

# Female Genital Mutilation in Rural Regions of Iraqi Kurdistan: A Cross-Sectional Study

Public Health Reports  
2019, Vol. 134(5) 514-521  
© 2019, Association of Schools and  
Programs of Public Health  
All rights reserved.  
Article reuse guidelines:  
sagepub.com/journals-permissions  
DOI: 10.1177/0033354919860512  
journals.sagepub.com/home/phr



Deldar Morad Abdulah, MPH<sup>1</sup> ; Bewar Abdulaziz Sedo, MPS<sup>2</sup>; and Angela Dawson, PhD<sup>3</sup>

## Abstract

**Objectives:** Although female genital mutilation (FGM) is illegal in Iraqi Kurdistan, FGM continues to be performed frequently in Muslim communities in the region. The objectives of this study were to (1) determine the prevalence of FGM among females living in rural areas of Iraqi Kurdistan; (2) assess the attitudes toward FGM of mothers, village community leaders, and religious leaders; and (3) compare the prevalence of FGM by maternal education.

**Methods:** In a cross-sectional, double-randomized study of rural areas in Iraqi Kurdistan, we used a semi-structured questionnaire to interview 1657 mothers of 5048 daughters, 192 mullahs (religious leaders), and 386 mokhtars (community leaders). We examined data on maternal education level, daughters' ages, whether daughters had experienced FGM, and attitudes about FGM.

**Results:** A total of 2361 of 5048 (46.8%) daughters had experienced FGM. Of 1643 mothers, 565 (34.4%) supported FGM for their daughters in the future, although 825 of 1652 (49.9%) mothers were aware that it was illegal. Eighty-six of 192 (44.8%) mullahs and 339 of 382 (88.7%) mokhtars supported abandoning the practice of FGM. Support for FGM was significantly higher among uneducated mothers than among educated mothers (prevalence ratio [PR] = 1.45; 95% confidence interval [CI], 1.22-1.72;  $P < .001$ ) and significantly higher among mothers with  $\leq 9$  years of education than among mothers with  $> 9$  years of education (PR = 1.66; 95% CI, 1.17-2.35;  $P = .003$ ).

**Conclusions:** FGM continues to be prevalent in rural areas of Iraqi Kurdistan. Public health interventions in this region are needed to improve knowledge about the harmful effects of FGM, its illegality, and the importance of prevention, particularly targeting leaders and households with low education levels.

## Keywords

education, female circumcision, female genital cutting, prevention

Female genital mutilation (FGM), also known as female genital cutting and female circumcision, is defined as a non-therapeutic procedure involving the partial or complete removal of some or all of the external female genitalia. In 1994, at the 47th World Health Assembly, the World Health Organization declared that FGM was a violation of the human rights of women and girls.<sup>1,2</sup>

FGM is a deeply rooted cultural tradition that is practiced in more than 28 African countries and numerous countries in Asia and the Middle East, including Egypt,<sup>3</sup> Ghana,<sup>4</sup> Somalia,<sup>5</sup> and Iraq.<sup>6</sup> According to a 2016 report by the United Nations Children's Fund (UNICEF),<sup>7</sup> an estimated 200 million girls and women globally have undergone FGM, and approximately 3 million girls are at risk of experiencing FGM each year. UNICEF also reported prevalence rates among females aged 15-49 ranging from 1% in Cameroon, 1% in Uganda, 2% in Nigeria, and 8% in Iraq, to 93% in

Djibouti, 97% in Guinea, and 98% in Somalia from 2004 to 2015.<sup>7</sup> Serious health consequences are associated with FGM, including sepsis, shock, pain, urinary tract infections, mental health disorders, sexual issues, obstetric complications,<sup>8-10</sup> and death as a result of hemorrhage.<sup>11,12</sup>

<sup>1</sup> Adult Nursing Department, College of Nursing, University of Duhok, Iraqi Kurdistan, Iraq

<sup>2</sup> Department of Political Science, College of Humanities, University of Duhok, Iraqi Kurdistan, Iraq

<sup>3</sup> Australian Centre for Public and Population Health Research, University of Technology, Sydney, Australia

## Corresponding Author:

Deldar Morad Abdulah, MPH, University of Duhok, College of Nursing (City Campus), Adult Nursing Department, Nakhoshkhana Rd, Opposite Side of Azadi Hospital, PO Box 42001, 1006 AJ Duhok, Iraqi Kurdistan, Iraq.  
Email: deldarmorad@gmail.com

For more than a decade, women's organizations and local and international nongovernmental organizations (NGOs) have raised concerns about the common practice of FGM involving girls in Iraqi Kurdistan. In response to these concerns, in 2011, the Kurdistan Parliament criminalized all forms of FGM.<sup>13</sup> Furthermore, local authorities, including the Kurdistan Ministry of Health, have organized community awareness programs to highlight the adverse health outcomes associated with FGM and encourage the abandonment of the practice. However, studies show that FGM continues to be performed frequently in Muslim communities in the region.<sup>10,14,15</sup>

Few studies have estimated the prevalence of FGM in Iraq. In a 2013 study of Muslim women recruited from urban primary health care centers and the Maternity Teaching Hospital in the city of Erbil, 70.3% of women aged 15-49 reported having experienced FGM, and clinicians reported that 58.6% of women had evidence of FGM.<sup>10</sup> Another 2013 study reported that 23.1% of Muslim females aged 6 months to 20 years who were recruited from primary health care centers in urban areas in 3 governorates of Iraqi Kurdistan had experienced FGM.<sup>15</sup> To our knowledge, however, no studies have examined FGM in the rural areas of Iraqi Kurdistan.

