

A Scoping Review of Female Genital Mutilation and its Effects on Sexual Function and Sexual Satisfaction

Nusee Z^a, Musa R^b, Ismail H^a, Jamani NA^c, Arifin SRM^d, Mohd Zaki MA^a, Abd Aziz KH^e, Yusof NM^a

^aDepartment of Obstetrics and Gynaecology, Kulliyyah of Medicine, International Islamic University Malaysia, Sultan Ahmad Shah Medical Centre @ IIUM

^bDepartment of Psychiatry, Kulliyyah of Medicine, International Islamic University Malaysia, Sultan Ahmad Shah Medical Centre @ IIUM

^cDepartment of Family Medicine, Kulliyyah of Medicine, International Islamic University Malaysia

^dDepartment of Special Care Nursing, Kulliyyah of Nursing, International Islamic University Malaysia

^eDepartment of Community Medicine, Kulliyyah of Medicine, International Islamic University Malaysia

ABSTRACT

The practice of female circumcision (FC), particularly female genital mutilation/cutting (FGM/C), has been controversial as it is regarded as physically and mentally harmful and violates human rights. The purpose of this study is to perform a scoping review aiming to evaluate and compare the effects of FC and FGM/C on the sexual function of the affected women, including the Google Scholar, EBSCO Discovery Service, PubMed, ProQuest Health & Medical Complete, and Wiley Online Library between the year 1999 to 2020. The following keywords were used: 'Female Circumcision', 'Female Genital Mutilation', 'Female Genital Cutting', 'Female Circumcision and Sexual Function', and 'Female Circumcision and Sexual Satisfaction'. A total of 72 articles related to FC and sexual function or satisfaction were retrieved, and 30 articles met the inclusion criteria. Based on the analysis of the final 30 articles, most of the articles described the detrimental effects of FGM/C on sexual function and sexual satisfaction. However, future studies around the less invasive types of FGM/C are required to better reflect on FGM/C on female health. FGM is detrimental to female sexual satisfaction. However, a different method of FC that is less invasive may provide different outcomes. Therefore, a comprehensive guideline on proper FC techniques is needed for education among medical practitioners to prevent any adverse effects on sexuality.

Keywords

female circumcision, female genital mutilation, sexual function, sexual satisfaction, sexual dysfunction.

Corresponding Author

Assoc. Prof. Dr. Siti Roshaidai Mohd Arifin
Department of Special Care Nursing
Kulliyyah of Nursing
International Islamic University Malaysia
Indera Mahkota Campus 25200 Kuantan
Pahang

E-mail : roshaidai@iiuim.edu.my

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INTRODUCTION

Female Circumcision (FC) is widely practised among the Muslim population globally. However, the practice has always been a controversial issue. More than two decades ago, the World Health Organization (WHO) included FC as a type of Female Genital Mutilation/Cutting (FGM/C) collectively regarded as physically and mentally harmful and a violation of human rights. By definition, FGM includes any procedures that intentionally alter or cause injury to the female genital organs for non-medical reasons. The procedure has been generally viewed as not giving any health benefits for girls and women.¹ The classification of FGM/C is as follows:

Type I : Excision of the prepuce, with or without excision of part or all of the clitoris.¹

Type II : Excision of clitoris with partial or total excision of labia minora.¹

Type III: Excision of part or all of the external genitalia and stitching/narrowing of the vaginal opening (infibulation).¹

Type IV: Unclassified, which includes methods such as pricking, piercing, incising, stretching, cauterisation, scraping, cutting, or introducing corrosive substances/herbs into the vagina.¹

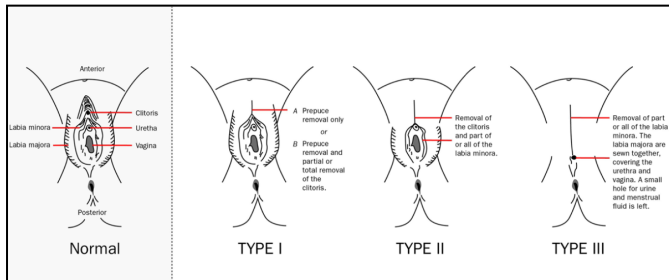


Figure 1: Types of FGM/C. "Female Genital Mutilation Is a Violation of Reproductive Rights of Women: Implications for Health Workers," by S. B. Jungari, 2016, *Health & Social Work*, Volume 41, Number 1, 27. Copyright 2015 by National Association of Social Workers.

Figure 1 illustrates the various types of FGM/C.² FGM/C, especially the more severe types, is commonly associated with multiple complications in various aspects of health. However, the above statement does not apply to FC practice in some countries such as Malaysia that practised less invasive methods such as nicking. According to some studies, these methods are considered harmless or even beneficial.³⁻⁵ However, no extensive scientific evidence has been published to prove any direct health benefits related to FC practice. This scoping review aimed to assess and compare the effects of FC and FGM/C on the sexual function of affected women.

METHODS

This scoping review included published studies that reported the effects of FGM/C on sexual function and sexual satisfaction globally. In addition, we included observational studies in various settings published in the English language from the year 1999 until the year 2020. Ethical approval was obtained from the Ethical Committee of International Islamic University Malaysia (IREC No; 2020-179).

