RESEARCH ARTICLE

REVISED The effect of women's bargaining power within couples on contraceptive use in Cameroon [version 2; peer review: 1 approved, 1 approved with reservations, 1 not approved]

Dimitri Tchakounté Tchuimi , Benjamin Fomba Kamga

Faculty of Economics and Management, University of Yaounde II, Yaounde, Centre, Po. Box 1792, Cameroon

V2 First published: 10 Feb 2020, 4:20
<https://doi.org/10.12688/gatesopenres.13100.1>
 Latest published: 19 May 2021, 4:20
<https://doi.org/10.12688/gatesopenres.13100.2>

Abstract

Background:

The prevalence of contraception among married women, evaluated at 23%, is low in Cameroon. Maternal death rates, estimated at 782 deaths per 100,000 live births, are very worrying. The National Strategic Plan for Reproductive, Maternal, Newborn and Child Health (2015-2020) and the Health Sector Strategy (2016-2027) focuses on increasing modern contraceptive prevalence as a means to reduce maternal death. This paper identifies women's bargaining power as a factor that may stimulate contraceptive use. The objective of this study is to analyze the association between women's bargaining power within couples and modern contraceptive use.

Methods:

The data used come from the fifth Demographic and Health Survey (DHS) conducted in 2018. Women's bargaining power within couple is measured by a Woman Bargaining Power Composite Index (WBPCI) built through a multiple correspondence analysis. The logistic regression model was used to analyze the relationship between WBPCI and modern contraceptive use.

Results:

The results of the descriptive statistics show that women's bargaining power is higher among women who use contraception than for those who do not. The results of the logistic regression model show that an increase of WBPCI was significantly associated with higher chances of using a modern contraceptive method (OR = 1.352; 95% CI: 1.257, 1.454; p < 0.01). The education of women is also a key determinant since educated women were at least two times more likely to use a modern contraceptive method than uneducated women.

Conclusions:

To reduce high maternal death rates in Cameroon, public health policies should not only focus on the health system itself, but should also focus on social policies to empower women in the household.

Open Peer Review

Approval Status ? X ✓

	1	2	3
version 2			
(revision)			✓
19 May 2021			view
version 1	?	X	?
10 Feb 2020	view	view	view

1. **Vissého Adjwanou** , Université du Québec à Montréal (UQAM), Montréal, Canada

2. **Aurélia Lépine** , University College London, London, UK

3. **David K. Guilkey**, University of North Carolina at Chapel Hill, Chapel Hill, USA

Any reports and responses or comments on the article can be found at the end of the article.

Keywords

Women's bargaining power, Contraceptive use, Couple, Maternal death, Probit model, Cameroon

This article is included in the [International](#)

[Conference on Family Planning](#) gateway.

Corresponding author: Dimitri Tchakounté Tchuimi (tchakountedimitri@gmail.com)

Author roles: **Tchakounté Tchuimi D:** Conceptualization, Data Curation, Formal Analysis, Investigation, Methodology, Software, Validation, Writing – Original Draft Preparation, Writing – Review & Editing; **Kamga BF:** Funding Acquisition, Project Administration, Resources, Supervision, Writing – Original Draft Preparation

Competing interests: No competing interests were disclosed.

Grant information: This research was supported by the Bill and Melinda Gates Foundation [OPP1181398].

The funders had no role in study design, data collection and analysis, decision to publish, or preparation of the manuscript.

Copyright: © 2021 Tchakounté Tchuimi D and Kamga BF. This is an open access article distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

How to cite this article: Tchakounté Tchuimi D and Kamga BF. **The effect of women's bargaining power within couples on contraceptive use in Cameroon [version 2; peer review: 1 approved, 1 approved with reservations, 1 not approved]** Gates Open Research 2021, 4:20 <https://doi.org/10.12688/gatesopenres.13100.2>

First published: 10 Feb 2020, 4:20 <https://doi.org/10.12688/gatesopenres.13100.1>

REVISED Amendments from Version 1

Six main revisions have been made in the new version:

- The study analyses the association between women's bargaining power between couples and contraceptive use, and no more the causality between these factors. To this end, a logistic regression model has been estimated rather than a logit model, and the results were presented by the estimated odds ratio (OR) and adjusted odds ratio (AOR) with 95% confidence interval.
- The dependent variable, contraceptive use, has been coded 1 if the woman was using a modern contraceptive method at the time of the survey (rather than 1 if the woman was using any contraceptive method), and 0 if not (a traditional contraceptive method or no method).
- The bivariate analysis and the Heckman model analysis have been removed.
- In order to produce the updated analysis, the paper uses the last version of the Demographic and Health Survey carried out in 2018 since it has been made available recently.
- In the revised paper, the study used the woman module rather than the couple module, and only married women or women living in a union were considered in the analysis.
- The description of the multiple correspondence analysis (MCA) and the indicators belonging to the dimensions of women's bargaining power have been reinforced. The table containing these indicators and the detailed results of the MCA are presented in the extended data.

Any further responses from the reviewers can be found at the end of the article

Introduction

Improving maternal health is one of the key priorities of public health policies in the world in general, especially in developing countries. Defined in 2000 as the fifth Millennium Development Goal (MDG-5), the reduction of maternal deaths was renewed in 2015 as a target of the third Sustainable Development Goal (SDG-3). For a woman, pregnancy is a period of the life cycle during which her health is particularly vulnerable. In fact, the complications observed throughout this period seem to be the main cause of maternal deaths in developing countries (Haider *et al.*, 2017). The use of reproductive health care services, particularly in relation to the use of contraception to control fertility and, to prevent early and unwanted pregnancies, appears to be an investment to ensure good health for the mother. Thus, access to reproductive health care is an effective weapon for limiting the risk of maternal morbidity and death (Hou & Ma, 2013).

