BMJ Open

Baseline data from a planned RCT on attitudes to female genital cutting after migration: when are interventions justified?

Anna Wahlberg,[1] Sara Johnsdotter,[2] Katarina Ekholm Selling,[1] Carina Källestål,[1] Birgitta Essén[1]

To cite: Wahlberg A, Johnsdotter S, Selling KE, *et al*. Baseline data from a planned RCT on attitudes to female genital cutting after migration: when are interventions justified? *BMJ Open* 2017;**7**:e017506. doi:10.1136/bmjopen-2017-017506

► Prepublication history and additional material are available. To view these files please visit the journal online (http://dx.doi.org/10.1136/bmjopen-2017-017506).

Received 26 April 2017
Revised 4 July 2017
Accepted 7 July 2017

[1]Department of Women's and Children's Health, International Maternal and Child Health, Uppsala University, Uppsala, Sweden
[2]Faculty of Health and Society, Malmö University, Malmö, Sweden

Correspondence to
Dr Anna Wahlberg;
anna.wahlberg@kbh.uu.se

ABSTRACT

Objectives To present the primary outcomes from a baseline study on attitudes towards female genital cutting (FGC) after migration.

Design Baseline data from a planned cluster randomised, controlled trial. Face-to-face interviews were used to collect questionnaire data in 2015. Based on our hypothesis that established Somalis could be used as facilitators of change among those newly arrived, data were stratified into years of residency in Sweden.

Setting Sweden.

Participants 372 Somali men and women, 206 newly arrived (0–4 years), 166 established (>4 years).

Primary outcome measures Whether FGC is acceptable, preferred for daughter and should continue, specified on anatomical extent.

Results The support for anatomical change of girls and women's genitals ranged from 0% to 2% among established and from 4% to 8% among newly arrived. Among those supporting no anatomical change, 75%–83% among established and 53%–67% among newly arrived opposed all forms of FGC, with the remaining supporting pricking of the skin with no removal of tissue. Among newly arrived, 37% stated that pricking was acceptable, 39% said they wanted their daughter to be pricked and 26% reported they wanted pricking to continue being practised. Those who had lived in Sweden ≤ 2 years had highest odds of supporting FGC; thereafter, the opposition towards FGC increased over time after migration.

Conclusion A majority of Somali immigrants, including those newly arrived, opposed all forms of FGC with increased opposition over time after migration. The majority of proponents of FGC supported pricking. We argue that it would have been unethical to proceed with the intervention as it, with this baseline, would have been difficult to detect a change in attitudes given that a majority opposed all forms of FGC together with the evidence that a strong attitude change is already happening. Therefore, we decided not to implement the planned intervention.

Trial registration number Trial registration number NCT02335697;Pre-results.

Strengths and limitations of this study

- This study involved Somalis at several levels: in designing the study, collecting data, interpreting the findings, and as participants, thereby enhancing a comprehensive understanding of attitudes towards female genital cutting (FGC) among this group.
- Survey questions were based on the anatomical extent of FGC and measured on a Visual Analogue Scale, which is a novel and useful approach.
- Participants' attitudes towards FGC before migrating to Sweden were unknown, and thus it was not possible to draw conclusions on how and when attitudes change.
- Participants were recruited through purposive sampling in Somali organisations, which could result in selection bias.

INTRODUCTION

The eradication of female genital cutting (FGC), also called female genital mutilation or female circumcision, has been on the agenda of governments and international agencies for decades. FGC is a practice in which parts of the female genitalia are altered or injured for non-medical reasons. WHO classifies FGC into four types: type I involves partial removal of the clitoris and/or the prepuce (clitoridectomy); type II includes partial removal of the clitoris and the labia minora, with or without removal of labia majora (excision); type III includes narrowing of the vaginal opening by cutting and bringing together the labia minora or labia majora, with or without clitoridectomy (infibulation); type IV includes all other harmful procedures to the female genitalia for non-medical reasons, for example, pricking.[1] One of the earliest initiatives to prevent FGC dates back to the 1950s when FGC was addressed within the United Nations Commission on Human Rights. In 1958, WHO undertook a study on the 'persistence of customs subjecting girls to ritual operations', bringing international attention to the issue of FGC. In the 1960s

and 1970s, non-governmental organisations began to lead campaigns to raise awareness of the health risks associated with FGC. The first international conference on the topic was held in Sudan in 1979, in which a zero-tolerance position against FGC was taken, condemning all forms of FGC.[2] A zero-tolerance approach has since then characterised the debate and campaigns against FGC.[3]

Throughout the years, anti-FGC campaigners have used different strategies to end the practice of FGC. Commonly used approaches, used alone or combined, are: (1) emphasising the negative health consequences of FGC, (2) criminalising FGC, (3) framing FGC as a violation of human rights of girls and women and (4) depicting FGC as a way to control women's sexuality.[4] Interventions based on these approaches have targeted stakeholders at individual, community and national levels.[5 6] In addition to the obvious benefits of such interventions, there are also risks involved. Anti-FGC interventions may reinforce the stigma of being cut, and interventions that focus on the negative health aspects of the practice may leave women who have been subjected to FGC with a feeling of having an incomplete body.[7 8]

With global migration, FGC is no longer restricted to countries where it is traditionally practised and girls from, or with parents from, FGC-practising countries may be at risk of FGC in the new country.[9] However, no anti-FGC interventions with designs containing a comparison group have been performed in a country outside Africa.[10] Attitudes towards FGC seem to change over time after migration from an FGC-practising to a non-FGC-practising country.[11–15] We therefore planned an anti-FGC intervention to investigate whether it is possible to speed up the process of attitude change among Somali immigrants in Sweden, the largest immigrant group in Sweden from a country where FGC is traditionally performed.[9]

The aim of this paper is to present the primary outcomes from a baseline study on attitudes towards FGC after migration. This study was designed as a cluster randomised controlled trial (cRCT). However, after collecting baseline data, we decided not to go through with the planned intervention and consequently not to collect any endline data. This paper describes the planned intervention, the methods employed to gather the baseline data and the results and discusses the rationale for ultimately deciding not to implement the intervention.

