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Analysis of the Changing Role of Traditional Birth Attendants in Tirol West County, South Sudan

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Abstract

Effective from May 2014, community-based traditional birth attendants (TBAs) in Yirol West County, South Sudan, were directed to start referring all women in labour to health facilities for childbirth instead of assisting them in the villages. This study aimed to understand the degree of integration of TBAs health system, to reveal the factors influencing the integration, and to explore the perceived solutions to the challenges faced by TBAs. A qualitative study utilising 11 focus group discussions with TBAs, 6 focus group discussions with women, and 18 key informant interviews with members of village health committees, staff of health facilities, and staff of the County Health Department was conducted. Data were analysed using qualitative content analysis. The study found that many TBAs were referring women to health facilities for delivery, but some were still attending to deliveries at home. Facilitators of the adoption of the new role by TBAs were: acceptance of the new TBAs' role by the community, women and TBAs, perceptions about institutional childbirth and risks of home childbirth, personal commitment and motivation by some communication problems between TBAs and health care facilities, delays in seeking care by women, insecurity, lack of materials and supplies for TBAs, health system constraints, insufficient incentives for long distances to health facilities and transportation problems. This study has revealed encouraging developments in TBAs' integration in the formal health system in Yirol West. However, there is need to address the challenges faced by TBAs in assuming their new role in order to sustain the integration.

Keyword: *TBAs Health system, TBAs In South Sudan, TBAs in Yirol, Focused antenatal care, Care of uncomplicated delivery, Emergency Obstetric and Newborn Care (HemOnc), Focused postnatal care.*

Abbreviations

ANC	Antenatal care
ARV	Antiretroviral
AVD	Assisted vaginal delivery
BEmONC	Basic emergency obstetrics and newborn care
CBR	Crude birth rate
CEmONC	Comprehensive emergency obstetrics and newborn care
CFR	Case fatality rate
CHC	Community health centre
CHD	County Health Department
CHO	Community health officer
CHP	Community Health Post
COMAHS	College of Medicine and Allied Health Sciences
C-Section	Caesarean Section
CSMMR	Child Survival and Maternal Mortality Reduction
CSSD	Central Stores and Sterilization Department
DHS	Demographic and Health Survey
EmONC	Emergency obstetric & newborn care
ER	Emergency room
FGD	Focus group discussion
HAART	Highly active antiretroviral therapy
IMR	Infant mortality rate

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IPT	Intermittent preventive treatment
LBW	Low birth weight
MCH Aides	Maternal and child health aides
MCHP	Maternal and Child Health Post
MDG	Millennium Development Goals
MICS	Multiple Indicator Cluster Survey
MMR	Maternal mortality ratio
MoHS	Ministry of Health and Sanitation
MRP	Manual removal of placenta
MVA	Manual vacuum aspiration
NGO	Nongovernmental organization
OR	Operating rooms
PHC	Primary Health Care
PHU	Peripheral Health Unit
PMTCT	Prevention of mother to child transmission
PNC	Postnatal care
PPH	Post partum haemorrhage
TBA	Traditional birth attendant
TFR	Total fertility rate
UNFPA	United Nations Population Fund
UNICEF	United Nations Children Fund
WHO	World Health Organization

Introduction

In the year 2000, the world's nations pledged to reduce the maternal mortality ratio (MMR) by 75% as the fifth-millennium development goal and ensure universal access to reproductive health by 2015 (ref). Overall, the achievement of this goal has been unequal and many countries, especially in sub-Saharan Africa, are unlikely to reach their targets. By 2014, respect to 1990 baseline, maternal mortality ratio had declined by only 45 per cent globally and by 49 per cent in sub-Saharan Africa[1]. In 2013, WHO estimated that 289,000 women lose their lives during pregnancy and childbirth every year [1], of which 179,000 (62%) in sub-Saharan African countries.

In developing countries, especially in communities with poor access to health facilities and an insufficient number of skilled health personnel, many births take place at home under the supervision of traditional birth attendants (TBAs). South Sudan has one of the world’s lowest levels of access to maternal health services due to a fragile health system and a combination of socio-cultural, economical political factors. Due to lack of qualified staffs, TBAs have been providing maternal health services both at lower level health facilities [primary health care centers (PHCCs) and primary health care units (PHCUs)] and at home. In Tirol West County, since May 2014, home delivery by TBAs was banned and TBAs started receiving incentives to refer women to health facilities for delivery. So far, routine health data show an increasing trend in institutional delivery.

The objective of this study is to explore whether the current model of TBA integration into the health system is effective in promoting access to and utilization of maternal health services and how this integration is perceived by the TBAs, pregnant women, health personnel and the community. The study will collect primary data utilizing two qualitative methods: Focus Group Discussions (FGDs) with TBAs and mothers, and Key Informant Interviews (KIIs) with village health committee members, skilled health workers and County Health Department staff.

South Sudan has the highest maternal mortality rate in the world, at 2,045 per 100,000 live births, according to the World Health Organization (WHO).

Qualitative data from FGDs and KIIs will be analyzed using thematic and content analysis approach. Data handling and coding will be performed using NVivo software.

The indicator of maternal mortality is the most difficult to improve when compared to neonatal, infant and child mortality. Reduction in MMR requires high coverage of quality services for childbirth-impossible, for instance, where there is a shortage of qualified personnel- an efficient

referral system and conductive political, economic and socio-cultural context. The 3 delays model, often used to describe barriers in access to maternal health services, captures all these aspect and their relationship [3].

