

Effectiveness of Community Dialogue in Changing Gender and Sexual Norms for HIV Prevention: Evaluation of the Tchova Tchova Program in Mozambique

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Structural HIV prevention interventions have gained prominence as ways to address underlying social and cultural factors that fuel the HIV epidemic. Identifying theories that explain how structural interventions are expected to change such factors can substantially increase their success. The Tchova Tchova community dialogue program, a theory-based intervention implemented in 2009–2010 in the provinces of Zambezia and Sofala, Mozambique, aimed to change gender and sexual norms for HIV prevention. Through facilitated sessions, the program sparked critical thinking and open dialogue among participants. This article measures the program's effectiveness based on a sample of 462 participants and 453 nonparticipants. The results show that the program was successful in producing changes in three of the underlying structural factors of HIV: gender attitudes, gender roles, and HIV stigma. The program was also successful in changing other factors associated with HIV infection, including HIV prevention knowledge, discussion of HIV between sex partners, and having multiple sex partners.

There is growing recognition of the importance of interventions to address structural factors that promote HIV prevention (Blankenship, Friedman, Dworkin, & Mantell, 2006; Small, Nikolova, & Narendorf, 2013; Sumartojo, Doll, Holtgrave, Gayle, & Merson, 2000). In sub-Saharan Africa, such structural factors include gender inequality (Bagnol & Mariano, 2008; Machel, 2001; Underwood, Skinner, Osman, & Schwandt, 2011), cultural norms that negatively affect health (Bates et al., 2004), and socioeconomic disparities that limit access to services and information (Machel, 2001). A criticism of interventions that attempt to address structural factors, however, is that

they are often not assessed rigorously and do not provide an underlying theory that maps out the mechanisms through which the intervention is expected to effect change and in turn influence health outcomes (Gupta, Parkhurst, Ogden, Aggleton, & Mahal, 2008). In this article we provide an example of how an intervention can combine theory and research to map the pathways that lead to the spread of HIV and address some of its structural sources.

Background

With an estimated HIV prevalence of 11.5%, Mozambique remains one of the countries in sub-Saharan Africa most affected by HIV/AIDS (Audet et al., 2010; Instituto Nacional de Saúde, 2009). Prevalence is higher among women than men (13.1% vs. 9.2%, respectively), mostly a reflection of social norms and inequities that put women at higher risk for HIV infection (Audet et al., 2010; Instituto Nacional de Saúde, 2009; Underwood, Skinner, et al., 2011). Heterosexual transmission accounts for the majority of new infections, with multiple sex partners (MSP) and multiple concurrent partnerships (MCP) being a main driver of the epidemic (Republic of Mozambique Council of Ministers, 2009). Since 2007–2008, prevalence has stabilized and slightly declined (UNAIDS, 2013) after sustained increases since 1986 (Audet et al., 2010). Although the progress is encouraging, reducing the number of new infections—estimated at 117,000 per year (UNAIDS, 2013)—remains a public health priority in the country.

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Given the limited success of individual-oriented HIV prevention interventions (Coates, Richter, & Caceres, 2008), continuing efforts tend to emphasize comprehensive interventions to better address structural and normative factors that underlie HIV transmission. Besides the well-documented negative effect of inequitable gender norms on women in sub-Saharan Africa (Luke, 2003), traditional sexual norms such as early sexual initiation, intergenerational sex, dry sex, and widow cleansing result in increased susceptibility among women to HIV infection (Hawkins, 2009; Myer, Kuhn, Stein, Wright, & Denny, 2005; Underwood, Skinner, et al., 2011).

Evidence indicates that gender inequality and traditional social norms around sexuality are fueling the HIV epidemic in Mozambique. A study among schoolgirls in the capital Maputo found that “patriarchal norms and the need for material support” make young women from low socioeconomic levels engage in risky sexual behavior more than women of higher status (Machel, 2001, p. 88). Predominant gender norms portray men as “superior, dominant and decision-makers while women are considered subservient, passive and obedient” (Bandali, 2011a, p. 578). Thus, women have difficulty negotiating condom use, as this is seen as questioning male authority (Machel, 2001) and may also suggest to men that women are being promiscuous (Bagnol & Mariano, 2008). It is thus not surprising that condom use at last sex among sexually active women (ages 15–49) is about half (8%) that for males (16%; Instituto Nacional de Saúde, 2009).

