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Full title: Effect of a structural intervention for the prevention of intimate partner violence and HIV in rural South Africa: results of a cluster randomized trial

Short title: South African IMAGE Study on violence and HIV

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Abstract

Background: HIV infection and intimate partner violence (IPV) share a common risk environment in much of southern Africa. We implemented a structural intervention that combined a microfinance programme with a gender and HIV training curriculum and assessed changes in economic well-being, gender equity, social capital and vulnerability to HIV and IPV.

Methods: Eight villages were pair-matched and randomly allocated to receive the intervention at study onset or three years later. Loans were provided to poor women enrolling in the intervention. A participatory learning and action curriculum was integrated into fortnightly loan meetings. Effect estimates were generated for outcome measures among direct programme participants (Cohort 1) and 14-35 year old household (Cohort 2) and community members (Cohort 3), alongside matched controls.

Findings: Among direct programme recipients, effect estimates suggested improvements in economic well-being, social capital, and empowerment relative to matched controls. Within this cohort, 12 month experience of physical and/or sexual abuse was reduced by 55% (aRR 0.45 95% CI 0.23-0.91). No data on HIV risk were collected from this cohort.

Modest effects on vulnerability to HIV were seen among indirect programme recipients. Among Cohort 2 (14-35 year old household members) greater levels of openness and communication about sex/sexuality were reported. No behavioural effects were observed (aRR for unprotected intercourse at last sex with a non-spousal partner 1.02 95% CI 0.85-1.23). Among Cohort 3 (14-35 year old community members) there was a suggestion that partner numbers were reduced (aRR for more than one partner in the last year 0.64 95% CI 0.19-2.16) but there was no effect on the rate of unprotected intercourse at last sex with a non-spousal partner (aRR 0.89 95% CI 0.66-1.19) or HIV incidence (aRR 1.06 95% CI 0.66-1.69).

Interpretation: The study provides evidence that a combined microfinance and training intervention has the potential to generate social and economic benefits, and lead to reductions in levels of IPV among programme participants. There was very limited evidence of wider indirect effects on HIV risk among young people in the short term. Social and economic development interventions have the potential to alter risk environments for HIV and IPV in southern Africa and should be evaluated further.

INTRODUCTION

HIV/AIDS and intimate-partner violence (IPV) are major public health challenges in southern Africa. In South Africa alone, 29.5% of women visiting public antenatal clinics were HIV positive in 2004.¹ National prevalence surveys suggest that women and girls make up 55% of all infections.² In addition, one in four South African women report having been in an abusive relationship³ and violence has been identified as an independent risk factor for HIV infection.⁴

Underdevelopment, lack of economic opportunities for both sexes, and entrenched gender inequalities create a risk environment that supports high levels of both HIV and IPV.⁵⁻¹² Structural interventions seek to influence risk environments by altering the context in which ill-health occurs.¹³ They address upstream determinants of health and have the potential to influence multiple endpoints.¹⁴ While structural interventions are increasingly regarded as important in the prevention of HIV and IPV, few have been rigorously evaluated in developing countries.¹⁵⁻¹⁷

Microfinance is a development tool that provides loans to poor households for income generation. With nearly 100 million clients worldwide,¹⁸ such programmes have the potential to reduce poverty, empower participants and support better health.^{19,20} Furthermore, the benefits of microfinance may diffuse to non-participants residing in programme areas and support the wider adoption of health practices.²¹ The Intervention with Microfinance for AIDS & Gender Equity (IMAGE) combined a poverty-focused microfinance initiative targeting the poorest women in communities with a participatory curriculum of gender and HIV education. We hypothesized that women's involvement in the programme would improve household economic well-being, social capital, individual empowerment and negotiating-power within relationships and thus reduce vulnerability to IPV. Through stimulating such changes alongside raising levels of communication and collective action on HIV and gender issues within communities, we further hypothesized that vulnerability to HIV among 14-35 year old household and village residents would be reduced.

METHODS

The study was conducted between June 2001 and March 2005 in South Africa's rural Limpopo province. Poverty remains widespread²² and unemployment rates exceed 40%.²³ There are high levels of labour migration with 60% of adult men and 25% of women residing away from home for more than six months per year.²⁴

The study protocol underwent peer-review at the Lancet (03/PRT/24) and was registered with the National Institutes of Health (NCT00242957). Eight villages were pair-matched on estimated size and accessibility, and one village from each pair was randomly allocated to receive the intervention. Prior to the study, no village had access to microfinance. Health workers in government clinics serving all villages received training in HIV testing, care and support prior to the study.

The number of villages included in the study was determined by the operational feasibility of delivering the intervention over a wide geographic area; time required for cohort recruitment and follow up; the need to enrol all eligible households in a village before expanding, and; ethical concerns about withholding participation from comparison villages. Precision estimates for measures of effect for primary outcome variables were provided in the protocol. These were calculated on the basis of the projected sample size and for a range of values of outcome prevalence, magnitude of effect and inter-cluster variance.³³ From the outset, it was recognised that the study would have wide confidence intervals unlikely to exclude unity. The choice of a randomized, controlled design, with multiple intervention and control communities was employed to generate unbiased effect estimates, representing a substantial advance over previous evaluations

of structural interventions and microfinance programmes. The study was also designed to assess both the consistency and congruency of observed changes in structural-level pathway variables and health outcomes, critical in interpreting the plausibility of intervention effects.³⁴

Intervention design

Key features of the IMAGE intervention are documented in **Table 1** and described elsewhere.²⁵

Microfinance component

Microfinance services were implemented by the Small Enterprise Foundation (SEF, South Africa) which has more than 12 years experience and 30 000 active clients. Their client-base was exclusively women. SEF actively targets the poorest, and about half the households in the study area were eligible to receive loans based on SEF's wealth ranking criteria. Loans were administered for the development of income-generating activities using a group lending model. Businesses were run by individual women, but groups of five women guaranteed each other's loans. Group members repaid together to receive further loans.²⁶ Approximately 40 women (eight groups of five) comprised one loan centre which met fortnightly.

Training component

Based upon participatory learning and action principles, a 12 to 15 month training curriculum called 'Sisters-for-Life' (SFL) was implemented during loan centre meetings. SFL comprised two phases: Phase One consisted of ten one-hour training sessions, and covered topics including gender roles, cultural beliefs, relationships, communication, IPV and HIV and aimed to strengthen communication skills, critical thinking and leadership. Since group-based learning can foster solidarity and collective action,²⁷ Phase Two encouraged wider community mobilization to engage both youth and men in the intervention communities. Key women were selected by their centres for a further week of leadership training and subsequently worked with their centres to mobilize around priority issues including HIV and IPV.

SFL began once sufficient members were recruited to a loan centre (generally 3-6 months) and was run in parallel to the microfinance intervention by a separate training team.²⁸ A qualitative research programme monitored delivery of the intervention. Process data were collected through attendance registers, focus groups, financial monitoring systems and questions on intervention acceptability.

