coaching/supervision	• Technical assistance for implementation was provided by the NPHCDA, SPHCDA and development partners. However, support waned in almost all states due to poor buy-in at state level. (D2,10–12)

(Continues)

TABLE 3 (Continued)

QIF STEPS	Identified implementation processes
12. Process evaluation	• There is no evidence that process evaluation was planned or carried out anywhere
13. Supportive feedback mechanism	• While review meetings were planned as platforms for retrospective evaluation (annually and biannually at national and state levels respectively), national meetings held only in 2012 and 2013. (D2,10-12)
14. Learning from experience	• Lessons learned are documented in various reports, however these are limited to few implementation bottlenecks given that no process evaluation was carried out. (D2, 10-12, 14-39)

FIGURE 2 A radar chart scoring the alignment of the policy implementation process with the 14 QIF steps

3.2 | Phase two: creating a structure for implementation

This second phase of quality implementation involves the development of an organized structure to oversee the process. The QIF prescribes the availability of a clear plan for implementing the innovation as well as a team of qualified individuals responsible for executing tasks related to delivering the innovation and overseeing its implementation. With respect to DIVA rollout, document analyses and interviews revealed gaps with respect to alignment with the QIF. First, even though a national rollout plan was developed in 2012 detailing tasks and timelines (including accountability/responsibility frameworks), the rollout plan was not adhered to (D2, 13), thus earning this step a QIF alignment score of 2. Further, our analysis of implementation reports suggests that the number of resource persons mobilized to conduct the trainings did not match the scale of the exercise. Consequently, knowledge and skill may not have been effectively translated to implementation teams (D2, 10-12 and 14-18), thus the poor QIF alignment rating of 1 on "creating implementation teams."

> *… they took off very early! The national [NPHCDA] after developing the template and the training, were not supposed to go into [full] implementation. We [national] ought to have seen how we could analyse the results [from the pilot study] and published [findings], [Thereafter] seen how the states will buy in before withdrawing. But there was an early [national] withdrawal of the program … and the states were not being mentored as they were supposed to be, the couching process was not thorough. R2*

We were unable to complete the plan because the funding was inadequate, so we used the money the state allocated for us to complete PHC review at the LGA level. R6

3.3 | Phase three: ongoing structure once implementation began

This phase involves three important tasks: providing needed on-going technical assistance to subnational implementers; monitoring on-going implementation; and creating feedback mechanisms. Our findings suggest that this was the least performing phase given that the three tasks scored 1, 0, and 1, respectively, on the QIF alignment scale. Analyses of qualitative data revealed that, even though technical assistance for implementation was provided by the national government and development partners, this support waned in almost all states. The exception was Kaduna state, where UNICEF sustained support due to the interest of the newly elected government in strengthening its health system through evidence-informed initiatives (D2, 10-12).

… early withdrawal at the national [level] … made the states not to have a full grip of the PHC reviews because they did not have the level of support they needed. That was the major reason the PHC review process of the states could not continue as it was supposed to … Nasarawa state wanted to continue … but they dropped out. But Kaduna was able to have ownership, [state government] interest was there, and they saw that PHC review was actually an initiative that will bring dividends to PHC service delivery and then offer dividends to the populace. R2

A month after the swearing in of the governor [of Kaduna state], the team came to us and interacted with us, asking [about the issues in health] … and we gave them the output of the last PHC review we had, what were the results, what were the challenges, what were the major challenges in health care services and after that we sent a memo in respect to the PHC review and instantly there was approval for what we asked for. R6

There was no evidence that implementation process evaluation was conducted in any state, thus the zero-alignment score on this step. Whereas the implementation plans included annual state-level reviews as part of feedback and mechanism, national meetings held only in 2012 and 2013, while only Kaduna state has sustained state level reviews (D2, 10-12). Consequently, the corresponding QIF step scored 1 on the alignment scale indicating poor alignment.

3.4 | Phase four: improving future applications

This final phase involves retrospective analyses and self-reflection with feedback from implementers to identify strengths and weaknesses that occurred during implementation. Unfortunately, due to the weak implementation of the preceding phases, learning from experience was also poor (score: 1). Thus, while "lessons learned" are documented in various implementation reports, these are limited to few implementation bottlenecks that are not in sufficient detail to improve future processes (D2, 10-12 and 14-39).

