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Transforming masculine norms to improve men's contraceptive acceptance: results from a pilot intervention with men in western Kenya

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Abstract: *Men's adherence to constraining male gender norms can lead them to resist contraceptive use. Very few interventions have attempted to transform masculine norms to encourage greater contraceptive acceptance and gender equality. We designed and evaluated a small-scale community-based intervention targeting the masculine norms tied to contraceptive resistance among partnered men (N = 150) in two western Kenya communities (intervention vs. control). Pre–post survey data fit to linear and logistic regression models evaluated differences in post-intervention outcomes, accounting for pre-intervention differences. Intervention participation was associated with increases in contraceptive acceptance scores (adjusted coefficient (aβ) 1.04; 95% confidence interval (CI) 0.16, 1.91; p = 0.02) and contraceptive knowledge scores (aβ 0.22; 95% CI 0.13, 0.31; p < 0.001) and with contraceptive discussions with one's partner (adjusted Odds Ratio (aOR) 3.96; 95% CI 1.21, 12.94; p = 0.02) and with others (aOR 6.13; 95% CI 2.39, 15.73; p < 0.001). The intervention was not associated with contraceptive behavioural intention or use. Our findings demonstrate the promise of a masculinity-driven intervention on increasing men's contraceptive acceptance and positive contraceptive involvement. A larger randomised trial is needed to test the effectiveness of the intervention among men as well as among couples.* DOI: 10.1080/26410397.2023.2170084

Keywords: family planning, men, gender norms, measurement, Kenya, contraceptive use

Background

Opposition from male partners is an important barrier to women's use of contraception when desired.[1] Studies have shown that men's contraceptive resistance can be driven by their lack of knowledge about contraceptive methods (particularly side effects) and reproductive physiology;[2,3] fear of contraception's perceived potential to encourage infidelity by allowing women to have sexual relationships with other men without risking pregnancy;[2,4] and concerns about

contraception undermining their male roles as decision makers and heads of household.[5,6] These apprehensions reveal deeper concerns about how improvements in women's reproductive – and overall – autonomy may interfere with men's sense of themselves as men and their understanding of how gender relations should operate. A growing literature has highlighted how adherence to narrow and constraining conceptions of masculinity contributes to a range of health problems.[7–10] Working to address the relationship between conformity to restrictive gender norms and harmful attitudes and behaviours is thus paramount to efforts to achieve improved and more equitable health outcomes.[11–13]

Engaging men and boys to recognise the ways in which their masculine identities shape poor health outcomes for themselves, their female partners, and their families and shifting their beliefs and attitudes in the direction of more gender equality to improve health is an innovative model known as gender transformation. This type of work has flourished in the HIV and gender-based violence prevention fields, demonstrating effectiveness in reducing HIV risks and violence against women and girls, improving sexually transmitted infection outcomes, and modifying gender inequitable attitudes.[11,14,15] Despite calls for sexual and reproductive health programmes to more meaningfully address the roles of men and gendered power relations,[16] gender-transformative approaches are relatively new in the family planning (FP) field, and the masculine norms most relevant to men's contraceptive acceptance are not well understood.[15] At the time of launching our research study, we could identify no rigorous efforts to describe the dimensions of masculinity that contribute to men's contraceptive attitudes and behaviours, though there have been important recent contributions to this knowledge base, including an exploration of gender norm construction related to FP among young people in Uganda [17] and an assessment of the normative environment for FP use in the Democratic Republic of the Congo.[18]

Correspondingly, a limited number of interventions published in the peer-reviewed literature have attempted to transform gender norms to encourage men to accept and/or positively engage in FP.[15] One intervention among married Malawian men, based on the information-motivation-behavioural skills model, arranged peer-led individual sessions that offered FP education and discussions exploring and challenging rigid gender roles that hindered couples' contraceptive uptake.[19] The intervention arm reported increased contraceptive use (78% vs. 59% in control, $p < .01$), largely due to improvements in couples' communication. Two interventions used interactive small-group workshops with Ugandan men[20] and Guatemalan couples.[21] These interventions encouraged participants to understand and challenge harmful gender norms, attitudes, and behaviours related to FP, drawing from adapted gender-related content developed by programmes such as Stepping Stones and EngenderHealth Men as Partners. Among the Ugandan men, improvement in gender-related attitudes was not observed post intervention, though increases in some self-reported health-seeking behaviours were noted (e.g. increase from 13.9% to 32.8% reporting the use of condoms with a main partner in the prior three months ($p < .0001$); increase from 29.3% to 55.5% reporting accompanying a main partner to a health centre in the prior five months ($p < .0001$)).[20] The Guatemalan intervention led to significantly greater improvements in gender equity scores for both women (difference in difference 0.96, 95% CI 0.36, 1.57, $p = .003$) and men (difference in difference 1.10, 95% CI 0.43, 1.77, $p = .002$) in the intervention group, though an increase in modern contraceptive use was not observed.[21] One intervention used community dialogues about gender and FP (with content developed by CARE) in Kenya to shift social norms to enable more acceptability and use of contraception; exposure to FP dialogues during the intervention resulted in 1.78 higher odds (95% Confidence Interval (CI) 0.68, 2.23) of modern contraceptive use among women ($p < .05$), but the increase among men was not significant (Odds Ratio (OR) 1.23 95% CI 0.68, 2.23).[22]

