

**Traditional birth attendance, HIV/AIDS and safe delivery in the Eastern Cape,
South Africa: evaluation of a training**

Karl Peltzer* and Nomvo Henda**

*Human Sciences Research Council & University of Venda for Science and Technology

** Human Sciences Research Council

Address correspondence to:

Prof Karl Peltzer
Human Sciences Research Council &
Department of Psychology
School of Health Sciences
University of Venda for Science and Technology
Private Bag X5050
THOHOYANDOU 0950
South Africa

Tel/Fax.: 0027-15-9631041

Email:peltzerk@hsrc.ac.za

SUMMARY The aim of this study was to evaluate a training programme for TBAs on HIV/AIDS and safe delivery. The sample included 50 previously untrained TBAs, with the less than 10 assisted deliveries in a year, in rural South Africa. Results indicate that TBAs had a fair knowledge on risk signs during pregnancy and on HIV/AIDS which still significantly increased after the training. While 76% of TBAs felt a great risk of HIV infection when assisting during a delivery, this significantly reduced after the training. HIV risk practices significantly reduced after the training, especially in regard to the use of gloves, a new razor blade and non-use of reed to cut the umbilical cord. Most TBAs were involved in HIV/STI management such as risk assessment, risk reduction counselling, distribution of condoms, community education and home-based care. Compared to prior to the training, after the training keeping of records of deliveries in the past 3 months and having a supply of gloves significantly increased. Prior to the training, most TBAs had pregnant women come to them, checked and advised on nevirapine, did a postpartum home visit, and advised the client on immunizations and birth control. After the training significantly more TBAs conducted prenatal check-ups, assessed the baby's position within the uterus, took the mother's and baby's pulse, and significantly less TBAs conducted abnormal or complicated deliveries.

Introduction

A Traditional Birth Attendant (TBA) is defined, based on the South African Bill to establish the Interim Traditional Health Practitioners Council, as a person who engages in traditional health practice and is registered under this act¹. According to midwives² TBAs can be characterized in South Africa as follows, she is a middle aged or elderly lady with no formal training, who acquired her skills through experience. She attends to women during pregnancy, labour and the postnatal period in different ways that have been used by the TBA are mainly herbs that facilitate a quick delivery, or others that cause bleeding of the uterus postnatally. Other TBAs use no medicine. The Department of Health¹ notes that the role of traditional birth attendants in prenatal care for the mother includes advice or instructions as to what to eat, what not to eat, the giving of herbal remedies for pain, sickness or discomfort. They do abdominal massages and offer comfort to mothers, giving them a sense of security. They also assist with the delivery of the baby and advise and assist the new mother on how to care for the baby after it is born. A number of authors have indicated the importance of traditional birth attendance in the delivery of health care to the mother and child in South Africa²⁻⁶.

Peltzer, Mosala, Shisana, Nqueko and Mngqundaniso⁷ interviewed 1534 pregnant women recruited at first antenatal care in five PMTCT clinics (n=936) and 598 from the community around the five clinics prior to antenatal care in the Eastern Cape, South Africa, and found that 41% of those women who had delivered before (n=995) had delivered their last baby at home. Regarding the distance to a health facility, two-thirds of the pregnant women spent more than one hour to get to the nearest hospital (where a delivery can take place) and almost one-third spent more than hour to the nearest clinic (where no delivery takes place). WHO recommends that health services be accessible within an hour's travel time, by foot or otherwise. O'Mahony and Steinberg⁸ conducted a survey of two hundred women on place of delivery, home delivery practices and antenatal care for the most recent delivery (within the previous 5 years) from randomly selected clusters, obtained from a multistage random sampling process, in rural Transkei, now Eastern Cape. Two-thirds had delivered at home and one-third within the health services. Of those who delivered at home, 62 (47%) were alone at the time of delivery

while the remainder were assisted by a close relative or neighbour; 38% had one or more risk factors for obstetric complications.

Bulterys et al.⁹ note that traditional (or "trained") birth attendants could play a critical role by reaching pregnant women not currently receiving formal antenatal care and by assisting with delivery of primary services designed to prevent HIV transmission. If rapid HIV testing could be made more widely available to pregnant women (for example, in primary healthcare centres and mobile clinics), trained birth attendants could oversee the provision of nevirapine to women infected with HIV who give birth at home and to their newborn infants. Traditional birth attendants could also counsel women and their partners on how to reduce the risk of HIV being transmitted to the child, focusing particularly on the postpartum period.

