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Sexual Relationship Power and Socio-demographic Factors Predicting Contraceptive Use, Antenatal Visits and Sick Child Health Service Use in Northern Togo

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Abstract

Introduction—Implementation of community-based healthcare services offering effective contraception, antenatal care (ANC), and treatment for symptomatic children under five has reduced maternal and child mortality in Togo. However, understanding if women are utilizing these services differentially based on social or demographic factors is important. This study identifies whether sexual relationship and socio-demographic factors are associated with healthcare utilization in four health facility catchment areas.

Methods—We conducted a cross-sectional household survey of women aged 15–49 in four health facility catchment areas in 2016 (three rural sites, one urban site). We used multivariable Poisson regression to test whether socio-demographic factors and a validated sexual relationship power scale were associated with contraceptive use, ANC visits, and seeking treatment for symptomatic children under five.

Results—Among women not pregnant or desiring pregnancy, older age, lower education, and single relationship status were associated with lower use of effective contraception. Among women who gave birth in two years preceding survey, low relationship power and low wealth quintile were associated with being less likely to attend at least four ANC visits. Women in rural sites were slightly more likely than women in the urban site to report seeking treatment for child under five with malaria, pneumonia, and/or diarrhea symptoms in last 2 weeks.

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Discussion—Interventions in low-resource settings should explore ways to reach women with low health-service utilization to improve contraceptive use, ANC visits, and treatment for sick children. Furthermore, age, education, marital status, wealth status and sexual relationship power must be considered when targeting maternal health behaviors.

Trial registration—[ClinicalTrials.gov](https://clinicaltrials.gov/ct2/show/study/NCT03773913) Identifier: [NCT03773913](https://clinicaltrials.gov/ct2/show/study/NCT03773913); Date of registration: 12 Dec. 2018

Keywords

Care seeking; Antenatal care; Contraception; Child mortality; Sexual relationship power; Togo

Introduction

Togo has high rates of maternal and child mortality, with an estimated maternal mortality rate of 368 deaths per 100,000 live births and under five child mortality rate of 76 deaths per 1000 live births in 2015 (Hug et al. 2017; World Health Organization 2015). Many deaths could be prevented through access to and utilization of effective contraception for women wishing to avoid pregnancy (World Health Organization (WHO) 2018b), antenatal care (ANC) visits (World Health Organization (WHO) 2016), and treatment for the major causes of under-five mortality of malaria, pneumonia, and diarrhea (World Health Organization (WHO) 2018a).

In 2014, the Togolese Ministry of Health (MoH) collaborated with the non-governmental organization Integrate Health (IH) to develop and implement an integrated community-based health system strengthening (ICBHSS) model to improve primary healthcare services. The ICBHSS model consists of four evidence-based interventions that use community engagement and feedback strategies: (1) removal of point-of-care costs for children under five and women of reproductive age, (2) pro-active community-based care using salaried community health workers, (3) clinical mentoring and enhanced supervision at health centers, and (4) facility and supply chain operational improvements. Initiative implementation is ongoing with annual collection of population-based household surveys for evaluation.

As of 2017, the initiative started 1283 women on effective contraceptive methods, performed 4087 pre- and post-natal consultations, conducted 67,213 home visits, and strengthened primary healthcare services focusing on maternal and child care in the four centers (Hope Through Health 2017). Analysis from the baseline 2015 household surveys found that not all women accessed services equally; utilization of intra-partum care, post-partum care, and childhood immunizations varied by wealth, education and residential distance from facilities (McCarthy et al. 2017). As effective contraceptive use, ANC and treatment for symptomatic children under five could reduce maternal and child mortality in Togo, understanding if women are utilizing these services differentially based on social or demographic factors is important.

Previous studies have demonstrated significant associations between sexual partner relationship power and sexual health behaviors such as condom use (Jama Shai et al. 2010;

Muldoon et al. 2014) and other HIV prevention behaviors (Jewkes et al. 2010). In 2016, we included the relationship control (RC) subscale of a validated sexual relationship power scale (SRPS) in the household survey to assess whether gender inequities and power differentials affect health service utilization (Pulerwitz et al. 2000). We hypothesized that women with higher RC are more likely to use effective contraception, attend ANC visits, and seek treatment for a symptomatic child. As RC is known to be associated with condom use (Jama Shai et al. 2010; Jewkes et al. 2010; Muldoon et al. 2014), we hypothesized that this finding would generalize to other effective contraception that require communication between sexual partners. Furthermore, we hypothesized that a woman who feels powerful in her relationship is more likely to seek care for herself or her child, either alone or by encouraging her partner to join her.