Although predominant sexual and gender norms appear deeply entrenched, recent evidence shows emerging changes. A qualitative study in Cabo Delgado province found that for some men, economic responsibility entailed choosing *not* to spend resources on other women but protecting their family from HIV infection and financial insecurity (Bandali, 2011a). In another study, some women described actively reducing their HIV risk by leaving risky marriages or successfully negotiating condom use with their husbands, thereby beginning to redefine the norms (Bandali, 2011b).

Said and Figueroa (2008) reported similar findings in their study in the provinces of Sofala and Zambezia. They found that people were dissatisfied regarding traditional sexual and gender practices and often expressed this dissatisfaction as a desire for more gratifying gender relations and a more harmonious family life. Chore sharing and opposition to domestic violence and multiple sex partnerships were endorsed equally by men and women, but multiple factors impeded acting on these new practices, thus hindering change. As in the Bandali (2011b) study, in Zambezia and Sofala extramarital relationships were perceived as burdens to the well-being and financial security of families and as a cause of HIV and other sexually transmitted infections. These studies suggest that in spite of deeply rooted gender and sexual norms, men and women in Mozambique are starting to redefine those norms, although Said and Figueroa noted that these emerging views are not widespread, openly spoken about, or acted on.

Theory

Murdock (1956) defined *culture* as a system of habits that are learned collectively and passed from one generation to the next. These habits—or social norms—endure because of social pressure

to conform and may prevent individuals from expressing divergent opinions or actions. According to Noelle-Neumann (1974, 2014), willingness to share an opinion depends on the perception of *public* opinion on the subject (Scheufele & Moy, 2000). When what is perceived as the minority opinion is self-censored to avoid social isolation, a “spiral” of silence develops that prevents *deviant* voices from being heard (Noelle-Neumann, 1974, 2014).

How then can a new social norm emerge? The theory of bounded normative influence posits that a minority position can become the social norm by a process of normative influence through communication networks (Kincaid, 2004). These networks of people linked through information and uniform, although minority, opinions can maintain a majority status within a portion of the larger network and expand by gaining converts, thus eventually establishing its position as the norm for the larger network.

Whereas the theory of bounded normative influence explains change at the *network* level, convergence theory helps explain how *individuals* at the subgroup level may improve mutual understanding, leading to normative changes. Convergence theory presents communication as a process of sharing or creating information by participants who seek to clarify information, knowledge, messages, symbols or meaning (Kincaid, 1987). Providing opportunities for the exchange of information on a certain topic accelerates convergence because the rate of convergence is partially a function of the rate of information exchange.

Dialogue is central to the process of convergence. According to Brazilian educator Paulo Freire (2001), face-to-face dialogue that provides opportunities for critical thinking, questioning of assumptions, and the development of a new view of the world leads to *conscientização* (critical consciousness) among group participants. In this sense, *conscientização* is a powerful agent of change that emerges from within the group and that can lead to new ways of thinking or *ideational* change (Kincaid, 2000). Ideational change regarding knowledge, beliefs and values (attitudes), emotions, self-efficacy, self-concept, and interpersonal communication (Ajzen, 1991; Fishbein & Ajzen, 1975; Kincaid, 2009) can evolve into new social norms. Critical thinking can be facilitated by exposure to divergent scenarios and observational learning that could provide alternative models of being (Bandura, 1977, 1986, 1997). Such exposure can be provided not only by discussion groups but also by the mass media, such as radio, which can have tremendous reach and psychosocial impact. Indeed, according to social-cognitive theory (as applied to mass media communication), people are active and self-reflecting agents who can learn through modeling provided by the media (Bandura, 2009).

The Tchova Tchova (TT) Program

In a resource-constrained environment such as Mozambique, where 54.7% of people live in poverty (World Bank, 2013), social isolation is a powerful social regulator. In such an environment, people cannot afford to be marginalized, as they rely on family and peers to weather disease, a bad crop, or the loss of a job. This, together with the fact that it is considered taboo to talk openly about sexual practices in Mozambique, makes changing sexual and gender norms for HIV prevention a challenge.

