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Chapter

Improving Human Resource for Health in Rural Northern Nigeria

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Abstract

Inadequate number of health workers in rural areas is a major concern in many countries. It causes underutilization, prevents equitable access of health services, and is a barrier to universal health coverage. To increase the number and improve retention of health workers in rural areas, the World Health Organization (WHO) issued global recommendations to improve the rural retention of the health workforce. This paper presents the experiences of adopting and implementing the WHO recommendations in four states in Northern Nigeria. It highlights the results, challenges and lessons learnt with the implementation. We used an implementation research approach and evaluated the implementation at three stages: the pilot; full implementation; and immediate post exit. A total of 477 midwives were recruited and deployed to rural health facilities over a period of four years. Of these, 196 (41%) were in Jigawa, 126 (26.4%) in Yobe, 78 (16.4%) in Zamfara and 77 (16.1%) in Katsina. Midwives' retention rates increased gradually over the four years. In three (Jigawa, Katsina and Zamfara) of the four states, midwives' retention rates increased from 69.2% in Jigawa in 2013 to 98% in 2016; from 53.3% in Katsina in 2013 to 100% retention in 2016. Zamfara made the most progress with a poor retention rate of 42.8% in 2013 to 100% retention rate in 2016. In Yobe state, the retention rate of 47% in 2013 gradually increased to 100% in 2015. This however slightly dropped to 90% in 2016 as a result of the deteriorating security situation in 2015. Other effects of the initiative included: heightened determination of states to increase the production of indigenous midwives; reversal of policy directives that banned the recruitment of health workers including midwives; and to provide incentives such as safe and comfortable accommodation.

Keywords: Rural retention, universal health coverage, incentives scheme, skilled birth attendance, rural health workers, midwives

1. Introduction

The Maternal Mortality Ratio (MMR) in Nigeria is amongst the highest in the world (576 per 100,000 live births) [1]. Within Nigeria, the burden of MMR remains heaviest in the Northern part of the country with rates as high as 1549 and 1025 per 100,000 live births in the Northeast and Northwest zones respectively [2]. Most of these deaths occur in the rural areas where about 69–70% of the population lives. It is estimated that the MMR could be as high as 1,732 per 1000,000 live births

amongst the rural population under longitudinal surveillance by the Nahuche Health and demographic surveillance system in Zamfara state [2].

The high mortality rates in Northern Nigeria are due to a multiple of factors such as gaps in the health system, socioeconomic factors, and cultural norms regarding practices during labor and childbirth [3]. The key to addressing these factors is access to culturally appropriate and quality maternal health care for antenatal care, family planning counselling, and skilled birth attendance, with availability of basic emergency obstetric care providing quality intrapartum and immediate postnatal care [4]. An adequate and equitable distribution of maternal health care workers is therefore key to reducing maternal mortality rates [3, 4].

Providing an adequate number of maternal health care workers in Northern Nigeria requires increasing the number of qualified midwives who are trained and willing to be sent to the rural clinics where they are most needed. The harsh working environment in the rural areas however, discourages midwives from going to and staying at rural health facilities [5]. Health facilities in the rural areas of Northern states are therefore understaffed with qualified midwives and are consequently largely dysfunctional. Even experienced midwives from these states are unwilling to be posted to the rural health facilities, leaving them largely staffed by Community Health Extension Workers (CHEWs) and young, inexperienced, unmarried midwives from Southern Nigeria who are undergoing their compulsory post-graduation clinical service as part of the national Midwives Service Scheme (MSS) [6, 7].

To attract, recruit and retain health workers in rural and underserved areas, the World Health Organisation (WHO) recommends an integrated set of incentive mechanisms. As shown in **Table 1**, the integrated bundle spans the

A. Education	A1. Students from rural backgrounds
	A2. Health professional schools outside major cities
	A3. Clinical rotation in rural areas during studies
	A4. Curricula that reflect rural health issues
	A5. Continuous professional development for rural health workers
B. Regulatory	B1. Enhanced scope of practice
	B2. Different types of health workers
	B3. Compulsory service
	B4. Subsidized education for return of service
C. Financial incentives	C1. Appropriate financial incentives
D. Professional and personal support	D1. Better living conditions
	D2. Safe and supportive working environment
	D3. Outreach support
	D4. Career development programmes
	D5 Professional networks
	D6 Public recognition measures

Source: WHO. (2010). Increasing access to health workers in remote and rural areas through improved retention: global policy recommendations. Geneva: World Health Organization; 2010.

Table 1.
WHO framework to attract, recruit and retain health workers (including midwives) in rural areas.

areas of education, regulation, financial rewards, and the improvement in the working environment and welfare of the health worker. It recommends wide stakeholder consultation in adapting this model to state-specific needs along with effective monitoring and evaluation of whichever package is adopted [8].

In 2011, four Northern Nigerian states with severe shortages of health workers met to begin adapting this WHO framework for their needs. These consultative meetings included Directors of State Primary Health Care Development Agency, Health Human Resources, State Ministry of Health (SMOH), Heads of Midwifery and Nursing training institutions, and a few midwives. During these meetings, these stakeholders conducted their own situational analysis to prioritize and contextualize the WHO recommendations on incentive mechanisms to attract, recruit, and retain female health workers. There was a broad consensus that the most critical shortage was for midwives, who were grossly inadequate in numbers and inequitably distributed. By the end of 2012, each state had developed an incentive package to produce, attract, recruit, and retain midwives in rural health facilities as shown in **Table 2**. They also developed implementation plans, which included routine monitoring and evaluation to feedback into the implementation process. The package developed by each state was called the Midwife Recruitment and Retention Scheme (MRRS). The developmental process has been described in an earlier publication [9].

In this paper, we describe the 2012–2016 MRRS implementation experience and results from each of the four Northern Nigerian states (Jigawa, Katsina, Yobe and Zamfara).

