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CLINICAL ARTICLE

Male partner involvement in reducing loss to follow-up after cervical cancer screening in Uganda

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ABSTRACT

Objective: To evaluate the efficacy of male partner involvement in reducing loss to follow-up among women in Uganda referred for colposcopy after a positive cervical cancer-screening test. *Methods:* In 2 family-planning/postnatal clinics at Mulago Hospital, Kampala, Uganda, 5094 women were screened for cervical lesions. Those who screened positive were referred for colposcopy; half were allocated to the intervention group and half to the control group. In the intervention group, information about the screening findings and a request to assist their partner in attending the next examination were sent to male partners. In the control group, a standard service was provided, which did not include a letter to the male partner. Logistic regression models were applied to calculate the probability of women returning for colposcopy. *Results:* Of the 834 women referred, 209 (25%) did not return for colposcopy: 143/419 (34%) from the control group and 66/415 (16%) from the intervention group. Women in the intervention group were more likely to return (odds ratio 2.8; 95% confidence interval, 1.9–3.9). *Conclusion:* Male partner involvement significantly reduced loss to follow-up among women referred for colposcopy.

1. Introduction

Cervical cancer is the second most common cancer among women worldwide, with 452 000 new cases per year [1]. It is the most common cancer affecting women in Uganda, with an estimated age-standardized incidence rate of 40.7 per 100 000 females [2]. In Sub-Saharan Africa alone, 57 000 estimated new cases of cervical cancer occurred in 2000, comprising 22% of all cancers [1].

The use of visual inspection with acetic acid (VIA) and visual inspection with Lugol's iodine (VILI) is feasible as a primary means of screening for cervical cancer in low-resource settings [3–7]. In low-income countries, organized cytologic screening—which used to occur annually but now occurs every 3–5 years—has been successful in reducing the number of deaths from cervical cancer [8,9]. Owing to lack of resources and poor logistics, cytology-based programs are not feasible in low-resource settings. This has led to a shift toward see-and-treat strategies and it is advocated that, where resources are limited, screening for precancerous lesions should be attempted once or twice in a woman's life, between the ages of 30 and 50 years [10,11]. It has been shown that once-per-lifetime screening—using VIA—of women aged 35 years, followed by cryotherapy without colposcopic confirmation for women who screen positive, would reduce the incidence of cervical cancer by 26% and be less expensive overall than not screening. A single round of human papillomavirus testing would be extremely effective at reducing mortality from cervical cancer [12,13].

For a cervical cancer-screening program to be effective, uptake should be high and loss to follow-up should be minimal. Loss to follow-up after cervical cancer screening ranges from 10% to 70% in some low-income countries [14,15] and may be as high as 30%–50% in high-income countries [16].

Different strategies have been investigated in terms of reducing loss to follow-up after cervical cancer screening, including telephone call reminders; tracing by community health workers; personalized follow-up letters; economic incentives; and behavioral, cognitive, sociologic, and combined strategies [14–19].

Most interventions have targeted women. Uganda is a patriarchal society in which male partners hold significant power over decision making at home and over the health-seeking behavior of family members. A study of reproductive health services usage showed that men are willing to help but are rarely informed [20]. Some qualitative studies have indicated a role for men in screening programs for cervical cancer [21–23], although the impact of male partner involvement was

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not quantified. In Uganda, overall literacy levels for men are 89.8% in urban areas and 81.4% in rural areas. Levels are 81.0% in the central region of Uganda and 94.2% in Kampala [24].

The aim of the present study was to determine whether male partner involvement could reduce loss to follow-up among women in Uganda referred for colposcopy after screening positive for cervical cancer during visual inspection.

2. Materials and methods

An open interventional study with 2 treatment arms was conducted at Mulago Hospital, which is the national referral and teaching hospital of Uganda and the largest hospital in the country. It is 2 km from the city center of Kampala. Opportunistic cervical cancer screening was performed at 2 family-planning/postnatal clinics at the hospital. Most women who lived within a 10-km radius of the clinics would take minibuses to attend. Those who lived further away would take buses to the city center, then minibuses to the clinics.

The subsequent screening of referred women took place from February 2, 2007 to August 12, 2008. The study ended on November 30, 2008 because the final woman with a colposcopic diagnosis of cervical intraepithelial neoplasia (CIN) was followed-up for 3 months after treatment.