Tchova Tchova Histórias de Vida: Diálogos Comunitários (TTHV), which translates as “Push Forward Life Stories:

Community Dialogues,” was designed to address underlying social determinants, especially inequitable gender norms, as a fundamental step in reducing HIV risk behaviors, increasing self-efficacy to talk about and address HIV, and decreasing HIV stigma. The program was implemented in the provinces of Sofala and Zambezia by community-based organizations (CBOs) and nongovernmental organizations (NGOs) that carried out 1,134 community discussions/debates in 267 villages, reaching a total of 32,679 men and women participants during 18 months between 2009 and 2010. The program had two main components: facilitated community dialogues (TTHV sessions) using the African Transformation gender tool (Underwood, Brown, Sherard, & Abdur-Rahman, 2011) adapted to HIV/AIDS prevention (Pinho & Poppe, 2009) and the TT radio magazine.

The HIV/AIDS prevention gender tool used principles of adult education proposed by Freire’s empowerment education (Freire & Ramos, 1974), which emphasizes that knowledge comes not from experts but rather from collective dialogue and from within. The tool included nine video and written profiles of real Mozambican trendsetters, known in the literature as positive deviants (Sternin & Choo, 2000; Tuhus-Dubrow, 2009). In the profiles, the men, women, and couples tell their stories of how they overcame gender, cultural, and social barriers, such as domestic violence, alcohol abuse, and the subordination of women, to make positive changes in their lives that impacted HIV treatment and prevention.

The video profiles were shown on computer laptops during weekly interactive community sessions for 10 weeks (one session per topic plus a wrap-up session), followed by dialogue led by two trained local TTHV facilitators (one male, one female). Between 25 and 30 adults per session participated in lively discussions sparked by the video stories. The topics discussed included, among others, protecting one’s family from HIV through condom use, risk from having MSP, why and how to live without domestic violence, antiretroviral therapy (ART) adherence, and how men and women can support each other at home. TTHV facilitators led a step-by-step process for exploring both gender norms and individual behaviors in a safe environment, allowing participants to increase consciousness and self-efficacy to assess the impact of HIV in their life, family, and community. To guarantee the technical and facilitation skills of the local facilitators, the program conducted weekly facilitator supervision and mentoring sessions fostering cross-fertilization of ideas and experiences as well as peer-to-peer reinforcement, resulting in a technically and culturally competent team facilitating the sessions, which has been shown to increase the success of community-level interventions (Small et al., 2013).

The video stories mirrored viewers’ reality, highlighting the benefits and challenges men and women go through in adopting preventive behaviors and developing more equitable gender relations. Through identification, vicarious experience, positive modeling (Bandura, 1977, 1997), and group reinforcement, the TTHV sessions attempted to create conditions to facilitate the development of more favorable norms for HIV prevention and care. Participants discussed traditions and cultural values that play against women, gender-based violence, equitable gender roles and responsibilities at home and work, blaming women for bringing HIV home, and dismantling the idea of HIV as

taboo. Participants also practiced skills to speak out even when their opinions were in the minority. The situations and individuals portrayed in the videos together with the problem-solving strategies utilized by the video protagonists were intended to spark identification among participants. The nine-session cycle created rapport among participants, and many formed action groups to continue discussing salient issues, sharing TTHV lessons learned with other community members, and advocating for HIV-protective behaviors. TTHV groups were admired by people in the community, who sought to become part of the TTHV group discussions (Arias Quincot & Figueroa, 2010).

To expand the reach of TTHV activities, the TT radio magazine provided reinforcing messages and featured testimonies of TTHV participants who had made changes in their lives and modeled positive behaviors. The radio magazine included 34 programs of 12 minutes each, in local languages, covering topics such as condom use, sexual networks, domestic violence, dialogue on HIV between partners, HIV stigma, and gender and HIV, among others. Each of the 34 programs included a modeling segment that presented listeners with ways of speaking up or addressing these issues. Each program also included a radio debate segment in which listeners could call in or send text messages to an HIV/AIDS specialist. Questions in some text messages served as the basis for new content in future radio programs.

We hypothesize that people who participated in the TTHV discussions will have more favorable views of gender equity and HIV/AIDS, be more open to discussing sex-related issues with their partners, and have higher HIV prevention knowledge than those who did not participate.