State	Proposed Incentive Package
Jigawa State	Payment of Midwife specific rural allowance
	Provision of safe and comfortable accommodation and water
	Provide safe working environment, equipment and logistics
	Providing priority access to continuous education
	Instituting public recognition and award scheme
Yobe State	Payment of midwife specific hardship allowance in addition to any existing allowance
	Provide safe and comfortable accommodation to improve living conditions
	Enhance the scope of practice of rural midwives
	Schemes to support continuing education and professional development of midwives in rural practice
Katsina State	Payment of midwife specific rural allowance
	Provision of safe accommodation, portable water and electricity
	Provision of supervision and mentoring support to MSS midwives
	Provision of permanent employment to non-indigenes
Zamfara State	Payment of midwife specific rural allowance
	Provision of accommodation with easy reach of MNCH facility
	Lift ban on recruitment of midwives to targeted rural health facilities providing MNCH services

Source: Afenyadu et al. [9].

Table 2.
Agreed state specific incentive package to attract, recruit and retain midwives at inception.

2. Methods

Study design: Each state used phased implementation research to assess the implementation of each of three implementation phases:

Phase 1: Pilot phase (2012–2013). The first phase focused on establishing all the elements of the incentive package. During this phase, additional modifications to the MRRS incentives may have been adopted, after reconciliation of the MRRS with the realities of political support, human resource (HR) policy, and budgetary funding availability in each state.

Phase 2: Full Implementation phase (2013–2016). During the full implementation phase, the Women for Health (W4H) programme supported the states to initiate the necessary HR policy reforms and provide the budgetary allocations necessary to roll out each state-specific package. Each state worked towards an effective implementation of the full complement of an incentive package carefully selected from the four broad intervention areas of Education, Regulation, Financial Incentives, and Professional and/or Personal support as outlined in **Table 2**. Implementation was also conditional on having midwives available to be recruited from anywhere in Nigeria, as well as rural health facilities being functional with the requisite logistics, supplies, and equipment. During 2013–2014, W4H provided some financial support to pay the salaries and rural allowances of the midwives posted to rural facilities per each state's MRRS incentive package. From 2015 onward, each state took over the responsibility for this financial support. They developed and initiated the roll out of sustainability plans by the end of this period.

Phase 3: Post-exit phase (2016–2017). W4H supported the continuing monitoring and evaluation of the implementation by the states.

Evaluation Methods: The evaluation was guided by the MRRS logic model shown in **Figure 1**. The evaluation used multiple methods, both qualitative and quantitative, with repeated measures of the outputs and outcomes throughout the study period.

2.1 Monitoring and evaluation activities

2.1.1 Establishment of State MRRS Implementation Committees

The State Implementation Committee (SIC) consist of key stakeholders including those from the State Primary Health Care Development Agency, SMOH, and the Local Government Areas (LGAs). The SIC engaged key decision makers,

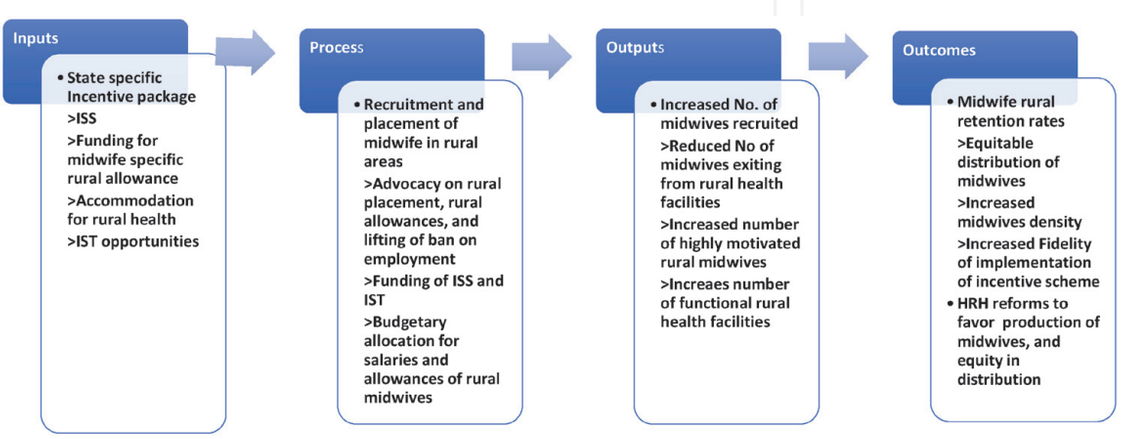

Figure 1.
MRRS Logic model.

gatekeepers, and centers of power, especially those responsible for policy decision-making and the management of the budgetary funds required to roll out the incentive packages. It also monitored and provided feedback on progress and challenges with the implementation process at several cross-state review meetings that were organized to facilitate cross-state learning and sharing of experience [10].

2.1.2 Assessment of state of readiness for full implementation at the end of the pilot phase

At the end of the pilot phase, each state team was facilitated to assess its readiness to implement its MRRS package by ranking the perceived status of selected determinants of readiness to cope with the initial implementation stage. These determinants were: cooperation and support of stakeholders (CS), team confidence (TC), management of fear and resistance to change (F&R), favorable (recruitment) policy environment (FPE), reporting and reviewing framework (RRF), availability of human resource (AHR), and availability of a funding stream (AF) [11].

Each member of the SIC ranked, by scoring each of the determinants from one to three, where three is the highest and one is the lowest. The scores by each member of the committee were then aggregated and averaged for each determinant. This helped to obtain a consensus position on the state readiness of each participating state. A radial graph that summarizes the status of the determinants in each state is shown in **Figures 2–5**. The graphs illustrate the extent to which each state is ready or able to cope with the initial implementation phase as determined by the status of the seven variables.

The assessment method depends on group judgment or consensus. In spite of standardizing the methodology and data tools, the variations within the group judgment or consensus from one state to the other limits, comparability between states. However, it aptly describes the status of readiness as perceived by each state and helped map out what determinants require more attention for a successful implementation.

