

ORIGINAL ARTICLE

Evaluation of a video based health education strategy to improve sexually transmitted disease partner notification in South Africa

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Objectives: To evaluate the feasibility and impact of a health education intervention promoting partner notification for sexually transmitted diseases (STDs).

Methods: The research setting was a busy public health clinic in a rural district in KwaZulu Natal, South Africa. A before/after quantitative study design was used to measure the effect of an audiovisual presentation of a compelling love drama, posters, and pamphlets. Measures collected from all consenting STD index patients during a 6 week pre-intervention (control) phase were compared with those collected during a 6 week intervention phase. A qualitative evaluation assessed whether the intervention accurately portrayed the intended educational messages.

Results: 150 index patients (55% female) were interviewed in the control phase and 185 index patients (64% female) in the intervention phase. The intervention phase showed improvements on several measures of self efficacy about notifying casual partners, such as a belief among index patients that a greater proportion of their casual partners would see the importance of seeking treatment as a result of their notification interaction. The rate of contact cards returned per index patient was 0.27 in the intervention phase, compared with 0.20 in the control phase (95% CI for the rate difference: -0.05, 0.17). The qualitative research found that the intervention was thoroughly enjoyed by patients and clinicians, but a fundamental problem with it was that patients received confused messages about the relation between HIV/AIDS and other STDs. This has potentially negative consequences for partner notification.

Conclusion: The intervention needs further development, and then could provide a highly acceptable, cost effective model for health education in clinics in developing countries.

In South African public health services, partner notification practices appear to have limited success. Recent evaluations found that the proportion of clients who present with contact cards at various STD services ranged from 2% to 39%,^{1–5} and the proportion of partners identified by index patients, who subsequently presented for treatment, ranged from 16% to 30%.^{6–8} Our observations at primary care clinics, where patients often spend 2 or more hours waiting to receive treatment, led us to postulate that audiovisual presentations in the waiting areas might provide an effective mechanism for improving the effectiveness of partner notification by educating clinic attendees about STDs, and motivating them to encourage their partners to get treated. In a pilot study we showed that such interventions were feasible and acceptable.⁹ Previous research in other healthcare settings suggests audiovisual presentations can be an effective alternative to clinician delivered health education in improving knowledge, attitudes, drug regimen adherence, partner returns, and condom uptake.^{10–12}

A recent systematic review of strategies for STD partner notification¹³ identified 11 randomised controlled trials (RCTs), four of these evaluating various health education strategies. One, conducted in the United States,¹⁴ found that an educational video demonstrated a significant change in knowledge, but no measurable change in behaviour, but was methodologically flawed as the outcome measure lacked sensitivity.¹⁵ Two other trials found the use of pamphlets and verbal health education did not result in improvements in partner notification.^{16–17} The last, conducted in South Africa,¹⁸ found the combination of a short, verbal, nurse given health education message together with intensive one on one coun-

selling by lay counsellors, improved partner treatment. The public health services have not, as yet, been able to implement such a strategy, possibly because health educators and counsellors are in short supply.

This project investigated the feasibility and effect of a health education intervention consisting of a video, posters, and pamphlets on the knowledge and attitudes of STD patients towards partner notification, and on the rate of partner notification by STD patients. It was an exploratory study, investigating the size of any potential effect, to inform further experimental research.

METHODS

Development of a video

The video was developed by Soul City, a health and development mass media organisation, which produces South Africa's popular television and radio soap opera *Soul City*. The televised component is based in a township setting with specific health issues addressed using characters living and working in and around a busy community health centre. Detailed formative research ensures that plausible story lines are developed, and extensive characterisation helps to ensure that viewers are entertained while being educated. The video used in the intervention was developed using material from the television series and, with a relatively low budget, adapting it for the clinic setting, to address the following barriers to partner notification documented by research in South Africa: (a) fears of introducing conflict into relationships and of being blamed for causing the disease^{19–20}; (b) reluctance to notify "casual" as opposed to "steady" partners⁷; (c) need for

advice about how to persuade a partner to go for treatment²⁰; and (d) lack of a clear understanding of the cause of STDs, the modes of transmission, and the concepts of reinfection, and latent and asymptomatic infection.²⁰ Bettina, a nurse in the health centre, and her new man friend, Vusi, were the protagonists in the video, both well known and popular characters of the *Soul City* series. Complementary posters and pamphlets featuring the video characters and reinforcing the video's health education messages were developed.