Methods

Data

Data for this study came from a post-only sample survey of 462 participants and 453 nonparticipants in the TTHV sessions in Zambezia and Sofala provinces. The sampling of participants (intervention group) followed two stages. In the first stage a random sample of program districts was selected, and in the second stage a systematic random sample of men and women, in equal numbers, who had participated in the TTHV sessions was drawn from the selected districts. Because participants in TTHV may have been self-selected individuals who agreed to participate, the sample of nonparticipants (control group) was drawn from a list of men and women who had agreed to participate in the next round of TTHV sessions but had not done so at the time of the survey. The survey was fielded in July 2010 through face-to-face interviews using a structured questionnaire that collected information on exposure to and recall of the TTHV sessions, TTHV radio, and various gender and HIV-related attitudes, perceptions, and behaviors that the program addressed, as well as a set of sociodemographic and control variables. The study received approval from the Johns Hopkins Internal Review Board and from the Comité Nacional de Bioética em Saúde (internal review board) in Mozambique.

Table 1 shows that the samples in the intervention and the control groups varied slightly in some sociodemographic characteristics. The intervention sample was slightly older and

Table 1. Sociodemographic characteristics, media consumption, and community activities of the sample respondents in the control and intervention groups

Characteristic	Control	Intervention
Age (<i>M</i>)	33.1	36.1***
Female (%)	51.7	51.3
Religion (%)		
None	8.6	6.4
Catholic	43.4	38.8
Protestant	39.6	44.7
Other	8.4	10.1
Number of children (<i>M</i>)	3.3	3.9***
Occupation (%)		
Machamba/field	61.6	63.6
Vendor	16.1	16.0
Other	22.3	20.4
Works outside the house (%)	71.0	66.0
Poverty/days without food or shelter (<i>M</i>)	1.8	2.0***
SES/number of durables at home (<i>M</i>)	3.3	3.0**
Ever attended school (%)	86.5	86.6
Education level (%)		
None	20.0	19.0
Primary (EP2)	39.0	43.0
Secondary (Cycle 1)	25.0	24.0
Secondary (Cycle 2) and higher	14.0	11.0
Marital status (%)		
Married	25.0	35.5***
In union	75.0	65.5
Media consumption and community activities (%)		
Listens to the radio every day	42.6	49.0*
Watches TV every day	16.0	14.0*
Participates in other non-TTHV community groups/activities	82.3	85.3
Heard of organizations in his or her community that work on HIV	62.9	62.9

Note. SES = socioeconomic status; EP2 = primary education levels 6 and 7; TTHV = Tchova Tchova Histórias de Vida: Diálogos Comunitários. * $p < .05$. ** $p < .01$. *** $p < .001$.

poorer (socioeconomic status), with a larger number of children, less exposure to television, and a higher proportion of married respondents compared to the control group. Because these differences may have negatively affected program outcomes in the intervention group, we controlled for these characteristics in the final statistical analyses.

Measurement

Exposure to TTHV Sessions and Radio

By design, the control group had no exposure to the TTHV sessions but could have been exposed to the TT radio program. All survey respondents were asked whether they had heard of TT in general. For the intervention group, the questionnaire also measured (a) the number of sessions attended; (b) whether the spouse also attended; (c) recall of topics discussed (unaided); (d) identification of five images shown from videos; and (e) for each

image recognized, what participants learned from each story. The video images were shown after respondents had answered the question about topics they recalled from the TTHV sessions. Exposure to the TT radio program was measured by asking all survey respondents whether they had heard TT on the radio, their frequency of listening, and what messages they remembered (unaided). High participation and recall in the sessions did not provide sufficient variance to differentiate participation levels, and thus for the analyses we used a binary measure (0/1) of participation in the TTHV sessions. For exposure to the TT radio, a four-level variable (quartiles) was developed from the number of messages recalled. We kept these measures separate to identify their independent contributions to the outcomes and because the control sample could have been exposed to the radio program.

Behavior-Related Outcomes

The questionnaire included questions about gender attitudes and gender roles, HIV partner communication, HIV prevention knowledge, HIV stigma, and MSP behavior. Given the limited length of the questionnaire, we were not able to collect detailed data about each sexual relationship to be able to compute an average measure of condom use. The survey did however measure condom attitudes and self-efficacy for condom use, which have been shown to be predictors of condom use (Albarracín, Johnson, Fishbein, & Muellerleile, 2001). In this article, our analysis is limited to MSP behavior given its relevance to HIV infection in Mozambique. Testing for HIV was not investigated in the survey.

