

ORIGINAL RESEARCH ARTICLE

Gender relations and the utilization of contraceptives and antenatal care services in Kenya, Namibia and Nigeria

DOI: 10.29063/ajrh2022/v26i11.13

Yemi Adewoyin^{1,2*} and Clifford O. Odimegwu²

Department of Geography, Faculty of the Social Sciences, University of Nigeria, Nsukka, Nigeria¹; Demography and Population Studies Programme, Schools of Public Health and Social Sciences, University of the Witwatersrand, Johannesburg, South Africa²

*For Correspondence: Email: yemiadewoyin@yahoo.com; Phone: +2348062932175

Abstract

The impacts of gender relations (GR) on reproductive health in sub-Saharan Africa (SSA) have received little attention. Virtually non-existent are studies that take cognizance of the socio-cultural diversity of SSA countries in assessing the impacts. Using Demographic and Health Survey data from Namibia, Kenya and Nigeria, this study investigated whether feminine gender relations (FGR) predict higher uptake of contraceptives and antenatal care services (ANC) in SSA. Results from univariate, bivariate and multivariate analyses showed that Namibia had the highest prevalence of FGR (20.0%) and contraceptive use (57.8%) while Nigeria had the lowest FGR (5.7%) but highest ANC utilization (42.1%). At the unadjusted levels, FGR predicted higher contraceptive use in Namibia and Nigeria but became insignificant when sociodemographic confounders were controlled for. Masculine gender relations (MGR) however predicted increased contraceptive and ANC utilization in the three countries at the unadjusted levels and contraceptive use in Kenya and Nigeria when adjusted. That MGR predicted higher odds of using contraceptives in a largely gender egalitarian Kenya and patriarchal Nigeria while FGR was insignificant even in the largely feministic Namibia, suggests that promoting equality in GR, rather than emphasizing female autonomy, possesses greater capacity for improving reproductive health outcomes in SSA. (*Afr J Reprod Health* 2022; 26[11]: 141-153).

Keywords: Gender relations, reproductive health, contraceptive use, antenatal care services, sub-saharan Africa

Résumé

Les impacts des relations de genre (RG) sur la santé reproductive en Afrique subsaharienne (ASS) ont reçu peu d'attention. Pratiquement inexistantes sont les études qui tiennent compte de la diversité socioculturelle des pays d'ASS pour évaluer les impacts. En utilisant les données des enquêtes démographiques et sanitaires de la Namibie, du Kenya et du Nigéria, cette étude a cherché à savoir si les relations entre les sexes féminins (RFG) prédisaient une utilisation plus élevée des contraceptifs et des services de soins prénatals (ANC) en ASS. Les résultats des analyses univariées, bivariées et multivariées ont montré que la Namibie avait la prévalence la plus élevée de RGF (20,0%) et d'utilisation de contraceptifs (57,8%) tandis que le Nigéria avait le RGF le plus bas (5,7%) mais l'utilisation des soins prénatals la plus élevée (42,1%). Aux niveaux non ajustés, le FGR a prédit une utilisation contraceptive plus élevée en Namibie et au Nigeria, mais est devenu insignifiant lorsque les facteurs de confusion sociodémographiques ont été contrôlés. Les relations hommes-femmes (RMG) prédisaient cependant une augmentation de l'utilisation des contraceptifs et des soins prénatals dans les trois pays aux niveaux non ajustés et l'utilisation des contraceptifs au Kenya et au Nigeria après ajustement. Le fait que le MGR ait prédit des chances plus élevées d'utiliser des contraceptifs dans un Kenya largement égalitaire entre les sexes et un Nigeria patriarcal alors que le FGR était insignifiant même dans la Namibie largement féministe, suggère que la promotion de l'égalité en RG, plutôt que de mettre l'accent sur l'autonomie des femmes, possède une plus grande capacité à améliorer les résultats en matière de santé reproductive dans ASS. (*Afr J Reprod Health* 2022; 26[11]: 141-153).

Mots-clés: Relations entre les sexes, santé reproductive, utilisation de contraceptifs, services de soins prénatals, Afrique subsaharienne

Introduction

In spite of widespread global health transition, reproductive health outcomes in sub-Saharan Africa (SSA) remain one of the poorest. According

to a World Health Organization (WHO) report, approximately 810 women died daily from pregnancy and childbirth related complications in 2017 with the highest risk being among females under the age of 15 and women living in Sub-

African Journal of Reproductive Health November 2022; 26 (11):141

Saharan Africa¹. The sub-continent's maternal mortality rate (MMR) per 100,000 live births, according to the report, was 534. The figure masks country-specific MMR that are as high as 1,150, 1,140, and 917 deaths per 100,000 live births in South Sudan, Chad and Nigeria respectively. Under-five and neonatal mortality in SSA are also the highest in the world with one in thirteen children dying before the age of five² and 28 neonatal deaths in 1,000 live births³. The prevalence of modern contraceptives in SSA (24.1%) is the lowest in the world⁴, the sub-continent accounts for most of the estimated 25 million cases of unsafe abortion procured annually⁵ and Antenatal Care (ANC) utilization in SSA rate is 52%⁶. The country variation in contraceptive use ranges from 5.0% in Chad to 65.5% and 65.8% in Eswatini and Zimbabwe respectively⁷. Chad also had the lowest prevalence of ANC utilization (31.0%) while Ghana had 85% prevalence⁶.

While studies on reproductive health in SSA, including at national and sub-national levels, and particularly on the poor outcomes and their underlying dimensions, are not in short supply in the literature, the role of household gender relations on the outcomes has been less investigated. Much less investigated is the relationship across countries. In the few cross-country studies on gender and reproductive health outcomes in SSA⁸⁻¹³, the level and contextual characteristics of gender relations in countries were not taken into cognizance in selecting the study countries. This made a comparison of how gender relations influence reproductive health outcomes in feministic, patriarchal and gender egalitarian settings in SSA difficult. In other words, gender, which refers to socially constructed roles, cultural values ascribed to biological sex, as well as activities and responsibilities connected to being male or female in a society¹⁴⁻¹⁶, underlies social relations in a society. The social relations, which may be equal or lean towards either the female or male members of the society, are hypothesized to have varying outcomes on reproductive health, especially contraceptive use and the utilization of antenatal care services.

