

## ORIGINAL RESEARCH ARTICLE

# Incorporating traditional birth attendants into the mainstream maternal health system in Nigeria - An evaluation of the Ondo State Agbebiye program

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## Abstract

Historically, the roles of traditional birth attendants (TBAs) in maternity care have been contentious. In 2014, Ondo state in response to an 80% proportion of TBA-related maternal deaths launched the Agbebiye program to incorporate TBAs. This study which aimed to evaluate the program involved a retrospective review of maternity records between 2013 and 2016. The results showed that the seven-month pilot phase in the state capital witnessed a reduction in TBA-related deaths when compared to the previous year. Overall, 5,606 TBAs were coopted with resultant 14,124 referrals out of 142,206 facility deliveries (9.9% referral rate). Additionally, there was a 61.8% increase in facility births from 33,077 in 2013 to 53,531 in 2016. During program implementation, there were seven maternal deaths linked to Agbebiye-registered TBAs out of 260 statewide facility deaths (2.7%). Our study confirms the positive role that TBAs' incorporation into the maternal healthcare system can play in reducing maternal deaths in low-resource countries. (*Afr J Reprod Health* 2021; 25[4]: 82-88).

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**Keywords:** Traditional birth attendants, maternal mortality, maternal health system, Ondo state, Agbebiye

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## Résumé

Historiquement, les rôles des accoucheuses traditionnelles (AT) dans les soins de maternité ont été controversés. En 2014, l'État d'Ondo, en réponse à une proportion de 80 % des décès maternels liés aux AT, a lancé le programme Agbebiye pour intégrer les AT. Cette étude qui visait à évaluer le programme impliquait un examen rétrospectif des dossiers de maternité entre 2013 et 2016. Les résultats ont montré que la phase pilote de sept mois dans la capitale de l'État a vu une réduction des décès liés aux AT par rapport à l'année précédente. Dans l'ensemble, 5 606 AT ont été cooptées avec pour résultat 14 124 références sur 142 206 accouchements en établissement (taux de référence de 9,9%). En outre, il y a eu une augmentation de 61,8 % des naissances en établissement, passant de 33 077 en 2013 à 53 531 en 2016. Au cours de la mise en œuvre du programme, il y a eu sept décès maternels liés à des accoucheuses traditionnelles enregistrées à Agbebiye sur 260 décès en établissement à l'échelle de l'État (2,7 %). Notre étude confirme le rôle positif que l'intégration des AT dans le système de santé maternelle peut jouer dans la réduction des décès maternels dans les pays à faibles ressources. (*Afr J Reprod Health* 2021; 25[4]: 82-88).

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**Mots-clés:** Accoucheuses traditionnelles, mortalité maternelle, système de santé maternelle, état d'Ondo, Agbebiye

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## Introduction

In 2015, Nigeria accounted for 19% of the global burden of maternal mortality which translated to 58,000 deaths annually<sup>1</sup>. The Nigeria Demographic and Health Surveys of 2013 and 2018 revealed that only 38% and 43% of parturients respectively, were delivered by skilled personnel<sup>2,3</sup>. Amidst a myriad of challenges militating against the attainment of the health-related Sustainable Development Goal

(SDG) in Nigeria, ensuring that all pregnant women are delivered by skilled attendants remains a recurring strategy advocated by the World Health Organization (WHO)<sup>4-6</sup>. On the other hand, a traditional birth attendant (TBA) is an unskilled person who assists the mother at childbirth and who initially acquired such experience delivering babies by self-tutelage or working with other birth attendants<sup>6</sup>. For this study, faith-based healers are also categorized as TBAs.

The precise role of TBAs in reducing maternal mortality in Nigeria has been a subject of contention. Key opinion leaders have expressed varied opinions ranging from advocating the promotion of their practices to outright rejection<sup>7</sup>. In the last decade, an array of publications emanated from all parts of the country on evaluations of the knowledge, capabilities, and practices of TBAs. A significant number of these publications were cross-sectional questionnaire-based studies from either the perspectives of parturients or TBAs<sup>8-14</sup>. Some papers showcased the benefits of training these unskilled personnel<sup>15,16</sup>. Others conducted systematic reviews to make overall deductions and recommendations<sup>17-19</sup>. To the best of the researchers' knowledge, no publication has evaluated a strategic policy incorporating TBAs into the mainstream maternal health system on a statewide level.