Outcome evaluation

Quantitative data were collected among three cohorts within intervention villages: women enrolled in the IMAGE programme (Cohort 1), household co-residents aged 14-35 years (Cohort 2), and a random sample of community residents aged 14-35 years (Cohort 3). A control group was recruited for each cohort from comparison communities (see **Table 2**). Recruitment to Cohorts 1 and 2 occurred during a 15 month period, with matched controls recruited contemporaneously. Interviews were generally conducted after programme enrolment but before loan disbursement. Follow-up interviews were conducted approximately two years later. Interviews for Cohort 3 were conducted at the beginning and end of the three year study period. Primary study outcomes were past year experience of IPV - physical or sexual violence by a spouse or other sexual intimate (Cohort 1), unprotected intercourse at last sex with a non-spousal partner in the past 12 months (Cohorts 2 and 3) and HIV incidence (Cohort 3).

Data were collected by trained female facilitators through face-to-face structured interviews. Facilitators received four-weeks of training, including technical, ethical, and safety considerations in conducting research on sexual behaviour, HIV and IPV.²⁹ Interviews were conducted in a safe location chosen by the respondent, with discussion of sensitive topics suspended when

interruptions could not be avoided. Interviews concluded by providing local information on HIV counselling and additional support services.

Questionnaire design and outcome indicators were guided by hypothesised pathways of change and established best-practices, and further refined through local piloting and the use of qualitative data. **Table 3** lists pre-defined primary and secondary indicators in order of hypothesised likelihood of change. Primary outcomes were distal, health-related endpoints. Secondary outcomes were defined prior to comparative analysis. Their selection was guided by the distribution of indicators within the population as well as through qualitative data highlighting the local risk environment for HIV and IPV. Thus among Cohort 1, indicators of household economic well-being, social capital and gender equity were collected; while among Cohorts 2 and 3 secondary indicators related to HIV awareness, access to testing, and sexual behaviour. Details of questionnaire items are available in a [web appendix](#). For the main analysis, all outcome variables were coded to be binary at the individual level, requiring the application of cut-off values in some cases. Where outcome variables combined data from multiple questions to measure an underlying construct, reliability coefficients were high (Kuder-Richardson-20 = 0.5-0.9 [[web appendix](#)]). Sensitivity analysis confirmed that conclusions were robust to whether data were used in continuous form or different cut-off values applied.

Laboratory methods

Participants aged 14-35 years were asked to provide an oral fluid specimen for HIV testing at both rounds. Samples were collected using the OraSure collection device (UCB group, Belgium) and analysed with the Vironostika HIV Uni-Form II assay (bioMerieux, France). Analysis was blinded to the village of origin. Data from one interviewer raised quality concerns and were excluded from the analysis. Additionally, some samples collected at baseline were stored for longer than recommended by the manufacturer before analysis. Sensitivity analysis demonstrated little impact of the inclusion of these samples on the estimate of effect and they were retained in the main analysis.

Statistical analysis

Data were entered into an Access database (Microsoft) containing range and logic checks. Statistical analysis was conducted using Stata version 9 (Statacorp, Texas).

Crude measures of effect with 95% confidence intervals were calculated, comparing the intervention group to the comparison group (prevalence or risk ratios, identified as RR). This was done by entering the log of village level summaries into an analysis of variance model including terms for intervention and village pair. Observations were weighted with inverse proportional to the variance of the measure for Cohorts 1 and 2, as denominators varied between villages. For one primary outcome variable (experience of IPV in past 12 months) no events were recorded in one village at follow up so 0.5 was added to allow calculation of a log prevalence.³⁰ To examine the robustness of this finding the risk difference was also estimated.

Adjusted measures of effect (aRR) were calculated by generating standardised village level summaries.³¹ These were calculated as the ratio of observed to expected outcomes predicted by fitting a logistic regression model on individual data with binary outcomes as dependent variables. Independent variables included village pair and age group in all models, marital status for Cohort 1, and sex for Cohorts 2 and 3. Since the study randomised a limited number of villages, it was necessary to adjust for baseline imbalances. Consequently, a term for the baseline measure was also included in the model, with a missing value category assigned to individuals on whom baseline data were not available.

For primary outcomes the coefficient of variance (k_m) for a matched pair design was estimated using baseline data.³² HIV prevalence was used to estimate k_m for HIV incidence as no baseline incidence data were available.

A small number of subgroup analyses were performed. Among Cohort 1, effect estimates were calculated separately for individuals who did / did not take out at least three loans and attended more than 70% of the SFL programme. For Cohorts 2 and 3, effect estimates were calculated for males and females separately. Significance tests of interaction were conducted on cluster-level data.

Ethical considerations

The study design was approved by ethical review committees at the University of the Witwatersrand (South Africa) and the London School of Hygiene and Tropical Medicine (UK). All participating individuals provided informed consent. Permission to conduct the study was also sought from leadership structures in each village. A community liaison board was established to provide feedback on study progress and results. The intervention was administered in comparison communities upon study completion.

Role of funding sources

The sponsors had no role in study design, data collection, analysis, interpretation or writing this report.

RESULTS

Intervention delivery

Four hundred and thirty women, with an average age of 41 years, enrolled in the loan programme during the 15-month recruitment period. Approximately 1750 loans were disbursed over the first three years of programme operation, valued at over US \$290,000. Loans were most often used to support retail businesses selling fruit and vegetables, new / second-hand clothes or tailoring businesses. Repayment rates were 99.7%.

Among women successfully followed up, 78% had taken out three or more loans and most were still members of the programme. Some 65% attended more than seven training sessions. Qualitative data noted initial resistance to sensitive issues discussed in the training though this had largely resolved by the end of the first phase. While 15% of women reported they found some material uncomfortable, 90% felt the intervention had a major impact on their lives.

Thirty seven women attended the week of leadership training and played a central role in community mobilisation. Activities included numerous attempts to increase levels of community awareness about HIV and IPV through talking to children, partners, churches and others. Loan centres organised 40 village workshops, 16 meetings with leadership structures, five marches, two partnerships with local institutions, and formed two new committees targeted, respectively, at crime and rape within the community.

Study profile

Four hundred and thirty loan recipients and an equal number of matched controls were enrolled to Cohort 1 (**Figure**). Most women were interviewed successfully at baseline. Two-year follow up rates were 90% in the intervention arm and 84% in the comparison arm. Data on variables relating to partners were restricted to women reporting an intimate partner during the previous 12 months.

Among Cohort 2, some 1455/1835 (79%) of 14-35 year old household residents were successfully interviewed at baseline. Two-year follow up rates were 75% and 71% in the intervention and control arms respectively. Among Cohort 3, a random sample of 2858/3881 (74%) eligible young people were interviewed at baseline. Three-year follow-up rates were 57% in the intervention group and 63% in the control group. Data on HIV incidence were available for 1286/2018 (63.7%) individuals who were confirmed HIV negative at baseline.

Baseline characteristics

Villages in the two study arms were similar in terms of size, distance to the town, electrification, unemployment rates and levels of migrancy. Access to a water tap was limited in one intervention village (**Table 4**).