In the 1970s, the international response to maternal mortality purposely included traditional birth attendants (TBAs). Although TBAs working in well-structured contexts have helped to save the lives of many mothers and their children [2], they have failed in adequately address obstetric complications because of lack of equipment and specific knowledge.. After twenty years, and with evidence that investing in the training of TBAs does not affect MMR, ensuring the presence at the delivery time of skilled birth attendants (SBAs) became the key strategy to reduce maternal mortality in developing countries, as they are those in conditions to manage obstetric complications, which might unpredictably arise. However, twenty years of this latter approach have not led to the achievement of maternal health targets in many countries because of various challenges including personnel shortages and persistent financial, geographic, logistic and socio-cultural barriers.

Lack of universal skilled birth attendance at delivery is linked to qualified staff shortages and to the obstacles mothers are encountering in reaching the services offering SBA delivery. [4, 5]. Although there has been 66% worldwide increase in skilled delivery assistance [6], each year 45 million women still deliver without skilled attendance, two thirds being attended just by TBAs [7]. TBAs continue to attend to women during delivery in areas where SBAs are scarce, when services are not easy to access, when the health services demand is affected by socio and cultural factors [8, 9]. The disconnection between TBAs, SBAs and the health system as a whole has a negative impact on access to maternal health services [10].

Integration of TBAs in the health system

Integration of TBAs into the health system is driven by necessity because they are the main providers of child delivery care in most rural areas where SBAs are scarce. Successful integration of TBAs into the health system requires supervision and continuous refreshment of their knowledge and skills and a strengthen link between them and the health care units they have to refer women to. It must be taken into account TBAs integration consist in them to play an important part in raising women awareness on safe motherhood, including the importance of SBA delivery, and in referring them to health facilities for ANC, PNC and delivery. The directly provided assistance to a woman giving birth should gradually become a last resort initiative, due to exceptional circumstances and even in this case the TBA should be ready to timely identify any risk signal and to immediately refer. Not all TBAs should be considered for integration, only those meeting certain criteria, as the willing to change their role as described above and according to the guidelines of the Ministry of Health and the recognition and endorsement of their activities by the communities they are living in.

Integration of TBAs into the health formal health systems is expected to increase skilled birth attendance [11]. Studies have shown that training of TBAs as promoters of institutional delivery, coupled with continuous supervision and monitoring of their activities leads to a rapid rise of this indicator [12]. Studies in Bangladesh showed that supervision of TBAs by SBAs led to a sudden increase in skilled deliveries [13]. Other studies have found that creating link between TBAs and staff in the units, especially SBAs, increased skilled deliveries from 37% to 95% [14] and from 5% to 48.7% [15]. However, some studies, such as the one by Lynch and Derveeuw [16], have found that training and supervision of TBAs does not increase skilled deliveries. A multinational study on the use of pictorial home based maternal records by TBAs reported mixed results [17]: referral of cases increased in the Philippines from 51% to 94%, but showed little or no improvement in Zambia, Senegal, and Pakistan. This seems to suggest the impact of TBAs integration on access to SBA delivery may change according to the context and its peculiar factors.

A four-year qualitative research was done in Somaliland to establish the consequences of the changed roles of TBAs in a rural area, where they were trained as health promoters and birth companions. The TBAs were linked to Maternal and Child Health Care Facilities (MCHCFs) and for every pregnant woman in labor referred or escorted to the unit they were receiving an incentive equivalent to 5$. The result was five times increase of safe deliveries in the units compared to the baseline [18].

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Research has shown that TBAs training may improve their maternal health related knowledge, attitude and behaviors and lead to better pregnancy outcomes [19]. However, the link between TBAs training and improved referral of women with obstetric complications is still uncertain as the quality of studies that have assessed this outcome is weak [16]. A recent Cochrane review concluded that the potential of TBAs training to reduce peri-neonatal mortality is promising when combined with improved health services [2]. There is now a renewed interest in the role of the TBA, especially in links with the SBA services, so that they become promoters of safe childbirth within health units.

Review studies have shown that inclusion of TBAs in multi-sectoral initiatives of community mobilization and awareness can achieve good results [20]. The role of the community is essential in increasing the number of SBAs. Studies have shown that an increase in the quality of care alone is not sufficient to significantly increase the demand for maternal health services. A large scale study done in Bangladesh [28], showed that by increasing the quality of care, there was an increase in SBA at delivery from only 7.2% to 12.5%. But if this is combined with involvement of TBAs, SBA increase from 2.4% to 20.5%. Gabrysch et al. [14], and Skinner and Rathavy [21] have shown that involving the community in maternal health care can yield good results. There are different forms of involvement including education groups [22], health education sessions held together by TBAs and midwife [23], health committees that make promotion of safe childbirth in the community[13-16], monthly meetings [15, 17, 24-26] and mobilization through family groups and women groups [27].

Context

South Sudan has the highest maternal mortality ratio in the world: 2054 deaths per 100,000 live births [29]. This is likely to be the result of a complex group of factors, including geographic and logistic constraints to access, made even more concerning by the adverse environmental conditions (long distances without any road other than rough path ways which become unpassable during the raining season), direct and indirect costs, socio and cultural barriers to utilization of maternal services (which are not familiar for a mainly nomadic population) and poor availability of quality health services due to the generally fragile health system.

South Sudan Government is aware of such situation and it has taken seriously the need of inverting it, including maternal and U5 mortality reduction amongst the objective of South Sudan Development Plan 2011-2013. Coherently, the Ministry of Health has elaborated the Health Sector Development Plan 2012-2016, whose goal is to "Contribute to the reduction of maternal and infant mortality and improve the overall health status as well as the quality of life of the South Sudanese population." The cornerstone of the HSDP is the Basic Package of Health Services (BPHS), which contains a set of high impact interventions aimed at reducing the leading causes of morbidity and mortality. The HSDP emphasizes the importance of adequate human resources for health and improved accessibility of the health service by the population, and community empowerment through health education.

