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## **Estimating the number of foreign women with female genital mutilation/cutting in Italy**

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## **Estimating the number of foreign women with female genital mutilation/cutting in Italy**

### **Abstract**

**Background:** Female Genital Mutilation/cutting (FGM/C), is an emerging topic in Europe as a consequence of the increasing proportion of women migrating from Africa. The prevalence of FGM/C is however unknown in Europe, as there are no country-representative surveys on this topic. The aim of this study is to provide an estimate for Italy for the year 2010.

**Methods:** This study relies on the results of the First Survey on Women at Risk of FGM/C held in Italy in 2010. This cross-sectional survey involved 1,000 migrants from the main FGM/C practicing countries aged 15-49 living in the Italian region of Lombardy. The estimate presented is based on a method combining direct estimates for the communities involved in the survey and indirect estimates for other communities. Indirect estimations were obtained using a refinement of the most general extrapolation-of-country-prevalence-data method.

**Results:** It is estimated that some 57,000 foreign girls and women aged 15-49 with FGM/C were living in Italy in 2010. The Nigerian community is the most affected, with around 20,000 women with FGM/C (35.5% of the total number women affected in Italy), followed by the Egyptian community (around 18,600 women with FGM/C; 32.5%). Another 15% of the women affected are from the Horn of Africa, notably from Ethiopia (3,200 women; 5.5%), Eritrea (2,800 women; 4.9%) and Somalia (2,300 women; 4%).

**Conclusions:** This study offers an additional methodological advancement by proposing a combination of direct and indirect estimation of FGM/C. The results are crucial information to plan interventions and targeted policies.

**Keywords:** female genital mutilation, female genital cutting, FGM/C, Italy, Migrant health

## Introduction

Female genital mutilation/cutting<sup>1</sup> (FGM/C) is a term that refers to all traditional practices that intentionally alter the female genital organs for non-medical reasons. It is recognized as a form of gender-based violence as well as a violation of the human rights of children and women (WHO, 2008). These practices occur predominantly in 27 African countries plus Yemen, Iraq and Indonesia but also in other areas where communities from practicing countries are settled, including Europe (UNICEF, 2013; 2016). During recent years, FGM/C has gained considerable attention in the EU: experts have repeatedly pointed out the need for a comprehensive strategy based on a gender-sensitive and human-rights approach that empowers women and balances the state measures of protection, prevention and prosecution. Within this framework, an improvement in the collection and dissemination of data has been clearly recognized as an action of primary importance (EIGE, 2013). A determination of the number of migrants with FGM/C is in fact very important for informed decision-making, to determine resource allocation, to monitor progress towards practice abandonment in emigration and to better plan health care and psychological assistance to meet women's special needs.

In practicing countries the main sources of data concerning the FGM/C status of women are the Demographic and Health Survey (DHS) developed by ICF International (DHS, 2015) and the Multiple Indicator Cluster Survey (MICS) directed by UNICEF (2015). Using national age-specific FGM/C prevalence rates from these surveys along with data on the female population, country by country estimates have been provided for women aged 15-49 and recently also for women aged 50 and older and for girls aged 10-14 (Yoder et al., 2013). On the contrary, the extent of the phenomenon in western countries is substantially unknown as in the 28 EU Member States there are no ongoing representative surveys similar to the MICS and DHS. Several studies have been carried out in certain EU countries but, due to the variation in methodologies and approaches used, these didn't generate comparable estimates. A valuable effort to make a systematic revision of such studies was recently carried out in 2013 by EIGE's research that mapped the scale of the diffusion of FGM/C in the 28 EU

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<sup>1</sup> Many terms have been used to describe this practice. The term "female genital mutilation" (FGM) is used, among others, by WHO while others use the more neutral term "female genital cutting" (FGC). In this paper, we use the most broadly inclusive term "female genital mutilation/cutting" (FGM/C) accordingly to United Nations (UN) agencies.

