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Searching the nexus between women empowerment and female genital cutting/mutilation

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Female Genital Cutting (FGC) or Female Genital Mutilation (FGM) refers to all procedures involving partial or total removal of the external female genitalia or other injuries on the female genital organs for non-medical reasons. Usually, it is done over girls before the age of puberty. The practice can cause short- and long-term health complications, including chronic pain, infections, increased risk of HIV transmission, depression, birth complications, infertility and, in the worst cases, death.
An internationally accepted classification identifies four main types of practices ranging from the partial or total removal of the clitoris to infibulation, including other types of modification like stretching, cauterization, piercing, etc. FGM/C is currently quite common in Africa and the Middle East, spanning at least in 29 countries and affecting over 200 million girls and women (Unicef, 2019). Evidence suggests that the practice also exists in other countries such as Colombia, Jordan, Oman, Saudi Arabia and parts of Indonesia and Malaysia, and among groups of migrants in Europe and North America as results of migration flows.
The reasons why female genital mutilations are performed vary from one region to another as well as overtime and include a mix of factors within families and communities. In general, where FGM/C is a strong social norm, the pressure of the community to conform to what others do and have been doing are strong motivations to perpetuate the practice. FGM/C is often considered part of raising a girl, and a way to prepare her for adulthood and marriage. Also, FGM/C aims to ensure premarital virginity and marital fidelity. They are associated with cultural ideals of femininity and modesty, which include the notion that girls are clean and beautiful after the removal of body parts considered unclean, unfeminine or male.
Two strategies have been implemented to eradicate FGM/C. One focuses on the serious health consequences that they have on women's body and mental health[1]. The second considers a wider educational and cultural framework, taking into account the FGM/C as a violation of human rights. The latter, often called "empowerment approach"[2], is included in Goal 5 of the SDGs, which focuses on gender equity. Following this approach, empowerment is meant to raise awareness into communities and to obtain wider dissemination and acceptability of the opposition to FGM/C. Behavioral change at community level is seen in literature as tantamount to a good success of any intervention, for individuals mutually reinforce themselves throughout time.
Indeed, FGM/C is internationally recognized as an extreme violation of the rights of women and girls since it violates the principles of equality and non-discrimination based on sex, as well as the right to freedom from torture or cruel, inhuman or degrading treatments. In 2008, many UN agencies wrote a common statement (WHO, 2008) to fully condemn the practice of FGM/C in all its forms and reasons. They specifically called it a violation of human rights and a discrimination based on sex, rooted in gender inequality and power imbalance. The condemnation is well embodied in many of the most important and jus cogens related international conventions (the two covenants of 1966, the convention against torture – as written by the UN

[1] Approaches focusing on FGC as harmful practice have resulted in the increase of its medicalization, anyway condemned by - among others - United Nations Organizations (UNFPA, UNICEF).
[2] We will leave out of the scope of the present article the question whether other approaches based on criminalization of FGM/C have a strong efficacy or not.

committee against torture, the convention against discrimination and the ones for the protection of children and refugees) as well as other regional instruments (ECHR, African Charter).
For what concerns the global picture, decades of actions of International Agencies, governments, civil society, communities, and individuals accelerated the secular decline of FGM/C. The tendency to abandon the practice for most countries is reported in the DHS comparative report published in 2013, in terms of both numbers and different cohorts. Considering a fewer sample of countries, that are the ones we have chosen for the purpose of the present paper, the reduction is well enlightened comparing the prevalence among older and younger generations even if Mali, Togo, and Nigeria the difference is more negligible. Similarly, the positive attitude towards the practice is decreasing everywhere except for Nigeria, but the picture is much more fragmented. Younger women are more in favor to abandon the practice except for Cote d'Ivoire, Mali, Nigeria and Togo. If we look at the evolution of such different attitudes, the countries where we see the greatest change (above 10%) are Cote d'Ivoire and Egypt. [Table1]

Table 1 FGM/C prevalence and women who believe that female circumcision should be continued (%)

	Women circumcised (FGC)			Women who believe that female circumcision should be continued		
		Age (5-year groups)			Age (5-year groups)	
Country	Total	15-19	45-49	Total	15-19	45-49
Burkina Faso	75.8	57.7	89.3	9.3	10.3	11.7
Cote d'Ivoire	36.7	27.4	41.5	14.0	14.4	9.1
Egypt	87.2	69.6	97.1	53.9	37.9	64.8
Ethiopia	65.2	47.1	78.7	17.5	13.6	21.7
Mali	91.4	90.3	92.1	71.9	70.0	70.3
Nigeria	24.8	15.3	35.8	23.1	23.2	23.3
Togo	4.7	1.8	10.2	1.4	2.3	1.9

Source: DHS Programme

Empowerment is often indicated to play a role in the abandonment of FGM, though there is a limited number of researches on the evidence of the association between them (Afifi 2009, Finke 2006). This paper aims to contribute to evaluate the association between FGM/C and empowerment, controlling for several sociodemographic variables. Specifically, we'll enlighten if and how the empowerment of mothers is a protective factor for the next generation of girls in terms of discontinuation, controlling for the background and the socio-economic conditions of adult women in several African countries. We expect to confirm the positive effect of women's empowerment on discouraging the continuation of the practice, thus protecting daughters from the circumcision. Also, we will enlighten the strength of the empowerment dimension in different household and country contexts. Identifying and evaluating the significance of these factors form a basis for the implementation of appropriate policies and measurements aimed at reducing FGM/C on girls through active policies of changing women's positions in society. Potentially, this could generate a virtuous circle: for each child who is not circumcised, a risk-free third-generation is born.