METHOD

Setting

Sweden has a population of 10 million; 350 000–400 000 are Muslims, with the fourth largest Muslim group being Somalis.[16] Many Somalis migrated to Sweden after the outbreak of the civil war in 1991, and another wave of Somali immigrants arrived around 2010–2015. The majority of Somalis thus migrated to Sweden after all forms of FGC were criminalised in 1982.[17] Today, 60 000 Somali-born men and women live in Sweden. The largest Somali population can be found in Stockholm, followed by Gothenburg, Borlänge and Malmö. Gothenburg has a population of 550 000 of which 130 000 were born abroad; 7400 (5.5%) in Somalia. Malmö has a population of 320 000 of which 100 000 are born abroad; 2100 (2.1%) in Somalia.[18] Age distribution and time spent in Sweden are similar among Somalis in Gothenburg and Malmö, as are other demographics; about half are married, a majority (61%–71%) have primary or secondary education and 21%–23% are employed.[16] There are numerous Somali organisations in Gothenburg and Malmö. These are generally organised by clan affiliation, although many opt to include individuals from several clans, and for some, clan affiliation has lost its relevance in diaspora.[16 19]

The planned intervention

The design, content of the intervention and outcome measures were based on discussions with Somali key informants, earlier research experiences with Somali communities, previous anti-FGC interventions and social convention theory (trial registered at ClinicalTrials.gov, identifier NCT02335697).[2 10 11 20 21] Our hypothesis was that there would be a higher number of individuals who supported FGC among newly arrived Somalis in Sweden than among established Somalis who had lived in Sweden for a longer time period. The latter were expected to be opponents of all forms of FGC and as such could be used as facilitators of change among supporters of FGC. Newly arrived Somalis were defined as those who had lived in Sweden for a maximum of 4 years (this cut-off was based on a study among Somali immigrants in Norway[15]), and established Somalis were defined as those who had lived in Sweden for more than 4 years. The planned community-based intervention was to comprise five meetings between newly arrived and established Somalis with predetermined topics relating to FGC (culture, religion, health, children's rights and Swedish laws and regulations). Various experts, chosen to match each topic respectively, were to be invited in order to facilitate interactive discussions. Somalis who were familiar with both Swedish and Somali culture would have facilitated the meetings, enabling culturally sensitive means of accessing the study population and topic. The participants would themselves decide what they thought was important to know and discuss in relation to the different topics. The intervention was planned to have a duration of 5 months.

Study design and participants

The intervention study was designed as an cRCT, and baseline data were collected in Gothenburg and Malmö, Sweden. In the two municipalities, eight purposively selected Somali organisations, as geographically separated as possible, welcoming both men and women, not actively working to prevent FGC and willing to participate in the study, constituted the clusters from which participants were recruited. Eligible to participate in the study were Somali-born men and women aged 18 years or older. All participants were informed about the study both in writing and verbally. Eligible participants who

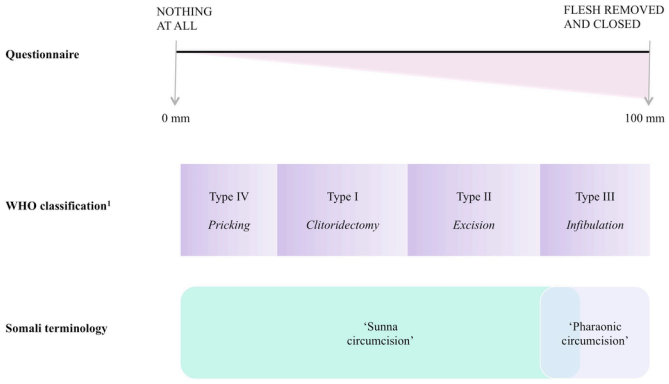

Figure 1 Visual Analogue Scale, ranging from 0 to 100 mm, used in the questionnaire to capture all different forms of female genital cutting based on anatomy, and approximately how this corresponds to the WHO classification and Somali terminology. [1] WHO type IV includes several procedures, defined as 'all other harmful procedures to the female genitalia for non-medical purposes, for example: pricking, piercing, incising, scraping and cauterization'. In this context, pricking is most relevant.

gave their verbal informed consent were included in the study.

Data collection

Baseline data were collected from January to December 2015 through a validated[22] and pilot-tested 49-item questionnaire that had been translated and back-translated from English to Somali. We measured attitudes towards FGC on Visual Analogue Scale (VAS) ranging from 0 to 100 mm to describe all different forms of FGC based on anatomy. The higher the millimetre was on the VAS, the more extensive the form of FGC. In the questionnaire, the left end of the VAS (0 mm) was marked with 'Nothing at all' and the right end (100 mm) with 'Flesh removed and closed' (figure 1). To assist the participants to express attitudes on a VAS, a schematic picture describing the different anatomical forms of FGC was provided. The least extensive form of FGC that has been described in a Somali context is pricking.[11] Thus, pricking was placed to the very left in the VAS and defined as procedures in which the skin of the clitoris or labia is pierced with a sharp object; blood may be let, but no tissue is removed, and there is no permanent alteration of the external genitalia, according to the WHO definition.[1 23] Hereafter, this will be referred to as 'pricking' in the text.

Somali key informants, having different backgrounds and varying years of residency in Sweden, were responsible for recruiting participants and collecting data through face-to-face interviews with the participants using the questionnaire. As FGC may be a sensitive topic, the Somali key informants (as representatives of the research team) tried to establish a trusting relationship with the participants. Using face-to-face interviews ensured that illiterate Somalis could participate and that the respondents accurately understood the different anatomical forms of FGC. As a quality control, the first author, together with the Somali key informants, looked through and discussed the answers in the majority of the questionnaires. If inconsistencies or missing data were found, the participant was contacted for clarification.

Outcome measures

There were three primary outcomes of the study measuring attitudes towards FGC. The first two outcomes were measured on the VAS: (1) 'What do you think is acceptable to do?' and (2) 'We don't know if you have a daughter. But let's hypothetically say that you do have a daughter, what would you then do?' The most severe form of FGC that the participant thought was acceptable and wanted to have done on his/her daughter was recorded. The third outcome was categorical: (3) 'There are people who want female circumcision to be abolished and other people who want it to be continued. What of the following do you want to continue?' Multiple responses were allowed and response alternatives were: (a) pricking but no flesh removed, (b) some flesh removed, (c) flesh removed and some stitches, (d) flesh removed and closed and (e) all of them should be abolished. Only two participants had selected several options; those were therefore recoded into the most severe form only. Thus, the data are presented as one answer per participant. There was one individual with missing values for outcome 1, and none for outcomes 2 and 3.