In developing countries, several factors may be associated with the use of reproductive health care services. The 1994 International Conference on Population and Development (ICPD) in Cairo already emphasized the role of women's economic empowerment. Moreover, as it is recognized that decisions that lead women to use reproductive health care services occur in the sphere of marriage, the household or the family (Becker, 1996), much literature has suggested that appreciation of

women's bargaining power¹, while at the same time reducing gender inequalities in the couple, is an important driver for the use of reproductive health care service (Blanc, 2001; Chapagain, 2006; Haque *et al.*, 2012; Kamiya, 2011). It is generally recognized that women's bargaining power over resource allocation and decision-making is assessed through so-called modern factors, such as education, income, possession of property, legislation prohibiting violence against women and the freedom to move about (Adjiwanou *et al.*, 2018; Allendorf, 2007; Beegle *et al.*, 2001; Habibov *et al.*, 2017). However, the power of women is hardly indissociable from the channel of social and cultural norms on the allocation of resources in the household and the role of women in the organization of the household and the couple; in most cases, these standards restrict women in decision-making both for themselves (decisions about the use of adequate health care, among others) and their children. As a result, since women's traditional values may hinder the positive impact of their modern values, the mechanisms by which women's bargaining power can influence the use of reproductive care appear delicate and ambiguous (Westeneng & D'Exelle, 2015), drawing our attention to the specificity of the context in which the study is conducted.

In Cameroon, the assessment of the use of reproductive health care is of particular importance since maternal death levels, estimated at 467 deaths per 100,000 births by the Demographic and health Survey (2018), are very worrying. Current government policy on reproductive health focuses on facilitating access to reproductive care (with a focus on assessing modern contraceptive prevalence) as a means of reducing these high rates of maternal mortality. However, it is becoming increasingly clear that issues related to reproductive health are more of a joint behavior in a couple than an individual choice. Indeed, in Africa, marriage remains the privileged place of procreation (Noumbissi & Sanderson, 1999) and where the decision to use adequate reproductive health care results from the ability of each partner expressing preferences through negotiation (Nikiema *et al.*, 2008).

This paper aims to analyze the association between women's bargaining power within couples and contraceptive use in Cameroon. The contribution of this study is at two main levels. First, information from work linking women's bargaining power in the couple and reproductive health is fairly abundant in countries with a strong tendency to conserve patriarchal cultures. However, this type of investigation is particularly rare in Cameroon, a country not bordering on the prevalence of asymmetrical gender relations and power imbalances between spouses. This study will fill the gap related to this information scarcity. Secondly, this study aims to provide an effective

¹ Bargaining power is defined as the ability of an individual to influence household decision-making. It is the amount of influence an individual has over other individuals in the household (Doss, 2013).

tool for achieving the goal of reducing maternal death rates of the current health policy in the horizon of 2027².

Methods

Ethical Statement

Permission to use the datasets for this research was obtained prior to the study from the Demographic and Health Surveys (DHS) Program. Ethical approval was not required for this study because it used anonymized DHS data only. The IRB-approved procedures for DHS public-use datasets do not in any way allow respondents, households, or sample communities to be identified.

Data

The data came from the fifth DHS carried out in 2018 by the National Institute of Statistics (INS) in collaboration with the Ministry of Public Health and financial support from the United States Agency for International Development (USAID), United Nations Population Fund (UNFPA) and UNICEF. As in other developing countries, this survey has collected information on household characteristics, reproductive and sexual health/AIDS, children's health, STD/AIDS knowledge, attitudes and behaviors, and the bargaining power of women in households. Three questionnaires were used to collect the data in this survey: the women's questionnaire, the men's questionnaire and the household questionnaire. These different questionnaires generated five modules: the child, woman, man, household and couple modules. We use woman module within which the answers to the questions were reported by women aged 15 to 49.

In total, a representative sample of 14,677 women were constituted at the end of the survey. However, two restriction criteria must be specified. Firstly, the study considers only married women or women living in a union with a partner since participation in decision-making, which is an important dimension of women's bargaining power, only concerns women in a couple. Thus, 6,617 women (comprised of 4,915 never in union, 757 widowed, 237 divorced and 708 separated) are excluded from the sample. Secondly, since we are interested in the use of contraception at the time of the DHS survey, the analysis is limited to couples in which women were not pregnant. The data comprised of a total of 1,514 women where pregnant at that time was therefore excluded. Thus, the analysis rely on a final sample consists of 6,546 married women.

Variable measurement

Dependent variable. The dependent variable of this paper is contraceptive use. It is measured by a variable that takes the value 1 if the woman uses a modern contraceptive method at the time of the survey, and 0 if not (traditional method or

no method). The modern contraceptive methods include the pill, the intra-uterine device (IUD), the injection, the male condom, the implant/Norplant, the female condom, the female sterilization, the male sterilization, emergency contraception, standard days method and other modern method. The traditional methods include periodic abstinence, withdrawal, breastfeeding, and lactational amenorrhea (LAM).

Independent variables

The variable of interest, women's bargaining power:

The transition from the theoretical conception of the woman's bargaining power to her empirical measure is associated with many difficulties since the process of negotiation between the partners within a couple is unobservable (Beegle *et al.*, 2001; Friedberg & Webb, 2006). Thus, to measure the bargaining power of women, it is essential to resort to proxies (Doss, 2006). A review of the literature reveals that several dimensions can be used to design it (Ewerling *et al.*, 2017; Hanmer & Klugman, 2016; Lépine & Strobl, 2013; Mahmud *et al.*, 2012).

