

Training community care workers to provide comprehensive TB/HIV/PMTCT integrated care in KwaZulu-Natal: lessons learnt

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Abstract

OBJECTIVE To describe a participatory approach to implement and evaluate ways to integrate and train community care workers (CCWs) to enhance collaborative TB/HIV/PMTCT activities, and home-based HIV counseling and testing (HCT) at community level.

METHODS The intervention study was conducted in Sisonke, a rural district of KwaZulu Natal, South Africa. A baseline household (HH) survey was conducted in 11 villages. Six villages were randomly selected into intervention and control clusters. Training was provided first to CCWs from the intervention cluster (IC) followed by the control cluster (CC). Routine monthly data from CCWs were collected from March–December 2010. The data was subjected to bivariate tests.

RESULTS The baseline HH survey revealed that of 3012 HH members visited by CCWs in 2008, 21% were screened for TB symptoms, 7% were visited for TB adherence support and 2% for ART adherence, and 1.5% were counselled on infant feeding options. A total of 89 CCWs were trained. Data show that during the study period in IC, 684 adults were offered HCT by CCWs, 92% accepted HCT and tested and 7% tested HIV-positive and were referred to the clinic for further care. Of 3556 adults served in IC, 44% were screened for TB symptoms and 32% for symptoms of sexually transmitted infections (STIs) and 37% of children were traced as TB contact. Out of 6226 adults served in CC, 10% were screened for TB symptoms and 7% for STI symptoms. The differences in uptake of services between IC and CC were statistically significant ($p < 0.05$).

CONCLUSION The findings of this study suggest higher uptake of TB and STI symptoms screening, TB contact tracing and home based HCT in the intervention clusters. This study suggests that up-skilling CCWs could be one avenue to enhance TB/HIV case finding, TB contact tracing and linkages to care.

keywords community care workers, integration, up-skilling, joint TB/HIV activities, South Africa

Introduction

Most countries in sub-Saharan Africa, including South Africa, are currently exploring ways to re-vitalize the Alma Ata Primary Health Care (PHC) concept (WHO 1978), with a focus on community participation and integration of community care workers (CCWs) into health systems. Several studies have highlighted the impact of community participation in health care, including an increase in health service coverage, efficiency, effectiveness, equity, access and self reliance (Lewin *et al.* 2005; Haines 2007; Lewin & Glenton 2007; Herman *et al.* 2009). As highlighted in the WHO interim policy on implementation of collaborative TB/HIV activities and in several studies conducted in sub-Saharan African countries, involving CCWs in the fight against HIV and TB may contribute to universal

access to HIV and TB prevention, case finding, treatment support and care thus prevent new infections and mitigating the impact of both infections (WHO 2004; Friedman 2005; Maher *et al.* 2005; Zachariah *et al.* 2006; Parsa *et al.* 2009).

Besides the potential benefits for increased access to care, there is growing evidence supporting involvement of CCWs as a strategy to address critical health workforce shortages (Lehmann & Sanders 2007; Schneider *et al.* 2008). Despite their potential for expanding primary health care (PHC) beyond health facility fences and addressing the human resource for health crisis (HRH), in most settings CCWs are under-utilized (Zachariah *et al.* 2009). Therefore, it is crucial to identify ways to maximize involvement of CCWs in the implementation of collaborative TB/HIV/PMTCT services and the PHC system as whole.

In South Africa, community members such as CCWs, traditional healers and other groups have been involved in HIV prevention and care, advocacy, support and counselling in efforts to address high HIV-infection rates and mitigate the impact of HIV (Friedman *et al.* 2007; Schneider *et al.* 2008). However, there are many cadres of CCWs (i.e. community health workers (CHWs), home based carers (HBCs), TB treatment supporters, etc.) and most have been trained in a single disease or a particular programme. This has created conflicts among CCWs and discomfort to household members who are visited by more than one CCW (Clarke *et al.* 2008; Uwimana *et al.* 2010). To date no research has yet been conducted in South Africa to explore models of providing comprehensive and integrated TB/HIV/PMTCT services by CCWs.