The objectives of our study were to (1) determine the prevalence of FGM among females living in rural areas of Iraqi Kurdistan; (2) assess the attitudes toward FGM of mothers, village community leaders, and religious leaders; and (3) compare the prevalence of FGM by maternal education.

## Methods

Our study took place in rural areas (ie, villages) of 3 of 4 governorates (ie, provinces) of the Iraqi Kurdistan region—Duhok, Erbil, and Sulaiymani (in Raparin, a district with the semi-autonomous governorate inside the Sulaiymani governorate). Kurdistan is further divided into districts, which comprise villages and cities. We did not include the Halabja governorate in this study because of funding constraints.

The Kurdistan region has about 5.8 million people,<sup>16</sup> primarily Muslims of Kurdish ethnicity (Kurds); ethnic minority groups, including Arabs, Chaldeans, and Turkmen; and religious minority groups, including Christians and Yezidis. Most residents live in the cities of Erbil, Duhok, and Sulaiymani and are employed by the government, the construction industry, or the private sector.<sup>17</sup> In 2017, the estimated populations of the governorates in the Kurdistan region were 1 511 585 in Duhok, 2 113 391 in Erbil, and 2 021 175 in Sulaiymani (Figure).<sup>16</sup>

Each village typically has a religious leader. A mullah is a Muslim man who is trained in religious law and doctrine, holds an official post, and receives a government salary. Mullahs manage mosques in the Kurdistan region, provide religious guidance, and deliver religious teaching every Friday. Because of government funding shortages, some

villages in Iraqi Kurdistan do not have a mullah. A mokhtar plays a cultural role and does not receive a government salary. Mokhtars represent the community on public issues, act as a link between local persons and the government, and help residents solve family and community issues.

## Study Design and Sampling

We surveyed the Muslim mothers of female children, as well as the village mullahs and mokhtars, from February 19 through July 31, 2017. We obtained a random sample of rural villages in the 3 governorates, from which we obtained a random sample of households.

First, we acquired a list of village names and their characteristics from the executive department of each governorate's administration. We then coded the name of each village in each governorate by using SPSS version 24.0. Next, we used SPSS to generate a simple random sample of villages.<sup>18</sup> If a village was selected in the randomization process that contained a majority Yezidi or Christian population, we excluded it from the study and used random sampling to replace it with another village with a majority Muslim population. We excluded Christians and Yezidis from the study because they do not practice FGM.<sup>15</sup>