In this research, women's bargaining power is apprehended through four specific dimensions: (i) economic status/independence in the household, (ii) control over financial resources, (iii) decision-making on key aspects of household life, and (iv) women's attitudes towards husband's violence (a dimension to understand the contribution of cultural norms to the role of gender justifying the domination of the husband over the women). The dimension of the woman's economic status is made up of three indicators: whether the mother worked during the 12 months preceding the survey; whether the mother owned a house, and whether the mother owned land. The dimension of control over financial resources has four indicators: The person who decides how to spend mother's income; the person who decides how to spend husband's income; whether the mother used telephone for financial transactions; whether the mother had an account in a bank or other financial institution. The dimension of decision-making contains four indicators: the person who decides on the mother's health care; the person who decides on contraceptive use; the person who decides on general household purchases and the person who decides on visits to family and relatives. The last dimension, women's attitudes towards husband's violence, contains five indicators: wife-beating is justified if wife goes out without telling husband; wife-beating is justified if wife neglects children; wife-beating is justified if wife argues with husband; wife-beating justified if wife refuses to have sex with husband; wife-beating justified if wife burns the food.

Table A1 (Tchakounte, 2021b) in the appendix provides a detailed description of each of these dimensions and the codes of indicators. A multiple correspondence analysis (MCA) on the indicators that makes up each of these dimensions has permitted us to generate a Women Bargaining Power Composite Index (WBPCI) used in our investigations to measure the bargaining power of women. The MCA is a factorial method allowing to synthesize the common information shared by

² The current maternal health improvement policy is contained in the Health Sector Strategy 2016-2027 with the primary goal of increasing the number of women using modern contraception from 16% in 2011 to 35% by 2027.

several dimensions or several indicators (Greco *et al.*, 2019). The choice of this method is based on the idea according to which the indicators selected cannot be considered as equivalent in the information they provide on women's bargaining power. It would then be relevant to reflect this idea in the structure of the constructed index. Practically, the WBPCI is constructed through the first factorial axis from the MCA. The results of this MCA are contained in the Table A2 (Tchakounte, 2021b) of the Appendix³. It comes out that the total inertia explained by the factorial plan is 82.21%, that is 61.49% explained by the first factorial axis and 20.71% explained by the second factorial axis.

Keeping the continuous values of the WBPCI has the relevance of avoiding ambiguities related to a categorization of this index in various modalities (Haider *et al.*, 2017). As Richardson (2018) points out, using threshold values to categorize such an index is not appropriate as it is only a matter of value judgments and a subjective approach that sometimes may not reflect the context in which the study is conducted.

In addition, Cronbach's alpha coefficient is used to measure the internal consistency of the WBPCI. The closer the value of this coefficient is to 1, the more reliable the constructed index is (Aiken & West, 1991). Here, the value of Cronbach's alpha obtained is 0.7262, which indicates the reliability of the WBPCI since the value of alpha is upper than 0.70 (Nunnally, 1978).

Control variables:

Control variables are divided into three categories: socio-demographic, economic and cultural factors, media exposure factors, and intermediate variables of contraception. The first category of factors includes age, education, work status, religion, number of living children, household wealth and place of residence. Three factors of women's exposure to the media are considered: exposure to television, exposure to radio and exposure to newspapers. For the third category of factors, only one intermediate variable of contraception is considered: the desire of the woman not to have an additional child. Table 1 below highlights the description, measurement and codes of control variables.

Empirical methods

In addition to descriptive statistics, this paper also uses an econometric model. To this end, it is worth recalling that the objective of the research is to analyze the association of women's bargaining power within couples with contraceptive use. Since contraceptive use is a dichotomous variable, a qualitative dependent variable model, and more specifically a logistic regression model, is used.

Specification of logistic regression model. The logistic regression model can be formalized using the following equation:

$$\log(p / 1 - p) = \beta_0 + \beta_1 WBP_i + \beta_2 X_i + \varepsilon_i \quad (1)$$

Where $(p/1-p)$ represents the chances of using a modern contraceptive method by the woman i . WBP_i corresponds to the bargaining power of the woman i and is measured by WBPCI. β is the coefficient which allows measurement of the association between the woman's bargaining power and modern contraceptive use. X is the matrix of control variables, and γ is the vector of parameters which permits assessment of the relationships between the control variables contained into X and contraceptive use. ε is the error term independently and identically distributed. The regression results were presented by the estimated odds ratio (OR) and adjusted odds ratio (AOR) with 95% confidence interval (95% CI).

Software. The software used to carry out the empirical analyzes of this study is STATA, version 15 (StataCorp, 2017).

Results

Results of descriptive statistics

Table 2 below highlights the descriptive statistics of the variables of the study. It appears that among married women at the time of the survey, only 17.7% used a modern contraceptive method, 5.68% used a traditional method and 76.58% were not using any method.

Concerning the bargaining power of women within the couple, the average value of WBPCI is 0.134 (knowing that the maximum value is 1.586 and the minimum is -2.79). Looking at control variables, 20.7% of married women were 25–29 of age, 19.4% were aged 30–34, 15.8% were aged 35–39, 15.2% were aged 20–24, 12% were aged 40–44, 9.7% were aged 45–49, and only 7.1% were 15–19 of age. Among these women, the most representative level of education is the secondary level (36.9%), followed by the primary level (32.8%), uneducated (25.1%) and the higher level (5.2%). In addition, most of partners have a secondary level of education (36.9%), followed by primary level (31.2%), uneducated (23.1%) and the higher level (8.8%). Almost all partners (96.8%) had an occupation in the 12 months preceding the survey. The most prevalent religion among married women is Christianity (68.4%), with 27.9% of Muslim religion. 33% of women have 1–2 living children with their partners, 32.1% have 3–4 living children, 19.3% have 5–6 living children, 9.9% have more than 6 children and 6.8% have no living children. Regarding household wealth, 23.3% of average wealth, 21% of household were poor, 20.1% were rich, 18.2% were very rich and 17.4% were very poor. In addition, 52.3% of households lived in rural areas. Regarding media exposure variables, 51.4% of married women watched TV at least once a week, 37.7% listened to the radio at least once a week and 16.3% read newspapers at least once a week. Finally, for the intermediate variables of contraception, 33.8% of married women no longer wanted to have children.

³ The four dimensions selected have a total of 16 indicators. After applying the principle of First Axis Ordering Consistency (FAOC) as prescribed by Asselin (2002), from the results of the first iteration of the MCA, it appears that all these indicators are appropriate for the construction of the WBPCI.