Notably, outcomes for these interventions were assessed using measures of gender attitudes, largely adapted from Pulerwitz & Barker's[13] Gender Equitable Men (GEM) Scale,[20,21,19] or women's empowerment using CARE's[23] WE-MEASR tool.[22] In a recent review of gaps in monitoring and evaluation of strategies to engage men in FP,[24] a dearth of high-quality indicators was noted for the full spectrum of male engagement activities, and gender attitude was the only recommended key indicator listed for programming that addresses gender norms and equality. However, while attitudes about gender equality is an

important factor to consider in contraceptive use, gender norms – specifically, perceptions of whether and to what extent support for contraception leads to a loss of masculinity – are likely to be a more proximal indicator of whether an intervention designed to shift gender norms successfully targeted those that drive men's contraceptive resistance. Prior to our current research, no psychometrically tested, masculinity-informed instrument to measure contraceptive acceptance existed.

Given these evidence gaps in intervention conceptualisation, implementation, and measurement, rigorous evidence is needed to better understand how to transform notions of masculinity to improve men's contraceptive acceptance. We conducted extensive formative research in western Kenya to elucidate how masculinity and gender norms inform men's and couple's perceptions and use of contraception. Based on the formative research, we developed a novel community-based intervention to shift these norms towards greater contraceptive acceptance and positive contraceptive involvement. We also developed a rigorous psychometric measure, the Masculine Norms and Family Planning Acceptance Scale, to capture perceptions of male roles and duties related to contraceptive use and the planning of one's family.[25] Finally, we conducted a small-scale study to preliminarily evaluate the impact of the intervention on men's contraceptive acceptance, knowledge, discussions, behavioural intentions, and current use. We hypothesised that men in the intervention community would experience improvements in study outcomes compared to those in the control community.

Methods

Study setting

This quasi-experimental study was conducted in Kisumu County, Kenya from June 2017 to August 2018. Bordering Lake Victoria, Kisumu County is semi-rural with headquarters in Kisumu City, the third largest city in Kenya. Major occupations include agriculture, unskilled manual labour, and domestic service.[26] Of married women of reproductive age, nearly one-quarter have an unmet need for contraception, and the HIV prevalence is 17.5%, nearly four times the national prevalence.[27,26,28]

Study design and participant selection

Using parallel groups, repeated measures design with a non-equivalent comparison group, we selected two semi-rural communities in the Kisumu district of Nyanza province, Kenya. We selected the two communities, the Nyando and Kisumu West sub-counties, based on similar size, poverty indices, both 66%, and contraceptive prevalence rates, 46% and 45%, respectively,[26,29] and randomised them to intervention and control conditions. An independent statistician at the University of California, San Francisco (UCSF) conducted randomisation using a computer-generated random assignment. Study allocation was made known to study staff and communities, given that masking was not possible due to the activities received by the intervention community. Purposive sampling is frequently used in small-scale, mixed-method studies in order to provide a cost- and time-effective method given study resources. Given our small pilot sample, this technique proved to be the most appropriate to maximise our recruitment of participants who were suited to exploring our research questions. In each study community, trained male research assistants visited social venues that were known to attract men of reproductive age in the community, such as soccer matches, community meetings and events, and bicycle taxi termini. Men were then directly approached by the research assistants, who offered information about the study and assessed the men for eligibility. Eligibility criteria included being a Dholuo-speaking man of reproductive age (18–65 years old) with a Dholuo-speaking primary female partner, aged 18–45 years, also willing to participate in the study. Formal consent procedures were completed through a home visit or other meeting at a mutually agreed-upon location, and both men and their female partners were enrolled after they gave informed voluntary written consent.

Men in the intervention community completed intervention activities and data collection; men in the control community participated in data collection only. Primary female partners of all male study participants participated in data collection only for exploratory analyses (data not shown). Study approval was granted on 30 August 2016 by the Scientific Ethics and Review Unit at the Kenya Medical Research Institute (Protocol # P00030/ 3303) and on 6 November 2016 by the Committee on Human Research at UCSF (IRB # 15-17339).

Intervention

Formative research

We developed our intervention based on formative research that our team conducted among women, men, and healthcare providers in western Kenya to explore relationship dynamics and gendered power relations within couples related to planning a family and contraceptive use.[30–39,6] Our qualitative findings revealed that men's resistance to their female partner's use of a contraceptive method was significantly driven by a lack of knowledge, largely stemming from their perceived and experienced exclusion from the "woman's domain" of FP; and by the belief that limiting family size and using a contraceptive affected their sense of themselves as men and undermined their status and decision-making in families and communities. In particular, contraceptive use was perceived to conflict with masculine norms related to fertility (the expectation that men should father many children), land (the need to bear male children to ensure land inheritance), wealth (the higher social status and impression of wealth conveyed by larger families), and sexuality (the discomfort or embarrassment experienced by men when discussing sex). Additionally, a woman's contraceptive use was viewed as weakening her male partner's household and sexual decision-making power. These fears of a loss of masculinity were only intensified by societal changes in gender roles, especially women's increased contributions to household earnings and decision-making, that removed the typical means of achieving prevailing expectations of manhood. Despite these reservations, men appreciated the financial benefits of smaller families and were concerned about the adverse effects of rapid repeat pregnancy on the health and wellbeing of their female partners and other children. They were also interested in learning more about contraception and in becoming more involved in joint contraceptive decisions.