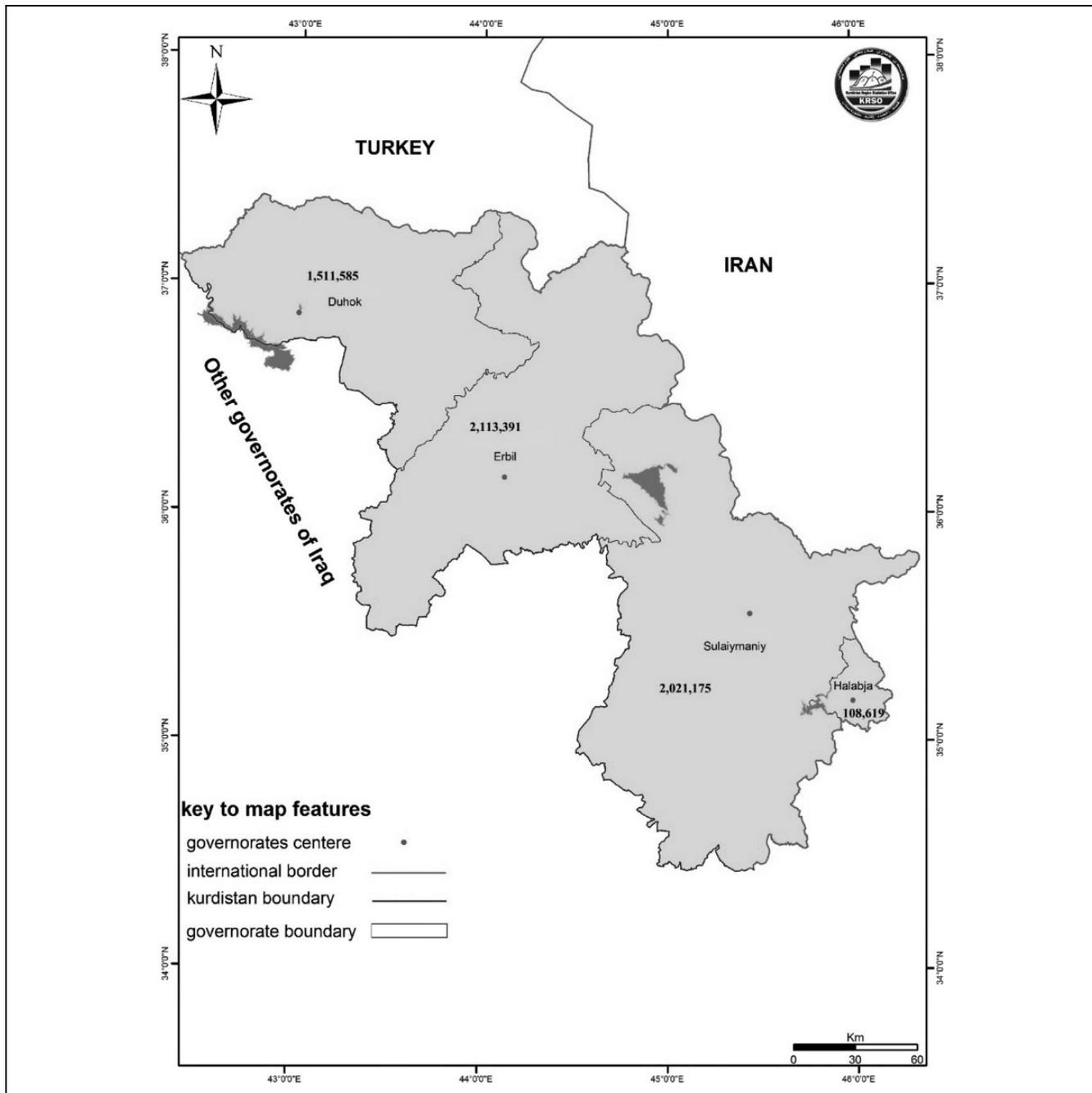
We randomly selected 10% of the total number of villages ( $n = 3860$ ) for this study. Of a total of 386 villages selected, 161 (42%) were in Erbil, 125 (32%) were in Duhok, and 100 (26%) were in Raparin. These percentages were roughly in line with the relative 2017 estimated populations of the 3 governorates. The number of villages selected from Sulaiymani was low, which was consistent with our decision to confine our work in that governorate to Raparin.

We subsequently obtained a list of family names from the mokhtar in each village in the sample and coded the name of each family as a household. We then created a random sample of households in each village by using SPSS version 24.0,<sup>18</sup> and we selected 20% of the households in each village for the study. Through this double randomization process, we selected 1657 mothers who had 5048 female children for the study. We included all female daughters of the selected mothers, regardless of their ages. The sample included 748 mothers and their 2183 daughters in Erbil, 514 mothers and their 1832 daughters in Duhok, and 395 mothers and their 1033 daughters in Raparin. We included mothers who were married, unmarried, Kurdish, and Arabic.

We also invited the mullahs and mokhtars from each village in the study sample to participate in the study. A total of 386 mokhtars (1 from each of the 386 villages) and 192 mullahs participated in the study. Not all villages had a mullah, and some villages had mullahs who did not live in the villages and were unavailable for the study.

## Data Collection

The first 2 study authors were based in Duhok and collected the data there. The study authors trained 2 teams of 3 persons



**Figure.** Map and estimated population of the Kurdistan Region of Iraq in a study of female genital mutilation prevalence and attitudes in the governorates (provinces) of Duhok, Erbil, and Sulaymaniyah, 2017. The Halabja governorate was not included in the study because of funding constraints. Iraq consists of 19 governorates. Map used with permission of the Kurdistan Region Statistics Office.

(2 nurses and 1 physician) in Erbil and Raparin to collect data using semi-structured, interviewer-administered questionnaires. We based the questions asked of mothers on questions already described in the literature.<sup>10,15</sup> The teams collected the following data from mothers: daughter's age (<15, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49,  $\geq 50$  years), whether their daughters had experienced FGM (yes/no), education level (illiterate, read and write, primary school, intermediate school, high school, institute [completion of 2 years

of study at a university], college), duration of education ( $\leq 9$  years or  $>9$  years), whether they would support FGM for daughters in the future (yes/no), whether they would support FGM prevention programs in villages (yes/no), whether they were aware that FGM is illegal (yes/no), and source of information about FGM and the law (NGO team, television, radio, newspaper, members of the public). We did not ask about the type of FGM experienced by daughters, because the type of FGM depends on who performed the procedure and because

mothers were unlikely to know which type of procedure had been performed. The teams asked 3 questions of mullahs and mokhtars: (1) Is there any relation between religion and FGM? (2) Do you support programs to prevent FGM? and (3) Are you ready to ask persons to stop FGM? (yes/no for all).

### Statistical Methods

We calculated the medians and interquartile ranges for the ages of all daughters. We also compared 2 subpopulations, daughters who experienced FGM and daughters who did not experience FGM, by using the Mann-Whitney *U* test. We determined the frequencies of FGM by governorate and age group for all daughters, daughters who experienced FGM, and daughters who did not experience FGM. For the 2 subpopulations, we calculated prevalence by governorate and age group by dividing the number of daughters in each governorate and age group by the total number of daughters in each subpopulation. We determined differences in the prevalence of experiencing FGM and not experiencing FGM among the 3 governorates and the 9 age groups by using the Pearson  $\chi^2$  test. We determined frequencies and percentages for maternal education levels, information sources, and attitudes toward FGM of mothers, mullahs, and mokhtars.