Group health education sessions were held at the clinics each morning regarding the services available. The sessions provided information about the extent of the problem of cervical cancer, causes and risk factors, symptoms, and treatment options. Attendees were taught about prevention of the disease, and those eligible were offered the screening test. The nurses had been intensively trained on using VIA/VILI for screening. Because the study aim was not to measure the specificity of the screening method, a low threshold for positivity was used, and nurses were instructed to err on the side of positive. Women who screened positive following VIA/VILI and who were living with a male partner in a stable relationship were eligible for the study.

Because Lugol's iodine takes 3–5 days to disappear from the cervix and because it obscures the visualization of cervical vasculature and acetowhitening, which are essential for colposcopic evaluation, women referred for colposcopy were told to return (between Monday and Friday) for the examination after at least 1 week.

Under control conditions (the standard service routine), women who screened positive at visual inspection were told the result and the implications; if the lesion seemed precancerous, they were assigned a date to return for colposcopy. The women were informed that further management would depend on the colposcopic findings.

The intervention was a letter addressed to the male partner, in addition to the standard routine. The women were told about the contents of the letter, which they were asked to deliver to their male partner; intention-to-treat analysis was used. The letter informed the male that his partner had a condition requiring further evaluation and requested that he offer her assistance in returning within the indicated period. A telephone number was included, which could be called for more information. The letter was written in English and Luganda, which is the major local language in the area where the study was conducted.

To minimize study contamination, letters were issued according to the week in which women were screened. This was alternated so that the number of weeks in which letters were issued was equal to the number in which letters were not issued.

The main outcome measure was whether women returned for colposcopy within the study period. The probability of returning for colposcopy was compared between the study arms by fitting logistic regression models calculating the odds ratio (OR) and the associated 2-sided 95% confidence interval (CI). In supplementary logistic regression models, we adjusted for women's age, income status, education, distance from clinic, male partner literacy (education), and male partner income status.

Women's age was divided into 6 categories: 20 years or younger; 21–30 years; 31–40 years; 41–50 years; 51–60 years; and 61–70 years. Income statuses for women and their male partners were categorized separately as high (large-scale trading; clerical work; and professional, technical, or managerial occupations) or low (not working, manual work, services, agriculture, and small-scale sales) depending on occupation. A similar method of categorization was used to create the income variables for women and their male partners. Distance was categorized as near (≤10 km from the clinics) or far (>10 km from the clinics). The χ^2 test was used to compare the data distribution of the baseline covariates between the 2 groups. STATA version 10 (StataCorp, College Station, TX, USA) was used for the data analyses.

The present study was approved by the Institutional Review Board of Makerere University Faculty of Medicine and the Uganda National Council for Science and Technology. Written informed consent was obtained from those eligible for recruitment into the study. It was explained to the eligible women that relevant care would be offered to all, regardless of participation in the study. Screening and treatment were free of charge; participants had to pay only for their transport costs.

3. Results

In the first 12 months of the study, 630 women were referred, with 204 referred subsequently. In total, 415 women were assigned to the intervention group and 419 to the control group. Women's age ranged from 17 to 70 years, with a mean of 34.6 years. Male partners' age ranged from 20 to 85 years, with a mean of 40.8 years. There were no statistically significant differences between the 2 groups in social demographic characteristics (Table 1) or colposcopy diagnosis ($P=0.900$). Among the women recruited into the study who screened positive and were referred for colposcopy, HIV prevalence was 16%—double that of the general population.

Table 1
Distribution of covariates in the intervention and control groups, and loss to follow-up.[a]

