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Female genital mutilation and cutting: a systematic literature review of health professionals' knowledge, attitudes and clinical practice

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Abstract

Background: The World Health Organisation (WHO) estimates that 100–140 million girls and women have undergone female genital mutilation or cutting (FGM/C). FGM/C is an ancient cultural practice prevalent in 26 countries in Africa, the Middle East and Asia. With increased immigration, health professionals in high income countries including UK, Europe, North America and Australia care for women and girls with FGM/C. FGM/C is relevant to paediatric practice as it is usually performed in children, however, health professionals' knowledge, clinical practice, and attitudes to FGM/C have not been systematically described. We aimed to conduct a systematic review of the literature to address this gap.

Methods: The review was conducted according to guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and registered with the PROSPERO International Prospective Register of Systematic Reviews (CRD42015015540, <http://www.crd.york.ac.uk/PROSPERO/>). Articles published in English 2000–2014 which used quantitative methods were reviewed.

Results: Of 159 unique articles, 18 met inclusion criteria. The methodological quality was poor - six studies met seven of the eight quality criteria. Study participants included mainly obstetricians, gynaecologists and midwives (15 studies). We found no papers that studied paediatricians specifically, but two papers reported on subgroups of paediatricians within a mixed sample of health professionals. The 18 articles covered 13 different countries: eight from Africa and 10 from high income countries. Most health professionals were aware of the practice of FGM/C, but few correctly identified the four FGM/C categories defined by WHO. Knowledge about FGM/C legislation varied: 25 % of professionals in a Sudanese study, 46 % of Belgian labour ward staff and 94 % of health professionals from the UK knew that FGM/C was illegal in their country. Health professionals from high income countries had cared for women or girls with FGM/C. The need to report children with FGM/C, or at risk of FGM/C, to child protection authorities was mentioned by only two studies.

Conclusion: Further research is needed to determine health professionals' attitudes, knowledge and practice to support the development of educational materials and policy to raise awareness and to prevent this harmful practice.

Keywords: Female genital mutilation or cutting, Health professionals, Knowledge, Attitudes, Practice

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Background

The World Health Organisation (WHO) estimates that between 100–140 million girls and women have undergone female genital mutilation or cutting (FGM/C) [1]. FGM/C is usually performed in children aged between 1 month and 15 years, and is therefore relevant to paediatric practice [2]. There are different types of FGM/C procedures ranging from “nicking” or “pricking” the prepuce, to complete removal of the clitoris or infibulation, when the vaginal opening is narrowed by cutting and repositioning the inner or outer labia, with or without removal of the clitoris [1, 3]. FGM/C is an ancient cultural practice, predating both the Bible and the Koran and has no basis in religion [4]. FGM/C is currently customary in over 26 countries in Africa, the Middle East and Asia, with a prevalence of 70 % or more reported in 11 African countries including Somalia, Egypt, Sierra Leone, Sudan, Mali, Eritrea, and Ethiopia [2]. There are no medical or health indications for FGM/C. FGM/C is harmful and immediate complications include bleeding, pain, infections and significant psychological trauma [1, 2, 5, 6]. Long term complications include recurrent urinary infections, birthing difficulties including need for emergency caesarean section, third-degree vaginal tears, and ongoing psychological and sexual problems [1, 2, 4–8].

All forms of FGM/C whether performed by medical practitioners or other “cultural practitioners” are illegal in at least 20 countries in Africa including Kenya, Nigeria and Egypt [9], and in high income countries such as Australia, New Zealand, United Kingdom, Republic of Ireland, Canada, many European Countries, and 15 of the 52 States of the USA have law where parents/guardians and circumcisers are subject to prosecution [4–6, 10–12]. Furthermore, it is illegal to organise for FGM/C procedures to be performed overseas in children resident in many of these high income countries [5–7, 10, 12]. FGM/C is a child protection issue and in many countries, mandatory reporting to authorities is required by health professionals who identify children who have undergone FGM/C or who are believed to be at risk of FGM/C [4–7, 10–12]. FGM/C violates the UN Charter of Human Rights, the UN Charter of Women’s Rights, the Charter of the Rights of the Child, and the Charter of Rights of the African Child [13–16].

Medicalization of FGM/C refers to the procedure being performed in a medical setting, often by a doctor [17, 18]. A recent study from the UK reported that of 27 girls who had FGM/C, it was known to have been performed by a doctor in a medical setting in 71 % [19]. Medicalization is often supported by those who practice FGM/C because they believe it offers “harm reduction” by preventing immediate medical complications [17, 18]. However, the involvement of healthcare providers in FGM/C in any setting has

been condemned by the WHO because it does not prevent long-term medical or psychological complications and legitimises continuation of FGM/C in some communities [1, 3].

Many women with FGM/C and girls at risk of FGM/C are now living in the UK, Europe, North America, Australia and New Zealand due to the increasing immigration from countries where FGM/C is prevalent [4–7, 10–12]. The prevalence of FGM/C in girls and women living in these countries is unknown, because procedures tend to be organised by families in private, often outside the mainstream health system, and information about FGM/C is not routinely collected or coded in medical records. Furthermore, girls may be taken for FGM/C to the family’s country of origin [5]. Thus, FGM/C may only become apparent to health professionals when girls or young women present with complications, or when women need obstetric and gynaecological care [5, 7, 20].