1. The multidimensional concept of Empowerment

In literature, empowerment has come to identify independence at various levels, as a synonym of autonomy in decision-making (Rappaport, 1984 and Afifi, 2009). It represents the capacity to make choices and turn them into outcomes (Ewerling, 2017). It can refer both to individual and collective realities (an empowered social group is associated with a civic-engaged group) that can be self-confident and not dependent on others. When specific reference is made to women's empowerment (Rahman, 2013), the concept comes to

indicate the participation of women in the decision-making process: politics, economics, health system, reproductive preferences, etcetera. Each dimension may be seen as more central to others according to what is under investigation: when individuals are empowered, it means that they can "maximize the opportunities available to them *without* constraints" (Rahman, 2013). Thus, women are treated as an autonomous social group that has to take control over its opportunities and be able to influence processes as well as other social categories, in a way that is sustainable over time, from generation to generation. Dandikar (1986) describes it as a phenomenon of redistribution of power. That does not mean to act against other social groups but to follow a complementary logic in which other groups that exercise more power can share it in a more democratic and participatory logic. Women are not a self-standing social reality and thus, for instance, in the case of FGM/C, wider empowerment must also involve men or any other authority that influences the practice. It is inherent to the concept of autonomy that somebody has to be self-aware of his or her own needs, to be able to take care of them. The process through which people become aware of their interests is thus central. Empowerment cannot stop to mere participation in decision making: it must lead people to perceive themselves as able and entitled to truly make decisions (Ewerling, 2017). This might need to deconstruct negative social perceptions, to gain capacity and right to act and influence over decisions (Rahman 2013). It goes with a higher bargaining power the need for wider awareness and capacity to bargain and use the power obtained. Bargain indicates per se that relationships with other social groups must be taken into consideration. Therefore, education is one of the most important means to empower women with the knowledge, skills, and self-confidence necessary to increase their empowerment. It is true in many dimensions of empowerment that we can consider, from economic possibilities to health and reproduction choices (empowered women are more likely to use contraception and have better nutrition and health) (Ewerling, 2017). However, when looking at international efforts to expand education, as an example of one central dimension, we notice that basic education is still lacking in some areas of the world, in which 960 million people remain illiterate, of whom 2/3 are women (UNFPA and UNICEF, 2018). Moreover, such gender gap is reflected in many other dimensions of empowerment where UN agencies focus their attention; as from the report of UNFPA and UNICEF:

"*Countries should act to empower women and should take steps to eliminate inequalities between men and women as soon as possible by:*

a) Establishing mechanisms for women's equal participation and equitable representation at all levels of the political process and public life in each community and society and enabling women to articulate their concerns and needs;
b) Promoting the fulfilment of women's potential through education, skill development, and employment, giving paramount importance to the elimination of poverty, illiteracy, and ill-health among women;
c) Eliminating all practices that discriminate against women; assisting women in establishing and realizing their rights, including those that relate to reproductive and sexual health;
d) Adopting appropriate measures to improve women's ability to earn income beyond traditional occupations, achieve economic self-reliance, and ensure women's equal access to the labour market and social security systems;
e) Eliminating violence against women;
f) *Eliminating discriminatory practices by employers against women, such as those based on proof of contraceptive use or pregnancy status*
g) Making it possible, through laws, regulations and other appropriate measures, for women to combine the roles of child-bearing, breast-feeding and child-rearing with participation in the workforce."

It is recalled that the fight for empowerment is closely linked to the concept of gender equality: this means that the "rights, responsibilities and opportunities of individuals will not depend on whether they are born male or female" (Warth and Koparanova, 2012). Discriminatory behaviors run against human rights by

definition and the SDGs, embodied in the 2030 agenda for Sustainable Development, call for the fight against gender discrimination linked to the process of "empowerment for all women and girls"[3].

2. Data and method

Data originate from the Demographic Health Survey (DHS) programme, the most complete and updated database for developing countries with a standardized methodology comparable in time and space. To our ends, we selected the countries that present in the same survey both the module on empowerment and the one on FGM/C: Burkina Faso, Ivory Coast, Egypt, Ethiopia, Mali, Nigeria, and Togo[4]. [Table 2] Since the questions used to measure empowerment have been asked only to women in union, the paper focuses on currently married or cohabiting women. The total number of women aged 15-49 years old is slightly higher than one hundred thousand, differently distributed in the sample.

Table 2 Married women by country. Unweighted Sample

	N
Burkina Faso	13,392
Ivory Coast	6,453
Egypt	20,430
Ethiopia	9,824
Mali	8,737
Nigeria	27,274
Togo	6,360
Total	92470

Source: DHS Programme

The critical information of our investigation, the dependent variable, is the opinion of women on the continuation of the practice. Women were asked whether they "think that female circumcision should be continued or should be stopped". The variable is coded 1 for "yes should be continued", otherwise 0, including also "it depends" and "don't know" since the focus is on the determinant of the continuation. Women were also asked on the knowledge of the practice, the personal experience of having undergone FGM/C and if daughters have had circumcision. The predictor variables include background information, wealth, religion, proximates of empowerment as education, employment, and other several variables on life course as the age at first cohabitation, the control on reproductive rights (as unmet need of contraception) and the fertility attitude (children ever born by age). Those dimensions take into account the life cycle events that may exercise and influence women's autonomy and gender equality.

[3] Fourth World Conference on Women, Beijing, 1995

[4] The most recent DHS surveys where: 2010 for Burkina Faso, 2013-14 for Togo, 2015 for Egypt and Mali, 2016 for Ivory Coast and Ethiopia, 2016-17 for Nigeria. Also, Chad and Tanzania carried out surveys including both sections (respectively in 2014-15 and 2015-16), but Mali has been excluded because almost 48% of the question about the continuation of the practice are missing, while Tanzania presents to many missing values over the religion control variable.