Gender Attitudes

The survey investigated gender attitudes by asking respondents whether they agreed or disagreed with a series of 12 statements (based on program monitoring results) about gender roles, such as “Nowadays married men can also assist in the tasks typically assigned to women (washing, cooking, looking after the children).” A Likert-type scale of *total disagreement to total agreement* was used. For the analysis a gender equity attitude scale was developed (mean range = 0–4; $\alpha = .74$) and split at the median to correct for skewness.

Gender-Equitable Behaviors

To measure gender-related behaviors, the survey questionnaire contained a list of 11 household tasks, including some discussed during TTHV sessions, and asked respondents to indicate whether in their household these tasks were done only by men, only by women, or by both. For the analysis we used a continuous variable measuring the number of tasks reported done by both men and women (range = 0–11).

HIV Partner Communication

To explore partner communication related to HIV, the survey questionnaire asked respondents whether in the past 3 months they had talked with their partner about HIV and/or sexual behavior and what they had spoken about. For the analysis we used a continuous variable measuring the number of topics reported (range = 0–9).

HIV Prevention Knowledge

HIV prevention knowledge was measured by first asking respondents whether they had heard of HIV. Those with a

positive response were asked whether there is anything people can do to prevent HIV infection, and if so what people can do (unaided responses). For the analysis we used a continuous measure representing the number of correct answers related to sexual behavior (range = 0–6, collapsed to 0–4 for the analysis).

HIV Stigma

Respondents were asked to use a Likert-type scale to give their opinion on statements reflecting attitudes toward HIV and people living with HIV, such as “It is a shame to be seen with someone who is known to have AIDS.” For the analysis we developed a scale reflecting HIV stigma (mean range = 0–4; $\alpha = .75$) split at the median to correct for skewness.

MSP Behavior

Number of sex partners was measured by asking respondents how many sex partners they had at the time of the interview, including their spouse. For the analysis we created a dichotomous variable with 1 representing more than one sex partner.

Statistical Analysis

To evaluate the effect of the TTHV sessions we compared outcomes between the intervention and control groups using analysis of variance for continuous variables, such as number of shared household tasks, and cross-tabulations for binary variables. *F* statistics for analysis of variance and chi-square statistics for cross-tabulations were used to assess whether the identified differences were statistically significant ($p < .05$). In addition, we used multivariate regression analysis that allowed controlling for potential confounders and accounting for sample differences between the intervention and the control groups. Goodness-of-fit statistics are reported for each regression model. We used STATA 12 for the statistical analyses.

Results

Level of Exposure and Recall of TTHV Sessions

Attendance at all nine TTHV sessions was high, at about two thirds of participants (64%). For the remaining third, the median number of sessions attended was five, which means that about 80% of respondents attended at least five of the nine sessions. Overall, more men reported attending all nine sessions (69%) than women (59%). Participation by partners/spouses of respondents was also high at 66%.

Unaided recall of topics discussed in the sessions reflected the diversity of issues addressed by TTHV discussions. The issue of MSP was mentioned by 47% of respondents, and sexual violence, alcohol use, and condom use also had high levels of unaided recall at almost 40%. Most topics were equally recalled by both men and women. Each of the five images from the TTHV videos was recalled by at least 70% of respondents, and 53% recalled all five images; only 4% did not recall any image. Overall, men and women had roughly equal recall of the images shown, although men had a significantly higher recall of images that corresponded to topics specifically aimed at men—sharing household chores, and alcohol and violence. More than 95% of respondents provided unaided valid answers related to the story images shown.

Exposure and Recall of TT Radio

Almost two thirds (63%) of the control group said that they had heard of TT, with the main channel being radio (72%), followed by friends (29.6%), neighbors (16.4%), and relatives (13.9%). Exposure to TT over the radio was higher however among those in the intervention group (91%) compared to the controls (51%). Recall of the radio topics was also higher in the intervention group compared to the control group. About 16% of respondents in the control group and 4% in the intervention group were not able to recall any specific topic.