Table 1. Description, measurement and codes of control variables.

Variables	Description and measurement
<i>Sociodemographic, economic and cultural factors</i>	
Age of woman	Age (number of years) of the woman at the time of the survey measured by three dummy variables: 15–24, 25–34, and 35–49.
Education of woman	The highest level of education attained by women measured by four dummy variables: uneducated, primary, secondary and higher level.
Education of partner	The highest level of education attained by partner measured by four dummy variables: uneducated, primary, secondary and higher level.
Status of occupation of husband	Measured by a binary variable taking the value 1 if the husband worked in the 12 months preceding the survey and 0 if not.
Religion of woman	Represents the religious affiliation of the woman measured by three dummy variables: Muslim, Christian and other religions.
Number of living children	Represents the number of living children of the couple, and measured by 5 dummy variables: 0, 1–2, 3–4, 5–6 and more than 6.
Household wealth	Represents the household's living standard and measured the wealth index, which categorizes household into five wealth quintiles: poorest, poor, average, rich and richest ⁴ .
Place of residence of household	Measured by a binary variable taking the value 1 if the household lived in a rural area and 0 if they lived in an urban area ⁵ .
<i>Factors of exposure to media</i>	
Exposure to TV	Number of times the woman watched TV per week and measured by a dummy variable: 1 if at least once per week and 0 if not once.
Exposure to radio	Number of times the woman listened to the radio per week and measured by a dummy variable: 1 if at least once per week and 0 if not once.
Exposure to newspapers	Number of times the woman read newspapers per week and measured by a dummy variable: 1 if at least once per week and 0 if not once.
<i>Intermediate variables of contraception</i>	
Desire of the woman to have no more children	Measured by a dummy variable taking the value 1 if the woman no longer wanted to have children and 0 if not.

Logistic regression model results

Recall that the estimation of the logistic regression model makes it possible to highlight the association of the woman's bargaining power within the couple with contraceptive use. The results of this estimation are contained in the Table 3. This table have two models: an unadjusted model and an adjusted model. The unadjusted model is the one that includes only women's bargaining power as the independent variable, while

the adjusted model includes control variables in addition to bargaining power of women. The results of the unadjusted model estimation illustrate that women's bargaining power was significantly associated with the likelihood of using a modern contraceptive method. Specifically, it emerges that an increase in the WBPCI was associated with higher chances of contraceptive use (OR = 1.352; 95% CI: 1.257, 1.454; $p < 0.01$). From the adjusted model, the association between WBPCI and contraceptive use is not more significant. By looking at other determinants of contraceptive use, it emerges that the woman's age and religion, husband's occupation and the place of residence (rural) were significantly associated with lower odds of using a modern contraceptive method, while women's education, husband's education (higher), household wealth (poor), number of children (3–4, 5–6, 6+), and exposure to radio and newspapers were significantly associated with higher odds of using modern contraception.

⁴ The wealth index is generated by the DHS program with a principal component analysis using data on a household's ownership of selected assets, such as televisions and bicycles; materials used for housing construction; and types of water access and sanitation facilities.

⁵ According to the classification of the National Institute of Statistics, the urban area includes cities of at least 10,000 inhabitants and, the rural area includes small agglomerations of less than 10,000 inhabitants.

Table 2. Descriptive statistic of variables.

Variables	Mean/proportion	Std. Dev.	Min	Max
Contraceptive use (modern)	0.177	0.42	0	1
WBPCI	0.134	0.943	-2.79	1.586
Age of woman				
15–19	0.071	0.258	0	1
20–24	0.152	0.359	0	1
25–29	0.207	0.405	0	1
30–34	0.194	0.395	0	1
35–39	0.158	0.365	0	1
40–44	0.12	0.325	0	1
45–49	0.097	0.296	0	1
Education of woman				
Uneducated	0.251	0.434	0	1
Primary education	0.328	0.469	0	1
Secondary education	0.369	0.482	0	1
Higher education	0.052	0.223	0	1
Education of partner				
Uneducated	0.231	0.422	0	1
Primary education	0.312	0.463	0	1
Secondary education	0.369	0.483	0	1
Higher education	0.088	0.283	0	1
Occupation status of partner	0.968	0.177	0	1
Religion of woman				
Muslim	0.279	0.449	0	1
Christian	0.684	0.465	0	1
Other	0.037	0.189	0	1
Number of living children				
0	0.068	0.252	0	1
1–2	0.33	0.47	0	1
3–4	0.311	0.463	0	1
5–6	0.193	0.395	0	1
6+	0.099	0.298	0	1
Household wealth				
Poorest	0.174	0.379	0	1
Poor	0.21	0.407	0	1
Average	0.233	0.423	0	1
Rich	0.201	0.401	0	1
Richest	0.182	0.386	0	1

Variables	Mean/proportion	Std. Dev.	Min	Max
Place of residence: Rural	0.523	0.499	0	1
Exposure to television	0.514	0.5	0	1
Exposure to radio	0.377	0.485	0	1
Exposure to newspaper	0.163	0.37	0	1
Desire to have no more children	0.338	0.473	0	1

WBPCI, Woman Bargaining Power Composite Index.

Table 3. Results of logistic regressions on contraceptive use.