Our study sought to explore training and integrating different types of CCWs involved in TB and HIV programmes into one cadre of CCW; to develop and implement an integrated model for provision of TB/HIV/PMTCT care by CCWs; and to assess the performance of up-skilled CCWs in providing integrated TB/HIV/PMTCT services. In this paper, we report on the phased, participatory action-research process, as well as its results.

Methods

The study was conducted in Sisonke district,¹ a rural district of KwaZulu Natal (KZN) province in South Africa with very high (39%) antenatal HIV prevalence (DOH 2010). An Action Research (AR) approach was chosen as a process of collaborative knowledge development and action involving local stakeholders as full partners in a mutual learning process (Greenwood & Levin 2007). AR is increasingly being used in healthcare settings as an effective approach to identify problems in clinical practice and engage practitioners and beneficiaries in helping to develop potential solutions in order to improve practice (Meyer 2000). In line with this participatory perspective embedded in the AR approach, five steps were undertaken.

First, we explored stakeholder perspectives on involving CCWs in provision of TB/HIV/PMTCT integrated services at community level through a qualitative study involving key informant interviews (KIIs) and focus group discus-

sions (FGDs) with a purposive sample of 29 participants.² The overall findings of this first step (qualitative study) are discussed elsewhere (Uwimana *et al.* 2009); here we discuss key findings related to engaging CCWs in provision of TB/HIV/PMTCT integrated services.

Second, we convened a stakeholders' meeting in Sisonke district in February 2009 to discuss the key findings of the qualitative study and develop recommendations to enhance the engagement of CCWs in provision of TB/HIV/PMTCT integrated care. Thereafter a district research committee (DRSC) was established to oversee the project and a sub-committee (SC) was also established with a mandate to develop, implement and evaluate an integrated model for provision of TB/HIV/PMTCT services by CCWs.

Third, we mapped CCW based on the criteria set by SC,³ then undertook community mapping (using Global Positioning System (GPS) units) of all HBCs and CHWs in the catchment areas of the selected NGOs. A total of 209 CCWs were mapped and grouped according to their geographic areas in 11 villages.

Fourth, a baseline household (HH) survey⁴ was conducted to assess the burden of TB and HIV in four sub-districts in the district and the provision of services related to TB/HIV/PMTCT by CCWs. Six of the 11 surveyed villages were randomly selected into three intervention and three control clusters matched on demographic and socio-economic factors and access to health facilities. The remaining five villages were too different to match and were identified as 'non-selected sites'. A phased implementation approach was used to train CCWs in all villages,

²Key informants interviews with 6 provincial managers, 6 district managers and programme coordinators, 11 health facility managers and 6 NGOs employing CCWs (i.e. CHWs and HBCs). Six focus group discussions with CCWs.

³At the time of the study, CCWs were employed and managed by NGOs, some of which were contracted by the Department of Health. Selection criteria for NGOs to participate in the study were based on the number of years of existence in the district (5 years or more), services provided (should include TB and HIV), good governance records and contracted by the Department of Health.

⁴A sample size of 2400 households (i.e. individuals) was calculated using Epiinfo based on the total population of the selected wards as study sites. This sample size has been calculated for a one-sided test with 80% power and a 5% significance level based on an increase of VCT uptake from 32% to 40% post-intervention over a period of 6 months. Approximately 20% is added to this sample size for the purpose of non-response rate making a total of 3000 household members (individuals). The estimated effect size is conservative since this is a new intervention that has never been rigorously assessed in South Africa. A total of 1500 households (individuals) per arm (i.e. 500 individuals per ward/cluster) in order to determine an increase from 35% of HCT uptake to 40% after 12 months of intervention.

¹Sisonke district is one of the 11 districts of KZN province with a high HIV prevalence in TB patients and high numbers of multi-drug resistant TB (MDRTB) and extremely drug resistant TB (XDRTB). The HIV prevalence among ANC in the district is estimated at 35% compared to 38.7% provincial overall in 2008–2009 (DOH 2010). The total number of TB cases (new) was 1079 per 100 000 population with HIV co-infection rate of 81% compared to 52% overall in SA (DOH-KZN 2010).