Sample size

Sample size was estimated for the intended intervention study.[24 25] Included in the calculations was a delta of 15 mm, a current mean cluster size of 20±5, an intracluster correlation coefficient of 0.09, power=0.80 and alpha=0.05. The required sample size, when 20% was added to the number of participants to account for potential loss to follow-up, was a minimum of 195 participants divided into eight clusters: four intervention and four control clusters.

Statistical analysis

Primary outcomes were analysed by descriptive statistics, stratified on years of residency in Sweden. To ease interpretation of the VAS, millimetres were categorised into four anatomical forms of FGC. In the first categorisation, the VAS millimetre were given equally sized proportions, while the second categorisation yielded a more strict estimate for 'Pricking' and 'Tissue removed, sewn closed' compared with the first categorisation. In both estimate categorisations, the categorisation of 'Nothing' was equal to zero (table 1).

Binary logistic regression analysis was used to quantify the influence of years of residency in Sweden on attitudes towards FGC, dichotomised so that all who did support some form of FGC were merged together and compared with those who opposed all forms of FGC. Both crude ORs and ORs adjusted for the background factors gender, age, marital status, cohabitation, level of education, Somali origin and employment were computed. The variables religion and own circumcision status were not included in

Table 1 The two categorisations of the VAS millimetre measuring attitudes towards female genital cutting based on anatomy

	Equal proportion estimate	Strict estimate
	VAS mm	VAS mm
Nothing	0	0
Pricking	1–25	1–10
Some tissue removed	26–50	11–50
Tissue removed, some stitching	51–75	51–90
Tissue removed, sewn closed	76–100	91–100

VAS, Visual Analogue Scale.

the model as the majority were Muslims and circumcised. The level of statistical significance was set to 0.05. The correlation, measured with Kendall's tau-b, between the variables in the model was <0.37 for all pairwise comparisons. As the intended division based on intervention and control clusters were not followed through, the data were instead stratified only on municipality to visualise possible differences between the two municipalities. SPSS (version 23) and R (version 3.0.2)[26] were used for all analyses.

RESULTS

Here we will present the primary outcomes from the baseline study, on which we based our decision to not proceed with the planned intervention that intended to target newly arrived Somalis (0–4 years of residency in Sweden) with established Somalis (>4 years of residency in Sweden) acting as facilitators of change.

The study sample consisted of 372 Somali Muslim immigrants with different lengths of residency in Sweden, 166 categorised as established and 206 as newly arrived. The majority originated from urban areas in Somalia, and 98% were circumcised. The self-reported forms of FGC among the women were: 51% tissue removed and sewn closed, 32% tissue removed and some stitching, 11% some tissue removed, 5% pricking and 2% none. There were almost as many men as women in the sample, and the age ranged from 18 to 70 years, with a mean age of 37 years (SD 11.0). The majority had either primary or secondary education, about one-third were employed and 48% were married (table 2).

In outcomes 1 and 2, participants' attitudes towards FGC were measured on a VAS. Zero millimetre on the VAS means that the participant opposed all forms of FGC, and 100 mm means that the participants supported all forms of FGC. We made two categorisations of the VAS millimetre into anatomical forms of FGC, as described in table 1. Data presented in the text report the equally sized proportions estimate; the strict estimate is presented in

Table 2 Background factors of study participants (n=372)

	n	%
Gender		
Man	181	48.7
Woman	191	51.3
Age		
18–25	59	15.9
26–35	130	35.0
36–45	92	24.8
≥46	90	24.3
Marital status		
Single	152	41.0
Married/partner	179	48.2
Divorced/widowed	40	10.8
Cohabit		
Yes	234	63.2
No	136	36.8
Education		
University/college	35	9.4
Secondary school	129	34.7
Primary school	134	36.0
Koranic school only	28	7.5
No education	46	12.4
Somali origin		
Urban	301	81.4
Rural*	69	18.6
Years of residency in Sweden		
≤2	140	37.6
3–4	66	17.7
5–9	68	18.3
10–14	31	8.3
≥15	67	18.0
Employment		
Work full/part time	104	28.1
Student	35	9.5
No work†	231	62.4
Religion		
Muslim	371	100.0
Circumcised/FGC‡		
Yes	361	97.6
No	8	2.2
Don't know	1	0.3
Municipality		
Gothenburg	169	45.4

Continued

Table 2 Continued

	n	%
Malmö	203	54.6

FGC, female genital cutting.
Total number varies due to missing values ranging from 0 to 2 for each variable presented.
*Includes village and nomadic life.
†Includes Swedish for Immigrants courses, programmes organised by employment agency, retired/sick leave/parental leave and unemployment.
‡Includes both men and women, regardless of form of circumcision/FGC.

table 3. Outcome 3 was categorical, and the original variable is presented.

Outcome 1 measured acceptability of different forms of FGC. Among established Somalis, the mean value of the VAS was 0.6 mm (SD 2.2), and the median was 0 mm (figure 2). Categorising the VAS millimetre into anatomical form of FGC showed that none of the established Somalis stated that is was acceptable to cause anatomical change; 83% said they did not think any form of FGC was acceptable, while 17% stated that pricking was acceptable (table 3). Among newly arrived Somalis, the mean value of the VAS was 5.2 mm (SD 12.3), and median was 0 mm (figure 2). Translated into anatomical form of FGC, 96% of the newly arrived did not think causing anatomical change was acceptable; 59% said no form of FGC was acceptable, while 37% reported that pricking was acceptable. Among newly arrived, acceptability of anatomical change was 4% (table 3).

Outcome 2 measured attitudes towards preferred form of FGC on daughters. Among established Somalis, the mean value of the VAS was 3.8 mm (SD 14.0), and the median was 0 mm (figure 2). Categorising the VAS millimetre into anatomical form of FGC showed that 98% of the established Somalis preferred no anatomical change; 75% reported that they wanted their daughter to remain untouched, while 23% said they wanted their daughter to be pricked. Anatomically changing the daughters' genitals was preferred by 2% of the established (table 3). Among newly arrived Somalis, the mean value of the VAS was 8.8 mm (SD 18.0), and median was 0 mm (figure 2). Translating into anatomical form of FGC categories showed that 93% of the newly arrived Somalis preferred no anatomical change; 53% said they wanted their daughter to remain untouched, while 39% expressed that they wanted their daughter to be pricked. Anatomically changing the daughters' genitals was preferred by 7% of the newly arrived (table 3).