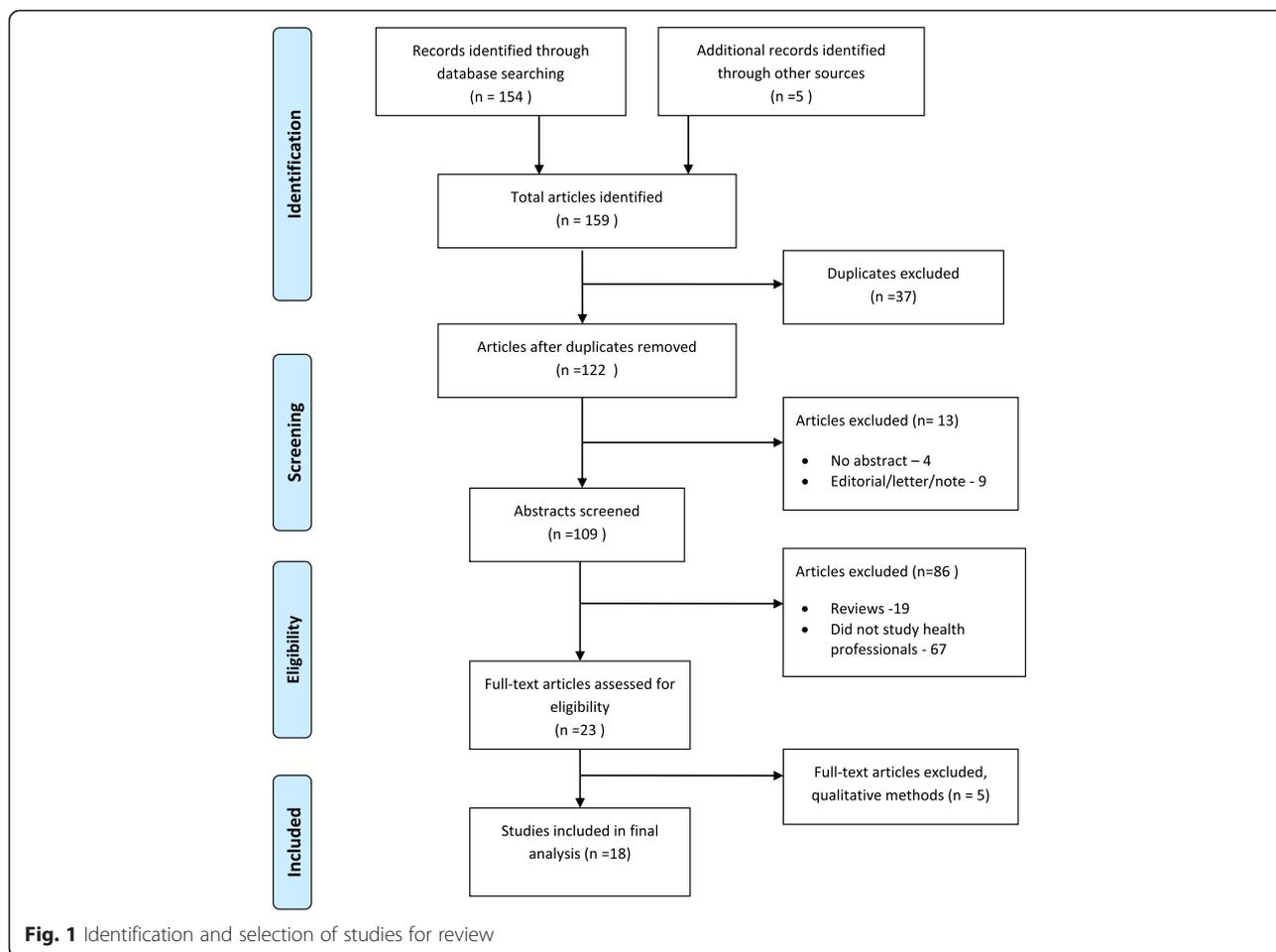
As the immigrant communities in high income countries become larger and increasingly multicultural and ethnically diverse, health professionals are more likely to see women and girls with FGM/C or at risk of FGM/C, in their clinical practice. In this systematic review of the literature we aimed to identify, describe and analyse publications reporting the knowledge, attitudes and clinical practices related to FGM/C among health professionals internationally. We aimed to answer the following questions:

1. Do health professionals have experience of FGM/C in their clinical practice?
2. Do health professionals have adequate knowledge about FGM/C categories, complications, and high risk groups and do they have access to education and training opportunities?
3. Do health professionals have adequate knowledge about laws relating to FGM/C?
4. What are the attitudes and beliefs of health professionals towards the practice of FGM/C?

Methods

Systematic review of the literature using the terms “female genital mutilation”, “female genital cutting” or “female circumcision” combined with MESH terms: “Paediatrics”, “Child Health” and keywords: “paediatrician”, “practice guidelines,” “attitudes” “knowledge” and “education” was conducted. Databases including MEDLINE, CINHALL and SCOPUS were searched applying limits: year of publication 2000–2014; human; English language.

The review was conducted according to guidelines of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and registered with the PROSPERO International Prospective



Register of Systematic Reviews (CRD42015015540, <http://www.crd.york.ac.uk/PROSPERO/>).

The titles and abstracts of all articles identified through the literature search were scanned for relevance. Documents were selected for full review if they specifically mentioned FGM/C, and reported primary data on health professionals' knowledge attitudes and clinical practice related to FGM/C.

Definitions

WHO definitions of the 4 types of FGM/C:

1. *Clitoridectomy*: partial or total removal of the clitoris (a small, sensitive and erectile part of the female genitals) and, in very rare cases, only the prepuce (the fold of skin surrounding the clitoris).
2. *Excision*: partial or total removal of the clitoris and the labia minora, with or without excision of the labia majora (the labia are “the lips” that surround the vagina).

3. *Infibulation*: narrowing of the vaginal opening through the creation of a covering seal. The seal is formed by cutting and repositioning the inner, or outer, labia, with or without removal of the clitoris.
4. *Other*: all other harmful procedures to the female genitalia for non-medical purposes, e.g. pricking, piercing, incising, scraping and cauterizing the genital area.

Other definitions:

5. *De-infibulation*: is the surgical procedure to open up the closed vagina of FGM type 3 and is often performed on the wedding night, and prior to childbirth.
6. *Reinfibulation*: The re-stitching of FGM type III to reclose the vagina after childbirth.