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first in intervention clusters – IC ($n = 39$ CCWs), second in non-selected sites ($n = 120$) and lastly in control clusters – CC ($n = 50$). There was an interval of 10 months between training of intervention and control clusters. This training was implemented from October 2009 to February 2011.

As the final step, community mobilization events involving officials, chiefs, traditional healers and others were conducted after training in each cluster to introduce CCWs in the communities. For monitoring and evaluation (M&E) of the project, routine monthly data on CCW performance were collected from March 2010 to December 2011 in both clusters by community health facilitators (CHFs), the supervisors of CCWs. Data collections and reporting tools for routine data were developed by the researcher in collaboration with the SC. The data were captured using Excel. We report on more details of this process under 'results', as the intervention itself comprised transforming the ways in which CCWs are deployed, trained, supervised, and the programme evaluated. A follow up HH survey was later conducted to assess the impact of the project at community level. The latter is an on-going activity.

Ethical clearance was obtained from the University of the Western Cape and the Research Unit of the KZN Department of Health. Written consent was obtained from all participants in KIIs, FGDs and Household surveys.

Data collection and analysis

Key informant interviews were conducted in English by the first author and FGDs with CCWs were conducted in isiZulu by a bilingual (isiZulu and English) research assistant. The interviews were transcribed by an independent transcriber. ATLAS.ti was used to capture and organize data thematically. Data collection for the baseline HH survey consisted of interviews recorded on cellphones (Clyral Research console) with all adults 18 years old or more in a household. The questionnaire was developed by the first author and was programmed into the cell phones in collaboration with the service provider (Clyral). Logical, range, missing data and other checks were also programmed to minimise data entry error by field workers. The data for the HH survey were exported into Excel and analysed with Statistical Package for Social Sciences (SPSS_version 19). For routine CCWs data, the data from March to December 2010 was collected for analysis comparing intervention and control clusters in relation to provision of core TB/HIV/PMTCT services. The data was captured using Excel and analysed with STATA version 11 using frequencies and proportions. Bivariate tests (t -test and Poisson test) were used to

compare difference in proportions and means across clusters. For statistical significance a p -value <0.05 was used.

Results

Implementation process of the CCW training programme for provision of TB/HIV/PMTCT integrated services

The findings of the qualitative study⁵ and the feedback report from the stakeholders' meeting in the district served as a guide and working document for the SC to set up a framework for designing, implementing and evaluating the CCWs up-skilling programme (Fig. 1). The predominant thematic recommendations emerging from the qualitative study were: integrate diverse community care cadres into one cadre; harmonise scope of practice; train CCWs to provide comprehensive TB/HIV/PMTCT care; and improve supervision of CCWs through a monitoring and evaluation (M&E) system for community based programmes (i.e. NGOs and CCWs). All participants felt that CCWs should be trained comprehensively to provide integrated TB/HIV/PMTCT care. A set of core activities (Table 1) related to provision of TB/HIV/PMTCT integrated services by CCWs emanating from the qualitative study was used to develop the training package for CCWs.

Reallocating and streamlining linkage among NGOs, CCWs, households and health facilities

After selection of NGOs and CCWs, 10 community health facilitators⁶ (CHFs) were recruited and placed in the PHC clinics to support CCWs. Since both CHWs and HBCs had to be integrated as one cadre of CCWs to avoid multiple visits in homes, a demarcation process was undertaken by CHFs and the NGO supervisors to re-allocate 50–100 households to each selected CCW. Each household was thereafter visited by only one CCW.

⁵The details of the qualitative study are presented and discussed in another paper that has been submitted for publication: Engagement of non-government organisation and community care workers in collaborative TB/HIV activities including PMTCT in a rural district of KwaZulu Natal, South Africa. Uwimana *et al.* (2011).