This analysis assesses whether RC predicts use of effective contraception, antenatal care visits, and health-seeking for children with symptoms of malaria, pneumonia, and/or diarrhea, after adjusting for socio-demographic characteristics using 2016 household data. We also explore whether socio-demographic characteristics predict use of these services.

Methods

Study Design and Setting

This is a secondary analysis of a population-representative household survey of females aged 15–49 years between January and February 2016 within the catchment areas of four public sector centers in Kozah District, in the Kara region of Togo, which received support from IH to improve primary healthcare services. The four-public sector centers of Adabawere, Kpindi, Sarakawa, and Djamde were selected by the Ministry of Health based on their limited availability and low utilization of maternal and child health services. A population-representative sample was recruited using random clustered sampling of households and random selection of eligible women within households using KISH selection grids (Kish 1949) as described in detail elsewhere (McCarthy et al. 2017).

Survey questions regarding household demographics, child symptoms and treatment, maternal and newborn health, and family planning were adapted from the 2013 Demographic and Health Survey (DHS) (Ministère de la Planification du Développement et de l'Aménagement du Territoire 2015) and the 2010 Multiple Indicator Cluster Survey (MICS) (Direction Générale de la Statistique et de la Comptabilité Nationale and UNICEF Togo 2010). Interviewers recorded participants' survey responses with electronic tablets using KoBo Toolbox ("KoBoToolbox|Data Collection Tools for Challenging Environments," 2018) instruments with internal consistency checks. All interviewers were fluent in French and Kabiye, completed some post-secondary education, and received training on research ethics, data collection, informed consent, sampling strategy, and survey administration.

Ethics and Consent

The study was reviewed and approved by the Albert Einstein College of Medicine Institutional Review Board (IRB) (ref: 005127) and the Togolese Ministry of Health's Bioethics Review Board for Health Research (French: Comité de Bioéthique pour la

Recherche en Santé) (ref: 31/2014), and deemed exempt by the City University of New York (CUNY) IRB. All participants provided informed consent.

Health Behavior Outcomes

We explored predictors for three health behavior outcomes:

Contraceptive Use—We assessed contraceptive use by asking if participants were currently delaying or avoiding pregnancy, and if so, what method they were using (categorized as female sterilization, male sterilization, intra-uterine device (IUD), injectables, implants, pill, male condom, female condom, diaphragm, foam/jelly, lactational amenorrhea method (LAM), periodic abstinence/rhythm method, withdrawal, or other). Women who were currently pregnant, unable to become pregnant, or not actively delaying or avoiding pregnancy were excluded from these analyses. We defined effective contraceptive use as currently using any method other than periodic abstinence/rhythm method, withdrawal, or other (Centers for Disease Control and Prevention 2017). We also created a measure for currently using male and/or female condom as dual protection methods.

ANC Visits

Total number of ANC visits at last pregnancy was measured among women with a live birth within two years preceding date of interview. For women with multiple live births in this timeframe, only the most recent birth was analyzed. We assessed number of ANC visits by asking women if they saw someone for ANC during their most recent or current pregnancy (including doctor, clinical assistant, nurse/midwife, auxiliary midwife, traditional birth attendant, or community health worker), and if so, how many times they received antenatal care. Women received ANC at home (either their home or other home), at a public sector facility (university hospital, regional hospital, district hospital, community health center, health post, other public sector facility), or a private sector facility (private clinic, other private sector facility). Based on the 2002 World Health Organization (WHO) recommendation of four or more (4+) ANC visits during pregnancy (“WHO Antenatal care (at least 4 visits),” 2015), we dichotomized the responses into 0–3 and 4 + ANC visits.

Seeking Treatment for Sick Child

We calculated the proportion of mothers who sought advice or treatment for a child under five in their household who had symptoms indicative of possible malaria, pneumonia, and/or diarrhea in the past 2 weeks. For women with multiple sick children, we randomly selected one child for analysis using the STATA “runiform” function. Seeking advice or treatment was defined as visiting a public sector institution (hospital, health center or health post) or a private sector institution (clinic, pharmacy, or traditional practitioner) for medical help.