The results in outcome 3, measuring what forms of FGC should continue to be practised, were similar to those for outcomes 1 and 2. The majority of established (99%) and newly arrived (93%) Somalis supported the continuation of practices involving no anatomical change; 83% of established Somalis and 67% of newly arrived stated that they thought all forms of FGC should discontinue, while the support for pricking was higher among newly arrived (26%) compared with established Somalis (16%). The continuation of practices causing anatomical change was supported by 1% of the established and 7% of the newly arrived Somalis (figure 3).

Table 3 Acceptability of FGC (outcome 1) and preferred form of FGC on daughter (outcome 2), stratified on established (n=166) and newly arrived (n=206), with Visual Analogue Scale measurements categorised into anatomical forms of FGC

		Established (>4 years)		Newly arrived (0–4 years)	
Outcome	Form of FGC	Equal proportion estimate n (%)	Strict estimate n (%)	Equal proportion estimate n (%)	Strict estimate n (%)
Acceptability	Nothing	138 (83.1%)	138 (83.1%)	121 (59.0%)	121 (59.0%)
	Pricking	28 (16.9%)	26 (15.7%)	76 (37.1%)	48 (23.4%)
	Some tissue removed	–	2 (1.2%)	6 (2.9%)	34 (16.6%)
	Tissue removed, some stitching	–	–	–	–
	Tissue removed, sewn closed	–	–	2 (1.0%)	2 (1.0%)
Daughter	Nothing	124 (74.7%)	124 (74.7%)	110 (53.4%)	110 (53.4%)
	Pricking	38 (22.9%)	28 (16.9%)	81 (39.3%)	41 (19.9%)
	Some tissue removed	1 (0.6%)	11 (6.6%)	8 (3.9%)	48 (23.3%)
	Tissue removed, some stitching	–	–	1 (0.5%)	2 (1.0%)
	Tissue removed, sewn closed	3 (1.8%)	3 (1.8%)	6 (2.9%)	5 (2.4%)

Total number varies due to missing values ranging from 0 to 1 for each variable presented.
FGC, female genital cutting.

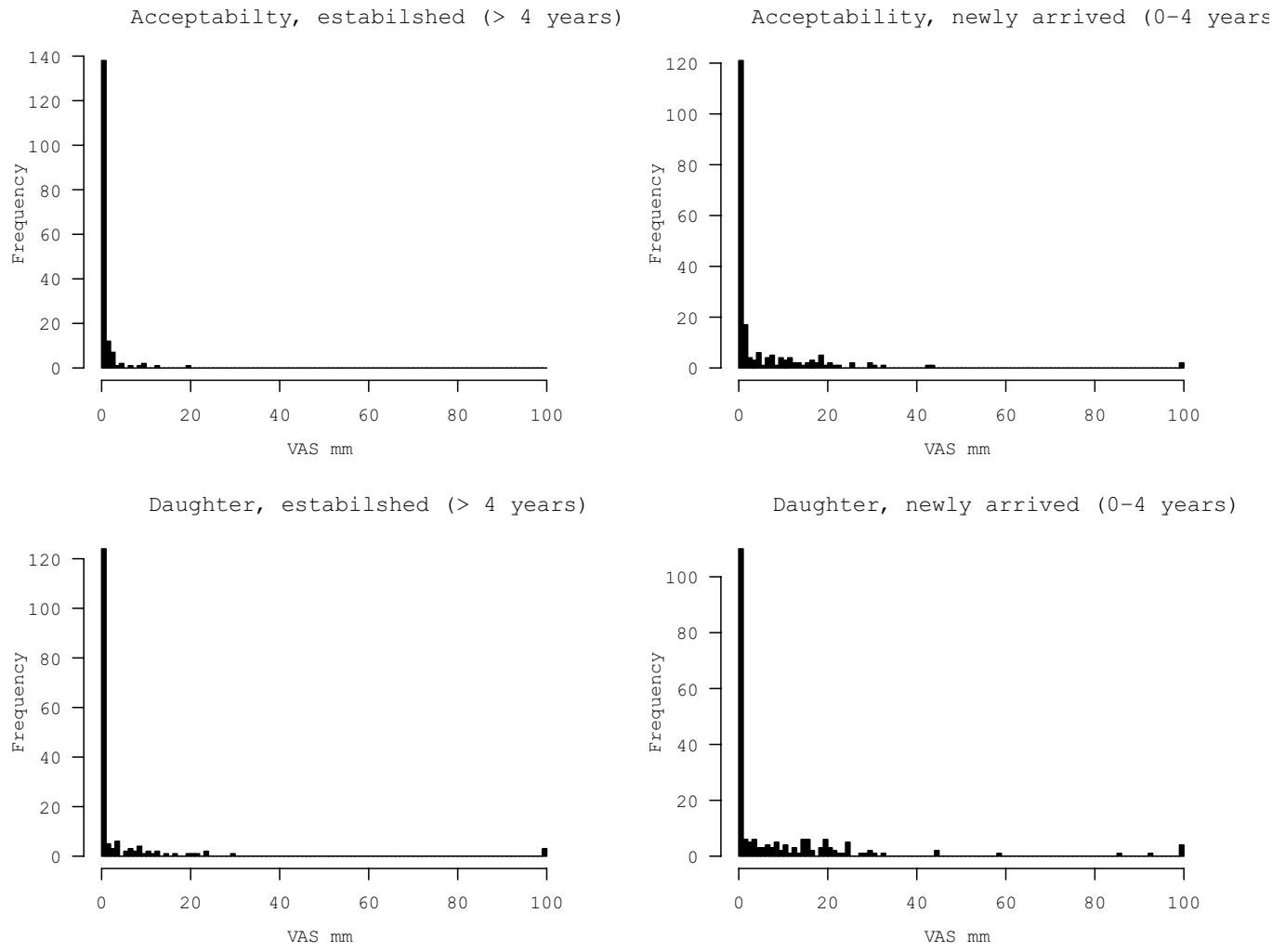

Figure 2 Acceptability of different forms of FGC (outcome 1, upper graphs) and preferred form of FGC of daughter (outcome 2, lower graphs), stratified on established (n=166) and newly arrived (n=206). 0=No form of FGC; 100=All forms of FGC. FGC, female genital cutting; VAS, Visual Analogue Scale.

