Manuscript

Title

Female Genital Cutting Is a Social Coordination Norm in Kenya, Mali, Nigeria and Sierra Leon (or: Cutting or Not: Depending on what others will undergo the practice than what they think about the practice) [[**CFS: This title is a response to Efferson's title**]]

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journals

possible consideration: The Lancet Global Health, Science, BMJ, Bulletin of WHO

Abstract

Context

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Results

Conclusions

Funding

Keywords

female genital cutting/mutilation, multilevel model, social norms, gender, DHS

Introduction

[[**JD: I've been talking with Mike and Katie about writing papers that are easy to read. You should focus on paragraph structure, particularly the first s. of each ¶. I will send you a link.**]]

[[**JD: This is a run-on sentence It is estimated,**]] based on a UNICEF global database [[**JD: cite the database right here?**]] including Demographic and Health Surveys (DHS), Multiple Indicator Cluster Surveys (MICS), and other nationally representative surveys between 2004 to 2015, that more than 200 million women and girls have undergone female genital cutting (FGC), mostly in Africa and the Middle East. [[**JD: Can this be a new sentence? are the 15 million also girls below 15? If so, link directly and if not, clarify**]] and 44 million of them are girls below age 15, with another 15 million girls at risk by 2020 [5, 56]. Progress in reducing FGC is not keeping up with the population growth: the number of girls and

women undergoing FGC is projected to rise significantly over the next decade if current trends continue [29, 56]. [[**JD: Need to think about how much to about terminology and how to say it**]] FGC is also known as female genital mutilation and female circumcision. As adapted by Tostan [53], [[**JD: I don't understand any of this. Can you just say Tostan and others suggest cutting? Why can't this be put into the first s?**]] cutting is preferred over circumcision without diminishing or excusing the negative impact of the practice because it implies a degree of self-awareness and is considered less judgmental [28, 24, 36, 42, 49, 53]. [[**CFS only: less cites**]]

[[**JD: Wordy: "about eradication" is indirect**]] The commonly shared position for the practice of FGC is more about eradication than intervention [29, 32, 54, 56, 61], as the United Nations has declared that FGC violating human rights, and promoted abandonment of the practice [61, 41] [[**CFS only: add and update**]] [[**JD: Simplify: it looks like there's been a consensus for eradication for decades.**]] . The progress is hindered due to the complicated history of the [[**JD: what does this mean? very practice**]] [6, 19]. The meanings of FGC are [[**JD: don't understand: competitively defined by various groups from local religious community to international governmental institutes, and by linking the practice to cultural and religious identity in one end and to public health and human rights on the other**]] [2, **?**, 7, 16, 20, 29, **?**, 48, 59]. [[**CFS only: too many cites**]]. Understanding values and norms [[**JD: you introduce norms soon, is it weird to use them now?**]] attached to FGC practice is essential to comprehend the persistence of FGC practice []. Social norm, as behavioural patterns that are self-enforcing within a group [21] and widely applied in understanding public health behaviours [3, 4, **?**, 38, 46], is a key approach in comprehending, intervening or eradicating the behaviour of FGC [10, 11, 32, 33, 34, 46, 63, **?**, 55] [[**CFS only: more cites**]]. [[**JD: Not sure what is the relation in terms of document flow between the s. above and the s. below.**]]

Social norm is often used to understand behavioural pattern of FGC [[**CFS only: more citeBoylCorl010, DuncWand11, Drol11, EffeVogt15, Hayf05, HayfTrin11, Grue05, Hodg11,KandNwak09, OdukAfol17, Youn02 (to confirm)**]]. Identifying FGC norm is crucial in intervention of sustainable changes [15, 46] [[**CFS only: Bicc etc, more**]]. Convention theory, a widely [[**JD: not sure what this word means; inferred**]] approach in FGC research, posits that FGC is an important norm to control

marriage fidelity and social prestige; this perspective views FGC as a social behaviour resulting from group coordination, s. starting to run on and it takes a "critical mass" to initiate a change [33, 34]. FGC is also viewed as social capital for inclusion within women's social groups [**?**]. When the norms within the communities are strong, individuals tend to self-enforce community norms [[**JD: this seems circular; self-enforcing is the definition of norms**]] [4, 22, 25, 26, 32, **?**, 34, 52] and the bond within women's social networks could be interdependent and interconnected across generations [33, **?**, 51]. [[**CFS only: add [?]**]].