The BPHS, besides illustrating the intervention to be carried on at different level of the health system, lists all the human and material resources required at this scope. For what concerns TBAs, it recognizes they may still play an important part while waiting for qualified SBAs being trained and enrolled but clearly states that they will be gradually phase out, being replaced by other low and middle level cadre (as Mother and Child Health Workers and Community Midwife), having anyway a more consistent preparation. Their role is limited to "counseling for the promotion of preventive reproductive and obstetric health service, […] prompt identification and referral of obstetric complications" and their involvement in delivery assistance is foreseen just in case of "abrupt labor on transfer".

Currently South Sudan is still in the process of training qualified SBAs; the choice of terminating Community and Enrolled Midwife courses, focusing on the one for Registered Midwife implies longer time to reach an adequate number of high level cadres and therefore maternal services keep being run by the lower profiles, including TBAs, who are operating in the communities but at Health Facilities level as well (especially in Primary Health Care Units and Centres, but also in Hospitals). The first version of the Harmonized Salary Scale the Ministry of Health introduced for the health personnel (July 2013) included the TBA profile as part of PHCU team, while this was not there in the second (being a TBA considered a simple support staff, if not formally trained for 9 months).

Tirol West, Lakes State, is one of the counties with big challenges in health service delivery. The main ethnic group is Dinka (internally divided in different clans, as Atuot, Ciec, Jier); a semi-nomadic population relying on pastoral activities, whose 48.9% of the population lives under the poverty line. The vaccination coverage of children under one is 22%, and the under-5 mortality is more than 250/1,000. The percentage of deliveries assisted by skilled personnel increased from 6% in 2010 to 23% in 2013 and now stands at 26%. This remarkable improvement, however, is entirely depending on Tirol County Hospital and St Immaculate Mapourdit Hospital, as no qualified midwifes (or other cadre as Clinical Officers or Nurses) are operating in the PHC facilities. Tirol County Hospital can count on three Medical Doctors (all international staff) and 6 midwives (5 national) for an estimated catchment population of 301,633 people in the Greater Tirol area which consists of three counties: Tirol West 142,701, Tirol East 95,810 and Awerial 63,122. This implies that there is one midwife per 2,513 expectant pregnant women.

Since 2011, Doctors with Africa CUAMM, hereafter referred to as CUAMM, an Italian non-governmental organization (NGO), is supporting the government owned hospital of Tirol West County, specifically targeting mothers and children. Important steps have been moved in terms of increased access and utilization, however wide gaps still exist [30]. In 2014, Tirol Hospital was able to capture and assist the 34% of expected Major Direct Obstetric Complications in Tirol West County and to register a further increment in the number of assister deliveries (passed from 344 in 2008 to 1461 in 2014). However the drop out between mothers attending ANC services and those choosing to deliver in the Hospital remains concerning; in 2014 there were 4582 ANC first visits (80% coverage), but only 1461 hospital based deliveries (26% coverage). Considerable also the frop out respect to ANC 4th visit, whose coverage reached only the 34%.

ANC 1st visits in PHCCs/PHCUs in 2010 was around 2%, following introduction of an outreach program from the county hospital, this figure increased to 23%, while ANC 4 coverage rose to 11%. After the recruitment of TBAs in peripheral health units in February 2014, the coverage of ANC 1 reached 61%. In the period January to August 2015, the coverage of ANC 1 has been 52% and ANC 4 22%.

Since 2012, CUAMM is supporting the County Health Department (CHD) in strengthening county wide primary healthcare services delivery. The intervention started with the implementation of an integrated outreaches plan, carried on by a mobile team composed of Tirol County Hospital staff and covering the most remote areas with the provision of EPI, ANC, consultation and health education. In the following years, CUAMM has focused on the poorly operating health facilities; at present, 12 of them have been reactivated through infrastructure renovation, equipment and supplies provision and staff hiring, training, supervision.

Concerning the staff, the main problem to deal with is the absolute lack of skilled health personnel in peripheral health units. Thus, TBAs, known to be very active in the community, have been employed to fill the human resource gaps at PHCCs/PHCUs. Despite being unqualified staff, they have continued to yield good results, thanks to an effective combination of on job (in PHC facility and at Tirol County Hospital) and formal trainings and supervision, including the promotion of the use of national standardized clinical guidelines.

Additionally, with effect from May 2014, community based TBAs were asked to stop home delivery and later offered an incentive for each woman referred to the health facility for delivery. Further, women delivering in the health facilities started receiving a newborn care kit, as demand side incentive. In January 2015, the proportion of expected deliveries conducted in PHCCs/PHCUs by facility based TBAs had increased from 5.5% to 20%. Overall, the coverage of institutional delivery in Tirol west increased from 31% to 47%.

Although facility-based delivery cannot be defined as SBA when occurring in a PHCU or PHCC, as TBAs are not qualified personnel, it can be considered a safe one, as conducted by staff who have been trained, who have access to adequate equipment and supplies and who are able to recognize risk signals and promptly activate the referral system (ambulance) to transfer the mother to the Hospital. For this reason, the above described intervention consisting in attracting women to the HFs through TBAs involvement and demand side incentives is considered functional to achieve the objective of

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reducing maternal mortality and morbidity through an increased access and utilization of maternal health services.

What done at PHC level reflects a similar initiative previously taken at Tirol County Hospital. Besides keeping training on job the TBAs who are part of Hospital workforce (as MoH staff) and who are operating under the constant supervision of qualified midwifes, it was identified a group of village based TBAs, living in Hospital surrounding areas and they have been trained on safe motherhood promotion and prompt referral; on monthly bases they are meeting to report their activities and to receive an incentive for each woman they have brought to the Hospital for delivery. Mothers delivering in the Hospital as well are receiving the baby kit as demand side incentive.