The proportion of individuals opposing FGC increased over time after migration in all three outcomes. Comparing those who opposed all forms of FGC with those who supported some form of FGC (from pricking to sewn closed) showed that newly arrived Somalis had higher odds of supporting FGC as compared with those who were established. To sort out finer differences in regard to years of residency in Sweden, the categories 'newly arrived' and 'established' were further divided into several smaller year intervals (≤2, 3–4, 5–9, 10–14, ≥15 years of residency). Compared with Somalis who had lived in Sweden for 15 years or more, the odds of viewing any form of FGC as acceptable was 11 times higher among Somalis residing in Sweden for less than 2 years (OR: 11.28, 95% CI 3.89 to 32.73). This group also had increased odds of wanting to cut their daughter (OR: 7.59, 95% CI 3.38 to 17.05) and to support the continuation of FGC (OR: 4.17, 95% CI 1.91 to 9.10). These associations also remained significant after adjusting for other background factors (table 4), suggesting that living in Sweden facilitates a transition in attitudes.

Stratifying the data on municipality did not substantially change interpretations made on attitudes towards FGC; the highest odds of supporting some form of FGC were still found among those with less than 2 years of residency in Sweden (supplementary table 1). The proportion who stated that FGC was acceptable and wished to perform it on daughter was higher among established and newly arrived Somalis in Gothenburg compared with those in Malmö, while the support for the continuation of FGC was higher in Malmö (supplementary tabe 2).

DISCUSSION

Our results suggest that migrating to and living in Sweden facilitates a transition in attitudes regarding FGC. Based on the primary outcomes, a majority of Somali immigrants opposed all forms of FGC with increased opposition over time after migration, and the majority of

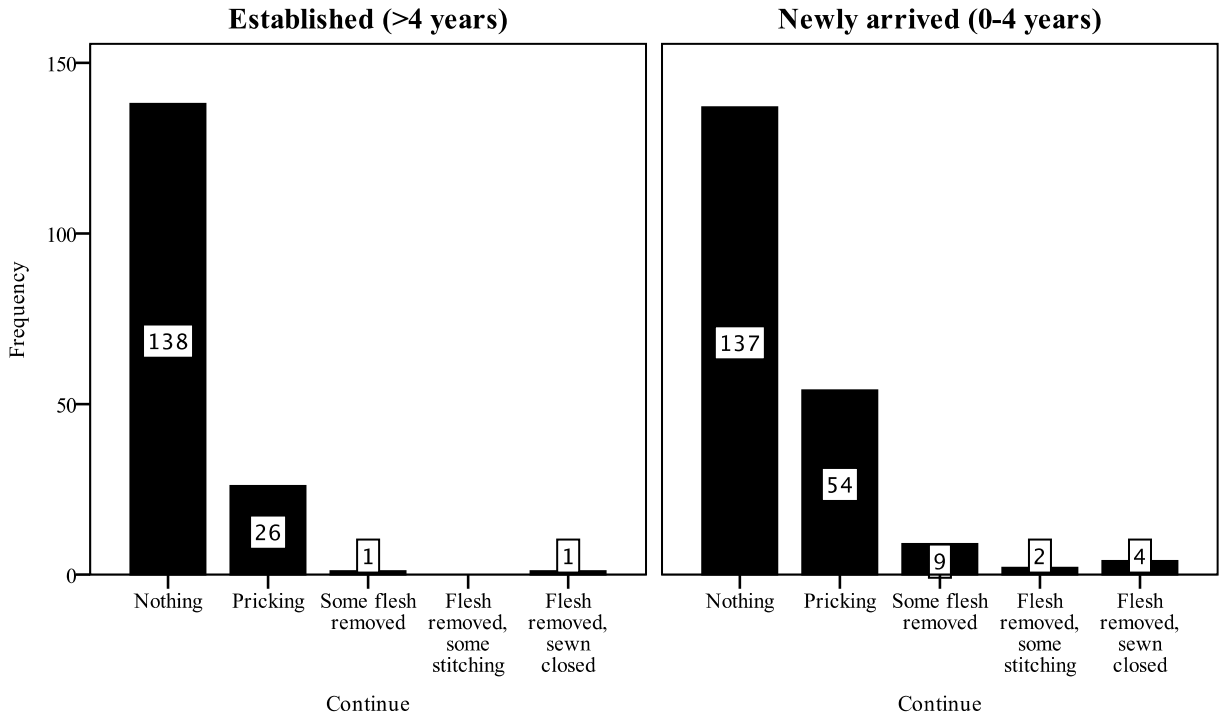

Figure 3 Attitudes regarding what form of female genital cutting that should continue to be practised (outcome 3), stratified on established (n=166) and newly arrived (n=206).

proponents of FGC supported a form of FGC where no tissue is removed—pricking. We argue that it would have been unethical to proceed with the planned intervention as it, with this baseline, would have been difficult to detect a change in attitudes before and after an intervention given the high opposition towards all forms of FGC and the evidence that a strong attitude change is already happening. Below we will further elaborate on why we made this decision.

When are interventions justified?

Our hypothesis was that living in Sweden facilitates attitude change regarding FGC, and our aim was to speed up this process through an intervention. However, there was already a high opposition towards all forms of FGC among Somali men and women, including newly arrived, suggesting that negative attitudes toward FGC are more widespread than we anticipated. Furthermore, among proponents of FGC, the support for practices causing anatomical change was low. This is reflected in the mean values of the VAS for newly arrived being 5.2 mm and 8.8 mm for outcomes 1 and 2, respectively. We had calculated the sample size to be able to detect a change of 15 mm on the VAS. Thus, with this baseline, it would have been difficult to detect a change in attitudes before and after an intervention without increasing the sample size significantly, which would have required resources we did not have. As a consequence, it would also not have been possible to evaluate the actual effectiveness of the intervention, which, in itself, makes it ethically questionable to proceed with an intervention. This lack of statistical power, as a result of the low support for practices causing anatomical change, was the main reason why we decided not to implement the planned intervention.