There was little suggestion that women who joined the intervention differed from control women in socio-demographic traits (**Table 4**). However, there was evidence that women who enrolled in the intervention were more often members of social groups ($p=0.01$) and savings associations (*stokvels*) ($p=0.02$), were more likely to believe the community would work together towards common goals ($p=0.06$) and more likely to report controlling behaviours by their partner ($p=0.01$) at baseline than women recruited as matched controls (see **Table 5** for distributions). There were no significant baseline differences between intervention and control groups among Cohorts 2 and 3.

For primary outcomes, high coefficients of variance for cluster proportions were noted for IPV ($k_m=0.41$) and HIV ($k_m=0.32$). Lower values were found for unprotected sex ($k_m=0.10$ in cohort 2, $k_m=0.02$ in cohort 3).

Outcome measures among women directly exposed to the intervention

Adjusted point estimates of effect for 16 of the 17 indicators suggested differences between intervention and comparison groups in the direction hypothesised (**Table 5**). Effect sizes were large though confidence intervals did include unity for all but three indicators.

Increased economic well-being among women in the intervention arm was suggested by indicators of household assets (aRR 1.15 95% CI 1.04-1.28), membership of savings groups (*stokvels*) (aRR 1.84 95% CI 0.77-4.37) and expenditure on food and clothing (aRR 1.23 95% CI 0.47-3.20) but not food security or school attendance by children in the household.

Women in the intervention group were more likely to report higher levels of participation in social groups (aRR 1.85 95% CI 0.95-3.61) and collective action (aRR 2.06 95% CI 0.92-4.49), and a greater sense of solidarity from their community in a time of crisis (aRR 1.65 95% CI 0.81-3.37). There was less difference in the perception that community members would work together to solve common problems (aRR 1.11 95% CI 0.38-3.24) or the preference for communal ownership (aRR 0.97 95% CI 0.73-1.29).

Effect estimates for all measures of empowerment were in the hypothesised direction. The strongest effects were for holding attitudes challenging established gender roles (aRR 1.57 95% CI 0.87-2.81), communication with household members about sex (aRR 1.58 95% CI 1.21-2.07) and holding more progressive attitudes to IPV (aRR 1.49 95% CI 0.86-2.60). There were smaller effects on improved self confidence (aRR 1.15 95% CI 0.83-1.60) and communicating with partners about sex (aRR 1.14 95% CI 0.90-1.44).

IMAGE participants were more likely to report progressive attitudes towards gender violence (aRR 1.49 95% CI 0.86-2.60). The 72% of women with an intimate partner during the previous year

experienced less controlling behaviour by these partners (aRR 0.80 95%CI 0.35-1.83). Among this group, there was a substantial reduction in IPV in the previous 12 months (aRR 0.45 95% CI 0.23-0.91). A similar result was noted when the effect estimate was calculated on the risk difference scale (adjusted difference = -7.3%, 95% CI -16.2%-0.2%). At baseline, data on IPV were collected among women married or living as married at baseline. At follow-up, data was also gathered for non-cohabiting partners. When the analysis was restricted to those women who reported on IPV at both time points a similar magnitude of effect was seen (aRR 0.39 95% CI 0.20-0.72; risk difference -7.7% 95% CI -11.5% - -3.8%).

Most measures of effect were similar among women who had taken three or more loans and attended 70% of the training sessions. However, there was some evidence to suggest a more pronounced positive effect among this group on household communication (interaction test $p < 0.01$), community support in a crisis ($p = 0.17$) and communal ownership ($p = 0.18$).

Outcome measures among household members aged 14-35 years

Point estimates for five of the eight indicators were in the direction hypothesised but effect sizes were modest and confidence intervals wide. For the primary outcome of unprotected intercourse at last sex with a non-spousal partner in the last 12 months the relative risk was very close to unity (aRR 1.02 95% CI 0.85-1.23). The strongest evidence of effect related to household communication on sex/sexuality (aRR 1.32 95% CI 0.90-1.95). There was little evidence to suggest differences in effect estimates between males and females.

Outcome measures among community members aged 14-35 years

For five of the six indicators, point estimates of effect were in the direction hypothesised, but were small with wide confidence intervals. Fewer individuals in the intervention arm reported more than one partner in the past year (aRR 0.64 95% CI 0.19-2.16). In terms of primary outcomes there was no difference in HIV incidence between intervention and comparison groups (aRR 1.06 95% CI 0.66-1.69) and little evidence that unprotected intercourse at last sex was less common in the intervention group (aRR 0.89 95% CI 0.66-1.19). There was little evidence to suggest consistent effect differences between men and women.

DISCUSSION

This study was the first randomised trial of a microfinance-based structural intervention for the prevention of HIV and IPV. The intervention was feasible to deliver with a high degree of coverage and was acceptable to programme participants. There was evidence for an intervention effect on household economic well-being, social capital and empowerment. Furthermore, we estimated that over a two year period levels of IPV were reduced by 55% among women in the intervention arm relative to controls. There were more modest effects among young people not directly exposed to the intervention, and HIV incidence in this group was similar in intervention and comparison communities. This study provides encouraging evidence that a combined microfinance and training intervention can have health and social benefits, including reducing levels of violence experienced by participants, though indirect effects, if any, on young people's HIV risk over the short term are more limited.

The study had a number of strengths. The prospective, matched-cluster randomised design minimised recall and programme placement bias - both major limitations in the interpretation of previous poverty-reduction studies.³⁵ The study was informed by a pre-specified framework and employed extensive qualitative data, while the analysis controlled for secular changes occurring during the study period and baseline imbalances in confounding factors. Our interpretation of the

study results are shaped by the consistency of observed changes in pre-defined indicators, and the congruency between pathway variables and health outcomes.³⁴

The study also had had a number of limitations. Perhaps most important was the low precision of effect estimates due to the limited number of clusters – a product of operational and ethical issues highlighted earlier. A second weakness was the relatively short duration of follow-up (2-3 years). Third, there may have been biased reporting, though the direction of such biases are difficult to predict. Higher levels of experiences such as violence may have been reported by programme participants since the training sought to increase sensitisation to these issues. Fourth, since programme participants self-selected to join the intervention, these individuals may have differed from those enrolled in the comparison arm. We attempted to ensure groups were similar through age and village-type matching, and restricted entry in the comparison group to women who would have been eligible to join the programme. Nevertheless, some imbalances were seen at baseline. Fifth, while study communities were identified from locally recognised borders, they were not separated by large distances, leaving the potential for contamination of control villages and underestimation of true effects. Sixth, individuals not successfully interviewed at baseline and/or follow up might have differed from those included in the trial, although again the direction of such bias is not easy to predict. Finally, as programme participants were generally older women in whom sexual behaviour was not assessed, we are not able to comment on potential direct effects of the intervention on HIV risk.

The IMAGE study demonstrated that it is possible to conceptualise, design and deliver an intervention targeting the structural determinants of HIV and IPV in a southern African context. Despite widespread recognition of the role structural factors play in relation to IPV, HIV, and other health outcomes, such interventions have remained largely in the realm of theory. The evaluation of such interventions is complex. We employed an experimental design to generate unbiased estimates of effect despite practical constraints limiting cluster numbers. The feasibility, ethics and utility of such assessments remain important considerations in the evaluation of structural interventions, and further research is clearly required.^{14,36} Finally, the sustainability, transferability, cost, and relative benefits of the training and microfinance components of the IMAGE intervention are the subject of ongoing study by our group.