A different view is held by Berer¹⁰ arguing that the TBAs cannot be expected to carry out HIV/AIDS prevention and treatment activities. In developed countries one can argue this but in developing countries this argument is questionable. If we become realistic, many people use TBA, something must be done to help these people. Arguing this issue will not help at all. WHO¹¹ notes that TBAs have the potential for improving maternal and newborn health at community level. The role of TBAs in caring for pregnant women and conducting deliveries is acknowledged, but generally TBAs are not trained to deal with complications. A paradigm shift from the risk approach to focus on emergency obstetric care (every pregnancy carries a risk) has occurred since 1997. The reason behind this shift is that most complications often occur in women with no antenatal care risk factors during labour and delivery. It is therefore essential for women to be cared for by skilled health workers if maternal mortality is to be reduced¹¹.

Some research seems to show that training TBAs has not been shown to be effective in terms of pregnancy outcome. Training TBAs may also not be cost-effective, because most TBAs have a low caseload¹². Training TABs to wash their hands was found to be not an effective strategy to prevent maternal postpartum infection in Bangladesh¹³. In a controlled study the impact of traditional birth attendant training in Mozambique failed to demonstrate a reduction in perinatal or infant mortality associated with TBA training¹⁴. Ray and Salihu¹⁵ review that TBAs and village midwives have been employed in many interventions to reduce maternal mortality in developing countries. Five of the

five programmes reviewed that evaluated their impact on maternal mortality demonstrated a decline in maternal mortality ratios, two of three studies measuring morbidity-related indicators found improvement of some but not all morbidity outcomes, six of seven showed a trend of improved referral rates, and three of three found high levels of knowledge retention among trained TBAs. Programmes with the greatest impact utilised TBAs and village midwives within multisectoral interventions. These findings suggest that TBAs and village midwives contribute to positive programme outcomes. Further investigation is needed to determine the nature of their contribution within larger programmes.

As South Africa is faced with a problem of HIV/AIDS, delivery attendants should protect mothers, children and themselves from exposure to blood and body fluids. Knowing and understanding all issues surrounding HIV/AIDS, infection control can help all birth attendants to protect themselves and others. In formative research with 20 TBAs in the Eastern Cape Henda and Peltzer¹⁶ found that they had poor HIV knowledge (only half knew that a pregnant woman with HIV can transmit the virus to her unborn child and that an HIV positive mother can transmit the HI virus to the baby through breast feeding) and poor hygienic practices (most used bare hands in the delivery and a number used reed to cut the umbilical cord), but the majority was keen to get trained on HIV and safe delivery. Troskie⁶ also found that many traditional birth attendants interviewed had little knowledge about AIDS, others stated that they are able to heal AIDS. Habimana, Bulterys, Usabuwera, Chao and Saah¹⁷ investigated the risk of occupationally acquired HIV infection among TBAs in Rwanda and found that the risk of occupationally acquired HIV infection among TBA appears small. However, the high frequency of blood-skin contact among TBA in Rwanda highlights the need to include infection control precautions in the training of TBA.

Therefore, the aim of this study was to evaluate a training programme for TBAs on HIV/AIDS and safe delivery.

Method

Design

The study used a pre-post training evaluation design of TBAs in two primary health care clinic areas in rural South Africa. In those two clinic areas a previous survey showed that more than 50% of those women who had delivered before had delivered their last baby at home⁷.

Sample and procedure

The sample included 50 traditional birth attendants from two areas around two clinics in the Eastern Cape. Purposeful and key informant sampling was used to include all traditional birth attendants from two selected communities in Quakeni District in the Eastern Cape after access was established through other TBAs, community leaders and clinic staff. TBAs were interviewed at their homes by the second author (NH).

The study was approved by the Human Sciences Research Council Ethics Committee (Clearance no REC 2/12/11/02). Informed consent was obtained from all participants. Questionnaires were interview-administered in Xhosa by the second author (NH) trained in interview administration of this interview schedule. Participants were provided with R 50 each as a token for participation.

The questionnaire was administered prior to and four month after the training; the response rate was 100%. The training consisted of 4 days including the following modules: (1) HIV and AIDS, (2) Prevention of HIV from mother to child, (3) antenatal care, (4) obstetric care, (5) postpartum care, (6) counselling on safe infant feeding, (7) status and role of traditional birth attendants, (8) traditional medicine and rituals in delivery and infant care, and (9) monitoring and follow-up; modules 7 to 9 also included skilled birth attendants from the nearest hospital. TBAs were also provided with a TBA delivery kit, including gloves, razor blades and male condoms¹⁸.