In October 2009, Ondo state in southwest Nigeria implemented multi-faceted maternal, newborn, and child health strategies under the Abiye (safe motherhood) program. These essentially involved: improving the supply and demand side of health services, eradicating financial barriers, and tracking all pregnant women from conception until delivery<sup>20</sup>. However, the initial scarcity of relevant statewide maternal health indicators and accurate data made it difficult to appropriately plan, monitor, and evaluate the impact of these interventions. Several pragmatic steps were then taken including the legislation of the Confidential Enquiries into Maternal Deaths in Ondo State (CEMDOS) in May, 2010<sup>21</sup>. The maiden one-year report in 2013 revealed that about 80% of maternal deaths recorded were associated with complications from late referrals and or mismanagement of labor cases by TBAs. This evidence-based result prompted the formulation and implementation of a homegrown policy the following year to limit, regulate and incorporate their practices. To fill the current information gap, this study aims to evaluate the incorporation of TBAs into the mainstream maternal health system in Ondo State.

### ***The Agbebiye program***

The policy initiative was christened Agbebiye, a Yoruba term literarily translated to mean utilizing TBAs (known locally as Agbebis) to safely deliver

mothers. The main goal of the program was the eradication of TBA-related maternal mortality in Ondo state. The key personnel involved in the operations of the Agbebiye program included the pre-registered TBAs, the Abiye vanguards (volunteers recommended by members of community development committees), health rangers (re-trained community health extension workers), the Medical Officers of Health in the Local Government Areas (LGAs), prominent traditional and religious leaders, civil society activists as well as law enforcement agents. State-level coordination was by the supervising Ministry of Health (MOH), Hospitals' Management Board (overseeing healthcare activities in secondary and specialist facilities), and the Primary Health Care Development Board (overseeing activities in LGAs and the field operations of the program).

The program implementation process began with the identification and voluntary registration of all TBAs operating in a particular LGA following extensive community sensitization and awareness campaigns. In collaboration with the health rangers and Medical Officers of Health, the TBAs registered the pregnant women in their centers or domestic homes, monitored antenatal progress, and provided health education. At term, prior to any pregnancy or labor-related complications, they refer or physically accompany parturients to the nearest state-run maternity center for safe delivery at no cost. In exchange for the uncomplicated referrals and not to be deprived of livelihood, a TBA received a payment voucher per parturient equivalent of 2000NGN (~4USD) which would be redeemed later. To facilitate the pursuit of alternative means of livelihood within a pre-determined period of about a year, skill acquisition workshops were organized by the Ondo State Primary Health Care Development Board (OSPHCDB). These included catering, bakery as well as textile, soap, and bead-making, among others. The state government also granted interest-free start-up capital for each category of TBAs after their training workshop certifications.

Concurrently, TBAs were prohibited from taking deliveries at the risk of prosecution, fines, jail time, and sealing of their premises. These punitive actions were premised on existing laws governing the establishment of unregistered healthcare facilities in the state. In line with the umbrella Abiye program and the expected upsurge

in capacity utilization, the government undertook structural renovations and equipment upgrade of PHC facilities. In addition, there were increased employment and enhanced remuneration of all cadres of healthcare workers, particularly at low and middle levels. In collaboration with law enforcement agents, the vanguards (who served as liaison officers between the TBAs, the community, and authorities) were mandated to ensure the rules guiding the policy were complied with. The latter also attended quarterly data and logistics review meetings hosted by the OSPHCDB.

## Methods

### Study setting

Ondo state is situated in the southwest geo-political zone of Nigeria and during the period of review, had an estimated population of about 4,000,000<sup>22</sup>. It comprises 18 LGAs, 203 wards, and hosts 543 primary healthcare (PHC) facilities, 18 secondary level hospitals (one per LGA) as well as five specialist referral centres. Though an oil-producing state with rich mineral deposits, it is a largely rural and agrarian society noted for cocoa cultivation among other cash crops. Its capital is in Akure South LGA while other well-populated councils include Ondo West, Akoko Northeast, Ilaje, and Okitipupa.