⁶Community health facilitators ($n = 10$) were supervisors of CCWs who were placed in the clinics to ensure facility and community interface, monitor the work of CCWs and submit monthly report. CHFs were also in charge of community oriented activities in the catchment area of the clinic.

Framework for the development and implementation of the CCW's up-skilling programme for provision of TB/HIV/PMTCT services

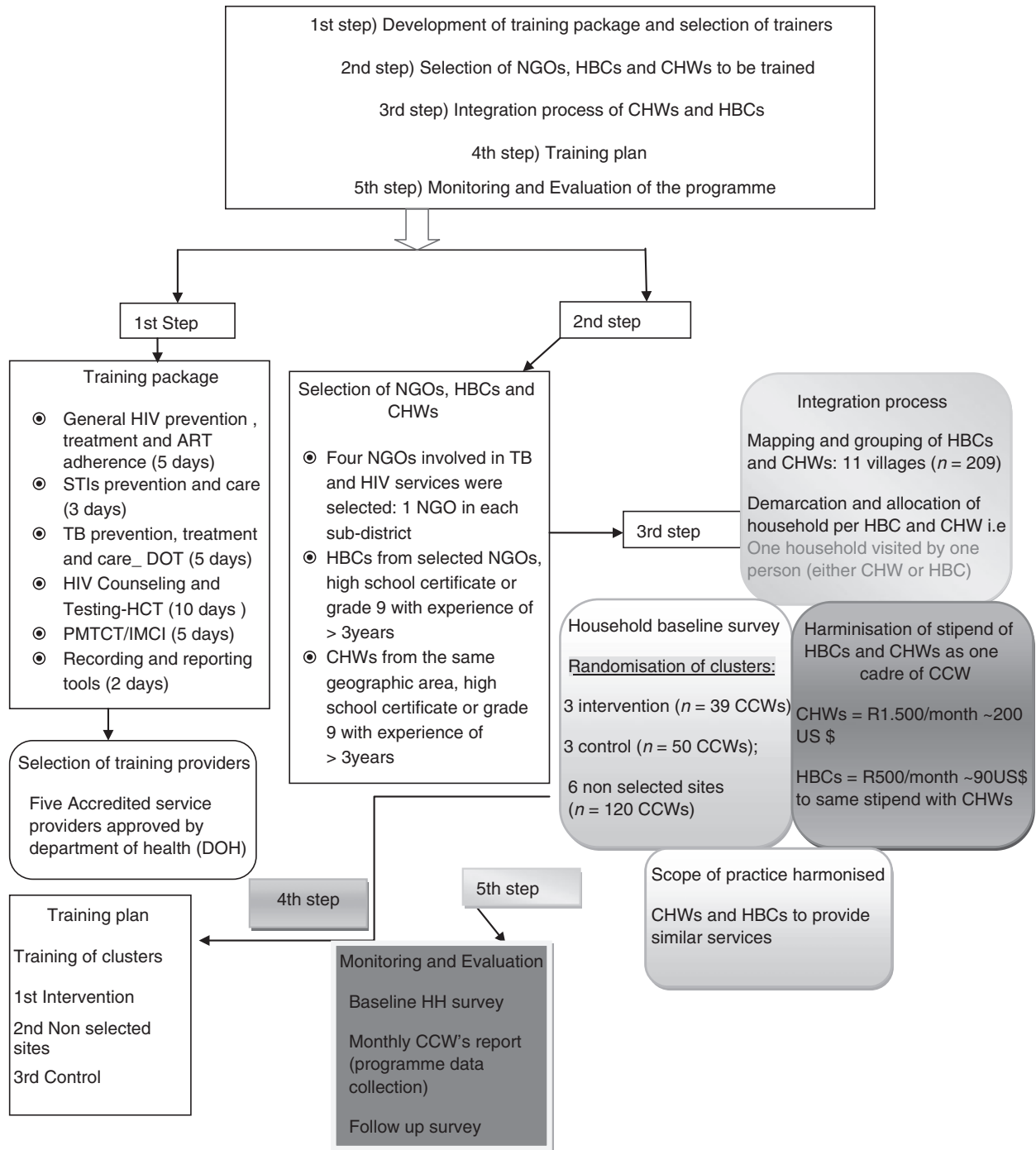


Figure 1 Framework for the development and implementation of the CCW's up-skilling programme for provision of TB/HIV/PMTCT services.

