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Research Article

Knowledge, attitude, and practice among mothers towards female circumcision Ombada province Khartoum state, Sudan

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ABSTRACT

Background: Female circumcision (FC) is a widespread practice that is carried out on young girls between the ages of 5 and 10 years, it is not a religious obligation required by known religions. It is practiced mainly in Africa and in some Asian countries.
Methods: A cross-sectional descriptive study was conducted in Ombada province, with objectives to assess knowledge, attitudes and practices among mothers towards female circumcision.
Results: Three-hundred-and-sixty-eight - questionnaires were returned. The mean age of the mothers participated in study was (32±11.9) years, (51.0%) of them had formal education and (84.5%) were Muslim. All mothers knew female circumcision, (80.2%) of them affirmed that it is still practiced in their society. The significant reasons why FC persistent practice were; to insure virginity, compliance religious instructions, avoid social stigma, good for prospective marriages, with proportion of (52.2%), (32.9%), (10.2%) and (4.7%), respectively. The majority of mothers were known its health consequences, (85.0%) of mothers knew that female circumcision it can be eradicated through increasing mother's awareness (68.0%). The attitude of mothers towards (FC) was negative attitude (71.5%) i.e. encouraging it. The negative attitudes were associated with marriage prospective (29.7%), safeguard virginity (27.4%), religious instructions (19.0%), husband pleasure (11.4%), removal of genitalia dirtiness (5.7%), and tradition practice (5.3%). Whereas Type I, clitoridectomy (Sauna) the most preferred type by mothers (43.9%).
Conclusions: Mothers participating in the study aware about FC While, the practice and negative attitudes is still persistent among mothers in northern Sudan, supported by religious, culture, social, tradition and misconceptions.

Keywords: FC, Knowledge, Attitudes, Practice

INTRODUCTION

Female circumcision is widely practiced in African countries, WHO estimates that between 100 and 140 million girls and women worldwide have been subjected to one of the first three types of female genital mutilation.[1] Based on the most recent prevalence data indicate that 91.5 million girls and women above 9 years old in Africa are currently living with the consequences of female genital mutilation. There are an estimated 3 million girls in Africa at risk of undergoing female genital mutilation every year.[2]

Female genital mutilation/cutting (FGM/C) is a global concern. Not only is it practiced among communities in Africa and the Middle East, but also in immigrant communities throughout the world. Moreover, recent data reveal that it occurs on a much larger scale than

previously thought. It continues to be one of the most persistent, pervasive and silently endured human rights violations.[3] Female circumcision is widely practiced in all regions of Sudan, with some variations in the prevalence and types of circumcision performed according to the indigenous local customs and traditions.[4]

There are three main types of female circumcision practiced in Sudan sauna, intermediate and pharaonic circumcision.[5] Tin Demographic and Health Survey (SDHS) conducted in 2006 showed that (89%) of every married women have undergone some form of genital cutting, varying from (65%) in Darfur Region to almost (99%) in the northern region of Sudan.[6]

Circumcision is widely practiced in northern Sudan among Muslims and Christians both pharaonic and sauna circumcision are practiced and the strange thing is that Christians practice sauna circumcision at 46.2% when compared to Muslims at 14.5%. This clearly proves that, the practice is a social tradition.[7] In accordance to that in most areas in Sudan uncircumcised women are generally viewed as impure and thus unmarriageable. Given their lack of choice and the powerful influence of tradition, most women accept circumcision as necessary, and even naturally part of life, and adopt the rationales given for its existence.

In northern Sudan, the prevalence of female genital mutilation in girls and women 15 – 49 years in northern Sudan is 90.0%.[8] It had been found that there was a limited data on knowledge, attitudes and practice of households about female circumcision. Hence, Ombada province was selected because its multi-ethnic population comprises people from different regions and tribes of Sudan. Ombada is suburban area of the capital city Khartoum with adversity of inhabitants who migrated from different parts of Sudan and a majority of them are of middle and low socioeconomic status was selected for this study to assess the knowledge, attitudes and practices among mothers towards female circumcision.