Although convention theory was [[**JD: doesn't seem to mean anything; well deliberated and applied**]] and showed a [[**JD: larger (than what? do you just mean large?)**]] effect on FGC practices (e.g, [16, **?**, **?**, 17, 22, **?**, 32, **?**, **?**, 62]), it was not without challenges and no coordination game was observed in marital expectation [15] [[**JD: By anyone? Or just by them? It is hard for the reader to reconcile this statement with the previous one**]]. Studies show that there may be more than one [[**JD: you seem to be conflating determining factors with tipping points; tipping point**]] other than marriageability [[**JD: more than one total? or more than one other? this is awkward**]] underlying women's fgc decisions [**?**, 35, 15, 22, **?**, 43, 45, 51, **?**] [[**JD: run-on and hard to parse:**]] as well as that it can be a social bond for women [33, **?**]. Multiple theoretical frameworks were [[**JD: what does this mean; called to be incorporated to grasp a full explanation**]] of the persistence and decline of FGC due to the heterogeneity of the population [15, 37] [[**CFS only: norm theory [3, 4, 10, 11, 32, 33, 34, 46, 63] applied on fgc CislHeis18, EffeVogt15, Harf06, PashPonn16, ShelHern06,**]]

In this study, we consider multiple social determinants of FGC practice both at a individual and a community level to analyze how community of FGC expectation and beliefs associates with individual attitudes on the practice. In addition to [[**JD: hard to figure out what this means in this context, do you just mean attitudes about FGC? social norms of FGC,**]] we also incorporated information about women's gender values and their [[**JD: Can you explain this? social environment.**]]

Research Questions

This study takes both the dynamics of beliefs of FGC benefits and of FGC practices into account at both a population and a community level to understand associations of FGC values and intention of carrying out the practices. Our main interest in this study is to analyze how norms associate with behavioural intention. We focus on whether women will likely genitally cut their daughters based on their current intention and that provides a relatively more detailed result on how FGC norms interacts FGC practice than using than what had already happened (e.g. women's own FGC status). The main norm theory tested in this paper was that women's intention on practicing FGC on their daughters was dependent on other women's intention on cutting their daughters within their community. We developed three models in this study. The main one is the "daughter" model, which analyzed associations of beliefs of FGC benefits (see the list of FGC benefits at table xx) and intention to have their daughters undergoing FGC in order to understand if patterns of social norms (i.e., aggregation of values of FGC benefits) associating behavioral intention can be detected. Additionally, we also decompose the model into two "structural" models: "persistence" model to study women's beliefs of FGC benefits and FGC continuance; and "daugher$_persistence"$$model to examine the association of beliefs of FGC benefits, FGC persistence a$

Methods

Data and Samples

We conducted secondary analysis of women aged 15-49 in the Demographic and Health Surveys (DHS). Countries with the following criteria were selected: high FGC prevalence [56], DHS surveys with modules of FGC benefits, and index of gender awareness; and that resulted in four nations: Kenya 2008/9, Mali 2006, Nigeria 2008 and Sierra Leone 2008. We did not analyze the newest dataset due to the lack of FGC benefits modules before this study finished for publication checked in 1/09/19.

Only women with daughters to be considered for FGC were included in the main model (the daughter model) and the mixed structure (daugher$_persistence)$$model, while the persistence model included all the women in the samples; and tha$

Measurements and Concepts

[[CFS only: [45]]]*

Our main response variables were woman's behavioural intention to cut their daughters in the daughter model and the mixed (daughter-persistence) model, and woman's attitude on whether FGC should be continued in the persistence model. The predictors selected based on literature (e.g., aforementioned above) were woman's FGC status and beliefs of FGC benefits (see supp for a list of questionnaire of FGC benefits). The beliefs of FGC benefits were quantified using average score pls confirm to identify the strength of benefits associating with fgc practice. We also included gender awareness (see — for questions of gender awareness proxy) in our models to test if women's self-awareness would moderate wording their intention of FGC practice [[**CFS only: cites of feminist theory on fgc**]]. Other socio demographic variables included were: age, education, religion (see the list of religion recode at table xx in appendix; with a footnote on how we recoded it), marital status, work status, media use and residence (urban vs. rural) in addition to country. Media use and gender awareness were scored. The followings were treated as random variables: cluster ID (villages) and ethnicity (see the list of ethnicity recode at table xx in appendix; with a footnote on how we recoded it).