4 | DISCUSSION

Findings from the QIF process appraisal suggest that the poor subnational implementation of DIVA may have resulted from defects in translating the innovation from the national level to the subnational. Although needs and resource assessments, organizational capacity building, and development of implementation plans were relatively well carried out, these were not effective in ensuring sustainability of DIVA at the subnational level, given that most states did not sustain implementation. However, Kaduna state was able to sustain implementation due to strong political will of the state government. We discuss key process challenges using the QIF phases and themes.

4.1 | Phase one: initial considerations regarding host setting

This study found significant weakness in this phase at the national level. Organizational readiness for change is critical to implementation success, as inadequate readiness accounts for almost half of all failed large-scale innovations.[22,23]

Although needs assessment was conducted, organizational readiness was not measured. This resulted in poor considerations for contextual adaptation. Transformational leadership of the state governor is a key factor identified for the high degree of readiness in Kaduna. Studies have shown the strong relationship between leadership and organizational readiness to implement change.[24,25] Transformational leadership has been known to induce readiness, and, in one case, accounting for up to 44% variance in organizational readiness.[26]

Another major weakness in this phase relates to the fifth QIF step "Obtaining explicit buy-in from critical stakeholders and fostering a supportive climate." While many stakeholder consultations were held, these were done at higher levels, thus excluded key implementers. Stakeholder engagements are critical in policy processes, as they help create acceptable and better evidence-informed policies and generate better development outcomes.[3,12] For example, success in the development of Ghana's National Health Insurance Scheme has been attributed to strong stakeholder engagements in the policy processes.[27] Further, at lower levels, community engagement was also a useful strategy in promoting acceptance and improving interest and active participation in the scheme.[28] Conversely, inadequate engagement of critical stakeholders has been implicated in the weak mental health policies in Ghana, Uganda, South Africa, and Zambia.[29]

Lower level implementers are known to exhibit discretionary power that often compromises implementation quality, even in centralized health systems.[5,30] Sometimes, these "street-level bureaucrats" may significantly alter policy or program design to the extent of redefining the objectives.[30] Walker and Gilson, [31] as well as Scott et al,[32] demonstrated that lower level perspectives and resistance to policy (even when the implementers stand to benefit from the policy) could significantly affect the policy processes. Consequently, subnational implementation of top-down policies in decentralized settings must engage critical stakeholders across tiers of governance, especially those at the implementing tier.

4.2 | Phase two: creating a structure for implementation

Poor adherence to implementation plans was a major weakness in this policy process. The large-scale initial implementation probably overwhelmed the capacity and resources available to the national policy initiators. Meyers et al[15] posit that at a minimum, a clear plan for implementing innovations and identifying a team of qualified individuals responsible for delivering innovation tasks must be in place before implementation commences. Weakness in this phase may have contributed significantly to the poor implementation outcomes observed with DIVA.

4.3 | Phase three: ongoing structure once implementation began

National processes were very poor in this phase of implementation. The weak and waning technical support to subnational tiers, and poor feedback mechanism and monitoring of ongoing implementation, could have also contributed to failed continuity in most states. Sustained technical, political, and sometimes financial support is critical to improving subnational uptake of top-down innovations in decentralized LMIC contexts.[3,15] This is particularly crucial in Nigeria, where responsibility of the various governance tiers with respect to health is only defined by policy without constitutional backing.[5] Consequently, strong advocacy, with political incentives, has been recommended as an effective measure to improve subnational commitment to national initiatives like DIVA.[5] Sustained support for implementation process is essential for implementation quality. Thus, preimplementation planning of interventions must consider the availability of resources to support implementation and ensure fidelity.

4.4 | Phase four: improving future applications

Given that process evaluation was not conducted at the national level to provide knowledge on effective strategies, contextual facilitators, and challenges to quality implementation and sustainability of the initiative, opportunities to learn from experience were limited. Meyers et al[15] identified this phase as being essential to implementation, given that this is where the support system engages with the delivery system to reflect on the implementation process.