Inclusion criteria

Design

Human observational studies, including cross sectional, cohort or population-based studies that used quantitative methodology.

Table 1 Characteristics of studies included in the review

Reference	Country	Study design and method	Domains assessed			Sample	N	Response rate
			Attitudes	Knowledge	Practice			
Publications from African Countries								
Ashimi et al. 2014 [21]	Nigeria	Cross-sectional; self-administered survey	Yes	Yes	No	Nurses	350	84 %
Kaplan et al. 2013 [22]	Gambia	Cross-sectional; survey administered face to face	Yes	Yes	Yes	Nurses, community nurses and midwives	468	NR
Ali et al. 2012 [23]	Sudan	Survey administered via face to face interview	Yes	Yes	Yes	Midwives (~63 % of midwives were illiterate)	157	NR
Dike et al. 2012 [24]	Nigeria	Cross-sectional survey	Yes	Yes	No	Student nurses and midwives	269	95.7 %
Rasheed et al. 2011 [25]	Egypt	Cross sectional; self-administered survey	Yes	No	Yes	^a Nurses; junior and senior physicians		
Refaat 2009 [26]	Egypt	Cross-sectional Survey	Yes	Yes	Yes	^a Physicians	193	68 %
Mostafa et al. 2006 [27]	Egypt	Random sample; Survey	Yes	Yes	No	5 th year medical students	330	90.3 %
Onuh et al. 2006 [28]	Nigeria	Cross-sectional; Survey	Yes	Yes	Yes	Nurses practising in a hospital	182	94.3 %
Publications from "Western Countries"								
Caroppo et al. 2014 [29]	Italy	Purposive sample; Self-administered survey	No	Yes	Yes	Physicians, social workers, psychologists, "health assistants" working in an asylum seeker centre	41	100 %
Purchase et al. 2013 [30]	UK	Cross-sectional; survey	No	Yes	No	Obstetricians and Gynaecologists	607	20.1 %
Relph et al. 2013 [31]	UK	Cross-sectional; Survey	Yes	Yes	No	Health care professionals	79	92.9 %
Moedd et al. 2012 [20]	Australia and New Zealand	Cross-sectional; Survey	No	Yes	Yes	Obstetricians and Gynaecologists and trainees	564	18.5 %
Hess et al. 2010 [32]	USA	Randomised Survey	Yes	Yes	Yes	FGM/C workers	34	91.9 %
Kaplan-Marcusan et al. 2009 [33]	Spain	Cross-sectional; Survey at two time points (2001 and 2004)	Yes	Yes	Yes	^b Primary health care professionals	280 (2001) 296 (2004)	80 % (2001) 62 % (2004)
Leye 2008 [34]	Belgium	Cross-sectional; Survey	Yes	Yes	Yes	Gynaecologists and trainees	333	46 %
Zaidi et al. 2007 [35]	UK	Cross-sectional; Survey	No	Yes	Yes	Labour ward staff	45	100 %
Tamaddon et al. 2006 [36]	Sweden	Cross-sectional; Survey	No	Yes	Yes	^b Health professionals	796	28 %
Jager et al. 2002 [37]	Switzerland	Cross-sectional; Survey	No	Yes	Yes	Obstetricians and gynaecologists	454	39.1 %

^aSample included paediatricians but did not report on paediatricians separately;

^bSample included paediatricians and paediatricians were compared with other professionals;

NA Not applicable

NR Not Reported

Table 2 Assessment of methodological quality of studies included in the review

Reference	Representativeness						Survey validity		Score out of 8
	Profession of respondents described	Age or years of practice	Gender	Setting	Sampling procedure	Response rate reported	Pre-test	Expert review	
Publications from African Countries									
Ashimi et al. 2014 [21]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	7
Kaplan et al. 2013 [22]	Yes	Yes	Yes	Yes	No	No	Yes	Yes	7
Ali et al. 2012 [23]	Yes	Yes	No ^a	Yes	No	No	No	No	3
Dike et al. 2012 [24]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	7
Rasheed et al. 2011 [25]	Yes	No	No	Yes	No	Yes	No	No	3
Refaat 2009 [26]	Yes	Yes	Yes	No	Yes	Yes	No	No	5
Mostafa et al. 2006 [27]	Yes	Yes	Yes	Yes	Yes	Yes	No	No	6
Onuh et al. 2006 [28]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	7
Publications from "Western Countries"									
Caroppo et al. 2014 [29]	Yes	No	Yes	Yes	Yes	Yes	No	No	5
Purchase et al. 2013 [30]	Yes	Yes	No	Yes	Yes	Yes	No	No	5
Relph et al. 2013 [31]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	7
Moeed et al. 2012 [20]	Yes	No	No	No	Yes	Yes	No	No	3
Hess et al. 2010 [32]	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	7
Kaplan-Marcusan et al. 2009 [33]	Yes	Yes	Yes	Yes	Yes	Yes	No	No	6
Leye 2008 [34]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	8
Zaidi et al. 2007 [35]	Yes	No	No	Yes	Yes	Yes	No	Yes	5
Tamaddon et al. 2006 [36]	Yes	No	No	Yes	Yes	Yes	No	Yes	5
Jager et al. 2002 [37]	Yes	No	No	Yes	Yes	Yes	No	No	4

"Yes" indicates that this criterion was adequately reported in the paper

^aThe sample consisted of "midwives" and it is assumed that all would have been female given the cultural setting for this study

Participants

Health professionals including paediatricians, obstetricians, gynaecologists, family doctors, nurses, midwives or students of medicine, nursing, midwifery or other health disciplines.

Outcomes

Measures of knowledge about FGM/C, attitudes/beliefs towards FGM/C and experience of FGM/C in clinical practice.