METHODS

A cross-sectional descriptive community based study was conducted in Ombada province among mothers, with objectives to knowledge, attitudes and practices among mothers towards female circumcision.

Ombada province is one of the, Khartoum state Provinces; It is bordered by Kordofan state in the West, Omdurman locality in the East and the South, and the River Nile state in the North. Health services provided by state ministry of health, also private sectors and with non-governmental organization (NGO). Total population is two million; females represent 48.7% of them. The study population comprised of all the mothers who were living in Ombada province. A total number of 973199 mothers distributed in 23 residential areas were enlisted. The sample size was determined using the formula: n=N/1+N (e).[2] Were n: is the sample size, N: is the total number of mothers and e: is a marginal error (0.05). The study sample was calculated using the above formula and was found to be (368) families.

Inclusion criteria

Mothers, living in Abo zaid, Alrashidia and Elsabeel residential area were involved in this study.

Sample selection and distribution

Out of a total of 23 residential areas in Ombada province, Three residential area from east of the province were selected through simple random sampling technique. The calculated sample size 368 was divided into three groups proportionate to population size living in residential area and hence 221 (60.1%) mothers from Abo zaid and Alrashidia residential area and 147 (39.9%) mothers from Elsabeel residential area. Systematic random sample was used to select mothers from the list of mothers made by the researcher prior to distribution of data collection tool and so 1 mother was selected from each 15 mothers in list.

Methods of data collection

The data was collected using a pre-coded, pre-tested, structured questionnaire included socio- demographic characteristics of households, KAP related to female circumcision. The study data was collected by twelve interviewers who were chosen and trained to conduct face-to-face interviews.

Data analysis

In order to meet the study objectives, the data obtained from the research tool was analyzed. Depending on the nature of the variables, descriptive statistics were used to tabulate and describe the data (frequency distribution, percentages, means and standard deviations), and inferential statistics (Chi-Square tests) was used to examine association between categorical variables. The data were checked for completeness and consistencies then, cleaned, coded and entered in to computer using statistical package for social sciences (SPSS) windows version 18.0.The tests were carried out at 95% confidence interval, p-values less than 0.05 were considered significant.

Ethical considerations

The study was reviewed and approved by the Ethical Committee of the Faculty of public and environmental health at University of Khartoum. Then, written permission was obtained from Ombada province authority before the start of the study. During training of the interviewers, emphasis was placed on the importance of obtaining informed oral consent before every session of the interview and the avoidance of any kind of force.

RESULTS

The socio-demographic characteristic of the respondents was 368. The respondents' ages ranged between 15 and greater than 45 years, with mean about (32±11.9) years. The literacy level was quite high in this study.

Table 1: Distribution of respondents by age group, education level, religion and monthly incomers (n=368).

Characteristics of respondents	Number	%
Age group		
15-25	135	36.7
26-35	51	13.8
36-45	97	26.4
>45	85	23.1
Education level (No. / %)		
Informal education	180	49.0
Formal education	188	51.0
Religion		
Muslim	311	84.5
Christian	57	15.5
Monthly income/in Sudanese pound		
< 250	173	47.1
251-350	87	23.6
351-450	62	16.8
> 450	46	12.5
Monthly income (M±SD)	350.5±91.3	

Slightly more than half (51.0%) of them had formal education, and about (47.1%) had monthly income (<250) Sudanese pound, with mean monthly income (350.5±91.3). The majority (84.5%) were Moslems (Table1). Almost all, 368 (100.0%) of the study the study subjects knew female circumcision and the practice is performed in their society.

Therefore, 55.2% of the mothers defined female circumcision as a partial removal of female genitalia, 42.9% of them defined it as total removal, 6.3 of them said all mentioned and 1.9% sewing of the genitalia.

Related to the mothers knowledge about the types of female circumcision, the results showed that (47.7%) of the mothers knew Type I (Sauna), (17.8%) knew Type II (Intermediate), and (34.4%) of them knew Type III (Pharaonic). As wells, Majority of mothers were knew the consequences of (FC). Out of these consequences; urine retention (30.0%), hemorrhage (25.0%), wound infection (17.0%), painful during sex (16.0%) and psychological trauma (9.0%) while the least consequence due (FC) its surrounding tissues damage (3.0%).