The research setting and project preparation

The research ethics committee of the University of Cape Town approved the study. The research was conducted during 1999. The research setting was a busy public health clinic in a rural district in KwaZulu Natal, referred to below as "the research clinic," where patients wait on average 2 hours for treatment. Before initiating the research, the nursing staff at the research clinic received a 2 day training course in the best practice for partner notification, and during this, they were trained in how to use the video to complement their interactions with STD patients.

Study design

A before/after quantitative study design was used to measure the effect of the video intervention by comparing measures collected from a 6 week pre-intervention (control) phase with those collected from a 6 week intervention phase. The primary quantitative research outcomes were: (1) index patients' knowledge about STDs and attitudes towards partner notification; (2) index patients' self efficacy in communicating with partners; and (3) the rate of partners per index patient, presenting for treatment at the research clinic as well as other public and private health services in the district. In addition to measuring the effect of the video, the acceptability of the intervention was assessed by asking index patients how they experienced the video. To describe potential obstacles to partner notification, index patients were questioned about their fears and experience of domestic violence and abuse. Finally, the impact of the intervention on nursing practice was assessed to ascertain whether index patients in the intervention and control phases were treated similarly, aside from the intervention. Index patients were questioned about the interventions they received from the nurses.

During the 6 week pre-intervention phase, questionnaire data were collected from consecutive STD index patients presenting at the research clinic. Each index patient was given contact cards for his/her partners. Each card had a unique identifying number to link the index patient to his/her partners when they returned the card to a health service. The collection of returned contact cards was used to estimate the number of partners returning to the research clinic and all other health services in the district (clinics, hospitals, general practitioners). The collection of contact cards continued during a 2 week "washout period" following the 6 week pre-intervention phase. In the wake of the washout period, the video, posters, and pamphlets were introduced for a 6 week period. The video was shown continuously in the waiting room. Posters were displayed on the clinic walls and pamphlets were given to all STD patients. As in the pre-intervention phase, interviewing continued with consecutive STD patients at the research clinic as did collecting and counting contact cards returned to all health services in the district. Contact card collections continued for 2 weeks after the intervention was removed from the research clinic.

Complementary qualitative research was conducted to augment and help explain the quantitative findings. It assessed whether the video used accurately portrayed the intended educational messages and whether unintended messages were also portrayed. Qualitative interviews were conducted with patients and clinicians at the research clinic.

Analysis

Data were captured using EPI-INFO 6.04b (CDC, Atlanta, GA, USA) and analysed using EPI-INFO 6.04b and SAS. χ^2 and Fisher's exact tests were used for comparing proportions, and Wilcoxon two sample tests were used to compare medians. Analysis of variance was used to test for the interaction between sex and intervention effect, and led to sex specific results being reported where this was significant. We assumed that the number of partners presenting for care per index patient was a random variable following a Poisson distribution, and calculated a confidence interval for the difference in the rate of partners presenting for care using the normal approximation to the Poisson distribution.

RESULTS

There were no known qualitative differences between the pre-intervention and intervention phases. In the pre-intervention phase, 150 index patients (82, 55% female) who presented to the research clinic were interviewed, compared to 185 index patients (118, 64% female) during the intervention phase. This represents a 93% and 90% response rate for the pre-intervention and intervention phases respectively.

Participant characteristics

Table 1 describes the characteristics of the index patients in the two phases. Male index patients in the pre-intervention phase were more likely to have presented with a genital ulcer, when compared with male patients in the intervention phase.