### Study design

This was a retrospective descriptive study spanning the year preceding the launch of the program (from February 2013) to the period of phased implementation (December 2016). Data relating to the number of facility deliveries across the state were obtained from the centralized District Health Information Software 2 (DHIS2) which is a secure, open-source, web-based data input platform adopted by the federal government. Those pertaining to maternal deaths (including age, parity as well as time, date, place, and cause of death) were retrieved from the Office of CEMDOS under the jurisdiction of the Directorate of Planning, Research and Statistics (DPRS) of the MOH. The TBA-specific data on the other hand were retrieved from the DPRS of the OSPHCDB. While the DHIS2 data are available in reproducible electronic format, the other two sources comprise hard copy documents securely kept in well labelled file cabinets in the individual offices. All data were

personally collected by the researchers. In addition, purposive literature searches of electronic databases (Google scholar, Jstor, Hinari) were conducted. This was to identify previous empirical works, review articles, reports, and peer-review publications on TBAs.

### Data analysis

Data entry and analysis utilized Microsoft Excel 2010 and Win PEPI version 11.65 software. The categorical variables were expressed as frequencies (percentages) while data were presented as tables and charts. The Chi-square test was used to ascertain significant differences ( $p < 0.05$  and 95% confidence level) for other relevant variables. A correlation analysis was used to determine the relationship between the observed differences in the facility deliveries at the primary and the secondary health facilities during the pilot phase.

## Results

The program was piloted between February and August 2014 in Akure South LGA using two reference referral facilities, namely, the Mother and Child Hospital Akure (at specialist secondary healthcare level) as well as the Comprehensive Health Centre Arakale (at primary level). During the period, there were 362 Agbebiye referrals out of 4,757 combined births (7.6% referral rate). There were also seven recorded maternal deaths resulting in a facility-based maternal mortality ratio of 147 per 100,000 births. None of those deaths emanated from Agbebiye-registered TBAs. Meanwhile, during the same months of the preceding year 2013, there were 5,653 combined births out of which 12 maternal deaths were recorded (including nine associated with TBAs). This resulted in a ratio of 212 per 100,000 births. These data are better illustrated in Table 1. A quadratic (non-linear) relationship (regression - 4981.318, P-value - 0.065) exists between the observed differences in the facility deliveries during the two periods.

The state's records showed a 61.8% increase in facility births from 33,077 in the pre-implementation year 2013 to 53,531 in 2016. In addition, there was a statistically significant difference ( $p$ -value  $< 0.05$ ) when comparing the deliveries that took place at the primary and secondary healthcare facilities during the study period. These are shown in Table 2.

**Table 1:** Distribution and comparison of monthly facility births, deaths, and maternal mortality ratio by year

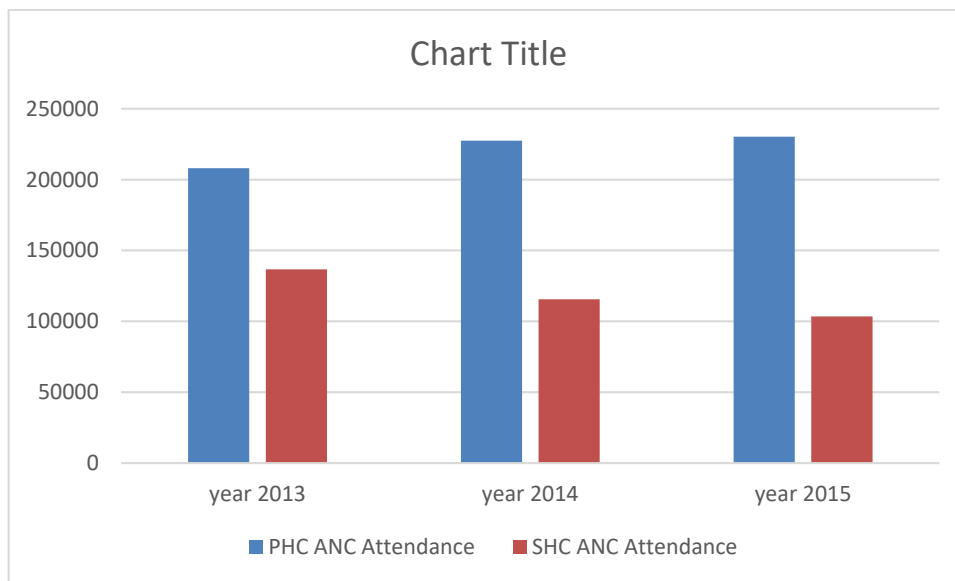
Month	2013 (Pre-pilot)		2014 (Pilot)	
	Births	Maternal Deaths	Births	Maternal Deaths
February	720	1	713	1
March	776	5	819	1
April	884	2	861	3
May	966	0	927	0
June	806	1	779	2
July	783	1	301	0
August	718	2	357	0
<b>Total</b>	<b>5,653</b>	<b>12</b>	<b>4,757</b>	<b>7</b>
<b>Maternal mortality ratio</b>	<b>212 per 100,000 births</b>		<b>147 per 100,000 births</b>	