We determined the prevalence of maternal support for FGM for daughters in the future by education level (educated, uneducated) and education duration ( $\leq 9$  years of education,  $>9$  years of education). We defined educated as having attended primary school or beyond and uneducated as never having attended school. We also determined the prevalence of maternal support for FGM for daughters by maternal education level and duration. We then determined differences in the prevalence of supporting and not supporting FGM by education level and education duration by using the Pearson  $\chi^2$  test.

We calculated prevalence ratios (PRs) with 95% confidence intervals (CIs) for mothers who supported FGM for daughters in the future and compared mothers who were educated with mothers who were uneducated and mothers who had  $\leq 9$  years of education with mothers who had  $>9$  years of education. We calculated PRs by dividing prevalence in the uneducated group by prevalence in the educated group. We considered  $P < .05$  to be significant.

We used SPSS version 24.0 for all analyses.<sup>18</sup> We estimated the prevalence of FGM to be 62.5% in the Kurdistan region according to previous surveys.<sup>10,15</sup> We expected to achieve a power of 0.95 using G\*Power 3.1.9 statistical software.<sup>19</sup> The total sample that we obtained from the mentioned calculation was 4810 persons. However, we increased the sample size to compensate for the possibility of a low response rate.

The Board of Relief and Humanitarian Affairs in the Duhok governorate, the Organizations Department in the Erbil governorate, and the semi-autonomous administration of the Raparin district within the Sulaymaniyah governorate

approved this study. We obtained consent from all mothers, mullahs, and mokhtars to collect their data and publish the results, and participation was voluntary. We guaranteed the confidentiality of personal information by de-identifying data using a numerical coding system.

### Results

Of the 1680 households selected for the study, 1657 (98.6%) mothers of 5048 daughters (median age, 21.0 years; range, 0.5-85.0 years) participated. The median age of daughters who had experienced FGM (26.0 years; range, 1.0-83.0 years) was significantly higher than for daughters who had not experienced FGM (17.0 years; range, 0.5-85.0 years) ( $P < .001$ ).

#### Prevalence of FGM

Of 5048 daughters, 2361 (46.8%) had experienced FGM (Table 1). The percentage of daughters who had experienced FGM was lowest in the Duhok governorate (48 of 1832, 2.6%) and highest in Erbil (1503 of 2183, 68.9%) and Raparin (810 of 1033, 78.4%). The percentage of daughters who had experienced FGM increased by age group until age 40, from 28.5% among females aged  $<15$  to 65.3% among women aged 35-39. The percentage of daughters who had experienced FGM was higher than the percentage of daughters who had not experienced FGM in all age groups with the exception of children aged  $<15$  and teenagers aged 15-19.

#### Maternal Education, Information Sources, and Attitudes Toward FGM

Of 1651 mothers who provided information about their education level, most were either illiterate ( $n = 653$ , 39.6%) or had only basic reading and writing skills without having attended school ( $n = 535$ , 32.4%) (Table 2). Of 1643 responding mothers, 565 (34.4%) supported FGM for their daughters in the future. However, of 1652 responding mothers, 1560 (94.4%) supported having FGM prevention programs in their villages, and 825 (49.9%) were aware that FGM was illegal. Also, 199 of 259 (76.8%) mothers said they received the information through the television.

#### Attitudes of Mullahs and Mokhtars Toward FGM

One hundred eight of 191 (56.5%) mullahs and 249 of 386 (64.5%) mokhtars believed that religion supported the practice of FGM, 136 of 192 (70.8%) mullahs and 362 of 383 (94.5%) mokhtars supported NGO and government programs to prevent FGM, and 86 of 192 (44.8%) mullahs and 339 of 382 (88.7%) mokhtars supported abandoning the practice of FGM (Table 3).

**Table 1.** Prevalence of female genital mutilation (FGM)<sup>a</sup> among 5048 daughters of 1657 mothers in rural areas of the Duhok, Erbil, and Sulaymaniyah governorates,<sup>b</sup> by governorate of residence and age group, Kurdistan Region of Iraq, February 19–July 31, 2017

Characteristics	Female Genital Mutilation Status			P Value <sup>c</sup>
	Total No. (%), (N = 5048)	FGM Performed, No. (%), <sup>e</sup> (n = 2361)	FGM Not Performed, No. (%), <sup>e</sup> (n = 2687)	
Governorate of residence				<.001
Duhok	1832 (36.3)	48 (2.6)	1784 (97.4)	
Erbil	2183 (43.2)	1503 (68.9)	680 (31.1)	
Sulaymaniyah (Raparin) <sup>d</sup>	1033 (20.5)	810 (78.4)	223 (21.6)	
Age <sup>e</sup> group, y				<.001
<15	1582 (31.4)	451 (28.5)	1131 (71.5)	
15-19	693 (13.8)	337 (48.6)	356 (51.4)	
20-24	577 (11.4)	300 (52.0)	277 (48.0)	
25-29	488 (9.7)	264 (54.1)	224 (45.9)	
30-34	438 (8.7)	268 (61.2)	170 (38.8)	
35-39	340 (6.7)	222 (65.3)	118 (34.7)	
40-44	310 (6.2)	165 (53.2)	145 (46.8)	
45-49	202 (4.0)	126 (62.4)	76 (37.6)	
≥50	410 (8.1)	226 (55.1)	184 (44.9)	