Predictors of Health Behaviors

Relationship Control (RC)—The sexual relationship power scale (SRPS) is a theory-based measure of relationship power dynamics (Pulerwitz et al. 2000), used in diverse populations to understand how sexual power inequalities influence women’s health behaviors like condom use (Jama Shai et al. 2010; Roye et al. 2010; Weeks et al. 2010), HIV

prevention (Harris et al. 2009; Jewkes et al. 2010), and pregnancy prevention (Rocca et al. 2010). The SRPS has been used with high reliability and validity in many populations in sub-Saharan Africa, with Cronbach's alphas ranging from 0.73 to 0.96 (Dunkle et al. 2004; Groves et al. 2012; Hatcher et al. 2012; Jama Shai et al. 2010; Jewkes et al. 2010; Sayles et al. 2006; Shannon et al. 2012; Steffenson et al. 2011). While SRPS has been utilized in sub-Saharan Africa, to our knowledge it has never been used in the Kara region of Togo.

The relationship control (RC) subscale of SRPS was added to the 2016 household survey to explore women's autonomy and see if RC influences their health behaviors. We chose the RC subscale of the SRPS as it is the most utilized measure of sexual relationship power in the current literature (McMahon et al. 2015). This subscale contains 15 items, each rated on a four-point Likert scale from one (strongly agree) to four (strongly disagree); the subscale was modified to a three-point Likert scale based on piloting by Togo research staff (1 = agree, 2 = disagree, 3 = completely disagree). A higher score indicates greater perceived RC. A final RC score was obtained by calculating a mean score from the 15 items and dividing these scores into three equal parts of "high," "medium," and "low" power as described previously (Pulerwitz et al. 2000). In this study, the scale had high internal consistency (Cronbach's $\alpha = 0.81$; Table 1).

Socio-demographic Factors—We examined whether age, education, marital status, household wealth quintile, health insurance status, distance to facility, and urban/rural residence predicted each of the health outcomes. We coded marital status as single, living with partner, living with partner with co-wives, married, married with partner and co-wives. Household wealth was measured using household assets on a scale from 0 to 11, with one point given for each item, and dividing the scale into quintiles. Facility distance was defined as distance in kilometers to nearest public sector health facility within each cluster (< 3 km, 3–5 km, and > 5 km). Residence was coded as urban (Adabawere) or rural (Djamde, Sarakawa, and Kpindi).

Data Analysis

We compared RC score by socio-demographic variables and health service utilization outcomes using Chi-squared tests. We estimated prevalence ratios (PRs) using multivariable Poisson regression models to assess the relationship between RC, socio-demographic factors, and our outcome measures: effective contraceptive use, condom use, 4+ ANC visits, and seeking treatment for child under five with malaria, pneumonia and/or diarrhea symptoms. As the purpose of analysis was risk stratification, we used an iterative process, including variables significantly associated with outcomes of interest at the bivariate level. Analyses utilized sample weights and adjusted for clustered sampling design.

Results

Of 1767 households surveyed, 1571 (89%) women ages 15–49 agreed to participate and had complete data. 159 (9%) had no eligible female present at time of survey, 21 (1%) refused to participate, 16 (1%) were unable to complete the survey. One hundred and twenty-one (8%) had no RC score available and were excluded from those analyses. Most women completed elementary or secondary education (64%), were married or living with partner (78%), did

not have health insurance (87%), and lived < 3 km from health facility (76%). Ten percent of women had low RC, 56% medium, and 34% high. High RC was associated with higher education and being married without co-wives (Table 2).

Among the 1,009 women not currently pregnant or planning to become pregnant, 47% were using an effective contraceptive method, with injectables (28%), implants (29%), and male condoms (24%) most frequently used. Among the 582 women who reported a live birth in the past two years, 70% completed 4+ ANC visits and 88% gave birth in a health facility. Seventy-three percent of the 331 women whose child under five demonstrated malaria, pneumonia, and/or diarrhea symptoms in last 2 weeks sought treatment; 85% whose child had malaria symptoms, 83% pneumonia symptoms and 71% with diarrhea. In bivariate analysis, RC was associated with contraceptive use; women with higher RC were more likely to use effective contraceptive methods, most frequently male condoms, and less likely to use other methods (withdrawal, periodic abstinence/rhythm method, other) or no method. RC was not associated with number or location of ANC visits or with seeking treatment for a sick child under five in bivariate analysis (Table 3).