The low prevalence of contraceptive use in SSA has been attributed to several factors broadly categorized as socioeconomic, demographic and ideational factors¹⁷. The socioeconomic factors

include literacy and level of education, place of residence, wealth index, employment status, religion, ethnicity, spousal communication, and affordability/availability of contraceptives. The demographic factors include age, age difference between couples, marital status, type of marriage / union, number of children ever born, and number of living children while spousal approval, perceived negative side effects, perceived complications, and perceived severity of another pregnancy were some of the ideational factors¹⁸⁻²¹. The same group of determinants explains the prevalence of ANC utilization in several SSA countries²²⁻²⁸. Other determinants of ANC utilization include distance to healthcare facilities, insurance coverage, media exposure, quality of care, and pregnancy experience²⁹⁻³⁷. Although the few African studies have shown that gender equality and women empowerment were associated with increased uptake of contraceptives and maternal healthcare services⁸⁻¹³, would these findings be valid in countries that exhibit unequal levels of masculine, feminine and equal gender relations? This follows from the different sociocultural characteristics in SSA countries, as well as different country-level progress in accepting and scaling up gender equality following the 1995 World Conference on Women. The study is therefore situated in three purposively selected countries with contrasting gender equality index in Sub-Saharan Africa. These are Kenya, Namibia and Nigeria. The overarching hypothesis of the study is that the uptake of contraceptives and antenatal care services is higher in countries with more feministic gender relations.

Methods

Study setting

In the 2020 global gender report by the World Economic Forum (WEF), Namibia was ranked 12th of 153 countries on the gender equality index³⁸. The ranking makes Namibia the highest ranked SSA country on gender equality. The lowest ranked countries were Nigeria, Burkina Faso, Gambia, Mali, Togo, Cote d'Ivoire, Chad and Democratic Republic of Congo (DRC). For this study, Namibia and Nigeria were purposively selected to represent the two ends of the index while Kenya, 109th on the global rank and 19th of the 32 SSA countries on the

index, represents the middle category. Namibia, Kenya and Nigeria also typify the cultural characteristics in Southern, Eastern and Western Africa. Women autonomy is highest in the Southern African subregion while Kenya has made conscious efforts through several policy reforms and constitutional amendment to increase women autonomy. Nigeria, like other Western Africa countries, remain largely patriarchal. The three geographical regions make up the SSA sub-continent. The WEF ranking does not significantly differ from a 2019 sustainable development goals (SDG) gender equality index³⁹. In the latter, Namibia (64.5) was ranked second after South Africa (64.9) while Kenya (55.1) and Nigeria (46.1) were in the middle and bottom categories respectively.

Data source and study population

The latest Demographic and Health Surveys (DHS) in Kenya, Namibia and Nigeria were used for the study. The 2014 Kenya Demographic and Health Survey (KDHS), the 2013 Namibia Demographic and Health Survey (NmDHS) and the 2018 Nigeria Demographic and Health Survey (NDHS) were the latest surveys in the three countries. The DHS is a nationally representative survey that employed multi-stage sampling techniques to collect up-to-date estimates of basic demographic and health indicators in the selected countries. Some of the indicators measured included fertility, family planning uptake, maternal and child health, adult and childhood mortality, women's empowerment and their experience of domestic violence, and a number of basic sociodemographic characteristics like age, marital status, place of residence, employment status, education and wealth status. The KDHS, NmDHS and NDHS comprised a weighted sample of 31,079, 10,018 and 41,821 women aged 15-49 respectively. Of these, 23,245, 6,453 and 29,992 were parous in Kenya, Namibia and Nigeria respectively, and by implication, qualified to have used antenatal care services. The parous women constituted the study sample.

Variable description

Two main outcome variables were employed for the study. These were the use of modern contraceptives and ANC utilization. In the women individual

recode file of the DHS datasets, variable (V) 313 measured contraceptive use by type among the population. The available options were 'no method', 'folkloric method', 'traditional method' and 'modern method'. The first three options were recoded as 'No' to indicate the none use of modern contraceptives. Variable M14\$1 in the recode file measured the women's number of antenatal visits during their pregnancy. Prior to 2016, the WHO recommended a minimum of four antenatal care visits during pregnancy to, among other things, increase the likelihood of positive pregnancy outcomes and enhance maternal and child health. The minimum number of visits was increased to eight from 2016 (WHO, 2018). As the KDHS and NmDHS were conducted before 2016, the prevailing four visits recommendation at the time was used as the benchmark for standard ANC visits in this study. Hence, all visits in the datasets were recoded as <4 and 4+.

The main predictor variable, gender relations, was derived from variables 632, 739, 743A, 743B, 743D and 743F. These variables measured the women's decision-making powers by asking who decided on the respondents' use of contraceptives, how their earnings were spent, their healthcare, large household purchases, visits to family and relatives, and how their spouses' earnings are spent. The responses were recoded to reflect three levels of gender relations; feminine, masculine and equal. Feminine gender relations implied that the women made most of the decisions while masculine implied that their male spouses made most of the decisions. Age (V13), marital status (V502), place of residence (urban/rural) (V25), region of residence (V24), religion (V130), education (V106), partner's education (V701), wealth (V190), number of children ever born (V201) and coital frequency (V536) were employed as explanatory variables in the study. Other explanatory variables employed were family composition to determine the number of male and female children the respondents had, derived from variables 203-207; experience of intimate partner violence, which was derived from variables D104, D106, D107 and D108; and media exposure derived from variables 120 and 121 which measured whether or not the respondents had access to radio and TV respectively. Studies have shown that all the explanatory variables influence contraceptive

use. And with the exception of coital frequency and family composition, they also impact ANC utilization.

Data analysis

Descriptive analysis, using frequency and percentages, was carried out on the levels of contraceptive and ANC utilization in the three countries. The explanatory variables were equally analyzed descriptively at the univariate level. Chi Square test statistics was used at the bivariate level to determine the associations between the outcome variables and the explanatory variables. The analyses were conducted separately for each of the outcome variables and for each of the three countries. As the outcome variables are binary; modern contraceptive use and non-use, and <4 and 4+ ANC visits, the binary logistic regression was employed at the multivariate level of data analysis. Two regression models each were generated for determining the relationship between each of the outcome variables and the set of predictors at both the unadjusted and adjusted levels. In other words, for each outcome variable, there were two models for each country. In all, a total of 12 regression models were generated for the two outcome variables in the three countries.