Measure

A semi-structure questionnaire was developed from the literature^{5,19} and formative research with 20 TBAs in the area¹⁶ (who did not form part of the final sample) including the following components: socio-demographic data (8 items), practice characteristics (18 items), one open-ended questions on knowledge of risk signs during pregnancy, HIV/AIDS knowledge (9 items, rated as true, false or do not know), HIV risk perception

(2 items, rated from 1=great risk to 3=not at risk), HIV and STI management (12 items), HIV risk practices (9 items), attitudes towards biomedical health practitioners and referral (4 items)(response options for all questions, if not stated differently, were “yes” or “no”). The questionnaire was translated from English into Xhosa and cross-checked by an external expert.

Data analysis

Descriptive statistics was used to obtain frequency distributions and where appropriate paired samples t-tests were used to compare means at time 1 and 2, using SPSS version 12.0.

Results

Results are divided into (1) sample and practice characteristics, (2) knowledge on pregnancy risk signs, (3) HIV/AIDS knowledge, (4) HIV risk perception, (5) HIV and STI management, (6) HIV risk practices, (7) TBA practice, and (8) attitudes towards biomedical health practitioners and referral.

Sample and practice characteristics

More than half (52%) of the TBAs were between 41 to 50 years old, and 26% were between 31 to 40 years old. All TBAs belonged to the Xhosa ethnic group. More than half (54%) had five and less years of formal education, while 16% had no formal education. All TBAs did not undergo a formal training as TBA, they had only observed deliveries for one to three years. Two-thirds of the TBAs (66%) started practicing as a TBA with 31 years and older, and half (52%) had been practicing as a TBA for more than five years. The majority (70%) had assisted in 3-10 deliveries in the past 12 months, 28% in two or less deliveries, and only one TBA assisted in more than 10 deliveries in the past 12 months (see Table 1).

Table 1: Sociodemographic and practice characteristics

| | | f | % |
|---|--------------|-----------|------------|
| Sex | Female | 50 | 100 |
| Age | 21-30 | 4 | 8 |
| | 31-40 | 13 | 26 |
| | 41-50 | 26 | 52 |
| | 51-60 | 5 | 10 |
| | 61-70 | 2 | 4 |
| Ethnicity | Xhosa | 50 | 100 |
| Formal education | None | 8 | 16 |
| | <=5 years | 19 | 38 |
| | >5 years | 23 | 46 |
| Training/observation in months | 0-12 months | 25 | 50 |
| | 13-24 | 10 | 20 |
| | 25-60 months | 15 | 30 |
| Age at which started as TBA | 21-30 yrs | 17 | 34 |
| | 31-40 | 26 | 52 |
| | 41-50 | 7 | 14 |
| Number of years practicing as TBA | 0-5 | 24 | 48 |
| | 6-10 | 10 | 20 |
| | 11 and more | 16 | 32 |
| Number of pregnant women known to TBA currently | 0-1 | 11 | 22 |
| | 2-3 | 21 | 42 |
| | 4 and more | 18 | 36 |
| Number of deliveries assisted in past 12 months | 0-2 | 14 | 28 |
| | 3-5 | 20 | 40 |
| | 6-10 | 15 | 30 |
| | 11-20 | 1 | 2 |

Most TBAs (88%) were TABs only, while three (6%) were also herbalists and another three were TBAs and faith healers. Three of the TBAs were registered with the traditional healer's council, while the rest were not.

(2) Knowledge on pregnancy risk signs

TBAs were asked on risk signs during pregnancy in an open-ended question prior to (=Pre) and three months after (=Post) the training. They had a fair knowledge on risk signs during pregnancy before and after the training, ranging from headaches, bleeding, swollen feet or legs to stress. Prior to the training none and after the training 13% of the

TBAs mentioned sexually transmitted diseases as risk signs during pregnancy (see Table 2).

Table 2: Risk signs during pregnancy

| | Pre (% of cases)# | Post (% of cases)# |
|--|-------------------|--------------------|
| Swollen feet/legs | 36 | 48 |
| Epilepsy | 14 | 23 |
| Difficult labour | 30 | 21 |
| Headaches | 74 | 21 |
| Bleeding | 36 | 19 |
| High blood pressure | 16 | 15 |
| Diabetes | 12 | 13 |
| Sexually transmitted diseases | 0 | 13 |
| Stress | 10 | 4 |
| Other (glands in body, malnourishment, substance abuse, domestic violence) | 10 | 25 |

#multiple responses possible

(3) HIV/AIDS knowledge

TBAs had also a fair knowledge on HIV and AIDS which still significantly increased after the training ($p=.018$), especially on the items of transmission of HIV through cooking utensils, that there is no cure for AIDS, and transmission of HIV from mother to child (see Table 3).