2.1.3 Monthly collection of data on midwife retention

Data were collected monthly from each participating rural health facility on number of midwives at post at the beginning of the month at each rural facility in

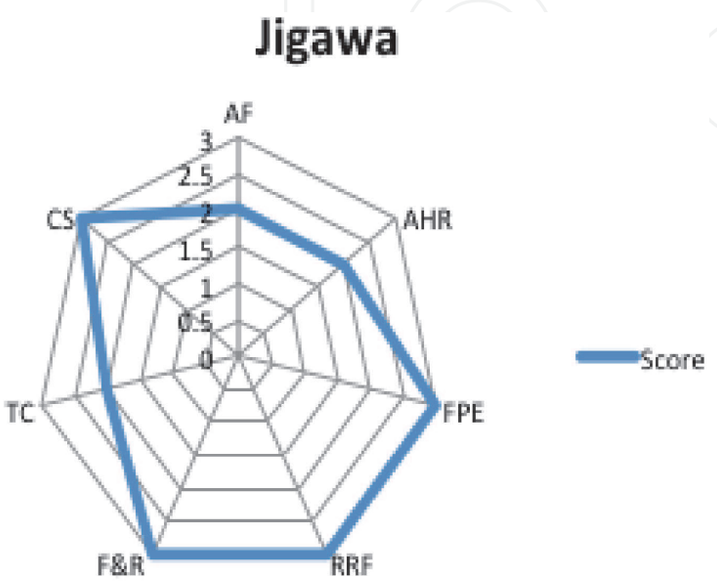

Figure 2.
Jigawa state-strongest supporting structures for change.

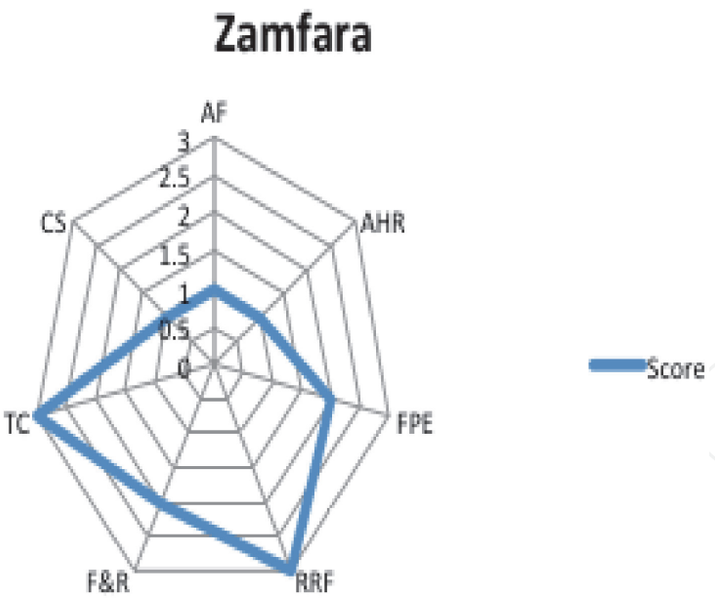

Figure 3.
Zamfara state-weakest supporting structures for change.

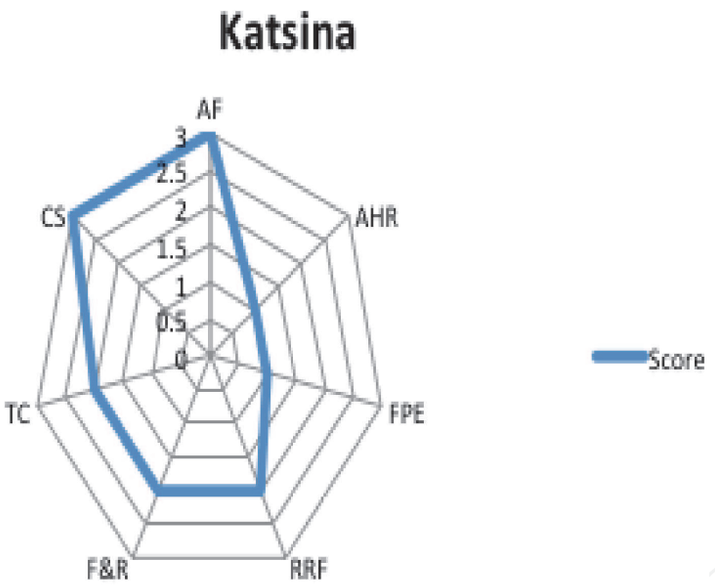

Figure 4.
Katsina state readiness.

the scheme (x), numbers of midwives posted that month (y) and the numbers exiting that month from the facility (z). After cleaning, quarterly retention rates were computed and feedback was provided to the state implementation teams. Percentage Retention Rates (PRR) values were calculated for each month as: PRR = (x + y - z)/(x + y) x100%. These PRR were subsequently discussed at the quarterly cross-state review meetings, where outliers (very high or low) attrition or exit rates were interrogated for any lessons that might be learned for strengthening MRRS implementation.

2.1.4 Quarterly cross state review meetings

During implementation, a series of review meetings were held with the state implementation teams to track progress, discuss challenges encountered, share

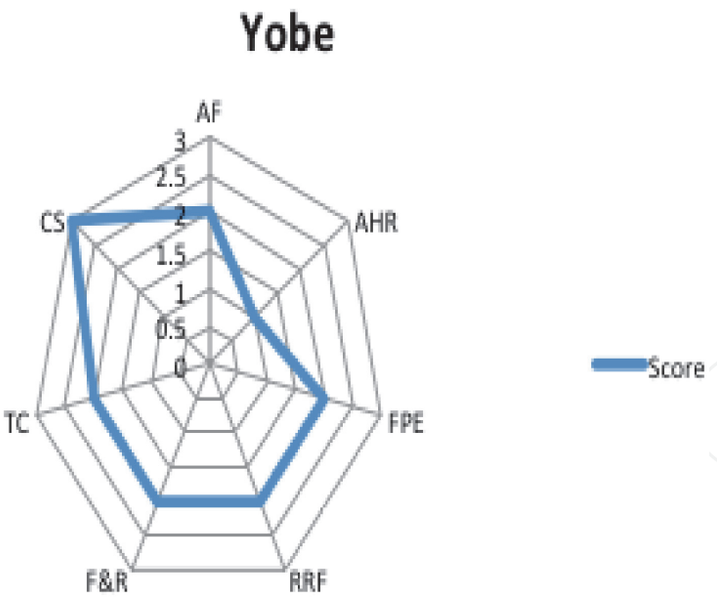

Figure 5.
Yobe state readiness. Legend: AF, Availability of funding stream (fiscal budget); AHR, Availability of Human Resource (Midwives); FPE, Favorable Policy environment; RRF, Reporting and Reviewing Framework; F&R, Management of fear and /or resistance to change and the complexities of change; TC, Team confidence; CS, Cooperation and support of stakeholders.

information on how such challenges were resolved or mitigated, and propose recommendations to strengthen the implementation of the incentive scheme.