Member States, providing a thorough analysis of the existing data, studies and methodologies used (EIGE, 2013; Leye et al., 2014). Estimating the number of women with FGM/C poses several theoretical and informative challenges. Determining a reliable number of women living in emigration by country of origin and a correct prevalence among each different national group are among the most crucial points. To this end, EIGE's experts have suggested distinguishing between a standard baseline estimate (based on census and DHS/MICS data) and enhanced FGM/C prevalence estimates that can be computed for countries where it is possible to obtain a more accurate picture of the phenomenon (EIGE, 2013; Leye et al., 2014). Consistent with this approach, our paper presents an enhanced estimation of the number of women with FGM/C for Italy in 2010. To obtain this result we applied a method that was recently proposed by these authors (Ortensi et al., 2015) along with an additional methodological advancement aimed at including estimation from primary data on FGM/C available for Italy. In the presentation of results, close attention will be paid to the theoretical hypotheses of the study.

### **3. Methods**

The data required to produce a national estimate of women with FGM/C in an immigration context include a measure of the prevalence of the phenomenon in each overseas community and the number of foreign women to whom this prevalence refers.

To present prevalence data we distinguish between the results from dedicated surveys (primary data or direct estimates) and data used to produce indirect estimates (secondary data).

*Primary data about prevalence.* Primary data on prevalence derives from the First Italian Survey on the Presence of Women at Risk of FGM/C (Farina, 2010; Farina and Ortensi, 2014).

This original survey consisted of 1,000 face to face interviews of women aged 15-49 living in the Italian region of Lombardy, including undocumented migrants. This sample is representative of the main 9 practicing communities present in Italy (Cote d'Ivoire, Burkina Faso, Egypt, Ethiopia, Ghana, Nigeria, Senegal, Somalia and Eritrea) through a quota sampling. Given the sensitivity of the subject the interviews were carried out by a team of female foreign interviewers well acquainted with the issues, and belonging to the communities selected in the sample, who were thus able to translate and

formulate questions appropriately<sup>2</sup>. To reach the number of interviews required for each nationality a combination of facility-based and respondent-driven sampling has been used. The FGM/C experience was self-reported by the women interviewed and no physical examination was performed in relation to the survey. These data share most of the limitations expected of surveys on hard-to-reach populations with respondent driven sampling or facility based sampling (Verma, 2013; Tourangeau, 2014). However this survey, along with the French “Excision et Handicap (ExH) project” (Andro et al., 2009) and the German “Listening to African Voices” project (Behrendt, 2011) is among the first innovative examples of ad hoc surveys on FGM/C carried out in Europe and gives the first insights into a phenomenon previously overlooked in quantitative European surveys (EIGE, 2013).

*Secondary data about prevalence.* Data on the national prevalence of FGM/C in practicing countries, which was used as a starting point in producing indirect estimation of the prevalence for practicing countries not included in the ad-hoc survey, comes from DHS (DHS, 2015) and MICS (UNICEF, 2015) surveys available.

*Data about women from practicing communities in Italy.* The number of women to which prevalence data refers is another crucial passage in the estimation of the number of women affected by FGM/C (EIGE, 2013). Besides the general recommendation of using high-quality data, it is important to underline that the omission of undocumented migrants as well as naturalized citizens can result in a significant underestimation of FGM/C. Data used in this study on the presence of women aged 15-49 by citizenship was supplied by the ISMU Foundation (Blangiardo, 2011) and provides an advance in the field of FGM/C estimations compared to census data as it includes estimates for undocumented migrants, therefore covering all of the foreign population at risk for FGM/C, irrespective of their legal status<sup>3</sup>.

This data has, however, at least two relevant limits depending on the migration process. First, it doesn't take into account migrants who have acquired Italian citizenship. Second, it's not possible to

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<sup>2</sup> This has been a key factor in facilitating intimate conversation among women. A very positive outcome was reported by most of the interviewers. These factors contributed to fewer than 15% of the women initially involved refusing the interview.

<sup>3</sup> Explaining the rationale of these estimates goes beyond the aims of this paper. Readers can refer the authors for further information.

distinguish between the first and second generations. These relevant limitations are mitigated by the low number of naturalization processes and by the small number of second generation girls<sup>4</sup> aged 15 and over in Italy (Eurostat, 2015). Italy has in fact only recently become a country of family migration (Triandafyllidou and Gropas, 2007).

We suggest that the best available data for each community should always be used to produce estimates. Consistently, this study combines direct estimates of FGM/C prevalence among first generation women from the First Italian Survey on the Presence of Women at Risk of FGM/C (Farina, 2010; Ortensi et al., 2015) for the nine citizenships at risk included in the survey, with indirect estimation for the other communities originating from the practicing countries not covered by primary data (Ortensi et al., 2015).