Exclusion criteria

- Publications reporting patient or community knowledge or attitudes
- Publications that used qualitative study designs
- Publications reporting on genital cosmetic procedures
- Foreign language publications

Quality assessment

Publications were assessed and scored for representativeness and survey tool validity. Quality measures

included: sample description (1 point for each detail provided: profession, age, gender of respondents and response rate); sampling method (description of site/setting – 1 point, sampling procedure described - 1 point); and survey validity (1 point if survey pre-tested and 1 point if the survey was reviewed by content experts), for a maximum score of eight points.

Data extraction and analysis

Data were extracted by two researchers independently (YZ, AP). Any inconsistencies were resolved by checking full-text versions of the documents and discussion with the review team. All proportions reported in the original documents have been rounded up to whole percentages for ease of reading and interpretation.

Results

One hundred and fifty nine potentially relevant articles were identified. After exclusion of duplicates there remained 122 unique publications. Editorials, letters, notes and publications that did not have abstracts (mainly opinion pieces) were excluded, leaving 109

Table 3 Reported experience of FGMC in clinical practice

Reference	Country	Had seen patients with FGMC	Managed women or girls with FGMC/FGMC complications; used prevention measures	Has performed FGMC or has been asked to perform FGMC	Clinical Guidelines/ Clinical Education to support practice
Publications from African Countries					
Kaplan et al. 2013 [22]	Gambia	41 % - had seen a girl with complications of FGMC	41% - had seen a girl with complications of FGMC	8 % - had performed FGMC 69 % - FGMC is practiced in my family/household	NR ^a
Ali et al. 2012 [23]	Sudan	NR	NR	81 % had performed FGMC during their career Each of these midwives had performed 5–88 FGMC procedures in the previous year	NR
Rasheed et al. 2011 [25]	Egypt	NR	NR	None of the nurses had performed FGMC	NR
Refaat 2009 [26]	Egypt	NR	NR	19 % - performed FGMC 34 % of those who perform FGMC reported complications among patients	NR
Onuh et al. 2006 [28]	Nigeria	NR	NR	7 % - currently practice FGMC 14 % have practiced FGMC in the past 58 % - will perform FGMC in the future if compelled to do so	NR
Publications from "Western Countries"					
Caroppo et al. 2014 [29]	Italy	71 % - never met or assisted a woman with FGMC despite working in an asylum seeker facility	76 % - stated they would refer the woman for care elsewhere, with many different options provided		34 % were aware of guidelines/ procedures for the management of women with FGMC
Purchase et al. 2013 [30]	UK	87 % - had been involved in the care of a girl/woman with FGMC 20 % - had seen >10 cases		3 midwives had been asked to perform FGMC in a child or to re-infibulate after delivery	26 % - had sufficient training in FGMC 31 % - reported that the hospital/ trust had screening for FGMC procedures 21 % - there was an FGMC specialist (obstetrician or midwife) at the hospital trust 40 % - had training in de-infibulation
Relph et al. 2013 [31]	UK	59 % had been involved in the care of a woman with FGMC	NR	NR	NR
Moeed et al. 2012 [20]	Australia and New Zealand	76 % see women from African countries and from the Middle East	47 % had seen at least one woman or girl with complications related to FGMC – "most commonly" urinary problems; problems in labour and dyspareunia	21 % - of O&G specialists asked to re-infibulate after birth	NR

Table 3 Reported experience of FGMC in clinical practice (Continued)

		75 % saw at least one woman with FGMC in the last 5 years	"A few" reported psychosexual complications	12 % - of those who had been asked had done so:	
		Most saw 1–5 women with FGMC in the last 5 years		38 % of the FGMC workers had heard of re-suturing taking place; one respondent indicated that re-suturing had taken place >50 times	
				2 (0.5 %) respondents had been asked to perform FGMC on a baby, young girl or woman	
				One was asked on 1–5 occasions; the other 6–10 occasions	
				1 % of the O&G specialists had convincing evidence that the procedure was done in Australia or NZ	
				10 % of the FGMC workers were aware of convincing evidence that the procedure was being performed in Australia or NZ	
Hess et al. 2010 [32]	USA	43 % - of certified nurse- midwives had seen women with FGMC in their practice	Problems associated with FGMC not discussed consistently 20 % discussed circumcision of daughters, nieces, grand-daughters "Often" or "Always" 78 % never discussed infertility		NR
Kaplan-Marcusan et al. 2009 [33]	Spain	2001 6 % - of all HP surveyed had seen cases in practice 7 % - of paediatricians saw FGMC 2004 16 % - had seen FGMC in practice 19 % - of paediatricians saw FGMC FGMC was seen by females more often than males	NR	91 % of paediatricians had an interest in FGMC 42 % of paediatricians were aware of guidelines and protocols	NR
Leye 2008 [34]	Belgium	58 % had seen women or girls with FGMC in their practice Most common forms: 56 – infibulation 40 – Excision	Consulted regarding complications: 1 % - acute complications 1 % - fertility problems 2 % - psychological problems	2 % [6] respondents had been asked to perform FGMC in Belgium 4 % [13] had been asked whether FGMC could be performed in Belgium 9.5 % [31] gynaecologists had heard that FGMC had been performed in Belgium	51 % wanted guidelines on FGMC 45 % sought more information about FGMC after seeing patients with FGMC

Table 3 Reported experience of FGMC in clinical practice (Continued)