Feedback from lower level implementers can inform modification or application of the innovation, and factors that influence the quality of implementation. For example, documented lessons learned from DIVA were useful in identifying health systems constraints and attracting more support for strategies to improve maternal and child health interventions in Ghana and Uganda.[10,33] Top-down implementation theorists argue perfect implementation may not be expected, particularly in LMICs, considering resource constraints.[3,5,12,13] This should not be of great concern, however, as long as implementation challenges are recognized and optimum implementation quality is maintained.[34] How the center and periphery of health systems relate also affects implementation quality, as many policies get altered or even discarded at subnational levels.[3,5] Such lower level discretionary power informs the arguments by bottom-up theorists that, even in highly centralized systems, subordinate implementers can significantly influence or alter implementation objectives, thus are key (though often unrecognized) stakeholders in policy processes.[3,30]

Top-down policies in decentralized LMICs like Nigeria commonly experience implementation challenges during the process of subnational translation and implementation.[3] The extent of this depends on contextual differences such as governance structures, level of political decentralization, and external support systems.[5,35] Nigeria possesses a considerably politically decentralized system of government. Although most health policy thrusts are centrally initiated and coordinated,[36] subnational governments demonstrate significant discretion as to whether and how to implement.[5,16] Whereas quality improvement models like DIVA were designed to strengthen subnational organizational and management capacity to deliver quality PHC services, poor translation and delivery of the intervention constrain quality implementation and impact of such initiatives.

4.5 | Limitations

Findings and inferences from this study are based on our interpretation of documents and interviews, thus could be considered researcher biased. However, given that data were independently interpreted by different researchers and triangulated from multiple sources, we believe such biases are mitigated. While this study highlights key gaps and makes recommendations towards improving implementation in decentralized contexts, application of findings beyond the Nigerian context or even with another initiative within the same context should be applied with caution, given the complex adaptive nature of health systems.[37] However, lessons learned can inform better implementation in other contexts.[38] Our deductive approach to qualitative analysis confined the scope of this paper to predetermined themes from the QIF, thus potentially obscuring other aspects or nuances that may have been identified from emergent themes. However, here, we aim to explain gaps implementation processes using existing theories. Upcoming studies will complement this by using inductive techniques.

5 | CONCLUSIONS

Our study highlights the challenges to quality implementation in decentralized contexts and proffers ways to improve fidelity. Essentially implementing between levels of governance is more complex than within a tier. Understanding and engaging various interests across governance spectrum is key to improving quality. Further, detailed contextual analysis is recommended to inform more effective planning as against presumptive approach. While theories exist to explain aspects of policy implementation in decentralized settings, more comprehensive process models are needed to inform effective implementation processes and sustainability, particularly in decentralized contexts. Application of the QIF in one of such contexts provides some insight on how policy processes can be strengthened for optimal implementation outcomes. Thus, this study demonstrates that the QIF can contribute to filling this gap by identifying practical steps and process challenges towards improving implementation quality.