2.1.5 Annual evaluation

An independent consultant was engaged each year to evaluate the MRRS scheme, guided by terms of reference relevant to the stage of implementation of the initiative across implementing states. The methods adopted included a survey of midwives, key informant interviews of selected key stakeholders at the community, LGA, and state levels.

2.1.6 Post-exit evaluation activities

Comparable to the annual evaluation, post-exit evaluations were conducted in 2016 to focus on sustainability of the results and steps taken to sustain the gains of the initiative.

Ethical approval: As this study was categorized under service evaluation, ethics committee approval was not needed because the study does not constitute research in Nigeria, where it was conducted. Written informed consent was however obtained from all participants to collect, analyze and publish the data.

3. Results

3.1 The Pilot Implementation Phase (2012–2013)

The pilot phase of the implementation was an opportunity to assess the complications of implementation and determine feasibility and readiness of the key stakeholders to support and fund the initiative. The phase was found to be associated with some hesitation by some policymakers, especially where the implementation

of a particular component of the proposed incentive package meant reviewing existing state policies or providing additional budgetary funds.

3.2 Recruitment of midwives into the scheme

All four states in 2012 were well below the WHO global minimum standard of three midwives or nurses per 1000 women of reproductive age [12]. As shown in **Table 3**, Jigawa and Katsina had just under two midwives per 1000 women of reproductive age, and Yobe and Zamfara had only half (or less) as many. Across all states, 67% of the midwives' salaries were paid by the states. About 30% of midwives were supported by the federal MSS, which assigns newly graduated midwives to rural health facilities. Most of the MSS midwives came from states outside the Northern region, which already poses a retention challenge. This in part is due to cultural differences and the fact that the newly qualified midwives are young and may need to return to marry from their regions.

Production of midwives was severely constrained in all the states. At the inception of the W4H program, of the seven Nursing and Midwifery training institutions in the four states, none had full accreditation, three had provisional accreditation, and four were denied accreditation. A full accreditation status would allow the training institution to admit 100 students for training while a provisional accreditation meant that the training institution could admit 50 students. A denied accreditation, however, meant an embargo on student admission for training. Even though three of these training institutions had provisional accreditation, and could recruit 50 students per cohort per year, the training institutions were also experiencing high drop-out and low graduation rates. All these contribute to reduce number of health workers produced in the states.

In two of the states (Katsina and Zamfara), there was an embargo on employment of workers including midwives. In the remaining two states where employment was allowed, there was difficulty in getting midwives to recruit from within the state, due to inadequate production. These states were also unable to attract midwives from other states for recruitment. This is because midwives coming from other states preferred pensionable employment, but could only be offered non-pensionable contracts. Pensionable contracts were only available for indigenous health workers from the state. The recruitment into the rural MRRS was further encumbered by the lack of appropriate accommodation for the midwives in rural areas. Indeed, even if midwives were available, the scheme could only expand if functional rural health facilities with suitable accommodation were available. As

State	Population	Total Midwives	Midwife Density/1000 pop	Non-State Government sources
Jigawa	5,286,804	511	0.96	• MSS = 143 • Subsidy Reinvestment and Empowerment Programme-Maternal Newborn and Child Health (SURE-P MCH) =42
Katsina	6,500,000	581	0.89	• MSS = 144
Yobe	2,885,518	77	0.26	• MSS = 31 • SURE-P MCH = 1
Zamfara	4,064,012	202	0.50	• MSS = 89 • SURE-P MCH =5

Table 3.
2013 Midwife density in implementing states.

State	Category of Midwives			
	MSS	State government	SURE-P MCH	Total
Katsina	8	2	—	10
Yobe	14	1	—	15
Jigawa	18	3	3	24
Zamfara	12	1	—	13

Table 4.
Types of Midwives in the MRRS during the Pilot Phase.

shown in **Table 4**, across all states there were only 63 midwives enrolled in the MRRS (5% of the 1369 midwives in the states), and most of these had their salary support from the MSS.

3.3 Fidelity of implementation

The fidelity of implementation of the state specific rural incentive bundles is the extent to which the proposed contents of the rural incentive bundle had been implemented, calculated as an adherence ratio equal to the proportion of the components actually implemented out of the total proposed bundle of components. In addition, the status of implementation of each individual component of the state-specific incentive bundle was ranked by each SIC on a scale of 1 to 3: 1 = Not yet implemented (red), 2 = Partially implemented (yellow), 3 = Fully implemented (green).

As shown in **Table 5**, in the Pilot Phase (2013), no participating state could implement the full complement of its proposed incentive bundle to attract, recruit and retain midwives to work and live in health facilities in rural and underserved areas (Fidelity ratio < 1). Payment of midwife specific allowances was fully implemented in all states, although payment was irregular or in arrears, for example in Jigawa.

The components of the incentive bundles that could not be implemented during the pilot phase were largely those involving policy decisions by "power centers" who had little interest in those components, even if not fully voiced at the time of configuring the incentive package at the consultative meetings. These components included "decisions to lift the ban on employment," "enhancing the scope of practice of rural health workers (task shifting)," "granting preferential access to in-service training to midwives working in the rural health facilities," and the institutionalization of "public recognition and awards" for rural health workers, especially midwives.

These components require the support of those who control state political power and fiscal budgetary resources. Indeed, the ultimate decisions on health policy issues in the state were neither made by the technocrats or the directors responsible for the various departments of the health service (such as Human Resources, Nursing, and Policy and Planning), nor by the commissioner of health alone, but by the state governor.