Domestic violence and abuse were considered potential obstacles to partner notification. To assess the extent of risk that might be involved in asking women with STDs to notify their partners, female index patients were asked about their experience of domestic violence and abuse. During the pre-intervention phase 34 women (44%) reported ever having been abused by a sex partner, compared with 42 (38%) in the intervention phase ($p=0.38$). Fewer women in the intervention phase had experienced abuse from a sex partner during the 3 months before being interviewed (five (5%) versus 11 (14%), $p=0.02$). Only three women in the pre-intervention phase (4%) and four in the intervention phase (4%) reported that they preferred not to notify their partner of their STD to prevent abuse ($p=0.59$).

Index patients' experience and evaluation of the intervention

During the intervention phase, all but one patient (182, 99.5%) reported that they had seen the video in the clinic waiting area. A large majority of these patients found it "easy to see" (130, 81%), "easy to hear" (127 79%), "helpful" (168, 92%), and reported that it gave useful advice about notifying partners (170, 98%). Few found it boring (two, 1%) or annoying (one, 1%). Many patients (82, 51%), because of their familiarity with the *Soul City* television series, recognised at least one of the characters in the video.

The impact of the intervention on the clinic staff

Table 2 describes and compares the interventions given by the nurses to index patients in the control and intervention phases, based on index patients' reports. These questions were asked to assess whether, aside from the intervention, patients in the control and intervention phases were treated similarly. The nursing staff distributed more condoms during the intervention period, yet fewer patients were educated about condoms and fewer contact cards were given to patients. (During both the pre-intervention and the intervention phases, after the nurse's consultation with the patient and during the interview with the researcher, each patient was asked whether he or she wished to have more contact cards. When comparing the total number of cards that patients took

Table 1 A description and comparison of the index patients in the pre-intervention and intervention phases

Characteristic	Pre-intervention % (n)	Intervention % (n)	p Value
Sex: female	55% (82)	64% (118)	0.08
Age (mean)*	25 years	25 years	0.91
Education: at least 10 years of schooling*	66% (99)	64% (118)	0.67
Employed*	34% (47)	27% (45)	0.19
More than 1 sex partner in last 3 months			
Women	12% (10)	11% (13)	0.83
Men	55% (36)	54% (35)	0.94
Number of contact cards taken: mean (SD)			
Women	0.88 (0.48)	0.94 (0.50)	0.38
Men	1.55 (1.12)	1.46 (1.17)	0.65
Symptoms:			
Women			
Discharge	73% (69)	67% (92)	0.37
Genital ulcers	20% (19)	18% (25)	0.74
Men			
Discharge	62% (45)	51% (41)	0.20
Genital ulcers	49% (36)	21% (17)	<0.001
Experienced symptoms before*	46% (67)	46% (83)	0.10
Talked with partner about problem before clinic visit*	55% (82)	53% (97)	0.62

*No sex differences were observed for these variables.

with them when they left the clinic, there was no difference between patients in the pre-intervention and intervention phases (see table 1).

The impact of the intervention on index patients

Two questions assessed index patients' knowledge. The first assessed whether patients knew that whether or not their sex partner was symptomatic, he or she needed to visit the clinic for treatment. Most patients in both pre-intervention (106 patients, 76%) and intervention phases (141 patients, 82% respectively) correctly answered the question ($p = 0.21$).

The second question assessed whether patients knew that after taking treatment for their STD, they could become reinfected if they did not use a condom and/or engaged in unsafe sex with their untreated partner. Eighty eight patients (78%) in the pre-intervention phase and 160 patients (86%) in the intervention phase correctly answered the question ($p = 0.09$).

Several questions were asked to assess patients' feelings of confidence (self efficacy) with regard to the notification process. Table 3 illustrates the responses to these questions. For almost every indicator, index patients expressed confidence in successfully notifying a greater proportion of their *regular* partners than their *casual* partners. For every comparison but one, those in the intervention group reported a greater level of self efficacy than those in the pre-intervention group. In particular, female index patients in the intervention phase, when

compared with those in the pre-intervention phase, were confident about finding a greater proportion of their casual partners ($p < 0.01$). Index patients (both male and female) in the intervention phase, when compared with those in the pre-intervention phase, believed that it was important to notify a greater proportion of their regular partners ($p = 0.06$), and were confident about knowing what to say during the notification interaction with a greater proportion of their regular partners ($p = 0.07$). Index patients in the intervention phase, when compared with those in the pre-intervention phase, believed that a greater proportion of their casual partners would see the importance of seeking treatment, as a result of the notification interaction ($p = 0.02$).