VARIABLES	Unadjusted Model		Adjusted Model	
	OR	95%CI	OR	95%CI
WBPCI	1.352***	(1.257, 1.454)	0.996	(0.918, 1.081)
Age of woman (ref=15–24)				
25–34			0.602***	(0.503, 0.719)
35–49			0.260***	(0.208, 0.323)
Education of woman (ref=uneducated)				
Primary			2.307***	(1.7955, 2.962)
Secondary			2.802***	(2.113, 3.712)
Higher			2.685***	(1.775, 4.059)
Education of husband (ref=uneducated)				
Primary			1.188	(0.949, 1.485)
Secondary			1.116	(0.884, 1.409)
Higher			1.375*	(0.993, 1.902)
Occupation status of husband			0.391***	(0.308, 0.495)
Religion (ref=other)				
Muslim			0.149***	(0.111, 0.198)
Christian			0.323***	(0.246, 0.422)
Household wealth (ref=poorest)				
Poor			1.262*	(0.982, 1.620)
Middle			1.197	(0.912, 1.571)
Richer			1.059	(0.768, 1.460)
Richest			1.061	(0.739, 0.1521)
Place of residence (ref=urban)			0.531***	(0.445, 0.633)
Number of children (ref=none)				
1–2			0.948	(0.767, 1.169)
3–4			1.570***	(1.256, 1.962)
5–6			1.987***	(1.517, 2.601)
6+			2.098***	(1.482, 2.968)

VARIABLES	Unadjusted Model		Adjusted Model	
	OR	95%CI	OR	95%CI
Exposure to TV			0.961	(0.781, 1.181)
Exposure to Radio			1.302***	(1.112, 1.522)
Exposure to News Paper			1.301***	(1.083, 1.562)
Desire to have no more children			1.380***	(1.159, 1.641)
Observations	6,546		6,546	
Prob > chi2	0.000		0.000	
Log pseudolikelihood	-3025.17		-2797.14	
Model AIC	6054.35		5644.28	

*** p<0.01, ** p<0.05, * p<0.1. dydx, marginal effects. WBPCI, Woman Bargaining Power Composite Index.

Discussion

The association of the woman's bargaining power with contraceptive use

The results obtained from the logistic regression model (first column of the Table 3) illustrate that women's bargaining power within couples was significantly associated with higher chances of using a modern contraceptive method. This result can be explained by the fact that in developing countries, women are allocating more and more time and resources to income-generating activities and education. In fact, the Cameroon DHS surveys show that the proportion of women at secondary and higher levels who are economically active increased between 2004 and 2018 from 39.1% to 51.3% respectively (and 46.2% in 2011). Thus, getting pregnant would be a hindrance to these ambitions. Therefore, if they have high bargaining power, and therefore a strong ability to make choices and influence decision-making in the desired direction, the likelihood that they will use contraception will be high. This result is similar to that found by Klomegah (2006); Patrikar *et al.* (2014); Rwege (2003), and recently by Juraqulova & Henry (2020) who found that in Tajikistan the probability of using contraception is higher for a woman who has a say in the decision to control births and has both control over her own health care and financial means to get medical help than a woman who does not have these choices. On the other hand, it is far from those of DeRose & Ezech (2010) who found that the decision-making power of the woman (at the individual level) has no effect on the use of contraception in Uganda. However, when controlling for covariates, the association between the bargaining power of the woman with contraceptive use lose its significance.

Other determinants of contraceptive use

Compared to women aged 15–24, women aged 35–49 and 25–34 have lower chances to use modern contraception, suggesting that the older the woman, the more her capacities of procreation decrease, and these capacities are canceled out

when she is menopausal. Education of woman is also a key determinant of contraceptive use. In fact, compared to uneducated women, women with primary, secondary or higher education have higher chances to use modern contraception. This can be explained by the fact that relative to uneducated women, those who are educated clearly apprehends the importance of using contraception to control her fertility (through spacing or limitation) and to avoid unintended pregnancies. The challenge here is to focus on quality children, that is, children who can attend school and who can receive adequate health care. With regard to the religion of women, it appears that the Muslim religion was significantly associated with lower odds of contraceptive use. Indeed, this result can be justified since according to the report of the DHS 2018, the North Region is not only the area where we find the bulk of the Muslim population (75.13% in Adamawa region, 52.33% in the Far-North region and 48.63% in the North region), but it is also the part of the country where the total fertility rate is highest (5.9 on average in the Far-North, 6.2 in the North and 4.6 in Adamaoua). The Christian religion was also associated with low chances of modern contraception.

Women have greater chances to use modern contraception when their husbands are educated, compared to women with uneducated husbands. But the husband's occupation status was significantly associated with lower odds of contraceptive use. Relatively to household wealth, women from poor households have higher chances of contraceptive use compared to women from poorest households. Moreover, the likelihood of using modern contraception is low in households living in rural areas, compared to those living in urban areas. This may reflect the fact that the impact of promotion and counseling campaigns for the use of contraceptive methods are weak in rural areas. The higher the number of living children of a couple, the more likely the woman will use contraception to reduce the burden she may face. With regard to the exposure variables to the mass media, exposure to radio and exposure to

newspapers are associated with higher odds of contraceptive use, which highlights the strong potential that these medias have on an individual's behaviors with regard to contraception. Finally, the desire of a woman to have no more children was linked to lower probability of using contraception.

Limitations of the study

This work is subject to two main limitations. Firstly, the *woman* module of the 2018 DHS data does not include the responses reported by husbands on decision-making in the household. This is why the paper focused on the responses reported by women only. This approach may be biased to the extent that these responses are likely to mask the reality of the couple's life and the true status of each spouse within the household. Secondly, women's bargaining power may be related to certain unobservable factors that also influence contraceptive use, suggesting the potential endogeneity of bargaining power. This aspect has been neglected in the analysis produced. Despite these limitations, this is the first study to analyze the relationship between women's bargaining power and modern contraception in Cameroon, using a recent and credible dataset. It therefore constitutes a reference for several future investigations.

Conclusions

The objective of this paper was to analyze the association of women's bargaining power within couples with contraceptive use based on Demographic and Health Survey realized in 2018 in Cameroon. Contraceptive use is measured by a binary variable (modern contraception or not), and the bargaining power of women is measured by WBPCI, constructed by a multiple correspondence analysis on the indicators that make up the four dimensions selected for its apprehension: the role in the decision-making on key aspects of household life, control over financial resources, economic position in the household and women's attitudes towards husband's violence. The logistic regression model was used as the econometric method, and the results suggest that the woman's bargaining power within the couple was significantly associated with higher chances of using a modern contraceptive method. In addition, woman's education was strongly linked to greater chances of contraceptive use. The religion of women, husband's education (higher) and occupation status, household wealth, place of residence, exposure to medias (radio, and newspapers) the desire of a woman to have no more children of contraception are other determinants of contraceptive use.