The provision of suitable accommodation is capital intensive and was only partially implemented in most states. The SICs attributed the delay to the time required to present the bill of quantities (BoQ) and some bureaucracy associated with issuing contracts for the refurbishment of available accommodation. The BoQ, prepared by quantity surveyors, provided project specific measured quantities of the items of work identified by the drawings and specifications in the tender documentation. Preparing a BoQ requires that the design is complete and a specification has been prepared. Katsina and Jigawa states were yet to receive required

		Status of Implementation – Pilot Phase 2013		
State	**Bundle components**	**Fully**	**Partial**	**Not yet**
Jigawa State	Payment of ME specific allowance of N20,000 per month			
	Improve living conditions			
	Provide safe working environment, equipment and logistics			
	Provision of safe accommodation within easy reach of facility & provision of water			
	Granting of preferential access to rural midwife to continuous education			
	Public Recongition and award scheme			
Yobe State	Improvement of living conditions of midwives working and living in the rural area			
	Enhanace the scope of practice for rural midwives (task sharing)			
	Payment of midwife specific hardship allowance in addition to any existing allowance			
	Support continuing education and professional development of midwives living and working in the rural areas			
Katsina State	Payment of Midwife specific rural allowance			
	Provision of permanent employments			
	Provide supportive supervision and mentoring to MSS midwives			
	Provide safe accommodation znd portable water & electricity			
Zamfara State	Life ban on recruitment of midwives to targeted rural health facilities providing MNCH sevices			
	Provide accommodation withi easy reach of MNCH facility			
	Payment of midwife specific rural allowance			
Legend				
	Fully Implemented			
	Partially implemented			
	Unable to implement			

Table 5.
Fidelity of Implementation by the end of Pilot Phase.

funds to refurbish accommodation that would facilitate the planned expansion into additional health facilities due to unexplained bureaucratic bottlenecks.

3.4 Readiness to install incentive scheme to attract, recruit, and retain midwives in rural health facilities

At the end of the pilot phase, a state government was considered "ready to implement its midwife recruitment and retention scheme" if the following conditions were met:

- Availability of funds or willingness to contribute financially to the implementation of the initiative (AF)

- State government is demonstrably willing to invest in the production of midwives or take the pragmatic steps to make the human resource (midwives) available to service the scheme (AHR); A favorable state human resource for health (HRH) recruitment policy environment (FPE); Capacity to manage resistance or fear of change (F&R)

- Confident state implementation committee (TC); existing mechanisms for reporting and reviewing the implementation process (RRF); and the cooperation of relevant stakeholders (CS).

Across the four states, Zamfara, was the least prepared to cope with the complexities and challenges associated with the pilot phase. It scored 13 out of a maximum of 21 points. It was the most constrained with funding, had a ban on employment of health workers (including midwives), and was not getting optimal support and cooperation from some stakeholders.

In summary, the key challenges faced during the pilot phase of implementation were limited to no availability of midwives, an unfavorable HRH policy environment, and inadequate funding. The shortage of midwives in the states was linked to the low output of trained midwives from the state schools of midwifery, as well as the existing ban on employment in Jigawa, Katsina and Zamfara states. The policy of non-pensionable employment of midwives from the southern states of the country was counterproductive. As it made it difficult to attract midwives from other states to come and work in these four states. The provision of suitable accommodation for midwives posted to the rural areas and payment of midwife specific rural allowances require funding, which had budgetary implications.

4. The full implementation phase (2013 to 2015)

This phase was characterized by an expansion of the initiative, with intensified advocacy efforts to: increase availability and deployment of midwives to the targeted rural health facilities; improve the fidelity of implementation of the MRRS by working with all relevant stakeholders; pay rural incentive allowance; provide accommodation; provide supportive supervision; and provide opportunities for in-service training. It was also the stage for planning sustainability as implementation approached 2015.

During this phase, the W4H program supported the recruitment and posting of midwives to rural health facilities by providing funding for salaries and rural allowances with the understanding that the state governments would make the necessary policy reforms and budgetary allocations to take over the payment of salaries and rural allowances of these midwives and recruit additional ones. By the end of 2015, the W4H brought this financial support to an end and the period of full implementation was subsequently evaluated.

4.1 Progress made over the implementation period

4.1.1 Jigawa State

The Jigawa state government sustained the regular payment of salaries, rural allowances, and also provided accommodation for rural midwives over the implementation period. Although accommodations were provided, not all of them were fully furnished. The recruitment and placement of midwives in rural health facilities continued with additional numbers being recruited each year. By 2015, about 50

midwives were placed in 25 rural health facilities. This included the 18 midwives previously paid by W4H. However, non-indigenous midwives were given non-pensionable "contract" appointments instead of the preferred "permanent and pensionable" appointments (**Table 6**).

State	Bundle components	Status of implementation-Pilot Phase 2013			Status of implementation-ending 2015		
		Fully	Partial	Not yet	Fully	Partial	Not yet
Jigawa state	Payment of ME specific allowance of N20,000 per month						
	Improve living conditions						
	Provide safe working environment, equipment and logistics						
	Provision of safe accommodation within easy reach of facility & provision of water						
	Granting of preferential access to rural midwife to continuous education						
	Public recognition and award scheme						
Yobe state	Improvement of living conditions of midwives working and living in the rural area						
	Enhance the scope of practice for rural midwives (task shifting)						
	Payment of midwife specific hardship allowance in addition to any existing allowance						
	Support continuing education and professional development of midwives living and working in the rural areas						
Katsina State	Payment of midwife specific rural allowance						
	Provision of permanent employments						
	Provide supportive supervision and mentoring to MSS midwives						
	Provide accommodation and portable water and electricity						
Zamfara State	Lift ban on recruitment of midwives to targeted rural health facilities providing MNCH services						
	Provide accommodation within easy reach of MNCH facility						
	Payment of midwife specific rural allowance						

LEGEND	
	Fully implemented
	Partially implemented
	Unable to implement

Table 6.
Comparative Progress with implementation of state specific rural incentive package.

4.1.2 Katsina State

The Katsina state government regularly paid the monthly rural allowance to midwives over the period. It also took over the payment of the rural allowances and salaries of the 18 MRRS midwives originally recruited with the funding support from W4H. Available accommodations in rural health facilities were competitively allocated to health workers (including midwives) posted to rural health facilities and a rent allowance deducted from their salaries. There was therefore no special dispensation for midwives serving in rural health facilities. Less than 30% of midwives were offered accommodation. The state government was reluctant over the period to recruit MSS and the Subsidy Reinvestment and Empowerment Programme-Maternal and Child Health (SURE-P MCH) midwives who completed their training, due to a statewide embargo on employment. However, Katsina did try to recruit the new graduates from the Katsina midwifery training institution, most of whom are native to Katsina. In addition, the community midwifery program (an expedited program to train rural women and young girls as community midwives for rural health facilities) was up and running by 2015. The state government plans to post its graduates directly to rural health facilities in their respective LGAs (**Table 6**).