The review was conducted following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines.⁶ Using the following main keywords: 'Female Circumcision' or 'Female Genital Mutilation' or 'Female Genital Cutting' and 'Sexual Function' or 'Sexual Satisfaction', the authors searched Google Scholar, EBSCO Discovery Service, PubMed, ProQuest Health & Medical Complete, and Wiley Online Library. Two authors conducted all the initial searches. The articles were then independently examined by the other authors. There were no disagreements between the

authors. We included original articles published in English or those with an English version of the article. A total of 72 articles related to FC, sexual function, and satisfaction were retrieved. However, only 30 articles remained after all duplicates were removed.

RESULTS

Selection of studies

A total of 72 articles were initially identified. After removing the duplicates, we further screened the remaining 42 studies. Based on the titles and abstracts, 2 articles were removed. Upon screening the full text, ten articles were excluded because they did not fulfil the inclusion criteria, leaving 30 articles in the final analysis (Figure 2).

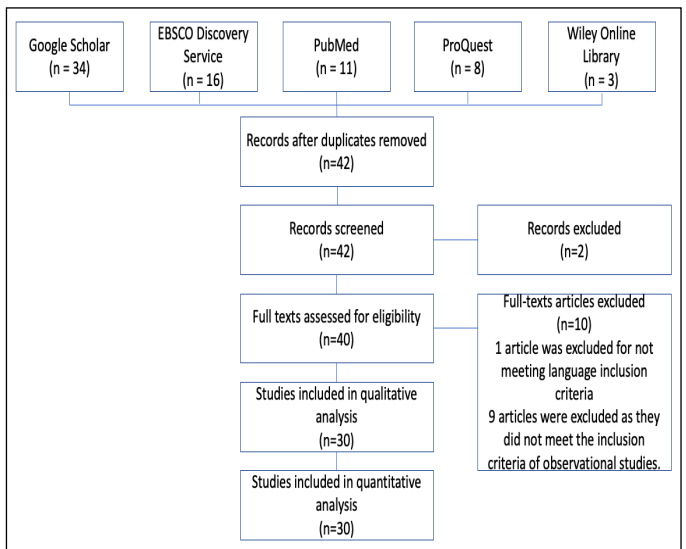


Figure 2: Search strategy for eligible articles

Characteristics of included studies

Table 1 summarises the findings of the studies included in this review, including study location, study period, study design, and sample size. Eight studies were conducted in Egypt,⁷⁻¹⁴ three in Sudan¹⁵⁻¹⁷ and Malaysia,¹⁸⁻²⁰ two in Iran,²¹⁻²² Saudi Arabia,²³⁻²⁴ Nigeria,²⁵⁻²⁶ and Spain,²⁷⁻²⁸ and one each in the United States of America,²⁹ Italy,³⁰ United Arab Emirates,³¹ Switzerland,³² England,³³ and France.³⁴ These studies were published between 1999 and 2020. All articles were published in English or included an English version of it. The sample size for all the studies ranged from 13 to 1836 participants.

Table 1: Summary of characteristics of studies included in the review.

