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An Unrecognized Key Population? Traditional treatment practices associated with HIV risk among traditional healers in rural South Africa

Carolyn M. AUDET^{1,2}, Sizzy NGOBENI³, Mevian MKANSI³, Floidy WAFWANAKA³, Muktar H. ALIYU^{1,2}, Sten H. VERMUND⁵, Ryan G. WAGNER^{3,4}

¹:Department of Health Policy, Vanderbilt University Medical Center, Nashville, TN 37203

²:Institute for Global Health, Vanderbilt University Medical Center, Nashville, TN 37203

³:MRC/Wits Rural Public Health and Health Transitions Research Unit (Agincourt), School of Public Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

⁴:Umeå Centre for Global Health Research, Umeå University, Umeå, Sweden

⁵:School of Public Health, Yale University, New Haven, CT, 06510

Abstract

Objective: To understand the risk of HIV acquisition through occupational exposure among rural South African traditional healers, notably via the practice of traditional skin incisions with razors.

Design: A random sample of traditional healers living in South Africa participated in a cross-sectional survey that included a rapid HIV test.

Setting: Rural Bushbuckridge district of Mpumalanga, South Africa.

Subjects, participants: Traditional healers.

Intervention: Pretest counseling; Posttest counseling and referral to care if HIV seropositive.

Main outcome measure(s): HIV infection

Results: Among healers who reported a previous positive test result or accepted an HIV test (96%), HIV prevalence was 30% [95% confidence interval, CI: 23%– 37%]. During their careers, 98% of healers reported conducting at least one “vaccination” (as traditional incisions are called), 32% reported always using gloves when conducting these procedures, 29 (14%) reported patient blood touching their bare skin. Healers who reported exposure to patient blood had a higher HIV

Correspondence to: Carolyn M. Audet, Institute for Global Health, 2525 West End Ave, Suite 750. Vanderbilt University Medical Center, Nashville, TN 37203. Fax: (615) 343-7797. Phone: (615) 343-2418. carolyn.m.audet@vanderbilt.edu.

Authors Contributions

CMA, SHV, MHA, SN and RGW conceptualized and designed the study. SN, MM, FW, CMA, and RGW designed the data collection tools. SM and MM conducted the surveys and conducted HIV testing and counseling among healers. CMA, RGW and MHA conducted the data analysis. CMA wrote the first draft of the manuscript. All authors edited and contributed to the final version of the manuscript.

Conflicts of Interest

The authors declare they have no conflicts of interest.

prevalence than their non-exposed colleagues (adjusted risk ratio: 2.35, 95% CI: 1.55–3.56, $p=0.001$).

Conclusions: Nearly all traditional healers are routinely performing minimally invasive skin incisions that could expose them to patient blood. The lack of training and access to personal protective equipment increase their risk of acquisition of bloodborne pathogens, including HIV. Given the widespread practice of traditional skin incisions across southern Africa, and the higher levels of HIV among traditional healers exposed to patient blood, it is likely that traditional healers are a hitherto unrecognized key population at disproportionate risk of acquiring HIV.

Keywords

(5–7) HIV; Traditional Healers; vaccinations; blood exposure; South Africa; personal protective equipment; key population

Introduction

There are >200,000 traditional healers in South Africa.¹ These healers provide popular, low-cost, non-allopathic services for a myriad of disease conditions, including human immunodeficiency virus (HIV), tuberculosis, epilepsy, schizophrenia, and depression.^{2–5} While substantial efforts have been expended on understanding the positive^{6–9} and negative^{4,10} impact that healers can have on the health of their patients, occupational hazards associated with traditional healer practices in sub-Saharan Africa (SSA) have attracted scant attention.¹⁰

Allopathic health care workers (HCW) are recognized to be at risk for bloodborne infections, including HIV through occupational exposure to blood and bodily fluids.¹¹ Similar to allopathic HCWs, traditional healers are exposed to patients' blood. A widespread practice among healers is the traditional "vaccination," where the healer performs subcutaneous incisions to rub herbs directly into the bloodied skin.^{12–14} Healers may be at significant risk of disease acquisition when caring for persons living with HIV-positive in the absence of personal protective equipment (PPE). While the risk of transmission might be low for a singular exposure,¹⁵ repeated exposure to infected blood increases the probability of transmission.