Table 1 Core activities related to collaborative TB/HIV/PMTCT to be provided by CCWs

| Activities | Description |
|---|--|
| Health education: TB prevention and care; HIV prevention and care; Sexually transmitted diseases (STIs) and other issues such as hygiene and environmental health | Health education was given as a talk to householder members during household visits and campaigns or community events |
| General home based care | Provision of nursing care (bathing, feeding, etc) to HIV terminally ill patients |
| TB symptoms screening, treatment adherence and tracing of defaulters | Screening of household members for TB symptoms and refer TB suspect to the clinic for further care Provide treatment adherence support to household members diagnosed with TB (i.e. treatment literacy and counselling and pill counts) Tracing of TB contacts and TB defaulters |
| STI symptoms screening | Screening of household members for STI symptoms and refer STI suspect to the clinic for further care |
| Home based HIV Counselling and testing | Provision of HIV counselling and Testing in homes (i.e. Pre-HIV test counselling, HIV testing using rapid test and post-test counselling) and on-going counselling |
| Treatment adherence support for ART and tracing of ART defaulters | Provide ART adherence support (i.e. treatment literacy and counselling and pill counts) Tracing of ART defaulters |
| Treatment adherence support to PMTCT clients (AZT), Counselling on infant feeding for HIV+ pregnant clients and refer pregnant women for antenatal care (ANC) visits (within 14 days) | Provision of adherence on dual therapy, educate and counsel pregnant women on infant feeding options and encourage pregnant women to attend ANC visits particularly the 1 st ANC visit at 14 days |

Training process of CCWs

A training plan was developed by the SC as described in Fig. 1 which was geared towards the core activities to be performed by CCWs in relation to provision of a comprehensive TB/HIV/PMTCT package of services (Table 1). Thirty-nine CCWs from the intervention clusters were trained over a period of 30 days and were then placed in the clinics for practical training on HCT and TB and STI case finding for a further month. They were under the supervision of CHF's and the professional nurse in charge of the PHC clinic. After the clinic placement and practical training of CCWs, multi-sectoral community mobilization events were conducted in the villages prior to provision of TB/HIV/PMTCT services by trained CCWs in their community. These events involved traditional leaders (Chiefs, *Induna*), traditional healers, NGOs, social development services, officials from the Department of Home Affairs, schools, professional nurses and CCWs. Community mobilization events were conducted in order to introduce the project to the community leaders and community members and explain the range of services to be provided by up-skilled CCWs. During community mobilizations, CCWs distributed condoms, provided HCT, TB and STI symptom screening, TB sputa collection and referral of TB and STI suspects to health facilities.

Other services such as issuing of birth certificates, identification documents, and application for grants were also provided. One thousand hundred and sixty-seven people attended the mobilization events. Four thousand six hundred and seventy condoms were distributed, 27.5% of participants were tested for HIV and screened for TB and STIs symptoms. Of 321, 4.3% tested HIV-positive and 5% had TB symptoms. The sputa were collected from TB suspects and all the 19 HIV-positive clients were immediately followed up by a professional nurse for CD4 counts.

Provision of TB/HIV/PMTCT integrated services and M&E of the project

Two initial steps were recommended by SC to monitor and evaluate the intervention. The first step *was a* baseline HH survey for community profiling, determining the burden of disease (TB and HIV), services provided by CCWs in the communities, and the data were used to match communities prior to randomization. The second step was the development of recording and reporting tools to assess the performance of up-skilled CCWs. These recording and reporting tools were developed by the first author in collaboration with the SC. Both CCWs and CHF's were trained on the recording and reporting

systems. Each month, the data was collected by the CHF's and validated by nurse mentors.⁷ Data from March 2010 to December 2010 was analysed by the first author and the results were reviewed by the SC and the DRC.