*Direct estimation.* The survey included the 9 most representative practicing communities settled in Italy selected from the countries with a high proportion of women with FGM/C at the national level. Estimation of the prevalence of FGM/C in each community is provided according to the self-reported status of the women interviewed, consistently with the DHS/MICS standard methodology. In order to obtain an accurate final proportion of mutilated women ( $\bar{m}_j$ ) resulting from the survey, weights have been applied to each woman's record (Farina, 2010; Farina and Ortensi, 2014).

The final weights applied to each woman's record result from the combination of three partial multipliers and provide corrections for nationality and age structure:

$$v_{sti} = \frac{1}{\gamma_s} * \frac{1}{\delta_t} * \frac{1}{\varepsilon_i^s}$$

Where:

$\gamma_s$  is the community's sampling fraction (i.e. the ratio of number of women of the community  $s$  included in the sample to the total estimated number of women of the community  $s$  in Italy)

$\delta_t$  is the macroarea's sampling fraction (i.e. the ratio of number of women of the macroarea  $t$  included in the sample to the total estimated number of women of the macroarea  $t$  in Italy)

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<sup>4</sup> It has been shown that migrants who were born in Europe versus their home country have a lower risk of being circumcised (Korfker et al., 2012; Johnsdotter et al., 2009; Morison et al., 2004, Farina and Ortensi, 2014, EIGE, 2015). Dedicated methods for the estimation of prevalence in second generations have been proposed recently (EIGE, 2015).



$\varepsilon_i^s$  is the sampling fraction of each ageband for each community  $s$  (i.e. the ratio of number of women of the community  $s$  and of ageband  $i$  included in the sample to the total estimated number of women of the community  $s$  and of ageband  $i$  in Italy).

Weight calculations are based on ISMU data for 2010 (Blangiardo, 2010).

*Indirect estimation.* The method used to estimate prevalence for communities not included in the survey is a refinement of the most general extrapolation-of-country-prevalence-data method, a procedure that applies practicing countries' prevalence rates onto data of the relative female population living in a given EU country (EIGE, 2013). This approach is the most widely used as it's the least complex and the cheapest technique (Equality Now et al., 2012). Despite its popularity, this method has strong methodological limitations as it fails to consider the process of social and geographical selection of migrants.

To overcome some of these limitations this study applies a method recently proposed by the current authors for first generation migrants (Ortensi et al., 2015). The method is based on the theoretical assumption that migration, especially at the pioneering stage, is a selective process. Many studies have shown that migrants are not a random cross-section of the populations from which they originate (Tacoli, 1995; Lindstrom and Ramírez, 2010; McKenzie and Rapoport, 2010; Czaika and Vothknecht, 2012). An analysis of the trans-Saharan Migration to the EU has confirmed the existence of mechanisms of positive selection. Although these flows originate from some of the poorest countries, migration is generally a conscious choice by relatively well-off individuals and households to enhance the livelihoods of all members, rather than a desperate response to destitution. The relatively high costs of migration into Europe partly explain why African migrants generally do not belong to the poorest milieus in origin countries, even when they move as a consequence of the fear of persecution and violence (OECD, 2006). As a consequence, compared to their non migrant co-nationals, they are often relatively well educated and from moderate socio-economic backgrounds (IOM, 2008; de Haas, 2007, 2006)<sup>5</sup>. As there is evidence from different practicing countries indicating that wealth, education or urban residence often correlate with the occurrence of FGM/C (UNICEF, 2013) it is thus improbable that the FGM/C rates assessed in African countries match those of communities abroad.

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<sup>5</sup> Selection has also been incorporated into Migration Studies theoretical frameworks as a key factor in explaining fertility (Courgeau, 1989) and "the healthy immigrant effect" (Kennedy et al., 2006).

This refined indirect estimation method calls for two steps. The preliminary operation is the correction of the prevalence deriving from the DHS/MICS data ( $m_t^*$ ). This revision is needed in order to equalize the national surveys performed in different years before 2010. Otherwise the application of prevalence rates based on older data would overestimate the prevalence even under the hypothesis that the sample of migrants is fully representative of the country of origin because in most countries the phenomenon is decreasing in the younger generations (UNICEF, 2015b).