We have previously estimated a cumulative lifetime exposure of 1,500 unprotected razor-blood events over a traditional healer's career in Mozambique.¹⁶ We have confirmed similar practices among healers in South Africa.³ In addition to occupational HIV risk, healers tend to be female and have a lower level of educational attainment than the general population, both groups with higher prevalence of HIV than the general population.^{2,3,16} In Mpumalanga, our study region, the prevalence of HIV among adults was 19% (24% among women [CI: 22–26%], 11% among men [CI:9–12%]) in 2011.¹⁷ Among adults over 40 years old, the HIV prevalence was 23% (CI: 21–24) in 2015 and did not vary by sex.¹⁸ To understand the risk of occupational acquisition of HIV among traditional healers via the practice of "vaccinations", we surveyed and performed HIV rapid tests on a cross-section of rural South African healers.

Methods

Study setting

The study was conducted in the Bushbuckridge sub-district of Mpumalanga province, South Africa. The Medical Research Council/Wits Agincourt Research Unit oversees the maintenance and operation of the Agincourt Health and socio-Demographic Surveillance Site (HDSS).¹⁹ Located 500km northeast of Johannesburg, the unit has been engaged in population-based health and socio-demographic research since 1992. Strong ties with the local community ensure the continual functioning and sustainability of the research. The Agincourt HDSS population is comprised of an estimated 120,000 mainly xiTsonga-speaking persons spread throughout 20,000 households in 31 research villages.

Study population

Traditional healers (> 18 years of age) were recruited into the study between December 2017 and May 2018 through the Kukula Traditional Healer Organization, a public organization of traditional healers who work within the Bushbuckridge area. From a pool of 354 registered traditional healers, 229 healers were randomly selected to participate in the study using the random selection function in Stata [StataCorp, College Station, Texas, USA]). Of these, 14 had died, 2 had out-migrated, and 5 were no longer practicing as traditional healers. The remaining 208 traditional healers were invited, and all agreed to participate in the survey. Only 9 (4%) refused to undergo HIV testing or report a previous positive test.

Data collection

A trained HIV counsellor administered a 28-item questionnaire (Supplement 1) in the traditional healer's language of choice and at the location of their choice. The survey data were entered into REDCap, a secure web platform for building and managing online surveys and databases.²⁰ The survey covered socio-demographic information, use of vaccination procedures during treatments, exposure to blood, and the number of patients treated in the past week and month. Other possible avenues for HIV acquisition were also queried, including number of sexual partners and participation in a polygamous relationship. We captured data on the number of lifetime sexual partners eight months after our initial survey due to a delay in ethical approval for this specific question in South Africa.

HIV status

We asked about previous HIV testing and test results. Healers that did not report a previously positive test result were invited to undergo a rapid HIV test. After pre-test counselling, blood samples were obtained by fingerstick and spotted onto an Allere® test for HIV (Allere International, Ireland). In patients with positive or indeterminate results from the HIV rapid test, a second test (using a Uni-Gold® test kit [Trinity Biotech, Ireland]) was performed. We provided post-test counseling to participants with a positive test result and referred them to the nearest health facility.

Statistical Analysis

We analyzed survey participant characteristics as frequencies with percentages, means with standard deviations, or medians with interquartile ranges (IQR), depending upon the distribution of the data. Bivariate comparisons were assessed using Pearson's chi-square or Fisher's exact test for categorical variables and multivariable logistic regression for continuous variables. A modified Poisson model with robust standard errors was used to model the risk of HIV infection. The model included occupational exposure to patient blood, age, number of sex partners, marital status, years practicing, sex, number of patients treated in past month, and educational level.