Table 2. Distribution of outcome variables between TTHV control and intervention groups: gender-equitable attitudes, gender roles, HIV prevention knowledge, attitudes that discourage HIV stigma, HIV partner communication, and multiple sex partners behavior

Outcome	Control (%)	Intervention (%)
Gender equity		
Gender attitudes (above the median)	35	64***
Gender roles (mean number of shared household tasks)	4	7***
HIV prevention knowledge		
Abstain from sex	24	33**
Use condom	80	92***
Have sex with only one partner/be faithful to your one partner	71	85***
Avoid sex with prostitutes	4	11***
Reduce the number of sex partners	6	11**
Avoid having sex with someone who has other sex partners	3	7**
Bring new blade to healer (<i>curandeiro</i>)	21	24
Demand new syringe (<i>seringa</i>) in health services	13	13
Mean number of six correct answers ^a	1.9	2.4***
HIV stigma		
Attitudes that discourage HIV stigma (above the median)	30	52***
HIV partner communication		
Talked with partner in the past 3 months	72	88***
Topics discussed with partner		
HIV risk (generic)	43	50
HIV prevention (generic)	66	62
Condom use	26	35**
<i>Andar fora</i> (being unfaithful)	28	36**
Being faithful	21	26
Multiple sex partners	18	30***
HIV testing	14	20*
Mean number of topics discussed	1.9	2.8***
Multiple sex partners (with more than one sex partner)	7	2***

Note. TTHV = Tchova Tchova Histórias de Vida: Diálogos Comunitários.
^aOnly includes the six sex-related responses that were addressed by the program.
 * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 3. Household tasks done by only men, only women, or both in control and intervention households

Household task	Only women (%)		Only men (%)		Both (%)	
	Control	Intervention	Control	Intervention	Control	Intervention
Work in <i>machamba</i> /field	15	12	2	3	83	85
Prepare meals for family	75	43	0.4	0.7	25	56
Make blocks	2	1	39	26	59	73
Work outside for money	5	3	53	34	42	63
Bathe children	71	32	0.5	1	28	67
Do the dishes	75	42	1	1	24	57
Cut wood/burn charcoal	29	12	19	20	51	67
Fetch water for household	69	37	0.2	2	31	61
Maintain/fix house structure	20	9	20	20	59	71
Do laundry	69	40	1	0.6	30	60
Clean house	64	31	1	1	35	67
Mean number of shared household tasks					4.5	7

Note. $N = 915$. All differences between the intervention and the control groups were statistically significant ($p < .05$) except for the first task listed (work in *machamba*/field). Bold font highlights those chores that are traditionally done by women and that showed a more than double difference between intervention and control.

Gender Equity Attitudes and Behaviors

Table 2 includes the percent distribution of all six outcomes in the study. Respondents in the control group had lower levels of agreement with gender equity attitudes (above the median) at 35% compared to almost double that (64%) in the intervention group. Regarding behaviors, the average number of shared household tasks was seven in the intervention group compared to only four in the control group ($p < .001$). Table 3 provides the frequencies of each household task as reported done only by men, only by women, or by both for the intervention and the control groups separately. The results show higher figures among the intervention group compared to the control group. For sharing tasks traditionally differentiated by gender, such as doing laundry, bathing children, or fetching water, the percentage was more than double in the intervention group compared to the control group.

HIV Partner Communication

Overall, 80% of respondents in the sample said that they had talked with their partner about HIV and/or sexual behavior in the past 3 months. This figure was 88% for the intervention group and 72% for the control group (see Table 2). The difference in frequency of topics discussed was statistically significant between groups, except for generic topics (HIV risk and prevention). Respondents in the intervention group discussed about three HIV topics on average, whereas those in the control group discussed about two ($p < .001$).

In addition, 84% of control group respondents exposed to TT radio reported talking with their partner about HIV, whereas only 60% of those in the control group not exposed to TT radio did so (data not shown). This statistically significant difference suggests a positive effect of TT radio on HIV partner communication among those in the control group. Among control group respondents, those exposed to

TT radio discussed two topics on average, whereas those not exposed to TT radio talked on average about one topic ($p < .001$).

HIV Prevention Knowledge

The number of correct answers about ways to prevent HIV was higher among respondents in the intervention group compared to the control group, except for responses about using new blades or syringes, which have been addressed by other health programs. All differences were statistically significant. Respondents in the intervention group correctly mentioned an average of 2.4 of six sexual behaviors to prevent HIV, whereas those in the control group mentioned 1.9 (see Table 2).

HIV Stigma

Respondents in the intervention group held more positive attitudes toward HIV, indicative of less HIV stigma, than did respondents in the control group. About 52% of those in the intervention group had attitudes above the median that discourage HIV stigma compared to only 30% in the control group ($p < .001$).