In order to address the significance of community impact on the practice of FGC, education, wealth, media use, FGC beliefs, gender awareness and FGC prevalence were also tested at the community level [[**CFS: on a cluster level, not national, right?**]]. Cluster was used as a proxy to represent a community level of impact [**?**, 22, 30]

[[JD: Ideally, we would make ethnicity a random effect, but we are back to the Gilmour problem I guess.]] [[CFS: Ethnicity is an important factor (see Hayf05), more so than religion, associating with FGC status, and I don't think it shall be coded as a random factor. But as J said, it is too hard!]] [[CFS: Bayesian model [25] "Conversely, one cannot assume that the clusters selected in each district are fully representative of the states in which they are located because surveys only attempted to generate a fully representative sample at the regional level. Consequently, the spatial analysis will be affected by some random fluctuations. Some of

this random variation can be reduced through structured spatial effects because it includes neighboring observations in the analysis. However, it should be pointed out that such a spatial analysis should preferably be applied to census data, where the precision of the spatial analysis would be much higher." (p. 788)]] [[CFS: Regarding FGC benefits modules, there were 9 questions. Keya had all the 9, Mali and SL 7 (missing promiscuity and STD), NG 8, missing STD). Should we drop STD since 3 out of 4 missed this variable?]] [[CFS only: in response to the degrees of modernization, conventional values and gender awareness within- and among-community (see [1, 16, 22, 25, 37, 39, 40, 64]).]]).

Statistical Model

We used cumulative link mixed models (CLMMs) in the statistics package R [?, ?] to analyze the models. The CLMM framework allows us to model a binary or ordinal response variable (i.e., intention of cutting daughters and whether to continue FGC practice), while treating clusters and ethnicity as random effects. We subtracted respondent (-1) from the cluster when testing the community effect Please rewrite this. Also, do we need to mention how we treat cluster with only one sample (if that happens).

[[CFS: Do we explain conveyance of uncertainty and data sampling?]]

[[CFS: Our response ARE categorical not binary; AND still need to explain why ethnicity is a random effect. AND media use was supposed to be incorporated as a random factor at the country level, based on the assumption that media content likely varied among countries.]]

[[CFS: Do we do any within-community variation and between-community variation? Is it a thing?]]

[[CFS only: reference: Methods and the first paragraph of Discussion[?]]]

Scripts

Codes are be available upon request.

Results

We need to show both isoplots and effect plots because some binary variables are not on the isoplots.

Baseline socio-demographic and sample characteristics are shown in figure x. The prevalence of FGC are 31.8%, 88.6%, 45.9% and 91.0%, and 15.5%, 73.9%, 20.6% and 65.5% of the samples thought FGC should be continued in Kenya, Mali, Nigeria and Sierra Leon accordingly.

The results of the three models are at figure?. The findings showed that women's fgc status, beliefs of fgc benefits and FGC prevalence were all clearly and positively associated with the two responses (intention to cut daughters, attitudes on whether FGC should be continued); so as the following factors but in negative association: country, media, education, age and religion and the community levels of beliefs of FGC benefits this one is tricky to interpret. The association of gender awareness with the two responses was not clear in our findings both at a population or individual and a community level.

===== stop reading =======

[[**CFS: main predictors: beliefs of FGC benefits, woman's FGC status and attitudes of gender equality**]]

Tables and figures to be included: - a figure of women's FGC prevalence vs. their intention of cutting daughters vs. attitudes towards FGC continuity. (ref to https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3302551/, Fig 1)

Discussion

–Main interpretation –

Our findings suggest that the likelihood of whether a mother will have their daughters genital cut is overdetermined by her community's overall likelihood

of mothers' intention of cutting their daughters, fgc prevalence, among others: the norm of FGC is synergistic, based on what women think about the other women in the community will like undergo the practice than what they think about this practice. Our findings show that omen's decision on cutting their daughters was clearly related to their own FGC status, personal beliefs of FGC benefits and theFGC prevalent in their community link; yet group beliefs of FGC benefits in their community did not play a clear role in determining whether a daughter would be cut. The similar results also applied to women's view of whether FGC should be continued link. How to use the future-mother producing daughter model?. Our findings suggest that FGC practice is a social norm in respect of how an individual behavioral intention on FGC is in line with how their community implement this ritual; the social norm is based on what an agent perceives what their community members think and that perception can be based on the members' behavioural outcome (i.e., whether others had FGC) or communication about the ritual practice [] .