The positive results mentioned above are likely to be due to a combination of different interventions, being the gradually changing role of TBAs and their integration into the formal health system on of them. Despite it seeming quite promising, still little is known about how the integration is working (and which enabling factors or barriers is eventually encountering), the adaptation of TBAs to their new role, perceptions of different stakeholders towards these phenomena.

Research question and objectives

Research question

Is the model of TBA integration into the formal health system currently applied in Tirol West County effective in increasing access and utilization of maternal health services in general and of facility-based delivery in particular?

Which are the factors facilitating TBAs integration into formal Health System and which are those challenging it?

Is TBAs integration into formal Health System well accepted by the TBAs, pregnant women, health personnel and the community and therefore sustainable on the longer term and replicable on wider scale?

Objectives

1. General objective

To explore whether the model of TBA integration into the health system currently applied in Tirol West Countty is effective in increasing access and utilization of maternal health services in general and of facility based delivery in particular, which factors are facilitating or, at the contrary, hampering it and how it is perceived by the TBAs, pregnant women, health personnel and the community and therefore the extent it is sustainable on longer term and replicable on wider scale into the State and the Country.

2. Specific objectives

To explore if the new role of TBAs in Tirol West County (as providers of services in PHCC/PHCUs and as institutional delivery promoters in the communities) is enabling women overcoming the main barriers they are encountering in accessing and using maternal health services or not (and if, at the contrary, it is constituting an additional obstacle).

To explore if the new role of TBAs in Tirol West County (as providers of services in PHCC/PHCUs and as institutional delivery promoters in the communities) is perceived as having a specific added value compared to other interventions in place, aimed to promote access to and utilization of maternal health services.

To understand which factors are facilitating or challenging TBAs in assuming their new role in the health system.

To assess the perception of community based TBAs towards their new role of promoting of skilled birth attendance and accompanying women to health facilities.

To assess the perception of facility based TBAs towards their role of providing maternity services in these facilities.

To assess the perception of women on the role of TBAs as providers of services in PHCC/PHCUs and as institutional delivery promoters in the communities and their preference between the current model and the previous one (TBAs assisting deliveries in the villages).

To assess the perception of health professionals on the role of TBAs as providers of services in PHCC/PHCUs and as institutional delivery promoters.

To assess the perception of the community on the roles of TBAs as providers of services in PHCC/PHCUs and as institutional delivery promoters in the communities and their preference between the current model and the previous one (TBAs assisting deliveries in the villages).

To assess the perception of local authorities towards TBAs integration into formal health system and their attitude towards further development of this model.

Methodology

Study design

This will be a qualitative study utilizing focus group discussions (FGDs) and key informant interviews (KIIs) as data collection methods. FGDs will be used to explore perceptions towards the new role of TBAs, the enabling or constraining factors affecting their integration into the health system and its impact on maternal health services access and utilization, observing how TBAs and mothers interact in a social context and how this interaction modifies their personal views and opinions. KIIs will be used to gather in-depth information from health professionals and community leaders on the integration of TBAs in the health system and to triangulate the information collected through FGDs.

Study population and study samples

The study will take place in Tirol West County, Lakes State. The county has an estimated population of around 123,292 people divided into the following 7 payams: Abang, Anuol, Geng Geng, Aluakluak, Geer, Mapourdit, Tirol Town.

In the county there are XXX TBAs recognized by the CHD, XXX working in the Hospital, XXX working in the PHC facilities, XXX community based. They can be further divided in 1) TBAs who have abandoned home delivery and are now accompanying women to deliver in health facilities, 2) TBAs who are still attending to home deliveries (and who might or not refer as well). All of them will be included in the study.

Besides from TBAs, data will be collected from different sources including: women who delivered in the past one year, health professionals, the staff of CHD and village health committee members. TBAs and mothers will be part of the FGD, while the other profile will be interviewed. The health professionals to be interviewed will include: 1) Professional maternity staff at PHCCs/PHCUs, 2) head staffs (in-charges) of PHCCs/PHCUs, and 3) Professional maternity staff at the hospitals. The County Health Department staff who will participate into the KKI will be the county medical officer and the head of maternal health services in the county. The **figure 1** summarizes the study samples.

Sample size and sampling process

Being a qualitative study, the sample should be theoretical, meaning the choice of the number and type of people to be enrolled depend on the extent they can contribute to provide relevant information to respond to the research question (purposively rather than statistical selection).

The County Authorities will provide the list of recognized facilities and community based TBAs and all of them will be included in the study as FGD participants.

The TBAs still conducting deliveries at home will be identified with the help of village health committees, community health workers and other TBAs.

A sample of 5 villages will be randomly selected and from each one of them XXX women who deliver within one year will be randomly selected from the list compiled with the help of the village health committees and community health workers. The time frame of 1 year has been chosen to aid recall and to ensure the collected reflect current practice. It is also the period during which Doctors with Africa CUAMM has started focusing more consistently on TBAs role in Maternal Health Promotion.

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A total of 14 FGDs, each with 8-10 participants will be conducted. Each FG participants will be randomly selected, to ensure each group including people with different views

Participants of KIIS will be selected amongst those believed to have the highest knowledge about maternal health issues in the county and they will be as follows: One hospital maternity staff and one in-charge per PHCC/PHCU, One maternity staff and one maternity in-charge per hospital, 4 village health committee members, 2 CHD staffs.