MSP Behavior

Only 4.5% of respondents in the overall sample reported having more than one sex partner. This figure was 2% among participants in the intervention group compared to 7% in the control group, a more than threefold difference between the two groups ($p < .001$).

Regression Analyses on Outcomes

We conducted multivariate regression analyses on the various outcomes as an additional way to confirm the impact of the TT program on each outcome and to control for differences in the

Table 4. Regression of gender attitudes, HIV prevention knowledge, and HIV stigma attitudes on TTHV and the set of control variables

Variable	Model 1: Gender attitudes (odds ratio)	Model 2: HIV prevention knowledge (standardized β coefficient)	Model 3: HIV stigma attitudes (odds ratio)
Participation in TTHV sessions (being in the intervention group)	2.82***	0.23***	2.88***
Exposure to TT radio (ref = 1st quartile)			
Recall radio topics (2nd quartile)			
Recall radio topics (3rd quartile)	1.58*		
Recall radio topics (4th quartile)		0.08*	
Sociodemographic characteristics			
Age of respondent			
Sex is female (ref = male)	1.76**	-0.24***	
Religion (ref = Catholic)			
Religion is Protestant			0.34*
Religion is Siao/Zione		0.07*	
Number of children		0.07*	
Occupation (ref = work in his or her own <i>machamba</i> /field)			
Occupation is worker in others' <i>machamba</i> /field			
Occupation is alcohol seller			
Occupation is mason			
Occupation is other		0.12***	
Poverty (days without food or shelter)		-0.16***	0.65**
Education (ref = no education)			
Education is primary EP1			4.42*
Education is primary EP2			1.79**
Education is secondary Cycle 1			2.23**
Education is secondary Cycle 2 and higher			3.48***
Language (ref = Lomue)			
Language at home is Ndau		0.14*	
Language at home is other (includes Portuguese)	1.7*		
Province of residence is Sofala (ref = Zambezia)			
Media consumption and community activities			
Listens to radio (ref = never listens)			
Listens to radio 1-3 days/week			
Listens to radio 4-6 days/week			
Listens to radio every day/week		0.12*	
Watches TV (ref = never watches)			
Watches TV 1-3 times per week			
Watches TV 4-6 times per week			
Watches TV every day		0.08*	0.46**
Participates in other non-TT community activities	1.51*		
Sample size	911	911	898
Pseudo- R^2	.11		.10
Adjusted R^2		.23	

Note. Empty cells indicate that results were not significant and therefore are not reported. Controls also included marital status, number of household goods (socioeconomic status), and heard of organizations that work on HIV in the community. TTHV = Tchova Tchova Histórias de Vida: Diálogos Comunitários; ref = reference category; TT = Tchova Tchova; EP1 = primary education levels 1 to 5; EP2 = primary education levels 6 and 7.

* $p < .05$. ** $p < .01$. *** $p < .001$.

two samples. Table 4 shows the regression results for intermediate outcomes such as attitudes and HIV prevention knowledge, and Table 5 includes the results on specific behaviors such as sharing household tasks, HIV partner communication, and MSP behavior. All six models provided evidence of the effect of TTHV sessions on each of the outcomes after other confounders,

including participation in other non-TTHV community activities, were accounted for.

TT radio was found to be significant in four of the six outcomes. In all models except Model 6, the outcome was explained by various other variables included in the analysis. Few variables from the survey predicted having MSP; all else

Table 5. Regression of gender roles, HIV partner communication, and multiple sex partners behavior on TTHV and the set of control variables