The findings support the idea that the practice of FGC is supported by social values and beliefs within the community [11]. FGC prevalence is a strong predictor of all models and it shows that norms sustained through communications and evolve through social interactions [**?**, 46].

— Norm —

- conventional [**?**, 22, 26, 32, 51] vs. - [43]: "attitude is the strongest predictor of mothers' intentions to allow their daughters to undergo FGM, followed by subjective norms." also their findings showed that beliefs of fgc benits was the strongest predictor of mother' intention of cutting daughters. [51]:"alternative convention/peer convention. Subjective norm referred to "perceived social pressure to perform or not to perform the behavior" or "socially expected mode of conduct" [3].

- descriptive norm: what others do. In our case, is it fgc prevalence in a community?

[51] proposed that reasons for fgc practice go beyond the belief that it is advantageous for marriage prospects. FGC allows women to gain social capitals and access to networks. Their findings also suggested that the main deterent to marriages was not men's refusal of non-fgc women, but hostility and discrimination from fgc women to non fgc women. [[**CFS only:**

Mackie's social convention theory was supported in [51]. In [34], the authors saw marriageability was only one reason for FGC and proposed multiple factors in influencing women's decision of cutting their daughters.]]

[43]: Attitude was the strongest predictor of mothers' intentions for their daughters' FGC status, followed by subjective norms

- community level of effects - [23](community -based approach), [8, 22, 26, 44, 51] [35]: "We find that much of the variation in a woman's support for FGC can be attributed to individual- and household-level factors rather than to village-level factors or to factors beyond the village level." - tipping point/threshold - [[**CFS: empirical norm: enough others follow the norm- community level of FGC [10] normative norm: enough others think we need to follow the norm - FGC beliefs, decision on daughter's FGC status (already and future), [10]**]] -community level of fgc benefit: can the no effect result partially due to heterogeneity?

What does it mean that group level of daughter future as the biggest predictor compared to individual benefit and group fgc (prevalence)? Does it mean that fgc norm works implicitly and it might not be something behaviour women really agree with? Is it a social norm supported by social sanction (i.e., cutting daughter) for what reason? (see [34] (p.28 which mentioned Bicchieri06)

- Beliefs of FGC benefits - Our PCA results show that women's beliefs of what benefits FGC brings is not clearly identified (see figure pca) and marriageability was not a clear one (to compare with [**?**, **?**]. On interpretation is that marriageability is no longer a strong belief in community where FGC is still common and new norms are insinuated around [[**CFS only: Cite: EffeVogt15, MackLeJe08, ShelWand11, networking, part of social groups Duncan-Shell?**]]

— secondary analysis/socio demograhpic —

- modernization (citeBoylMcMo02, Youn02, education and wealth as index of modernization), vs. gender [14, 31, 17, **?**, 36, 58, 62, 64]. Hayf05 SipsChen12 Wealth. [22]: Some research showed that household wealth has nonlinear correlation with women's FGC status predictor of daughter's FGC status

[13](in 7 African countries): increasing media coverage and education, and

reducing poverty are of importance for shifting adolescent girls' attitudes in favor of discontinuation of FGM. [22, 43] (more)

— by nations and laws in those nations—

In Ethiopia, the majority of women who were aware of the negative reproductive health effects had not stopped the practice highlighted the possible fear of isolation and being alienated from the cultural system where FGC could be seen as a force of social cohesion [62]. In Kenya, woman's decision on whether to cut their daughters' genitals were likely to relate to collective identity within ethnic groups against broader social changes [1, 22]; similarly findings observed in Nigeria [**?**, **?**].