Findings from the baseline household survey

Concerning the burden of TB and HIV disease in the community, of 4420 HH members, 90% were willing to disclose information related to HIV and TB; and 6% reported being diagnosed with TB and currently on treatment. Of 2028 HH members (56%) who reported having been tested for HIV 22% were HIV-positive, 52% were on Cotrimoxazole preventive therapy; 19% on isoniazid preventive therapy (IPT), 57% were on ART and 20% were co-infected with TB and currently on TB treatment. One hundred and fifty-six HH members (4.5%) were pregnant of whom 7% were HIV positive and 10% had TB. Seventy-eight per cent of HH members were visited by CCWs in the past year (2008) with 95% reported being visited for health education, 21% for TB symptom screening (TBS), 7% for directly observed TB treatment (DOT); 2% for ART adherence support and only 1.5% of HIV pregnant women were counselled on infant feeding options. Table 2 illustrates the TB/HIV/PMTCT services provided by CCWs at household level from the baseline survey.

Table 2 Proportion of households served by CCWs and type of services provided from Baseline Survey

| Services provided | Number (n) | Percentage (%) |
|--|------------|----------------|
| Health education | 2860 | 95 |
| Screening of TB symptoms | 645 | 21 |
| Awareness on HIV counselling and testing | 593 | 20 |
| Home based HIV counselling and testing | 1105 | 17 |
| Collecting a sputum | 338 | 11 |
| Adherence support for TB treatment | 214 | 7 |
| Nutrition/food parcel | 67 | 2.2 |
| Adherence support for ART | 61 | 2 |
| Counselling on infant feeding | 46 | 1.5 |
| Adherence PMTCT clients | 17 | 0.5 |

n = 3012.

⁷Nurse mentors were primary health care (PHC) supervisors of 4–6 PHC clinics in each sub-district where the study took place. These nurse mentors were mentoring and coaching the nurse in charge/operational managers of clinics and the CHF's.

Performance of CCWs after training on TB/HIV/PMTCT comprehensive care package

A total of 5588 HH were visited by CCWs in the IC compared to 13 479 households in the CC whereby 4038 (72%) of HH members were served by CCWs in the IC and 6600 (48%) in the CC ($p < 0.05$). In the IC, the majority (91%) of HH members received education on TB/HIV/PMTCT and infants feeding, 44% were screened for TBS and 32% screened for STIs. Of 482 children served, 180 (37%) were traced as TB contacts and referred to the clinics.

In the CC, 42% of HH members were educated on TB/HIV/PMTCT and infants feeding, 10% were screened for TBS, 7% STIs symptoms screening. The differences in provision of TB and STI screening in IC compared to CC were statistically significant ($p < 0.05$). Out of 1575 screened for TBS in IC, 6% were TB suspects, 77.5% were referred to the clinics, 2% were STI suspects and 35.7% were referred to the clinics. Whereas in CC, of 446 screened for STIs, 13% were suspects and 60% were referred to the clinic. The differences finding TB/STIs suspects and referrals were statistically significant ($p < 0.005$). The high number of TB and STI suspects in CC is due to the fact that CCWs were only screening those with obvious symptoms.

Since CCWs from the control arm had not yet been trained on providing home-based HCT, they were only promoting HCT and referring clients to the clinic for HIV testing. Only 64 clients were counselled for HIV testing and 41 (64%) of them had an HIV test at the clinic. In contrast, CCWs in the intervention arm were promoting HCT and providing HIV testing (using HIV rapid tests) at home. A total of 684 clients were offered HCT, 92% accepted to be tested and 7% were HIV positive and referred to the clinics for further care.

With regard to treatment support of clients on TB, ART and dual therapy, in IC of 752 clients receiving treatment adherence support, 62% were on ART, 36% on TB treatment and 2% were on dual therapy (for PMTCT). In CC, of 714 clients, 59% were on ART, 39% on TB treatment and 0% on dual therapy. Table 3 illustrates the performance of up-skilled CCWs and non up-skilled CCWs.