The study also contributes evidence to ongoing debates about the role of microfinance in alleviating poverty. Participants represented the poorest women in each community, and enrolment in the intervention generated additional income for savings and expanded asset ownership. There was little effect on school enrolment, potentially reflecting relatively high enrolment rates in much of South Africa, with little room for measurable improvement. The limited impact on food security may arise from overall increases in reported food security over the trial period, perhaps the result of the expansion of child and foster care grants in the area.

The data presented here also strongly suggested an intervention effect on women's empowerment and reduction of IPV. While this benefit cannot be assumed for all contexts, and the potential for violence to increase with changes in social and economic status has been suggested in some settings,³⁷ the study lends support to a growing literature on the importance of women's economic participation in reducing gender inequity and violence.³⁸ This is the first study to observe such effects on the prevention of IPV. Better understanding the potential mechanisms for this impact and the relative contribution of the economic, social and educational dimensions of the intervention are of central policy relevance in Africa and elsewhere.

There were modest intervention effects on levels of openness and communication about sex and collective action among young people in participating households, yet the results of the trial

suggested little influence on sexual behaviour and HIV infection rates during the short follow-up period. Effects in this group would have to occur through diffusion from those receiving the intervention to the wider community via mentorship, education, participation in community activities or as a result of household economic gains. Since the time for direct IMAGE participants to receive the full intervention package of microfinance and training was 18 months on average, the opportunity for such diffusion to occur over the two to three year study period was limited.

Structural interventions have the potential to play an important role in confronting the complex risk environment underlying high rates of IPV and HIV in southern Africa. While some suggest that addressing relationships between economic underdevelopment, gender inequality and HIV are the only sustainable solution¹⁰, others argue that structural change takes too much time and may draw attention away from the basics of prevention.³⁹ This study suggests that even in the short term, shifts in social and economic vulnerability including reductions in IPV may indeed be achievable. As poverty reduction, the promotion of gender equity, and combating HIV/AIDS remain pillars of the United Nations Millennium Development Goal framework, identifying strategies to maximize the synergy between behavioural and structural approaches is critical. Progress towards these targets will require creative partnerships between sectors.

Contributors

P Pronyk was the principal investigator of the study and project leader in South Africa, led the drafting of this manuscript, and contributed to all aspects of the study. J Hargreaves was responsible for the study design, field management of survey teams, data management, overall quantitative analysis and assessment of process indicators. J Kim was responsible for the development and implementation of the training component of the intervention, the design and validation of survey instruments for gender violence, and contributed to the analysis. L Morison contributed to the overall design of the study and provided major support for the statistical analysis. G Phetla was the team leader in South Africa for the qualitative component of the study. C Watts provided support to the training intervention, the design of survey tools, and the analysis. J Busza provided technical support to the qualitative research team. J Porter participated in the initial conceptualization of the intervention, its design, and advised on most aspects of the study. All authors contributed to the drafting of this manuscript.

Conflict of interest statement

We declare that we have no conflict of interest.

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Table 1: Intervention details

Component	Key features
Poverty focused microfinance	<p>Microfinance processes facilitated by one fieldworker in each village</p> <ul style="list-style-type: none"> - Identification of the poorest households using participatory wealth ranking - Recruitment and group formation for credit guarantee and support (one group = 5 women) - Individual borrowing and repayment of loans over 10 / 20 week cycles - Fortnightly centre meetings (one centre = c.40 women in 8 groups) - Ongoing business assessment and impact monitoring
<p>“Sisters for Life” Gender and HIV training programme 25</p>	<p>“Sisters for Life” facilitated by a team of trainers working in all villages.</p> <p><i>Phase 1 : Structured training</i></p> <ul style="list-style-type: none"> - Ten sessions conducted within fortnightly centre meetings (c.6 months) <ol style="list-style-type: none"> 1. <i>Introductions</i> 2. <i>Reflecting on Culture</i> 3. <i>Gender Roles</i> 4. <i>Women’s Work</i> 5. <i>Our Bodies, Our Selves</i> 6. <i>Domestic Violence</i> 7. <i>Gender and HIV</i> 8. <i>Knowledge is Power</i> 9. <i>Empowering Change</i> 10. <i>Way Forward</i> <p><i>Phase 2 : Community mobilisation</i></p> <ul style="list-style-type: none"> - Election of “natural leaders” from within centres (up to 5 per centre) - External training for natural leaders - Development of centre based action plans responding to local priority issues - Six to nine months of continued facilitation by training team

Table 2: Eligibility and follow up criteria for individuals recruited to three cohorts within the IMAGE Study

Cohort	Eligibility Criteria			Follow up criteria	
	Intervention villages	Comparison villages	No. eligible	Period	Criteria
1	New Loan Applicants	Age, sex and village pair matched controls. <i>Sampling strategy:</i> Households from the pair-matched village that would have been eligible for SEF if available were randomly sampled from the village list until a household containing an age-sex matched control was found	860	2 yrs	All individuals eligible at baseline
2 *	14-35 year old individuals of either sex listed as currently sleeping in the household of loan applicants (<i>de facto residents</i>)	14-35 year old individuals of either sex listed as currently sleeping in the same household of control women	1835	2 yrs	All individuals successfully interviewed at baseline
3 *	14-35 year old individuals of either sex listed as resident in randomly selected households in intervention communities (<i>de jure residents</i>)	14-35 year old individuals of either sex listed as resident in randomly selected households in comparison communities	3881	3 yrs	All individuals eligible at baseline

* To maximise levels of exposure to the intervention young people were eligible for follow up in Cohort 2 only if they were currently sleeping in the home and successfully interviewed at baseline. Individuals who were enrolled in Cohort 1 aged less than 35 years were also recruited to Cohort 2. Individuals were eligible for follow up in Cohort 3 if they were residents of the household (but not necessarily sleeping there) and regardless of whether successfully interviewed at baseline.