Author; Date	Study location	Period of study	Research design sample size	Outcome measure(s)
Yassin K; 2018	Khartoum, Sudan	6 months	Prospective cohort 230 with FGM/C 190 without FGM/C.	sexual function complications during labour verification of types of FGM/C
Saeed M.A. Thabet; 2003	Cairo University, Cairo, Egypt	3 years	Case-control. (n=147) 30 uncircumcised (control) 30 minorly circumcised 30 minorly circumcised mutilated 57 circumcised with clitoral cysts	Sexual function using 'Kasr El Aini sexual assessment questionnaire sheet'
M.I.H. Mahmoud; 2015	Alexandria (Abees region).	3 months	Case-control 272 circumcised 272 uncircumcised (controls)	Sexual function using FSFI questionnaire score
Ismail SA; 2017	Assiut University Hospitals, Egypt	6 months	Case-control (n=394) 197 without FGM/C 197 with FGM/C. 73.6% (n = 145) FGM/C type I 26.4% (n = 52) FGM/C type II.	FSFI questionnaire score; physical examination to determine type of FGM
Biglu MH; 2016	Kurdistan province of Iran	1 year	Case-control 140 circumcised 140 non-circumcised	FSFI questionnaire score
Anis TH; 2012	Cairo University, Egypt	3 months	Cross sectional N=650 aged 16 -55 333 circumcised 317 uncircumcised	FSFI questionnaire score; physical examination to determine type of FGM
Rouzi AA; 2017	Jeddah, Saudi Arabia	18 months	Cross sectional N=107 39% had FGM/C type I 25% had type II 36% had type III	verified women's type of FGM/C FSFI questionnaire score
Obaid ZM; 2019	Al-Azhar University Hospital; Egypt	9 months	Case-control N=200 sexually active women 100 had FGM/C 100 no FGM/C	Hamilton Anxiety Rating Scale (HAM-A) for assessing anxiety Beck's Depression Inventory for assessing depression Davidson Trauma Scale- DSM-IV for assessing Post-Traumatic Stress Disorder FSFI questionnaire score
Oyefara JL; 2015	Southwestern Nigeria	3 months	Cross sectional N= 350 ever-married women 221 (83.1%) had clitoridectomy 29 (10.9%) had excision 16 (6.0%) had infibulation	Questionnaire with eight sections on socio-demographic background, marital history, female genital mutilation, sexual initiation, sexual activity, sexual satisfaction, fertility and marital harmony
Nyairo CB; 2013	Minnesota, USA, and Nairobi, Kenya	7 months	Cross sectional. N=136 married aged above 18 61 (44.85%) circumcised 72 (52.94%) non-circumcised	Dyadic Adjustment Scale (DAS) for relationship satisfaction. Index of Sexual Satisfaction (ISS) for sexual satisfaction. Personal Assessment of Intimacy in Relationships inventory (PAIR) for intimacy scale to assess gender ideologies, roles and attitude
Catania I; 2007	Florence, Italy		Case control 57 infibulated women (G2) 57 uninfibulated women (G1)	The Female Sexual Function Index
Nevin F.W. Zaki; 2018	Mansoura, Egypt	3 months	Cross sectional N=306 women aged 18 to 47 years 87.7% (n=269), were uncircumcised	Female Sexual Function Index (ArFSFI) Fertility Quality of Life questionnaire (FertiQoL)
SA Awar; 2020	Abu Dhabi city; UAE	8 months	Cross sectional Total 831 FGM/C 344 (41.4%) - Type I 216 (62.8%) - Type II 57 (16.6%) - Type III 17 (5%) - unsure 1.4%	Structured/semi-structured questionnaire on FGM/C-related knowledge, attitude, practices, and complications
ZM Ibrahim; 2012	Suez Canal University Hospital	1 year 8 months	Cross sectional N=220 married women 74.5% circumcised 86% type I, 14% type II	FSFI questionnaire score
SMA Thabet; 2009	Cairo University, Egypt	3 years 6 months	Cohort 50 uncircumcised 125 circumcised *Moderate vaginal wall Descend.	Kasr El Aini Sexual Assessment Sheet Biopsy of vaginal specimen Postoperative sex assessment to determine the possible interruption the G-spot site
Abdulcadir J; 2016	Switzerland	1 year	Cross sectional 15 with FGM("cutting of the clitoris") 15 women without FGM	Pelvic MRI for sexual anatomy mapping Sexual desire (Sexual Desire Inventory) Body image (Questionnaire d'Image Corporelle) Sexual function (FSFI).
O Birge; 2015	Sudan	1 year 9 months	Comparative cross sectional N= 239 210 were circumcised 29 were uncircumcised.	FSFI questionnaire score

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Author; Date	Study location	Period of study	Research design sample size	Outcome measure(s)
O Birge; 2015	Sudan	1 year 9 months	Comparative cross sectional N= 239 210 were circumcised 29 were uncircumcised.	FSFI questionnaire score
FE Okonofua; 2002	Edo State of Nigeria	6 months	Cross sectional 827 cut and 1009 uncut 71% had type I 24% had type II	Physical examination on type of female genital cutting; structured questionnaire
SHA Andersson; 2012	London England	4 years 6 months	Case-control 73 had FGM 37 control	Sexual Quality of Life-Female (SQOL-F) questionnaire score
F Daneshkhah; 2017	Piranshahr County, Iran	1 month	Cross sectional 140 FGM 60 without FGM	Determination type of FGM/C FSFI score Quality of life (QoL) score
SA Alsibiani; 2010	Jeddah, Saudi Arabia.	1 year	Case-control N=260 sexually active 130 with FGM 130 without FGM	FSFI questionnaire score
AA Magied; 2002	Khartoum Sudan	-	Cross sectional 300 women with sexual experience	Interview and questionnaire
S Khalid; 2017	Malaysia	1 month	Cross sectional N= 402 353(87.8%) circumcised 16(4%) not circumcised 131(8.2%) were unsure	Questionnaire
A Rashid; 2009	5 villages in north Malaysia	1 year	Cross sectional N= 630 females 597 cut and 33 uncut	Semi-structured interview
AR Isa; 1999	Kelantan; Malaysia	3 months	Cross sectional N= 262 circumcised women	Clinical examination, Interview and questionnaire
G. Mestre-Bach; 2018	Barcelona, Spain	Unspecified	Cohort Type I : n = 6 Type II : n = 21	Female Sexual Distress Scale Revised (FSDS-R)
G Paslakis; 2020	Barcelona, Spain	5 years	Cohort Type I = 2. type II = 41	FSFI; FSDS-R
M Vital; 2016	Nantes, France	1 year	Cohort Type I = 3 Type II = 9	FSFI, clitoral sensation, self-esteem and symptoms of depression or anxiety