Effective Contraceptive Use

In multivariable models, age, education, and marital status were associated with current effective contraceptive use. Women ages 35–49 were less likely to use effective contraception (adjusted Prevalence Ratio (aPR) 0.78, 95% CI 0.62, 0.98) than women 15–24 years old. Women with higher educational status were more likely to use effective contraception than women with less or no education (aPR 1.15, 95% CI 1.07, 1.24), as were women living with a partner compared with single women (aPR 1.40, 95% CI 1.06, 1.85). For male and/or female condom use, higher education (aPR 1.85, 95% CI 1.45, 2.36) was associated with increased condom use. Women who were married (aPR 0.55, 95% CI 0.32, 0.94) or living with a partner (aPR 0.25, 95% CI 0.12, 0.54) and women 25–34 years (aPR 0.54, 95% CI 0.33, 0.88) or 35–49 years (aPR 0.39, 95% CI 0.21, 0.71) old were less likely to use condoms compared with single women and 15–24-year-old women, respectively. No association was found between RC and contraceptive use in adjusted models (Table 4).

Antenatal Care (ANC) Visits

RC score and wealth quintile were significantly related to 4+ ANC visits in multivariable models. Women with high RC (aPR 1.37, 95% CI 1.06, 1.78) were more likely to have 4+ ANC visits compared with women with low RC; women in the middle wealth quintile (aPR 1.23, 95% CI 1.01, 1.49) were more likely to have 4+ ANC visits compared with women in the lowest quintile (Table 5).

Sought Treatment for Sick Child

In bivariate models, only wealth quintile was significantly related to seeking treatment for a sick child; women in the highest wealth quintile were less likely to seek treatment for a child under five who had symptoms indicative of malaria, pneumonia, and/or diarrhea compared with women in the lowest wealth quintile (aPR 0.62, 95% CI 0.40, 0.98; Table 6). Adjusting for distance from facility and education status caused the effect to remain significant in the same direction (aPR 0.60 and aPR 0.64, respectively). Furthermore, when studying the

distribution of these covariates, we found 97% of women with highest education, 78% closest (< 3 km) to a facility and 100% in the two highest wealth quintiles lived in the Adabawere site. Due to this skewed distribution of wealth, distance from facility, and education by site of residence, we included site of residence to our final multivariable model. We found no association between wealth quintile and seeking treatment for a sick child using this model, but found health seeking to be related to site of residence, with a trend for women in the rural sites to be more likely to seek treatment than those in the urban site.

Discussion

We found that older age, little or no education, and single relationship status were associated with less use of effective contraception. Women with low RC and who were in the lowest wealth quintile were least likely to report receiving the recommended 4 + ANC visits in either a private or public sector health facility. Women in the urban site were less likely to seek treatment for a sick child under five than in the rural sites. While improved quality of available primary health services is important to reduce maternal and child mortality, utilization is necessary to ultimately improve health outcomes. These results support and contribute to the findings of our previous study, which showed women's utilization of intra-partum, post-partum, and child care to vary by education, wealth and facility distance (McCarthy et al. 2017). Our findings underscore the need for targeted outreach activities and further research to identify mechanisms that prevent women from accessing care.

Previous studies support our finding of increased use of modern contraceptive methods among women with higher education in Sub-Saharan Africa (Ortayli and Malarcher 2010; Solanke 2017). While increasing access to education as a human right, efforts are needed to identify ways to reach less educated populations for health services as a stopgap. The RC subscale was not associated with increased use of effective contraceptive methods in the multivariable models in contrast to other research findings. Our non-significant finding may reflect the high utilization of effective contraception in our population regardless of RC. For example, 43–53% of women in our study demonstrated effective contraception use across all RC scores, rates much higher than the most recent national estimates of 18.7% (United Nations Department of Economic and Social Affairs 2015).

While this is the first study describing the relationship between relationship control and ANC visits, previous studies have found that enhancing women's autonomy (Tiruneh et al. 2017) and empowerment (Patil et al. 2017; Sipsma et al. 2014) in their relationship can increase use of ANC during pregnancy. Our findings may reflect that women with higher RC feel more empowered in their relationship and other aspects of their lives, such as their antenatal care.