Covariate	Intervention group	Control group	Loss to follow-up, %
Age, y		$P=0.357$	$P=0.001$
≤20	21 (55.3)	17 (44.7)	39.5
21–30	156 (46.0)	183 (54.0)	30.9
31–40	130 (54.0)	111 (46.0)	22.8
41–50	67 (51.5)	63 (48.5)	14.6
51–60	37 (50.0)	37 (50.0)	16.2
61–70	4 (33.3)	8 (66.7)	25.0
Education		$P=0.228$	$P=0.005$
University/institution	112 (52.6)	101 (47.4)	17.4
Secondary	155 (50.8)	150 (49.2)	28.2
Primary	118 (44.9)	145 (55.1)	29.3
None	30 (56.6)	23 (43.4)	17.0
Income status		$P=0.079$	$P<0.001$
High	100 (55.6)	80 (44.4)	15.0
Low	315 (48.2)	339 (51.8)	27.8
Distance from clinics, km		$P=0.582$	$P=0.005$
≤10	297 (49.0)	307 (51.0)	18.3
>10	118 (51.0)	112 (49.0)	27.7
Residence		$P=0.978$	$P=0.029$
Urban	343 (49.8)	346 (50.2)	26.6
Rural	72 (49.7)	73 (50.3)	17.9
Male partner age, y		$P=0.904$	$P<0.001$
≤20	1 (50.0)	1 (50.0)	100.0
21–30	81 (46.8)	92 (53.2)	35.8
31–40	166 (51.5)	156 (48.5)	25.2
41–50	87 (50.0)	87 (50.0)	20.1
51–60	47 (50.0)	47 (50.0)	13.8
61–70	19 (43.2)	25 (56.8)	18.2
71–80	14 (56.0)	11 (44.0)	32.0
Male partner income status		$P=0.300$	$P=0.007$
High	138 (52.3)	126 (47.7)	18.9
Low	275 (48.4)	293 (51.6)	27.6

[a] Values are given as number (percentage) unless otherwise indicated.

Table 2
Outcome in the 2 groups.[a,b]

Outcome	Control group (n = 419)	Intervention group (n = 415)	Total (n = 834)
Lost to follow-up	143 (34)	66 (16)	209 (25)
Returned for colposcopy	276 (66)	349 (84)	625 (75)

[a] Values are given as number (percentage).
[b] χ^2 36.87; $P<0.001$; odds ratio 2.7 (95% confidence interval, 1.97–3.82).

In a univariate analysis, the proportion lost to follow-up was higher among young women (<30 years) and elderly women (>60 years) than among women aged 30–60 years ($P = 0.001$; Table 1). Women with higher education and higher income were less likely to be lost to follow-up ($P = 0.005$ and $P<0.001$, respectively). There were few women with no education (30 in the intervention group and 23 in the control group). The percentage lost to follow-up was lower among women residing near the screening center ($P = 0.005$) and among women with male partners of higher income status ($P = 0.007$). A lower percentage was lost to follow-up among women residing in rural areas than among women residing in urban areas ($P = 0.029$).

Women in the intervention group were significantly more likely to return for colposcopic evaluation than were women in the control group, with 16% and 34%, respectively, lost to follow-up (Table 2). The effect of the intervention remained statistically significant after multivariate adjustment for the other variables (OR 2.8; 95% CI, 1.9–3.9) (Table 3).

4. Discussion

A letter to the male partner increased the likelihood of return among women referred for colposcopy after a positive screening test. Two possible mechanisms could explain this effect. Assuming that the male partners received the letters and acted accordingly, it would mean that they had a positive role in the health-seeking behavior of the women—consistent with some studies [20,22,25,26]. The problem in the general population is communicating to men the reproductive health problems of women. In Uganda, especially among older generations, women's reproductive health is perceived as an issue not to be discussed with male partners. Instead, it is discussed with other females such as aunts, mothers, sisters, and peers. In many cases, the male partner may be the last person to be informed, if they are informed at all.

The other mechanism involves the letter to male partners influencing women's perception of the gravity of the condition. Normal routine does not include communication to the male partner; therefore, the issuance of such a letter could have changed the way women perceived the screening findings—meaning that, to them, the condition was serious enough to warrant providing such information to their partner. It is well documented that health-seeking behavior is greatly influenced by how serious a condition is perceived to be (i.e. the Health Belief Model) [27].

Women of higher income status were more likely to return for colposcopy than were those of lower income status, although this difference was not significant after all variables—including the involvement of male partners—had been included in the analysis. We believe that, when women are empowered economically, they are more likely to access healthcare services; indeed, this has been the foundation of most interventions [23]. However, the involvement of male partners may level off the differences in return rate for colposcopy among women with lower income.

Uganda Ministry of Health guidelines recommend cervical cancer screening for women aged 20–60 years. In the present study, 784 women (94.0%) were within this age range, 38 (4.6%) were 20 years of age or younger, and 12 (1.4%) were older than 60 years of age. Thus, the women studied were representative of the target population. The difference in employment status between the participants (66% employed) and women in other urban areas (62% employed) was negligible.

Loss to follow-up was higher among women with primary and secondary education than among women with university/institution education or no education. The number of uneducated women was low in the present study; thus, the statistical power to draw conclusions based on this subgroup analysis was limited.