Effects of FGM/C on Sexual Function and Satisfaction

Table 2 outlines the findings of the study findings on the effects of FGM/C on sexual function and satisfaction. A total of 25 studies described the impact of FGM/C on sexual function and satisfaction. Thirteen of the 25 studies used the Female Sexual Function Index (FSFI) as the outcome measures,^{8-13,16,21-24,30,32} while seven studies used self-questionnaire,^{15,17,18,20,25,26,31}. Two studies used the 'Kasr El Aini Sexual Assessment Questionnaire Sheet',^{7,14} one used the Index of Sexual Satisfaction (ISS),²⁹ one used the Sexual Quality of Life-Female (SQOL-F),³³ while another study was an interview-based¹⁹. The FSFI is a 19-item self-reported instrument tool to measure sexual scores in the past 4 weeks sexually active women, The scores are based on six domains namely desire, arousal, lubrication, orgasm, satisfaction, and pain.³⁵⁻³⁶ A woman who scored overall 26.55 is identified as having a higher risk of sexual dysfunction. This instrument is widely used worldwide and available in languages including Chinese, Thai, Turkish and Arabic version.³⁷⁻⁴⁰

The 'Kasr El Aini Sexual Assessment Questionnaire Sheet' can be used to determine the state of the genital anatomy and femininity features, the level of genital and sexual knowledge, the state of the act, the response, and the resultant sexual satisfaction.⁷ Meanwhile, ISS consists of 25 items on a 7-point Likert scale with scores ranging from 0-100, whereby higher scores indicate the gravity of sexual relationship problems.²⁹ On the other hand, the items in the SQOL-F measure the three specific areas of impact of FSD, i.e. self-esteem, emotional issues, and relationship issues.⁴¹

Most studies reported significantly lower scores for sexual function regardless of the tools used. For studies that used FSFI, a significantly lower total score was reported among those with FGM/C compared to those without FGM/C.^{8,9,13,16,21,22,24} A total of six studies reported a statistically significant lower score for all six domains of FSFI for those with FGM/C.^{8,9,16,21,22,24} On the other hand, three

studies that used FSFI did not specify the domains with and without FGM/C. statistically significant differences between those with and

Table 2: Effects of FGM/C on sexual outcomes

Author; Date	Research design	Type of FMG/C	Summary of sexual outcomes and its complications
Yassin K; 2018	Prospective cohort	230 with FGM/C 190 without FGM/C.	1.FGM/C group found to have - 6.9%,(n = 177) sexual complications. - dyspareunia (76.9%% Vs. 46.2% (P = 0.001) - reduced sexual desire (62.6%% Vs. 20%, P = 0.004) - reduced sexual satisfaction (P =0 .002) compared with the other group. 2.The FGM-related sexual complications were not significantly varied by FGM types.
Saeed M.A. Thabet; 2003	Case-control	Case-control. (n=147) 30 uncircumcised (control) 30 minorly circumcised 30 minorly circumcised mutilated 57 circumcised with clitoral cysts	1. The mean sex scores for the controls is higher than the mean for the minorly circumcised women (P >0.05). 2. The mean sex scores for the mutilated cases is significantly lower than for the controls (P< 0.0005). 3. The mean sex scores for complicated cases is statistically insignificant from the controls (P>0.05).
M.I.H. Mahmoud; 2015	Case-control	Type I 135 (49.6%); type II 127 (46.7%); type III 10 (3.7%)	The mutilated cases had lower mean sexual function than control in all domains, with total sex score lower as compared to control (p = 0.000).
Ismail SA; 2017	Case-control	73.6% of cases had type I and 26.4% had type II	1. Frequency of sexual intercourse per week among cases is significantly lesser as compared to controls (p = 0.000). 2. The total FSFI score in the FGM/C group (19.82 ± 7.1) was significantly lower (p = 0.000) than in the control group (23.34 ± 8.1). 3. The FGM/C group had significantly lower than control in all sexual domains.
Biglu MH; 2016	Case-control	All are type I	Cases had a significantly lower mean sexual function than non-circumcised controls in all six domains.
Anis TH; 2012	Cross sectional	N=650 aged 16 -55 333 circumcised 317 uncircumcised	After adjusting for the three confounders, all domains of FSFI, except for the sexual pain domain, were significantly higher in the uncut participants, compared with those of the cut participants.
Rouzi AA; 2017	Cross sectional	N=107 39% had FGM/C type I 25% had type II 36% had type III	1. 92.5% of the women scored lower than the FSFI cut-off point for sexual dysfunction. 2. Sexual dysfunction was significantly greater with more extensive type of FGM/C, across all sexual function domains and in overall sex scores.
Obaid ZM; 2019	Case-control	Not specified	1. FSFI scores showed significant difference between the two groups except for only a single domain "lubrication" (t-test = 2.100; P = 0.037).
Oyefara JL; 2015	Cross sectional	Cross sectional N= 350 ever-married women 221 (83.1%) had clitoridectomy 29 (10.9%) had excision 16 (6.0%) had infibulation	1. Significant relationship between FGM status of women and frequency of sexual initiation in their marriage (P < 0.01). 2. A significant relationship between FGM status of women and women nursing of fear whenever their spouses call for sex (P < 0.01). 4. Low desiring of sex a significantly among women FGM status. (P < 0.01). 5. FGM has significant relationship with feeling of pains during sexual intercourse (P<0.01). 6. The frequency of sexual intercourse of those with FGM/C is significantly lower (P<0.01). 7. Small proportion of circumcised women had ever reached orgasm during sexual intercourse (P<0.01). 8. Less circumcised women always enjoy sexual intercourse as compared to uncircumcised women (P<0.01) 9. 63.2% of circumcised women were satisfied with their sexual lives compared to 96.4% of uncircumcised women.
Nyairo CB; 2013	Cross sectional	Not specified	1. For the relationship satisfaction, no significant main effect for the circumcision factor (p=0.17). 2. For sexual satisfaction, no significant main effect for the circumcision factor (p=0.998).
Catania I; 2007	Case control	Type I (n = 30; 21.90%); Type II (n = 19; 13.87%); Type III (n = 84; 61.31%); Type IV (n = 4; 2.92%)	Significant differences were observed between G2 and G1 in desire, arousal, orgasm and satisfaction with mean scores higher in the group of mutilated women. No significant differences were observed between the two groups in lubrication and pain.
Nevin F.W. Zaki; 2018	Cross sectional		Circumcision status was a strong predictor, tending toward statistical significance (p=0.055) of having a sexual dysfunction
SA Awar; 2020	Cross sectional	Total 831 FGM/C 344 (41.4%) (Type I =216 , II = 57 ,Type III 17)	Relationship between FGM/C type (minimal: Type I, moderate: Type II, and major: Type III) and the occurrence of complications (bleeding, difficulties in sexual life, and delivery-related problems, respectively) was statistically significant (p-value <0.05)
ZM Ibrahim; 2012	Cross sectional	Type I (n = 141 (85.9%)); Type II (n = 23 (14.1%)); Type III (n = 0 (0%))	1. Total FSFI score in the circumcised groups is significantly lower as compared to the uncircumcised group (P = 0.001). 2. Uncircumcised women had statistically significantly higher scores in all domains compared with circumcised women, except for the score of arousals
SMA Thabet; 2009	Cohort	50 uncircumcised 125 circumcised *Moderate vaginal wall Descend.	1. Histo-positive patients has significantly higher mean sexual scores than the histo-negative patients. (P < 0.005). 2. More histological findings in the circumcised women who could locate the site of the G-spot than in the uncircumcised women. The sexual bodies of the G-spot were also significantly more often detected in the circumcised women (P < 0.05). 3. More circumcised women were significantly able to locate the site of the G-spot than the uncircumcised women and more circumcised women also noted the occurrence of genital ejaculation than uncircumcised women. 4. The circumcised women did not have significantly different mean sexual scores to the uncircumcised women (P > 0.05). 5. Both circumcised and uncircumcised groups manifested a significant drop in their scores after anterior vaginal wall surgery (T/df= 33.62/284, P < 0.0005; and T/df = 26.02/98, P < 0.005, respectively)