		3 – sunna ^b	4 % - fistulae		
		7 patients , 14 years old	15 % - pregnancy and delivery problems		
		23 patients 15–18 years old	18 % - chronic pain		
		The rest were 19 years or older	19 % - urinary tract infections		
		Patients were from: Somalia, Ethiopia, and other including Nigeria, Egypt, Mali, Senegal	41 % - sexual dysfunction		
			35 % - of those looking after pregnant women tried to persuade the mother not to perform FGMC if the child was a daughter		
			65 % - said they would not do any prevention		
Zaidi et al. 2007 [35]	UK	80 % had seen women with FGM/C in their practice	NR	NR	NR
Tamaddon et al. 2006 [36]	Sweden	60 % had seen at least one patient with FGM/C	39 % - had seen patients with long-term complications of FGM/C	5 % - had been asked about performing FGM/C in Sweden; 4 of these were paediatricians	NR
			1 % - had seen patients with complications due to recently performed FGC	10 % - had been asked to perform reinfibulation after birth	
			2 of these 7 were paediatricians, 4 midwives, 1 gynaecologist		
Jager et al. 2002 [37]	Switzerland	51 % - had seen women with FGM/C in their practice in Switzerland	NR	21 % - had been asked to re-infibulated after birth	FGM/C is not included in the undergraduate medical curriculum
		73 % - from the French-speaking region of Switzerland had seen women with FGM/C in their practice		2 gynaecologists have been asked to perform FGM/C in young girls	There is no reporting system for FGM/C
				4 gynaecologists were asked where FGMC could be performed in Switzerland	
				12 gynaecologists said that they knew of FGM/C being performed in Switzerland	

^aNR = Not reported; ^bSunna- Equivalent to the WHO Type 1 – cliteridectomy

abstracts for screening. Of the 109 abstracts screened, 67 did not study health professionals and 19 were reviews which did not include primary data. Twenty-three full text articles were reviewed in detail and 5 of these were excluded because they used qualitative methods, leaving 18 articles for analysis (Fig. 1) [20–37].

Of the 18 publications, eight originated from low-middle income countries in Africa, mainly from Nigeria and Egypt (Table 1). Ten came from high

income countries: five from Europe, three from the UK, one from Australia/New Zealand (ANZ), and one from the USA (Table 1). We found no studies that specifically focussed on paediatricians. Four studies reported on mixed samples, which included paediatricians, but only two of these analysed paediatricians as a separate subgroup (Table 1). Seventeen studies reported on health professionals' knowledge, 13 on practice and 12 on attitudes, with only four studies

Table 4 Health professionals' reported knowledge about FGMC

Reference	Country	Knowledge of FGMC ; FGMC types ; high risk groups	Knowledge about complications	Knowledge about legislation / clinical guidelines
Publications from African Countries				
Ashimi et al. 2014 [21]	Nigeria	91 % - had heard of FGMC 40 % - did not know any of the 4 types 49 % identified "Angurya and Gishiri" ^b as forms of FGMC	77 % - haemorrhage 73 % - transmission of infectious disease (HIV, hepatitis and tetanus) 63 % - sexual dysfunction 54 % - difficult birth 48 % - epidermal cysts	NR ^a
Kaplan et al. 2013 [22]	Gambia	NR	53 % - haemorrhage 59 % - transmission of infectious disease 46 % - difficult birth 25 % - sexual dysfunction 21 % - affects health and welfare of women and girls	NR
Ali et al. 2012 [23]	Sudan	7 % - identified all 4 types correctly 545 % - identified type 1 correctly	46 % - transmission of infectious disease (HIV) 64 % - sexual dysfunction 29 % - infertility	25.5 % - FGMC is illegal 74.5 % - FGMC is legal
Dike et al. 2012 [24]	Nigeria	NR	86 % - haemorrhage 84 % - transmission of infectious disease (HIV) 27 % - difficult birth 7 % - sexual dysfunction	100 % - FGMC is banned in some states 96 % - FGMC is a crime against humanity
Rasheed et al. 2011 [25]	Egypt	NR	66 % - knew about complications of FGMC	NR
Refaat 2009 [26]	Egypt	76 % - know the type usually performed in Egypt (type II)	75 % - haemorrhage 70 % - sexual dysfunction 64 % - shock 63 % - genital disfigurement 14 % - NO complications (if done by a physician or gynaecologist)	NR
Mostafa et al. 2006 [27]	Egypt	52 % - correctly identified type I 30 % - identified type II 5 % - identified type III	62 % - aware that FGMC can cause complications including: 48 % - short-term physical 39 % - long term physical 62 % - psychosocial complications 59 % - sexual dysfunction	17 % - knew Egyptian law which states that FGMC cannot be performed by a non-physician 28 % - reported that FGMC violates the medical ethical principles of "do no harm" and "no not kill"
Onuh et al. 2006 [28]	Nigeria	100 % - identified at least one type of FGMC 38 % - identified Type I and Type II ONLY as FGMC 7 % - identified all 4 types correctly	98 % - haemorrhage 81 % - transmission of infectious disease 54 % - transmission of HIV 80 % - difficult birth 55 % - scars and keloid formation 21 % - infertility 59 % - sexual dysfunction	NR

Table 4 Health professionals' reported knowledge about FGMC (*Continued*)