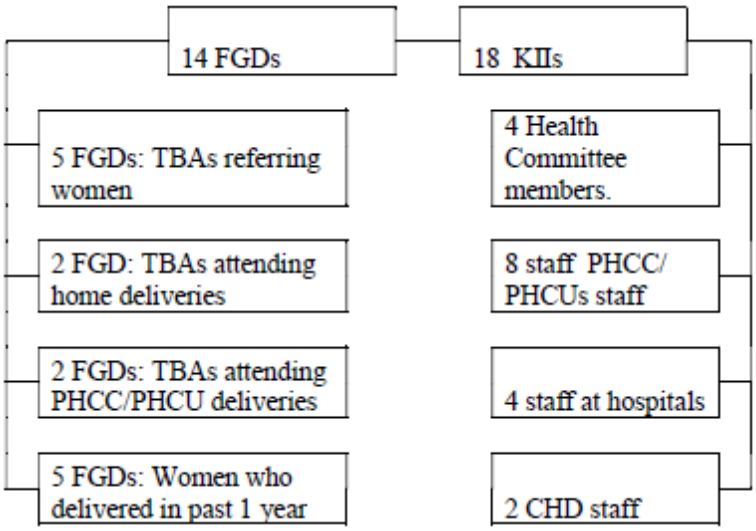

Figure 1. A summary of study participants

Study method and data collection

FGDs and KIIs will be conducted utilizing open-ended question guides that will allow for a certain degree of flexibility in gathering information. Pretesting of FGD and KII question guides will be performed during the training of data collectors. Socio-demographic characteristics of FGD participants will be collected using a closed-ended questionnaire.

Each FGD will be conducted by two Dinka language speaking facilitators. For cultural reasons, facilitators of FGDs will be female and well versed with the local language and culture. One data collector will be in charge of facilitating the sessions while the other one will manage audio recordings and provide additional support. The data collectors will be trained for one day and will be supervised by the principal investigator who will be present at all FGDs. The venues for FGDs will include local churches, schools or under trees, as considered most convenient by participants. To ensure that participants maintain concentration, each FGD session will last for about 1 hour. Refreshments will be served.

KIIs will be conducted at venues and time that are convenient to participants following prior arrangements with the data collectors.

All FGD and KIIs will be audio recorded after obtaining permission from participants.

Data analysis

Audio recordings will be transcribed and read through several times to obtain an overall picture and identify emerging patterns. The transcripts will then be coded and analyzed based on thematic and content analysis using NVivo 10. A pre-identified list of themes will be set up in NVivo and this list will be updated as new themes emerge during coding. These themes will form the basis for further data synthesis and inference.

Limitations of the study

The following are potential limitations of this study:

1. Some villages may be inaccessible because of bad roads or insecurity. In case this happens, suitable replacements will be identified.

2. There is potential for loss of information during translation and transcription. To mitigate this problem, attempts will be made to recruit the best available data collectors and translators.

3. As TBAs' role revision is multifaceted with many concurrent interventions aimed at improving maternal and child health, it is not possible to exclusively attribute any specific outcome to the integration of TBAs in the health system.

Results

Of the 172 TBAs identified, 171 were interviewed (121 in Tirol East county and 50 in Tirol West county), with one TBA refusing consent for interview. Demographics All TBAs were women aged between 24 and 85 years. The mean age was 59.6 years (median 60 years), and only eight respondents (4.6%) were aged under 40 years. Ages should be considered approximate and interpreted with caution, as they are based on the respondent's own estimate confirmed with qualitative exploration matching respondents' birth, marriage and birth of first child to notable local events with fixed dates. Two thirds of respondents (66.1%) were Nyan, and 27.5% were Adior, almost two thirds (64.3%) were currently married, 32.7% were widowed, and a small proportion were either divorced or had never been married. All except two of the respondents (98.8%) had children of their own: the highest number of children born to a respondent was 14, and the mean number of children was 7.3 (median 8). Only 7.0% TBAs had ever attended school.

Research designs used (n=63)

The Purpose of this study health interventions linked with TBAs has been to promote the use of skilled care whether through additional training of TBAs or by promoting formally trained medical professionals. Organizations such as the Doctors with Africa work with governments and communities to increase access and utilization of skilled birth attendants who have been formally trained because this reduces the risk of morbidity and mortality of both the mother and the child.

Methodology a qualitative study utilizing focuses group discussions (FGDs) and key informant interviews (KIIs) as data collection methods. FGDs will be used to explore perceptions towards the new role of TBAs, the enabling or constraining factors affecting their integration into the health system and its impact on maternal health services access and utilization, observing how TBAs and mothers interact in a social context and how this interaction modifies their personal views and opinions. KIIs will be used to gather in-depth information from health professionals and community leaders on the integration of TBAs in the health system and to triangulate the information collected through FGDs.

Results

This poster presents findings for the following aspects of the sample of studies:

- Type of document, country of origin, and year of publication;
- Research design and method used to evaluate TBA training;
- Intervention, TBA training, including curriculum content, intensity and productivity of TBA training programs, training modalities, approaches, and follow-up of trained TBAs; and
- Effect of TBA training on TBA 'Knowledge' and on TBA client or maternal 'Knowledge'.

The effects of TBA training on TBA and maternal 'Attitude', 'Behavior', 'Advice' (a subset of behavior), and on 'Pregnancy Outcomes' are forthcoming.

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Table 1. Research designs used (*n*=63)

DESIGN	STUDIES (n)	PERCENT (%)
POST COMPARISON		
• Post comparison, 2 groups	28	44%
• Post comparison, > 2 groups	5	8%
• Post comparison, 2 groups, multiple observations	1	2%
PRE/POST COMPARISON		
• Pre/post comparison, 2 groups	10	16%
• Pre/post comparison, 1 group	4	6%
• Pre/post comparison, gain score	4	6%
• Pre/post comparison, 2 groups, multiple observations	3	5%
• Pre/post comparison, 1 group, multiple observations	1	2%
• Baseline/post comparison, 1 group	1	2%
• Baseline/post comparison, 2 groups	1	2%
OTHER		
• Mixed[1]	4	6%
• Baseline comparison, 2 groups	1	2%

[1]Mixed designs occurred in some studies having multiple data sets.