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Author; Date	Research design	Type of FMG/C	Summary of sexual outcomes and its complications
Abdulcadir J; 2016	Cross sectional	Type IIb (n=3 (20%)); Type IIIa (n=7 (46.7%)); Type IIIc (n=5 (33.3%))	<ol style="list-style-type: none"> 1. Women without FGM reported significantly higher SDI total, dyadic, and solitary scores and higher FSFI total, arousal, lubrication, and pain scores compared with women with FGM. 2. No significance differences for FSFI desire, orgasm, and satisfaction or QIC scores between the two groups.
O Birge; 2015	Comparative cross sectional.	N= 239 210 were circumcised 29 were uncircumcised.	Both the total FSFI scores and each individual score domain are significantly higher in uncircumcised women as compared to circumcised women.
FE Okonofua; 2002	Cross sectional	Cross sectional 827 cut and 1009 uncut 71% had type I 24% had type II	Uncut women were significantly more likely to report that the clitoris is the most sexually sensitive part of their body (OR 0.35; 95% CI 0.26–0.47), while cut women were more likely to report that their breasts are their most sexually sensitive body parts (OR 1.91; 95% CI 1.51–2.42).
SHA Andersson; 2012	Case-control	73 had FGM 37 control FGM type I = 20, type II n = 9, type III = 26 Angurya/Gishiri cuts 1.37% , Corrosive substances 1.37% un- specified 21.92%	<ol style="list-style-type: none"> 1. For sexually active group, control group had significantly higher SQOL-F scores (P < 0.05) than type III and unspecified FGM. 2. For sexually inactive group, no significant effect of FGM type on reported SQOL-F (P = 0.26) However, the mean SQOL-F for the controls was significantly higher than for women with FGM of any type (P = 0.015).
F Daneshkhah; 2017	Cross sectional	Not specified	<ol style="list-style-type: none"> 1. Circumcised women has significantly lower average sexual scores (mean=18.25, SD=6.32) than non-circumcised women (mean=23.90, SD=7.12). 2. Circumcised women have significantly lower sexual function scores in all the domains as compared to uncircumcised women. 3. Circumcised women have significantly lower QoL and FSFI scores as compared to uncircumcised women.
SA Alsibiani; 2010	Case-control	Fifty-three (40.8%) women characterized their FGM as type I and type II; 55 (42.3%) women characterized their FGM as type III; and 22 (16.9%) women as “unknown”.	<ol style="list-style-type: none"> 1. There were no statistically significant differences of sexual scores between the two groups in desire and pain domains. 2. Control has significantly higher scores as compared to cases in arousal (P = 0.007); lubrication (P = 0.01); orgasm (P = 0.03); satisfaction (P = 0.03) domains and the full scale (overall) score (P = 0.009).
AA Magied; 2002	Cross sectional	Not specified.	<ol style="list-style-type: none"> 1. The majority (69%) of the respondents had fearful and painful expectations for the first sexual intercourse. Most of those (58%) were pharaonically circumcised, 8% had a clitoridectomy and only 2% were uncircumcised. 2. Irrespective of the state of circumcision the majority (32% and 51%) of the respondents either always or usually reached their orgasm. 3. At least 19% of the respondents who are pharaonically circumcised seem to be deprived of the four phases of sexuality (excitement, plateau, orgasm and resolution).
S Khalid; 2017	Cross sectional		In the study, 67/402 (17%) believed that circumcision will give better sexual function.
A Rashid; 2009	Cross sectional	All 597 are type IV	In the focus group discussion, unanimously they believe that FGM does not reduce the female libido.
AR Isa; 1999	Cross sectional	All 262 (100%) are type IV	All 262 (100%) enjoyed sexual relationship.