The second step is the correction of the practicing countries' national data according to the selection hypothesis. According to this method, and on the basis of available national DHS/MICS data, the prevalence for women in overseas communities is estimated by multiplying the national updated prevalence by the mean of the ratios between the observed prevalence for younger, higher educated, urban settled and wealthier women to the national average. The comparison between indirect and direct estimates has shown that this correction reduces the bias due to the application of rough country data to overseas communities (Ortensi et al., 2015).

In this study we are advancing previous results by proposing a combination of direct and indirect estimation and by providing an estimation for Italy.

To apply data from the survey conducted in the region of Lombardy to Italy as a whole, we have to make the hypothesis that no substantial territorial differences exist in the occurrence of FGM/C among women from the same community settled in Italy. This hypothesis is not unrealistic as being mutilated is a characteristic dependent upon a women's ethnic background and it is not directly related to the choice of the migration setting in Italy. Moreover, specific information about the regional settlement of different ethnic groups from each practicing country is not available.

The total number of women with FGM/C in Italy is estimated as follows:

Let  $P_{j,15-49,t}$  be the number of women aged 15-49 living in Italy irrespective of legal status in year  $t=2010$  from each country  $j$  included in the survey

Let  $\overline{m}_{j,t}$  be the prevalence estimated for women aged 15-49 from the survey for countries  $j$  included in the survey in the year  $t$

Let  $P_{i,15-49,t}$  be the number of women aged 15-49 living in Italy irrespective of legal status in the year  $t$  from each country  $i$  not included in the survey

Let  $m'_{i,t}$  be the estimated prevalence for women aged 15-49 according to the selection hypothesis for countries  $i$  not included in the survey

The estimated number of mutilated/cut women aged 15-49 is calculated as:

$$\overline{P_{15-49,t}^m} = \sum_j \bar{m}_{j,t} P_{j,15-49,t} + \sum_i m'_{i,t} P_{i,15-49,t}$$

## Results

The prevalence rates for overseas communities according to the results of the 2010 Italian survey along with the national prevalence from the last DHS/MICS survey are reported in table 1. The proportion of women with FGM/C among communities varies significantly, ranging from a maximum of 91.5% among the Somali to a minimum of 4.2% among the Ghanaian.

*[Table 1 about here]*

A comparison among prevalence rates by country of origin and direct estimation for each of the communities surveyed confirm that the baseline DHS/MICS prevalence or extrapolation-of-country-prevalence-data method leads to a general overestimation of the prevalence of FGM/C among migrants. Differences between the DHS/MICS data are greater (>15%) for communities from Eritrea, Senegal and Ethiopia. The notable exception of Nigeria, a community where the prevalence is more than twice the proportion observed at the national level, is due to a strong phenomenon of geographical and social selection<sup>6</sup> and is therefore consistent with our research hypotheses.

Indirect estimates for the prevalence rates according to the overseas communities are reported in table 2. The correction provided on the basis of the selection hypothesis predicts a lower expected prevalence for all of the countries of origin except for Mali and Sudan.

The combination of direct and indirect estimation shows that the expected proportion of women with FGM/C in overseas communities is likely to be lower than that observed in most countries of origin, with the exception of countries where a higher proportion of FGM/C is positively correlated with socioeconomical selection (Nigeria, Mali and Sudan).

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<sup>6</sup> In Nigeria the prevalence rate of excised women is higher than the national level for women who are more educated, live in wealthier families and reside in urban settings. Moreover this result is also due to a strong geographical selection of the migration flow of Nigerian women to Lombardy, which mainly originated from the Edo state (Caritas/Migrantes, 2010)

*[Table 2 about here]*

According to our study the total number of women living in Italy with FGM/C was around 57,000 in 2010<sup>7</sup> (table 3). This number corresponds to a proportion of 42 % of the women from practicing countries. Two groups alone, Nigeria and Egypt, account for 68% of the total number of women with FGM/C present in Italy, while these two groups account for only 39% of the total number of women from practicing countries. Women from the Horn of Africa, linked to Italy by former colonial ties, altogether account for another 15% of the total number of women with FGM/C. This figure is considerably higher than the most recent figure for Italy, which accounted for the 35,000 women affected as of 2009 (Istituto Piepoli, 2009; EIGE, 2013).