—- Kenya: legal background: Kenya [**?**]; [55]; vs. [**?**, 22], and [http://kenya.usaid.gov/programs/women/182PEPFAR/kenya] —- Mali: "The occurrence of FGM/C is also concentrated in certain West African countries where prevalence rates range from 72–96 percent: Burkina Faso, the Gambia, Guinea, and Mali. The populations of these countries share certain social and historical ties, which suggests that a strategy to eliminate FGM/C in one of these countries might be successful in others. FGM/C is practiced as part of the initiation into a secret society in Liberia and Sierra Leone. We should expect that the repercussions for mothers there who do not send their daughters to be initiated would be different than for mothers in nearby Mali or Guinea [**?**]

—- Nigeria: "Modernization (education and high socioeconomic status) had minimal impact on the likelihood of FGM, but education plays an important role in the mother's decision not to circumcise her daughter. It follows from these findings that community factors have a large effect on FGM, with individual factors having little effect on the distribution of FGM" [25]

—- Sierra Leone: [47]

FGC is less a coordination rite than singling group identity and symbolism [51, 21] or social pressure []. — Suggestions —

Changing social norm is a key step to changing behaviour Bicc10. Changes of social norms in public health beavhiors may require a few steps: motivation, deliberation and action [**?**]. An alternative to fgc (a complete stop or a symbolic pricking) will have to provide motivation and facilitate the change of behaviour; the behavioural change will have to be a social action (i.e., gaining recognition and public participation within community) since fgc is

a social norm; and a public commitment to change in hope for reaching a critical mass needed to dismantle the normative behaviour. (using Tostan as an example) (also see [21]. Promising change are observed in changing norms [**?**] (and Tostan). How to foresee a community conducive to certainty for girls without fgc?

Unlike foot binding which was displayed in public, the outcome of FGC can only be identified through private channels (e.g., a tight group community or personnel communications). The intervention of FGC via public rejection or condemnation is more questionable (or challenging, especially when if marriage is no longer a main reason for FGC). While the comparison of foot binding had a public norm effect, the difference between FGC and no FGC is more personal. A bottom-up campaign empowering local community and engaging women in change of the practice is essential [**?**] and messages tailoring differences of normative beliefs in different groups should also be considered. The practice of FGC is likely to be revised due to types of FGC, but how to eradicate it if it evolves to just a "nick" compared to the norm of male circumcision?

- MC vs. FGC. Considering the acceptance of Alternative rights of passage [18] without criminalize the practice. (I'm not sure if I'm comfortable with this position, but it is an alternative.) vs. focused on empowerment, and campaigns to recruit change agents from within communities (to eradicate FGC) [50, 60] - modelling by plotting empirical data to study threshold/tipping point. - redesign questions of fgc benefits in DHS - inviting faced women migrated to western society to participate in fgc intervention campaign. For example, attitude change: "migrating to and living in Sweden facilitates a transition in attitudes regarding FGC" [57], and initiating "participatory campaign and education" (an idea from MackLeJe08's "participatory human rights education" and Boston's), including women's empowerment and horizontal involvement (vs. trickle-down strategy) - [34]"coordinated community abandonments (Dagne 2008, http://www.kmgselfhelp.org/hotissues.html). Both human rights deliberation and coordinated community abandonment are necessary for change. National programmes in Egypt and Sudan are promoting positive human rights messages and discussions at national, regional, and local levels, and are experimenting with a variety of coordinated abandonment through community dialogue efforts at the local level. " (use [12, 34] for this idea) - a bottom-up intervention aimed at changing social expectation [11]

- Instead of focusing on improving knowledge and changing attitudes, we need to be more cautious about implementation of social norm interventions and infuse intervention in a relational dimension and a dynamic framework [**?**, **?**, 27]. Empowering local community and opinion leaders in implementing "organized diffusion" [34]has proven cost-effective [9]. (and Boston?)

— Limitation — - No FGC types relating to our response varialbes - Not controlling for daughter's age

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Conflicts of interest

The James S. McDonnell foundation and the Canadian Institutes of Health Research had no role in study design; collection, analysis, and interpretation of data; the writing of the manuscript; or in the decision to submit the manuscript for publication. The views expressed herein do not necessarily represent the views of the founding bodies.

Authors' contributions

Disclaimer

The findings and conclusions of this article are those of the authors and do not necessarily represent the views of the funding agency.

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Appendix

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