**Table 2:** Cross-tabulation comparing deliveries at the primary and secondary health care facilities by year

Year	Facility deliveries		Total (%)
	PHC (%)	SHC (%)	
2013	21,694 (16.14)	11,383 (27.82)	33,077 (18.87)
2014	29,805 (22.18)	9,811 (23.99)	39,616 (22.60)
2015	34,911 (25.98)	14,148 (34.59)	49,059 (27.99)
2016	47,969 (35.70)	5,562 (13.60)	53,531 (30.54)
<b>Total</b>	<b>134,379 (100.00)</b>	<b>40,904 (100.00)</b>	<b>175,283 (100.00)</b>

Pearson Chi-square = 8159.093, P value= 0.000

PHC – primary healthcare; SHC – secondary healthcare



ANC – antenatal clinic, PHC – primary healthcare, SHC – secondary healthcare

**Figure 1:** Distribution of antenatal clinic attendance by year

Overall, 5,606 TBAs and 413 Abiye vanguards were coopted into the program across the 203 wards in the 18 LGAs of Ondo State. There were 14,124 Agbebiye referrals (including 48 sets of twins, nine triplets, and two quadruplets) out of 142,206 state-wide facility births during the three years of implementation, giving a referral rate of 9.9%. In

addition, there were 19 TBA-related maternal deaths out of which only seven emanated from Agbebiye-registered TBAs while the remaining deaths were from unregistered ones.

The annual figures of antenatal clinic (ANC) attendance at the PHC facilities across the 18 LGAs were 208,016 in 2013 and 230,291 in

2015, an increase of 10.7%. Contrastingly at the secondary facility level, the figures were 136,652 and 103,437 in 2013 and 2015, respectively. This resulted in a reduction of 24.3%. These findings are illustrated in Figure 1.

## Discussion

The seven-month Agbebiye pilot in the referral facilities showed a reduction in recorded births compared to the previous year. This was attributable to prolonged strike action from mid-2014 by sections of state-employed healthcare workers which led to reduced clinical activities in the referral facilities. Despite this, there was a reduction in TBA-related maternal deaths when compared to the previous year although a statistical non-linear relationship between the observed differences was obtained. This reduction in maternal deaths is assumed to be due to the initial enthusiastic participation of stakeholders leading to prompt referral of parturients to health facilities before the onset of life-threatening complications. A CEMDOS report revealed that a 33% reduction in statewide maternal mortality ratio from 253 per 100,000 births in 2012/2013 to 170 in 2014/2015 was substantially attributed to the success of the Agbebiye program<sup>21</sup>. To buttress this, Akure's busiest referral center recorded a consistent reduction in the number of maternal deaths in 2014 during the pilot phase of the initiative<sup>23</sup>. The apparent success of that phase facilitated the scaling up of the program to other LGAs.

According to the CEMDOS reports, there were 260 maternal deaths during the three years of program implementation<sup>21</sup>. This study revealed that 12 (4.6%) and seven (2.7%) of those deaths were linked to non-registered and Agbebiye-registered TBAs, respectively. These rates are marked improvements when compared to 80% TBA-related maternal deaths obtained in the pre-implementation year of 2013. The 61.8% increase in total facility births between 2013 and 2016 translated to increased skilled attendance, further strengthening the positive impact of the home-grown initiative.