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

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REFERENCES

1. Damschroder LJ, Hagedorn HJ. A guiding framework and approach for implementation research in substance use disorders treatment. *Psychol Addict Behav: J Society Psychologists Addict Behav*. 2011;24:194-205.
2. DeLeon P. The missing link revisited: contemporary implementation research. *Policy Stud Rev*. 1999;16:311-338.
3. Buse K, Mays N, Walt G. *Making Health Policy*. Berkshire: Open University Press; 2005.
4. Durlak J. The Importance of Quality Implementation for Research, Practice and Policy. ASPE; U.S. Department of Health & Human Services 2013.
5. Eboreime EA, Abimbola S, Obi FA, et al. Evaluating the sub-national fidelity of national initiatives in decentralized health systems: integrated primary health care governance in Nigeria. *BMC Health Serv Res*. 2017;17(227):227.
6. Ridde V. Need for more and better implementation science in global health. *BMJ Global Health*. 2016;1(2):e000115.
7. Abimbola S, Negin J, Jan S, Martiniuk A. Towards people-centred health systems: a multi-level framework for analyzing primary health care governance in low - and middle-income countries. *Health Policy Plan*. 2014;29(suppl 2):ii29-ii1139.
8. Pyone T, Smith H, Broek N. Frameworks to assess health systems governance: a systematic review. *Health Policy Plan*. 2017;32(5):710-722.
9. Abimbola S, Negin J, Martiniuk AL, Jan S. Institutional analysis of health system governance. *Health Policy Plan*. 2017;1-7.
10. Henriksson DK, Fredriksson M, Waiswa P, Selling K, Peterson SS. Bottleneck analysis at district level to illustrate gaps within the district health system in Uganda. *Glob Health Action*. 2017;10(1). 1327256. https://doi.org/10.1080/16549716.2017.1327256
11. Mikkelsen-Lopez I, Wyss K, Savigny D. An approach to addressing governance from a health system framework perspective. *BMC Int Health Hum Rights*. 2011;11(13). https://doi.org/10.1186/1472-698X-11-13
12. Sabatier P, Mazmanian D. The conditions of effective implementations: a guide to accomplishing policy objectives. *Policy Anal*. 1979;5(4):481-504.
13. Hogwood B, Gunn L. *Policy Analysis for the Real World*. Oxford: Oxford University Press; 1984.
14. Nilsen P. Making sense of implementation theories, models and frameworks. *Implement Sci*. 2015;10(53). https://doi.org/10.1186/s13012-015-0242-0
15. Meyers DC, Durlak JA, Wandersman A. The quality implementation framework: a synthesis of critical steps in the implementation process. *Am J Community Psychol*. 2012;50(3–4):462-480.
16. Eboreime E, Bozzani F, Abimbola S. Access to routine immunization: a comparative analysis of supply-side disparities between Northern and Southern Nigeria. *PLoS One*. 2015;10(12). e0144876. https://doi.org/10.1371/journal.pone.0144876

17. Eboreime EA, Nxumalo N, Ramaswamy R, Eyles J. Strengthening decentralized primary healthcare planning in Nigeria using a quality improvement model: how contexts and actors affect implementation. *Health Policy Plan*. 2018;In press;33(6):715-728.
18. UNICEF. *The Guidebook: Strengthening District Management Capacity for Planning, Implementation and Monitoring for Results with Equity*. New York: UNICEF; 2012.
19. O'Connell T, Sharkey A. *Reaching Universal Health Coverage through District Health System Strengthening: Using a Modified Tanahashi Model Sub-nationally to Attain Equitable and Effective Coverage*. New York: UNICEF; 2013.
20. NPHCDA. *Institutionalization of the Primary Health Care Reviews in Nigeria: Status and Progress*. Abuja: National Primary Health Care Development Agency; 2013.
21. Ghaffar A, Langlois EV, Rasanathan K, Peterson S, Adedokun L, Tran NT. Strengthening health systems through embedded research. *Bull World Health Organ*. 2017;95(2):87.
22. Weiner BJ. A theory of organizational readiness for change. *Implement Sci*. 2009;4(67). https://doi.org/10.1186/1748-5908-4-67
23. Amatayakul M. Assess readiness first. *Healthc Financ Manage*. 2005;59(5):112-113.
24. Eisenbach R, Watson K, Pillai R. Transformational leadership in the context of organizational change. *J Organ Chang Manag*. 1999;12(2):80-89.
25. Appelbaum SH, Cameron A, Ensink F, et al. Factors that impact the success of an organizational change: a case study analysis. *Ind Commer Train*. 2017;49(5):213-230.
26. Nordin N. The influence of emotional intelligence, leadership behaviour and organizational commitment on organizational readiness for change in higher learning institution. *Procedia Soc Behav Sci*. 2011;29:129-138.
27. Agyepong IA, Adjei S. Public social policy development and implementation: a case study of the Ghana National Health Insurance scheme. *Health Policy Plan*. 2008;23(2):150-160.
28. Alhassan RK, Nketiah-Amponsah E, Spieker N, Arhinful DK, Wit TFR. Perspectives of frontline health workers on Ghana's National Health Insurance Scheme before and after community engagement interventions. *BMC Health Serv Res*. 2016;16(192):192.
29. Omar MA, Green AT, Bird PK, et al. Mental health policy process: a comparative study of Ghana, South Africa, Uganda and Zambia. *Int J Mental Health Syst*. 2010;4(24). https://doi.org/10.1186/1752-4458-4-24
30. Lipsky M. *Street-Level Bureaucracy: Dilemmas of the Individual in Public Service, 30th Anniversary Expanded Edition*. Russel Sage Foundation; 2010.
31. Walker L, Gilson L. "We are bitter but we are satisfied": nurses as street-level Bureucrats in South Africa. *Soc Sci Med*. 2004;59(6):1251-1261.
32. Scott V, Matthews V, Gilson L. Constraints on implementing an equity-promoting staff Alocation policy: understanding mid-level managers' and nurses perspectives affecting implementation in South Africa. *Health Policy Plan*. 2011. https://doi.org/10.1093/heapol/czr020
33. Yawson AE, Bonsu G, Senaya LK, et al. Regional disparities in immunization services in Ghana through a bottleneck analysis approach: implications for sustaining national gains in immunization. *Arch Public Health*. 2017;75(10):10. https://doi.org/10.1186/s13690-017-0179-7
34. Durlak JA, DuPre EP. Implementation matters: a review of research on the influence of implementation on program outcomes and the factors affecting implementation. *Am J Community Psychol*. 2008;41(3-4):327-350.
35. Abimbola S, Olanipekun T, Igbokwe U, et al. How decentralisation influences the retention of primary health care workers in rural Nigeria. *Glob Health Action*. 2015;8(1):26616.
36. National Health Act, 2014. Abuja, Nigeria: Federal Governement of Nigeria;2014.
37. Lipsitz LA. Understanding health care as a complex system: the foundation for unintended consequences. *J Am Med Assoc*. 2012;308(3):243-244.
38. *Health Policy and Systems Research: A Methodology Reader*. Geneva: Alliance for Health Policy and Systems Research, World Health Organization; 2012.