Because Somalis originate from a context where an estimated 98% of all females have been subjected to FGC, among whom approximately 63%–80% are infibulated, and at least 65% support the continuation of FGC,[1 27] questions arise regarding how the opposition to FGC can be so high among those who have migrated to Sweden. One explanation, in line with social convention theory, could be that living in diaspora provides opportunities to redefine and reinterpret social norms.[11 21 28] In Somalia, there is great social pressure on individuals to have their daughters cut in order for them to be accepted in society and seen as respectable, marriageable women, and being cut is seen as the norm.[1 21] However, after migration to Sweden, the migrants live in a different social context. There, FGC is criminalised, there is a 'zero tolerance' of FGC among Swedish authorities,[11 17] and women with FGC may be stigmatised as being cut is no longer the norm.[29] Furthermore, in encounters with other Muslims, Somali immigrants in diaspora have been found to start questioning the religious imperative of FGC. Consequently, religious and cultural customs are disentangled and what characterises being seen as a good Muslim is being redefined.[11 30]

Table 4 Odds of supporting some form of FGC among Somali immigrants according to years of residency in Sweden

Outcome	Years of residency in Sweden	n (%)	cOR†	95% CI	aOR‡	95% CI
Thinks FGC is acceptable (n=112/371)	Newly arrived (0–4 years)	84 (75.0)	3.42**	2.09 to 5.60	2.06*	1.12 to 3.79
	Established (>4 years)	28 (25.0)	1.00	Ref.	1.00	Ref.
	≤2	58 (51.8)	11.28**	3.89 to 32.73	5.42**	1.61 to 18.20
	3–4	26 (23.2)	10.24**	3.32 to 31.53	5.11*	1.48 to 17.73
	5–9	14 (12.5)	4.08*	1.27 to 13.15	2.74	0.78 to 9.71
	10–14	10 (8.9)	7.50**	2.13 to 26.45	5.09*	1.31 to 19.88
	≥15	4 (3.6)	1.00	Ref.	1.00	Ref.
Wishes to perform FGC on daughter (n=138/372)	Newly arrived (0–4 years)	96 (69.6)	2.58**	1.65 to 4.02	1.27	0.72 to 2.26
	Established (>4 years)	42 (30.4)	1.00	Ref.	1.00	Ref.
	≤2	71 (51.4)	7.59**	3.38 to 17.05	4.18**	1.47 to 11.90
	3–4	25 (18.1)	4.50**	1.85 to 10.95	2.83	0.95 to 8.42
	5–9	25 (18.1)	4.29**	1.77 to 10.42	4.18**	1.46 to 11.99
	10–14	9 (6.5)	3.02*	1.03 to 8.80	2.41	0.71 to 8.16
	≥15	8 (5.8)	1.00	Ref.	1.00	Ref.
Wants FGC to continue (n=97/372)	Newly arrived (0–4 years)	69 (71.1)	2.48**	1.51 to 4.09	2.00*	1.06 to 3.81
	Established (>4 years)	28 (28.9)	1.00	Ref.	1.00	Ref.
	≤2	55 (56.7)	4.17**	1.91 to 9.10	4.12**	1.44 to 11.80
	3–4	14 (14.4)	1.74	0.69 to 4.34	2.11	0.68 to 6.58
	5–9	14 (14.4)	1.67	0.67 to 4.18	2.03	0.70 to 5.95
	10–14	5 (5.2)	1.24	0.38 to 4.06	1.43	0.39 to 5.21
	≥15	9 (9.3)	1.00	Ref.	1.00	Ref.

aOR, adjusted OR; cOR, crude OR; FGC, female genital cutting.
% calculated on the subgroup of proponents of FGC. Individuals with missing data were excluded from the regression analyses.
*p<0.05, **p<0.01.
†Crude logistic regression.
‡Logistic regression adjusted for gender, age, marital status, education, Somali origin, cohabitation and employment.

Thus, with migration the social context changes, and the pressure to conform to traditional practices may be reduced, enabling individuals to renegotiate the practice of FGC. Differences in attitudes between individuals in FGC-practising and migrants in non-practising countries may also be due to selective migration: that more individuals with a certain set of values have migrated than others.[31] Attitude change regarding FGC has been reported among Somalis as well as other immigrant groups in Sweden[11 32] and among Somali diaspora to other countries.[15 28 30 33 34] Furthermore, there is a trend in Somalia towards performing less extensive forms of FGC,[27 35] suggesting that the practice of FGC is also being reassessed in Somalia.

Although the majority of Somalis in this study opposed all forms of FGC, this study, as well as other studies among migrants in Sweden,[36–38] has found individuals with positive attitudes towards the practice. The majority of proponents of FGC in this study supported pricking. Pricking has been described as having gained support among migrants in the Somali diaspora.[11 30] Given that we would *not* have observed a strong attitude change towards the opposition of all forms of FGC and indeed have had enough statistical power to detect small changes in attitudes as measured on the VAS, should an intervention targeting pricking have been implemented? This issue is a moot point. On one hand, advocates of a zero-tolerance approach claim that the existence or non-existence of physical harm does not determine how one should view this practice, as pricking is still a violation against girls' rights and bodily integrity.[39] Based on that argument, implementing an intervention targeting pricking would be justified. On the other hand, as pricking does not cause any anatomical changes, arguments that pricking has a limited impact on health and function have been brought forward.[40 41] The legal status of pricking is also contested. As circumcision of boys where tissue is removed is a legal practice, the justifications behind legislating against a practice on girls that does not involve the removal of tissue are questioned.[40] Furthermore, national and international legislation, such as the Istanbul convention, usually legislate against practices that mutilate or cause permanent changes to the genitalia, leaving the illegality of pricking open to interpretation as it does not cause permanent changes.[40 42 43] Further, as researchers, it is important to reflect on what impact, positive and negative, our studies can have on the study population and why we define certain practices as problematic and problematic for whom. All anti-FGC interventions carry the risk of reinforcing the stigma of being cut, and addressing the negative sexual, reproductive and physical health aspects of the practice may leave women who have been subjected to FGC with a feeling of having an incomplete body and inadequate, dysfunctional sexuality.[7 8] Thus, to implement an anti-FGC intervention in the Swedish context could have the positive effect of decreasing the support of pricking, however, at the expense of possibly increasing the stigma of being cut as well as reinforcing a feeling among women with FGC of having an inadequate body and sexuality. Based on the above arguments, the risks of implementing an intervention targeting pricking would outweigh the benefits; thus, an intervention would not be justified.