Table 3: Outcome measures *

		Indicator Those classified as having experienced the outcome reported:	For composite indices – no. of items	Hypothesised direction of change due to intervention
Cohort 1				
Household economic well-being	Estimated value of selected household assets >2000 ZAR		9	Increase
	Membership of a savings cooperative (<i>stokvel</i>)		-	Increase
	Greater food security		2	Increase
	Per person expenditure on clothing / shoes >200 ZAR per year (1)		-	Increase
	Attending school (among household members aged 10-19yrs at baseline)		-	Increase
Social Capital		More participation in social groups	18	Increase
		Taken part in collective action	2	Increase
		Greater perception of community support in a time of crisis	4	Increase
		Belief that the community would work together toward common goals	3	Increase
		More positive attitude to communal ownership	-	Increase
Gender equity	Empowerment	More self confidence (1)	2	Increase
		Greater challenge of established gender roles	6	Increase
		Communication with intimate partner about sex in past 12 months (1)	-	Increase
		Communication with household members about sex in past 12 months (1)	3	Increase
	Vulnerability to violence	More progressive attitudes to intimate partner violence (1)	8	Increase
		Controlling behaviour by intimate partner in past 12 months (2)	4	Decrease
		Experience of intimate partner violence in past 12 months (2)	4	Decrease
Cohort 2				
Specific vulnerability to HIV infection	HIV awareness	Communication with household members about sex in past 12 months	-	Increase
		Comfortable discussing sex/sexuality issues at home	-	Increase
		Knowledge that a healthy-looking person can be HIV+	-	Increase
		Having had an HIV test	-	Increase
		Participation in collective action against HIV/AIDS	-	Increase
	Sexual behaviour	New sexual debut (3)	-	Decrease
		>1 sexual partner in past 12 months	2	Decrease
		Unprotected intercourse at last sex with a non-spousal partner in past 12 months	2	Decrease
Cohort 3				
Specific vulnerability to HIV infection	HIV awareness	Correct identification that a healthy-looking person can be HIV positive	-	Increase
		Having had an HIV test	-	Increase
	Sexual behaviour	New sexual debut (3)	-	Decrease
		>1 sexual partner in past 12 months	2	Decrease
		Unprotected intercourse at last sex with a non-spousal partner in past 12 months	2	Decrease
	HIV incidence	HIV seroconversion among HIV negatives at baseline (3)	-	Decrease

* Details of questionnaire items and reliability analyses for composite indices are held in a web appendix

Items listed in **bold** were classified as primary outcome measures in the study protocol.

Outcome measures were prevalence measures estimated among all cohort members at both baseline and follow up except; (1) data not collected at baseline, (2) data collected on married/living-as-married individuals at baseline and all individuals reporting an intimate partner in the previous 12 months at follow up, (3) outcome measure was a cumulative risk measure among those negative at baseline.

ZAR = South African Rand (2002). A *stokvel* is an informal savings co-operative common in rural South Africa.

Table 4: Baseline characteristics of villages and individuals interviewed at baseline

	Intervention	Comparison
Villages		
Number enrolled	4	4
Mains electricity	3 (75%)	3 (75%)
Number of households (Mean, Range)	1310 (845-2256)	1147 (567-1512)
Distance to the main road (Mean, Range)	9.1 km (0-20)	8 km (0-15.7)
Adult unemployment rate (Mean, Range) *	57% (55% - 59%)	54% (51% - 60%)
Population sleeping away from home (Mean, Range)	29% (22%-37%)	25% (21%-32%)
Household access to water from a tap (Mean, Range)	53% (20%-93%)	75% (39%-90%)
Individuals		
Cohort 1		
Number interviewed at baseline	426	417
Age (Median, IQ range)	41 (34-49)	42 (33-49)
Marital status	Never married	104 (24.4%)
	Currently married	187 (43.9%)
	Divorced / separated / widowed	135 (31.7%)
Female headed household	206 (50.5%)	231 (54.6%)
Had to beg for food or money in the past year	302 (71.1%)	305 (73.1%)
Cohort 2		
Number interviewed at baseline	725	730
% Female	450 (62.1%)	432 (59.2%)
Age (Median, IQ range)	20.8 (16.9-26.4)	20.6 (16.9 – 26.0)
Marital status	Never married	639 (88.1%)
	Currently married	76 (10.5%)
	Divorced / separated / widowed	10 (1.4%)
Current activity	Student	355 (49.0%)
	Unemployed	260 (35.9%)
	Self employed / employed	110 (15.2%)
Sexually active	Males	187 (68.0%)
	Females	361 (80.2%)
Cohort 3		
Number interviewed at baseline	1488	1370
% Female	831 (55.9%)	783 (57.2%)
Age (Median, IQ range)	20.9 (17.4-26.3)	21.0 (17.1-26.5)
Marital status	Never married	1272 (85.5%)
	Currently married	196 (13.2%)
	Divorced / separated / widowed	19 (1.3%)
Current activity	Student	676 (45.5%)
	Unemployed	592 (39.9%)
	Self employed / employed	217 (14.6%)
Sexually active	Males	472 (72.0%)
	Females	676 (81.4%)
HIV Prevalence	Males	26/509 (5.1%)
	Females	91/679 (13.4%)
		17/432 (3.9%)
		59/591 (10.0%)

* Unemployment rate measured as proportion of all non-students aged 15-60 years classified as unemployed or in irregular work over past 12 months. IQ Range = Interquartile range.

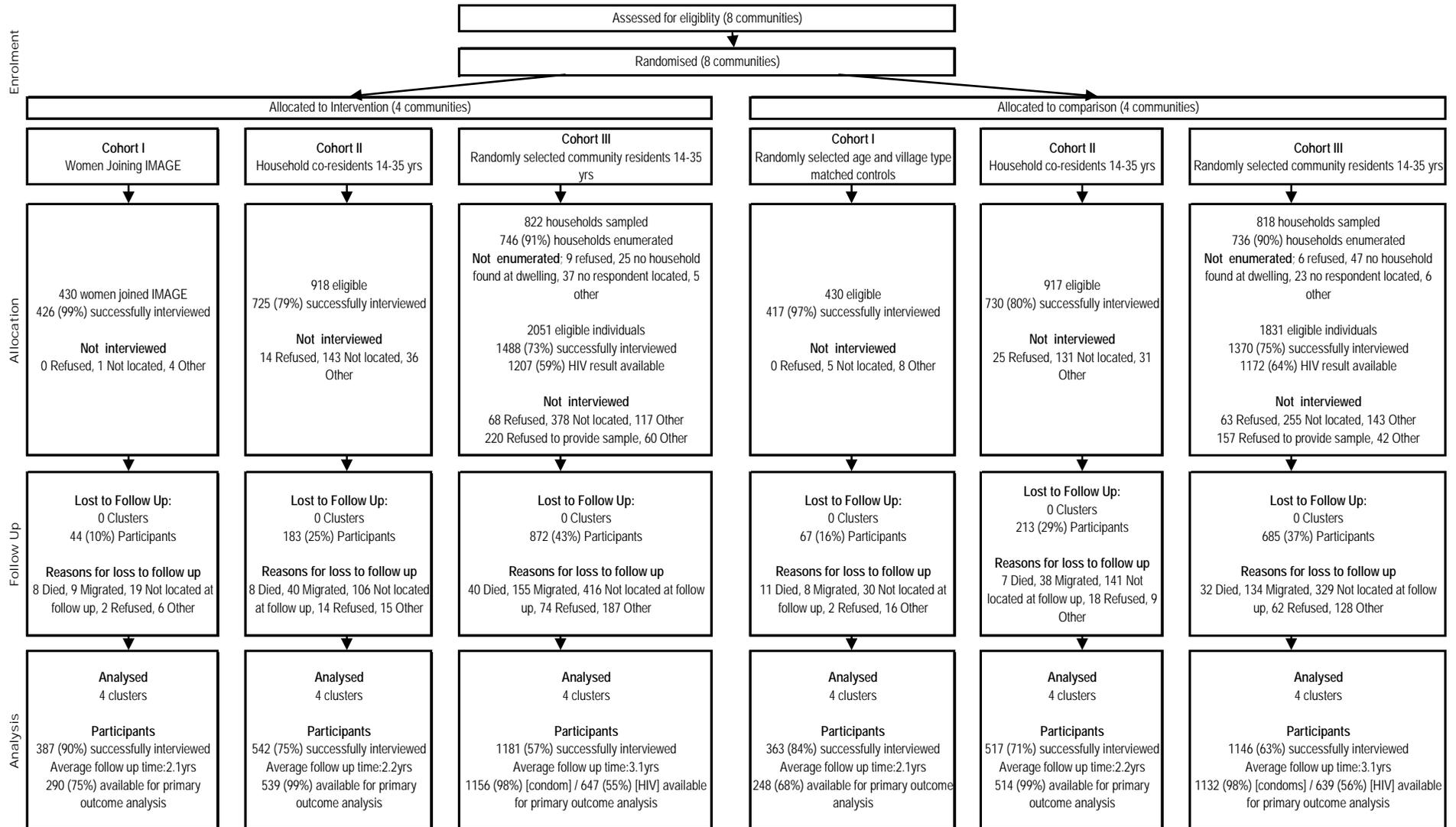
Table 5: Estimates of effect on outcome indicators among three cohorts of individuals differentially exposed to the IMAGE intervention