Ethical Considerations

This study was approved by the Vanderbilt Institutional Review Board (IRB# 610498) and the University of the Witwatersrand's Human Research Ethics Committee (Medical; #M160447). All participants provided written consent forms in their preferred language. Participants were offered the opportunity to opt-out of HIV testing. Those with a positive test result were provided post-test counseling and referral to the nearest health facility for HIV treatment if they were not already engaged in care.

Results

We interviewed 208 traditional healers practicing in Bushbuckridge. Healers were mostly female (78.9%), older (mean 54 years [SD: 16.3]), with low levels of formal education (mean 3.3 years [SD: 4.2]). Healers treated an average of two patients per week, with male healers treating more patients than female healers (2.7 vs 1.7 patients, $p=0.06$). The majority, 113 (54%) were married or living with a partner. The mean number of reported lifetime sexual partners was 2.13 (SD:1.86) (Table 1). Of 208 participants, 199 (96%) accepted the HIV test or reported a previous positive test result. Among these, 59 (30% [CI: 23%–37%]) healers tested HIV positive: 24% (CI: 11%–37%) of men and 44% (CI: 24%–39%) of women. Of those with a positive HIV test result, 12 (20%; 10 women, 2 men) were newly diagnosed; all others were already engaged in treatment.

We assessed multiple routes of potential HIV exposure using univariate analyses (Table 1). Exposure to patient blood, years practicing traditional medicine and being single were positively associated with HIV infection. Healers exposed to blood had HIV prevalence of 59% vs. 25% among those with no reported exposure. Single participants had 2.29 times the risk of HIV infection vs. married healers (CI: 1.45 – 3.64), but the additional risk associated with being single was attributable to the women. Single women had an HIV prevalence of 67% (vs. 0% among men).

We conducted a modified Poisson model with robust standard errors to assess predictors of HIV status. Our *a priori* model included: occupational exposure to patient blood, number of lifetime sex partners, gender, age, marital status, years practicing, education and number of patients treated in past week. Our model revealed that blood exposure (aRR: 2.35 [CI: 1.55–3.56]; $p=0.001$) remained significantly associated with HIV status (Table 2).

Discussion

We found an elevated prevalence of HIV infection among our sample of traditional healers (24% of men and 44% of women) compared to the general population¹⁷ and among individuals aged 40 years and older.¹⁸ As in other studies, single women had the highest HIV prevalence²¹ likely due to their lower socioeconomic status^{21,22} and sociocultural norms^{23,24} (e.g., intimate partner violence and gender inequality) that put them at increased risk.

Our adjusted model revealed that traditional healers who were exposed to patient blood and those who saw more patients were at significantly greater risk of acquiring HIV. There are an estimated 2 million traditional healers in all of SSA.²⁵ Studies indicate that 60–98% of healers regularly perform “vaccinations” on people with chronic disease, including those living with HIV.^{10,16,26} Given the high rate of HIV infection among healers who are exposed to blood, this study suggests that traditional healers are a hitherto unrecognized key population that needs additional HIV protective interventions.

Two factors showed moderate, but significant, protective associations with healer acquisition of HIV. Increased time practicing as a traditional healer and higher education level were associated with lower risk of HIV acquisition. Reduced HIV infection among people with higher education adds to the conflicting data about education and HIV status. Our findings are similar to studies in SSA, although most positively correlated studies were in younger participants.^{27–29} Others have found mixed associations between education and HIV prevalence, suggesting other factors are contributing to protective behaviors.³⁰

Given blood exposures and occupational risk outside the context of allopathic traditions, we suggest that traditional healers are a key target population, and interventions targeting HIV prevention and reduction of healer risk are warranted. One such strategy is to increase uptake, correct use, and safe disposal of PPE. Traditional providers, including traditional healers, traditional birth attendants, and faith healers are rarely trained in the use of PPE, despite their frequent contact with blood and bodily fluids.¹⁶ We found that few healers purchase gloves due to cost or limited local availability.^{10,12,16} Additionally, there is no standardized system for biohazard disposal, leaving many healers to reuse gloves and razors, disposing of them eventually in an unsafe location. Like clean needle exchange programs, the provision of personal protective equipment does not enable traditional “vaccination” behavior. Instead it attempts to bridge the divide between the disparate traditional and allopathic health systems.

