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Vocational Training with HIV Prevention for Ugandan Youth

Mary Jane Rotheram-Borus · Marguerita Lightfoot · Rogers Kasirye · Katherine Desmond

Abstract In a pilot study, young people in slums in Kampala, Uganda received an HIV prevention program (Street Smart) and were randomized to receive vocational training immediately (Immediate) or four months later (Delayed). Youth were monitored at recruitment, 4 months (85% retention), and 24 months (74% retention). Employment increased dramatically: Only 48% had ever been employed at recruitment, 86% were employed from months 21 to 24 post recruitment. Over two years, decreases were recorded in the number of sexual partners, mental health symptoms, delinquent acts, and drug use; condom use increased. Providing employment in low income countries, in conjunction with HIV prevention, may provide sustained support to young people to prevent HIV acquisition.

Keywords Vocational training · Ugandan youth · HIV/AIDS prevention

Resumen En un estudio piloto, los jóvenes en los barrios bajos de Kampala, Uganda recibieron un programa de prevención del VIH (Street Smart) y fueron aleatorizados para recibir la formación profesional inmediatamente (inmediato) o cuatro meses más tarde (en diferido). La juventud fue vigilada en el reclutamiento, 4 meses (85% de retención), y 24 meses (74% de retención). El empleo aumentó dramáticamente: sólo el 48% había sido empleado en la contratación, el 86% fue empleado de 21 a 24 meses después de la contratación. Más de dos años, se registraron disminuciones en el número de parejas sexuales, los síntomas de la salud mental, los actos delictivos y el consumo de drogas; el uso del condón aumentó. La creación de empleo en los países de bajos ingresos, en conjunción con la prevención del VIH, puede proporcionar un apoyo sostenido a los jóvenes para prevenir la adquisición del VIH.

Las palabras clave La formación profesional · La juventud ugandesa · La prevención del VIH/SIDA

Introduction

Nearly one million young people aged 15–24 years are infected with HIV in sub-Saharan Africa [1]. Existing HIV prevention programs based on cognitive behavioral intervention approaches have only been efficacious for subgroups of young people [2]. More attention has now been focused on the social determinants of HIV, given our failures. High unemployment among young Africans is a key social determinant of risk [3, 4]. Without a pathway out of poverty, it is unlikely that young people will be motivated to remain free of HIV, as poverty creates vulnerability to premature death, survival sex, and sex without condoms [5–9].

We initiated a pilot study examining the pre-post differences in HIV risk acts, when both traditional prevention programs and vocational training are provided. We selected

M. J. Rotheram-Borus (✉) · K. Desmond
Semel Institute of Neuroscience and Human Behavior, Center for Community Health, University of California, 10920 Wilshire Boulevard, Suite 350, Los Angeles, CA 90024-6521, USA
e-mail: MRotheram@mednet.ucla.edu

M. Lightfoot
Center for AIDS Prevention Studies, University of California, San Francisco, CA, USA

R. Kasirye
Uganda Youth Development League, Kampala, Uganda

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Street Smart, a small group, 10-session, evidence-based intervention adapted for high risk Ugandan youth (*Nsindikanjake*) [10–13]. The Ugandan collaborative partner, Uganda Youth Development League (UYDEL) serves predominantly homeless youth. Street Smart directly tries to reduce sex, alcohol, and drug use transmission-related acts. Street Smart does not address youth's economic challenges. Therefore, we added vocational training by local artisans in an apprenticeship model as part of the intervention. Thus, this pilot study examines the added value of vocational training provided to urban Ugandan youth, who have received Street Smart, a traditional HIV prevention program.