As high RC predicted 4+ ANC visits in our study, health practitioners could employ strategies to involve partners in pregnancy education and healthcare visits to increase ANC service utilization. Previous research in DRC and Zimbabwe found ANC health education that involved husbands fostered male involvement in antenatal, child delivery, and

prevention of mother to child transmission of HIV/AIDS (Gill et al. 2017; Makoni et al. 2016).

We found seeking treatment for a sick child to vary with socio-economic status, with women in the highest wealth quintile least likely to seek care in bivariate models. Additional research in similar settings have shown contradictory results when assessing this relationship; some found the same association (Ouma et al. 2017), no association (O'Meara et al. 2014) and the opposite association (Noordam et al. 2015) with higher wealth status predicting increased likelihood of health-seeking behavior for a sick child. Of note, O'Meara found a positive relationship between wealth status and seeking treatment for a sick child in some districts, and a negative relationship in others. These divergent results between sites in O'Meara's study, as well as a skewed distribution of wealth, distance from facility, and education status by site of residence in our study led us to include site of residence to our final model. Our final model demonstrated no relationship between wealth quintile and seeking treatment for a sick child, but showed a difference in seeking treatment for a sick child by site of residence. Women in the urban sites were less likely to report seeking treatment than those in the rural sites; the community health worker outreach of the intervention may be having a stronger impact in the rural sites than in the urban site.

This study has limitations. Households without an eligible participant during recruitment were not included and may differ systematically from those recruited. Recall bias may have informed reports of health service utilization in the last two years (Blanc et al. 2016; Stanton et al. 2013). This study's cross-sectional design can only reveal which women have low utilization rates but cannot explain why these disparities exist. We explored predictors of service use after one year of the ICBHSS intervention, and thus, results may have been affected by the intervention.

Our study's results show the relevance of population-representative empirical evidence in real-time design and delivery of health services. These efforts are especially important in settings with low resources. By assessing differential health service utilization, outreach efforts can be designed for sub-populations with low utilization rates. Further research should better understand why certain factors predict low utilization rates and what can be done to modify this trend.

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Significance Statement

Previous research has shown that socio-demographic variables can be predictors of healthcare utilization particularly in low-resource settings. McCarthy et al. (2017) found Northern Togolese women's utilization of intra-partum care, post-partum care, and childhood immunizations varied by wealth, education, and residential distance from health centers. This study assessed whether socio-demographic and sexual relationship factors influence women's utilization of three additional services: effective contraception, antenatal care visits, and medical treatment for a symptomatic child. We found that age, education, sexual relationship power, and wealth were associated with service utilization, suggesting the importance of tailoring interventions to increase health facility utilization in Northern Togo and similar low-resource settings.

Table 1

Mean score and internal consistency of SRPS RC subscale among Togolese women in study

Sexual relationship power scale, relationship control subscale Cronbach's alpha (N = 1450)	
Scale items (1 = strongly agree, 2 = agree, 3 = disagree)	Mean (SD)
(1) If I asked my partner to use a condom, he would get violent	2.66 (0.63)
(2) If I asked by partner to use a condom, he would get angry	2.58 (0.68)
(3) Most of the time, we do what my partner wants to do	1.80 (0.76)
(4) My partner won't let me wear certain things	2.05 (0.83)
(5) When my partner and I are together, I'm pretty quiet ^a	2.46 (0.78)
(6) My partner has more say than I do about important decisions that affect us	2.07 (0.82)
(7) My partner tells me who I can spend time with	2.19 (0.81)
(8) If I asked my partner to use a condom, he would think I'm having sex with other people ^b	
(9) I feel trapped or stuck in our relationship	2.63 (0.62)
(10) My partner does what he wants, even if I do not want him to	2.17 (0.77)
(11) I am more committed to our relationship than my partner is	1.93 (0.76)
(12) When my partner and I disagree, he gets his way most of the time	2.09 (0.71)
(13) My partner gets more out of our relationship than I do	1.84 (0.78)
(14) My partner always wants to know where I am	1.73 (0.84)
(15) My partner might be having sex with someone else	2.26 (0.76)
Cronbach's alpha	0.81

^aTotal N for question 5 = 1431 (19 missing)

^bTotal N for question 8 = 1422 (28 missing)