Conceptual framework

Few sexual and reproductive health interventions targeting men are theoretically driven to focus on masculinities in the name of transforming harmful gender norms and advancing gender equality – a focus which has been identified as crucial in the research base.[11,40,15] Drawing from our formative work and from gender-related and behavioural theory frameworks, we developed a conceptual model, which has been described fully elsewhere,[25] that delineated our hypotheses regarding the causal pathway toward male acceptance of contraception (Figure 1).

For the purposes of our study, we considered a man to demonstrate contraceptive acceptance when he (1) respects his female partner's contraceptive decisions, (2) approves of her desired contraceptive use, (3) agrees to male condom use, or (4) is positively involved in contraceptive decisions, including communication and joint contraceptive decision-making with his female partner, accompanying his partner to a clinic that offers contraceptive services, or participating in contraceptive counselling. Based on this definition, we identified six factors that influence male contraceptive acceptance, including behavioural capability (the ability to perform a behaviour through the necessary knowledge and skills), contraceptive attitudes, masculine norms regarding contraception, subjective norms regarding contraception, contraceptive self-efficacy, and contraceptive intention.

Intervention components

The three-month intervention addressed the social-ecological context of men's contraceptive acceptance by utilising activities at the intrapersonal, interpersonal, and community levels.[41–43] Its goal was to encourage men and their communities to understand how gender norms can shape contraceptive communication, decision-making, and relationship dynamics; to challenge masculine norms tied to contraceptive resistance; and to transform these norms to embrace contraceptive support, positive male contraceptive involvement, and gender equality. The intervention was collaboratively designed with Sonke Gender Justice, a South African-based NGO that works across Africa to strengthen government, civil society, and citizen capacity to support men and boys in taking action to promote gender equality, prevent domestic and sexual violence, and improve sexual and reproductive health outcomes. Sonke Gender Justice and study investigators conducted a five-day training with all study staff, including intervention facilitators, note-takers, and interviewers, prior to the intervention launch. The training focused on contraception education as well as gender-transformative programming, especially participatory methodologies, facilitation skills, and

Figure 1. Conceptual framework describing the relationship between masculine norms and male acceptance of contraception
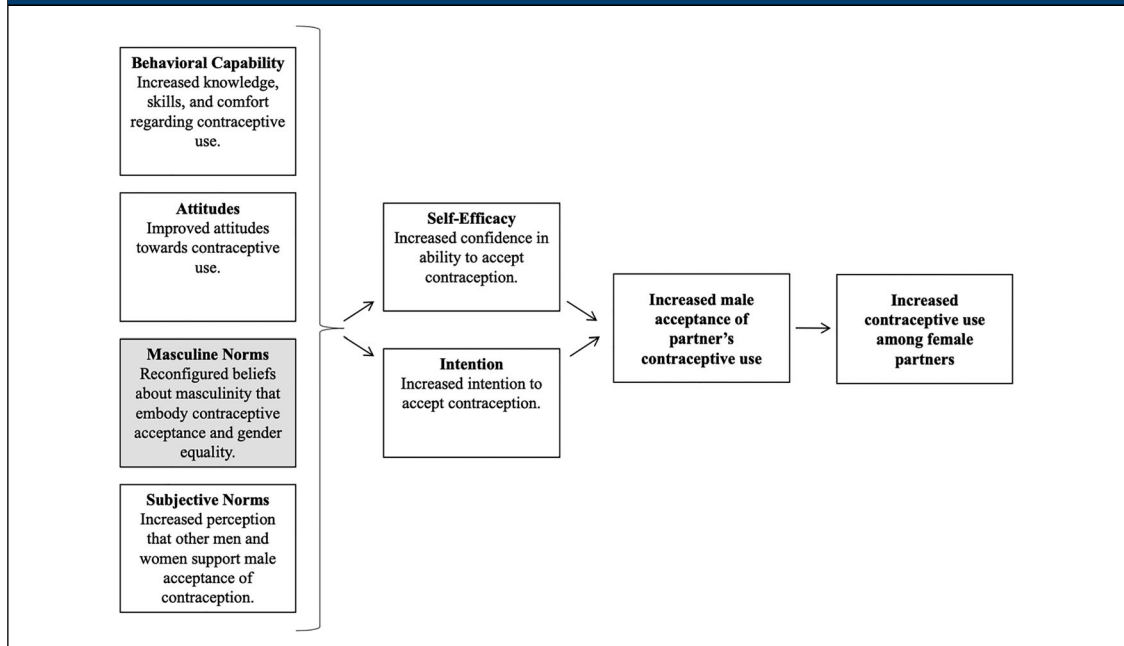
community mobilisation strategies to engage men positively in reproductive health.