The impact of the intervention on sex partners

During the pre-intervention phase, a total of 199 contact cards were given out to 162 index patients. (This includes 12 patients who refused to be interviewed.) Thirty three contact cards were returned to the research clinic or other district health services. The rate of contact cards returned per index patient was 0.20. During the intervention phase, a total of 248 contact cards were issued to 207 index patients. (This includes 22 index patients who refused to be interviewed.) Fifty five contact cards were returned to the research clinic or other district health services. The rate of contact cards returned per index patient was 0.27. The rate difference was 0.07 (95% CI: -0.05, 0.17).

Table 2 The nursing intervention on partner notification directed at index patients: a comparison between pre-intervention and intervention phases

Nurse's intervention	Pre-intervention % (n)*	Intervention % (n)*	p Value
Explain the cause of your problem	15% (22)	14% (25)	0.76
Tell you to bring all your partners	77% (116)	83% (153)	0.21
Tell you why it's important to bring all your partners	27% (41)	20% (37)	0.11
Advise you on how to tell you partner	14% (21)	12% (23)	0.67
Give you condoms	65% (98)	79% (147)	0.003
Explain how to use a condom	37% (56)	20% (37)	0.0004
Tell you what may happen if you have sex with an untreated partner	41% (62)	50% (93)	0.10
Tell you what may happen if you don't use a condom	25% (38)	44% (81)	0.0004
Contact cards given per index case by nurse: median and range	1 (0-4)	1 (0-3)	0.03

*Unless otherwise stated.

Table 3 Index patients' self efficacy about the process of notification: a comparison between pre-intervention and intervention phases

Indicator of self efficacy (type of partner)	Pre-intervention		p Value
	Mean (SD)*	Intervention Mean (SD)*	
Believed it was important to notify partner			
Regular	0.92 (0.27)	0.97 (0.17)	0.06
Casual	0.78 (0.40)	0.93 (0.25)	0.13
Believed that partner could be found†			
Regular:			
Men	0.94 (0.24)	0.94 (0.24)	0.91
Women	0.83 (0.37)	0.97 (0.16)	<0.01
Casual:			
Men	0.79 (0.39)	0.87 (0.33)	0.40
Women	0.83 (0.41)	0.90 (0.32)	0.72
Would know what to say during notification			
Regular	0.77 (0.42)	0.86 (0.35)	0.07
Casual	0.72 (0.44)	0.89 (0.32)	0.36
Would feel comfortable notifying partner			
Regular	0.92 (0.27)	0.96 (0.20)	0.23
Casual	0.71 (0.44)	0.86 (0.35)	0.35
Believed partner would see importance of treatment			
Regular	0.67 (0.47)	0.80 (0.40)	0.57
Casual	0.53 (0.49)	0.58 (0.48)	0.02
Believed partner would agree to seek treatment			
Regular	0.73 (0.44)	0.78 (0.41)	0.24
Casual	0.56 (0.49)	0.52 (0.48)	0.31

*The outcome compared is, for each index patient, the ratio of positive responses for each partner, over the total number of partners reported by that index patient. The mean (SD) refer to average of index patient percentages.

†For this variable, there was an interaction between sex and intervention effect, and thus results are presented by sex.

Qualitative research results

Eleven patients were selected at random from the general pool of patients awaiting a consultation and interviewed. All responded extremely positively to the video, felt that the video was realistic and appropriate to their needs, and thought that the story line was clear. All found the story compelling and identified with the characters portrayed:

"It was talking about what really happens. It once happened to me . . . my eyes were just stuck on this." *Patient 1.*

One of the nurses reported:

"The patients are crazy about it . . . Everybody laughs at Vusi hiding from Bettina because that's what they are doing. [Then] they see Vusi accepting [his STD] and admitting [to Bettina], and they learn to change. This [process] overcomes resistance."