<sup>a</sup>FGM, also known as female genital cutting and female circumcision, is defined as a nontherapeutic procedure involving the partial or complete removal of some or all of the external female genitalia.

<sup>b</sup>The Kurdistan Region of Iraq consists of the Duhok, Erbil, Sulaymaniyah, and Halabja governorates (provinces). The Halabja governorate was not included in this study because of funding constraints.

<sup>c</sup>The Mann-Whitney *U* test was performed for statistical analysis. *P* < .05 was considered significant.

<sup>d</sup>In the Sulaymaniyah governorate, the study was confined to Raparin, a semi-autonomous district, because of funding constraints.

<sup>e</sup>The median (range) age of all females was 21.0 (0.5-85.0) years, of females who experienced FGM was 26.0 (1.0-83.0) years, and of females who had not experienced FGM was 17.0 (0.5-85.0) years (*P* < .001).

### Association of Maternal Education With FGM

Maternal lack of education was significantly associated with maternal support of FGM for their daughters in the future (Table 4). The prevalence of mothers supporting FGM for daughters in the future was significantly higher for uneducated mothers (37.7%) than for educated mothers (26.0%) (*P* < .001) and significantly higher for mothers with ≤9 years of education (35.4%) than for mothers with >9 years of education (21.3%) (*P* = .003).

### Discussion

We observed a maternal-reported prevalence of FGM of 46.8% among Kurdish and non-Kurdish Muslim females of all ages in rural areas of Iraqi Kurdistan. This rural prevalence was lower than that reported by Yasin et al<sup>10</sup> in an urban area, Erbil city, where the prevalence of FGM was 70.3% for females aged 15-49. However, it was higher than that reported by the Association for Crisis Assistance and Solidarity Development Cooperation (WADI), which used a nonrandomized study in both urban and rural areas of Kirkuk governorate, and found the prevalence of FGM to be 38.2% among females aged ≥14.<sup>14</sup> Similarly, a study of rural and urban areas in Duhok, Erbil, and Sulaymaniyah governorates found that the prevalence of FGM was 23% among females aged ≤20 and that the prevalence of FGM was 5.2% in Duhok, 53.4% in Erbil, and 41.4% in Sulaymaniyah.<sup>15</sup> Our study found that the prevalence of FGM was 2.6% in Duhok,

68.9% in Erbil, and 78.4% in Raparin. Our findings appear to contrast with claims that higher numbers of females have experienced FGM in rural areas than in urban areas because of the higher rates of poverty, illiteracy, and conservative religious practices in rural areas.<sup>14,20</sup>

Consistent with others studies of FGM in Iraqi Kurdistan, we found the lowest prevalence of FGM in the Duhok governorate. As in previous studies, we were unable to draw definitive conclusions when comparing the governorates because the populations in each governorate were not matched by age group, ethnicity, education, and other demographic characteristics. However, the finding of such a low prevalence of FGM in Duhok is intriguing, particularly given that the communities we studied in Duhok and the other governorates tended to have the same religions and cultures. The lower prevalence of FGM in Duhok compared with other governorates suggests the potential value of further studying FGM in Duhok.

In our study, more than one-third (34.4%) of mothers supported FGM for their daughters, and the prevalence of this support was 1.45 times higher for uneducated mothers than for educated mothers and 1.66 times higher for mothers with ≤9 years of education than for mothers with >9 years of education. These findings are consistent with other studies in which the daughters of mothers with lower education levels were more likely than daughters of mothers with higher education levels to have had FGM.<sup>21</sup> For example, both Yasin et al<sup>10</sup> (odds ratio = 1.4, *P* < .001) and Saleem

**Table 2.** Education levels, information sources, and attitudes toward female genital mutilation (FGM)<sup>a</sup> of 1657 mothers of females in rural areas of the Duhok, Erbil, and Sulaymaniyah governorates,<sup>b</sup> Kurdistan Region of Iraq, February 19–July 31, 2017

Maternal Characteristics	Mothers of Females, No. (%)
Education (n = 1651)	
Illiterate	653 (39.6)
Read and write	535 (32.4)
Primary school	209 (12.7)
Intermediate school	133 (8.0)
High school	86 (5.2)
Institute <sup>c</sup>	32 (1.9)
College	3 (0.2)
Source of information about FGM and the law (n = 259)	
Nongovernmental organization teams	45 (17.4)
Television	199 (76.8)
Radio	7 (2.7)
Newspaper	2 (0.8)
Members of the public	6 (2.3)
Support FGM for daughters in future (n = 1643)	565 (34.4)
Support FGM prevention programs in villages (n = 1652)	1560 (94.4)
Aware that FGM is illegal (n = 1652)	825 (49.9)

<sup>a</sup>FGM, also known as female genital cutting and female circumcision, is defined as a nontherapeutic procedure involving the partial or complete removal of some or all of the external female genitalia.