The first phase of the intervention was directed at the individual and interpersonal levels. The 75 men in the intervention arm were split into cohorts of 12–13 men, and each cohort completed three small-group workshops. The workshops lasted for approximately six hours each and were held over a consecutive three-day period. Three male facilitators led each workshop in the Dholuo language, and a male note-taker was also present. Each workshop consisted of 4–5 interactive activities that aimed to raise consciousness, encourage personal reflection, facilitate deep discussion, and offer practice via role play. Topics included what "gender" is and how gender norms can affect human behaviour and influence relationships between men and women; contraceptive method and human anatomy education; conflict de-escalation and positive communication skills; empathy building; and how to challenge and change restrictive and harmful gender norms and practices. Emphasis was placed on the intersection of these topics with relationship dynamics related to fertility desires, planning a family, and contraceptive use. At the conclusion of each workshop day, men received 1000 Kenyan Shillings (around $10) to cover travel costs, food, and lost wages for that day. They also received a "certificate of completion" for participating in the workshops.

The second phase of the intervention focused on interpersonal and community influences on contraceptive use and acceptance. Three community dialogues were held over a three-week period during *barazas*, or regular community meetings, that are typically attended by a range of community members, including chiefs, elders, religious leaders, community health volunteers, police officers, bicycle and motorcycle taxi drivers, school teachers, farmers, organisation leaders, business women and men, and young people. The purpose of the dialogues was to create social network and community support for male contraceptive acceptance and positive involvement by providing contraceptive education, raising consciousness, encouraging collective reflection, and facilitating collective discussion. Each dialogue lasted for about 1.5 hours and was led in the Dholuo language by two male facilitators; a male or female observer and note-taker were also present. Dialogues were open to all members of the

intervention community, and men enrolled in the intervention group were encouraged to attend, but their participation was not documented.

Data collection

All 150 study participants completed interviewer-administered surveys at baseline, within two months of enrolment, and at follow-up, approximately 2–4 months after the end of the three-month intervention period. Data on outcome measures were collected in both the baseline and endline surveys among the same participants. Surveys were conducted in the Dholuo language at participants' homes or a mutually agreed upon location by male interviewers and lasted 1.5–2 hours. Local interviewers who were unknown to study participants were used in order to reduce the possibility of social desirability bias, given the sensitivity of our topics related to contraception, gender, and sexuality. At the conclusion of the post-intervention survey, each participant couple received a household token of appreciation valued at 500 Kenyan Shillings (around $5), consisting of sugar, salt, soap, tea, and matches.

Measures and outcomes

Our primary outcome was male contraceptive acceptance, measured using the Masculine Norms and Family Planning Acceptance (MNFPA) Scale.[25] We developed the MNFPA scale to fill a gap in the literature regarding measures of masculine norms related to contraception. Focused on the masculine norms construct of our conceptual framework, we drew on our formative qualitative research to develop scale items and tested item comprehension through cognitive interviews with Kenyan men in the study area. Using baseline data from the current study, we then developed and psychometrically evaluated the final scale performance using item response theory (Cronbach's α: 0.68). The 10-item scale includes statements such as, "A man who undergoes vasectomy is a weak male." and "Women who use family planning methods are taking power away from men." Respondents indicate whether they strongly agree, agree, disagree, or strongly disagree with each statement. The two lowest response categories (strongly agree and agree) were collapsed due to item responses reflecting high levels of contraceptive acceptance. Responses were then summed, with "strongly

disagree" reflecting the highest contraceptive acceptance, resulting in scores ranging from 0 to 20.

Our secondary outcome was contraceptive knowledge, measured using seven items related to myths and misperceptions about methods common in the region, including whether contraceptives are likely to cause birth defects, infertility, or cancer. Items were combined into a 0–1 scale indicating the proportion of items answered correctly (α: 0.74).

We included as tertiary outcomes measures related to contraceptive behaviours and intention. Two items assessed whether respondents had discussed contraception in the prior six months with their main partner or with someone other than the main partner. One item assessed contraceptive intention, asking whether participants would agree to use contraception if their main partner wanted to in order to space births. Response options ranged from strongly agree to strongly disagree, and we assessed the proportions strongly agreeing. Finally, we examined current use of a modern contraceptive method, defined as reporting current use of male or female sterilisation, intrauterine device (IUD), subdermal implant, injectable, oral contraceptive pills, or condoms or other barrier methods.

The primary independent variable was study arm (intervention, control). Time was examined as pre-intervention (baseline) versus post-intervention (endline).

Sample size calculation

We aimed to recruit 150 participants for this small-scale study, based on a standardised difference in means of 0.5 in the primary outcome, Masculine Norms and Family Planning Acceptance (MNFPA) Scale score, an alpha of 0.05, 0.80 power, and 15% attrition between baseline and endline.

Data analysis

To examine differences in participant characteristics by study arm at baseline, we fit a series of linear, logistic, and multinomial logistic regression models. We similarly examined differences in each outcome at baseline by study arm.