Results

Background characteristics

Other than with age, where women aged 15-19 constituted less than 4.5% of the sample in each of the three countries and those aged 25-29 were the majority, and with access to radio and TV, the three countries did not share any similarity on any other variable of study. For instance, while about 3.0% of Nigerian women were never in union, the figures were 7.5% in Kenya and 42.3% in Namibia. Similarly, while Nigeria and Kenya had majority of the respondents living in the rural areas, about 52% of respondents from Namibia were urban residents. More Kenyans had primary education and more Namibians had secondary education whereas more Nigerians had no formal education. The same pattern of respondents' education showed in partner's educational attainment in Kenya and Namibia. Kenya and Nigeria however shared similar characteristics in wealth status and family

composition. In both countries, there were more women from poor households and more male children. While only 1.0% of Namibians had at least nine children, the proportion was 8.0% in Nigeria. Recent sexual activity was highest among Nigerians (70.7%) and lowest among Kenyans (29.7%). More Nigerian women however never experienced intimate partner violence as illustrate in Table 1.

As further illustrated in the Table, gender relations were mostly masculinist in Nigeria with 62.5% of the respondents recording masculine gender relations and only 5.7% reported feminine gender relations. In Namibia and Kenya, equal gender relations were most prevalent. But while the distribution of feminine and masculine gender relations was almost the same in Kenya, feminine gender relations (20.0%) were over three times more prevalent than masculine gender relations (6.1%) in Namibia. The prevalence of contraceptive use was a mere 12.3% in Nigeria compared to Kenya's 45.5% and Namibia's 57.8%. Quite interestingly however, ANC utilization was highest among the Nigerian sample (42.1%). It was 34.8% in Kenya and 38.8% in Namibia. The religious affiliation of the study sample and their regions of residence in their respective countries are also shown in Table 1.

Sociodemographic dimensions of contraceptive and ANC utilization

Contraceptive use in the three countries was more prevalent among women who resided in urban areas, who were sexually active in the four weeks preceding the survey, who had experienced intimate partner violence and who had access to radio and TV. It was also more prevalent among women aged 25-34, and who had between one and four children in Kenya and Namibia. Women aged 35-44, those who were never in union, Christians of other denomination except Catholic, who had higher education and who had more sons also used contraceptives more in Nigeria. The prevalence was also higher among women adherents of Elcin religion, women with and whose partners had higher education, and who had more daughters in Namibia. As shown in Table 2, contraceptive use was lowest among residents of North-Eastern, Kavango and North-West regions of Kenya,

Table 1: Sociodemographic characteristics of study population

Country Variables	Kenya N = 23,245		Namibia N = 6,453		Nigeria N = 29,992	
		%		%		%
Age						
15-19	898	3.9	286	4.4	1,197	4.0
20-24	3,661	15.7	1,056	16.4	4,320	14.4
25-29	5,366	23.1	1,267	19.6	6,107	20.4
30-34	4,307	18.5	1,151	17.8	5,536	18.5
35-39	3,780	16.3	1,092	16.9	5,155	17.2
40-44	2,923	12.6	883	13.7	3,905	13.0
45-49	2,310	9.9	718	11.1	3,772	12.6
Marital Status						
Never in Union	1,754	7.5	2,731	42.3	912	3.0
In Union/Living with a man	18,124	78.0	3,128	48.5	26,963	89.9
Formerly in Union	3,367	14.5	594	9.2	2,117	7.1
Types of Residence						
Urban	8,477	36.5	3,330	51.6	11,259	37.5
Rural	14,768	63.5	3,123	48.4	18,733	62.5
Religion						
Catholic	4,613	19.8	1,357	21.0	2,920	9.7
Other Christian/Anglican	15,136	65.1	1,494	23.2	10,888	36.3
Islam/Elcin	2,952	12.7	2,586	40.1	15,909	53.0
Adventist	-	-	373	5.8	-	-
Traditional/Others	544	2.3	625	9.7	275	0.9
Highest Education						
No education	3,742	16.1	489	7.6	12,455	41.5
Primary	12,421	53.4	1,480	22.9	5,351	17.8
Secondary	5,261	22.6	4,090	63.4	9,549	31.8
Higher	1,821	7.8	394	6.1	2,637	8.8
Partner Highest Education*						
No education	1,384	6.0	497	7.7	9,097	30.3
Primary	4,720	20.3	743	11.5	4,193	14.0
Secondary	2,884	12.4	1,937	30.0	9,166	30.6
Higher	1,104	4.7	324	5.0	4,156	13.9
Wealth Status						
Poor	10,339	44.5	2,365	36.6	12,714	42.4
Middle	4,434	19.1	1,406	21.8	6,350	21.2
Rich	8,472	36.4	2,682	41.6	10,928	36.4
Children ever born						
1 – 4	16,499	71.0	5,410	83.8	17,901	59.7
5 – 8	5,864	25.2	977	15.1	9,728	32.4
9+	882	3.8	66	1.0	2,363	7.9
Family Composition						
More Sons	9,472	40.7	2,494	38.6	12,419	41.4
More Daughters	9,044	38.9	2,608	40.4	11,593	38.7
Equal	4,729	20.3	1,351	20.9	5,980	19.9
Coital Frequency*						
Active in last 4 weeks	6,911	29.7	3,170	49.1	21,194	70.7
Inactive in last 4 weeks - postpartum	1,028	4.4	951	14.7	2,552	8.5
Inactive in last 4 weeks - not postpartum	3,102	13.3	2,270	35.2	6,246	20.8
Experienced Partner Violence*						
Yes	2,048	8.8	499	7.7	3,367	11.2
No	2,277	9.8	849	13.2	26,625	88.8
Access to Radio/TV*						
Yes	15,579	67.0	4,817	74.6	20,983	70.0
No	7,150	30.8	1,478	22.9	8,672	28.9
Region (Kenya/Namibia/Nigeria)						
Coast / Caprivi / North-Central	2,765	11.9	484	7.5	5,452	18.2
North Eastern / Erongo / North-East	1,177	5.1	579	9.0	5,694	19.0
Eastern / Hardap / North-West	3,903	16.8	435	6.7	7,745	25.8