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APPENDIX A

SELECTED QUOTES FROM INTERVIEWS AS CODED

Reference	Respondent	Selected Quote
Quote 1	R1	"[Adapting DIVA for PHC reviews] started following a national strategic healthcare review process which revealed that some of the things were not going on well … [it was] then recommended that these issues could be handled through PHC reviews using DIVA. That was how it emerged."
Quote 2	R4	"… we also had focused group discussion with the teams and the ministry, where we were able to harmonize the output from those PHCs. [we found that] that the [initial] tool was very complex so what we did was to produce a simplified bottleneck analysis tool, measuring basic services at the PHC level. We were able to use that against some standards, universal standards or even national standards … we developed [standardized] tools to measure improvements"
Quote 3	R5	"The LGAs cannot because they've not been trained; their capacity has not been built on this. You know there was a state training on this bottleneck analysis by NPHCDA some years ago and it was expected that we should come back to state to bring it down but that didn't work"
Quote 4	R6	"A useful [new political] administration in the state, they have shown interest"
Quote 5	R6	"I think one of the major things that resulted in the state supporting PHC review was that a delegation was sent from the government house to interact with the M&E about what the key issues in health are."
Quote 6	R6	"A month after the swearing in of the Governor, the team came to us and interacted with us, asking [about the issues in health] … and we gave them the output of the last PHC review we had, what were the results, what were the challenges, what were the major challenges in health care services and after that we sent a memo in respect to the PHC review and instantly there was approval for what we asked for"
Quote 7	R6	"We were unable to complete the plan because the funding was inadequate, so we used the money the state allocated for us to complete PHC review at the LGA level"
Quote 8	R6	"For [LGA X], perhaps it is because there are some partners that are interested … there are some partners that are supporting implementation of such activity while [LGA Y] is not being supported"
Quote 9	R4	"[DIVA] started when the Federal Government (NPHCDA) decided to revise the methodology in PHC review. So, a new strategy was adopted … and Kaduna state was one of the states that took it very seriously through the support from UNICEF"
Quote 10	R7	"You know that National Primary Health Care Development Agency some years ago, I can't remember precisely now, we were taught. There was no [further] support, so the SIA and myself and one Dr. [name withheld], we put our heads together to analyse it."
Quote 11	R8	"We invite [the LGA chairperson] at the fourth or third day of the analysis … to inform him of the action we need him to take … We have to tender it to him so that he can help us … But some of the programs when we finish our analysis, some of the implementing partners … if they have funds they normally help us, but at the side of the [local] government, we find it very difficult to get funds"
Quote 12	R8	"You see there is an issue, some of the local governments have a lot of implementing partners and some don't have much implementing partners. Like our own [LGA] … we have a lot of partners. All these partners … have different activities they are carrying out. So, when they carry out the activity we consider it that we have done the activity in that plan. That is why we have this achievement"
Quote 13	R8	"The partners have their own their own work plans … [most of] the plans we made are not the government's. It is the partners that are going to sponsor the activity"
Quote 14	R9	"In the bottleneck analysis, actually we don't involve [the community], but after we have finished our analysis … then we go and meet them and show them what we have but during the carrying out [of DIVA], we don't invite them"
Quote 15	R9	"We normally invite the LGA Chairman after doing the analysis … to inform him where we are, and the action we need him to take … Some implementing partners that are around, if they have funds, they normally help us but at the side of the [local] government, we find it very difficult to get funds"