Finally, this research is relevant in terms of economic policy implication. Indeed, the public health policy in force aims to significantly reduce the high maternal mortality rates by significantly increasing the number of women on modern contraception from 16.1% in 2011 to 35% by 2027. Firstly, since our findings postulate that women with high bargaining power are able to use the most appropriate reproductive health care, policy makers need to look at the social policies of status revitalization and women's empowerment within households with much acuity. Secondly, policy makers need to offer more opportunities and educational resources to encourage women to progress in education.

Data availability

Underlying data

The 2018 Cameroon Demographic and Health and Multiple Indicators Survey dataset used for this study is available online from the DHS website under the *Woman's Recode* subsection:

https://dhsprogram.com/data/dataset/Cameroon_Standard-DHS_2018.cfm?flag=1. Data can be accessed by applying through the DHS website. Registration is required and access is granted for legitimate research purposes. Further information about data access can be found at : <https://dhsprogram.com/data/Access-Instructions.cfm>.

Extended data

Figshare: Extended data of the paper "The effect of women's bargaining power within couples on contraceptive use in Cameroon".

<https://doi.org/10.6084/m9.figshare.11719497> (Tchakounte, 2021b).

Data are available under the terms of the [Creative Commons Zero "No rights reserved" data waiver](#) (CC0 1.0 Public domain dedication).

Software availability

Source code available from: <https://github.com/DimitriTchakounte/Stata-Do-file.git>

Archived source code at time of publication: <https://doi.org/10.6084/m9.figshare.11371680> (Tchakounte, 2021a)

License: MIT License

References

- Adjiwanou V, Bougma M, LeGrand T: **The effect of partners' education on women's reproductive and maternal health in developing countries.** *Soc Sci Med.* 2018; **197**: 104–115.
[PubMed Abstract](#) | [Publisher Full Text](#)
- Allendorf K: **Do Women's Land Rights Promote Empowerment and Child Health in Nepal?** *World Dev.* 2007; **35**(11): 1975–88.
[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)
- Aiken LS, West SG: **Multiple regression: testing and interpreting**

interactions. Newbury Park, CA: Sage. 1991.

Reference Source

Asselin LM: **Multidimensional Poverty.** Theory, Québec, Institut de Mathématique Gauss. 2002; 33.

Becker S: **Couples and reproductive health: a review of couple studies.** *Stud Fam Plann.* 1996; **27**(6): 291–306.

[PubMed Abstract](#) | [Publisher Full Text](#)

Beegle K, Frankenberger E, Duncan T: **Bargaining Power within Couples and**

Use of Prenatal and Delivery Care in Indonesia. *Stud Fam Plann.* 2001; **32**(2): 130–46.

[PubMed Abstract](#) | [Publisher Full Text](#)

Blanc AK: **The effect of power in sexual relationships on sexual and reproductive health: an examination of the evidence.** *Stud Fam Plann.* 2001; **32**(3): 189–213.

[PubMed Abstract](#) | [Publisher Full Text](#)

Chapagain M: **Conjugal power relations and couple's participation in reproductive health decision-making: exploring the links in Nepal.** *Gend Technol Dev.* 2006; **10**(2): 159–189.

[Publisher Full Text](#)

DeRose LF, Ezech AC: **Decision-Making patterns and contraceptive use: evidence from Uganda.** *Popul Res Policy Rev.* 2010; **29**(3): 423–439.

[Publisher Full Text](#)

Doss C: **The Effects of Intrahousehold Property Ownership on Expenditure Patterns in Ghana.** *J Afr Econ.* 2006; **15**(1): 149–180.

[Publisher Full Text](#)

Doss C: **Intrahousehold Bargaining and Resource Allocation in Developing Countries.** *The World Bank Research Observer.* 2013; **28**(1): 52–78.

[Publisher Full Text](#)

Ewerling F, Lynch WJ, Victora CG, *et al.*: **The SWPER index for women's empowerment in Africa: development and validation of an index based on survey data.** *Lancet Glob Health.* 2017; **5**(9): e916–e923.

[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)

Friedberg L, Webb A: **Determinants and Consequences of Bargaining Power in Households.** Center for Retirement Research at Boston College, Working Paper N°13. 2006.

[Publisher Full Text](#)

Greco S, Ishizaka A, Tasiou M, *et al.*: **On the Methodological Framework of Composite Indices: A Review of the Issues of Weighting, Aggregation, and Robustness.** *SocIndic Res.* 2019; **141**: 61–94.

[Publisher Full Text](#)

Habibov N, Barrett BJ, Chernyak E: **Understanding women's empowerment and its determinants in post-communist countries: Results of Azerbaijan national survey.** *Womens Stud Int Forum.* 2017; **62**: 125–135.

[Publisher Full Text](#)

Haider MR, Qureshi ZP, Khan MM: **Effects of women's autonomy on maternal healthcare utilization in Bangladesh: Evidence from a national survey.** *Sex Reprod Healthc.* 2017; **14**: 40–47.

[PubMed Abstract](#) | [Publisher Full Text](#)

Hanmer L, Klugman J: **Exploring Women's Agency and Empowerment in Developing Countries: Where do we stand?** *Fem Econ.* 2016; **22**(1): 237–263.

[Publisher Full Text](#)

Haque SE, Rahman M, Mostofa G, *et al.*: **Reproductive health care utilization among young mothers in Bangladesh: does autonomy matter?** *Womens Health Issues.* 2012; **22**(2): e171–180.

[PubMed Abstract](#) | [Publisher Full Text](#)

Hou X, Ma M: **The effect of women's decision-making power on maternal health services uptake: evidence from Pakistan.** *Health Policy Plan.* 2013;

28(2): 176–184.