4.1.3 Yobe State

Yobe state absorbed the 19 MRRS midwives previously recruited with the support from W4H into its workforce. The state government regularly paid the midwives their rural allowance of N25,000 monthly, while some LGAs supplement this with N10,000 monthly. The rural allowance was paid to any other health worker working in the rural areas. The state government constructed, and in some cases, renovated health staff accommodations in the rural health facilities and some basic furnishing was also provided. A previous United Kingdom Department for International Development (UK-DFID) funded Maternal Newborn and Child Health project, the Partnership for Reviving Routine Immunisation in Northern Nigeria-Maternal Newborn and Child Health (PRRINN-MNCH) and the state government have equipped and refurbished health facilities in the state. The State governor gave approval for recruitment of 96 additional nurses and midwives, but there were no midwives from other states who wanted to come for employment in Yobe, as a result of the non-pensionable contract and the effect of the Islamic insurgency in the state.

There was inadequate support for supportive supervision of rural midwives by the state government over the implementation period. Training and mentoring opportunities for midwives also remained a challenge. The state also was unable to implement its proposed task-shifting and task-sharing policy as it was inconsistent with existing Federal policy (**Table 6**).

4.1.4 Zamfara State

By the end of 2015, the State governor approved and had taken over payment of the salaries of all the 32 midwives working in a total of 19 rural health facilities, spread over 11 LGAs where the midwives previously had been paid by W4H. Zamfara only paid its standard allowance that it pays to all rural health workers and abandoned the additional midwife-specific rural allowance. In addition, the majority of the newly recruited midwives continued to be posted to secondary health facilities, which may not necessarily be located in rural areas. The state also did not construct the accompanying accommodations for new PHCs. W4H either built, renovated, or worked with the facility health committee to provide the accommodation for midwives where there was no suitable accommodation. The rural

midwives were provided supportive supervision by a supervisory team that was funded by some development Partners. However, this team went on supervision only when partner funds were available. There was ongoing advocacy by the SMOH to the legislature and traditional authorities on recruiting and retaining midwives in rural areas and making their salary more attractive (**Table 6**).

4.2 MRRS outcomes: progress with recruitment, deployment and retention of midwives to rural health facilities

Table 7 shows the pattern of recruitment and deployment of midwives across the four states. A total number of 477 midwives recruited and posted to rural health facilities in the study states over the period 2013–2016. Of these, 196 (41%) were from Jigawa, 126 (26,4%) from Yobe, 78 from Zamfara (16.4%), and 77 (16.1%) from Katsina. Fifty-nine (12.4%) of these midwives were recruited in 2013, 147 (31%) each in 2014 and 2015, and 124 (26%) in 2016. The proportion of midwives recruited and posted to rural Health facilities increased each year from 12.4–31% and declined moderately to 26%.

With the exception of Zamfara, all states showed a big increase in midwife recruitment from 2013 to 2014. Jigawa tripled its recruitment from 17 to 68 and

State	Year				Total
	2013	2014	2015	2016	
Jigawa	17	68	67	44	196 (41%)
Zamfara	15	18	36	9	78 (16.4%)
Katsina	12	28	13	24	77 (16.1%)
Yobe State	15	33	31	47	126 (26.4%)
Total	**59 (12.4%)**	**147 (31.0%)**	**147 (31.0%)**	**124 (26.0%)**	**477 (100%)**

Table 7.
Number of Midwives recruited and posted to Rural health facilities 2013–2016.

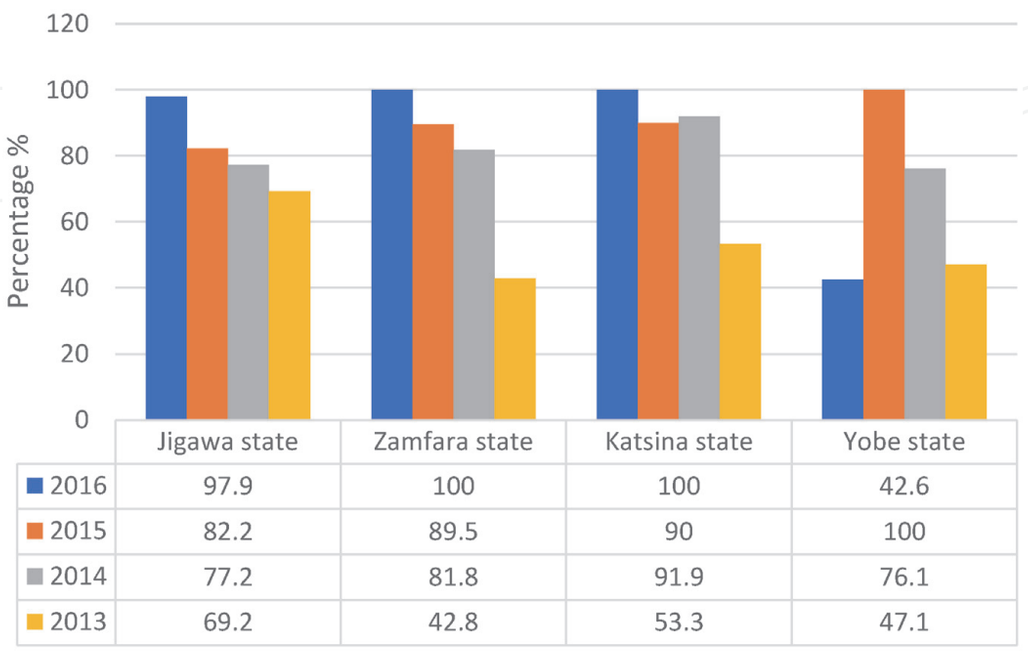

Figure 6.
Trends in Annual MW rural retention rates.

sustained this high level through 2015, but then dropped down to 44 in 2016, recruiting the most midwives (n = 196) of any state for the four-year period. Yobe recruited the second largest numbers of midwives, 126, showing steady increases in recruitment throughout the period. Katsina had small gains in recruitment for 2014–2016 over the 2013 numbers, and recruited only 77 midwives from 2013 to 2016. Zamfara recruited almost the same number of midwives as Katsina (n = 78), with the largest number in 2015, when 36 were recruited.