Post comparison was used most often (54%), followed by simple pre/post or baseline/post comparison without a control group (33%). The rigorous pre/post comparison with a control group was used infrequently (6%).

Table 2. Time frame

	May 2017 – Dec 2017									
MILESTONES/ACTIVITY	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**		
Write up of the Research Proposal										
Approval by MoH Juba ethical review committee and by Tirol County Health Department										
Organize for funds										
Selection of FDGs and KIIs										
Introduction of the study in the HUs, local leaders and CHD										
Identification and training of data collectors										
Pre-test study tools and revise them										
Preparation of schedule for collection of										

data										
Collect data										
Data transcription, translation and editing										
Supervision and monitoring of the project										
Data analysis										
Report writing and preliminary feedback										
Submission for Dissemination all stakeholders										

Experience as a TBA

Respondents had worked as a TBA for an average of 23.9 years (median 24 years; range = 1-60 years). The mean age at which women began working as a TBA was 35.6 years (median 35 years; range 19-63 years). The majority worked only in their own village, but 32.7% also worked in at least one other village. Most TBAs had at least one other TBA working (although not necessarily residing) in their village, with a mean of 3.6 TBAs per village overall. Only one-fifth of TBAs (22.2%) had received any training from a health professional. TBAs from Nyang were more likely to have received training compared to those from Adior (36.0% cf 16.5%; p=0.008). The most commonly reported training providers overall were nurses from local public health facilities, who accounted for over half of the training in Nyang, although in Adior, Caritas or Catholic missionaries were the most common source of training. Information regarding the recency, length or content of training was not collected, as respondents during piloting were generally unable to reliably recall this information. There was wide variation in the reported frequency of attending deliveries. More than two-thirds of the TBAs (70.8%) had not attended any deliveries in the previous month; 36.8% had not attended any deliveries in the previous four months; and 11.1% had not attended any deliveries in the last two years. Among those who had attended at least one delivery in the previous month, the mean attendance rate was 1.69 deliveries per month. Overall, the mean delivery attendance rate per month as measured by one-month recall was 0.49 (median 0; range 0-4), and as measured by eight months recall from a fixed event was 0.41 deliveries per month, suggesting an annual average delivery attendance rate of five to six deliveries per TBA. The majority of TBAs (72.5%) were normally paid money and/or in-kind for their services. Most TBAs (61.4%) received money (an average amount of SSP 52 i.e. ≈USD 3 (median 200 SSP; range SSP -200 SSP). Some TBAs also received in-kind payments of meat (30.4%) or other commodities (7.6%) such as tobacco or sugar.

Antenatal care

Most TBAs (91.2%) normally had antenatal contact with women prior to assisting with their deliveries. Respondents reported a mean of 2.4 antenatal visits for each woman they cared for (median 2; range 1-6).

Dietary advice: almost all TBAs (97.1%) gave advice about diet during pregnancy. The most common advice, given by 49.1% of TBAs, was that pregnant women should eat whatever they wished. Specific foods that were promoted included vegetables (35.1%), porridge (33.9%), herbs (22.8%) and a mixture of milk and water (19.3%). However, most respondents also advised against some foods including meat from sick animals (64.9%) and milk from sick animals (60.2%). Other foods that were discouraged by a minority were milk (18.7%), eggs (11.7%), bitter herbs (9.9%) and alcohol (7.0%).

Health facility antenatal check-ups

Almost all TBAs (95.9%) reported advising women to attend a health facility for a routine antenatal check-up. Antenatal referrals were most commonly made to local dispensaries (56.1%) and health centers (28.1%), which are the two lowest tiers in the South Sudan health system but the most geographically accessible in the study sites. One-fifth (20.5%) referred to the district or referral hospital, and the remaining 7.0% to other places such as the sub-district hospital or a mobile clinic. Respondents in Nyang were much more likely to refer to the local dispensary compared with those in Adior (74.0% cf 48.8%; p=0.002), and much less likely to refer to the district or referral hospital (2.0% cf 28.1%; p<0.001).

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Normal delivery practice

Hand hygiene: most TBAs (93.1%) reported washing their hands before assisting at the most recent delivery attended, with higher rates in Nyang than Adior (100% cf 90.1%, p=0.019). A much lower proportion reported wearing hand protection (e.g. gloves, plastic bags) during their last delivery: only 42.1% overall. Use of hand protection was better in Nyang, twice that in Adior (66.0% cf 32.2%; p<0.001). Most TBAs (80.1%) reported washing their hands before cutting the umbilical cord at their most recent delivery; this practice was more prevalent in Nyang than in Adior (96.0% cf 73.6%; p=0.001). Only 6.4% of TBAs had ever put their hands inside the birth canal during labor, which was more common in Nyang than Adior (16.0% cf 2.5%; p=0.001).

Delivery of placenta: delivery of the placenta was generally expectant, and encouragingly few TBAs routinely pulled on the umbilical cord to assist delivery of the placenta. If the placenta failed to deliver, the most common interventions were to massage the woman's belly (53.8%), induce vomiting (44.4%), and/or make a referral to a health facility (28.7%). Other less common interventions were to give the woman water to drink, pull on the cord, and give herbs.

Cord management: TBAs overwhelmingly advocated cutting the umbilical cord immediately after delivering the baby (98.2%). The tool usually used for cord cutting was a new/unused razor blade (89.5%). Just under half of the respondents (42.1%) usually anointed the cord stump after cutting; most commonly with ash, oil or herbs.