Table 2

Weighted percentage distribution of sociodemographic characteristics by RC subscale

	Unweighted N (weighted %)	Low RC score (n = 143)	Medium RC score (n = 810)	High RC score (n = 497)	P-value
Total	1,571	9.9	55.9	34.2	
Age group					0.56
15–24 years	500 (32.2)	21.4	30.0	28.6	
25–34 years	629 (40.5)	46.7	42.0	44.0	
35–49 years	442 (27.3)	31.9	28.1	27.5	
Education level					0.04
None	253 (13.4)	16.4	12.5	14.3	
Elementary school	578 (32.9)	40.4	36.0	29.9	
Secondary school	460 (30.9)	27.1	31.8	28.7	
High school	169 (13.3)	12.5	11.9	13.7	
Higher	111 (9.5)	3.6	7.8	9.3	
Marital status					0.01
Single	314 (22.0)	13.8	16.8	17.5	
Living with partner	372 (22.6)	26.4	26.7	20.1	
Living with partner/co-wives	151 (8.8)	17.4	9.4	6.3	
Married	529 (34.0)	26.5	34.0	42.9	
Married/co-wives	205 (12.6)	15.8	13.0	13.1	
Household wealth quintile					0.97
Quintile 1	432 (20.0)	23.1	19.6	19.9	
Quintile 2	425 (20.0)	19.5	20.4	21.1	
Quintile 3	242 (20.0)	25.1	19.9	19.3	
Quintile 4	233 (20.0)	15.1	20.1	19.0	
Quintile 5	239 (20.0)	17.2	20.1	20.8	
Health insurance status					0.53
Uninsured	1364 (86.8)	89.5	83.8	83.0	
Insured	199 (12.7)	10.5	16.2	17.0	
Missing	8 (0.5)				

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	Unweighted N (weighted %)	Low RC score (n = 143)	Medium RC score (n = 810)	High RC score (n = 497)	P-value
Facility distance					0.64
< 3 km	1062 (76.4)	70.4	75.2	78.1	
3–5 km	127 (5.4)	4.2	6.6	4.6	
> 5 km	382 (18.2)	25.4	18.2	17.3	
Residence					0.98
Urban	691 (59.0)	57.3	58.7	58.2	
Rural	880 (41.0)	42.7	41.3	41.8	

Table 3
Weighted percentage distribution of contraceptive use, ANC visits, and treating sick children by RC subscale

	Unweighted N (weighted %)	Low RC score (n = 90)	medium rc score (n = 510)	High RC score (n = 314)	P-value
Contraceptive use among women not pregnant or desiring pregnancy in future	(N = 1009)				0.47 ^b
Effective method	461 (46.6)	43.2	49.2	52.8	<0.01
Female sterilization ^a	2 (0.4)	0.0	0.5	0.4	0.89
Male sterilization ^a	3 (0.5)	2.9	0.2	0.4	0.05
Intrauterine device (IUD) ^a	11 (2.3)	1.6	1.9	3.6	0.55
Injection ^a	161 (28.0)	27.0	29.5	28.8	0.92
Implant ^a	155 (28.5)	40.2	31.1	23.7	0.05
Pill ^a	44 (9.6)	13.9	9.2	11.1	0.56
Male condom ^a	104 (24.0)	9.6	21.2	29.4	0.04
Female condom ^a	18 (4.3)	0.0	3.0	6.7	0.28
Foam ^a	1 (0.2)	0.0	0.5	0.0	0.73
LAM ^a	10 (1.9)	0.0	1.7	2.9	0.49
Other method	53 (5.7)	6.0	4.0	4.9	<0.01
Periodic abstinence/rhythm method ^a	45 (9.5)	3.0	7.2	6.8	0.54
Withdrawal ^a	8 (1.5)	0.2	0.3	1.7	<0.01
Other ^a	8 (1.4)	6.3	0.3	2.2	<0.01
No method	495 (47.7)	50.8	46.8	42.2	<0.01
Antenatal care visits among women with birth in last 2 years	(N = 582)	(n = 60)	(n = 329)	(n = 182)	0.09
No visits	14 (2.2)	2.6	2.6	1.5	
1–3 visits	166 (27.8)	42.7	28.4	22.3	
4–6 visits	370 (64.1)	48.7	63.5	69.7	
7+ visits	31 (5.9)	6.0	5.5	6.5	
ANC visit location					0.89
Facility	498 (87.7)	86.0	87.7	88.6	