Cohort 1	Baseline				Follow Up					
	I		C		I		C		Unadjusted RR (95% CI)	Adjusted RR (95% CI)
	n/N	%	n/N	%	n/N	%	n/N	%		
Estimated value of selected household assets >2000 ZAR	203/421	48.2%	183/412	44.4%	223/383	58.2%	176/359	49.0%	1.18 (0.87-1.60)	1.15 (1.04-1.28)
Membership in savings group (<i>stokvel</i>)	104/425	24.5%	49/420	11.7%	140/387	36.2%	55/363	15.2%	2.13 (0.92-4.94)	1.84 (0.77-4.37)
Greater food security	240/425	56.5%	190/422	45.0%	334/385	86.8%	304/361	84.2%	1.03 (0.83-1.28)	1.01 (0.81-1.26)
Per person expenditure on clothing / shoes >200 ZAR (2)	-	-	-	-	246/377	65.3%	182/339	53.7%	1.22 (0.46-3.23)	1.23 (0.47-3.20)
Children 10-19 years attending school (1)	882/1125	78.4%	833/1096	76.0%	654/1003	65.2%	630/985	64.0%	1.02 (0.93-1.12)	1.01 (0.97-1.06)
More participation in social groups	112/422	26.6%	53/416	12.7%	275/386	71.2%	133/363	36.6%	1.96 (1.02-3.78)	1.85 (0.95-3.61)
Taken part in collective action	167/407	41.0%	146/403	36.2%	290/383	75.7%	124/361	34.4%	2.22 (1.05-4.70)	2.06 (0.92-4.49)
Greater perception of community support in a time of crisis	300/419	71.6%	264/414	63.8%	306/387	79.1%	179/363	49.3%	1.68 (0.83-3.39)	1.65 (0.81-3.37)
Belief that the community would work together toward common goals	242/426	56.8%	171/419	40.8%	232/387	60.0%	184/362	50.8%	1.14 (0.39-3.36)	1.11 (0.38-3.24)
More positive attitude to communal ownership	259/426	60.8%	248/416	59.6%	227/387	58.7%	218/363	60.1%	0.97 (0.74-1.28)	0.97 (0.73-1.29)
More self confidence (2)	-	-	-	-	278/383	72.6%	227/358	63.4%	1.16 (0.83-1.61)	1.15 (0.83-1.60)
Greater challenge of established gender roles	158/423	37.4%	201/418	48.1%	233/381	61.2%	154/361	42.7%	1.54 (0.84-2.79)	1.57 (0.87-2.81)
Communication with intimate partner about sex in past 12 months (1) (2)	-	-	-	-	260/288	90.3%	195/243	80.3%	1.14 (0.87-1.50)	1.14 (0.90-1.44)
Communication with household members about sex in past 12 months (2)	-	-	-	-	331/383	86.4%	197/361	54.6%	1.60 (1.25-2.05)	1.58 (1.21-2.07)
More progressive attitudes to intimate partner violence (2)	-	-	-	-	200/382	52.4%	128/361	35.5%	1.50 (0.81-2.75)	1.49 (0.86-2.60)
Controlling behaviour by intimate partner in past 12 months (1)	67/193	34.7%	40/178	22.5%	95/282	33.7%	101/242	41.7%	0.78 (0.34-1.82)	0.80 (0.35-1.83)
Experience of intimate partner violence in past 12 months (4)	22/193	11.4%	16/177	9.0%	17/290	5.9%	30/248	12.1%	0.50 (0.28-0.89)	0.45 (0.23-0.91)

	Baseline				Follow Up					
	I		C		I		C		Unadjusted RR (95% CI)	Adjusted RR (95% CI)
Cohort 2										
Communication with household members about sex in past 12 months	339/724	46.8%	337/731	46.1%	357/542	65.9%	257/517	49.7%	1.34 (0.84-2.16)	1.32 (0.90-1.95)
Comfortable discussing sex/sexuality issues at home	355/724	49.0%	351/730	48.1%	336/541	62.1%	247/517	47.8%	1.36 (0.29-6.47)	1.35 (0.31-5.97)
Knowledge that a healthy-looking person can be HIV+	441/725	60.8%	413/730	56.6%	457/542	84.3%	387/517	74.9%	1.12 (0.85-1.47)	1.11 (0.86-1.42)
Having had an HIV test	90/725	12.4%	90/730	12.3%	98/542	18.1%	81/516	15.7%	1.16 (0.79-1.70)	1.18 (0.73-1.91)
Participation in collective action against HIV/AIDS	246/725	33.9%	225/729	30.8%	315/542	58.1%	211/517	40.8%	1.41 (0.68-2.93)	1.37 (0.67-2.82)
New sexual debut (3)	-	-	-	-	78/137	56.9%	70/132	53.0%	1.12 (0.94-1.33)	1.12 (0.93-1.36)
>1 sexual partner in past 12 months	95/724	13.1%	110/730	15.1%	98/540	18.2%	84/514	16.3%	1.08 (0.31-3.76)	1.16 (0.85-3.32)
Unprotected intercourse at last sex with a non-spousal partner in past 12 months	326/724	45.0%	313/729	42.9%	259/539	48.1%	245/514	47.7%	1.03 (0.82-1.29)	1.02 (0.85-1.23)
Cohort 3										
Knowledge that a healthy-looking person can be HIV+	750/1488	50.4%	749/1370	54.7%	812/1179	68.9%	787/1145	68.7%	0.99 (0.77-1.27)	1.00 (0.80-1.25)
Having had an HIV test	166/1488	11.2%	150/1368	11.0%	268/1181	22.7%	242/1144	21.2%	1.08 (0.77-1.51)	1.09 (0.81-1.47)
New sexual debut (3)	-	-	-	-	380/461	82.4%	344/416	82.7%	1.00 (0.86-1.16)	1.00 (0.86-1.15)
>1 sexual partner in past 12 months	175/1481	11.8%	140/1365	10.3%	172/1175	14.6%	220/1139	19.3%	0.56 (0.06-5.23)	0.64 (0.19-2.16)
Unprotected intercourse at last sex with a non-spousal partner in past 12 months	635/1481	42.9%	545/1365	52.3%	498/1156	43.1%	538/1132	47.5%	0.91 (0.68-1.22)	0.89 (0.66-1.19)
HIV incidence (3)	-	-	-	-	70/647	10.8%	72/639	11.3%	1.04 (0.67-1.61)	1.06 (0.66-1.69)

Adjusted RRs calculated on the basis of expected number of events from a logistic regression model on individual data with independent variables including age, village pair, marital status (Cohort 1 only), sex (Cohorts 2 and 3 only) and baseline measure except; (1) no adjustment for marital status, (2) adjustment for most similar baseline variable since data not collected at baseline, (3) cumulative risk measure so no adjustment made for baseline status, (4) adjusted for lifetime experience of IPV by current partner at baseline.