Methods

The Uganda Youth Development League (UYDEL), a non-governmental organization, implemented the project under the auspices of the University of California, Los Angeles, Institutional Review Board. From February, 2005 to January, 2006, 100 youth were recruited from two different youth centers in the slums of Kampala, Uganda. Even though the United Nations' definition of youth is 15–24 years, the youth in our study were aged 13–23 years. Participants were assessed at baseline, 4, and 24 months later. Youth were randomized to an Immediate Vocational Training ($N = 50$ youth) or Delayed Vocational Training ($N = 50$ youth) delivered 4 months later. All youth across conditions received the 10-session Street Smart HIV prevention program [12], adapted for delivery by the UYDEL-UCLA team. Youth in the Delayed Condition received vocational training after a 4-month follow-up assessment was completed. The Delayed Intervention was not delayed longer than 4 months for three reasons: (1) We had anticipated the vocational training to be completed by this time, but it was not. Our IRB application committed to providing the training after 4 months. (2) The funder required expenditure of all funds within one year, not allowing us to delay longer than 4 months (funds were later secured for the 24 month follow-up assessment). (3) Youth were highly motivated to participate and were often engaging in risky, delinquent acts while waiting for the intervention to be initiated. Delay would be unethical.

The final assessment was administered at 24 months, after all youth had received Street Smart and vocational training. Figure 1 summarizes the project's design.

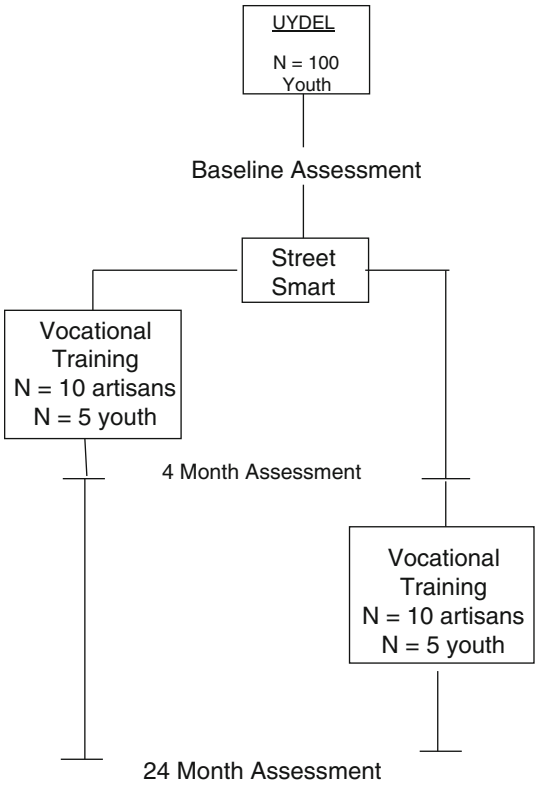

Fig. 1 Design of study

Assessment

Assessments were conducted by interviewers who were trained by UCLA. The training covered a detailed review of the content of each question, ethics training, emergency procedures, and mock interviews. Monitoring and supervision was carried out by the Ugandan team. Each participant's initial assessment and the 4- and 24-month follow-up assessments were conducted by the same interviewer. Retention was 85% at 4 months and 74% at 24 months.

At each assessment, "recent" referred to "the last three months." The primary outcomes were youths' responses to:

(1) The length and type of employment. At baseline, employment referred to ever having a job. At the 4 and 24 month assessment, it referred to having a job recently.
(2) Recent sexual risk behaviors were reported as whether youth had sexual intercourse (1) or not (0); the number of sexual partners, and the number of vaginal or anal sex acts with each partner up to the last 10 partners. Youth also estimated the number of sex acts for which condoms were used.

Secondary outcomes were:

(1) The sum of 10 recent delinquent behaviors (e.g. robbed someone, threatened someone, started fights, vandalized, etc.).
(2) Recent alcohol or marijuana use, rated as used (1) or not (0); hard drug use was rated as used (1) or not (0).

(3) Mental health symptoms. An abbreviated version of the Brief Symptom Inventory [14] was used with 18 items selected from the subscales for obsession-compulsion, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, and unfactored symptom dimensions. "Distress" is rated on each item scored with a range from 0 to 5. Higher values indicated greater distress ($\alpha = 0.93$).
(4) Quality of life was evaluated with the life satisfaction subscale of the HAT-Quality of Life instrument [15]. The eight items in the subscale assess satisfaction over the past 4 weeks with Likert-scaled responses to prompts such as "I have enjoyed living," "I have felt in control of my life," "I have felt motivated to do things" ($\alpha = 0.94$).
(5) Social support: An abbreviated 9-item version of the MOS Social Support scale [16], incorporating three items each from the emotional/informational, tangible, and affectionate subscales. This scale is scored 9–45, with higher values indicating greater support ($\alpha = 0.87$).
(6) Sociodemographic data on age, gender, and family status (as living at home or not).