Regarding mothers knowledge about the female circumcision eradication, the results revealed that (85.0%) mothers knew that female circumcision it can be eradicated, also (68.0%) mothers understand increasing mothers awareness through Health education is best method that may encourage female circumcision's eradication (Table 2).

Table 2: Knowledge of mothers about the female circumcision.

Knowledge of mothers		(N=368)	
		No.	%
Awareness about female Circumcision	Yes	368	100
	No	**0**	**0**
Definition of female circumcision	Partial removal.	203	55.2
	Total removal.	158	42.9
	sewing of the genitalia	7	1.9
Types of female circumcision	Type I (Sauna)	176	47.7
	Type II (Intermediate)	66	17.8
	Type III (Pharaonic)	127	34.4
Female circumcision complications	Yes	276	75.0
	No	112	25.0
Types of female circumcision complications	Urine retention	110	30.0
	Hemorrhage	92	25.0
	Wound infection	63	17.0
	Psychological trauma	33	9.0
	Surrounding tissues damage	11	3.0
	Painful sex	59	16.0
The possibility of eradication of female circumcision	Yes	313	85.0
	No	55	15.0
The best method that may encourage female circumcision's eradication	Health education	213	68.0
	Religious instructions	31	9.9
	Laws	39	22.1

Table 3: The distribution of mothers according to practicing female circumcision

Variables related to female circumcision practice		(N=368)	
		No.	%
Mothers practicing female circumcision	Yes	295	80.2
	No	**73**	**19.8**
The common reasons given by the mothers why they practicing female circumcision	Insure virginity	154	52.2
	Avoid social stigma	30	10.2
	Religious	97	32.9
	Good for prospective marriages	14	4.7
Persons performing female circumcision	Traditional birth attendant	260	88.1
	Nurse	29	10.0
	Old women	6	1.9
The common reasons given by the mothers why they did not practicing female circumcision	Harmful practice No religious origin Affect girls education	57 9 7	78.1 12.5 9.6
Places where female circumcision was practiced	Home	291	98.6
	Relative's and friends home's	4	1.4
Instruments used in female circumcision	Knives	230	78.0
	Razors	42	14.2
	Scissors	23	**9.7**
Decider to perform female circumcision	Parents	189	64.0
	All family members	106	36.0

Table 4: Attitude towards female circumcision (FC) among women participated in the study (n=368)

Variables related to attitudes of mothers towards female circumcision	(N=368)	
	No.	%
Negative attitude (encouraging)	263	71.5
Positive attitude (discouraging)	105	28.5
Reasons behind negative attitude among mothers regarding encouraging female circumcision:		
Traditional practice	14	5.3
Good for prospective marriage	78	29.7
Preserve virginity	72	27.4
Husband pleasure	30	11.4
Remove dirty genitalia	15	5.7
Religious instructions	50	19
Improves fertility	4	1.5
Reasons behind positive attitude among mothers regarding combating female circumcision		
Health complications	35	33.4
Uncircumcised are married	10	9.5
Affects girls education	17	16.2
Against religion instructions	23	21.9
Against dignity of women	14	13.3
Painful experience	6	5.7

Out of the 368 respondents analyzed, 295 (80.2%) affirmed that female circumcision or (FGM) is still practiced currently. However, there were many reasons for the persistent practice of (FC) were; to insure virginity, compliance religious instructions, avoid social stigma, good for prospective marriages were significant reason for the practice of (FC) with proportion of (52.2%), (32.9%), (10.2%) and (4.7%), respectively. While (19.8%) of mothers did not practicing female circumcision, because it is harmful practice (78.1%), no religious origin (12.5%) and affect girls' education (9.6%).