Five of the seven studies that used self-developed questionnaires reported adverse effects of FGM/C on sexual function.^{15,17,25,26,31} On the contrary, one study reported positive results of FGM/C towards sexual function in which all the respondents answered that they enjoyed sexual relationships.¹⁸ However, this study relied on self-reporting answers, and the tool was not validated to assess sexual satisfaction. Another study reported that 67/402 (17%) participants believed that circumcision would improve sexual function.²⁰

Clitoral reconstruction involves freeing the remaining part of the clitoris from any adhesion. The scar tissue is excised to relieved its adhesion on the skin in order to exposed the clitoris and place it externally close to vagina. Clitoris is mobilised laterally by dissecting it from the bulbocarvenosus muscle and dissection of the suspensory

ligament. The gland anchored to the pubic periosteum before closing the skin.²³

Repair of labia minora is usually done using the labial remnants to reform a continuous labium attached to the clitoris base. Paring and suturing or splitting the remnant to cross the defect are commonly needed.⁷ Two other studies also described the steps for the procedure that including uncovering the remaining clitoris before placing it externally as close as possible to the vagina by first removing the scar tissues from the skin to expose the clitoris. Next, the clitoris is dissected from the bulbocavernosus muscles to obtain lateral mobility, followed by the sectioning of the suspensory ligament.^{27,28} Summary of sexual outcomes following surgical correction on women with FGM/C is tabulated in Table 3.

Based on this review, two studies demonstrated a significant improvement post-surgical correction in terms of lower scores on the Female Sexual Distress Scale-Revised (FSDS-R).^{27,28} However, the same study revealed no statistical significance when comparing the pre-and post-intervention FSFI scores.²⁸ Another study that also measured FSFI scores after clitoral reconstruction reported an improvement of the total FSFI scores that

was not statistically significant at three months but significant at six months after the surgery.³⁴ On the other hand, the study that used the ‘Kasr El Aini Sexual Assessment Questionnaire Sheet’ reported that the mean scores of sexual satisfaction among the circumcised mutilated cases improved significantly post-surgically to almost similar levels as those recorded for the controls.⁷

Table 3: Summary of sexual outcome following surgical correction on women with FGM/C

Author; Date	Type of Intervention	Indication for Intervention	Outcome measure(s)	Summary of findings
Saeed M.A. Thabet; 2003	Clitoral cyst excision; excision reconstruction	Development of clitoral cyst as a late complication	‘Kasr El Aini sexual assessment questionnaire sheet’	<ol style="list-style-type: none"> 1. The mean scores for the circumcised mutilated cases increased and became like those recorded for the controls (T/d.f. = 33.941/58 and P < 0.0005) post-surgical correction. 2. The corresponding means for cases needing surgery for clitoral cysts were found to be significantly lowered for those treated by the simple surgical technique of excision (T/d.f. = 30.04/52 and P < 0.0005) and were found to be nearly maintained to be insignificant from the mean score prior to surgery (T/d.f. = 5.05.58 and P > 0.05) in those treated by excision and clitorolabial reconstruction.
G. Mestre-Bach; 2018	Clitoral reconstruction surgery; individual psychoeducational interventions	Sexual distress at baseline	Female Sexual Distress Scale Revised (FSDS-R)	<ol style="list-style-type: none"> 1. Mean score of FSDS-R showed a statistically significant reduction in post-intervention as compared to pre-intervention, with regards to interest/arousal disorder (p = 0.012). 2. Result also showed those with FSDS-R lower score of <11 increased post-intervention (p=<.001).
G Paslakis; 2020	Clitoral reconstruction	Not stated	FSFI; FSDS-R	<ol style="list-style-type: none"> 1. FSDS-R scores improved as a measure for sexual distress (p < 0.001). 2. All sexual function subscales of the FSFI, including sexual satisfaction, did not significantly improved.
M Vital; 2016	Clitoral reconstruction	Sexuality improvement [(n = 11 (92%)); Pain reduction [n = 7 (58%)]; Identity restoration [n = 6 (50%)]	FSFI; Questionnaire on clitoral sensation, self-esteem and symptoms of depression or anxiety	<ol style="list-style-type: none"> 1. Three months after the surgery: median FSFI summary score was 25 (IQR: 7–28) and did not differ significantly (P = 0.620) 2. Six months after surgery <ul style="list-style-type: none"> -The median FSFI summary score was 29 (IQR: 24–34), significantly higher (P = 0.009) than that before surgery. This significant improvement was observed on all FSFI sub scores except for lubrication. -Clitoral sensation had improved (P = 0.014). 3. At the same point, 11 (92%) of the women reported that they were satisfied with their surgery, and significant improvements were observed in terms of the women’s satisfaction with the appearance of their genitalia (11, 92%, P = 0.005) and sense of femininity (11, 92%, P = 0.046).