Publications from "Western Countries"				
Caroppo et al. 2014 [29]	Italy	9 % - knew that there are different types of FGM/C depending on the woman's country of origin	5 % - knew how to manage a woman with FGMC	44 % - knew that Italy has a law prohibiting FGMC practice
Purchase et al. 2013 [30]	UK	NR	92 % - identified each of the long term complications 75 % - HIV/hepatitis risk 74 % - pelvic infection 10 % - associated psychiatric syndromes To prevent complications during labour: 74 % - knew that defibulation should take place pre-conception 31 % - knew that defibulation is recommended at ~ 20 weeks pregnancy 52 % - unaware of referral pathways	94 % - FGM/C always illegal in the UK 79 % - were aware of the FGM/C Act 84 % - knew to contact a child protection officer if they thought a child was at risk
Relph et al. 2013 [31]	UK	100 % - aware of the practice of FGM/C 58 % - knew there are 4 types of FGM/C 93 % of senior doctors 50 % of junior doctors 40 % - confident in diagnosing FGM/C	76 % - haemorrhage 32 % - knew that defibulation should be performed before pregnancy to avoid complications	72 % - aware of UK legislation on FGM/C 89 % - family/religious figure performing FGM/C in UK is illegal 77 % - UK doctor performing FGM/C in UK is illegal 67 % - reinfibulation after delivery is illegal 78 % - sending a child abroad for FGM/C is illegal
Hess et al. 2010 [32]	USA	18 % - knew that both Muslim and Christian women may have FGM/C 39 % - knew FGM/C is NOT required by either religion Nurse midwives with direct practice experience of FGM/C scored better on a knowledge test	71 % - of nurse midwives who did not have direct experience with FGMC knew about FGMC complications , compared with 89 % of those who had direct experience Over a half of respondents did not know that circumcised women avoid health care due to stigma and legal implications	56 % - knew that it is illegal to perform FGM/C in girls and young women aged <18 years
Kaplan-Marcusan et al. 2009 [33]	Spain	97 % knew what FGM/C is Able to identify the 4 types: 41 % - of all professionals 68 % - of O&G 55 % - of paediatricians 38 % - general medicine 79 % - said they knew high risk countries 22 % - actually able to identify the high risk countries	NR	20 % - aware of protocols or guidelines 42 % - of paediatricians aware of protocols or guidelines
Leye 2008 [34]	Belgium	NR	NR	46 % - knew that FGM/C was illegal in Belgium

Table 4 Health professionals' reported knowledge about FGMC (*Continued*)

				24 % - knew which types of FGM/C were included under the law
				1 % (4 respondents) - knew of guidelines and information about FGM/C in their hospital
Zaidi et al. 2007 [35]	UK	98 % - knew what FGMC was 42 % - knew that there were different types of FGMC 4 % - correctly classified the 4 types 84 % - knew the high risk groups 58 % - were NOT aware that women at risk should be identified during antenatal visits	84 % - knew of complications associated with FGMC 70 % - knew that the best time for defibulation was before pregnancy (if FGMC diagnosed before pregnancy) 80 % - knew that defibulation should be done during pregnancy if diagnosed during pregnancy 54 % - knew that an anterior episiotomy should be performed if the woman is in the 2 nd stage of labour	40 % - knew the details of the UK FGM/C Act
Tamaddon et al. 2006 [36]	Sweden	28 % - said they had adequate knowledge about FGM/C 20 % - of paediatricians said they had adequate knowledge about FGM/C	NR	NR
Jager et al. 2002 [37]	Switzerland	NR	NR	Representatives from the Departments of Health in each Canton, did not know of any guidelines on FGM/C in their Canton

^aNR = Not reported ^b*Angurya*: is a form of FGMC type 4 that involves the scraping of tissue around the vaginal opening. *Gishiri*: is a form of FGMC type 4 where a long knife is inserted into the vagina and backward cuts from the vagina's anterior wall into the perineum are made

from high income countries reporting on health professionals' attitudes (Table 1).

Quality assessment

Publications were scored according to our pre-determined quality assessment matrix (Table 2). Only one publication scored the maximum eight points. Twelve (67 %) papers described the age of the participants and 11(61 %) reported gender. A description of the setting was lacking in two studies, sampling procedures were not described in three. (Table 2). Six (33 %) of the surveys were pre-tested, five (22 %) were reviewed by content experts, and two (11 %) were both pre-tested and reviewed by a content expert. Nine studies did not report any survey validation. Most of the studies are unlikely to be representative. Three studies from high income countries were set in specialist facilities serving migrant communities in which FGM/C is common and the health professionals surveyed had frequent experience with women affected by FGM/C.[29, 31, 35] Two studies did not report a response rate and in 5 studies the response rate was <50 %, (Table 1).

1. Do health professionals have experience with FGM/C in their clinical practice?

Five surveys in high income countries reported that health professionals who responded provided care to women with FGM/C, including 75.3 % of obstetricians/gynaecologists in ANZ [20]; 40 % of nurse-midwives in the USA [32]; 50 % of Swiss obstetricians/gynaecologists [37]; 60 % of Swedish health providers including paediatricians [36]; 12 % of paediatricians, 80 % of gynaecologists responding to a Spanish survey [33]; and 58 % of Belgian gynaecologists [34], (Table 3). Despite working in an asylum seeker health service in Italy, which serves refugees from high prevalence countries, 71 % of health professionals reported that they had never met or assisted a woman with FGM/C [29].

Some obstetricians, gynaecologists and midwives working in high income countries had been asked to re-infibulate women after delivery and some had done so (Table 4). Four studies reported that health professionals in high income countries had been asked to perform FGM/C in babies or young girls, or to

Table 5 Health professionals' attitudes towards FGMC

Reference	Country	Beliefs about the reasons for performing FGMC	Support for and intentions for performing FGMC	Beliefs and attitudes about the law and educational needs
Publications from African Countries				
Ashimi et al. 2014 [21]	Nigeria	53 % - prevent promiscuity 28 % - preserve virginity 16 % - socio-cultural acceptance 10 % - religious reasons 8 % - medically beneficial	4 % would support FGMC 4 % would perform FGMC 4 % of respondents (all women) would allow daughters to undergo FGMC	NR ^a
Kaplan et al. 2013 [22]	Gambia	54 % - mandatory religious practice 48 % - cultural practice 14 % - preserve virginity 1 % - it does not violate human rights	43 % - were supportive of the continuation of FGMC practice 47 % - intended to subject their daughters to FGMC 43 % - medicalising FGMC would make the practice safer 73 % - Health care workers have a role in eliminating FGMC 55 % - FGMC cannot be eliminated in The Gambia 78 % - men should be involved in the debate about FGMC 13 % - girls that have not undergone FGMC should be discriminated against	NR
Ali et al. 2012 [23]	Sudan	51.2 % - cultural 26 % - religious 23 % - economic	19 % - all forms of FGMC are harmful 76 % - only some forms are harmful 5 % - all forms are not harmful	NR
Dike et al. 2012 [24]	Nigeria	51 % - prevent promiscuity 47 % - appearance of external genitalia 27 % - tradition 11 % - initiation into womanhood 7 % - spiritual satisfaction	100 % would NOT have their daughters undergo FGMC	To stop FGMC: 81 % - Public enlightenment needed 25 % - Counselling of parents 7 % - punishing any person who aids or abets the practice
Rasheed et al. 2011 [25]	Egypt	100 % - senior physicians believed FGMC prescribed by religion 97 % - young physicians believed FGMC prescribed by religion 88 % - nurses believe it is a traditional practice	Nurses: 88 % - supported the practice of FGMC 48 % - would have their daughters undergo FGMC 28 % - had their daughters undergo FGMC Young Physicians: 34 % - supported the practice of FGMC Senior physicians: 15 % - supported the practice	NR
Refaat 2009 [26]	Egypt	82 % - do NOT approve of the practice Those practising in the Upper Egypt area, those from rural areas and those	18 % - supported practice; reasons for continuing practice included: • Convinced of benefit	91 % - FGMC and complications should be taught at medical school 40 % believed that physicians are the most