With regard to persons performing female circumcision, As shown in Table 3, Traditional Birth Attendant (TBA) performed most of the female circumcision in study area

(88.1%) fallowed by Nurse (10.1%), and least persons performing (FC) were old women (1.9%). Also, the results identified that both mothers and fathers, (64.0%) are decision makers for their daughter to undergo circumcision. while Knives represent the most popular instruments used in female circumcision (78.0%). As shown in Table 4 the attitude towards Female Circumcision or GM was generally Negative attitude, i.e. encouraging it.

As shown in Table 3, (71.5%) of the women had negative attitude (encouraging). The most important reasons behind negative attitudes were related to marriage prospective (29.7%), safeguard virginity (27.4%), religious instructions (19.0%), husband pleasure (11.4%), removal of genitalia dirtiness (5.7%), and tradition practice (5.3%), while the least was upon improving fertility (1.5%).

Only (28.5%) of all of the mothers participated in the study had positive attitude (discouraging). The reasons behind positive attitude among mothers regarding discouraging female circumcision were assigned to health complications (33.4%), against religion instructions (21.9%), affects girls education (16.2%), against dignity of women (13.3%), and uncircumcised girls are easily to get married (9.5%), while the least reason its painful experience (5.7%).

Table 5: Preference of a certain type of female circumcision as mentioned by practicing mothers.

Preference of a certain type of female circumcision	(N=295)	
	No.	%
Yes	198	67.1
No	97	32.9
The type of female circumcision preferred by the mothers		
Type I (Sauna)	87	43.9
Type II (Intermediate)	75	37.9
Type III (Pharaonic)	36	18.2
The common reasons given by the mothers why they preferring certain type of female circumcision		
No health complications	86	43.4
Religious origin	109	55.1
Safeguard virginity	3	1.5

The results presented in Table 5 revealed that more than half of the mothers (67.1%) were preferred specific type of female circumcision. Whereas Type I, clitoridectomy (Sauna) the most preferred type by mothers (43.9%), This was followed by Type II, excision (Intermediate) (37.9%) and the last type preferred by them was Type III, infibulation (Pharaonic) (18.2%).

However the main reasons given by the mothers why they preferring certain type of female circumcision were associated with religious origin, health complications and safeguard virginity (55.1%), (43.4%), (1.5%) respectively.

DISCUSSION

Female circumcision remains an endless public health problem in many societies and cultural groups, transcends religion, despite the concerted efforts and laws forbidding the practice.[9] It is among the traditional practices which are which are not only prejudicial and harmful to the life of a child but also discriminatory against to the girl child.[10] This study, aimed to assess the knowledge, attitudes and practices among mothers towards female circumcision in Sudan Khartoum state, Ombada province.

The results indicates that the mean age of the mothers participated in study was 32±11.9 years with range of 15 to 45 years. Unexpectedly, the literacy level was quite high in this study more than half (51.0%) of mothers had formal education theoretically it's considered a factor that ideally would have reduced the prevalence rate of (FC). The majority of them (84.5%) were Moslems.

With regards to knowledge of mothers about (FC) all, 368 (100.0%) of the study subjects were known female circumcision and the practice is performed in their society, also Ibekwe et al in Nigeria who found that in 2012, a high percentage of the respondents was aware of FGM (90.0%).[11] Related to the mothers knowledge about the most common type of the female circumcision, the results showed that (47.7%) of the mothers aware Type I (Sauna), is the most common type practiced.

This is contrast with the WHO 1996 findings which described the most common type of the female genital mutilation was type II which account for up to 80% of all cases.[12] However, magnitude of type III (34.0%) in this study was slightly lower than another study conducted in Ethiopia showed that most commonly practiced type III vaginal stitching operation (36%).[13]

As wells, the results of this study showed the Majority of mothers were knew the consequences of (FC). Out of these consequences; urine retention (30.0%), hemorrhage (25.0%), wound infection (17.0%), painful during sex (16.0%) and psychological trauma (9.0%) while the least consequence due (FC) its surrounding tissues damage (3.0%). This is in conformity with the findings of Daniel et al, in Ethiopia who in 2014 reported that immediate complications were excessive bleeding, infection, urine retention and swelling of genital organ.[14]