We employed two approaches to examining the intervention effect on MNFPA, testing two distinct hypotheses. In the primary approach (Approach 1), we used an ANCOVA approach to test whether endline MNFPA scores differed by study arm, controlling for baseline scores, using linear

regression. In the secondary approach (Approach 2), we used a repeated measured approach, testing whether there was a *difference in the change* in MNFPA between intervention and control over time. To do so, we regressed the MNFPA outcome on study arm, time (endline vs. baseline), and a study-arm-by-time interaction term. The effect estimate of the interaction term – reflecting whether there was a larger change over time in MNFPA for intervention than control – was assessed for significance. Two approaches were used because they test slightly different hypotheses and offer different advantages: while Approach 1 is more robust to varied outcome distributions and changes in distributions over time, Approach 2 uses all available data, does not assume the baseline MNFPA is measured without error, and better accounts for attrition.[44,45] Both approaches were repeated for each outcome, using linear (continuous outcomes) or logistic (binary outcomes) models. We then repeated analyses adjusting for two covariables in which baseline group differences were detected. Finally, we assessed differential attrition by study arm over follow-up using a bivariable logistic regression model. Data analysts were not blinded to study allocation. Survey data were securely stored in a REDCap (Research Electronic Data Capture) database and analysed using Stata 15 (StataCorp LP, College Station, TX) statistical software.

Results

Overall, 150 participants were enrolled, including 75 men in each study arm. Men were on average 33 years old (range 20–62 years), nearly all identified as Christian (97%), and 40% had more than a primary education (Table 1). Average household monthly income was around 19,000 Kenyan shillings (range 1000–90,000 shillings), which converts to $183 USD (range $10–$867). Nine percent were in a polygamous marriage or relationship, and the average relationship duration was about nine years. Men had fathered on average 3.5 children, beginning their childbearing around 23 years of age. The majority (83%) reported not living with HIV. Most men desired more children, with 31% wanting a child within the next two years and 45% at some point beyond two years. The most common effective contraceptive methods reported were the injectable (27%) and implant (29%). No participant reported use of an IUD or male sterilisation.

Baseline differences between the intervention and control groups were minimal. Men in the intervention group were more likely to have had more than a primary education ($p = 0.05$), and, while there were no differences in mean number of children, men in the intervention group were more likely to have 2–3 children, while men in the control group were more likely to have 4 or more children ($p = 0.04$) (Table 1). There were generally no baseline differences in study outcomes with an important exception: men in the intervention group were significantly more likely than those in the control group to have discussed contraception with their main partner within the previous six months (73% vs. 55%, $p = 0.02$).

Men demonstrated relatively high contraceptive acceptance overall at baseline. Nearly three-quarters strongly disagreed that women who use contraceptive methods are taking power away from men, and 69% strongly disagreed that women are undermining men as head of the household if they want to use contraception. Even so, 93% strongly agreed or agreed that women should seek permission from male partners before using contraception, and 47% strongly agreed or agreed that men have the final say in contraceptive decisions (Supplemental Table 1).

Contraceptive knowledge was low to moderate at baseline. Only one-quarter of the men answered correctly that vasectomy does not affect a man's sexual performance and that bleeding side effects from contraception are not harmful. More than half believed that contraceptive methods are likely to cause birth defects, infertility, and cancer. At the same time, 61% correctly answered that IUDs and implants cannot travel to other places in a woman's body, and 79% knew that contraceptive methods do not cause HIV (Supplemental Table 1).

Ninety-five percent of enrolled men completed endline surveys, including 97% (73/75) in the intervention group, and 92% (69/75) in the control group. Attrition was non-differential by study arm (OR 0.32; 95% CI 0.06, 1.61) and participant characteristics. Reasons for loss to follow-up were death ($N = 3$), declining to complete the post-survey ($N = 2$), loss of contact ($N = 1$), imprisonment ($N = 1$), and moving away from the study area ($N = 1$).

Analyses of the intervention effect demonstrated higher scores at endline for the

Table 1: Characteristics of male participants at baseline, by study arm (N = 150)				
Characteristic	**Intervention (N=75)**	**Control (N=75)**	**Total (N=150)**	**p**
	Mean (SD)	**Mean (SD)**	**Mean (SD)**	
Age, years (range: 20-62)	32.6 (8.9)	32.8 (7.9)	32.7 (8.4)	0.85
Monthly household income, Kenyan Shillings in 1,000s[a] (range: 1–90)	20.0 (15.8)	18.1 (13.9)	19.0 (14.9)	0.43
Relationship duration, years (range: 1-30)	8.3 (6.8)	9.3 (7.0)	8.8 (6.9)	0.38
Age at first birth,[b] years (range: 15-37)	23.6 (4.5)	22.9 (3.6)	23.2 (4.1)	0.31
Number of children fathered (range: 0-13)	3.3 (2.4)	3.7 (2.2)	3.5 (2.3)	0.30
	N (%)	**N (%)**	**N (%)**	**p**
Christian religion	74 (98.7)	72 (96.0)	146 (97.3)	0.33
Has more than a primary education	36 (48.0)	24 (32.0)	60 (40.0)	0.05
Number of children fathered				0.04
0-1	16 (21.3)	13 (17.3)	29 (19.3)	
2-3	37 (49.3)	25 (33.3)	62 (41.3)	
4+	22 (29.3)	37 (49.3)	59 (39.3)	
Polygamous marriage/relationship	5 (6.7)	9 (12.0)	14 (9.3)	0.27
HIV serostatus				0.93
HIV negative	64 (85.3)	61 (81.3)	125 (83.3)	
HIV positive	11 (14.7)	9 (12.0)	20 (13.3)	
No test or don't know	0 (0.0)	5 (6.7)	5 (3.3)	
Desired fertility timing				0.27
Wants no more children	14 (18.7)	22 (29.3)	36 (24.0)	
Wants a child in >2 years	35 (46.7)	33 (44.0)	68 (45.3)	
Wants a child within 2 years	26 (34.7)	20 (26.7)	46 (30.7)	
Most effective contraceptive method currently using[c,d]				
None	10 (13.3)	13 (17.3)	23 (15.3)	
Abstinence, withdrawal, rhythm, lactation	5 (6.7)	4 (5.3)	9 (6.0)	
Condom, other barrier	10 (13.3)	10 (13.3)	20 (13.3)	
Pill	6 (8.0)	7 (9.3)	13 (8.7)	
Injectable	20 (26.7)	20 (26.7)	40 (26.7)	
Implant	24 (32.0)	20 (26.7)	44 (29.3)	
Female sterilisation	0 (0.0)	1 (1.33)	1 (0.7)	