	Unweighted N (weighted %)	Low RC score	medium rc score	High RC score	P-value
Home	84 (12.3)	14.0 (n = 41)	12.3 (n = 186)	11.4 (n = 96)	
Sought treatment for child with symptom in last 2 weeks among women with child under 5 years	(N = 331)				
Fever/Malaria (n = 231)	199 (85.0)	91.2	82.0	86.0	0.51
Cough/Pneumonia (n = 42)	6 (82.7)	100.0	79.2	82.7	0.68
Diarrhea (n = 58)	44 (71.3)	74.0	76.5	65.0	0.75
Any symptom (n = 331)	249 (72.6)	77.2	70.6	73.3	0.75

LAM/lactational amenorrhea method

^aPercentages refer to method of contraceptive among women currently using contraception (excluding women using no contraception, n = 495)

^bComparing effective method, other method, and no method across SRPS RC levels among women not pregnant or desiring to become pregnant in the future

Poisson regression models of RC subscale and socio-demographic factors as predictors of effective contraceptive/condom use

Table 4

	Effective contraceptive use ^{a,b}		Male and/or female condom use ^a		P-value
	Adjusted PR	95% CI	P-value	Adjusted PR	95% CI
RC score					
Low power	Ref.	-	-	Ref.	-
Medium power	1.15	(0.95, 1.40)	0.15	1.67	(0.61, 4.56)
High power	1.22	(0.99, 1.51)	0.06	2.04	(0.69, 6.05)
Age group					
15–24 years	Ref.	-	-	Ref.	-
25–34 years	1.05	(0.87, 1.27)	0.57	0.54	(0.33, 0.88)
35–49 years	0.78	(0.62, 0.98)	0.04	0.39	(0.21, 0.71)
Educational level	1.15	(1.07, 1.24)	< 0.01	1.85	(1.45, 2.36)
Marital status					
Single	Ref.	-	-	Ref.	-
Living with partner	1.40	(1.06, 1.85)	0.02	0.25	(0.12, 0.54)
Living with partner/co-wives	1.45	(0.99, 2.13)	0.06	0.57	(0.17, 1.96)
Married	1.22	(0.97, 1.55)	0.09	0.55	(0.32, 0.94)
Married/co-wives	1.41	(0.99, 2.00)	0.06	0.47	(0.19, 1.19)
Household wealth quintile					
Quintile 1	-	-	-	Ref.	-
Quintile 2	-	-	-	0.55	(0.19, 1.47)
Quintile 3	-	-	-	2.50	(0.86, 7.25)
Quintile 4	-	-	-	2.90	(0.93, 9.08)
Quintile 5	-	-	-	2.15	(0.72, 6.44)
Health insurance status					
Uninsured	Ref.	-	-	Ref.	-
Insured	1.14	(0.94, 1.37)	0.17	1.00	(0.64, 1.58)
Residence					
Urban	-	-	-	Ref.	-
Rural	-	-	-	1.88	(0.83, 4.26)

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Among all women not currently pregnant and desiring pregnancy

Effective contraception use includes female and male sterilization, intrauterine device (IUD), injectable, implant, birth control pill, male and female condom, diaphragm, foam/jelly, and lactational amenorrhea method (LAM), and excludes periodic abstinence/rhythm method, withdrawal and other

Table 5
Poisson regression models of RC subscale and socio-demographic factors as predictors of 4 + ANC visits