Figure : CONSORT diagram showing completeness of follow-up in three study cohorts



“Effect of a structural intervention for the prevention of intimate partner violence and HIV in South Africa: results of a cluster randomized trial” : Web Appendix

This appendix gives details of questionnaire items and their coding used to create binary primary and secondary outcome variables reported in the per protocol analysis of the IMAGE Study.

All primary outcomes used well established measures that were defined in the study protocol. Indicators for secondary outcomes were also pre-defined prior to final analysis. The choice of indicators and the process undertaken to generate them were as follows:

1. Relevant to a pre-specified conceptual framework (see reference 25: RADAR, 2001)
2. Extensive piloting of questionnaires to ensure questions comprising outcomes that were both locally relevant and well-understood by respondents and the field research team.
3. A review of baseline quantitative data alongside interim analysis of concurrent qualitative data
4. Reviews of the international literature from the economics/microfinance, social capital, and gender fields.

More specifically, we refer to the following:

- Economics: indicators of economic well-being were derived after piloting operational tools and methods developed for conducting poverty assessments in Africa developed by CGAP (Consultative Group to Assist the Poorest)¹, USAID,² and the microfinance sector³
- Social capital: dimensions of cognitive and structural social capital were derived from the World Bank Social Capital Assessment Tool and related advances where emerging best-practice is evolving for studies conducted in developing country settings⁴⁻⁶
- Gender: Secondary IPV outcomes (past year experience of controlling behavior by an intimate partner, and attitudes towards the acceptability of IPV, Table 3) were drawn from the international WHO violence against women study instrument.⁷ These secondary outcomes were included because of quantitative and qualitative evidence suggesting that both are associated with risk of intimate partner violence in a number of settings, including South Africa.⁷⁻⁹

South African IMAGE Study on violence and HIV

Primary Outcome measures stipulated in the IMAGE protocol

Cohort	Outcome variable	Questionnaire items	Number of items	Coding details to create binary outcome variables		Notes
				0	1	
1	Experience of intimate partner violence in past 12 months	<p>I want you to tell me if any of the following things have happened to you with a sexual partner or spouse (in the past 12 months) ...</p> <p>a. He pushed or shoved you?</p> <p>b. He hit you with his fist or with something else that could hurt you?</p> <p>c. He physically forced you to have sexual intercourse when you did not want to?</p> <p>d. You had sexual intercourse when you didn't want to, because you were afraid of what he might do if you said no?</p>	4	"No" to all items	"Yes" to any item	<p>Exclusions: No intimate partner at follow up</p> <p>Reliability coefficient: 0.87</p> <p>Baseline data collected in subgroup: Data only collected among <i>married</i> women at baseline.</p>
2 / 3	Unprotected intercourse at last sex with a non spousal partner in past 12 months	<p>"How many of your partners in the last 12 months were Sexual partners that you are not married to and have never lived with?"</p> <p>If the answer is greater than 0, then for up to the three most recent partners the following question is asked.</p> <p>Did you use a condom the last time you had sex with this person?</p>	2	<p>Number of non-spousal partners in last year = 0</p> <p>OR</p> <p>Number of non-spousal partners in last year > 0 AND used a condom at last sex with all reported partners</p>	<p>Number of non-spousal partners in last year > 0</p> <p>AND</p> <p>Did not use a condom at last sex with any reported partner</p>	Only details of three partners are recorded for the previous 12 months
3	HIV incidence	<i>Estimated on the basis of laboratory assays conducted at baseline and follow up</i>	-	Negative sample at baseline and follow up	Negative sample at baseline, positive sample at follow up	Exclusions : Individuals with positive test at baseline and missing data at either timepoint

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Secondary outcome measures stipulated following review of qualitative data

Cohort	Outcome variable	Questionnaire items	Number of items	Coding details to create binary outcome variables		Notes
				0	1	
1	Estimated value of selected household assets >2000 ZAR	Do people living in the household own any of the following items. Code the items as "new <2yrs old", "medium 2-6 yrs old", "old >6yrs old" a. Cars b. Televisions c. Hi-Fis d. Fridges e. Bicycles f. Cell phones Do people living in the household own any of the following livestock. g. Cows h. Goats i. Chickens	9	Total value of assets listed < 2000 ZAR	Total value of assets listed >= 2000 ZAR	Valuations: Estimations of the value of each asset came from a small sub-study comprising approximately 100 interviews conducted in 2002. Participants were asked to estimate the sale and purchase value of these items. Valuations for the calculation come from the average of estimated sale and purchase values across all interviews.
1	Membership of a <i>stokvel</i>	Are you a member of a stokvel	1	"Not member"	"Leader" OR "Active member" OR "Member"	Definition: A stokvel is an informal savings co-operative popular in rural South Africa
1	Greater food security	a. During the last month, how often have most of the family had a meal that consisted of pap alone, bread alone or worse? b. While living in this house and during the past month have <u>you or any of your own children</u> gone without food or had a reduced amount to eat for a single day because of a shortage of food ?	2	"Often" to any item	"Never" or "Once only" or "A few times" to all items	
1	Per person expenditure on clothing / shoes >200 ZAR	Estimate the amount in Rands that has been spent on clothing and footwear for this individual in the last year. Include tailoring costs and costs of items used to make or mend clothes at home Summed over all individuals / household size	1	Per person expenditure < 200ZAR	Per person expenditure >=200ZAR	Baseline: No data collected at baseline. Nearest equivalent data = value of household assets