Table 3. Operational definition of variables

	Dimension	Coding
FGM	Female circumcision should be continued or should it be stopped	1 yes, 0 No, depends/don't know
	Has respondent ever been circumcised	1 yes; 0 no
Socio economic variable	Age	Years
	Woman's education	Years of schooling
	Marital status	Married Living with partner
	Religion	Christian, Muslim, Animist, Others
	Respondent's current age	Years
	The employment status (currently work)	Dummy yes no
Lifetime marriage and fertility	Age at first cohabitation	Years
	The control of reproductive rights	Unmet need, 1 No need 2 using contraceptive
	Children ever born by age	1 if women have a number of total children ever born higher than the average of the peer of her region otherwise coded 0.
	Wealth index (household)	1-5 Poorest-Richest
Empowerment Indexes	Beating justified if wife goes out without telling husband	-1 yes, 0 Don't know, 1 No
	Beating justified if wife neglects the children	
	Beating justified if wife argues with husband	
	Beating justified if wife refuses to have sex with husband	
	Beating justified if wife burns the food	
	Person who usually decides on respondent's health care	-1 Other, 0 Joint, 1 respondent alone
	Person who usually decides on large household purchases	
	Person who usually decides on visits to family or relatives	

Two different dimensions identify the multidimensional empowerment measure: the decision-making on who decide on relevant family decisions and the attitude to violence through five questions on justifying beating from the husband[5] [Table 3]. Starting from those enquiries, we perform a Principal Component Analysis (PCA) following the methodology proposed by Ewerlin (Ewerlin et al., 2017), to obtain a score of empowerment at the individual level, as well as for each area/region of the countries. At the individual level, the empowerment score is recoded 1 if it is higher than the average score of the area where the woman lives, 0 if it is equal or lower. PCA is a multivariate statistical technique which minimize the number of variables into a smaller number of "dimensions". Mathematically, PCA creates uncorrelated indices or components from correlated variables. The uncorrelated indices are a linear weighted combination of the initial variables. In addition to that, PCA generates the components in descending order of importance, which, the first component illustrates the maximum amount of variation in variables, and the last component has the

[5] Following Ewerlin methodology (2017), Attitude on violence as well as Decision-making variables have been coded from underpowered (-1) to empowered (+1). Each component of the third dimension proposed by the authors – labeled social independence - have been included as single individual covariates.

minimum amount of difference. The individual index for each domain of women's empowerment has been calculated using the formula:

$$S_{ij} = \frac{[-(\sum_{v=1}^{15} \lambda_{vj}\mu_v + \sum_{v=1}^{15}(\lambda_{vj}x_{vi})]}{\sigma_j}$$

Where: Sij is the individual standardized scores for individual i and component j. Xij are the individual values for the eight variables included in the PCA analysis. σj are the standard deviations for the predicted scores of each component j. Since our main aim is to disentangle the relationship between empowerment and FGM/C support, we extracted three indexes reflecting Gender role violence, Life decision making and Autonomy, as from table 4.

Table 4: Principal component analysis factor loadings.

Original Variable	Gender role violence	Life decision-making	Autonomy
Beating not justified if wife goes out without telling husband	0.4810	0.1278	-0.1643
Beating not justified if wife neglects the children	0.4906	0.0774	-0.159
Beating not justified if wife argues with husband	0.4732	0.0467	-0.0423
Beating not justified if wife refuses to have sex with husband	0.4169	-0.0987	0.1764
Beating not justified if wife burns the food	0.3518	-0.3258	0.4396
Who usually decides on respondent's health care	0.0184	0.6033	0.1757
Who usually decides on large household purchases	0.0421	0.6975	0.0155
Who usually decides on visits to family or relatives	-0.0663	0.0952	0.8309

Table 4 shows the specific results of the PCA for each country selected. The three derived components in the table explained 39%, 25%, and 8% respectively, adding up 72% of the total variation. Thus, we retained them in all the seven countries and proceeded with varimax rotation. The results regarding the variables loaded in each component were similar for all countries. These similarities ensured a combined analysis of all datasets. Women's empowerment scores were calculated on these three components. The three components in table 4 represent three domains of empowerment. The first component is dominated by the first three questions on beating, labelled "Gender role violence". The second component is dominated by important decisions making and it is labelled "Life decision-making". The third component is dominated by the issue of personal freedom and it is labelled as "Autonomy". These three domains represent our women's empowerment indexes.

To proceed in the understanding, these empowerment dimensions have been divided into quartiles so to be able to assign every woman in one of them, according to its own score. The quartiles were defined at regional level, not national in order to keep a better link between the social environment and the woman subject to it. To do the analysis, we fit seven Linear Probability Models (LPMs) at the country level to allow comparison between countries (Mood, 2010). We will present results mainly in term of predicted probabilities of supporting FGM/C continuation according to each empowerment index quartile.

3. Country setting

The countries involved in this study have more affinities than differences in their social and demographic environments. All countries are similar in their economic development; six of them are close to the bottom of the World Bank ranking (World Bank Indicators). Life expectancy at birth is lower than 66 years for all but Egypt, the infant mortality and total fertility rate are among the highest in the world, indicating that they are at the beginning of the demographic transition. The contraceptive prevalence is relatively low and the unmet need for contraception is comparatively high. Their participation in the formal and paid job is low too. These life-cycle factors are relevant because the social context is not neutral on women's empowerment. In the pre-transitional societies, a huge portion of women's lifetime is related to childcare. The early age at marriage and the high adolescent fertility rate have, among others, negative effects on education, which in turn could reduce their ability to access at economic resources, health programs, legal rights and civil liberties without mention the imbalance in power dynamics between a woman and other household members.