Central / Karas / South-East	2,380	10.2	579	9.0	3,617	12.1
Rift Valley / Kavango / South-South	6,960	29.9	572	8.9	3,501	11.7
Western / Khomas / South-West	2,066	8.9	605	9.4	3,983	13.3
Nyanza / Kunene / -	3,294	14.2	479	7.4		
Nairobi / Ohangwena / -	700	3.0	470	7.3		
/ Omaheke / -			422	6.5		
/ Omusati / -			459	7.1		
/ Oshana / -			415	6.4		
/ Oshikoto / -			429	6.6		
/ Otjozondjupa / -			525	8.1		
Gender Relations*						
Feminine	2,614	11.2	1,289	20.0	1,722	5.7
Masculine	2,487	10.7	394	6.1	18,737	62.5
Equal	3,489	15.0	1,413	21.9	4,060	13.5
Contraceptive Use						
Yes	10,567	45.5	3,729	57.8	3,684	12.3
No	12,678	54.5	2,724	42.2	26,308	87.7
ANC Utilization*						
4+	8,093	34.8	2,506	38.8	12,634	42.1
Less than 4	6,805	29.3	620	9.6	9,158	30.5

*Contains missing samples

Namibia and Nigeria respectively. In the three countries, women with equal gender relations were the highest users of contraceptives. The prevalence was lowest among women who reported more masculine gender relations.

The pattern of ANC utilization also shows that women who reported equal gender relations utilized the services more. Like with contraceptive use, masculine gender relations were associated with the lowest proportion of ANC utilization among the study population in the three countries. In the three countries, urban residence, higher education, partners with higher education, rich wealth status, having between one and four children wealth, and being exposed to radio and TV were associated with higher utilization of ANC services among the respondents. Women who were in union had higher ANC utilization in Kenya, whereas single women, who were never in union or were previously in union, had higher utilization in Namibia and Nigeria. While ANC utilization was higher among Christians of other denominations in Kenya and Namibia, it was higher among Catholics in Nigeria. Women who had not experienced intimate partner violence had higher ANC utilization in Kenya and Namibia. The spatial pattern of ANC utilization in the three countries shows that the North-Eastern region of Kenya and North-West region of Nigeria still had the lowest utilization. The utilization rate was lowest in the Kunene region of Namibia. All the associations between the explanatory variables and the two

outcome variables were statistically significant ($P < 0.005$) except for family composition and contraceptive use, intimate partner violence and contraceptive use, marital status and ANC, and intimate partner violence and ANC in Namibia.

Determinants of contraceptive and ANC utilization in SSA

At the unadjusted level, masculine gender relations were statistically found to significantly increase the likelihood that women in Sub-Saharan Africa would use contraceptives and antenatal care services. The odds of contraceptive use were however higher in Namibia than in Kenya and Nigeria as shown in Table 3. For ANC utilization, the likelihood was also higher in Namibia than in Nigeria and Kenya. Feministic gender relations were only significantly associated with contraceptive use in Namibia and Nigeria. The relations did not significantly influence contraceptive use in Kenya and ANC utilization in the three countries. When the models were adjusted and the sociodemographic variables were controlled for (Table 4), feminine gender relations did not significantly predict contraceptive use or ANC utilization in any of the three countries. The masculine gender relations which significantly predicted contraceptive and ANC utilization in the unadjusted models became only significant in predicting the likelihood of contraceptive use in Kenya and Nigeria. The masculine gender relations

Table 2: Sociodemographic dimensions of contraceptive and ANC utilization in SSA

Country Variables	Kenya		Namibia		Nigeria	
	C – Use %	ANC %	C – Use %	ANC %	C – Use %	ANC %
Age						
15-19	36.6	47.2	51.0	67.4	4.8	44.8
20-24	45.7	53.9	58.5	78.2	8.9	53.7
25-29	50.3	56.1	63.9	81.4	12.4	58.4
30-34	51.0	55.7	61.3	85.2	14.0	62.9
35-39	47.1	53.4	57.1	81.6	16.3	61.2
40-44	41.3	53.1	56.9	81.3	14.3	57.7
45-49	29.4	50.2	45.4	77.1	8.2	54.1
Marital Status						
Never in Union	33.1	48.8	60.9	80.8*	14.4	61.5
In Union/Living with a man	49.2	55.2	57.2	79.5*	12.5	57.6
Formerly in Union	31.7	51.6	46.5	80.9*	9.0	64.6
Types of Residence						
Urban	49.7	62.9	63.2	83.0	17.3	75.6
Rural	43.0	49.8	52.1	77.6	9.3	48.4
Religion						
Catholic	46.9	55.3	53.4	77.0	14.2	76.0
Other Christian/Anglican	51.5	56.2	56.5	80.3	18.6	74.7
Islam/Elcin	15.8	47.4	61.8	85.1	7.7	46.3
Adventist	-	-	59.8	75.7	-	-
Traditional/Others	25.4	40.6	52.8	72.8	4.4	40.3
Highest Education						
No education	10.8	40.8	34.6	56.8	4.8	35.2
Primary	50.9	52.0	51.0	72.8	13.7	64.2
Secondary	54.9	62.6	62.4	84.5	18.3	77.2
Higher	52.8	81.3	64.2	91.7	22.8	91.9
Partner Highest Education						
No education	9.4	39.9	41.9	67.6	4.4	31.0
Primary	50.6	52.3	53.4	73.1	11.9	61.9
Secondary	54.8	62.3	59.2	83.9	17.2	72.6
Higher	54.3	75.3	65.4	93.1	20.6	81.8
Wealth Status						
Poor	34.8	45.3	50.6	75.3	6.4	38.5
Middle	55.1	56.4	58.0	80.4	12.0	63.6
Rich	53.4	67.5	64.1	85.4	19.3	81.0
Children ever born						
1 – 4	48.5	57.5	59.6	81.8	12.3	62.6
5 – 8	40.1	46.1	49.5	72.1	13.6	52.3
9+	23.6	43.5	34.8	67.6	7.0	40.6
Family Composition						
More Sons	45.5		57.6*		13.0	
More Daughters	44.4		58.6*		11.6	
Equal	47.5		56.6*		12.2	
Coital Frequency						
Active in last 4 weeks	56.1		65.8		13.8	
Inactive in last 4 weeks - postpartum	14.5		37.4		4.6	
Inactive in last 4 weeks - not postpartum	32.6		55.0		10.2	
Experienced Partner Violence						
Yes	49.8	52.4	55.7*	78.8*	16.2	62.1
No	44.0	56.8	55.6*	80.0*	11.8	57.4
Access to Radio/TV						
Yes	51.2	59.5	59.4	81.8	13.2	59.8
No	33.0	44.3	52.6	75.6	9.9	53.7
Region (Kenya/Namibia/Nigeria)						
Coast / Caprivi / North-Central	38.3	60.5	53.9	79.3	15.2	58.2
North Eastern / Erongo / North-East	3.7	37.4	63.4	84.7	9.3	44.7