It was also almost similar study conducted in other countries like Gambia also showed the most common complication for all types of FGM was infection, haemorrhage and anaemia.[15] Similarly, severe pain, shock, haemorrhage, urine retention, ulceration of the genital region and injury to adjacent tissue were immediate complications.[10]

Regarding mothers knowledge about the female circumcision eradication, the results revealed that (85.0%) mothers knew that female circumcision it can be eradicated, thus (68.0%) mothers understand increasing mothers awareness through Health education is best method that may encourage female circumcision's eradication. This finding Similar to results of the study conducted in Gambia found that most women think that female circumcision could be eradicated by health education.[16] While contrasting with Ibekwe et al, who in 2012, found that the some respondents suggested capital punishment and Government intervention as best ways of curbing the practice.[11]

The prevalence of FC in this study was (80.2%) which is slightly higher than the prevalence of a study done in Ethiopian by Daniel et al., who in 2014 found that FC prevalence 78.5%. and its higher when compared with the study conducted in Mauritania (77%), Gambia (75.6%), Nigeria (50%) and lower than in Egypt (97%).[11,14,15,17,18] It was similar when compared with the study conducted in other countries like Sierra Leone (81.2%), also similar to the findings by Gruenbaum et al., in 2006 in Sudan.[19,20]

However, there were many reasons for the persistent practice of (FC) were; to insure virginity, compliance religious instructions, avoid social stigma, good for prospective marriages were significant reason for the practice of (FC) with proportion of (52.2%), (32.9%), (10.2%) and(4.7%), respectively. These were matching with reasons found by Bogale et al; 2015 who conduct a community based cross sectional study among reproductive age women revels the main reasons of FGM was to get married, to get social acceptance, to safeguard virginity, and religious recommendations.[21] Another study by the same authors in 2014 showed the main reason of FGM was religion, safeguarding virginity, tradition, and social values were the major reasons for the perpetuation of this practice.[22]

While (19.8%) of mothers did not practicing female circumcision, because it is harmful practice (78.1%), no religious origin (12.5%) and affect girls education (9.6%), This is results lower than findings reported by Bogale et al in 2014 who report 26.7% of the respondents had intention for the continuation of FGM.[22]

As shown in Table 3, Traditional Birth Attendant (TBA) performed most of the female circumcision in study area (88.1%). This finding similar to results of the study conducted by Daniel et al, who found that most of the study participants reported the operation, is performed in their communities by traditional birth attendants and local old age people traditional birth attendants. Similarly, in other study traditional birth attendants, parents, and relatives were the operators.[14,23] However, in the study conducted in rural Gambia all operations were undertaken by traditional operators also similar to the findings by SOAT et al in Sudan who found that more than 60 percent of those performing genital mutilation are traditional midwives.[24]

Negative attitudes toward FC could play a significant role in the persistence of this practice in Sudan, in this study the attitude towards female circumcision was generally Negative attitude, i.e. encouraging it. As shown in Table 3, (71.5%) of the women had negative attitude (encouraging). and 28.5%) % of the participants had a positive attitude toward the discontinuation of FC, as compared with a previous study that found that 82% of the Egyptian women surveyed supported its continuation other a recent study in Nigeria, in which only 24.2% cited they would be unwilling daughters their to be circumcised.[25,26] This finding provides solid evidence to change mothers' attitude toward FC.

CONCLUSION

All mothers a ware about FC and it consequences. While, the practice and negative attitudes is still persistent among mothers in Sudan, supported by religious, culture, social pressure, tradition and misconceptions. These facts provide solid evidence to change attitude toward FC through different strategies with collaboration with education, woman groups, and government, non-governmental organizations (NGOs).

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REFERENCES

1. UNICEF, "UNICEF Global Consultation on Indicators Female Genital Mutilation and Cutting", New York, USA. 2006.
2. Yoder PS, Khan S. Numbers of Women Circumcised in Africa: The production of a total. Calverton, Macro International Inc. 2007.
3. UNICEF. Female genital mutilation/female genital cutting: a statistical report. New York, UNICEF. 2005.
4. Magied A. Re-circumcision: The Hidden Devil of Female Genital Mutilation-Case study on the perception, attitudes and practices of Sudanese women. The Ahfad journal. 2005;17(1):22-32.
5. Magied A. Some FGM Terminology between the Negative and Positive Impact-The Ahfad Journal. 2002;15:27-9.
6. UNFPA. Women's Economic Empowerment: Meeting the Needs of Impoverished Women. New York, UNFPA. 2007.