Table 5 Demographic, social and economic indicators by countries

	TFT	Fertility adolescent rate (*1000)	Contraceptive prevalence (%)	Unmet need (%)	The last child not wanted(%)*	Infant mortality rate (*1000)	Life expectancy at birth	GDP per capita	Gender Gap score and (ranking)**
Burkina Faso	5.3	104	18.8	26.6	8.3	49	61	1,703	0.629 (129)
Cote d'Ivoire	4.7	118	20.4	23.8	21.6	59	57	3,601	0.627 (131)
Egypt	3.4	54	59.7	12.3	16.8	18	72	10,550	0.614 (135)
Ethiopia	4.3	67	36.2	25	19.3	39	66	1,730	0.656 (117)
Mali	6.0	169	12.2	26.9	13.3	62	58	2,014	0.582 (143)
Nigeria	5.5	107	16.0	21.9	8.7	76	54	5,338	0.621 (133)
Togo	4.4	89	21.4	33.5	26.0	47	60	1,430	0.618 (134)

**Among mothers; World Bank indicators, most recent data; ** World Economic Forum*

Not by chance, the latest figures proposed by The World Economic Forum show very low Gender Gap Scores among the seven countries, ranking over the 110th position except Tanzania. The gap is evident in all social and economic dimensions, although with different intensities. In education, literacy does not reach the equilibrium threshold, but the greatest gap in this field involves the third level (university degrees). The difference is less relevant in terms of employment, but it falls significantly among the estimated women's wages as well as in the field of the political and public representation (World Economic Forum, 2019). The GGI score is the result of exclusion processes, and in this sense, it partially expresses the unequal opportunities granted to women. The link of this to the FGM/C prevalence and the intentions to abandon it are the subject of analysis in the next paragraph. However, through this aggregate score, it is possible to observe a relationship: the higher the Gap, the higher the propensity to maintain the practice.

Also, the connection between prevalence and intentions is very high (0.87) as it results clear in Figure 1, as many countries are concentrated in both minimum and maximum quadrants. Specifically, of the nine countries examined, Togo and Tanzania and at the opposite side, Egypt and Mali show high-high or low-low prevalences and intentions. Ethiopia and Burkina Faso represent exceptions. They show the highest levels of opposition to the continuation of the practice despite their high prevalence, perhaps indicating that a transition towards the abandon of FGM/C is underway in both countries. This being true, it would describe

an evolution pattern shaped like an “L”, instead of a straight 45° line: countries would not decrease intention and prevalence together, but intention first and prevalence consequently, with the ageing of the young generations with less intention to support.

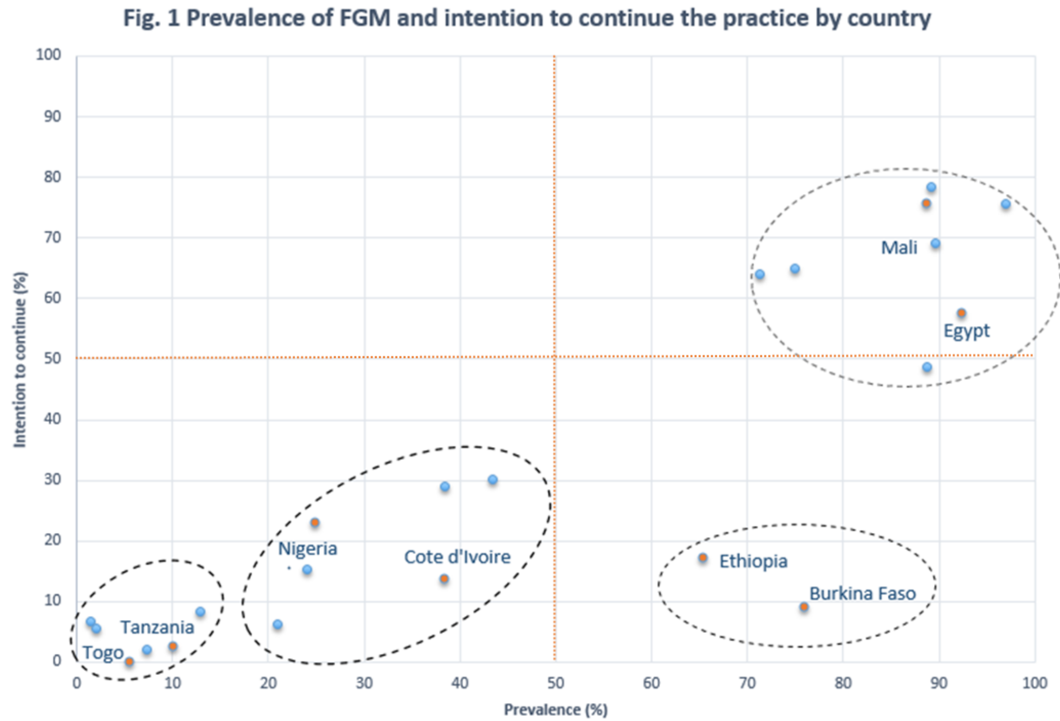


Fig. 1 Prevalence of FGM and intention to continue the practice by country

4. Preliminary results

Our data confirm the hypothesis of a relation between empowerment and FGM/C continuation. In all countries [table 6] empowerment has negative effects/coefficients on supporting FGM/C. The dynamic is very evident in correspondence to the first factors that summarize discriminating gender roles. Also, the factors called “family decision-making” and “Autonomy” show analogous pattern, still less sharp because in some cases the coefficients do not assume negative sign.