Table 3: HIV/AIDS knowledge

| | Correct pre n=50 (%) | Correct post n=50 (%) |
|--|-------------------------|--------------------------|
| A person can get HIV by using a cup or plate that has been used by a person with HIV/AIDS (False) | 41 (83.7) | 45 (90) |
| Having sex with more than one partner can increase a person's chance of being infected with HIV (True) | 48 (96.0) | 50 (100) |
| People can protect themselves from HIV by using a condom correctly every time they have sex (True) | 50 (100) | 50 (100) |
| You can get HIV through contact with infected blood (True) | 48 (96.0) | 50 (100) |
| HIV can be transmitted from mother to child through breast feeding (True) | 48 (96.0) | 49 (98) |

| | | |
|--|------------|----------|
| Can the transmission of HIV from mother to child be prevented (True) | 47 (94.0) | 49 (98) |
| Can needles and razors transmit HIV (True) | 50 (100.0) | 50 (100) |
| There is no cure for HIV, the virus that causes AIDS (True) | 46 (92.0) | 49 (100) |
| Can a TBA contract HIV when assisting during an delivery (True) | 48 (96.0) | 49 (100) |
| Paired Samples Test: M=-.27; CI 95%= -.48, -.05; t=-2.45; p=.018 | | |

(4) HIV risk perception

While 76% of TBAs felt a great risk of HIV infection when assisting during a delivery, most felt only somewhat at risk (68%) or at no risk (14%) after the training. The significantly lower HIV risk perception after the training at work did correspond somewhat but not significantly to lower HIV risk perception in their personal life (see Table 4).

Table: 4. HIV risk perception

| | | Great risk | Some-what at risk | Not at risk | Paired samples test | |
|---|------|------------|-------------------|-------------|---------------------|---------|
| | | n (%) | n (%) | n (%) | M (SD) | t |
| How much do you feel at risk of getting HIV when assisting with delivery? | Pre | 38 (76) | 8 (16) | 4 (8) | 2.0 (0.6) | 5.83*** |
| | Post | 9 (18) | 34 (68) | 7 (14) | 1.3 (0.6) | |
| How much do you feel at risk of getting HIV in your personal life? | Pre | 16 (32) | 15 (30) | 19 (38) | 2.2 (0.6) | 1.46 |
| | Post | 5 (10) | 28 (56) | 17 (34) | 2.1 (0.8) | |

***p<.001

(5) HIV/STI management

Most TBAs knew where to obtain VCT, approved of distributing condoms, and were involved in HIV/STI management such as risk assessment, risk reduction counselling, distribution of condoms, community education and home-based care. Compared to prior

to the training, after the training keeping of records of deliveries in the past 3 months and having a supply of gloves significantly increased (see Table 5).

Table 5: HIV/STI management practices

| | Pre (n) | Post (n) |
|--|------------|-------------|
| Do you know where you can obtain voluntary HIV counselling and testing services? | 47 | 50 |
| Did you refer a pregnant woman for HIV testing in the past 3 months? | 40 | 37 |
| Did you do HIV/STI risk behaviour assessment (e.g., ask about risky sex) in the past 3 months? | 41 | 42 |
| Did you do HIV/STI risk reduction counselling (e.g., advice on condom use, abstinence, fidelity and partner reduction) in the past 3 months? | 43 | 42 |
| Do you approve of distributing condoms to your clients? | 49 | 50 |
| Did you distribute condoms in the past 3 months? | 38 | 31 |
| Do you have a container with condoms in stock? | 40 | 41 |
| Did you do HIV/AIDS community education in the past 3 months? | 44 | 44 |
| Did you do home-based care in the past 3 months? | 38 | 40 |
| Did you keep records of deliveries in the past 3 months? | 29 | 44 |
| Do you have a supply of gloves to protect you against infection? | 33 | 46 |
| Do you have a container where you keep used blades after completing a procedure? | 2 | 1 |

(6) HIV risk practices

HIV risk practices significantly reduced after the training ($p=.007$), especially in regard to the use of gloves, a new razor blade and non-use of reed to cut the umbilical cord (see Table 6).