Women younger than 30 years of age and women with young (≤30 years of age) or elderly (>70 years of age) male partners were less likely to return for colposcopy (although this effect disappeared when the other covariates were adjusted for)—probably because of lack of knowledge and resources for women with younger partners, and lack of resources for those with older male partners, who were likely to be unemployed owing to advanced age. A study of Latino males found that younger cohorts were generally unconcerned about their spouses' breast and cervical cancer screening, and lacked knowledge in the area [25]. As age and education level increased, so too did the general awareness and knowledge of breast and cervical cancer [25].

The worst-case scenario of the present intention-to-treat analysis would be that none of the women delivered the letter to their male partners. It is probable that many did not, especially those who—as is often the case—attended for clandestine family planning without the knowledge of their male partners. If this were the case, the findings could be explained solely by the influence of the letter on how the women perceived the gravity of their condition.

If, however, only a small number of women did not deliver the letter to their partners, the present study would have underestimated the effect of male partner involvement because the effect would have been larger than reported. The male partners were not contacted via telephone because the decision on whether to involve them was made by the participants themselves, and further action from the research

Table 3
Estimated odds ratios (and associated 2-sided 95% confidence intervals) of returning for colposcopy.[a]

	Odds ratio (95% confidence interval)
Male partner involvement	
Control group	Referent
Intervention group	2.8 (1.9–3.9)
Age, y	
≤20	Referent
21–30	1.5 (0.7–3.0)
31–40	1.8 (0.8–3.8)
41–50	3.5 (1.5–8.2)
51–60	2.7 (1.0–6.9)
61–70	1.9 (0.4–8.8)
Education	
University/institution	Referent
Secondary	0.7 (0.4–1.3)
Primary	0.7 (0.4–1.3)
None	1.1 (0.4–2.9)
Income	
High	Referent
Low	1.4 (0.7–2.5)
Residence	
Urban	Referent
Rural	0.8 (0.4–1.6)
Distance from clinics, km	
≤10	Referent
>10	1.3 (0.7–2.3)
Male partner income status	
High	Referent
Low	1.2 (0.8–1.9)
Male partner literacy	
Literate (at least primary education)	Referent
Illiterate	1.39 (0.8–2.4)

[a] Adjusted for all other covariates in the table.

team could have been considered an invasion of privacy. It is possible that achieving a higher level of contact with men (e.g. by telephone) would reduce loss to follow-up even more in cervical cancer-screening programs.

Overall, the participants were less dependent on their male partners than are women elsewhere in the country; therefore, the intervention might have had a bigger effect than it would have done in settings in which the women were less empowered—as is the case in many low-income countries, where domestic power relations are in favor of men.

Compared with women, men have been found to be reluctant to participate in intervention studies to reduce HIV infection [26,28,29]. This may be explained by the nature of the disease because HIV positivity in a woman may be associated with a high chance of positivity in her partner, meaning that male partners might be unwilling to be involved in such a study if they were unaware of their HIV serostatus. Cervical cancer has less-direct health implications and less stigmatization for male partners, so they might be more willing to be involved.

A see-and-treat strategy using VIA and cryotherapy of precancerous lesions is acceptable in the Ugandan context and is performed in some centers. In the present study, women were treated after colposcopy because the nurses who carried out the screening were relatively inexperienced in this area, despite intensive training. The nurses were instructed to err on the side of positive to minimize the rate of false negatives. A common problem with cryotherapy after positive VIA is overtreatment, and there is a high false-positivity rate with VIA. In the present study, 30 of the 625 women who returned for colposcopy had CIN, 8 had invasive cancer, 2 had inconclusive results, and 129 had inflammation. The remainder had no pathologic cervical conditions; instead, they were diagnosed with normal conditions such as ectopy or acanthosis. As such, if cryotherapy had been used in all cases after positive VIA/VILI, there would have been gross overtreatment.

Male partner involvement in the decision process following cervical cancer screening improved the return rate for colposcopy among women who tested positive for cervical lesions during visual inspection. Pre-typed letters addressed to the male partner should be considered in screening settings in which return rate for colposcopy is currently low and in which women are partially economically dependent on their male partners. Where screening is done in a community setting, community health workers could consider contacting the male partners of women who screen positive, if the women consent.

5. Conflict of interest

The authors have no conflicts of interest.

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