It should be noted that two other dimensions indirectly confirm the relevance of empowerment. One is education, confirmed as a protective factor for girls since as it increases the support to FGM/C decline. Employment in paid work, even if less unilaterally, goes in the same direction as it tends – under several conditions - to encourage women independence.

Tab 6 Linear Probability Model for women's support of FGM/C continuation

		Burkina Faso		Ivory Coast		Egypt		Ethiopia		Mali		Nigeria		Togo	
Respondent is cut	No	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Yes	0.0910***	(0.00459)	0.259***	(0.0142)	0.351***	(0.0118)	0.201***	(0.0133)	0.557***	(0.0193)	0.282***	(0.00787)	0.0801***	(0.0144)
	Don't Know	-0.0306***	(0.00818)	-0.0631***	(0.00805)	-0.0870	(0.106)	-0.0776***	(0.00882)	-0.200***	(0.0198)	-0.109***	(0.00469)	-0.00839***	(0.00189)
Respondent age	(single years)	-0.000695	(0.000358)	-0.00231**	(0.000702)	0.00127*	(0.000504)	-0.00162**	(0.000536)	-0.00245***	(0.000649)	-0.000799**	(0.000308)	-0.000149	(0.000200)
Highest educational level	No education	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Primary	-0.0157*	(0.00786)	-0.0250	(0.0132)	-0.0156	(0.0139)	-0.0553***	(0.00972)	-0.0205	(0.0174)	-0.0445***	(0.00702)	-0.00219	(0.00350)
	Secondary	-0.0507***	(0.00741)	-0.0515**	(0.0163)	-0.0736***	(0.0104)	-0.0609***	(0.0117)	-0.0723***	(0.0208)	-0.0491***	(0.00763)	-0.000894	(0.00448)
	Higher	-0.0346**	(0.0117)	-0.0328	(0.0195)	-0.143***	(0.0157)	-0.0530***	(0.0152)	-0.126*	(0.0537)	-0.0790***	(0.0113)	-0.00618	(0.00453)
Wealth index	Poorest	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Poorer	-0.00318	(0.00925)	0.0117	(0.0166)	-0.0279*	(0.0118)	-0.0276	(0.0141)	-0.0104	(0.0154)	-0.0197*	(0.00782)	0.000787	(0.00395)
	Middle	-0.0189*	(0.00890)	0.00565	(0.0171)	-0.0660***	(0.0124)	0.00561	(0.0139)	0.000297	(0.0156)	-0.0591***	(0.00827)	0.00668	(0.00477)
	Richer	-0.00143	(0.00910)	-0.0102	(0.0172)	-0.104***	(0.0136)	0.0164	(0.0140)	-0.0234	(0.0165)	-0.0628***	(0.00873)	0.00841	(0.00581)
	Richest	-0.00366	(0.00886)	-0.0564**	(0.0173)	-0.129***	(0.0157)	-0.0291*	(0.0123)	0.0188	(0.0167)	-0.0727***	(0.0103)	0.00554	(0.00556)
Unmet need	No	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Yes	-0.00302	(0.00686)	-0.0301*	(0.0117)	0.00442	(0.0119)	0.0235	(0.0121)	-0.0113	(0.0123)	-0.0150*	(0.00611)	-0.000955	(0.00290)
current employment	not employed	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	employed	-0.0107	(0.00824)	-0.00865	(0.0120)	0.0374***	(0.0109)	-0.0251**	(0.00839)	0.00681	(0.0102)	-0.0281***	(0.00591)	0.00412	(0.00344)
Age at first cohabitation	(single years)	-0.00105	(0.00112)	-0.00120	(0.00110)	-0.00216	(0.00117)	0.00000235	(0.00124)	0.00136	(0.00139)	-0.00298***	(0.000678)	0.0000962	(0.000475)
Current marital status	Married	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Living with partner	-0.00677	(0.0112)	0.00184	(0.0115)			0.0125	(0.0235)	0.00535	(0.0380)	-0.0352*	(0.0137)	0.00148	(0.00285)
Gender role violence	First quartile	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Second quartile	0.00783	(0.00877)	-0.00439	(0.0158)	-0.0315**	(0.0115)	-0.0127	(0.0124)	-0.0129	(0.0151)	-0.0285***	(0.00740)	-0.00461	(0.00410)
	Third quartile	-0.0184*	(0.00894)	-0.0143	(0.0164)	-0.0603***	(0.0140)	-0.0192	(0.0126)	-0.0438**	(0.0152)	-0.0314***	(0.00876)	-0.00803	(0.00501)
	Fourth quartile	-0.0338***	(0.00886)	-0.00230	(0.0161)	-0.0330*	(0.0128)	-0.0101	(0.0139)	-0.123***	(0.0179)	-0.0480***	(0.00738)	-0.0114**	(0.00423)