Strengths and Limitations

A strength is that all data were collected before healers learned of their HIV status. Participation rates were high and sampling was random within the community-based organization. There are several limitations in our study. Due to the cross-sectional nature of this study, we do not know when healers seroconverted, nor the frequency of blood exposure, nor when they were first exposed to patient blood. While we asked about exposure only in the past week, there was the possibility of recall bias associated with healers remembering whether they were or were not exposed to patient blood. Healers who do not

draw blood in their skin incisions may be different from healers that do, affecting our putative causal inferences. Finally, the results of this study are based on data collected in the Bushbuckridge sub-district and may not be generalizable to other regions of South Africa or SSA.

Conclusions

South African traditional healers who are exposed to patient blood via the practice of traditional “vaccinations” have a higher prevalence of HIV. Given their ubiquitous presence in SSA, traditional healers may be a previously unknown or emerging key population that require targeted approaches to eliminate HIV acquisition and transmission in their work settings.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

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Table 1:

Demographics traditional healers by HIV status, Mpumalanga, South Africa

	HIV-negative (n=140)	HIV-positive (n=59)	Combined (n=199)	P-value [#]
Sex				0.35
Male	32 (76%)	10 (24%)	42(100%)	
Female	108 (69%)	49 (31%)	157 (100%)	
Age, years (mean, sd)	56 (17.3)	51 (13.6)	55 (16.5)	0.03
Education, years (mean, sd)	3.5 (4.4)	2.7 (3.7)	3.2 (4.2)	0.23
Marital status				0.002
Single	13 (42%)	18 (58%)	31 (100%)	
Married/living with partner	78 (74%)	27 (26%)	105 (100%)	
Widowed	38 (81%)	9 (19%)	47 (100%)	
Divorced/ Separated	11 (69%)	5 (31%)	16 (100%)	
Polygamous (yes)	18 (67%)	9 (33%)	27 (100%)	0.20
Number of lifetime sex partners	2.1 (1.97)	2.2 (1.61)	2.13 (1.86)	0.89
Years of practice as a traditional healer (mean, sd)	22 (16.3)	16 (11.7)	20 (15.3)	0.02
Use of gloves				0.74
Always	46 (74%)	16 (26%)	62 (100%)	
Usually	3 (100%)	0 (0%)	3 (100%)	
Sometimes	64 (72%)	25 (28%)	89 (100%)	
Never	2 (67%)	1 (33%)	3 (100%)	
Exposure to blood while <i>conducting</i> “vaccinations”	15 (41%)	22 (59%)	37 (100%)	<0.01
Exposure when <i>receiving</i> a traditional “vaccination”	135 (72%)	53 (28%)	188 (100%)	0.06
Number of sex partners	2.11 (2.0)	2.16 (1.6)	2.11 (1.8)	0.89
Tattoo (yes)	6 (86%)	1 (14%)	7 (100%)	0.82

[#] Chi-squared and t-tests comparing characteristics of participants who accepted testing

Sd: standard deviation

Table 2:

Multivariable Model assessing Risk of HIV infection among rural South African traditional healers (n=162)

	Risk Ratio	Confidence Interval (95%)	p-value
Exposure to blood while performing “vaccinations”	2.35	1.55–3.56	<0.001*
Number of sex partners	1.04	0.93–1.16	0.500
Sex (female)	1.00	0.53–1.91	0.995
Age (years)	0.99	0.97–1.01	0.995
Marital Status			
Single	2.42	1.40– 4.20	0.002*
Married/ Living with partner	Reference		
Widowed	1.38	0.66– 2.88	0.397
Divorced / Separated	1.33	0.60– 2.92	0.481
Years of practice as a traditional healer	0.98	0.96–0.99	0.011*
Education (years)	0.91	0.85–0.98	0.011*
Number of clients last week	1.07	1.03– 1.11	<0.001*