Effects on Orgasm and Lubrication

Table 4 summarises the effects of FGM/C on the specific sexual domains of ‘orgasm’ and ‘lubrication’. Nine studies demonstrated significantly lower sexual scores for both ‘orgasm’ and ‘lubrication’ domains among those with FGM/C compared to those without FGM/C.^{8–10,16,21–24,42} Two studies reported significantly lower sexual scores among those with FGM/C than those without FGM/C for lubrication. However, no significant differences were reported for the orgasm domain.^{11,32} Another study demonstrated significantly lower sexual scores in women with FGM/C than those without FGM/C for the orgasm domain but not for the lubrication domain.³⁰ One cohort study showed no significant improvement in sexual scores for both orgasm

and lubrication domains after clitoral reconstruction, while another cohort study reported significant improvement in sexual scores for the orgasm domain but not for the lubrication domain despite surgical intervention.^{28,34}

DISCUSSION

This scoping review included studies conducted in international and local settings that explored the relationship between FGM/C, sexual function, and sexual satisfaction. In general, this review demonstrated that FGM/C exerted detrimental effects on sexual function and sexual satisfaction.

Table 4: Summary of findings of studies demonstrating effects of FGM/C on sexual domain of 'orgasm' and 'lubrication'.

	Research design	Type of FGM/C involved	Outcome measure(s)	Summary of findings	
				Orgasm	Lubrication
M.I.H. Mahmoud; 2015	Case-control	Type I 135 (49.6%); type II 127 (46.7%); type III 10 (3.7%)	FSFI questionnaire score	sexual score significantly lower in FMG	sexual score significantly lower in FMG
Biglu MH; 2016	Case-control	All are type I	FSFI questionnaire score	sexual score significantly lower in FMG	sexual score significantly lower in FMG
Anis TH; 2012	Cross sectional	283 participants (84.98% of the cut) showed signs of type I & 50 of type II genital cutting. No type III or type VI genital	FSFI questionnaire score	sexual score significantly lower in FMG	sexual score significantly lower in FMG
Rouzi AA; 2017	Cross sectional	39% of the women had FGM/C type I, 25% had type II, and 36% had type III	FSFI questionnaire score	sexual score significantly lower in FMG	sexual score significantly lower in FMG
Obaid ZM; 2019	Case-control	Not specified	FSFI questionnaire score	No significant different in both groups	sexual score significantly lower in FMG
Oyefara JL; 2015	Cross sectional	221 (83.1%) of ever circumcised women had clitoridectomy, 29 (10.9%) had excision, 16 (6.0%) had infibulation	Questionnaire with 8 sections on socio-demographic background, marital history, genital mutilation, sexual initiation, sexual activity, sexual satisfaction, fertility history, marital harmony.	Small proportion of circumcised women compared with uncircumcised women reported that they had ever reached orgasm during sexual intercourse (P < 0.01).	
O Birge; 2015	Comparative cross sectional.	Majority Type 2 = 51%, Type 3 =25.7%; Type 1 circumcision =23.3%	FSFI questionnaire score	sexual score significantly lower in FMG	Sexual score significantly lower in FMG
AA Magied; 2002	Cross sectional	Not specified.	Interview and questionnaire	1. Irrespective of the state of circumcision the majority (32% and 51%) of the respondents either always or usually reached their orgasm. 2. At least 19% of the respondents who are pharaonically circumcised seem to be deprived of the four phases of sexuality (excitement, plateau, orgasm and resolution).	
Abdulcadir J; 2016	Cross sectional	Type IIb (n=3 (20%)); Type IIIa (n=7 (46.7%)); Type IIIc (n=5 (33.3%))	FSFI questionnaire score	No differences were found for FSFI sexual score	Sexual score significantly lower in FMG
F Daneshkhah; 2017	Cross sectional	Not specified	FSFI questionnaire score	Sexual score significantly lower in FMG	Sexual score significantly lower in FMG
SA Alsibiani; 2010	Case-control	Fifty-three (40.8%) women characterized their FGM as type I and type II; 55 (42.3%) women characterized their FGM as type III; and 22 (16.9%) women as "unknown".	FSFI questionnaire score	Sexual score significantly lower in FMG	Sexual score significantly lower in FMG
M Vital; 2016	Cohort	Type I (n = 3 (25%)); Type II (n = 9 (75%))	FSFI; Questionnaire on clitoral sensation, self-esteem and symptoms of depression or anxiety	Six months after surgery, the median FSFI summary score was 29 (IQR: 24–34), significantly higher (P = 0.009) than that before surgery on all FSFI sub scores except for lubrication.	No differences were found for FSFI sexual between pre and post-intervention groups.
G Paslakis; 2020	Cohort	Type I FGM/C (n = 2) and type II FGM/C (n = 41)	FSFI; FSDS-R	No differences were found for FSFI sexual score between pre and post-intervention groups.	No differences were found for FSFI sexual score between pre and post-intervention groups.
Catania I; 2007	Case control	Type I* (N = 30; 21.90%); Type II (N = 19; 13.87%); Type III (N = 84; 61.31%); Type IV (N = 4; 2.92%)	FSFI questionnaire score	Sexual score significantly lower in FMG	No significant different
ZM Ibrahim; 2012	Cross sectional	Type I (n=141 (85.9%)); Type II (n=23 (14.1%)); Type III (n=0 (0%))	FSFI questionnaire score	1. type II group had significantly lower scores of desires, lubrication, orgasm, pain, and satisfaction domains as well as the total score. 2. Uncircumcised women had statistically significantly higher scores in all domains, except for the score of arousals.	
Ismail SA; 2017	Case-control	73.6% of cases had type I and 26.4% had type II	FSFI questionnaire score	1. The domain scores in FGM group were significantly lower than control in all domains. 2. There was no statistically significant difference between the two types of FGM in terms of total and individual domain scores except for the pain domain. 3. Comparing the two types of FGM/C with the control revealed significant lower total and domain scores in both FGM/C types except for the desire domain	