	Four or more reported antenatal care visits ^a					
	Crude PR	95% CI	P-value	Adjusted PR	95% CI	P-value
RC score						
Low power	Ref.	-	-	Ref.	-	-
Medium power	1.26	(0.96, 1.65)	0.09	1.27	(0.98, 1.64)	0.07
High power	1.39	(1.07, 1.82)	0.02	1.37	(1.06, 1.78)	0.02
Age group						
15–24 years	Ref.	-	-	-	-	-
25–34 years	0.98	(0.87, 1.10)	0.69	-	-	-
35–49 years	0.89	(0.75, 1.06)	0.19	-	-	-
Education level	1.08	(1.01, 1.16)	0.03	1.06	(0.99, 1.14)	0.08
Marital status						
Single	Ref.	-	-	-	-	-
Living with partner	0.98	(0.76, 1.28)	0.90	-	-	--
Living with partner/co-wives	0.87	(0.63, 1.18)	0.36	-	-	-
Married	0.86	(0.68, 1.08)	0.20	-	-	-
Married/co-wives	0.83	(0.62, 1.11)	0.21	-	-	-
Household wealth quintile						
Quintile 1	Ref.	-	-	Ref.	-	-
Quintile 2	1.12	(0.91, 1.36)	0.28	1.11	(0.91, 1.35)	0.32
Quintile 3	1.28	(1.04, 1.58)	0.02	1.23	(1.01, 1.49)	0.04
Quintile 4	1.15	(0.83, 1.59)	0.39	1.12	(0.82, 1.53)	0.72
Quintile 5	1.00	(0.68, 1.48)	0.95	0.94	(0.67, 1.31)	0.71
Health insurance status						
Uninsured	Ref.	-	-	-	-	-
Insured	1.15	(0.98, 1.35)	0.09	-	-	-
Facility distance						
< 3 km	Ref.	-	-	-	-	-
3–5 km	0.85	(0.65, 1.10)	0.21	-	-	-

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Four or more reported antenatal care visits ^a						
	Crude PR	95% CI	P-value	Adjusted PR	95% CI	P-value
> 5 km	0.92	(0.75, 1.14)	0.44	-	-	-
Residence						
Urban	Ref.	-	-	-	-	-
Rural	0.91	(0.76, 1.10)	0.34	-	-	-

^a Among women reporting birth in last 2 years

Table 6
Poisson regression models of RC subscale and socio-demographic factors as predictors of treating sick children

	Sought treatment for sick child ^a					
	Unadjusted PR	95% CI	P-value	Adjusted PR	95% CI	P-value
RC score						
Low power	Ref.	-	-	Ref.	-	-
Medium power	0.92	(0.71, 1.20)	0.54	0.94	(0.74, 1.18)	0.55
High power	0.96	(0.76, 1.21)	0.71	1.01	(0.82, 1.23)	0.95
Age group						
15–24 years	Ref.	-	-	-	-	-
25–34 years	1.10	(0.86, 1.32)	0.54	-	-	-
35–49 years	0.90	(0.67, 1.12)	0.26	-	-	-
Education level	0.99	(0.91, 1.07)	0.72			
Marital status				-	-	-
Single	Ref.	-	-	-	-	-
Living with partner	1.09	(0.83, 1.42)	0.54	-	-	-
Living with partner/co-wives	1.20	(0.92, 1.56)	0.18	-	-	-
Married	0.78	(0.59, 1.02)	0.07	-	-	-
Married/co-wives	0.70	(0.47, 1.04)	0.18	-	-	-
Household wealth quintile						
Quintile 1	Ref.	-	-	Ref.	-	-
Quintile 2	1.02	(0.80, 1.30)	0.87	0.78	(0.58, 1.06)	0.11
Quintile 3	0.97	(0.62, 1.52)	0.91	1.23	(0.67, 2.28)	0.49
Quintile 4	1.09	(0.86, 1.37)	0.47	1.49	(0.76, 2.89)	0.24
Quintile 5	0.64	(0.42, 0.99)	0.04	0.90	(0.43, 1.89)	0.78
Health insurance status						
Uninsured	Ref.	-	-	-	-	-
Insured	0.85	(0.65, 1.11)	0.24	-	-	-
Facility distance						
< 3 km	Ref.	-	-	-	-	-
3–5 km	0.95	(0.59, 1.54)	0.83	-	-	-

Sought treatment for sick child ^a						
	Unadjusted PR	95% CI	P-value	Adjusted PR	95% CI	P-value
> 5 km	0.99	(0.73, 1.3)	0.98	-	-	-
Residence						
Urban	Ref.	-	-	-	-	-
Rural	1.16	(0.85, 1.58)	0.36	-	-	-
Site of Residence						
Adabawere	Ref.	-	-	Ref.	-	-
Kpindi	0.99	(0.68, 1.45)	0.97	1.24	(0.61, 2.53)	0.55
Sarakawa	1.23	(0.90, 1.67)	0.19	1.70	(0.88, 3.29)	0.12
Djande	1.20	(0.84, 1.72)	0.31	1.79	(1.03, 3.08)	0.04

^a Among women with child under 5 with symptoms in last two weeks