Eastern / Hardap / North-West	51.9	54.4	60.2	81.0	6.1	41.2
Central / Karas / South-East	60.5	62.3	67.7	84.3	11.8	84.7
Rift Valley / Kavango / South-South	40.3	49.9	42.1	71.5	14.5	68.2
Western / Khomas / South-West	55.5	53.6	65.3	84.2	23.2	89.0
Nyanza / Kunene / -	50.7	58.3	52.0	70.4		
Nairobi / Ohangwena / -	53.9	73.9	50.4	87.8		
/ Omaheke / -			61.8	73.8		
/ Omusati / -			48.1	88.4		
/ Oshana / -			67.2	94.4		
/ Oshikoto / -			57.8	81.7		
/ Otjozondjupa / -			60.2	71.0		
Gender Relations						
Feminine	51.7	56.4	55.5	80.5	15.7	73.4
Masculine	39.8	51.3	47.0	66.9	12.0	56.3
Equal	54.1	58.5	61.5	82.3	18.5	74.2

C-Use: Contraceptive Use, ANC: Antenatal Care, *Not significant

had no significant association with ANC utilization in any of the countries.

In Kenya in the adjusted models, while age, urban residence, religion, active coital frequency, experience of intimate partner violence and access to radio and TV significantly lowered the odds of contraceptive use, women with no education, whose partners had no education and from poor households were more likely to use contraceptives. Urban residence and religion were associated with lower utilization of ANC while wealth and education increased the likelihoods of ANC utilization. In Namibia, age and access to radio and TV were associated with lower odds of contraceptive utilization while education and coital frequency increased the odds. None of the variables was significantly related to ANC utilization in Namibia. In Nigeria, age, urban residence, coital frequency, experience of intimate partner violence and media access were significantly associated with lower odds of contraceptive use. Education, number of children and having more female children were associated with increased odds of contraceptive use

however. Age, education and wealth status were positive predictors of ANC utilization in Nigeria while residence, religion, number of children ever born and media access were associated with lower likelihood of ANC utilization. Relative to Nairobi, Otjozondjupa and the South-West regions of Kenya, Namibia and Nigeria, the odds of contraceptive use were higher in North-Eastern, Kavango and South-East regions of the three countries respectively. All the regions in Nigeria had higher odds of ANC utilization.

Discussion

This study examined the role of gender relations in promoting positive maternal health outcomes, through its influence on women's contraceptive and ANC utilization, in three SSA countries with differing levels of gender equality index. We hypothesized that the uptake of contraceptives and antenatal care services will be higher in countries with more feministic gender relations. This follows from the general perspective that most SSA

Table 3: Unadjusted odds ratio of the regression of gender relations and maternal health

Country	Kenya		Namibia		Nigeria	
	C – Use	ANC	C – Use	ANC	C – Use	ANC
Variable						
Gender Relations	UOR	UOR	UOR	UOR	UOR	UOR
Feminine	1.104	1.088	1.282**	1.126	1.219**	1.040
Masculine	1.782**	1.340**	1.805**	2.304**	1.675**	2.235**
Equal	RC	RC	RC	RC	RC	RC

C-Use: Contraceptive Use, ANC: Antenatal Care, UOR: Unadjusted Odds Ratio, **significant at 95% Confidence Interval, RC: Reference Category

Table 4: Adjusted odds ratio of the regression of gender relations and maternal health

Country Variables	Kenya		Namibia		Nigeria	
	C – Use	ANC	C – Use	ANC	C – Use	ANC
	AOR	AOR	AOR	AOR	AOR	AOR
Age						
15-19	0.245**	1.134	1.033	1.385	0.717	1.369**
20-24	0.292**	1.487	0.637	3.175	0.560**	1.389**
25-29	0.230**	1.679	0.619	2.645	0.495**	1.348**
30-34	0.273**	1.463	0.507**	0.983	0.515**	1.076
35-39	0.354**	1.286	0.635	0.950	0.486**	1.098
40-44	0.383**	1.107	0.601**	2.052	0.527**	0.941
45-49	RC	RC	RC	RC	RC	RC
Types of Residence						
Urban	0.779**	0.795**	0.945	0.850	0.801**	0.828**
Rural	RC	RC	RC	RC	RC	RC
Religion						
Catholic	0.506**	0.560**	0.863	1.412	0.261**	0.472**
Other Christian/Anglican	0.458**	0.586**	0.722	1.048	0.241**	0.508**
Islam/Elcin	1.409	0.946	0.682	1.365	0.455	0.581**
Adventist	-	-	0.850	1.801	-	-
Traditional/Others	RC	RC	RC	RC	RC	RC
Highest Education						
No education	2.573**	2.319**	4.860**	0.981	2.481**	4.052**
Primary	1.036	1.866**	1.731	0.491	1.267**	2.564**
Secondary	1.014	1.975**	1.268	0.343	1.049	2.032**
Higher	RC	RC	RC	RC	RC	RC
Partner Highest Education						
No education	3.208**	1.402	0.956	1.751	1.712**	2.401**
Primary	0.924	1.395	0.817	1.323	1.111	1.358**
Secondary	0.818	1.002	0.856	1.012	1.017	1.197**
Higher	RC	RC	RC	RC	RC	RC
Wealth Status						
Poor	1.334**	1.408**	0.973	2.416	1.610	1.938**
Middle	1.078	1.215	1.074	2.175	1.231	1.295**
Rich	RC	RC	RC	RC	RC	RC
Children ever born						
1 – 4	1.415	0.896	0.705	0.973	1.702**	0.682**
5 – 8	1.051	1.511	0.741	1.912	0.908	0.820**
9+	RC	RC	RC	RC	RC	RC
Family Composition						
More Sons	0.911		0.929		0.952	
More Daughters	1.125		0.864		1.129**	
Equal	RC		RC		RC	
Coital Frequency						
Active in last 4 weeks	0.498**		1.125		0.634**	
Inactive in last 4 weeks - postpartum	3.501**		3.325**		2.728**	
Inactive in last 4 weeks - not postpartum	RC		RC		RC	
Experienced Partner Violence						
Yes	0.820**	1.184	0.881	1.072	0.767**	0.990
No	RC	RC	RC	RC	RC	RC
Access to Radio/TV						
Yes	0.779**	0.839	0.667**	1.078	0.872**	0.838**
No	RC	RC	RC	RC	RC	RC
Region (Kenya/Namibia/Nigeria)						
Coast / Caprivi / North-Central	1.059	0.848	1.071	0.720	1.045	3.206**
North Eastern / Erongo / North-East	5.811**	1.409	1.003	1.161	1.078	2.823**
Eastern / Hardap / North-West	0.599	1.616	0.835	1.029	1.400**	2.891**
Central / Karas / South-East	0.619	1.754	1.030	1.030	2.626**	1.572**
Rift Valley / Kavango / South-South	1.355	1.729	2.090**	1.509	2.122**	3.482**
Western / Khomas / South-West	0.976	1.417	1.323	1.303	RC	RC