Midwife retention rates increased in all four states from 2013 to 2016 (**Figure 6**). In three states (Jigawa, Katsina and Zamfara), midwife retention rates increased steadily throughout the period 2013 and 2016: in Jigawa from 69.2–98%; in Katsina from 53.3–100%; and in Zamfara from 42.8–100%. In Yobe state, retention increased from 47% gradually to 100% in 2015, but then dropped slightly to 90% due to the loss of 27 midwives in the first quarter of 2016 due to deteriorating security measures following the insurgency activities of the Boko Haram terrorist group.

5. Discussion of findings and lessons learned

In spite of all the challenges encountered with its implementation, the MRRS has been a game changer in all the participating states. The key interventions implemented were: the provision of midwife specific rural allowance, ensuring regularity of payment of allowances, recruitment policy review on ban on recruitment of new health staff, provision of accommodation for staff posted to rural health facilities. Throughout the 2013–2016 period, all states increased the recruitment and retention of midwives, although more were recruited and retained in some states than others. A key cross cutting strategy for change was Advocacy on identifiable enablers for the retention of health staff in rural health facilities.

5.1 Advocacy for a favorable recruitment policy that targets rural health facility

Our implementation research showed the importance of a favorable recruitment policy environment, as exemplified in Jigawa state where progressive recruitment policies increased the number of midwives, particularly in targeted rural health facilities in the state. On the contrary, in the Katsina and Zamfara states, where there was an embargo on the recruitment of midwives amidst high maternal and newborn deaths, low recruitment of midwives, and poor access of the rural population to maternal care, progress in this regard has been significantly slow.

In advocating for reversing the ban on recruitment of health workers including midwives, we demonstrated to centers of power, the link between maternal and newborn health and access to trained midwives. This process was relentless, and response was slow as the restrictive policies were largely underpinned by budgetary constraints, particularly in the Katsina and Zamfara states. The process in Zamfara state for example illustrates the critical role of relentless advocacy appropriately targeted at "centers of power and decision making" [13]. Those targeted were state health commissioners, the Ministry of Local Government, the State House of Assembly Committee on Health, the state governor, and those who advise the governor. Two critical factors to ensuring sustainability of HRH interventions have been identified as the extent to which the chosen intervention was relevant to the need and health system context, and the extent of engagement of stakeholders in the design and identification of interventions [12]. Our study however shows that ensuring these critical factors at the design stage does not automatically translate to

implementation as other nuances depending on the context will need to be taken into consideration. Evidence has shown that influencing a change in an existing policy can be difficult and complex. As it requires complex interactions and negotiations amongst a range of stakeholders, including politicians, interest groups, technocrats, advisers, bureaucrats, and a range of other actors. Especially in a diverse country such as Nigeria, gaining the support of the communities and the public and ensuring political will have been identified as essential factors that will result in policy change [14–16].

Presentations were made by W4H to the House of Assembly Committee for Health on the HRH situation in the state, the shortage of midwives and its effect on maternal mortality, the need to save lives and achieve universal health coverage. The importance of actively engaging stakeholders has been identified as a key factor to ensure increase access to health workers in rural areas in other studies [13, 17–19]. In addition, W4H initially paid for the recruitment and posting of 20 midwives to some selected rural health facilities in support of its advocacy on the need for the state to respond to the severe midwife shortage in peripheral rural health facilities. The subsequent withdrawal of that funding after the agreed number of years not only triggered the absorption of those midwives by the state government, but also the recruitment of additional midwives by the Commissioner of Health.

The engagement of the stakeholders in advocating for the recruitment and posting of additional midwives to rural health facilities drew more attention to strengthening the functionality of primary health care facilities. The heavy workload of the secondary facilities presents a dilemma to health service managers to allocate greater numbers of midwives to them. However, improving the health workforce situation in the PHC facilities will reduce the inequitable distribution of qualified midwives, making maternal health services available to the rural population and ultimately reducing the workload in the secondary facilities. The provision of quality services at the primary health level will reduce delays and complications, and the need to refer to higher level of care which will ultimately reduce the workload in the secondary health facilities. The Nigeria health system is decentralized into three levels with responsibilities at the federal, state and local government. All the three tiers are involved to some extent in all the major health system functions including financing, stewardship, governance and service provision [20]. As a result, the state oversees secondary health facilities while the LGAs oversee the primary health care facilities, it is therefore critical that the state and LGAs plan for the staffing of rural health facilities together such that they are strategically placed to reduce the need for the secondary health facilities to poach midwives from rural health facilities.

5.2 Other enablers of successful rural retention identified in the study

Similar to findings of other studies [21–23], other identifiable enablers of success of appropriate health staff recruitment policies included: regular payment of salaries and or rural allowances by state governments, providing "permanent and pensionable" employment to every midwife irrespective of their state of origin, provision of safe and comfortable accommodation, involvement of multiple state stakeholders in planning the initiative, and advocating for the creation of state budgetary space for meeting the cost of implementing the incentive package.

Providing "permanent and pensionable" employment to every midwife irrespective of state of origin.

Most State health staff recruitment policy offers non pensionable contracts to Nigerians from other states. This is a major policy bottleneck requiring pragmatic and prudent revision. It is difficult to navigate Nigeria's federal political structure

on who gets pensionable employment, particularly if midwives from other states of the federation are willing to work in the rural health facilities of other states, at least until these states are graduating more of their own indigenes from their schools of midwifery. Perhaps some of the serious gaps in midwife availability could be mitigated if midwives from other states were offered pensionable employment. Unfortunately, the states that participated in this implementation were reluctant on providing pensionable employment to midwives from other states of the federation.

5.3 Availability of midwives

The MRRS initiative in the four states has also brought to the fore the need for them to put in place sustained strategies for the production of midwives, consistent with the efforts by W4H to increase student intakes and strengthen the capacity of state Nursing and Midwifery schools.