Table 6: Infection control

| | Pre (n) | Post (n) |
|--|------------|-------------|
| During delivery do you use bare hands (washed before)? (in the past 3 months) (risk) | 13 | 1 |
| During delivery do you use bare hands (not washed before)? (in the past 3 months) (risk) | 0 | 0 |
| During delivery do you use gloves (unused)? (in the past 3 months) (low risk) | 40 | 47 |

| | | |
|---|------------------|----------------|
| During delivery do you use gloves (used)? (in the past 3 months) (risk) | 0 | 2 |
| The umbilical cord you cut with a new razor blade (in the past 3 months) (low risk) | 44 | 47 |
| The umbilical cord you cut with a used razor blade (in the past 3 months) (risk) | 1 | 0 |
| The umbilical cord you cut with scissors (not sterilized) (in the past 3 months) (risk) | 1 | 1 |
| The umbilical cord you cut with scissors sterilized (in the past 3 months) (low risk) | 3 | 1 |
| The umbilical cord you cut with reed, dry wood from mountain (not sterilized) (in the past 3 months) (risk) | 8 | 0 |
| The umbilical cord you cut with reed, dry wood from mountain (sterilized) (in the past 3 months) (low risk) | 0 | 1 |
| Total: Paired samples test: $t=-2.82, p=.007$ | M=7.28 SD=1.2 | 7.84 SD=0.7 |

(7) TBA practice

At post test 14% of the TBAs had not attended to any delivery in the past three months, the majority (56%) had attended to one or two deliveries and 30% three and more deliveries in the past three months.

Prior to the training, most TBAs had pregnant women come to them, checked and advised on nevirapine, did a postpartum home visit, and advised the client on immunizations and birth control. After the training significantly more TBAs conduct prenatal check-ups, assess the baby's position within the uterus, took the mother's and baby's pulse, checked the mother if she had taken nevirapine, referred the mother to the clinic for nevirapine for the baby, and significantly less TBAs conducted abnormal or complicated deliveries (see Table 7).

Table 7: Practice as TBA

| | Pre (n) | Post (n) |
|--|---------|----------|
| Do pregnant women come to you? | 40 | 50 |
| Do you conduct prenatal check-ups? | 22 | 48 |
| Do you assess the baby's position within uterus? | 23 | 49 |
| Do you take the mother's pulse? | 5 | 40 |
| Do you take the baby's pulse? | 2 | 36 |
| Do you conduct abnormal or complicated deliveries? | 5 | 0 |

| | | |
|--|----|----|
| Do you check if the mother has taken nevirapine? | 39 | 47 |
| Do you advise your client to go to the clinic for nevirapine for the baby? | 39 | 47 |
| Do you advise your client to go to the clinic for immunizations? | 50 | 50 |
| Do you do a postpartum visit at the client's home? | 50 | 49 |
| Do you give advise about birth control? | 40 | 49 |

Prior to the training 40 of the TBAs indicated that they themselves and 10 said the mothers provide the instruments for delivery, while after the training almost all (n=47) of the TBAs indicated that they supplied the instruments themselves.

(8) Attitudes towards biomedical health practitioners and referral

Prior and after the training almost all TBAs were prepared to work with the clinic and would likely make referrals to a clinic. Three in four at pre-training and 86% at post-training indicated that they would refer a woman with risk signs during pregnancy to the health facility. The confidence in working with the clinic increased significantly from before to after the training (see Table 8).

Table 8: Collaboration with clinic

| | n (%) |
|--|---------------------------------|
| What do you do if you find any risk signs during pregnancy? | Refer to clinic/hospital |
| | Pre: 37 (74) Post: 43 (86) |
| How prepared do you feel to work with the clinic? | Prepared |
| | Pre: 49 (98) Post: 50 (100) |
| How confident do you feel in working with the clinic? | Confident |
| | Pre: 39 (78) Post: 47 (94) |
| How likely would you refer/recommend a client to a clinic in the future? | Likely |
| | Pre: 50 (100) Post: 50 (100) |

Discussion

This study reported on a pre-post training assessment on HIV/AIDS and safe delivery among 50 previously untrained (on the job training) TBAs, with less than 10 assisted deliveries in a year, in rural South Africa. Jepson and MacDonald³ also found among a sample of TBAs in Zululand that they had not been formally trained. Abioye-Kuteyi, Elias, Familusi, Fakunle and Akinfolayan²⁰ found among Nigerian TBAs that 35% had no TBA training, 23% on the job training and 54% apprenticeship training. Mchunu and Bhengu¹⁹ studied 57 TBAs in KwaZulu-Natal who had received one year training from a midwife, and found that 83% had assisted in less than 10 deliveries in the previous year and 17% had assisted with between 11 and 30 live births. In these cultures the work of TBAs is largely restricted to one extended family or clan, so they would deliver up to about 20 babies a year. Only a few TBAs have a wider practice²¹.