Strengths and limitations

This study contributes to a better understanding of how attitudes toward FGC evolve after migration, which is important for informed decision making and correct resource allocation among authorities and campaigners. This study involved Somalis at several levels: in designing the study, collecting data, interpreting the findings and as participants. Furthermore, it included a wide variety of Somalis in regard to age, socioeconomic status and years of residency in Sweden, enhancing a comprehensive understanding of attitudes towards FGC among this group. Furthermore, in order to validate the findings, preliminary results were discussed with the Somali key informants as well as in two group discussions with approximately 60 and 30 Somalis in Gothenburg and Malmö, respectively. We based our survey questions on the anatomical extent of FGC, measured by a VAS, rather than on the WHO classification or the terms 'Sunna and pharaonic circumcision' as these classifications fail to capture the wide variety of practices of FGC.[44 45] Where to place the different forms of FGC on the VAS may have been interpreted differently between the participants, even though the data collectors tried to minimise this risk. Therefore, we present two categorisations of the VAS, one strict and one based on equal proportions.

Participants were recruited through purposive sampling in Somali organisations and not through random sampling, which could cause selection bias. However, the demographics of the study participants were similar to those of the general Somali population in Gothenburg and Malmö. We do not know how many declined to participate or what attitudes the participants had towards FGC before migrating to Sweden. Observed differences in attitudes between the two municipalities could be due to actual differences or differences due to data collectors. However, data collectors were all trained in order to minimise this risk. When collecting questionnaire data, especially on a sensitive topic such as FGC, there is a risk of respondent bias. Because the practice is illegal in Sweden, some participants may have been hesitant to report a positive attitude toward FGC. To counteract this risk, we chose data collectors who themselves are Somalis, not associated with any authority and respected within the community. Furthermore, we asked about the participants' attitudes rather than behaviour. Attitudes towards FGC are not always translated into a corresponding behaviour, and vice versa.[46] It is therefore not possible in this study to draw further conclusions on the participants' actual behaviour. Studies of this type are encouraged. More research is needed in order to better

understand why attitudes change and what factors that are associated with negative and positive attitudes towards pricking.

Conclusion

In today's multi-ethnic European societies, there is a need to better understand attitudes to FGC among migrants from FGC-practising countries. In this paper, we have shown how we, as researchers, had to re-evaluate our decision to implement an anti-FGC intervention among Somalis in Sweden. Our results suggest that migrating to and living in a non-FGC-practising country, such as Sweden, facilitates a transition in attitudes regarding FGC, with increased opposition towards the practice over time. In our study, we also identified support for mainly pricking. We argue that it would have been unethical to proceed with the planned intervention as it, with this baseline, would have been difficult to detect a change in attitudes before and after an intervention given the high opposition towards FGC and the evidence that a strong attitude change is already happening. With the goal of total abolition of FGC, we need to increase our understanding and knowledge of pricking before deciding on subsequent steps to be taken.

Acknowledgements We wish to thank all participants who invested their time in this project and the Somali key informants, especially Zahra Abdi Mohamed and Asha Omar Geesdiir, for their diligent work to recruit and interview participants.

Contributors BE had the original idea for the study and designed it together with AW, KES, SJ and CK. Data collection was monitored by AW. The analysis of the data, interpretation of the findings and manuscript writing were done by AW together with all co-authors.

Funding This work was supported by the Swedish Research Council for Health, Working Life and Welfare (2013-2095, 2015-00771), the Swedish Research Council (2015-03546), the County Administrative Board Uppsala (801-2478-15) and the Sven Jerring Foundation.

Competing interests None declared.

Patient consent NA. The participants in this study gave their verbal informed consent.

Ethics approval The study was approved by the Regional Ethical Review Board of Uppsala, Sweden (2014/274).

Provenance and peer review Not commissioned; externally peer reviewed.

Data sharing statement Researchers can apply to obtain raw data from the corresponding author at anna.wahlberg@kbh.uu.se.