*[Table 3 about here]*

## **Discussion**

This study is an example of enhanced estimation of the number of FGM/C women in an immigration context. At the methodological level it proposes a combined use of direct and indirect estimation. The application of this approach allows researchers to base their estimates on the most accurate and reliable data available. In order to correctly evaluate the proportion of women with FGM/C the use of primary data deriving from a sample survey is undoubtedly the more advisable source. These surveys must, however, be designed carefully so as to properly investigate such a sensitive issue in the context of an elusive population. Should such an option not be available, or in the case of communities too small to be included in sample surveys, it is possible to introduce corrections to the standard extrapolation-of-country-prevalence-data procedure. As for data on the migrants' presence, the

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<sup>7</sup> Data about Iraq and Indonesia were not available as of 2010. Due to the small number of women present in Italy from these two communities a rough evaluation the number of women with FGM/C (not based on the current method) relying on more recent data from Iraq and Indonesia (UNICEF, 2016) suggest that around 500 women from these communities could possibly be added to our current estimate for 2010.

availability of data, including an estimation of irregular migrants, represents an improvement as compared to the standard data usually available for western countries.

The evaluation of the number of women affected by FGM/C is important for policy makers and for planning health services. Several European Member States are developing policies for health and psychosocial care, child protection measures and prevention programs against FGM/C. The effectiveness of such interventions needs to be evaluated through a reliable indicator such as the primary data on prevalence of FGM/C over the time. The possibility to produce estimates mainly based on surveys rather than on the extrapolation-of-country-prevalence-data procedure only is very important in order to reduce the knowledge gap and, in the case of repeated surveys, to monitor the trends. The presence of more than 50,000 women affected by FGM/C in Italy confirms the necessity of raising awareness and knowledge on this topic inside and outside the health services sector. The diffusion of these estimates, in any case, needs to be well thought out since they could be used for varied political or ideological purposes, including anti-discrimination and anti-immigrant campaigns.

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### **Conflicts of interest;**

None to be declared.

### **Key-points;**

- Due to international migration, female genital mutilation/cutting (FGM/C) has become an issue of increasing concern in most host countries such as Italy.

- The objective of this study was to estimate the number of women aged 15-49 with FGM/C present in Italy in 2010 irrespective of their legal status. The estimated number of women in Italy aged 15-49 with FGM/C was around 57,000. Most of these women are from Egypt and Nigeria. Another 15% of the women affected are from the Horn of Africa.
- An innovative method was used that combined both direct and indirect estimates of the prevalence in practicing communities. This method is an improvement of currently used methods to estimate FGM/C prevalence in the EU.

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**Tables** (each table on a separate page, complete with title and footnotes);

**Table 1. Estimated number of women with FGM/C in Lombardy (2010) according to the First Italian Survey on the Presence of Women at Risk of FGM/C survey data**

	<i>National prevalence from last DHS/MICS survey</i> $m_j^*$ [a]	<i>Year of last DHS/MICS survey</i>	<i>Prevalence in Lombardy among first generation migrants <math>\overline{m}_j</math></i> [b]	<i>Difference between direct estimation and DHS/MICS prevalence</i> [b]- [a]
Cote d'Ivoire	36.4	MICS 2006	22.8	-13.6
Burkina Faso	75.8	DHS 2010	65.7	-10.1
Egypt	91.1	DHS 2008	76.7	-14.4
Ethiopia	74.3	DHS 2005	56.4	-17.9
Ghana	3.8	DHS 2006	4.2	0.4
Nigeria	29.6	DHS 2008	75.3	45.7
Senegal	25.7	DHS 2010	5.9	-19.8
Somalia	97.9	MICS 2007	91.5	-6.4
Eritrea	88.7	PHS 2010*	67.2	-21.5

*Source:* Farina, 2010; Authors' elaborations on DHS/MICS data except \* Population and Health Survey

**Table 2. Prevalence of FGM/C at the practicing countries' national level according to selected characteristics, practicing countries' updated prevalence and indirect estimates for overseas communities according to the selection hypothesis**