This review also demonstrated that the more severe types of FGM/C would lead to worse outcomes for sexual function and sexual satisfaction. However, none of the studies that reported negative impacts included study participants with type IV FGM/C. The more severe types of FGM/C, such as complete excision of the clitoris, removal of a large part of the labia minora and infibulation, are in stark contrast with the conventional Southeast Asian traditions that involve less invasive methods such as nicking.³ Nicking, as practised in some countries, is the least invasive method among all the four types of FGM/C. No anatomical changes are made to the genitalia.^{4,5} These procedures are equivalent or less extensive in terms of procedure, scope, and effect compared to male circumcision, which does not encounter similar controversies.⁴³

Furthermore, most of the included studies demonstrated that surgical correction (clitoral reconstruction) significantly improved sexual function for those with more severe types of FGM/C. However, one study reported that no improvement in sexual function was observed in all domains despite the intervention.²⁸ The authors attributed it to low samples at follow-up that accounted for an underpowered sample to detect any significant changes in sexual function.²⁸ All the studies that assessed the effects of surgical intervention on the sexual function of those with FGM/C only involved type I, II, and III, likely because type IV FGM/C did not appear to be linked with any adverse effects on the sexual anatomy and function. In a Malaysian study, the examination of participants with FGM/C showed no clinical evidence of injury to the clitoris or labia. There were also no signs of cutting, burning, scarring, or any form of mutilation to the clitoris, the labia minora and majora, or any damage or alterations to the clitoris.¹⁸

In addition, some of the studies showed lower sexual scores for both orgasm and lubrication domains. However, most of these studies involved types I, II, and III FGM/C. This finding indicates the importance of the clitoris for orgasm and lubrication. The clitoris is an external organ with three erectile tissue parts, including the glans, body, and crura.⁴⁴ Clitoral stimulation activates the brain to instigate changes in the female genital tract

through vaginal lubrication to facilitate painless penile penetration.⁴⁵ A study using functional MRI demonstrated that the neural input from clitoral stimulation causes cortical activation within the medial cortex (medial paracentral lobule) and within the sensory, motor, reward, frontal cortical, and brainstem regions of the brain before orgasm.⁴⁶⁻⁴⁷ Therefore, further development of new FC methods should aim to preserve the clitoris.

Based on the findings, it is clearly shown that FGM/C practice should have a proper guideline. The guideline will guide our current practitioners on the appropriate method of FGM/C. The practitioners should also be aware about the negative consequences of extreme or inappropriate method of female circumcision. This paper clearly demonstrated that severe form of female circumcision or could be regarded as female genitalia mutilation could impair their sexual life in the future.

Series of studies in the past show that severe mutilation of genitalia particularly on clitoris will effect on female sexual satisfaction. The sexual impact was reported based on lower scores on sexual rating scales compared to uncircumcised women who had better sexual scores.^{3,15} On another hand, circumcision is also one of the needs in the practice of certain religions. Hence, a proper method is the solution to the issue.

LIMITATIONS

The main limitation of this review was the inadequate studies that included descriptions and findings on type IV FGM/C. Furthermore, most of the published studies combined all the different types of FGM/C as one category, thus hindering a more in-depth analysis that can provide better results.

CONCLUSION

Based on the review, most articles reported detrimental effects of FGM/C on sexual function and sexual satisfaction, with more severe types of FGM/C demonstrating worse outcomes. However, further studies involving the less invasive types of FGM/C are warranted better to reflect the overall burden of FGM/C on female health.

CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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