REFERENCE

1. United Nations Children's Fund. Female genital mutilation/cutting. *A statisticaloverview and exploration of the dynamics of change*. New York: UNICEF, 2013.
2. United Nations Children's Fund. *Changing a harmful social convention: female genitalmutilaiton/cutting*. Florence: UNICEF, 2005.
3. Johnsdotter S, Essén B. Genitals and ethnicity: the politics of genital modifications. *Reprod Health Matters* 2010;18:29–37.
4. Brown K, Beecham D, Barrett H. The applicability of behaviour change in intervention programmes targeted at ending female genital mutilation in the EU: integrating social cognitive and community level approaches. *Obstet Gynecol Int* 2013;2013:1–12.
5. Muteshi J, Sass J. *Female genital mutilation in Africa: an analysis of current abandonment approaches*. Nairobi: PATH, 2005.
6. Johansen REB, Diop NJ, Laverack G, *et al*. What works and what does not: a discussion of popular approaches for the abandonment of female genital mutilation. *Obstet Gynecol Int* 2013;2013:1–10.
7. Jirovsky ME. *Contemporary meanings of female circumcision/female genital mutilation (FC/FGM) in Bobo-Dioulasso, Burkina Faso—Local aspects of a global assemblage [thesis]*. Wien: University of Vienna, 2014.
8. Lien IL, Schultz JH. Internalizing knowledge and changing attitudes to female genital cutting/mutilation. *Obstet Gynecol Int* 2013;2013:1–10.
9. Socialstyrelsen [Swedish National Board of Health and Welfare]. *Flickor och kvinnor i Sverige som kan ha varit utsatta för könsstympning. En uppskattning av antalet [Girls and women in Sweden who may have been exposed to female genital mutilation. An estimate of the number]*. Stockholm: Socialstyrelsen, 2015.
10. Berg RC, Denison E. Effectiveness of interventions designed to prevent female genital mutilation/cutting: a systematic review. *Stud Fam Plann* 2012;43:135–46.
11. Johnsdotter S. *Created by God. How Somalis in Swedish exile reassess the practice of female circumcision [thesis]*. Lund: Lund University, 2002.
12. Johansen RE. Pain as a counterpoint to culture: toward an analysis of pain associated with infibulation among Somali immigrants in Norway. *Med Anthropol Q* 2002;16:312–40.
13. Farina P, Ortensi LE. The mother to daughter transmission of female genital cutting in emigration as evidenced by Italian survey data. *Genus* 2014;70:111–37.
14. Johnsdotter S, Essén B. Cultural change after migration: circumcision of girls in Western migrant communities. *Best Pract Res Clin Obstet Gynaecol* 2016;32:15–25.
15. Gele AA, Johansen EB, Sundby J. When female circumcision comes to the West: attitudes toward the practice among Somali Immigrants in Oslo. *BMC Public Health* 2012;12:697.
16. Open Society Foundation. *Somalis in Malmö*. New York: Open Society Foundation, 2014.
17. SFS 1982:316. *Lag med förbud mot könsstympning av kvinnor [Act prohibiting female genital mutilation of women]*. Stockholm, 1982.
18. Statistiska centralbyrån [Statistics Sweden]. *Befolkningsstatistik: Utrikes födda efterlån, kommun och födelseland 31 december 2015 [Foreign-born persons in Sweden by county, municipality and county of birth, December 31, 2015]*, 2015.
19. Johnsdotter S. *Somaliska föreningar som överbryggare. En uppföljning av 28 svensksomaliska projekt som fått stöd av Allmänna arvsfonden [Somali associations as bridge-builders: a follow-up on 28 Somali projects being supported by the Swedish Inheritance Fund]*. Malmö: Health and Society, Malmö University and the Swedish Inheritance Fund, 2010.
20. McChesney KY. Successful approaches to ending female genital cutting. *J Sociol Soc Welf* 2015:3–24.
21. Mackie G, LeJeune J. *'Social Dynamics of Abandonment of Harmful Practices: A New Look at the Theory.' Special Series on Social Norms and Harmful Practices, Innocenti Working Paper No. 2009-06*. Florence: UNICEF Innocenti Research Centre , 2009.
22. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. *Res Nurs Health* 2007;30:459–67.
23. World Health Organization. *Eliminating female genital mutilation: an interagency statement UNAIDS, UNPD, UNECA, UNESCO, UNFPA, UNHCHR, UNHCR, UNICEF, UNIFEM, WHO*. Geneva: WHO, 2008.
24. Eldridge SM, Ashby D, Kerry S. Sample size for cluster randomized trials: effect of coefficient of variation of cluster size and analysis method. *Int J Epidemiol* 2006;35:1292–300.
25. Chongsuvivatwong V. epicalc: Epidemiological calculator. R package version 2.15.1.0, 2012. http://cran.r-project.org/package=epicalc.
26. Core Team R. R:A language and environment for statistical computing. 2013 http://www.r-project.org/.
27. Newell-Jones K. *Empowering communities to collectively abandon FGM/C in Somaliland: baseline research report*. London: ActionAid, 2016.

28. Jinnah Z, Lowe L. Circumcising circumcision: renegotiating beliefs and practices among Somali women in Johannesburg and Nairobi. *Med Anthropol* 2015;34:371–88.
29. Goffman E. *Stigma: notes on the management of spoiled identity*. London: Simon and Schuster, 1963.
30. Berns McGown R. *Muslims in the diaspora: the Somali communities of London and Toronto*. Toronto: University of Toronto Press, 1999.
31. Vogt S, Efferson C, Fehr E. *The risk of female genital cutting in Europe: comparing immigrant attitudes toward uncut girls with attitudes in a practicing country*: SSM Popul Health, 2017.
32. Johnsdotter S, Moussa K, Carlbom A, *et al*. "Never my daughters": a qualitative study regarding attitude change toward female genital cutting among Ethiopian and Eritrean families in Sweden. *Health Care Women Int* 2009;30:114–33.
33. Morison LA, Dirir A, Elmi S, *et al*. How experiences and attitudes relating to female circumcision vary according to age on arrival in Britain: a study among young Somalis in London. *Ethn Health* 2004;9:75–100.
34. Talle A. Female circumcision in African and beyond: the anthropology of a difficult issue. In: Hernlund Y, Shell-Duncan B, eds. *Transcultural bodies: female genital cutting in global context*: Rutgers University Press, 2007.
35. Vestbøstad E, Blystad A. Reflections on female circumcision discourse in Hargeysa, Somaliland: purified or mutilated? *Afr J Reprod Health* 2014;18:22–35.
36. Ahlberg BM, Krantz I, Lindmark G, *et al*. 'It's Only a Tradition': making sense of eradication interventions and the persistence of female 'circumcision' within a Swedish context. *Crit Soc Policy* 2004;24:50–78.
37. Elgaali M, Strevens H, Mårdh PA. Female genital mutilation—an exported medical hazard. *Eur J Contracept Reprod Health Care* 2005;10:93–7.
38. Isman E, Ekéus C, Berggren V. Perceptions and experiences of female genital mutilation after immigration to Sweden: an explorative study. *Sex Reprod Healthc* 2013;4:93–8.
39. Earp BD. In defence of genital autonomy for children. *J Med Ethics* 2016;42:158–63.
40. Rogers JB. The first case addressing female genital cutting in Australia: where is the harm? *AltLJ* 2016;41:235–8.
41. Arora KS, Jacobs AJ. Female genital alteration: a compromise solution. *J Med Ethics* 2016;42:148–54.
42. Council of Europe. *Convention on preventing and combating violence against women and domestic violence*. Istanbul, 2011.
43. Johnsdotter S. *FGM in Sweden. Swedish legislation regarding "female genital mutilation" and implementation of the law*. Ghent: International Centre for Reproductive Health, Ghent University, 2003.
44. Elmusharaf S, Elhadi N, Almroth L. Reliability of self reported form of female genital mutilation and WHO classification: cross sectional study. *BMJ* 2006;333:124.
45. Lunde IB, Sagbakken M. Female genital cutting in Hargeisa, Somaliland: is there a move towards less severe forms? *Reprod Health Matters* 2014;22:169–77.
46. Shell-Duncan B, Herniund Y. Are there "stages of change" in the practice of female genital cutting? Qualitative research findings from Senegal and the Gambia. *Afr J Reprod Health* 2006;10:57–71.