	<i>National prevalence from last DHS/MICS survey</i> $m$ [a]	<i>Year of last DHS/ MICS survey</i>	<i>Updated national prevalence 2010</i> $m_t$	Indirect estimates for overseas communities $m'_t$ [b]	<i>Difference between indirect estimation and DHS/MICS prevalence</i> [b]- [a]
Benin	12.8	DHS 2006	12.1	<b>6.2</b>	-6,6
Cameroon	1.4	DHS 2004	1.1	<b>0.5</b>	-0,9
Central African Rep.	25.7	MICS 2006	24.3	<b>15.9</b>	-9,8
Chad	44.2	MICS 2010	44.2	<b>31.0</b>	-13,2
Djibouti	93.1	MICS 2006	92.6	<b>90.6</b>	-2,5
Gambia	78.3	MICS 2010	78.3	<b>72.0</b>	-6,3
Guinea	95.6	DHS 2005	94.4	<b>89.9</b>	-5,7
Guinea Bissau	50.5	MICS 2010	50.5	<b>39.9</b>	-10,1
Kenya	27.1	DHS 2008	25.4	<b>15.4</b>	-11,7
Liberia**	65.0	DHS 2007	62.5	<b>40.8</b>	-24,2
Mali	85.2	MICS 2010	85.2	<b>92.7</b>	7,5
Mauritania	72.2	MICS 2007	71.4	<b>64.7</b>	-7,5
Niger	2.2	MICS 2006	2.2	<b>0.0</b>	-2,2
Sierra Leone	88.3	MICS 2010	88.3	<b>75.2</b>	-13,1
Sudan***	65.5	MICS 2010	65.5	<b>78.9</b>	13,4
Tanzania	14.6	DHS 2010	14.6	<b>6.1</b>	-8,5

Togo	3.9	MICS 2010	3.9	<b>1.6</b>	-2,3
Uganda	1.4	DHS 2010	1.4	<b>1.4</b>	0
Yemen*	38.2	MICS 2003	38.2	<b>25.6</b>	-12,6

\* Some data refers to the YDHS 1997 survey. \*\*Some data refers to SDHS 2000 survey. \*\*\*Some data refers to the MICS 2006 survey.

*Source:* Authors' elaborations on DHS/MICS data

**Table 3. Estimated number of women by citizenship and with FGM/C. Absolute figures and percentages. Italy (2010)**

Country	<i>Estimated number of women aged 15-49 in Italy</i> [ $P_{15,49}$ ]	<i>% on the total number of women</i>	<i>Estimated prevalence of FGM/C in each community</i> [ $m'_t$ or $\overline{m}_j$ ]	<i>Estimated number of women with FGM/C in Italy 2010</i> [ $P_{15,49}^m$ ]	<i>% on the total number of women with FGM/C in Italy</i>
Benin	1,006	0.8	6.2	63	0.1
Burkina Faso	4,330	3.3	65.7	2,845	5.0
Cameroon	4,324	3.3	0.5	20	0.0
Central African Rep.	54	0.0	15.9	9	0.0
Chad	66	0.1	31.0	20	0.0
Djibouti	25	0.0	90.6	23	0.0
Egypt	24,286	18.6	76.7	18,627	32.5
Eritrea	4,156	3.2	67.2	2,793	4.9
Ethiopia	5,618	4.3	56.4	3,169	5.5
Gambia	239	0.2	72.0	172	0.3
Ghana	21,617	16.5	4.2	908	1.6
Guinea	1,135	0.9	89.9	1,020	1.8
Guinea Bissau	166	0.1	39.9	66	0.1
Ivory Coast	10,205	7.8	22.8	2,327	4.1
Kenya	997	0.8	15.4	153	0.3
Liberia	355	0.3	40.8	145	0.3
Mali	398	0.3	92.7	369	0.6
Mauritania	172	0.1	64.7	111	0.2

Niger	717	0.5	0.0	0	0.0
Nigeria	26,833	20.5	75.3	20,205	35.3
Senegal	18,211	13.9	5.9	1,074	1.9
Sierra Leone	558	0.4	75.2	420	0.7
Somalia	2,536	1.9	91.5	2,320	4.0
Sudan	457	0.3	78.9	360	0.6
Tanzania	502	0.4	6.1	30	0.1
Togo	1,359	1.0	1.6	22	0.0
Uganda	234	0.2	1.4	3	0.0
Yemen	103	0.1	25.6	26	0.0
Total	130,655	100.0	43.9	57,302	100.0

*Source:* Authors' elaborations on ISMU data (Blangiardo, 2010), First Italian Survey on the Presence of Women at Risk of FGM/C survey data and DHS/MICS data.