7. World Health Organization, Eliminating female genital mutilation: an interagency statement UNAIDS, UNDP, UNECA, UNESCO, UNFPA, UNHCHR, UNHCR, UNICEF, UNIFEM, WHO, Geneva , Switzerland. 2008.
8. Yoder PS, Khan S. Numbers of Women Circumcised in Africa: The production of a Total. Calverton, Macro International Inc. 2007.
9. Nour N. Female genital cutting: clinical and cultural guidelines. Obstet Gynecol Surv. 2004;59(4):272-9.
10. Wadesango N, Rembe S, Chabaya O. Violation of women's rights by harmful traditional practices. Anthropologist. 2011;13(2):121-9.
11. Perpetus IC, Robinson OC, Azubike OK, Paul EO. Rosemary IO. Female genital mutilation in Southeast Nigeria: A survey on the current knowledge and practice. Journal of Public Health and Epidemiology. 2012;4(5):117-22.
12. World Health Organization. Female genital mutilation: Report of a WHO Technical working Group, Geneva. 1996
13. 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.
14. Bogale D, Markos D, Kaso M. Prevalence of female genital mutilation and its effect on women's health in Bale zone, Ethiopia: across-sectional study. BMC Public Health. 2014;14:1076.
15. Kaplan A, Hechavarría S, Martín M, Bonhoure I. Health consequences of female genital mutilation/cutting in the Gambia, evidence into action. Reprod Health. 2011;8:26.
16. Morison L, Scherf C, Ekpo G, Paine K, West B, Coleman R, et al. The long-term reproductive health consequences of female genital cutting in rural Gambia: a community-based survey. Trop Med Int Health. 2001;6(8):643-53.
17. Ouldzeidoune N, Keating J, Bertrand J, Rice J. A description of female genital mutilation and force-feeding practices in Mauritania: implications for the protection of child rights and health. PLoS One. 2013;8(4):60594.
18. Abolfotouh SM, Ebrahim AZ, Abolfotouh MA. Awareness and predictors of female genital mutilation/cutting among young health advocates, International Journal of Women's Health. 2015;7:259-69.
19. Bjälkander O, Grant DS, Berggren V, Bathija H, Almroth L. Female genital mutilation in Sierra Leone: forms, reliability of reported status, and accuracy of related demographic and health survey questions. Hindawi Publ Corp: Obstet Gynecol Int. 2013;1:14.
20. Gruenbaum E. Sexuality issues in the movement to abolish female cutting in Sudan. Medical Anthropology Quarterly. 2006;8(20):121.
21. Bogale D, Markos D, Kaso M. Intention toward the continuation of female genital mutilation in Bale Zone, Ethiopia‖. Int J Womens Health. 2015;7:85-93.
22. Bogale D, Markos D, Kaso M. Prevalence of female genital mutilation and its effect on women's health in Bale zone, Ethiopia: a cross-sectional study‖. BMC Public Health. 2014;14:1076.
23. Mandara MU: Female genital mutilation in Nigeria. Int J Gynecol Obstet. 2004;84:291-8.
24. Morison L, Scherf C, Ekpo G, Paine K, West B, Coleman R, Walraven G. The long-term reproductive health consequences of female genital cutting in rural Gambia: a community-based survey. Tropical Medicine and International Health. 2001;6:643-53.
25. Dalal K, Lawoko S, Jansson B. Women's attitudes towards discontinua¬tion of female genital mutilation in Egypt. J Inj Violence Res. 2010;2(1):41-5.
26. Omolase CO, Akinsanya OO, Omotayo RS, Omolase BO. Attitudes towards female genital cutting among pregnant women in Owo, Nigeria. S Afr Fam Pract. 2012;54(4):363-6.

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