Variable	Model 4: Gender roles (standardized β coefficient)	Model 5: HIV partner communication (standardized β coefficient)	Model 6: Multiple sex partners (odds ratio)
Participation in TTHV sessions (being in the intervention group)	0.22***	0.19***	0.34*
Exposure to TT radio (ref = 1st quartile)			
Recall radio topics (2nd quartile)		0.07*	
Recall radio topics (3rd quartile)	0.14***	0.08*	
Recall radio topics (4th quartile)	0.23***	0.16***	
Sociodemographic characteristics			
Age of respondent			
Sex is female (ref = male)	-0.20***	-0.09*	0.03***
Number of children		0.11**	
Occupation (ref = work in his or her own <i>machamba</i> /field)			
Poverty (days without food or shelter)	0.16***	-0.19***	
Language (ref = Lomue)			
Language at home is Nda		0.24***	
Language at home is other (includes Portuguese)		0.21***	
Province of residence is Sofala (ref = Zambezia)	-0.31***	0.23***	
Spends time with partner every day			0.37*
Media consumption and community activities			
Listens to radio (ref = never listens)			
Listens to radio 1–3 days/week	0.10*		
Listens to radio 4–6 days/week	0.08*		
Listens to radio every day/week	0.11*		
Watches TV (ref = never watches)			
Watches TV 1–3 times per week			
Watches TV 4–6 times per week			
Watches TV every day	0.08*		
Participates in other non-TTHV community groups/activities		-0.06*	
Sample size	911	911	910
Adjusted R^2	.26	.30	
Pseudo- R^2			.25

Note. Empty cells indicate that results were not significant and therefore are not reported. Controls also included marital status, religion, occupation, number of household goods (socioeconomic status), education, and heard of organizations that work on HIV in the community. TTHV = Tchova Tchova Histórias de Vida: Diálogos Comunitários; ref = reference category; TT = Tchova Tchova.

* $p < .05$. ** $p < .01$. *** $p < .001$.

being equal, those with only one partner were more likely to have been exposed to TTHV sessions, were female, and spent time with their spouse every day. Other variables in the model had no effect on this particular behavior.

Discussion

The evaluation results show that the TT program contributed significantly to observed changes in three of the underlying structural factors of HIV—gender attitudes, gender roles, and HIV stigma. The program also contributed to changing HIV prevention knowledge and behaviors that are associated with HIV infection, including discussion of HIV between sex partners and MSP behavior. These results suggest that in a

relatively short period of time the program created opportunities to voice issues within the bounded TTHV groups that otherwise may have remained dormant or taken longer to surface. The group discussions that followed the viewing of the video during the TTHV sessions provided opportunities for participants to gain communication skills and voice their opinions, even if divergent, about sensitive issues. This was also reflected in the positive effect that TTHV had on HIV communication among partners.

Given the low levels of education among respondents, it is noteworthy that the list of topics correctly recalled for both the radio program and the TTHV sessions was quite varied. This suggests that the content was *relevant* to the majority of people in the communities. High recall of each story suggests that the

TTHV discussions helped create a solid impression and understanding of the issues among participants. In addition, using stories of local Mozambicans as trendsetters/positive deviants increased audience *identification* with the messages and made them more credible. The videos and radio format helped ignite critical thinking and retention of the story lessons.

Exposure to the TT radio program and frequency of listening was higher among the intervention group compared to the control group, evidence of the synergy that can be gained by coordinating content using different media formats.

The effect of TTHV on MSP behavior, a driving force of HIV transmission, was significant but marginal compared to the effect on the other five outcomes, which is indicative of the difficulty of changing deeply rooted sexual practices. Besides exposure to the TTHV sessions, the other factor that had a positive effect on having one sex partner was spending time daily with one's spouse. This suggests that programs could focus efforts on modeling behaviors that can improve couples' communication and increase satisfaction.

In contrast to the TTHV sessions, radio did not have the advantage of a captive audience for 10 consecutive weeks focused on HIV-related discussions. But the fact that radio was found to have a positive effect after we controlled for the TTHV sessions speaks to the value of the radio magazine format for capturing an audience's attention, engaging listeners through calling in and texting, and presenting mini-dramas modeling HIV-related situations.

The principal limitation of this study was the inability to obtain baseline measures of the outcomes of interest. This limitation, however, was reduced by selecting a control group from future participants, thus diminishing potential selection bias into the program that could have affected the observed outcomes. In addition, we controlled for about 15 confounders, including participation in non-TT community activities and other media consumption. The regression analysis also controlled for differences between the two samples. After we controlled for these confounders, the TTHV program remained statistically significant in all six models. The large differences observed in the outcomes between the intervention and the control groups, the statistically significant effect of the program in the regression models, and the fact that no other program has engaged the population to debate the issues addressed by the program increase our confidence that TT had a positive effect on changing key underlying structural factors of HIV as well as HIV-related behaviors such as MSP in the study communities. The study findings cannot be generalized beyond the program sites. But the results suggest that future programs can increase their effectiveness by engaging participants in active discussion and reflection as well as providing social modeling scenarios as was done by this program.

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