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AIDS Impact/SEISIDA Special Issue: Using Social and Behavior Change Communication to Increase HIV Testing and Condom Use: The Malawi BRIDGE Project

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Abstract

While overall HIV prevalence in Malawi has decreased, it is still high in the Southern region of the country. Behavioral prevention activities are crucial to continue the reduction in HIV prevalence. Behavior change is influenced by many factors. Previous work indicates knowledge about HIV transmission, self-efficacy to protect oneself from exposure, and accurate risk perception of one's susceptibility all impact sexual behavior. The current study looks at the effects of a behavior change communication program in Malawi called the BRIDGE II Project on psychosocial and behavioral variables. The program sought to address barriers to individual action

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and confront societal norms related to sexual risk behavior through a mix of community-based activities and mass media messages delivered through local radio stations. Using cohort data (n = 594), we examined the effect of BRIDGE exposure on three variables that affect HIV behaviors: knowledge, self-efficacy, and risk perception, as well as two behavioral outcomes: HIV testing and condom use at last sex. Data were collected at baseline and for a midterm evaluation. Regression analyses showed exposure to BRIDGE was significantly associated with knowledge level ($\beta = 0.20$, $p < .001$) and self-efficacy ($\beta = 0.35$, $p < .001$) at midterm when controlling for baseline scores, but not risk perception. Psychosocial variables did not show a significant relationship to either behavioral outcome. However, program exposure was a significant predictor of both HIV testing in the past year ($OR = 1.40$, $p < .001$) and condom use at last sex ($OR = 1.26$, $p < .05$). This study suggests such a communication intervention may play an important role in not only affecting HIV-related behaviors themselves, but also critical factors that affect HIV behaviors, including knowledge and self-efficacy. It is recommended that communication efforts around HIV risk reduction be increased.

Keywords

prevention; Malawi; communication; HIV testing; condom use

Introduction

HIV incidence among Malawian adults dropped by at least half since 2002 (UNAIDS, 2012). While prevalence declined among the general population, females, urban residents, and those in the Southern region are at higher risk (Malawi Country Report, 2012; NSO and ICF, 2011; NSO and ORC, 2005). With no known cure, prevention is paramount to reversing the epidemic.

Knowledge, self-efficacy, and risk perception have shown associations with reductions in sexual risk and HIV treatment-seeking behavior (Baidoobonso, Bauer, Speechley, & Lawson, 2013; Berendes & Rimal, 2011; Chepngeno-Langat, 2013; Odu et al., 2008; Rimal et al., 2009a; Rimal et al., 2009b; Rimal, Limaye, Roberts, Brown, & Mkandawire, 2013). The program of focus here, BRIDGE II, attempted to affect these mediating factors to ultimately promote HIV testing and condom use.

The BRIDGE II Program

The Johns Hopkins University Center for Communication Programs has spearheaded a multi-level HIV prevention intervention program in the southern region of Malawi, where prevalence is highest (NSO and ICF, 2011) known as BRIDGE (Bridge, Redefine, Integrate, Develop, Generate, and Expand). BRIDGE I was a social and behavior change communication program designed to influence perceptions and discussions of HIV/AIDS alongside adoption of improved health behaviors (Rimal et al., 2009a). BRIDGE II seeks to address barriers to individual action and confront societal norms as a means of scaling up prevention activities.

Program activities include community-based participation (e.g., small group discussions, interactive drama, community-wide events, couples' counseling, community referral, capacity building of local structures to implement activities) and mass media messages delivered through radio. The BRIDGE program does not directly provide testing services, but encourages and provides referrals. The program does provide condoms; however, condoms can also be accessed through other community outlets.

This paper seeks to examine whether a cohort sample in the Southern region was affected by the program at the point of midterm evaluation, specifically regarding the three intermediate individual level factors of interest (HIV knowledge, self-efficacy, and risk perception) and the behaviors of testing and condom use at last sex.

Method

Chi square analyses and t-tests were used to conduct an attrition analysis, while regressions assessed relationships regarding program exposure, intermediate factors, and behavior. Johns Hopkins University and the Malawi National Health Sciences Research Committee provided ethical clearance.