Table 5 Health professionals' attitudes towards FGMC (Continued)

		with a diploma (rather than PhD or Fellowship) were more likely to approve the practice of FGMC/C		appropriate to perform FGMC/C
			<ul style="list-style-type: none"> • Profit • Harm reduction 	35 % did NOT approve of the law banning FGMC/C
			82 % - did NOT approve of the practice for the following reasons:	
		18 % - supported practice for religious or customary reasons	75 % - reduced sexual pleasure	
			64 % - pain	
			61 % - bad habit	
			52 % - not religious practice	
			49 % - causes health problems	
			48 % - against women's dignity	
Mostafa et al. 2006 [27]	Egypt	51 % - NO medical reason for performing FGMC/C	43 % - unethical for a health professional to damage a healthy body	50 % - medicalization is the first step to prevention of the practice
		45 % - FGMC/C is a violation of human rights	65 % - FGMC/C is NOT a health issue	23 % - believed that the law is enough for prevention
		34 % - FGMC/C is essential part of culture	32 % - would subject their future daughters to this practice	53 % - believe that laws must go hand in hand with community education
		24 % - FGMC/C prevents external genitalia from growing	58 % - would NOT object if family members were to subject their daughters to FGMC/C	
		20 % FGMC/C ensures a girl's virginity	73 % - FGMC/C should be medicalised	
		49 % - prevents promiscuity	91 % - medicalization favourable because it reduces pain; carried out under hygienic conditions and with anaesthetic	
		30 % - FGMC/C is a religious obligation		
		86 % - believed that FGMC is practiced only by Muslims		
Onuh et al. 2006 [28]	Nigeria	9 % - decreases promiscuity	4 % - will have their own daughters undergo FGMC	92 % - FGMC/C should be legislated against
		10 % - makes genitalia more attractive	3 % - FGMC/C is a good practice	
		Other reasons: - cultural; financial; patient safeguarding from "traditional circumcisers"	3 % - will encourage FGMC/C	
			24 % - some forms of FGMC/C are not harmful	
Publications from "Western Countries"				
Purchase et al. 2013 [30]	UK	76 % - cultural reasons	NR	NR
		16 % - religious reasons		
Relph et al. 2013 [31]	UK	100 % - cultural reasons	9 % - FGMC/C should be medicalized to reduce complications	87 % - would warn social services of a child in danger of FGMC/C
			18 % - would support a woman's request for re-infibulation after birth if this was legal in the UK	
Moeed et al. 2012 [20]	Australia and New Zealand	NR	21 % - O&G specialists believed that in the women and girls with FGMC seen by them, the FGMC/C was probably done in Australia (but they did not provide number estimates)	NR
			42 % of the FGMC/C workers believed that the women and children with FGMC probably had the procedure performed in Australia/NZ	

Table 5 Health professionals' attitudes towards FGMC (Continued)

Kaplan-Marcusan et al. 2009 [33]	Spain	50 % - traditional reasons	26 % of FGMC/C workers believed that children were being taken out of Australia to attend family celebrations and to have FGMC done overseas	NR	2001 -1 % said ignore the problem
		16 % - religious reasons			48 % - educate 32 % - educate and report 19 % - report to authorities 2004 - None said ignore 49 % - educate and report 27 % - educate 24 % - report to authorities
Leye 2008 [34]	Belgium	NR	86 % - FGMC/C is a form of violence against women		21 % - believed that FGMC/C performed by a medical practitioner would reduce harm
			61 % - FGMC/C is a violation of human rights		48 % - wanted more clarity around ethico-legal issues
			7 % - FGMC/C should be respected because of cultural and religious beliefs		
			77 % - considered re-infubulation as a form of FGMC/C		
			19 % - would re-infubulate if requested by the woman		
			47 % - a symbolic incision was a good alternative to FGMC/C		
			15 % - Genital piercings and vaginal cosmetic surgery considered a type of FGMC/C		

^aNR = Not reported

provide information about where to get FGMC/C procedures done: two respondents to the ANZ survey [20]; 6 respondents to the Belgian study [34]; two respondents to the Swiss survey [37] and seven health professionals including two paediatricians in a Swedish survey [36] (Table 3).

Survey respondents in high income countries reported that they knew that FGMC/C was being practised in children including in Belgium and Switzerland [34, 37]. Approximately 20 % of obstetricians/gynaecologists responding to the ANZ survey believed that women presenting to them with FGMC/C probably had the procedure done in Australia or New Zealand [20].