<sup>b</sup>The Kurdistan Region of Iraq consists of the Duhok, Erbil, Sulaymaniyah, and Halabja governorates (provinces). The Halabja governorate was not included in this study because of funding constraints. In the Sulaymaniyah governorate, the study was confined to Raparin, a semi-autonomous district, because of funding constraints.

<sup>c</sup>Students obtain an institute certificate after completing 2 years of study at a university.

et al<sup>15</sup> (odds ratio = 8.0,  $P < .001$ ) reported that the daughters of poorly educated mothers were more likely to have experienced FGM than the daughters of more highly educated mothers.

In addition to mothers, male relatives (ie, fathers, brothers) may influence whether daughters experience FGM. In the Kirkuk governorate, 77.8% of women who experienced FGM had the decision made by a male relative<sup>22</sup>; in Kurdistan, 67.2% of women who had experienced FGM thought FGM would be abandoned if male relatives opposed it.<sup>14</sup>

Community and religious leaders may also play an important role in decision-making about FGM. Although most mullahs and mokhtars in our study considered FGM to be a religious practice, we did not ask why FGM is still practiced among the Kurdish Muslim population. However, a 2018 qualitative study of the attitudes of 29 local religious leaders in the Erbil governorate found that these leaders regarded FGM as both a religious requirement and an imbedded component of Kurdish culture.<sup>23</sup> These religious leaders suggested that the reasons for performing FGM were

**Table 3.** Attitudes toward female genital mutilation (FGM)<sup>a</sup> of 192 mullahs and 386 mokhtars<sup>b</sup> in rural areas of the Duhok, Erbil, and Sulaymaniyah governorates,<sup>c</sup> Kurdistan Region of Iraq, February 19–July 31, 2017

Attitudes	Mullahs		Mokhtars	
	Total	No. (%)	Total	No. (%)
Believe religion supports FGM	191	108 (56.5)	386	249 (64.5)
Support programs to prevent FGM	192	136 (70.8)	383	362 (94.5)
Support abandonment of FGM	192	86 (44.8)	382	339 (88.7)

<sup>a</sup>FGM, also known as female genital cutting and female circumcision, is defined as a nontherapeutic procedure involving the partial or complete removal of some or all of the external female genitalia.

<sup>b</sup>Each village has a cultural leader (mokhtar). Some villages also have a religious leader (mullah), although some do not because of government funding shortages.

<sup>c</sup>The Kurdistan Region of Iraq consists of the Duhok, Erbil, Sulaymaniyah, and Halabja governorates (provinces). The Halabja governorate was not included in this study because of funding constraints. In the Sulaymaniyah governorate, the study was confined to Raparin, a semi-autonomous district, because of funding constraints.

to regulate or reduce female sexual desire, prevent adultery and extramarital sexual relations, enhance female hygiene, and augment male sexual pleasure. Other studies have also affirmed the association between FGM and cultural tradition, focusing on the role of FGM in female marriageability and as a form of religious practice.<sup>10,14</sup>

Despite these attitudes, a positive aspect of our study was the finding that most mullahs and mokhtars in the urban areas of these 3 governorates supported FGM prevention programs in their villages and complete abandonment of FGM. This finding contrasts with a study by Ahmed et al,<sup>23</sup> in which most religious leaders in the Erbil governorate still supported FGM and did not support a law banning FGM. However, the leaders in that study acknowledged that excessive removal of the female genitalia often led to marital problems and adverse health outcomes for women. They noted that although they did not consider that they should be the primary source of advice about the practice of FGM, they were often consulted when FGM resulted in adverse effects or related problems.<sup>23</sup>

Community and religious leaders can play an important role in preventing FGM by acting as agents of change and role models. The Tostan project in Somalia, a holistic, community-based empowerment program in the villages of the Kolda region in Senegal, demonstrated that changes in behavior and attitudes about FGM can occur by engaging leaders with community members in discussions about abandoning FGM and by involving leaders in the selection of community champions to participate in FGM prevention health education classes.<sup>24</sup> Religious leaders have also been involved in FGM prevention efforts in Ethiopia and Kenya, where their effectiveness to bring about behavioral and

**Table 4.** Association between level and duration of maternal education and attitudes toward female genital mutilation (FGM)<sup>a</sup> of 1657 mothers of females in rural areas of the Duhok, Erbil, and Sulaymaniyah governorates,<sup>b</sup> Kurdistan Region of Iraq, February 19–July 31, 2017

Maternal Education	Mothers Support FGM for Daughters in Future		P Value <sup>d</sup>	Prevalence Ratio <sup>e</sup> (95% CI)
	Yes, No. <sup>c</sup> (%)	No, No. <sup>c</sup> (%)		
Education <sup>f</sup>				
Uneducated (n = 1181)	445 (37.7)	736 (62.3)	<.001	1.45 (1.22-1.72)
Educated (n = 462)	120 (26.0)	342 (74.0)		
Duration of education, y				
≤9 (n = 1521)	539 (35.4)	982 (64.6)	.003	1.66 (1.17-2.35)
>9 (n = 122)	26 (21.3)	96 (78.7)		

<sup>a</sup>FGM, also known as female genital cutting and female circumcision, is defined as a nontherapeutic procedure involving the partial or complete removal of some or all of the external female genitalia.