South African IMAGE Study on violence and HIV

Cohort	Outcome variable	Questionnaire items	Number of items	Coding details to create binary outcome variables		Notes
				0	1	
1	Attending school (among household members aged 10-19yrs)	Is X currently attending school? Data collected on individuals aged 10-19 years at baseline.	1	"No"	"Yes"	
1	More participation in social groups	Index of Group Membership generated by summing total number of all social groups respondent reports being a member of. Weighting x 2 if an "Active member" and x 3 if "Leader" of each group.	18	Score <5	Score >=5	
1 / 2	Taking part in collective action	1) In the past 3 years, have you participated in a meeting, march, rally or gathering around HIV/AIDS awareness? 2) Have you ever been involved in the organization of such a meeting or gathering?	2	"No" to all items	"Yes" to any item	Reliability coefficient: 0.69
1	Greater perception of community support in a time of crisis	Imagine that your house has been completely destroyed by a fire. In this question we would like to know whether you feel you could turn to [People from the village you don't know at all] a. To shelter you for two weeks while you make other long-term arrangements? b. To borrow 50 Rand to help you buy some clothes after the fire? c. How confident are you that you alone could raise enough money to feed your family for four weeks? – this could be for example by working, selling things that you own, or by borrowing money (from people you know or from a bank or money lender) d. Would you say that your household's ability to survive this kind of crisis is better, the same or worse as it was 2 years ago	4	"No" or "Don't know" to items a. AND b. AND "It would be possible / moderately confident" or "Not confident at all" or "Don't know" to items c. and d.	"Yes" to item a. or b. OR "Very confident" to item c. or d.	Reliability coefficient: 0.60

South African IMAGE Study on violence and HIV

Cohort	Outcome variable	Questionnaire items	Number of items	Coding details to create binary outcome variables		Notes
				0	1	
1	Belief that the community would work together toward common goals	<p>a. If a community project does not directly benefit your neighbor but has benefits for others in the village/neighborhood, then do you think your neighbor would contribute time for this project? (if the community project is not ordered by the chief)</p> <p>b. If a community project does not directly benefit your neighbor but has benefits for others in the village/neighborhood, then do you think your neighbor would contribute money (say about 10R) for this project? (if the community project is not ordered by the chief)</p> <p>c. If there were a problem that affected the entire village/neighborhood, for instance lack of water or electricity or a major flood, which scenario do you think would best describe who would work together to deal with the situation?</p>	3	<p>“No” or “Don’t know” to item a. and b.</p> <p>AND</p> <p>“Each person will deal with the problem individually” or “Neighbours among themselves” or “Local government / municipal political leaders would take the lead” or “All community leaders acting together” or “Other” to item c.</p>	<p>“Yes” to item a. or b.</p> <p>OR</p> <p>“The entire village / neighbourhood” to item c.</p>	Reliability coefficient: 0.50
1	More positive attitude to communal ownership	Suppose a friend of yours in this village/neighborhood faced the following alternatives, which one would s/he prefer most?	1	Own a plot of land entirely by themselves OR Don’t know not sure	Own a much larger (3 fold) plot of land jointly with one other person (not a family member)	
1	More self confidence	<p>a. People often feel shy about speaking in public. If you were at a community meeting (e.g. School committee) how confident are you that you could raise your opinion in public?</p> <p>b. Neighbours often have similar problems (e.g. around raising children). How confident do you feel about offering advice to your neighbour?”.</p>	2	“Very confident and often do” to all questions	“Confident but would need to be encouraged to speak out” OR “not confident at all / scare to speak in public and don’t” to any question	No baseline data collected: Nearest equivalent data on challenge of established gender norms

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Cohort	Outcome variable	Questionnaire items	Number of items	Coding details to create binary outcome variables		Notes
				0	1	
1	Greater challenge of established gender roles	In your own opinion, do you agree that ... a. A woman should do most of the household chores (cooking, cleaning), even if the husband is not working b. If a man has paid lobola, it means that his wife must always obey him. c. If a woman asks her husband to use a condom, she is being disrespectful to her husband d. If a woman asks her husband to use a condom it means that she must be sleeping around with other men e. A man needs to have many sexual partners, and the wife must just tolerate this f. A woman should never divorce her husband, no matter what happens”	6	“Agree” or “Don’t know” to any item	“Disagree” to all items	Reliability coefficient: 0.81
1	Communication with relationship partner about sex in past 12 months	In the last 12 months have you spoken about ... Sex, and sexuality in general with Your own spouse or sexual partner(s)	1	“No”	“Yes”	Exclusions: No intimate partner at follow up Baseline data collected in subgroup: Data only collected among <i>married</i> women at baseline. No baseline data collected: Nearest equivalent data collected on partner giving advice (FF1002b)
1 / 2	Communication with household members about sex in past 12 months	In the last 12 months, have you spoken about sex, and sexuality in general with 1) Your children 2) Your parents / guardians 3) Other household members	3	“No” to all items	“Yes” to any item	No baseline data collected: Nearest equivalent data collected on communication with children about sex / sexuality

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Cohort	Outcome variable	Questionnaire items	Number of items	Coding details to create binary outcome variables		Notes
				0	1	
1	More progressive attitudes to gender-based violence	<p>In your own opinion, do you agree that ...</p> <p>It is acceptable for a married woman to refuse to have sex with her husband if</p> <p>a. She doesn't want to b. He refuses to use a condom c. She is angry because he has other girlfriends d. She is worried he may have AIDS</p> <p>A man has good reason to hit his wife if:</p> <p>e. She refuses to have sex with him f. She asks him to use a condom g. He finds out that she has been unfaithful h. Disagrees with him in public</p>	8	<p>"Disagree" with any item a. -d.</p> <p>OR</p> <p>"Agree" with any item e.h.</p>	<p>"Agree" with all items a. -d.</p> <p>AND</p> <p>"Disagree" with all items e.- h.</p>	<p>Reliability coefficient: 0.81</p> <p>No baseline data collected on some variables: Data on attitudes to physical violence (items e.-h.) not collected at baseline.</p>
1	Controlling behaviour by relationship partner in past 12 months	<p>In the last 12 months, In your relationship/s with any of your partners has</p> <p>a. He kept you from seeing your friends? b. He insisted on knowing where you are at all times? c. He insulted or humiliated you in front of other people? d. He boasted about girlfriends or brought them home?</p>	4	"No" to all items	"Yes" to any item	<p>Exclusions: No intimate partner at follow up</p> <p>Reliability coefficient:0.64</p> <p>Baseline data collected in subgroup: Data only collected among <i>married</i> women at baseline.</p>
2	Comfortable discussing sex/sexuality issues at home	"In your household, do you feel 'free' /open to discuss issues of sex and sexuality?"	1	"No" or "Don't know"	"Yes"	

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Cohort	Outcome variable	Questionnaire items	Number of items	Coding details to create binary outcome variables		Notes
				0	1	
2 / 3	Knowledge that a healthy-looking person can be HIV+	"Do you think that a healthy-looking person can be infected with HIV, the virus that causes AIDS?"	1	"No" or "Don't know"	"Yes"	
2 / 3	Having had an HIV test	"I don't want to know the result, but have <i>you</i> ever had an HIV test?"	1	"No"	"Yes"	
2 / 3	New sexual debut	"Have you ever had sexual intercourse?"	1	"No"	"Yes"	Exclusions: Individuals who report having had sex at baseline
2 / 3	>1 sexual partner in past 12 months	"How many sexual partners have you had in the last year?" Include both spousal and non-spousal partners	2	"0" or "1"	> 1	

Reliability coefficient: Kuder-Richardson 20 coefficient describing agreement between binary indicators used to generate composite indicators at follow up where appropriate.

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