[PubMed Abstract](#) | [Publisher Full Text](#)

Juraqulova JH, Henry EB: **Women's bargaining power and contraception use in post-Soviet Tajikistan.** *Central Asian Survey.* 2020; **39**(4): 520–539.

[Publisher Full Text](#)

Kamiya Y: **Women's autonomy and reproductive health care utilisation: empirical evidence from Tajikistan.** *Health Policy.* 2011; **102**(2–3): 304–313.

[PubMed Abstract](#) | [Publisher Full Text](#)

Klomegah R: **Spousal communication, power, and contraceptive use in Burkina Faso.** *West Africa, Marriage & Family Review.* 2006; **40**(2–3): 89–105.

[Publisher Full Text](#)

Lépine A, Strobl E: **The Effect of Women's Bargaining Power on Child Nutrition in Rural Senegal.** *World Dev.* 2013; **45**: 17–30.

[Publisher Full Text](#)

Mahmud S, Shah NM, Becker S: **Measurement of Women's Empowerment in Rural Bangladesh.** *World Dev.* 2012; **40**(3): 610–619.

[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)

Nikiema B, Haddad S, Potvin L: **Women Bargaining to Seek Healthcare: Norms, Domestic Practices, and Implications in Rural Burkina Faso.** *World Dev.* 2008; **36**(4): 608–624.

[Publisher Full Text](#)

Noumbissi A, Sanderson JP: **Communication about family planning in couples in Cameroun: The fertility norms and strategies of couples.** *Population.* 1999; **54**(1): 131–144.

Nunnally JC: **Psychometric theory (2nd ed.).** New York: McGraw-Hill. 1978.

[Reference Source](#)

Patrikar SR, Basannar DR, Sharma MS: **Women empowerment and use of contraception.** *Med J Armed Forces India.* 2014; **70**(3): 253–6.

[PubMed Abstract](#) | [Publisher Full Text](#) | [Free Full Text](#)

Richardson RA: **Measuring women's empowerment: A critical review of current practices and recommendations for researchers.** *Soc Indic Res.* 2018; **137**(2): 539–557.

[Publisher Full Text](#)

Rwenge M: **Statut de la Femme et Utilisation des Condoms au Cameroun.** *Afr J Reprod Health.* 2003; **7**(2): 74–88.

[Publisher Full Text](#)

StataCorp: **Stata Statistical Software: Release 15.** College Station, TX: StataCorp LLC, 2017.

Tchakounte D: **Code source (Stata Do file).** *figshare.* Software. 2021a. <http://www.doi.org/10.6084/m9.figshare.11371680>

Tchakounte D: **Extended data of the paper "The effect of women's bargaining power within couples on contraceptive use in Cameroon".** *figshare.* Figure. 2021b. <http://www.doi.org/10.6084/m9.figshare.11719497>

Westeneng J, D'Exelle B: **How Economic Empowerment Reduces Women's Reproductive Health Vulnerability in Tanzania.** *J Dev Stud.* 2015; **51**(11): 1459–1474.

[Publisher Full Text](#)

Open Peer Review

Current Peer Review Status: ? ✗ ✓

Version 2

Reviewer Report 19 May 2021

<https://doi.org/10.21956/gatesopenres.14509.r30703>

© 2021 Guilkey D. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

David K. Guilkey

Carolina Population Center, Department of Economics, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

No further comments.

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Econometric Methods and program evaluation

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard.

Version 1

Reviewer Report 06 August 2020

<https://doi.org/10.21956/gatesopenres.14260.r29213>

© 2020 Guilkey D. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

David K. Guilkey

Carolina Population Center, Department of Economics, University of North Carolina at Chapel Hill, Chapel Hill, NC, USA

This paper uses Demographic and Health Survey (DHS) data for Cameroon from 2011 to estimate a model of the determinants of contraceptive use. The key explanatory variable is an index for the

strength of a woman's bargaining power within couples which is constructed using multiple correspondence analysis. The main conclusion is that woman's bargaining power has a positive and significant effect on contraceptive use and this result is robust to a selectivity correction used to control for dropping pregnant women from the contraceptive use equation.

Specific comments:

1. The multiple correspondence analysis (MCA) is not adequately described. For example, I assume that the authors used the first dimension from the MCA to construct their index but this is not clearly stated. It would also be useful to know what percent of the variation is explained by this first dimension.
2. It would be nice to know the breakdown of the methods that are included in the 22.9% contraceptive use. In particular, what is the percentage of traditional use? If it is large enough, it would be useful to see a multinomial logit model with three categories: non use, modern use, and traditional use since it may be the case that woman's bargaining power could have different effects for modern versus traditional use.
3. The authors do not clearly state whether or not their model demonstrates causality or association. It is likely that their index could be considered endogenous to contraceptive use. It is also possible that exposure to radio and television as well as the desire for no more children are endogenous. If these possibilities are true, then the model is one of association.
4. It is not clear to me that the Heckman selection model is a useful addition. First of all, the identifying variable they use as an exclusion restriction from the contraceptive use equation is ideal family size and they state that this variable is exogenous. This is almost certainly not the case and it has been found to be a direct determinant of contraceptive use in other empirical work (see, for example, Cronin *et al.*, 2018¹). Second, selection models tend to be unstable and not robust to minor variations in the model specification.
5. Therefore, I would recommend dropping the selection analysis and then switching to multinomial logit for the determinants of contraceptive use.

References

1. Cronin CJ, Guilkey DK, Speizer IS: The effects of health facility access and quality on family planning decisions in urban Senegal. *Health Econ.* **27** (3): 576-591 [PubMed Abstract](#) | [Publisher Full Text](#)

Is the work clearly and accurately presented and does it cite the current literature?