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Reference	Respondent	Selected Quote
Quote 16	R9	"The data are of good quality because we sometimes do DQA [Data Quality Assurance] to improve the data quality."
Quote 17	LGA 1	"There is need to invite [the community], there are some areas we need traditional and community leaders to sensitize their community, if they are there during the bottleneck analysis, they will give us a lot of information."
Quote 18	LGA 1	"It's really helping us!!! … before [DIVA] we hardly knew how to tackle some of the challenges we have in the health facilities but in the past two years [following] training in [DIVA] … when I go for any supervision, if I detect anything, I go back to my system to see how the facility will achieve good result based on the training we received"
Quote 19	LGA 2	"We don't find it easy when it comes to implementation. The challenge is that the LGA doesn't release any finance"
Quote 20	LGA 2	"And the LGA itself is never ready to sustain it. So, if UNICEF removes its hands … I don't see how it can continue; because the government of the day, I don't see how they can sustain this programme"
Quote 21	R10	"The data we generate is okay. Because we obtain our data from the facilities. When we go for meetings, there are some particular areas they want us to look at. So, when they come, we have the data available."
Quote 22	LGA 2	"Yes [we have been trained] but we need to train other staff from the health facility. That is if one staff [member] can be trained on Bottleneck Analysis, it will go a long way in improving data quality."
Quote 23	LGA 2	"Sometimes the [PHC director] involves the chairman. Once in a while, he comes to witness what is going on …Sometimes the meeting is chaired by the LGA chairman or in his absence, the director PHC."
Quote 24	LGA 2	"The traditional leaders, we hardly involve them. But it's one of the recommendations being given that we involve them"
Quote 25	LGA 2	"It's not easy. Because, even during the course of the planning, we only plan but we don't know how to source for the money to implement [strategies to address] the bottleneck identified. So that's why I say it's not easy because the government at times is not ready to put in their money. Most especially the local government. There are somethings we detect, which if they were implemented by the LGA, these bottlenecks will be reduced"

APPENDIX B

DETAILED QUALITATIVE ANALYSIS USING QIF

QIF Steps	Processes
Assessment strategies	
1. Conducting a needs and resources assessment • Why was the innovation initiated? • What problems or conditions is the innovation designed to address (ie, the need for the innovation)? • What part(s) of the organization and who in the organization is expected to benefit from improvement efforts?	• National needs and resource assessment were conducted in purposively selected states. ○ The need to strengthen LGA level capacity for evidence-informed health system bottleneck analysis and improvement was identified. ○ DIVA was expected to strengthen bottom-up health planning using feedback from locally generated data and local stakeholders (including service users) ○ 8 PHC interventions were identified as performance tracers (PMTCT, Immunization, Integrated Management of Childhood Illnesses, Antenatal Care, Skilled Birth Attendance, Infant and Young Child Feeding, Vitamin A supplementation, and Community Management of Acute Malnutrition). ○ Primarily targeted at LGA health managers (Health directors, Monitoring and Evaluation Officers, program