<sup>b</sup>The Kurdistan Region of Iraq consists of the Duhok, Erbil, Sulaymaniyah, and Halabja governorates (provinces). The Halabja governorate was not included in this study because of funding constraints. In the Sulaymaniyah governorate, the study was confined to Raparin, a semi-autonomous district, because of funding constraints.

<sup>c</sup>Numbers may not add up to totals because of missing data.

<sup>d</sup>The Mann-Whitney *U* test was performed for statistical analysis. *P* < .05 was considered significant.

<sup>e</sup>The prevalence ratio was calculated by dividing the prevalence in the uneducated group by the prevalence in the educated group and the prevalence in the group with ≤9 years of education by the prevalence in the group with >9 years of education.

<sup>f</sup>Uneducated was defined as never having attended school. Educated was defined as having attended primary school or beyond.

attitudinal change in FGM seems to have been related to the level of trust that communities had in them.<sup>25,26</sup>

Finally, our results suggest that television can be used to raise awareness about FGM issues. Our finding that television was the main source of information about FGM and laws pertaining to it in Duhok, Erbil, and Raparin is similar to the findings by WADI in the Kirkuk governorate, in which 51.7% of participants reported receiving information about FGM from television.<sup>14</sup> Marketing campaigns delivered through television could broadly publicize the adverse effects of FGM on women and their communities, the fact that FGM is illegal, and the need to prevent this practice in the future. A number of NGOs and local women's rights organizations have launched campaigns in Kurdistan, such as "Stop FGM in Kurdistan," which have likely played an important role in the criminalization of FGM.<sup>14,27</sup> However, more attention must be given to the issue of FGM to maintain this positive momentum.

### Limitations

This study had several limitations. First, we used maternal reporting to capture most of the data. The information we received may have been influenced by mothers who had varying levels of understanding of FGM. In addition, FGM may have been underreported by mothers because of the sensitive and illegal nature of the practice.<sup>28</sup> Second, we did not obtain data on several important topics, such as the age at which daughters experienced FGM, who decided that daughters would undergo FGM, and the type of FGM that each daughter had. However, mothers may not have known enough about the details to provide meaningful answers. Third, as with any cross-sectional study, ours did not provide insight into the incidence of FGM. An analysis of incidence would help more definitively determine whether the frequency of the practice is changing.<sup>10,15</sup>

### Conclusions

FGM is prevalent in some rural areas of Iraqi Kurdistan, particularly in the Erbil and Sulaymaniyah (Raparin) governorates. The prevalence of mothers who supported FGM for their daughters was significantly higher among women with low levels of education than among women with higher levels of education. Religious leaders, community leaders, and men also play a strong role in decision-making about FGM. Public health interventions in this region are needed to improve knowledge about the harmful effects of FGM, its illegality, and the importance of prevention, particularly targeting leaders and households with low education levels.

### Acknowledgments

We are grateful for the support of the Board of Relief and Humanitarian Affairs in the Duhok governorate, Organizations Department in the Erbil governorate, and the semi-autonomous administration of the Raparin district within the Sulaymaniyah governorate.

### Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

### Funding

The authors disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: The program was supported by a grant from the Netherlands Consulate General in Erbil.