Note: SD = standard deviation; p = p-value.
[a] In July 2019, 1000 Kenyan Shillings = approximately $10 USD.
[b] N = 144 due to missing values.
[c] No participant reported use of an intrauterine device (IUD) or male sterilisation.
[d] Formal comparison not performed due to empty cells.

intervention arm compared to the control arm for the primary and secondary outcomes. Among participants in the intervention arm, MNFPA scores increased from 13.6 at baseline to 15.7 (vs. 13.0–14.3 in control, adjusted coefficient (β) 1.04; 95% CI 0.16, 1.91). Contraceptive knowledge scores were also significantly higher at endline among intervention participants (0.84, from 0.51 at baseline), compared to controls (0.60, from 0.43 at baseline, aβ 0.22; 95% CI 0.13, 0.31) (Table 2).

In analyses of the intervention effect on tertiary outcomes, discussion of contraception with a partner or others within the previous six months increased among both study arms, but the changes were more significant among intervention participants. In the intervention arm, the percentage that reported discussing with a partner increased to 93.2% from 73.3% at baseline (compared to 79.7% from 54.7% in control, aOR 3.96; 95% CI 1.21, 12.94). The percentage that reported discussing with others also increased more in the intervention arm (89.0%, from 50.7% at baseline) compared to the control arm (56.5%, from 36.0% at baseline, aOR 6.13; 95% CI 2.39, 15.73). Increases for the intention variable (agreeing if a female partner wanted to use contraception to plan/space births) were observed for both study groups; however, there was no difference between the groups (aOR 1.50; 95% CI 0.33, 6.80). Participation in the intervention was not associated with the use of a modern contraceptive method (aOR 0.97; 95% CI 0.37, 2.55).

Results of analyses using the secondary analytic approach were somewhat consistent with those from primary analyses. In adjusted analyses, in contrast to primary results, increases in MNFPA scores were not significantly greater among intervention versus control ($p = 0.27$). Consistent with primary results, intervention participants experienced significantly greater improvements over time in contraceptive knowledge ($p = 0.01$). In contrast to primary results, increases in discussion of contraception with the main partner were not significantly different by study arm ($p = 0.54$). However, consistent with primary results, discussion of contraception with someone other than the main partner increased more in the intervention versus control group ($p = 0.03$). Also as with primary results, changes in behavioural intention and contraceptive use were not significantly greater among intervention versus control ($p = 0.89$ and $p = 0.74$, respectively) (Table 3).

Discussion

The current study is one of very few to evaluate the effects of an intervention to shift masculine norms towards more acceptance of contraception, and it is the only one to use a psychometrically tested instrument specifically created to assess changes in conceptions of masculinity related to contraceptive use. Using an ANCOVA analysis approach, masculinity-driven contraceptive acceptance, contraceptive knowledge, and likelihood of having discussed contraception with a partner or other person were higher at endline in the intervention than the control group, controlling for baseline differences. When using a repeated measures approach to test whether the *change* in each outcome was greater in intervention than control, results reached significance for only contraceptive knowledge and discussion of contraception with a non-partner. Together, these results demonstrate small but notable improvements in key factors associated with men's resistance to women's contraceptive use due to intervention participation. Results provide preliminary evidence to support a larger cluster randomised trial to test our intervention's effect on contraceptive use, as well as the application of gender-transformative strategies to the FP field more widely.

While we did not see increases in contraceptive use after the intervention, the use of modern contraceptive methods was already over 80% at baseline in our study sample, despite the two communities having estimated contraceptive prevalence rates (CPRs) of 45% (Nyando) and 46% (Kisumu West) prior to study initiation. Assessing current baseline contraceptive prevalence of the actual study sample immediately prior to intervention implementation and using a study sample with a current low baseline CPR may more successfully determine the effects of addressing masculine norms on contraceptive acceptance. Additionally, for some outcomes, such as contraceptive communication, differences existed at baseline between the men in the intervention and control arm. A larger trial with more clusters to randomise would likely result in a more equivalent distribution of these types of characteristics. Finally, our three-month intervention duration may not have been adequate to encourage behaviour change, and sustained programming exposure, especially at the community level, would likely be more effective.