Several publications highlighted the positive attributes and potentials of TBAs including their accessibility, cultural acceptability, affordability, and adaptability<sup>8-14</sup>. However, a particular publication sought to summarize the pros and cons of the contentious roles of TBAs in

Nigeria<sup>7</sup>. In the latter paper, a protagonist highlighted the dearth of HCPs in the country compounded by the reluctance of available ones to work in rural communities. The registration, training, and equipping of local TBAs were then advocated to fill the gaps of care. On the other hand, an antagonist in the same publication proposed scrapping of TBAs having established that most are illiterate, set in their ways, un-trainable, and as such have little or no role to play. The latter researcher advocated that the country's focus should instead be on educating and empowering women in communities, improving health infrastructure as well as re-training and incentivizing HCPs to provide the necessary needed services.

The Agbebiye program took a middle ground whereby the TBAs were pre-registered, trained on the provision of guided health education to pregnant women, and incentivized to refer parturients to hospitals rather than conduct deliveries. These were implemented while concurrently phasing them out through training on alternative skills acquisition. Other researchers conducted systematic reviews of scientific literature with a consensus that TBAs have roles to play in improving Nigeria's health system when properly harnessed<sup>17-19</sup>. The strategy of incentivizing TBAs to encourage patient referrals to hospitals is also not novel, as several local researchers have advocated for this strategy<sup>24,25</sup>.

Our study also showed that the immediate beneficiaries of improved capacity utilization from TBA referrals were primary healthcare facilities with about 60% increased delivery rate within three years (2014 to 2016) compared to secondary ones which had about 43% reduction. This finding is unsurprising considering most TBAs and pregnant women have easier access to the former located within their respective rural communities compared to the latter in usually more distant urban areas. The lower figure of increase in ANC attendance at the PHC level of about 11% could be attributed to the fact that prior to the program; pregnant women in many communities traditionally availed themselves of clinic visits in preference to being delivered in the same facilities.

## Implications for policy formulation

Nigeria is faced with challenges bedeviling its maternal health system and militating against the

attainment of health-related SDGs. These include high poverty levels among the general populace, poor female empowerment, dearth and inequitable distribution of skilled health personnel, dilapidating infrastructure as well as fiscal indiscipline. It is clear that whatever resources are capable of effecting a positive change should be deployed. Traditional birth attendants are such human resources with enough positive attributes to be appropriately guided towards improving maternal wellbeing.

The Agbebiye program was strategic to the repositioning of the primary health care system in Ondo state as the first point of contact for service delivery in line with the Alma Atta declaration of 1978<sup>26</sup>. In addition, there was a strengthening of the two-way referral system between the primary and secondary healthcare levels by virtue of the synchronized activities of the HMB and OSPHCDB.

The attributes of the TBAs in the program could be harnessed for other states of the federation. However, it should be left to individual states and LGAs to develop the TBAs' specific job descriptions based on competencies and capabilities that are short of encouraging conduct of deliveries. The keys to success will include adequate training in the sphere of these activities, sustainable program funding, and ardent supervision by healthcare professionals.

### **Ethical consideration**

Ethical approval for the study was obtained from the Ondo State Health Research and Ethics Committee.

### **Conclusion**

Our study showcased positive roles for TBAs when strategically incorporated into the mainstream maternal health system by helping to reduce the maternal mortality ratio in the state. The program also increased capacity utilization in health facilities, particularly at the PHC level. It is recommended that the Agbebiye program be emulated by other states and LGAs with appropriate modifications in implementation strategies.

### **Acknowledgement**

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Maternal Death Reduction (2014 – 2016). This study was self-funded.

### **Conflict of interest**

The authors declare no conflict of interest.

### **Availability of data and materials**

The datasets generated and analyzed during this study are not publicly available due to their sensitive nature and the need to ensure confidentiality. However, they are available from the Directorates of Planning, Research, and Statistics of the Ondo State Ministry of Health and Primary Health Care Development Board as well as the DHIS2, upon reasonable request.

### **Consent for publication**

Consent to publish is not applicable for this submission as no personal information is provided.

### **Declaration**

All authors are employees of the Ondo State Government. The first author is the pioneer Chairperson of CEMDOS while the second and third are the pioneer Executive Secretary and Director (Planning, Research, and Statistics) of the Ondo State Primary Health Care Development Board, respectively.

### **Contribution of Authors**

LO and OO conceived and designed the manuscript. OO and YO collected and analyzed data. OL prepared the manuscript while all three authors approved the final draft.

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