Nyanza / Kunene / -	1.280	1.412	1.103	0.848		
Nairobi / Ohangwena / -	RC	RC	2.346**	0.458		
/ Omaheke / -			1.127	0.873		
/ Omusati / -			3.284**	0.367		
/ Oshana / -			0.919	0.229		
/ Oshikoto / -			1.299	0.715		
/ Otjozondjupa / -			RC	RC		
Gender Relations						
Feminine	0.922	1.002	1.066	1.401	1.087	0.879
Masculine	1.295**	1.059	1.084	1.925	1.166**	1.052
Equal	RC	RC	RC	RC	RC	RC

C-Use: Contraceptive Use, ANC: Antenatal Care, AOR: Adjusted Odds Ratio, **significant at 95% Confidence Interval, RC: Reference Category

countries are patriarchal, the patriarchy impacts maternal health outcomes in the sub-continent negatively, and that more female empowerment is required to reverse the negative outcomes. While some of the few multi-country studies in SSA have shown that gender equality and women empowerment are associated with increased uptake of contraceptives and maternal healthcare services^{8,11,12}, findings from this study show that not only do the levels of gender relations differ considerably among the selected countries, the uptake of contraceptives and ANC utilization were also not uniform. This finding aligns with some other studies on Africa^{9,10,13} and elsewhere⁴⁰⁻⁴⁵ that reported mixed outcomes on the association between women autonomy and empowerment and the use of reproductive health services.

While Nigeria is mostly masculinist and had the lowest prevalence of feminist gender relations, its ANC utilization prevalence was the highest. It recorded the lowest contraceptive uptake however. More feministic Namibia and gender-equal Kenya had a contraceptive prevalence of 57.8% of 45.5% respectively and 38.8% and 34.8% of their population respectively had at least four ANC visits. When the utilization rates were dimensioned against gender relations in the three countries, the uptake of contraceptive and ANC utilization was highest among women who reported equal gender relations and lowest among women who reported masculine gender relations. Beyond the uniform utilization pattern along the gender relations categorization lines, however, the influence of gender relations in predicting utilization differed among the countries. This suggests that the spatial context, within which studies on the association between gender relations and the utilization of reproductive health services is

carried out, matters⁴⁶. Relative to women with equal gender relations with their spouses, feminine gender relations did not significantly influence the use of contraceptives or ANC services in Kenya. Rather, masculine gender relations significantly increased the likelihoods of using contraceptives and ANC services. When adjusted, masculine relations still predicted the likelihoods of using contraceptives. This finding is similar to that of Fikre and Demissie⁴⁷ who reported a negative association between women's autonomy and the use of maternal healthcare services. At the unadjusted level, feminine gender relations predicted the likelihoods of using contraceptives in Namibia and Nigeria while masculine relations predicted the likelihoods of both contraceptives and ANC utilization in both countries. When the sociodemographic confounders were controlled for, neither feminine nor masculine gender relations were significant in their relationships with contraceptive use and ANC utilization in Namibia, whereas masculine gender relations still significantly predicted increased odds of contraceptive use in Nigeria. In other words, masculine gender relations were significant predictors of contraceptive use in countries with more equal gender relations and more masculine gender relations. Feminine gender relations were not significant both in a more feministic Namibia or in Kenya and Nigeria. These findings show that the variation in levels of gender relations in countries, and not just gender equality, matter for maternal health outcomes.

Underlying this inter-country variation in outcomes is the differential sociodemographic profiles of the countries. For example, while 51.5% of Namibian women with children were unmarried, 90% and 78% of women who had at least a child in

Nigeria and Kenya were in union. Families in Namibia also had more female children while male children were more prevalent in Kenyan and Nigerian households. Female autonomy, exemplified by the high proportion of unmarried Namibian women, and family composition have been found to exert negative effects on maternal healthcare seeking⁴⁸⁻⁵¹. Women who were sole decision makers were less likely to use a health facility for maternal healthcare when compared with women with limited decision-making powers⁴⁹⁻⁵⁰.

There is also an inter-country disparity in the women's level of education. The proportion of women with no formal education in Namibia was a mere 7.6%, whereas this was 16.1% in Kenya and a whopping 41.5% in Nigeria. With a positive association between level of education and women's autonomy, Kenyan and Nigerian women were less autonomous and would therefore be more likely to use the services⁴⁹⁻⁵⁰. Further, more Namibians (51.6%) lived in urban areas as compared with Kenyans and Nigerians who lived mostly in the rural areas (about 65%). Studies have shown that place of residence matters for the utilization of reproductive health services^{17,22-24,28,37}. While the urban areas get the priority in the provision of healthcare services however, utilization is higher in rural areas despite the low availability of and distance to healthcare services²⁸. This possibly explains why the odds of utilization are positive among the largely rural women population in Kenya and Nigeria.