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QIF Steps	Processes
	managers) to improve efficiency and effectiveness of PHC governance system. ○ Frontline health workers at health facilities, community representatives and other stakeholders were secondary targets to strengthen the service delivery system. ○ Tertiary targets include the state-level PHC managers (SPHCDAs and State Ministries of Health) to provide technical support and supervision for the LGA managers. National level support systems (NPHCDA, Federal Ministry of Health) were also targeted.
2. Conducting a fit assessment • Does the innovation fit the setting? How well does the innovation match the: • Identified needs of the organization/community? • Organization's mission, priorities, values, and strategy for growth? • Cultural preferences of groups/consumers who participate in activities/services provided by the organization/community?	• DIVA is considered adaptable to the Nigerian context given that it was designed to strengthen decentralized (Devolved) health systems, such as Nigeria's. • DIVA is designed to reinforce existing systems and structures by "building on what exists" as against creating parallel systems. • The innovation is considered as being able to support ongoing national PHC revitalization efforts and governance restructuring policies. • Broad stakeholder participation in the program design gave various PHC interest groups (including donor and partner organizations) the opportunity to make inputs to suit their focus and priorities. • Although DIVA's guiding principles include community and private sector involvement, analysis of implementation reports and attendance list at planning meetings shows no evidence of these stakeholders participating in the program designing/planning.
3. Conducting a capacity/readiness assessment • To what degree does the organization/community have the will and the means (ie, adequate resources, skills and motivation) to implement the innovation? • Is the organization/community ready for change?	• Subnational (particularly LGA) human and system capacity was assessed, including routine data systems. Capacity gaps were identified and strategies to address them before and during implementation were devised. • Poor subnational commitment to implement was documented as a challenge. • Although the implementation plan includes readiness assessments prior to each quarterly cycle, there is no evidence that these were/are conducted.
Decisions about adaptation	
4. Possibility for adaptation • Was the innovation modified in any way to fit the host setting and target group? • What feedback can the host staff offer regarding how the proposed innovation needs to be changed to make it successful in a new setting and for its intended audience? • How are changes to the innovation documented and monitored during implementation?	• The decentralized (federal) system of government was considered as well as subnational contextual nuances. Consequently, aspects of the program design were made amenable to fit local contexts of each state. However, core elements of the intervention were to be maintained in the course of subnational adaptation. • Annual national and biannual state review meetings were planned as platforms for feedback and program modification. However, national meetings held only in 2012 and 2013 while state level meetings were inconsistent. By 2014, only Kaduna state still held state-level reviews, albeit annually.
Capacity-building strategies	
5. Obtaining explicit buy-in from critical stakeholders and fostering a supportive community/organizational climate • Are there genuine and explicit buy-in for this innovation from: • Leadership with decision-making power in the organization/community? • From front-line staff, who will deliver the innovation? • The local community (if applicable)? • Are important concerns, questions, or resistance to this innovation effectively dealt with?	• Various stakeholder meetings were held between 2012 and 2013 to get buy-in from other agencies of the federal government (besides the NPHCDA and FMOH); state ministries of health and PHC agencies; as well as development partners. However, there was no direct consultation with the implementing tier (LGAs), community structures (beneficiaries), or private sector • Whereas the various states welcomed the initiative, there was no genuine commitment or ownership by the subnational governments (except in Kaduna). This is

(Continued)