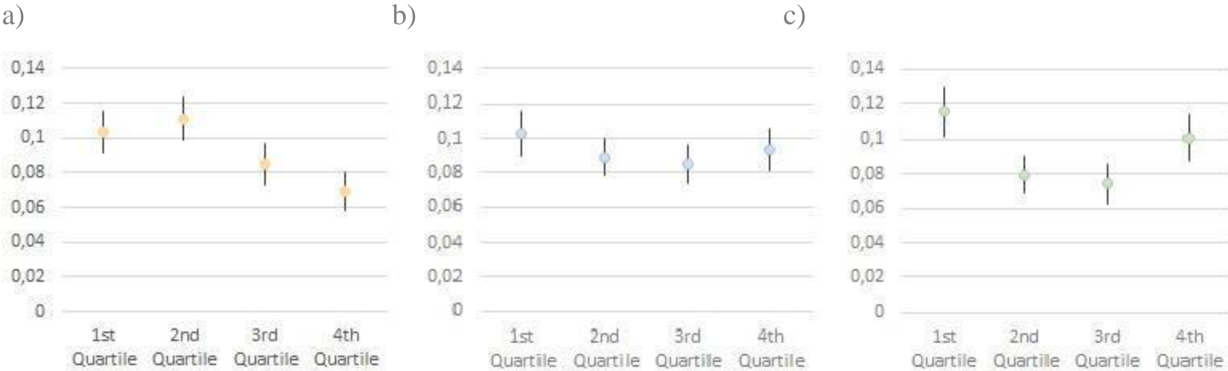
Life decision making	First quartile	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Second quartile	-0.0139	(0.00864)	-0.0292	(0.0149)	0.00175	(0.0122)	0.00368	(0.0141)	-0.0115	(0.0199)	-0.00252	(0.00775)	0.00718	(0.00437)
	Third quartile	-0.0179*	(0.00879)	-0.0190	(0.0160)	-0.00726	(0.0164)	-0.00581	(0.0130)	-0.0111	(0.0203)	-0.00635	(0.00821)	0.00618	(0.00465)
	Fourth quartile	-0.00943	(0.00973)	0.00758	(0.0171)	-0.0105	(0.0122)	0.00799	(0.0126)	-0.0187	(0.0168)	-0.0218*	(0.00860)	0.00605	(0.00481)
Autonomy	First quartile	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Second quartile	-0.0360***	(0.00817)	-0.000182	(0.0154)	0.00133	(0.0132)	0.00453	(0.0140)	-0.0197	(0.0216)	-0.0354***	(0.00729)	-0.0141*	(0.00551)
	Third quartile	-0.0415***	(0.0101)	0.00440	(0.0173)	-0.0627***	(0.0156)	-0.0107	(0.0138)	0.00833	(0.0196)	-0.0235**	(0.00857)	-0.0105	(0.00654)
	Fourth quartile	-0.0147	(0.0111)	0.00602	(0.0179)	-0.0266*	(0.0125)	-0.0205	(0.0129)	0.0135	(0.0170)	-0.0252**	(0.00864)	-0.0163**	(0.00622)
Children ever born by age	First quartile	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Second quartile	-0.00251	(0.00783)	-0.00410	(0.0153)	0.0458***	(0.0114)	-0.00124	(0.0107)	-0.00593	(0.0149)	0.00571	(0.00699)	0.00419	(0.00344)
	Third quartile	-0.00375	(0.00842)	-0.00876	(0.0159)	0.0467***	(0.0120)	0.0246	(0.0133)	-0.0220	(0.0154)	-0.00292	(0.00778)	0.00204	(0.00353)
	Fourth quartile	0.00533	(0.00946)	0.0279	(0.0183)	0.0934***	(0.0132)	0.0358*	(0.0146)	0.00330	(0.0160)	0.0106	(0.00844)	0.00785	(0.00434)
Religion	Muslim	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)	Ref.	(.)
	Christian	-0.0599***	(0.00540)	-0.0173	(0.0140)	-0.347***	(0.0156)	-0.0222*	(0.00965)	-0.204***	(0.0306)	0.0463***	(0.00772)	-0.00610	(0.00464)
	Animist	-0.0341***	(0.00985)	-0.0163	(0.0143)			0.0481***	(0.0108)	-0.254***	(0.0436)	0.0425	(0.0249)	0.00218	(0.00562)
	Other	-0.0958***	(0.0128)	0.0136	(0.0402)	-0.0654	(0.123)	-0.00651	(0.0223)	-0.128	(0.180)	-0.0402	(0.0210)	-0.00685	(0.00646)
	None	0.0758	(0.0398)	0.0248	(0.0197)					0.00919	(0.0343)			-0.00614	(0.00520)
Regional FGM/C prevalence	(proportion)	-0.00109***	(0.000262)	0.000386	(0.000283)	0.00761***	(0.000723)	0.00103***	(0.000191)			0.0657	(0.0365)	-0.00452	(0.00822)
	_cons	0.232***	(0.0331)	0.170***	(0.0410)	-0.289***	(0.0749)	0.0938*	(0.0364)	0.278	(0.179)	0.298***	(0.0202)	0.0161	(0.0142)
	N	13336		6415		20422		9824		8737		27028		6345	
	R-sq	0.037		0.176		0.170		0.247		0.186		0.174		0.048	
	AIC	4345.0		4155.8		25401.0		2399.1		9103.5		18633.2		-11030.4	

Finally, empowerment effect can be equally visible using the linear predicted probability of supporting FGM/C (Figure 2). Concerning gender role violence (a) graphs), it should be noted the decreasing in the probability of supporting FGM/C as the empowerment quartiles grow. This is very substantial in Burkina, Togo and Nigeria. Again, the pattern of this relationship is confirmed in the other two dimensions, but the magnitude of the decline of probability to support FGM/C is less consistent and not always coherent.