### ORCID iD

Deldar Morad Abdulah, MPH  <https://orcid.org/0000-0002-8986-5793>

## References

- Barstow DG. Female genital mutilation: the penultimate gender abuse. *Child Abuse Negl.* 1999;23(5):501-510.
- World Health Organization. Female genital mutilation. 2017. <http://www.who.int/mediacentre/factsheets/fs241/en>. Accessed April 1, 2019.
- El-Zanaty F, Way A. *Egypt Demographic and Health Survey 2008*. Cairo, Egypt: Ministry of Health, El-Zanaty and Associates, and Macro International; 2009.
- Oduro AR, Ansah P, Hodgson A, et al. Trends in the prevalence of female genital mutilation and its effect on delivery outcomes in the Kassena-Nankana district of northern Ghana. *Ghana Med J.* 2006;40(3):87-92.
- Mitike G, Deressa W. Prevalence and associated factors of female genital mutilation among Somali refugees in eastern Ethiopia: a cross-sectional study. *BMC Public Health.* 2009; 9:264. doi:10.1186/1471-2458-9-264
- Kizilhan JI. Impact of psychological disorders after female genital mutilation among Kurdish girls in Northern Iraq. *Eur J Psychiatry.* 2011;25(2):92-100. doi:10.4321/S0213-61632011000200004
- UNICEF. Female genital mutilation/cutting: a global concern. 2016. [https://www.unicef.org/media/files/FGMC\\_2016\\_brochure\\_final\\_UNICEF\\_SPREAD.pdf](https://www.unicef.org/media/files/FGMC_2016_brochure_final_UNICEF_SPREAD.pdf). Accessed April 1, 2019.
- Banks E, Meirik O, Farley T, Akande O, Bathija H, Ali M. Female genital mutilation and obstetric outcome: WHO collaborative prospective study in six African countries. *Lancet.* 2006; 367(9525):1835-1841. doi:10.1016/S0140-6736(06)68805-3
- Utz-Billing I, Kantenich H. Female genital mutilation: an injury, physical and mental harm. *J Psychosom Obstet Gynecol.* 2008;29(4):225-229. doi:1080/01674820802547087
- Yasin BA, Al-Tawil NG, Shabila NP, Al-Hadithi TS. Female genital mutilation among Iraqi Kurdish women: a cross-sectional study from Erbil city. *BMC Public Health.* 2013;13: 809. doi:10.1186/1471-2458-13-809
- World Health Organization. *A Systematic Review of the Health Complications of Female Genital Mutilation Including Sequelae in Childbirth*. Geneva: World Health Organization; 2000.
- Office of the United Nations High Commissioner for Human Rights, UNAIDS, United National Development Programme, et al. *Eliminating Female Genital Mutilation: An Interagency Statement*. Geneva: World Health Organization; 2008.
- Human Rights Watch. Iraqi Kurdistan: law banning FGM a positive step: bill shows commitment to end violence against women. 2011. <https://www.hrw.org/news/2011/07/25/iraqi-kurdistan-law-banning-fgm-positive-step>. Accessed April 1, 2019.
- Association for Crisis Assistance and Solidarity Development Cooperation. *Female Genital Mutilation in Iraqi-Kurdistan: An Empirical Study*. Berlin: Verbrecher-Verlag; 2010.
- Saleem RA, Othman N, Fattah FH, Hazeem L, Adnan B. Female genital mutilation in Iraqi Kurdistan: description and associated factors. *Women Health.* 2013;53(6):537-551. doi: 1080/03630242.2013.815681
- Statistics Office. Estimated population of Iraqi Kurdistan, 2017. <http://www.krso.net/Default.aspx?page=article&id=1678&l=3>. Accessed April 1, 2019.
- Kurdistan Regional Government. The people of the Kurdistan Region. 2019. <http://cabinet.gov.krd/p/page.aspx?l=12&s=050000&r=304&p=214>. Accessed April 1, 2019.
- SPSS Version 24.0 [statistical software]*. Armonk, NY: IBM Corp; 2016.
- Faul F, Erdfelder E, Buchner A, Lang AG. Statistical power analysis using G\*Power 3.1: tests for correlation and regression analyses. *Behav Res Methods.* 2009;41(4):1149-1160.
- Markey P. Fighting female genital mutilation in Iraqi Kurdistan, one Kurdish village at a time. *EKurd Daily.* 2012. <https://www.reuters.com/article/us-iraqi-mutilation/fighting-female-genital-mutilation-one-kurdish-village-at-a-time-idUSBRE89G10920121017>. Accessed June 17, 2019.
- Pashaei T, Rahimi A. Related factors of female genital mutilation (FGM) in Ravansar (Iran). *J Womens Health Care.* 2012; 1(2):1000108. doi:10.4172/2167-0420-1000108
- Association for Crisis Assistance and Solidarity Development Cooperation. *Female Genital Mutilation in Iraq: An Empirical Study in Kirkuk Province*. Frankfurt: Association for Crisis Assistance and Development Co-operation; 2012.
- Ahmed HM, Kareem MS, Shabila NP, Mzori BQ. Knowledge and perspectives of female genital cutting among the local religious leaders in Erbil governorate, Iraqi Kurdistan region. *Reprod Health.* 2018;15(1):44. doi:10.1186/s12978-018-0459-x
- Diop NJ, Askew I. The effectiveness of a community-based education program on abandoning female genital mutilation/cutting in Senegal. *Stud Fam Plann.* 2009;40(4):307-318.
- Chege J, Askew I, Igras S, Mutesh JK. *Testing the Effectiveness of Integrating Community-Based Approaches for Encouraging Abandonment of Female Genital Cutting Into CARE's Reproductive Health Programs in Ethiopia and Kenya*. Washington, DC: Population Council; 2004.
- Allam MF, de Irala-Estevez J, Fernandez-Crehuet Navajas R, et al. Factors associated with the condoning of female genital mutilation among university students. *Public Health.* 2001; 115(5):350-355. doi:10.1038/sj/ph/1900791
- Association for Crisis Assistance and Solidarity Development Cooperation. The Campaign: Stop FGM in Iraqi-Kurdistan. 2015. <http://www.stopfgmkurdistan.org>. Accessed April 1, 2019.
- UNICEF. *Legislative Reform to Support the Abandonment of Female Genital Mutilation/Cutting*. New York: UNICEF; 2010.