Huicho et al. [13] suggest that enhancing the attractiveness of working in a rural health facility can contribute to increased recruitment and retention, which may in turn have a positive effect on improving availability of health workers, and the quality of services. This framework assumes the availability of a supply of health workers who could be attracted by favorable contextual factors to accept placement in rural health facilities or underserved areas. This has not been the case in Northern Nigeria, because the production of midwives was severely constrained. While some of the states wanted to recruit additional midwives, the midwives were just not available from within the state or were constrained by the perceived unfavorable recruitment policies for non-native health workers. The logic that underpins the Huicho evaluation framework also assumes that availability of health workers naturally translates into improved quality of care and ultimately the improvement in the health status of the population. However, our evaluation shows that although the midwives may be available in the state, but they are not "available" for posting to rural facilities due to a variety of factors. The W4H MRRS initiative could directly provide funds to address some of these factors, such as a supplemental living allowance, but not all the incentive components that would make the rural areas attractive to the midwife (such as provision of comfortable accommodation as an example); interventions designed to increase availability of midwives (such as advocacy for the lifting of ban on recruitment, policy reforms to appropriately contract non-indigenous midwives); and their overall effect on midwife retention rates in the rural health facilities. Much of the advocacy implemented by W4H therefore targeted what could conceptually be described as "Centers of Power".

5.4 Advocacy targeting critical "Centers of Power" in leveraging policy change

A key lesson learned during the pilot phase that subsequently informed the full implementation phase was that a critical "center of power" that needs to be leveraged was located outside the health and health related departments. In Nigeria, policy decisions that had financial implications require the ultimate approval of the State Governor. The state governor's acceptance of the strategic response to the shortage and inequitable distribution of health staff was critical and also a potent enabler. In spite of the enthusiasm and commitment of state planning and finance officials and senior health managers to ensure that HRH issues were addressed, the state governor made the final critical decisions that could reverse the serious midwife shortages. The governor's office makes the ultimate budgetary decisions on HRH, including the recruitment of midwives, the provision of accommodation for midwives, and the payment of specific allowances to midwives. The office of the state governor is therefore a formidable ally in translating the proposed rural

incentive package into reality. This factor from our experience made MRRS very successful in Jigawa state and had to be strategically worked at in other states. It also resulted in lifting the embargo placed on the recruitment of health workers (including midwives) by some of the states. The various SICs therefore discussed at cross-state review meetings and adopted strategies for effective advocacy to engender the support of political authorities.

5.5 Provision of health staff accommodation in rural health facilities

This is capital intensive and adequately responding to this was a challenge in all the states. The extent to which states responded to this has been already discussed but it will be prudent to have a policy to insist or negotiate the inclusion of staff accommodation in any contract for newly constructed rural health facilities, while LGAs seek funding through donor and other support to provide staff accommodation for existing rural health facilities.

5.6 Rural retention rates

The retention rate of midwives in rural areas significantly improved over the period of implementation, with the retention rates being doubled in some states (Jigawa and Katsina) and tripled in other states (Yobe and Zamfara). This suggests that the provision of safe and comfortable accommodations and the payment of rural allowances on a regular and sustained basis are key in leveraging higher retention rates in the Northern Nigerian context. Key interventions implemented across the four states were payment of rural hardship allowance, and improved living condition. These were linked to increased midwife retention rates across the four states. Retention rates increased to from 69.2–98% in Jigawa; from 53.3–100% in Katsina; from 42.8–100% in Zamfara; and from 47–90% in Yobe state between 2012 to 2016. This is in-line with findings from other African countries, discrete choice experiments in Kenya and South Africa suggest that hardship allowance and opportunities for further education are incentive preferences that could attract nurses to rural health facilities [24–28].

In spite of the state of emergency declared because of terrorist insurgency, Yobe was still able to maintain a retention rate of 90% with only a drop of 10% in 2016 at the height of the insurgency. This is a significant achievement considering the importance of strengthening health systems in conflict and post-conflict settings to help provide universal health coverage for all. In addition, health systems have to be responsive and resilient, especially in light of current outbreaks of epidemics and exacerbation of conflicts in many countries. Health workers in conflict settings face additional challenges that can compromise the sustainability of the healthcare delivery system. Studies from other conflict and post-conflict countries have identified the importance of financial incentives, sense of being of service to the communities, training opportunities, and religion as key factors that motivate health workers to continue to work in these difficult environments [28–33].

5.7 Immediate post implementation challenges

Following an immediate post MRRS implementation evaluation, a number of challenges were observed. Indeed, some of the persisting challenges to effective MRRS implementation after W4H withdrew all financial support to the initiative were the lack of a coordinated plan for continuing professional development for midwives working in rural health facilities, staff shortages, delay in paying allowances/salaries, insecurity in some areas due to the activities of bandits, as well as

lack of working equipment and drug consumables [34–36]. Supportive supervision for rural midwives requires adequate funding to ensure regularity, as the status of funding for the integrated Supportive Supervision (ISS) did not significantly change since 2013 [37]. Persisting challenges also include lack of basic working equipment, drug consumable in some rural health facilities, poorly furnished accommodation (not comfortable), and poor security (caused by insurgency by Muslim militants) [38–40].

6. Conclusion

Adapting WHO recommendations on attracting, recruiting and retention of health workers in rural areas by the four states has been successfully implemented using an implementation research approach in Katsina, Yobe, Jigawa and Zamfara states of Northern Nigeria. In addition to the observed increase in recruitment and retention of midwives in rural health facilities over the period, the initiative additionally heightened awareness and determination by the implementing states to increase the production of midwives. Some of the states have moved away from the payment of midwife-specific rural allowance over and above that paid to all other health workers in rural areas to the payment of such an allowance to all category of health workers in rural and underserved areas. This is equitable, although it also de-emphasizes the focus on providing extra motivation to the midwife, a critical maternal health staff. On the other hand, this could be seen as a demonstration of the extent to which states have taken ownership of the initiative and adapted it to what works best for their particular circumstances.

Authors' contributions

AAA contributed to the study design, writing of the first draft of the manuscript, review of the manuscript at all stages and finalization. GYA designed the study and the writing of the first draft of the manuscript. FA participated in study design and reviewing the draft manuscript. SF participated in study design and reviewing the draft manuscript at all stages. All authors approved the final version of the manuscript.

Competing interests

We declare that we have no competing interests.

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