Discussion

The high provision of various services related to TB/HIV/PMTCT services by CCWs during the intervention phase after mobilization events may in part be attributed to the positive impact from the community mobilizations events as an enabling environment creating awareness and acceptance of services to be provided by

J. Uwimana *et al.* **Training community workers for integrated care****Table 3** Performance of up-skilled CCWs and CCWs non-up-skilled in provision of TB/HIV/PMTCT integrated services from routine monitoring data

| Household visits, <i>n</i> (%) | 5558 | 13 479* | <i>p</i> value [†] |
|--|-------------------------|----------------------------|-----------------------------|
| Beneficiaries | 4038 (72%) | 6600 (46%) | 0.000 |
| Adults served | 3556 (88%) | 6226 (94%) | |
| Children served | 482 (12%) | 374 (6%) | |
| Gender | | | |
| Females | 2688 (67%) | 4915 (74%) | |
| Males | 1350 (33%) | 1685 (26%) | |
| Services provided | <i>n</i> = 8079 | <i>n</i> = 9781 | |
| Health education on TB,STIs,HIV,PMTCT and infant feeding | 7391 (91.4%) | 4090 (41.8%) | 0.000 |
| Condom distribution | 8182 | 8841 | 95% CI [§] |
| Condoms distributed | (2.4 condom per adults) | (1.4 condom per adult) | [2.251–2.351] [1.390–1.499] |
| TB case finding and successful referrals to the clinics | | | |
| Clients screened for TB symptoms | 1575 (44%) | 627 (10%) | 0.000 |
| TB suspects identified | 89 (6%) | 170 (27%) | 0.000 |
| TB suspects referred the clinics | 69 (77.5%) | 125 (73.5%) | 0.48 |
| TB contacts traced | <i>n</i> = 482 | <i>n</i> = 374 | |
| TB contacts traced | 180 (37.3%) | 0 (0%) | 0.000 |
| STIs suspects and Successful referral to the clinics | | | |
| Clients screened for STIs symptoms | 1141 (32%) | 446 (7%) | 0.000 |
| STI suspects | 28 (2%) | 60 (14%) | 0.000 |
| STI suspects referred | 10 (35.7%) | 36 (0.6%) | 0.033 |
| Home based HCT | | | |
| clients offered HCT | <i>n</i> = 684 | <i>n</i> = 64 [‡] | |
| Clients accepted HCT and tested | 634 (92%) | N/A | |
| Clients HIV positive | 45 (7%) | N/A | |
| Clients referred – clinics for HCT to the clinic | 50 (8%) | 41 (64%) | |
| Treatment adherence support | <i>n</i> = 752 | <i>n</i> = 714 | |
| ART adherence support | 466 (61.9%) | 422 (59.1%) | |
| TB adherence support | 271 (36%) | 282 (39.4%) | |
| HIV-TB co-infected on TB adherence support | 40 (5.3%) | 10 (1.4%) | |
| Dual therapy adherence support | 14 (1.5%) | 0 (0%) | |

*The variation of households visits in the intervention and control clusters is due to number of CCWs enrolled in each arm (i.e. 39 CCWs in Intervention; 50 CCWs in control).

[†]*t*-test: *p* < 0.005.

[‡]CCWs from the control site where not providing home based HCT but they were promoting HCT and referring clients for HIV testing.

[§]Poisson test: CI.

up-skilled CCWs in the communities. The training itself also contributed to high provision of these services in the intervention clusters compared to the control ones. Almost half (44%) of the HH members were screened for TB symptoms and 32% of HH members were screened for STIs; in the control clusters only 10% of HH members were screened for TB symptoms and 7% screened for STIs. This concurs with other studies conducted in Haiti and Malawi (Zachariah *et al.* 2006; Mukherjee & Eustache 2007) where there was a substantial increase in uptake of HIV and TB services and other PHC services after training the CCWs.