Table 2: Unadjusted and adjusted effect estimates of intervention participation on study outcomes: Analysis Approach 1

	Baseline (N=150)	Endline (N=142)	Unadjusted		Adjusted	
	Mean Score	Mean Score	β (95% CI)[a]	p-value	aβ (95% CI)[b]	p-value
Masculine Norms and FP Acceptance (MNFPA) Scale (range: 0-20)[c]						
Control	13.04	14.32				
Intervention	13.61	15.66	1.21 (0.35, 2.07)	0.01	1.04 (0.16, 1.91)	0.02
Contraceptive knowledge (range: 0-1)[c]						
Control	0.43	0.60				
Intervention	0.51	0.84	0.23 (0.14, 0.31)	<0.001	0.22 (0.13, 0.31)	<0.001
	%	%	OR (95% CI)[a]	p-value	aOR (95% CI)[b]	p-value
Discussed contraception with main partner, last six months (%)						
Control	54.7	79.7				
Intervention	73.3	93.2	3.00 (1.00, 9.02)	0.05	3.96 (1.21, 12.94)	0.02
Discussed contraception with someone other than main partner, last six months (%)						
Control	36.0	56.5				
Intervention	50.7	89.0	6.44 (2.55, 16.29)	<0.001	6.13 (2.39, 15.73)	<0.001
Would agree if main partner wanted to use a contraceptive method to plan (space) births (% strongly agree)[d]						
Control	85.5	90.5				
Intervention	85.3	95.5	1.74 (0.39, 7.69)	0.47	1.50 (0.33, 6.80)	0.60
Contraceptive use – any modern method[d,e,f] **(%)**						
Control	82.6	81.0				
Intervention	82.4	80.6	0.92 (0.36, 2.33)	0.85	0.97 (0.37, 2.55)	0.96

Note: β = beta coefficient; aβ = adjusted beta coefficient; CI = confidence interval; FP = family planning; OR = odds ratio.
[a]Baseline-adjusted β or odds ratio by arm at endline.
[b]β or odds ratio for arm at endline, adjusted by baseline value of outcome, primary education and number of children.
[c]Higher score means stronger acceptance (for MNFPA scale) and more knowledge (for contraceptive knowledge scale).
[d]Excludes participants desiring pregnancy within 3 months; baseline (N = 137), endline (N = 130).
[e]Modern contraceptive methods include male or female sterilisation, intrauterine device (IUD), implant, injectable, pill, or condom.
[f]No participant reported use of an intrauterine device (IUD) or male sterilisation.

Notably, participants in the control group experienced trends toward improvement in study outcomes. Given that our study area is commonly targeted for FP programs and research, some control participants may have been exposed to information during the study that affected their contraceptive acceptance, knowledge, intention, and/or behaviours. Also, simply answering survey questions regarding contraception and gender topics may have resulted in unanticipated attitude

Table 3: Unadjusted and adjusted for an interaction term effect estimates assessing effect of intervention participation on study outcomes: Analysis Approach 2

Unadjusted		Adjusted	
β (95% CI) for interaction term[a]	p-value	aβ (95% CI) for interaction term[b]	p-value
Masculine Norms and FP Acceptance (MNFPA) Scale (range: 0-20)[c]			
0.77 (-0.68, 2.21)	0.30	0.81 (-0.62, 2.24)	0.27
Contraceptive knowledge (range: 0-1)[c]			
0.16 (0.04, 0.29)	0.02	0.17 (0.04, 0.29)	0.01
OR (95% CI) for interaction term[a]	p-value	aOR (95% CI) for interaction term[a]	p-value
Discussed contraception with main partner, last six months (%)			
1.52 (0.42, 5.46)	0.52	1.50 (0.41, 5.44)	0.54
Discussed contraception with someone other than main partner, last six months (%)			
3.42 (1.15, 10.20)	0.03	3.55 (1.17, 10.82)	0.03
Would agree if main partner wanted to use a contraceptive method to plan (space) births. (% strongly agree)[d]			
1.14 (0.19, 6.92)	0.89	1.13 (0.18, 7.02)	0.89
Contraceptive use – any modern method[d,e,f] (%)			
0.80 (0.22, 2.97)	0.74	0.80 (0.21, 2.99)	0.74

Note: β = beta coefficient; aβ = adjusted beta coefficient; CI = confidence interval; FP = family planning; OR = odds ratio.
[a]Difference in change in outcome over time by arm, based on the interaction term.
[b]Difference in change in outcome over time by arm, based on the interaction term, adjusted for primary education and number of children.
[c]Higher score means stronger acceptance (for MNFPA scale) and more knowledge (for contraceptive knowledge scale).
[d]Excludes participants desiring pregnancy within 3 months; baseline ($N = 137$), endline ($N = 130$).
[e]Modern contraceptive methods include male or female sterilisation, intrauterine device (IUD), implant, injectable, pill, or condom.
[f]No participant reported use of an intrauterine device (IUD) or male sterilisation.

and behaviour change in both groups. Long standing debates show that this is not uncommon in intervention trials and has even been found to be the case in randomised trials.[46,47] Our sample size for this preliminary study was relatively small and based on changes in attitudes; a larger sample will likely be needed to detect differences in behaviour change, including contraceptive use. Our purposive sampling techniques likely introduced selection bias into our study sample, resulting in participants who may have demonstrated more interest in our study topics and propensity for change. Finally, our small-scale, quasi-experimental study was limited in its ability to rigorously measure behaviour change effectiveness; therefore, a larger cluster randomised control trial is needed to assess the impact of transforming masculine norms on men's contraceptive acceptance and its impact on women's contraceptive use.