Fig 2 Predicted probabilities of supporting FGM according to the empowerment quartile index a) family decision making b) attitude toward partner violence and c) decision making in the social sphere

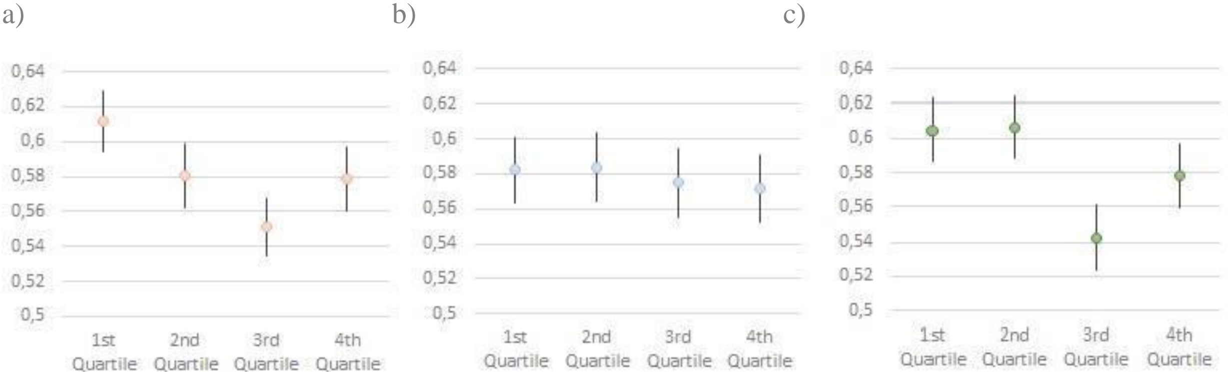
Burkina Faso

a) b) c)



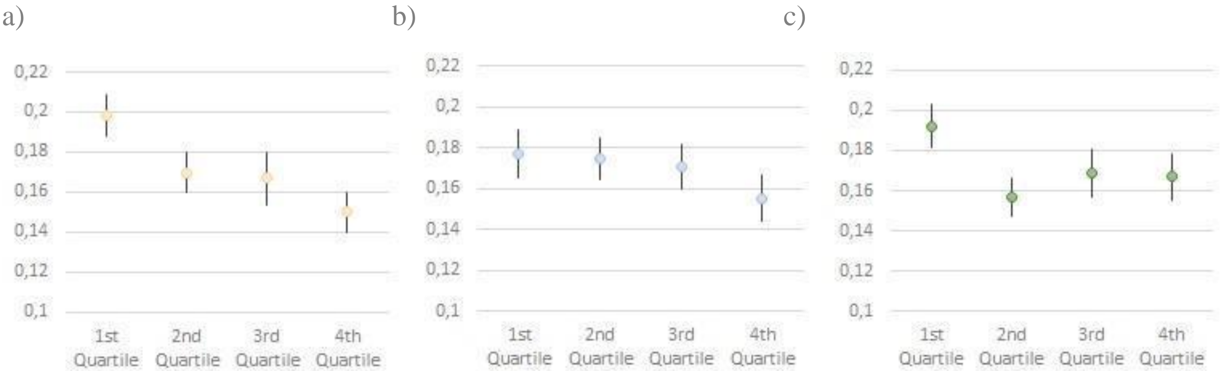
Egypt

a) b) c)



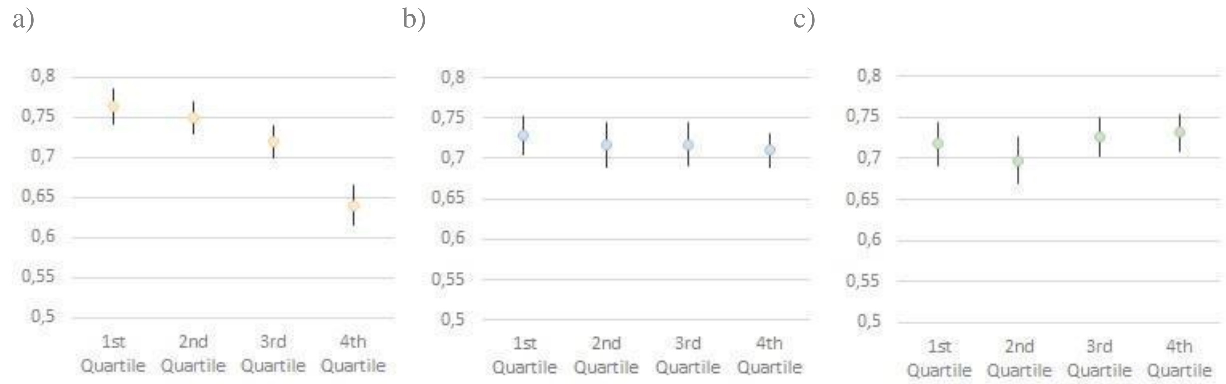
Nigeria

a) b) c)



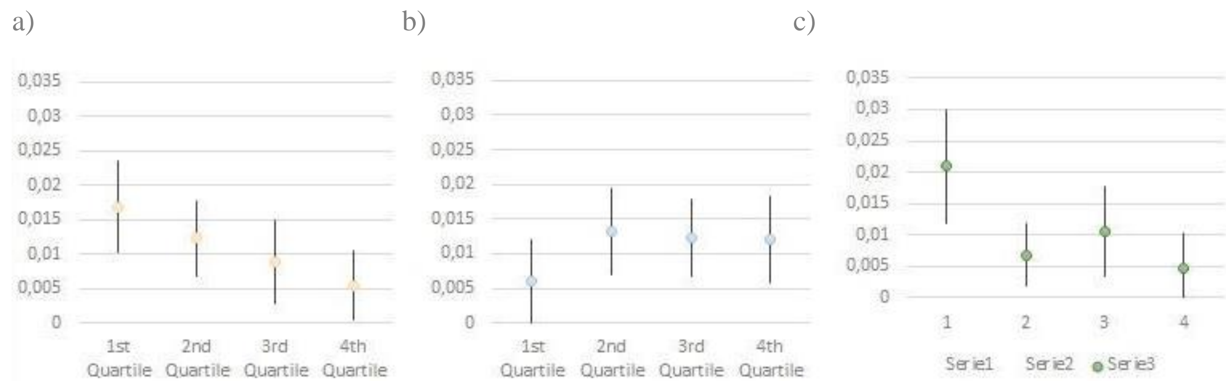
Mali

a) b) c)