Intervention

Vocational training consisted of apprenticeships with local artisans for training in hairdressing, catering, tailoring, mechanics, electronics, carpentry, cell phone repair, and welding. Youth attended classes regularly for 4–8 hours, 5 days a week; no more than five youth were assigned to each artisan. Artisans received a 5-day training and topics included: how to talk to youth, conflict resolution, HIV prevention, how to have conversations with youth about HIV and how to cope with unprofessional behavior (e.g., tardiness, hygiene problems).

The Street Smart HIV intervention program was delivered to youth over 10 weeks. Members of the intervention team (a different staff from the assessment team) had substantial experience working with youth. Their education ranged from high school to having Masters degrees. The Street Smart facilitators were trained by UCLA staff in the 10-session intervention. Training was intensive over a 5-day period. Mock sessions were conducted for each session, similar to the strategy used by the NIMH HIV Multisite Prevention Study [17]. Additionally, the intervention facilitators received training on the epidemiology of risk behaviors, ethics, and emergency procedures. They were monitored over time and supervised by the UYDEL team.

Unexpectedly, only 38% of youth in the Immediate Condition completed their vocational training by the time of the 4-month follow-up assessment. Therefore, most youths were continuing to receive vocational training at 4 months. The effects of vocational training are assessed in a pre-post fashion for both the Immediate and the Delayed Condition at 24 months.

Analysis

The intervention's impact on employment at follow-up was evaluated by logistic regression, controlling for age, gender, and lifetime history of employment. Random-intercept regression (RIR) models evaluated pre-post measures. A random intercept was included to account for correlations between repeated assessments of each participant's reports. Model covariates included an intercept, age, gender, indicators for assessment point and intervention condition, and an interaction between assessment point and intervention status. The interaction term measured the intervention effect (i.e., the relative change over time for the intervention condition compared to the control condition). At two years, the McNemar test evaluated outcomes that are expressed as percentages.

Results

Table 1 summarizes the outcome measures by intervention condition at baseline and four months. Youth in the Immediate Condition were on average two years younger (18 vs. 20, $t = 3.72$, $P < 0.001$) and more likely to be female (60 vs. 38%, $\chi^2 = 4.84$, $P = 0.028$) than in the Delayed Condition. Because of these differences, age and gender were controlled for in analyses of the intervention effect. Youth in the Delayed Condition were also more likely to be sexually active (80 vs. 58%, $\chi^2 = 5.13$, $P = 0.024$), were less likely to be abstinent or using condoms all the time (29 vs. 54%, $\chi^2 = 6.17$, $P = 0.013$), and had slightly more social support (26.8 vs. 23.3, $t = 2.44$, $P = 0.016$) than the Immediate Condition at the baseline interview. Thus, youth in the Delayed Condition had more risky profiles at baseline. Within each condition, the baseline demographics of employment and risk characteristics were similar at 4 and 24 months. There were no selection effects in who were successfully followed over 24 months.

At four months the youth in the Immediate Condition were more likely to be employed, reported significantly greater increases in their quality of life, and greater increases in social support, despite reporting less support at baseline than the youth in the Delayed Condition. Significantly fewer delinquent acts were reported in the Immediate Condition, although a decrease in delinquent acts was

Table 1 Observed outcomes by study condition at baseline and 4-month follow-up, with test of intervention effect