Partly

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Econometric Methods and program evaluation

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Reviewer Report 31 July 2020

<https://doi.org/10.21956/gatesopenres.14260.r29255>

© 2020 Lépine A. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Aurélia Lépine

Institute for Global Health, University College London, London, UK

This paper has several issues that would need to be addressed before indexing:

1. The authors infer causality in the abstract and in other sections of the paper (method, result, discussion) between women's bargaining power and contraceptive use while the analysis cannot say anything about a causal relationship.
2. There is not enough information on the MCA and on the variables included in the women's bargaining power index. Also authors do not discuss potential issues in relying on self-report. In this context I see two main issues 1) social desirability bias and 2) the fact that women who have disproportionate power in the household in context in which this clashes with social norms may actually be more a sign of woman's neglect by her husband or conflict between spouses rather than women's bargaining power.
3. The sample excluded pregnant women but it is not clear if it excluded women who were not sexually active. In addition, given that it seems that several measures of women's power captured decision-making in the couple it was not clear why the analysis did not focus on married women or women living with their partner.
4. The dependent variable should have been coded 0 if the woman was using a traditional

contraceptive method.

5. Bivariate analysis does not add anything to the multivariate analysis result and should be removed. In fact, the relationship between women's bargaining power and contraceptive is driven by confounding factors.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

No

Are sufficient details of methods and analysis provided to allow replication by others?

No

If applicable, is the statistical analysis and its interpretation appropriate?

No

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Partly

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Health economics.

I confirm that I have read this submission and believe that I have an appropriate level of expertise to state that I do not consider it to be of an acceptable scientific standard, for reasons outlined above.

Reviewer Report 27 April 2020

<https://doi.org/10.21956/gatesopenres.14260.r28708>

© 2020 Adjiwanou V. This is an open access peer review report distributed under the terms of the [Creative Commons Attribution License](#), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

Vissého Adjiwanou

Department of Sociology, Université du Québec à Montréal (UQAM), Montréal, QC, Canada

This study is important to show the importance of women's decision-making autonomy over their use of contraception, which still remains at fairly low levels in Cameroon. The analyses are well-conducted with particular attention to possible problems of sample selection bias. This study has

been conducted several times in different contexts and this study does not innovate enough in this direction.

That said, there are some corrections to be made to the article.

1. The construction of the independent variable: the authors used the "multiple correspondence analysis" approach to build their autonomy indicator. Then, they subtracted the minimum of the indicator values to have positive values. The problem with this construction is that it is difficult to interpret it as such, and the difficulty of comparing it between countries (which obviously is not the case here). The change of axis is to allow a good interpretation of the intercept in a regression, otherwise, I don't see the importance of this change.
2. The argument of the threshold to use to cut the indicator is a problem, but one can easily proceed as in the construction of poverty quintiles by dividing the indicator into 5 parts (like in the dhs). It can still be used as a quantitative variable in regressions.
3. Too much emphasis is placed on maternal mortality, we have to put this into perspective a little and look at the primary role of contraception which is to limit fertility level of for birth spacing.
4. The authors limited their analysis to couples. I do not see the relevance of this limitation here especially since the partner information that is used is the same that is available for married women with a larger sample. It is better to justify the choice of the sample, otherwise, it is more important to work on all married women I think.
5. In terms of results, the bivariate analysis is not properly conducted. It reversed the place of the dependent and independent variable. For example, in Figure 1, the authors show that the autonomy index is higher for women who use contraception than for other women who don't. The opposite reasoning is the way to go; that contraceptive use is higher among women who have a high index. But the problem is precisely that with a categorical dependent variable and a continuous independent variable, there is no (simple) way to make a bivariate description.
6. The results presented in Table 3 are therefore poorly presented. To find out, for example, whether a woman's level of education is associated with the use of contraception, the frequencies must be presented in row and not in the column as shown in the table.
7. The Heckman model uses an exogenous variable. In this study, the exogenous variable used is "ideal family size of the woman". A condition of the exogenous variable is that it does not explain the dependent variable of the second equation (here contraception). However, it is obvious that this variable influences the use of contraception. The ideal number of children is an important variable in the woman's decision to use contraception.

Is the work clearly and accurately presented and does it cite the current literature?

Yes

Is the study design appropriate and is the work technically sound?

Partly

Are sufficient details of methods and analysis provided to allow replication by others?

Yes

If applicable, is the statistical analysis and its interpretation appropriate?

Partly

Are all the source data underlying the results available to ensure full reproducibility?

Yes

Are the conclusions drawn adequately supported by the results?

Yes

Competing Interests: No competing interests were disclosed.

Reviewer Expertise: Demography, quantitative methods, sub-Saharan Africa

I confirm that I have read this submission and believe that I have an appropriate level of expertise to confirm that it is of an acceptable scientific standard, however I have significant reservations, as outlined above.

Author Response 23 Sep 2021

Dimitri TCHAKOUNTE, University of Yaounde II, Yaounde, Cameroon

Responses on the report of Vissého Adjiwanou, Department of Sociology, Université du Québec à Montréal (UQAM), Montréal, QC, Canada.

The corrections suggested by the reviewer are very useful. We have thus introduced in the revised paper most of his corrections.

Comment 1: I agree with this comment since in the new version, the values of the Woman Bargaining Power Composite Index (WBPCI) are now comprising between -2.79 and 1.586.

Comment 2: We do not affirm that an index should not be categorized (as you explained, the DHS program use such a method), but we refer on the argument suggested by Richardson (2018) to justified why our Index has not been categorized.

Comment 3: As the reviewer suggested, the emphasis has been placed on the primary role of contraception rather than maternal mortality.

Comment 4: We follow the instruction of the reviewer concerning this comment. That is why in the revised paper, the study considers only married women or women living in a union with a partner.

Comment 5: The reviewer is right. We removed the bivariate analysis in the revised paper.

Comment 6: Effectively, ideal family size of the woman seems to be an inadequate exogenous variable. We thus removed this analysis from the revised paper as also suggested by David K. Guilkey.

Competing Interests: No competing interests were disclosed.