Setting and participants

Participants were adults (18+ years) in 11 districts in southern Malawi. In 2009, we conducted baseline household-level surveys to assess knowledge, attitudes, and behaviors. All participants were informed they could be re-contacted for additional data collection. At the time of writing, two waves have been collected—baseline and midline (November 2011).

Materials and procedures

Malawian interviewers collected data. Questionnaires in Chichewa were pre-tested, responses informed subsequent revisions, and English back-translation confirmed proper concept translation.

Sampling—A multi-stage sampling process was used. Stage 1 involved selection and weighting of districts. Stage 2 involved stratification of all traditional authorities (akin to counties in the U.S.) in each district into three groups (low/medium/high exposure), according to the projected program activity level to be implemented. We randomly sampled homes from each exposure level; one person from each household was chosen. At midterm, we stratified all participants into the projected exposure groups and randomly selected 50% from each to be re-interviewed.

Measures

Demographics: Participants reported age, gender, marital status, and education.

Program exposure: Because programming levels changed slightly during implementation, exposure was measured via self-report on four items asking whether or not participants

heard of or participated in four campaigns. Participants received a point for each program they heard/participated in.

Knowledge: Assessed with an 11-item scale focused on cure and prevention previously tested by our organization in other African countries. Responses were "Yes", "No", and "Don't know." Items were scored 1 if correct and 0 if incorrect. "Don't know" was scored 0 (baseline $\alpha = 0.66$, midline $\alpha = 0.63$).

Self-efficacy: Assessed with a nine-item, four-point Likert scale (1 = strongly disagree; 4 = strongly agree) previously tested by our organization. Neither agree/disagree was scored zero. Scale scores were a sum of all items (baseline $\alpha = 0.75$, midline $\alpha = 0.73$).

HIV risk perception: A three-item scale determined perception of vulnerability to infection for oneself and family. Responses were a four-point Likert scale (1 = no likelihood at all; 4 = very high likelihood). Neither agree/disagree was scored zero. Scale scores were a sum of all items (baseline $\alpha = 0.76$, midline $\alpha = 0.81$).

HIV-related behaviors: Participants were asked: "Have you been tested for HIV in the last 12 months?" to measure testing during the program, and "The last time you had sex, did you and your partner use a condom?" (male or female condom not specified).

Results

We attempted to contact half the baseline sample (906 out of 1812) at midterm but only reached 685 (24.4% attrition). Attrition analyses showed differences for education level ($t = 2.72$, $p<.01$), gender ($\chi^2 = 9.06$, $p < .01$) and relationship status ($\chi^2 = 7.49$, $p<.01$); those who remained in the sample were more likely to be better educated, female, and married than those who dropped out.

One participant who did not complete baseline and participants with no sexual experience ($n = 66$) were excluded. Because of our interest in risk perceptions and prevention behaviors, we excluded those who reported being infected ($n = 24$) at either time point (final n = 594).

Table 1 shows the sample characteristics. The sample had a low education level, a majority was married/cohabitating, and mean age was 27.65 for women and 30.82 for men. Average program exposure level was 0.77 (SD = 0.88) for females and 1.23 (SD = 1.04) for males.

Using logistic regression analyses with the behaviors as outcomes, we entered key demographics (age, gender, education, marital status) and intermediate variable scores (knowledge, risk perception, and self-efficacy as measured at midline) as predictors. Only age and marital status were significant predictors of condom use. Age, gender, and marital status were significant predictors of testing (all p's$< .05$). Younger, female, and married respondents were more likely to have tested, and younger, unmarried respondents were more likely to use condoms compared to their counterparts. We used linear regressions to look at whether program exposure was related to each psychosocial intermediate variable, controlling for baseline (Table 2). Exposure was significantly associated with knowledge and self-efficacy (p's$< .01$) at midterm.

Table 3 shows logistic regressions examining whether intermediate variables were related to each behavior, controlling for baseline scores. None of the variables were significant predictors of either behavior. We examined whether program exposure was directly related to the behaviors using logistic regressions. Program exposure was a significant predictor of both testing in the past year ($p < .001$) and condom use at last sex ($p < .05$).