Ethical consideration

The DHS program sought and obtained ethical approval for the surveys in the selected countries. Approval to use the KDHS, NmDHS and NDHS datasets for this study was given by the DHS Program.

Conclusion

In spite of their capacity to improve maternal and reproductive health outcomes in Sub-Saharan Africa, the utilization of reproductive healthcare services on the continent is still relatively poor. With the impacts of gender relations on the utilization having received less attention, this study investigated how variations in level of gender

relations is associated with the utilization pattern in Kenya, Namibia and Nigeria. Findings show that, although the prevalence of the two outcome variables, contraceptive use and ANC utilization, was lowest among women who reported masculine gender relations, feminine gender relations did not significantly predict increased utilization but masculine relations did. The fact that masculine relations significantly predicted the odds of using contraceptives in a largely gender egalitarian Kenya and patriarchal Nigeria while feminine gender relations remained an insignificant predictor, even in the largely feministic Namibia, suggests that promoting equality in gender relations, rather than emphasizing female autonomy, possesses greater capacity for improving the uptake of reproductive health services in the study countries.

Contribution of authors

Both YA and COO conceived and designed the study, analyzed the data, and wrote the manuscript. Both authors read and approved the final manuscript.

References

1. World Health Organization. Reproductive Health Fact Sheets. Geneva, World Health Organization; 2019. Available from: www.who.int/reproductivehealth/en.
2. UNICEF. Child Mortality. United Nations Inter-Agency Group for Child Mortality Estimation (UN IGME). 2019. <https://data.unicef.org/topic/child-survival/under-five-mortality/>
3. World Health Organization. Newborns: Reducing Mortality. Geneva, World Health Organization; 2019. Available from: www.who.int/news-room/fact-sheets/detail/newborns-reducing-mortality
4. United Nations, Department of Economic and Social Affairs, Population Division. Contraceptive Use by Method 2019: Data Booklet (ST/ESA/SER.A/435). 2019
5. Ganatra B, Gerdtz C, Rossier C, Johnson BR, Tunçalp O, Assifi A, Sedgh G, Singh S, Bankole A, Popinchalk A, Bearak J, Kang Z and Alkema L. Global, Regional, and Sub-Regional Classification of Abortions by Safety, 2010-2014: Estimates from a Bayesian Hierarchical Model. *The Lancet*, 2017;390(10110): 2372-2381
6. UNICEF. Antenatal Care. Maternal Health. 2019. Available at <https://data.unicef.org/topic/maternal-health/antenatal-care/>
7. United Nations, Department of Economic and Social Affairs, Population Division. World Contraceptive Use 2020 (POP/DB/CP/Rev2020). 2020

8. Do M and Kurimoto N. Women's Empowerment and Choice of Contraceptive Methods in Selected African Countries. *International Perspective on Sexual and Reproductive Health*, 2021;38(1): 23-33
9. Adedini SA, Somefun OD and Odimegwu C. Gender Inequality and Maternal and Child Healthcare Utilization in Sub-Saharan Africa. *Gender and Behaviour*, 2014;12(4): 6050-6070
10. Jennings L, Na M, Cherewick M, Hindin M, Mullany B and Ahmed S. Women's Empowerment and Male Involvement in Antenatal Care: Analyses of Demographic and Health Surveys (DHS) in Selected African Countries. *BMC Pregnancy and Childbirth*, 2014;297
11. Odimegwu C and Adedini S. Gender Equity and Fertility Intention in Selected Sub-Saharan African Countries. *Gender and Behaviour*, 2014;12(4): 5858-5881
12. Singh K, Bloom S and Brodish P. Gender Equality as a Means to Improve Maternal and Child Health in Africa. *Health Care Women International*, 2015; 36(1): 57-69.
13. Yaya S, Uthman OA, Ekholuenetale M and Bishwajit G. Women Empowerment as an Enabling Factor of Contraceptive Use in Sub-Saharan Africa: A Multi-Level Analysis of Cross-Sectional Surveys of 32 Countries. *BMC Reproductive Health*. 2018; 15:24
14. March C, Smyth IA and Mukhopadhyay M. A Guide to Gender Analysis Frameworks. Oxford: Oxfam. 1999
15. Pan American Health Organization. Gender Equality in Health: Improving Equality & Efficiency in Achieving Health for All. 2009
16. United Nations Population Fund (UNFPA). Gender at the heart of ICPD. The UNFPA strategic framework on gender mainstreaming and women's empowerment. New York: UNFPA; 2011
17. Odimegwu CO and Adewoyin Y. Latent and Under-Explored Determinants of Contraceptive Use in Nigeria. *Sexuality Research and Social Policy*, 2020; doi.org/10.1007/s13178-020-00495-1
18. Williamson LM, Parkes A, Wight D, Petticrew M and Hart GJ. Limits to modern contraceptive use among young women in developing countries: a systematic review of qualitative research. *Reprod Health* 2009; 6: 3
19. Haider TL and Sharma M. Barriers to family planning and contraception uptake in sub-Saharan Africa: a systematic review. *International Quarterly of Community Health Education*, 2012;33(4): 403-413
20. Blackstone SR, Nwaozuru U and Iwelunmor J. Factors Influencing Contraceptive Use in Sub-Saharan Africa: A Systematic Review. *International Quarterly of Community Health Education*, 2017;37(2): 79-91
21. Odimegwu C, Akinyemi J, Banjo OO, Olamijuwon E and Amoo E. Fertility, Family Size Preference and Contraceptive Use in Sub-Saharan Africa: 1990-2014. *African Journal of Reproductive Health*, 2018; 22(4):44-53
22. Okedo-Alex IN, Akamike IC, Ezeanosike OB and Uneke CJ. Determinants of Antenatal Care Utilisation in Sub-Saharan Africa: a Systematic Review. *BMJ Open*, 2019;9: e031890. doi:10.1136/ bmjopen-2019-031890. 1-14
23. Kyei-Nimakoh M, Carolan-Olah M and McCann TV. Access Barriers to Obstetric Care at Health Facilities in Sub-Saharan Africa - A Systematic Review. *Systematic Reviews*, 2017;6:110 DOI 10.1186/s13643-017-0503-x. 1-16
24. Finlayson K and Downe S. Why do Women not use Antenatal Services in Low-and-Middle-Income Countries? A Metasynthesis of Qualitative Studies. *PLoS Med*. 2013;10:e1001373
25. Ononokpono DN, Odimegwu CO, Imasiku ENS and Adedini SA. Contextual Determinants of Maternal Health Care Service Utilization in Nigeria. *Women and Health*, 2013;53(7): 647-668
26. Simkhada B, Teijlingen ER, Porter M and Simkhada P. Factors Affecting the Utilization of Antenatal Care in Developing Countries: Systematic Review of the Literature. *J Adv Nurs*, 2007;6: 244-60
27. Say L and Raine RA. A Systematic Review of Inequalities in the Use of Maternal Health Care in Developing Countries: Examining the Scale of the Problem and the Importance of Context. *Bull World Health Organ*, 2007;85:812-9
28. Adewoyin Y. Maternal Healthcare, Place Differentials and Regional Planning in Africa. In Adewoyin Y, Adeagbo A, Ogunkan D and Chakwizira J. (eds). *Contemporary Issues in Urban and Regional Planning and Development in Africa: A Festschrift in Honour of Professor Aina Thompson Adeboyejo*. PP 64-76. Ibadan: Ladoke Akintola University of Technology. 2020
29. Rossier C, Muindi K, Soura A, Mberu B, Lankoande B, Kabiru C and Millogo R. Maternal health care utilization in Nairobi and Ouagadougou: evidence from HDSS. *Global Health Action*, 2014;7: 24351
30. Manzi A, Munyaneza F, Mujawase F, Banamwana L, Sayinzoga F, Thompson DR, Ntaganira J and Hedt-Gauthier B. Assessing predictors of delayed antenatal care visits in Rwanda: a secondary analysis of Rwanda demographic and health survey 2010. *BMC Pregnancy Childbirth*, 2014;14:290
31. Gudayu TW. Proportion and factors associated with late antenatal care Booking among pregnant mothers in Gondar town, North West Ethiopia. *Afr J Reprod Health*, 2015;19: 94-100.
32. Gupta S, Yamada G, Mpembeni R, Frumence G, Callaghan JA, Stevenson R, Brandes N and Baqui AH. Factors associated with four or more antenatal care visits and its decline among pregnant women in Tanzania between 1999 and 2010. *PLoS One*, 2015;9:e101893
33. Browne JL, Kayode GA, Arhinful D, Fidler SAJ, Grobbee DE and Klipstein-Grobusch K. Health insurance determines antenatal, delivery and postnatal care utilisation: evidence from the Ghana demographic and health surveillance data. *BMJ Open*, 2016;6:e008175
34. Manthalu G, Yi D, Farrar S and Nkhoma D. The effect of user fee exemption on the utilization of maternal health care at mission health facilities in Malawi. *Health Policy Plan*, 2016;31:1184-92