Patients responded positively to the health promotion messages in the video:

"[If] I keep it [the STD] a secret then after a long time I will ask myself a question: That if I'd told them [my wife and girlfriend] on time I could have helped them and it wouldn't have reached this terrible stage." *Patient 6.*

All respondents gleaned from the video that there is a strong relation between HIV/AIDS and other STDs, but frequently misunderstood the exact nature of this relation. All except one respondent translated information regarding increased vulnerability to HIV/AIDS into a direct causal relation, such that STDs were understood as "a sign of AIDS":

"I think they are the same thing because STD is a sign of HIV. If you do not get treatment you will end up having HIV." *Patient 10.*

Several patients expressed concern about the negative consequences of partner notification in their own lives and some therefore explicitly requested additional information to help them notify their partners in a manner that would enable them to prevent a negative emotional response.

DISCUSSION

Patients were captivated with health promotion messages grounded in a story set in their own social and cultural

context, and their responses demonstrated processes of internalisation of the constructive partner notification behaviours modelled in the video. However, that the video left patients confused about the relation between HIV/AIDS and other STDs has many potentially negative consequences. Notifying one's partner(s) of a fatal disease is far more difficult than notification of a disease that can be easily cured. This confusion between HIV and other STDs may deter people infected with curable STDs from informing their sexual partners. This potentially harmful feature of the video may be one of the explanations for the absence of an observed effect on partner returns. Despite the careful and extensive formative research process involved in producing the *Soul City* audiovisual materials, our further qualitative research into the reception and interpretation of the educational messages was vindicated.

Nurse support for the intervention was clear. Despite the fact that the intervention had an effect on nursing practice (with more index patients in the intervention phase being given condoms and an explanation about the consequences of failure to use condoms, and fewer receiving explanations about how to use condoms), it is unlikely that this would have affected index patients' attitudes and practices with regard to partner notification. As part of the research process, researchers ensured that patients in the pre-intervention and intervention phases had enough contact cards for all their partners. This routine needs to become a part of nursing practice, to facilitate effective partner referral.

One of the video's beneficial effects was an improvement in index patients' confidence in notifying their partners. This improved self efficacy did not produce significantly higher rates of partner returns. Counting returned contact cards might not be a sensitive enough surrogate indicator for partners presenting for care. For example, a study conducted in the United States found that contact card returns constituted a poor proxy indicator for partners presenting for care. Of 198 named partners, 54% presented at a health service, yet if the investigators had relied on card returns, they would have concluded that only 7% had presented.²¹ Although not evaluated,

a similar outcome could be expected in the South African context. To overcome this limitation, investigators would need to collect the names of all the partners of index patients included in the study (something which is not routinely done in STD services), and then check with all district health services whether these individuals indeed presented for care. Systems of filing patient information and inaccuracy in reporting and recording names may make this impossible. Alternatively, a more practical but less specific solution may be to interview all STD patients and determine the proportion reporting having been referred by partners. Limiting contact card collections to one health district, in a country where migrancy is a dominant feature of the labour practices, may have further compromised the sensitivity of the main outcome indicator.

In the context of high rates of reported domestic violence, it is important that patients' concerns about preventing a negative emotional response from partners are adequately addressed in partner notification interventions.

CONCLUSIONS

This type of intervention is highly acceptable to patients and clinicians, and is a potentially a cost effective model for health education in busy primary care clinics in developing countries. The next phase of research needs to involve the development of a video that addresses the problems identified in the qualitative research through further message development, formative research and pretesting, and the evaluation of its effects on partner referral using a randomised controlled trial. For such a trial, a superior alternative outcome to counting contact cards needs to be established.

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CONTRIBUTORS

The study was conceptualised and designed by CM, SG, NC, DC, and CL; the qualitative research was designed, undertaken and reported by JS; the quantitative fieldwork was organised and monitored by SM, CM, and DC; SG designed the intervention; CL advised on statistical issues; and CM and CL analysed the data; all named authors contributed to preparing the manuscript.

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