TBAs were found to have a fair knowledge on risk signs during pregnancy before and after the training, ranging from headaches, bleeding, swollen feet or legs to stress, and on HIV/AIDS which still significantly increased after the training. Mchunu and Bhengu¹⁹ asked trained TBAs with structured questions, as opposed to open-ended questions in this study, about risk signs during pregnancy, and found 96% reported correctly “bleeding from the vagina”, “back pain along the sides of the spine” and “resting pulse is over 100 beats/minute”, 90% “swelling of the face and hands” and “shortness of breath”, while only 11% were correct on “back pain along the spine” and 2% on “emotional highs and lows”. They further found among the trained TBAs in KwaZulu-Natal that their HIV knowledge was good, though there were also some misconceptions¹⁹.

While 76% of TBAs felt a great risk of HIV infection when assisting during a delivery, this significantly reduced after the training. This may be attributed by increased knowledge on how to protect oneself from HIV and increased use of gloves.

HIV risk practices significantly reduced after the training, especially in regard to the use of gloves, a new razor blade and non-use of reed to cut the umbilical cord. Abioye-Kuteyi et al.²⁰ found among TBAs in Nigeria that 12 (46%, two-thirds were trained and one-third untrained) had used hand gloves for delivery. Mchunu and

Bhengu¹⁹ (2004) found among the trained TBAs in KwaZulu-Natal that 80% cut the umbilical cord with “a blade”.

Most TBAs in this study knew where to obtain VCT, approved of distributing condoms, and were involved in HIV/STI management such as risk assessment, risk reduction counselling, distribution of condoms, community education and home-based care. Compared to prior to the training, after the training keeping of records of deliveries in the past 3 months and having a supply of gloves significantly increased.

Prior to the training, most TBAs had pregnant women come to them, checked and advised on nevirapine, did a postpartum home visit, and advised the client on immunizations and birth control. After the training significantly more TBAs conducted prenatal check-ups, assessed the baby’s position within the uterus, took the mother’s and baby’s pulse, checked the mother if she had taken nevirapine, referred the mother to the clinic for nevirapine for the baby, and significantly less TBAs conducted abnormal or complicated deliveries (10% in the past three months at pre and none at post-test). Mchunu and Bhengu¹⁹ found among the trained TBAs in KwaZulu-Natal that 83% conducted prenatal check-ups, 62% conducted abnormal or complicated deliveries, 100% assess the mother’s and baby’s pulse, 100% made a post-partum visit to the clients house, and 98% advised their clients to go to the clinic for immunization and birth control. Msaky et al.²² describe a project on the involvement of TBAs in PMTCT service delivery in Tanzania where TBAs ask all pregnant women who deliver under their care, whether during their antenatal care visits, they were given a tablet to take at delivery and whether they have taken it or lost it. TBAs then give eligible women (HIV+) who have lost their nevirapine a replacement tablet to take during labour.

Prior and after the training almost all TBAs were prepared to work with the clinic and would likely make referrals to a clinic. Three in four at pre-training and 86% at post-training indicated that they would refer a woman with risk signs during pregnancy to the health facility. The confidence in working with the clinic increased significantly from before to after the training. Mchunu and Bhengu¹⁹ also found among trained TBAs in KwaZulu-Natal that 96% would refer a woman with risk signs during pregnancy to a health facility.

The study showed that TBAs in the Eastern Cape in South Africa play a role in maternal care and HIV prevention. Further, TBAs can increase their knowledge, improve their attitudes and reduce risk practices after having been trained. TBAs need skilled, equipped available support to carry out basic preventive measures in the obstetric patient, to anticipate and identify obstetric complications, nevirapine prophylaxis, as well as make appropriate and timely referrals backed up with efficient referral mechanisms to reduce maternal morbidity and mortality²⁰.

Limitations of the study

The study used only a pre-post design and only self-reports measures which limit the validity and reliability of the results. Further, a follow-up research on maternal and child health in the studied communities should be conducted in order to establish the outcome of the training impact.

Acknowledgements

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