Discussion

Results indicated that although the program could be linked with improvements in knowledge and self-efficacy, but not risk perception, these variables were not associated with condom use or HIV testing. There was, however, a direct link between intervention exposure and improvements in condom use and testing.

These findings both verify results from previous studies and raise several questions. Knowledge, self-efficacy, and risk perception are key determinants of health behaviors, according to social cognitive theory (Bandura, 1977). The fact that these variables were not associated with behaviors points to the possibility of imprecise measures. Our findings did show, however, that even after controlling for baseline values, the intervention explained additional variance in midline values. The intervention was able to boost people's knowledge and self-efficacy beyond their values in the absence of an intervention. This suggests perhaps measurement issues were not strong enough to determine significant findings.

Condom use may be governed more by relationship quality than by individual-level factors such as knowledge and self-efficacy. Similarly, testing may be greatly influenced by social considerations—stigma, support of those with HIV—in addition to individual-level factors. Our other finding—that both testing and condom use were linked with campaign exposure—provides some support for this. Indeed, BRIDGE II went beyond individual-level change and sought to garner community support, change prevailing norms, and mobilize communities. It is likely our exposure variable was tapping into these aspects, and that individual-level factors were not adequate to capture the totality of effects.

Limitations

A limitation is the pre-/post-test design without a control group. With mass media being a large part of implementation, it was difficult to maintain a true control group due to the wide reach. However, this makes it impossible to know if the significant pre/post differences are truly attributable to the program. Also, participants may have engaged in social desirability in their midline self-reports. Finally, there may be fundamental differences in those who engaged in the program versus those who did not, especially for community activities.

It is clear BRIDGE II is linked to positive behavioral changes. The exact pathways of those changes are unclear, however, we are confident efforts to build knowledge, self-efficacy and increase risk perceptions to enable individuals to effect behaviors should continue. Multilevel social and behavioral change communication interventions, such as mass media supported by community interactions provides a strong platform to support behavior change.

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Table 1

Demgraphic characteristics at baseline.

	Female (323)		Male (271)		Total (594)	
	n/mean	**%/SD**	**n/mean**	**%/SD**	**n/mean**	**%/SD**
Age (mean, SD)	27.65	10.31	30.82	11.92	29.09	11.17
18–24 years	143	44.27	105	38.75	248	41.75
25–29 years	85	26.32	41	15.13	126	21.21
30–39 years	54	16.72	65	23.99	119	20.03
40–49 years	30	9.29	41	15.13	71	11.95
50+ years	11	3.41	19	7.01	30	5.05
Education (mean, SD)	5.49	3.38	6.49	3.33	5.95	3.39
1–4 years	132	40.87	82	30.26	214	36.03
5–10 years	166	51.39	154	56.83	320	53.87
11+ years	25	7.74	35	12.92	60	10.10
Relationship status						
Married/cohabitating	255	78.95	196	72.32	451	75.93
Single	68	21.05	75	27.68	143	24.07

Table 2

Regression analysis of program exposure on intermediate variables.

	Program exposure	
	β	95% CI
HIV knowledge	0.20	(0.06 – 0.34)**
Self-efficacy	0.35	(0.08–0.62)**
HIV risk perception	0.17	(−0.13–0.46)

** $p<.01$

Table 3

Regression analysis of program exposure and intermediate variables on behavioral outcomes.

	HIV testing within past year		Condom use at last sex	
	OR	**95% CI**	**OR**	**95% CI**
HIV knowledge	1.05	(0.96–1.16)	0.98	(0.87–1.10)
Self-efficacy	0.99	(0.94–1.05)	1.05	(0.23–0.97)
HIV risk perception	0.98	(0.93–1.02)	1.05	(0.99–1.11)
Program exposure	1.40	(1.16–1.70)***	1.26	(1.03–1.55)*

Note: OR=odds ratio adjusted for baseline

* $p<.05$

*** $p<.001$