Despite these limitations, the conceptualisation, design, and outcome evaluation of our intervention are important contributions to the literature on improving women's contraceptive outcomes and on gender-transformative work with men. Future research should continue to explore and advance this critical area of work, particularly among couples and at the community level.

Conclusions

This study evaluated a theoretically informed intervention, developed based on extensive formative research and rigorous outcome measurement, among men in two Kenyan communities. Results provide evidence supporting the potential of an intervention that seeks to shift male gender norms towards more contraceptive acceptance. The positive effects of the intervention on masculinity-driven contraceptive acceptance and contraceptive knowledge are particularly promising, given that these are factors that influence men's contraceptive resistance that can lead women to not use contraception when desired. In order to test the intervention's effect on couples' contraceptive use, a larger community randomised trial is needed that includes programming with couples and women alongside individual men. A larger randomised trial is needed to test the effectiveness of the intervention among men as well as among couples.

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Résumé

L'adhérence des hommes à des normes masculines contraignantes peut les inciter à résister à l'emploi de contraceptifs. Très peu d'interventions ont tenté de transformer les normes masculines pour encourager une meilleure acceptation de la contraception et une égalité entre hommes et femmes. Nous avons conçu et évalué une intervention communautaire de petite échelle ciblant les normes masculines liées à la résistance aux contraceptifs chez les hommes ayant une partenaire ($n = 150$) dans deux communautés du Kenya occidental (intervention et contrôle). Les données antérieures et postérieures à l'enquête ajustées à des modèles linéaires et de régression logistique ont permis d'évaluer les différences dans les résultats après l'intervention, en tenant compte des différences préalables à l'intervention. La participation à l'intervention a été associée à des augmentations des scores d'acceptation de la contraception (coefficient ajusté (aβ) 1,04; intervalle de confiance (IC) à 95% [0.16, 1.91]; $p = 0.02$) et des scores de connaissance des contraceptifs (aβ 0.22; IC à 95% [0.13, 0.31]; $p < 0.001$) et à des discussions sur les contraceptifs avec la partenaire (rapport de cotes ajusté (RCa) 3.96; IC à 95% [1.21, 12.94]; $p = 0.02$) et avec d'autres personnes (RCa 6.13; IC à 95% [2.39, 15.73]; $p < 0.001$). L'intervention n'a pas été associée à une intention comportementale contraceptive ou à l'emploi de contraception. Nos

Resumen

El cumplimiento de los hombres con normas de género masculino restrictivas puede causar que se resistan a usar anticonceptivos. Muy pocas intervenciones han intentado transformar las normas masculinas para fomentar mayor aceptación de anticonceptivos e igualdad de género. Diseñamos y evaluamos una intervención comunitaria de pequeña escala dirigida a las normas masculinas vinculadas con la resistencia al uso de anticonceptivos entre hombres con pareja ($N = 150$) en dos comunidades de Kenia occidental (intervención vs. control). Los datos pre- y post encuesta ajustados a modelos de regresión lineal y logística evaluaron las diferencias en resultados post-intervención, teniendo en cuenta las diferencias pre-intervención. La participación en la intervención se asoció con aumentos en los puntajes de aceptación de anticonceptivos (coeficiente ajustado (aβ) 1.04; intervalo de confianza del 95% (IC) 0.16, 1.91; $p = 0.02$) y puntajes de conocimiento de anticonceptivos (aβ 0.22; IC del 95% 0.13, 0.31; $p < 0.001$) y con conversaciones sobre anticonceptivos con la pareja (razón de momios ajustada (RMa) 3.96; IC del 95% 1.21, 12.94; $p = 0.02$) y con otras (RMa 6.13; IC del 95% 2.39, 15.73; $p < 0.001$). La intervención no se asoció con la intención de comportamiento anticonceptivo ni con el uso de anticonceptivos. Nuestros hallazgos demuestran la promesa de una intervención impulsada por masculinidad para aumentar la

résultats démontrent le potentiel d'une intervention axée sur la masculinité pour augmenter l'acceptation de la contraception par les hommes et leur participation positive à la contraception. Un essai aléatoire plus vaste est nécessaire pour tester l'efficacité de l'intervention chez les hommes ainsi que chez les couples.

aceptación de anticonceptivos por los hombres y la participación positiva en el uso de anticonceptivos. Se necesita un ensayo clínico aleatorizado más extenso para probar la eficacia de la intervención en los hombres y en las parejas.