Postnatal care

Almost all TBAs stayed with their patients for many days after delivery: 88.9% of respondents normally staid a week or more after delivery; 66.1% stayed at least four weeks, and the longest stay reported was 12 weeks. On average, TBAs stayed 34.2 days after delivery (median 28 days; range 1 hour-12 weeks). All but one TBA routinely gave advice about neonatal feeding during the post-natal period. Almost all TBAs (97.1%) advised exclusive breastfeeding. In contradiction to this, nearly one in five respondents (18.7%) said they recommended babies be given substances apart from breast milk during the first few weeks of life. A large majority (93.0%) said that babies should be breastfed "immediately" or "as soon as possible" after delivery.

Recognition and management of complications

Recognition of danger signs during pregnancy: respondents were asked (unprompted) to list indications that a pregnant woman might have problems during her delivery. A large majority (92.4%) were able to identify at least one indication. The most frequently named indications were weakness (37.4%), abnormal lie of the baby (36.3%), anaemia (22.8%), a large baby (17.0%), a history of problems in a previous pregnancy (15.8%), and bleeding during pregnancy (10.5%). Respondents were also asked (unprompted) to list indications that a labouring woman was in danger; 95.3% were able to identify at least one indication. The most frequently named indications were slow progression of labour (44.4%), abnormal lie/presentation (34.5%), weakness (34.5%), excessive bleeding during labour (21.1%), a large baby (16.4%), and the woman falling unconscious (12.9%). TBAs were shown pictures depicting four complications of labour (post-partum haemorrhage, obstructed labour, maternal sepsis and birth asphyxia). If they did not recognise a complication from the picture, they were informed what it was, and asked if they had seen it before. They were then asked open-ended, unprompted questions regarding the signs, symptoms and management of each complication.

Post-partum hemorrhage (PPH): almost all TBAs (94.7%) had previously seen a woman with PPH. When asked to name signs and symptoms of PPH (defined as "when a woman is bleeding so much her life is in danger"), respondents commonly mentioned bleeding which did not stop (93.0%), the woman losing consciousness (66.7%), and weakness/tiredness (55.6%). For management of PPH, 62.6% of TBAs said (unprompted) that they would refer the woman to a health facility. Other interventions commonly mentioned were feeding the woman blood (59.6%) and giving her medicinal herbs (21.2%). Of the 64 TBAs who did not mention referral in response to the unprompted question, 73.4% said they would make a referral to a facility for this condition, when asked directly about it. Among all of the TBAs who said they would refer a woman with PPH to a health facility (n=154), the most frequently reported indications for referral were bleeding which did not stop (78.4%), loss of

consciousness (63.2%), weakness/tiredness (45.6%), failure of initial management (12.9%), and woman in pain (8.8%).

Obstructed labour: nearly all TBAs (94.7%) said they had previously seen obstructed labour. When asked to name signs and symptoms of obstructed labour, respondents commonly mentioned long duration of labour (89.5%), abnormal lie/presentation (46.8%), the woman stopping pushing (33.3%), weakness/tiredness (26.3%), a large baby (22.2%), and a change in the shape of the woman's abdomen (12.3%). Almost all TBAs (90.1%) identified referral to a health facility as their intervention of choice for obstructed labour (unprompted). Other interventions included massaging the woman (8.8%) and giving herbs (8.2%). A small number said they would call the nurse or doctor, or make the woman walk around. Of the 15 TBAs who did not mention referral in response to the unprompted question, 73.3% said they would make a referral to a facility for this condition, when asked directly about it. Among all of the TBAs who agreed that they would refer a woman with obstructed labour to a health facility (n=164), the most frequently reported indication for referral was the length of time without progress (83.0%). Other commonly mentioned indications for referral were pain (45.6%), weakness (42.1%), woman stopping pushing (26.9%), failure of initial management by TBA (12.9%) and unconsciousness (11.7%). Most TBAs (78.4%) said they would wait a day or longer before referring a labouring woman to a health facility, and 37.1% gave waiting times of two days or longer. The mean wait time was 31.3 hours, with a median of 24 hours.

Maternal sepsis: nearly all TBAs (93.6%) said they had previously seen a woman with maternal sepsis. As with other obstetric complications, the most commonly described intervention for maternal sepsis was referral to a health facility (66.1%). Slightly more than half of the TBAs (53.8%) said they would use medicinal herbs to treat maternal sepsis, and 34.5% mentioned giving food to the woman as an intervention. Of the 57 TBAs who did not mention referral in response to the unprompted question, 70.2% said they would make a referral to a facility for this condition when asked directly about it. Among all of the TBAs who agreed that they would refer a woman with maternal sepsis to a health facility (n=153), the most frequently reported indications for referral to a health facility were long duration of fever (76.0%), weakness (51.5%), inability to eat or drink (39.2%), abdominal pain or tenderness (36.8%) and inability to breastfeed (17.0%).

Birth asphyxia: a majority of TBAs (82.5%) said they had previously seen a baby who did not begin breathing spontaneously at birth. The commonly reported interventions for birth asphyxia were splashing the baby with water (48.5%), holding the baby upside down (40.9%), pinching the baby (24.6%), ringing a bell near the baby (17.0%) and massaging the baby (11.7%). Only 2.3% mentioned calling a doctor or nurse.

Traditional birth attendants' relationships with health facilities

Referral during labour: four out of five respondents (80.1%) had previously referred a woman in labour to a health facility. Of those who had made at least one previous referral, 53.3% said they accompanied the woman to the health facility "always" or "most of the time". Only 14.6% said they never accompanied their patients. The decision to take a labouring woman to a health facility almost always involved the TBA (reported by 96.5% of respondents), and was usually jointly made with the woman's husband (80.1%), and occasionally with the woman's mother-in-law (7.0%). The labouring woman herself was not mentioned as a participant in the decision-making process by any respondent.