35. Straneo M, Fogliati P, Pellis I, Goodman C, Riva DD, Kisika F, Mpuya E and Putoto G. On the way to universal coverage of maternal services in Iringa rural district in Tanzania. who is yet to be reached? *Afr Health Sci*, 2016;16: 420–8
36. Assefa E and Tadesse M. Factors related to the use of antenatal care services in Ethiopia: application of the zero-inflated negative binomial model. *Women Health*, 2017;57:804–21
37. Gebre E, Worku A and Bukola F. Inequities in Maternal Health Services Utilization in Ethiopia 2000-2016: Magnitude, Trends, and Determinants. *Reprod Health*, 2018;15:119
38. World Economic Forum. Global Gender Gap Report 2020. WEF, Geneva. 2020
39. Equal Measures 2030. Harnessing the Power of Data for Gender Equality - Introducing the 2019 EM2030 SDG Gender Index. Equal Measures 2030, Surrey, United Kingdom. 2019.
40. Pratley P. Associations between Quantitative Measures of Women's Empowerment and Access to Care and Health Status for Mothers and Their Children: A Systematic Review of Evidence from the Developing World. *Soc Science and Medicine*, 2016;169:119-131
41. Hou X and Ma N. The effect of women's decision-making power on maternal health services uptake: Evidence from Pakistan. *Health Policy and Planning*, 2013;28 (2):176–84. doi:10.1093/heapol/czs042
42. Sado L, Spaho A and Hotchkiss DR. The Influence of Women's Empowerment on Maternal Health Care Utilization: Evidence from Albania. *Social Science & Medicine*, 2014;114:169-177
43. Adhikari R. Effect of Women's Autonomy on Maternal Health Service Utilization in Nepal: A Cross Sectional Study. *BMC Women's Health*, 2016;16(1):26
44. Osamor PE and Grady C. Women's Autonomy in Health Care Decision-Making in Developing Countries: A Synthesis of the Literature. *International Journal of Women's Health*, 2016;8:191-202
45. Sebayang SK, Efendi F and Astutik E. Women's Empowerment and the Use of Antenatal Care Services in Southeast Asian Countries. DHS Working Paper No. 129. Rockville, Maryland, USA: ICF. 2017
46. Bentley R and Kavanagh AM. Gender equity and women's contraception use. *Australian Journal of Social Issues*, 2008;43(1): 65-80
47. Fikre AA and Demissie M. Prevalence of institutional delivery and associated factors in Dodota Woreda (district), Oromia regional state, Ethiopia. *Reproductive Health*, 2012;9, 33
48. Islam MA, Islam MR and Banowary B. Sex Preference as a Determinant of Contraceptive use in Matrilineal Societies: a Study on the Garo of Bangladesh. *European Journal of Contraception and Reproductive Health Care*, 2009;14(4):301-6
49. Fapohunda BM and Orobato NG. When women deliver with no one present in Nigeria. Who, what, where and so what? *PLOS ONE* 2013;8(7).
50. Dahiru T and Oche OM. Determinants of antenatal care, institutional delivery and post-natal care service utilization in Nigeria. *Pan African Medical Journal*, 2015;21:301
51. Channon MD. Son Preference, Parity Progression and Contraceptive Use in South Asia. *Population Horizons*, 2015;12(1): 24–36.