QIF Steps	Processes
• What possible barriers to implementation need to be lessened or removed? • Were innovation champions identified/recruited? • Are there one or more individuals who can inspire and lead others to implement the innovation and its associated practices? • How does the organization/community assist the champion in the effort to foster and maintain buy-in for change?	evident in the failure to sustain implementation after external financial support was phased out. • The implementation plan identifies three categories of champions for DIVA ○ National coordination team domiciled at the NPHCDA's department of planning research and statistics, chaired by the director ○ State coordination teams chaired by the SPHCDAs' directors of planning research and statistics ○ LGA implementation team chaired by the PHC director and includes PHC health program managers • Champions are expected to provide advocacy, technical, and where applicable, financial support for DIVA implementation, especially at subordinate governance tiers. However, national level support has dwindled since 2014
6. Building general/organizational capacity • What infrastructure, skills, and motivation of the organization/community need enhancement in order to ensure the innovation will be implemented with quality?	• The needs assessment conducted identified the following as key items for capacity enhancement across the governance tiers ○ Routine data systems ○ Human resources to implement DIVA ○ Communication systems (e.g. internet infrastructure) • Routine data system enhancement has been undergoing transition from paper-based to digital via the cloud-based District Health Information Software (DHIS-2). • Harmonization of key monitoring indicators of vertical PHC interventions for integration into a National Health Management Information System (NHMIS) commenced in 2012 • Capacity building was conducted in 2012 for key state-level PHC policymakers and administrators in all states to enhance organizational readiness to implement the DIVA. • Laptop computers and internet were provided to M&E officers in all states and LGAs • A DHIS-2 virtual community was initiated to share data related experiences, thus bridging the communication gaps within, between and across tiers of the health system.
7. Staff recruitment/maintenance • Who implements the innovation? • Who supports the practitioners who implement the innovation? • Might roles of some existing staff need realignment to ensure that adequate person-power is put towards implementation?	• Existing PHC managers and workers across the governance spectrum are expected to be used, given that DIVA is designed to build on existing systems and structures. National managers are to serve as initiators and coordinators of the initiative nationwide. State managers are to provide direct coordination, supervision and coaching for implementers at the LGAs. • Realignment of roles are at the discretion of the respective institutions.
8. Effective pre-innovation staff training • Was sufficient training provided to teach the why, what, when, where, and how regarding the intended innovation? • How was it ensured that the training covered the theory, philosophy, values of the innovation, and the skill-based competencies needed for practitioners to achieve self-efficacy, proficiency, and correct application of the innovation?	• A pre-implementation plan to train key PHC managers across all states and LGAs in Nigeria on the PHC reviews and the DIVA methodology was developed. • A phased cascaded approach to training was planned, however poor adherence to the plan constrained implementation quality. Approximately 50% of targeted trainees were reached. • Further, reports and interviews indicate that the number of resource persons mobilized to conduct the trainings did not match the scale of the exercise, consequently knowledge and skill to implement DIVA may not have been effectively translated.

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QIF Steps	Processes
Structural features for implementation	
9. Creating implementation teams • Who has organizational responsibility for implementation? • Are support teams of qualified staff provided to work with front-line workers who are delivering the innovation? • Are the roles, processes, and responsibilities of these team members specified?	• The delivery system for PHC is at the LGA, thus, the implementation teams for PHC reviews/DIVA comprise of the LGA health management teams. • Technical support is provided by national and state coordinating teams. However, national level support has declined over the years. • Roles and responsibilities of each team member is specified. For example, PHC program managers are tasked with collecting and analyzing data for their respective tracer interventions, while the M&E officer collates and harmonizes data from all program. Bottleneck analyses is a team effort under the leadership of the PHC director.
10. Developing an implementation plan • Was a clear plan that includes specific tasks and timelines to enhance accountability during implementation created? • What challenges to effective implementation were foreseen to be address proactively?	• A national rollout plan was developed in 2012. The plan detailed tasks and timelines, including accountability/responsibility frameworks. However, the roll out plan was not adhered to. For example, the plan indicated that a phased approach will be adopted such that there will be opportunities for learning and improvement. However, implementation reports show that rollout was conducted simultaneously nationwide, rather than in phases. • No evidence that anticipated challenges to implementation were documented.
Ongoing implementation support strategies	
11. Technical assistance/coaching/supervision • Were the necessary technical assistance available to help the organization/community and practitioners deal with the inevitable practical problems that develop once the innovation began?	• Technical assistance for implementation was provided by the NPHCDA, SPHCDA, and development partners. However, support waned in almost all states due to poor buy-in at state level.
12. Process evaluation Is/was there a plan to evaluate the relative strengths and limitations in the innovation's implementation as it unfolds over time?	• There is no evidence that process evaluation was planned or carried out anywhere.
13. Supportive feedback mechanism • Is there an effective process through which key findings from process data related to implementation are communicated, discussed, and acted upon? • How are process data on implementation shared with all those involved in the innovation (eg, stakeholders, administrators, implementation support staff, and front-line practitioners)?	• While review meetings were planned as platforms for retrospective evaluation (annually and biannually at national and state levels respectively), national meetings held only in 2012 and 2013. • Participants at the review meetings include stakeholders involved in implementation of DIVA, as well as potential users of information harnessed from DIVA. These include government institutions (at national and state levels), donors, development partners, civil society organizations, etc)
Improving Future Applications	
14. Learning from experience • What lessons have been learned about implementing this innovation that can be shared with others who have an interest in its use?	• Lessons learned are documented in various reports, however these are limited to few implementation bottlenecks given that no process evaluation was carried out.