Assisting with facility-based care: over half of the TBAs (54.4%) had been present for at least one delivery in a health facility. A much smaller proportion of the overall cohort (14.0%) had assisted with a delivery at a health facility. However, nearly three quarters of the respondents (72.0%) had provided postnatal care for a woman while she was in a health facility, and most (94.6%) had provided postnatal care for a woman after discharge following a facility-based delivery.

Ethical considerations

The present protocol will be shared with Tirol West CHD and Lakes State MoH for their inputs and approval. It will be then presented to the Ministry of Health in Juba for approval by the Ethics Committee.

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FGD participants will be informed about study contents and purposes and how the data to be collected will be used. Participants will also be informed of their right to exit the FGD at any time without future prejudice in access to health services. In this case a replacement will be called in agreement with the community leaders. After the explanation, participants will be asked to sign the informed consent format, whose content as well will be explained in details, or to provide verbal consent, which will be audio recorded. A similar process will be followed for the participants in the KIIs. Participants will be informed of their right to ask for additional clarifications at any time during the study.

Permission to conduct the study in selected villages will also be sought from village leaders. Confidentiality will be assured. All collected information including audio recordings and transcripts will be kept on password protected computers and accessible only to the research team. The study report will be anonymous and will bear no personal identifiers which might help in matching a statement with the person who made it.

There is a certain risk for psychological distress among women as those having experienced a difficult delivery or one with unfavorable outcome might feel uncomfortable while trying to recall it. The study team will pay attention to such discomfort and will stop the conversation at any time that happens.

Leaving the choice of activity venue and time to the participants should minimize the logistic constraints they might encounter in participating in the study.

No personal identifiers that might help in matching a statement with the person who made it will be included in the report. All FGD participants will be compensated in kind for their time. No monetary incentives will be provided.

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General instructions

The era of Millennium Development Goals witnessed a 59% increase in the deliveries assisted by skilled birth attendants (SBAs) and a 44% reduction in Maternal Mortality ratio (MMR) worldwide [1, 2]. Despite this achievement, each year, 45 million women still deliver without skilled attendance [1] and 303,000 die from complications related to pregnancy or childbirth worldwide [2]. Almost all maternal deaths (99%) occur in developing countries, with sub-Saharan Africa accounting for 66% of the deaths [2]. Thus, maternal mortality remains an agenda for global development as reflected in the Sustainable Development Goals [3].

Between the 1970s and 1990s, the international response to maternal mortality included training of traditional birth attendants (TBAs) [4] to attend to deliveries. Although TBAs working in well-structured contexts may reduce perinatal deaths, stillbirths, and neonatal deaths [5], their training failed to reduce maternal mortality [6]. Thus, the use of skilled birth attendants (SBAs) became the key strategy to reduce maternal mortality in developing countries.

Nonetheless, in settings where SBAs are scarce and barriers to service access abound, TBAs still attend to a majority of childbirths [7–9]. In such contexts, the disconnection between TBAs and the formal health system may impede access to maternal health services [10]. Given that integration of TBAs into the health system may increase skilled birth attendance [11–15], there is a renewed interest in the linkage between TBAs and SBAs; with TBAs working as promoters of institutional childbirth [16].

Maternal mortality ratio (per 100,000 births) is estimated to have increased in South Sudan from 763·8 in 1990 to 956·8 in 2013 and is projected to remain in the range of 500 to 925 by 2030 [17]. This is due to a fragile health system, which has been exacerbated by decades of conflict. The provision of health services in the country is hampered by numerous challenges including a chronic shortage of professional health workers. Since 2012, Yirol West County Health Department (CHD) has been partnering with Doctors with Africa CUAMM (hereafter CUAMM), an Italian non-governmental organisation (NGO), to strengthen the delivery of primary health care services in the county. The county, however, lacks skilled health workers, especially in peripheral health facilities. To fill the gap, the Ministry of Health recruited and trained some TBAs to work in health facilities (hereafter referred to as facility-based TBAs). Most TBAs, however, continued to work in villages unsupervised (hereafter referred to as community-based TBAs).

Effective from May 2014, in line with the national guidelines aimed at improving the quality of primary health care services, the county authorities banned TBAs from attending to home births and directed that all women in labour be referred to health facilities. The community-based TBAs' main task became referring women to health facilities for childbirth. However, the TBAs were also trained for three days on assessing pregnant women, detecting dangerous signs before; during; and after childbirth, clean delivery, and first aid in case of an obstetric emergency. Each TBA was paid a symbolic monthly incentive of US$4. Supervisory meetings between TBAs and staff working in health facilities were held monthly. To stimulate demand for institutional childbirth, women delivering in health facilities received baby kits containing a basin, a plastic cup, a bar of soap, and a baby blanket. This study aimed to 1) understand the extent of integration of community-based TBAs in the health system, 2) reveal the factors influencing this integration, and 3) explore the perceived solutions to the challenges community-based TBAs faced in adopting their new roles.

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This study was conducted in Yirol West County, in the former Lakes State, South Sudan. In 2017, the county had an estimated population of 142,701 people and was divided into 7 *payams* (sub-county administrative units) namely: Abang, Anuol, Geng Geng, Aluakluak, Geer, Mapourdit and Yirol Town. The main ethnic group is Dinka (Atuot, Ciec and Jier clans) and semi-nomadic pastoralism and rudimentary crop farming are the main sources of livelihood for the inhabitants. At the time of the study, Yirol West County was served by two hospitals: Yirol County Hospital (a referral government hospital, which also serves Yirol East and Awerial counties) and St. Immaculate Hospital (a mission hospital in Mapourdit). The county was also served by 8 PHCUs and 2 primary health care centres (PHCCs).