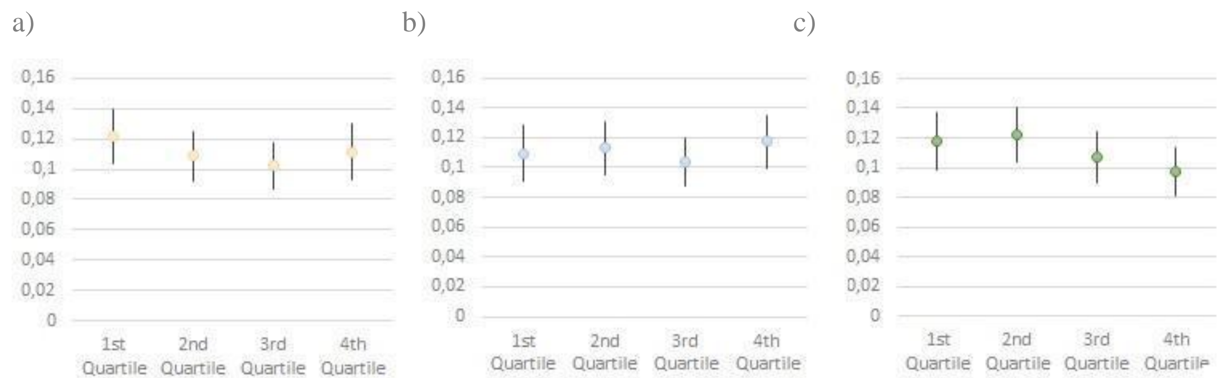
Togo

a) b) c)



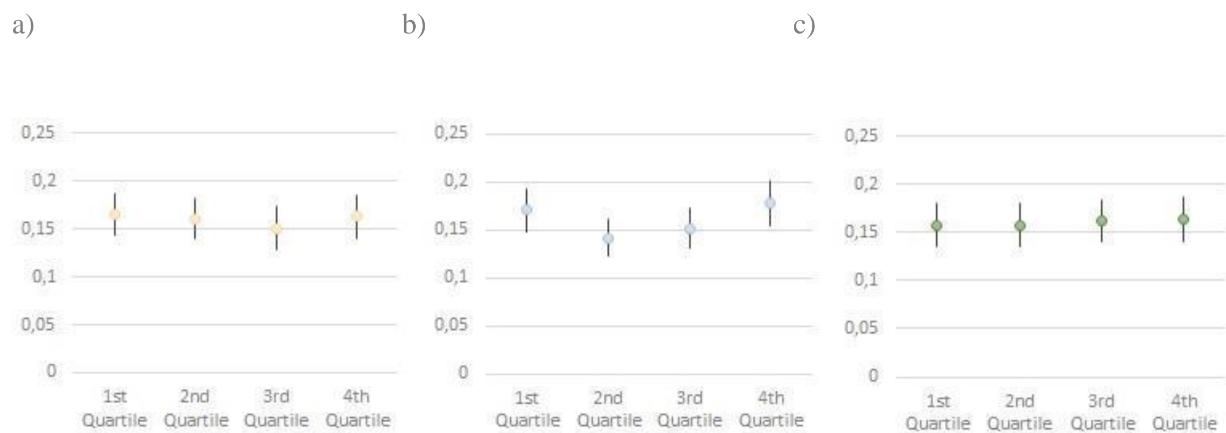
Ethiopia

a) b) c)



Ivory Coast

a) b) c)



5. Final remarks

The aim of the present paper is to show if and how the empowerment of mothers is a protective factor for the next generation of girls in terms of discontinuation, controlling for the background and the socio-economic conditions of adult women. It is indeed shown how such influence works in the model we propose. Among the control variables, not being cut is the most significant and most strongly associated with the probability not to support the practice. Also, it seems sustainable over time with no risk of rejoining. Thus, it is confirmed our initial suggestion of a virtuous circle: for each child who is not circumcised, a risk-free third-generation is born.

In the measurement of empowerment what has come to be more influential is the dimension of agreement among women on the subordinate role they have in the couple, that comes explicitly in the legitimization of the violence of a husband in case of transgressive behaviors. This is the first indicator of empowerment shown in the model, named "Gender role violence": it represents up to 39% of the variation. It is not the mere presence of violence, but the degree of acceptance, of legitimization, that it meets in the victim, which reflects a gender role dynamic that presents an unbalanced distribution of power.

Being it the strongest empowerment component, policy actions to enforce empowerment must go firstly in the direction of changing this legitimization, breaking the crystallized unbalance of gender gap shared by women, erasing the role of a punitive husband and a "disrespectful" wife who fully aim to be able and entitled to truly make decisions (Ewerling, 2017) with no fear of violent consequences.

As from the international organization literature, policies must go not only in the direction of human rights enforcement, but also and most notably in the elimination of gender discrimination (as from WHO, 2008). As such, gender role changes reflect more the definition of empowerment as a redistribution of power provided by Dandikar (1986), than the definition of autonomy in decision making from Raham (2013) which reflects our second and third components of the empowerment definition. However, Raham is precisely right when stating the objective to "maximize the opportunities available to them [women] *without* constraints", a good umbrella definition.

Therefore, it emerges the need for more specific definitions of empowerment, considering the perspective under which we may act to make a change, as in our case. Specific cultural characteristics of different contexts must be taken into consideration to understand the mechanisms operating in one defined territory. It is a limitation of the paper both to have a definition of empowerment linked to the available data and to reflect on applying a standardized definition to different cultures as well social contexts. Thus, it cannot be considered a resolutive model of analysis over the influence of empowerment on FGM/C, even though it represents a valid study of how empowerment influences such harmful practice at the regional levels of 7 African countries.

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