The study also indicated that almost a third (37%) of children <5 years were TB contacts and referred to the

clinics for further management. Kruk *et al.* (2008) in their prospective community study found that 2/3 of child TB contacts were identified by using a symptom-based approach, and those children were put on IPT with no requirement of TST. Therefore, TB symptom screening in homes, create an opportunity for prevention and access to care for exposed children less than 5 years.

One of the major challenges of the CCW programme in South Africa and other settings has been how to provide effective supervision and M&E (Wringe *et al.* 2010). In addition, the presence of multiple cadres of CCWs providing TB and HIV services in silos has hindered the enhancement of collaborative TB/HIV activities in the community, as well as their supervision (Clarke & Lewin

2008; Uwimana *et al.* 2010). Our findings suggest that it is feasible to integrate several cadres of CCWs into one cadre and to establish supportive structures through, for example, recruitment of Community Health Facilitators at PHC clinics. Placement of CHFs in the clinics enhanced the facility and community interface by providing supervision to CCWs and M&E community based activities.

This study also indicates that CCW-provided home-based HCT is both feasible and acceptable: 92% of people offered HCT in homes accepted to be tested by CCWs. In Uganda and Zambia, the acceptability of home based HCT was higher than facility based HCT (Mutale *et al.* 2010; Mulogo *et al.* 2011).

In South Africa, this is the first study that used CCWs to provide home based HCT as part of the comprehensive package for TB/HIV integrated services. This indicates a great opportunity for increase in uptake of HCT in the country particularly in rural areas with critical shortages of human resources. An enhanced scope of practice supported by training and effective supervision has been advocated by various scholars (Fiedman *et al.* 2007; Zachariah *et al.* 2009). Our findings strongly support this recommendation.

Stigma related to HIV & AIDS has been one of the barriers for enhancement for collaborative TB/HIV activities in the community (Okot-Chono *et al.* 2009) particularly for the uptake of HIV testing among TB patients as indicated elsewhere (Kigozi *et al.* 2011). Although our study didn't focus specifically on HCT among TB patients, there is an indication from this study that services provided by CCWs such as HCT were highly accepted by HH members. This suggests that up-skilled CCWs and provision of home based HCT is an avenue to decrease stigma in the community and bring the service nearer to the community. Although the acceptability of home based HCT was high, the inconsistency in supply of tests kits from the facilities was a major hindrance.

This study also indicates that CCWs from the IC where supporting a higher number (752) of clients on ART, TB treatment and dual therapy compared to CC (714). Although our findings did not assess the impact of treatment support provided by CCWs, studies elsewhere have shown that proper TB and HIV adherence support provided by CCWs contributed to improving treatment outcomes and survival, preventing drug resistance. The latter can potentially contribute to per patient cost saving (Muherrjee & Eustache 2007; Abaasa *et al.* 2008).

Finally, we note that the majority of HH members were counselled on infant feeding, and HIV pregnant women on dual therapy (AZT) where receiving adherence support. This is critical for improvement of PMTCT programme results. Community based interventions should therefore promote education on infant feeding.

Conclusion

Our findings suggest that community participation through multi-sectoral community mobilization events that engage community leaders such as traditional leaders is one of the enabling tools for successful community based programmes in TB/HIV/PMTCT care. Integrated provision of TB/HIV/PMTCT services at community level through one CCW cadre with an expanded and harmonized scope of action is feasible, acceptable, and appears to be successful. HCT and training CCWs to provide a comprehensive package of TB/HIV/PMTCT prevention, case finding and treatment support services is a promising avenue to maximize the implementation of collaborative TB/HIV/PMTCT activities. This could contribute significantly to providing comprehensive care and bridging the current gaps in service delivery through vertical TB, HIV and PMTCT programmes. However, an adequate structure at facility level that enhances facility and community interface through supervision of CCWs and M&E of community based activities is vital for quality services and to strengthen the PHC system at large. Inconsistency of supply and commodities such as test kits need to be resolved to increase uptake of HCT. Finally, we note that the outcomes of this study contributed to the integration process of CCWs across all of KZN province through the adoption of the model.

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