Recent	Intervention		Control	
	Baseline ($n = 50$)	4-month ($n = 41$)	Baseline ($n = 50$)	4-month ($n = 44$)
Percent engaged in sex	58%	59%	80%	91%
Mean number of partners	2.10	0.88	1.82	1.36
	(SD = 3.33)	(SD = 0.90)	(SD = 1.51)	(SD = 0.81)
Percent abstinent or using condoms 100% of the time	54%	95%	29%	64%
Mean satisfaction with life[a]	59.2	82.2	61.3	65.3
	(SD = 24.1)	(SD = 8.5)	(SD = 22.5)	(SD = 16.6)
Mean social support[b]	23.3	32.5	26.8	32.0
	(SD = 7.6)	(SD = 5.3)	(SD = 6.5)	(SD = 4.2)
Mean number of delinquent behaviors[c]	1.50	0.02	0.88	0.25
	(SD = 2.11)	(SD = 0.16)	(SD = 1.89)	(SD = 0.49)

F-tests of intervention × time interaction in random intercept regression, controlling for age and gender

[a] $F_{1,\ 82} = 14.15$, $P = 0.0003$

[b] $F_{1,82} = 7.01$, $P = 0.0097$

[c] $F_{1,82} = 7.21$, $P = 0.0088$

seen in both conditions. There were no significant differences in sexual risk across conditions at the 4 month follow-up interview.

Table 2 provides estimates for outcome measures assessed at baseline and the 24-month follow-up. Because participants in both arms of the study had received vocational training by that time, it is not possible to make comparisons of employment by intervention status. No statistical testing was performed for employment, as comparable measures were not taken at the baseline and follow up. We did note, however, a dramatic increase from 48% having worked at any point in their lifetime prior to recruitment to 83% having worked consistently in the 3 months prior to the 24-month assessment. There were significant decreases over time in the number of sexual partners, decreases in conduct problems, increases in abstinence and condom use during sex and increases in social support. These improvements were similar across conditions. Mental health symptoms were stable from baseline to 24 months, but alcohol and marijuana use and hard drug use decreased significantly during that time.

Table 2 Observed outcomes at baseline and 2-year follow-up, among participants with 2-year follow-ups ($n = 74$)

Recent	Baseline	2-year
Employed, %	48*	83
Engaged in sex, %	69	70
Mean number of partners[a]	2.12	1.12
	(SD = 2.93)	(SD = 1.20)
Abstinent or using condoms 100% of the time, %[b]	45%	71%
Mean satisfaction with life	61.4	63.8
	(SD = 23.6)	(SD = 15.9)
Mean social support[c]	24.8	29.6
	(SD = 7.2)	(SD = 7.7)
Mean number of delinquent behaviors[d]	1.21	0.54
	(SD = 2.08)	(SD = 0.94)
Mean psychological distress	0.76	0.76
	(SD = 0.67)	(SD = 0.74)
Percent using alcohol or marijuana[e]	76%	30%
Percent using hard drugs[f]	57%	18%

* Baseline measure is percent ever employed, lifetime

[a] $t_{65} = 2.56$, $P = 0.0128$ (one-sample t-test)

[b] $S = 9$, $P = 0.0031$ (McNemar's test)

[c] $t_{66} = 4.53$, $P < 0.0001$ (one-sample t-test)

[d] $t_{69} = 2.59$, $P = 0.0118$ (one-sample t-test)

[e] $S = 25$, $P < 0.0001$ (McNemar's test)

[f] $S = 20$, $P < 0.0001$ (McNemar's test)

Conclusion

The study's sample size, baseline differences and the inability to ethically delay the intervention beyond 4 months significantly limits any generalizations from this study. Even so, in a country with high lifetime unemployment, our observations suggest that the combination of vocational training and HIV prevention skills may be very useful in supporting the impact of HIV prevention programs. Four months after beginning vocational training, the young people receiving vocational training showed reduced delinquent behaviors and greater improvements than control participants in employment, quality of life, and social support. Both conditions demonstrated such improvements at 24 months, especially sustained employment and also a significant reduction in the number of sexual partners and increased abstinence and condom use. The decreases in alcohol, marijuana use, and hard drug use were clinically significant. Larger trials of HIV interventions addressing social determinants of HIV are warranted [3].

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