Five surveys of health professionals in Nigeria [28], Egypt [25, 26], Gambia [22] and the Sudan [23] reported on whether the respondents had performed or had been asked to perform FGMC/C procedures (Table 3). The

study of Sudanese midwives reported that 81 % of respondents had performed FGMC/C multiple times [23]. In contrast, among nurses and community midwives surveyed in Gambia, only 7.6 % had performed the procedure but 68.6 % said that FGMC/C was practiced in their household or family [22]. Among nurses surveyed in Nigeria, 7 % currently practiced FGM, 14 % had practiced in the past and 58 % said they would perform FGMC/C if required [24]. None of the nurses surveyed in Egypt [25] had performed FGMC/C, but 19.2 % of Egyptian doctors surveyed had performed FGMC/C and of these 24 % reported complications due to FGMC/C [26].

2. Do health professionals have adequate knowledge about FGMC/C types, complications, high risk groups and do they have access to education and training opportunities?

Knowledge about the FGM/C types varied widely; few health professionals in high income countries knew that there were 4 different types of FGM/C and fewer were able to identify the 4 types (Table 4). The Spanish study was an exception with 85 % of O&G and 55 % of paediatricians able to identify the 4 types of FGM/C [33]. Knowledge of the 4 types of FGM/C was also poor among respondents surveyed in Africa, however, most respondents knew of the type of FGM most commonly practised in their local area e.g. 76 % of Egyptian health professionals knew of type II FGM/C which is usually performed in Egypt [26].

In a study in North East London, 50 % of senior doctors and only 7 % of junior doctors had formal training in FGM/C; midwives were more confident in diagnosing FGM/C than doctors and 75 % of medical students were aware of FGM/C complications [31]. However, in an earlier study of midwives and doctors who attend births, also in London, only 4 % could correctly identify the different types of FGM/C and knowledge about the correct procedures to de-infibulate women during labour was poor for ~45 % of the respondents [35].

Survey respondents correctly identified a number of short and long-term complications of FGM/C although some studies reported that respondents knew of no complications after FGM/C (Table 4). Almost all participants (92 %) in the study in Birmingham, UK, correctly identified most long-term complications of FGM/C except for HIV/hepatitis and pelvic infection [30]. Only two studies asked about knowledge of psychological or psychosocial complications after FGM/C [30, 31].

Eleven per cent of Belgian doctors aged less than 40 years had been taught about FGM/C but only 1 % knew of guidelines or information about FGM/C in their hospital [34]. Education on FGM/C is not regularly included in undergraduate education in Switzerland [37]. Few Swedish paediatricians knew about FGM/C and the motives behind FGM/C [36], and Norwegian health professionals felt that they had inadequate knowledge and skills about FGM/C and they called for specific training in how to speak with women and families about FGM/C and which words to use when raising the issue (Table 4).

In a survey of obstetricians and other health professionals working in a large UK clinic, 26 % believed they had adequate training in FGM/C, 41 % had been trained in de-infibulation, 31 % knew that the hospital regularly screened for FGM/C and that the hospital had an obstetrician and a midwife that specialised in FGM/C [30]. Among paediatricians surveyed in Spain, 42.3 % were aware of protocols and guidelines about FGM/C [33]. In the study from Belgium, 51 % of gynaecologists surveyed, wanted relevant guidelines on FGM/C, 35 % said they tried to prevent mothers who had FGM/C from allowing FGM/C to be performed in their female

children, but 65 % said they would not do any prevention [34].

3. Do health professionals have adequate knowledge about laws related to FGM/C?

In a recent study of members ($N = 607$) of the Royal College of Obstetricians and Gynaecologists in the UK, 94 % understood that FGM/C is always illegal in the UK but 21 % were unaware of the FGM/C Act, (Table 4) [30]. The majority (84 %) of respondents said they would speak with a child protection officer if they suspected a child was at risk of FGM/C [30]. In the London study by Zaidi et al. 40 % of health professionals were familiar with the FGM/C Act [35]. Relph et al. reported that only 60 % of the UK health professionals surveyed were aware of current UK FGM/C law [31]. In the Belgian survey of gynaecologists, 45.5 % knew that FGM/C was illegal in Belgium, the majority (85.6 %) understood that FGM/C constituted violence against women, but only 60 % felt that it violated human rights [34]. Over a half (56 %) of midwives surveyed in a USA study knew that FGM/C was against the law [32]. In the Italian study of health professionals working with asylum seekers from FGM/C prevalent countries, less than half knew about the law prohibiting FGM/C in Italy [29].

Only 25 % of the Sudanese respondents [23] and 17 % of Egyptian respondents [24] knew that FGM/C was illegal in their country (Table 4). Furthermore, 35 % of Egyptian doctors responding to survey conducted by Refaat et. al. did not approve of the law banning FGM/C [26]. However, all participants surveyed in a Nigerian study knew that FGM/C was illegal in some states [24].

4. What are the attitudes and beliefs of health professionals towards the practice of FGM/C?

Beliefs about the reasons for performing FGM/C varied widely with some respondents from both high income countries and from African countries believing that FGM/C was done for religious reasons (Table 5). Surveys from African countries also cited other reasons including cultural, social, medical economic and cosmetic, included “preservation of virginity”, “curbing promiscuity”, and “improving the appearance of genitalia,” while those from high income countries only cited cultural/traditional reasons or religious reasons (Table 5). In four surveys, between 4 % and 48 % of health professionals indicated that they would agree for their own daughters to undergo FGM/C [21, 25, 27, 28].

A minority of health professionals practising in high income countries were not against FGM/C. Seven of 344 Belgian doctors felt that FGM/C deserved respect

because of cultural and religious connotations [34]. A survey of labour ward health personnel in the UK, showed that 14 % believed that a competent adult should be allowed to consent to FGM/C, 9 % felt that the procedure could be “medicalized” to prevent complications, and 17 % said they would support a woman’s request for re-infibulation [31]. Health professionals from high income countries indicated that they would reluctantly support re-infibulation of women from countries where this is customary to protect the woman from being marginalised from her community [26, 31]. In the ANZ study most respondents believed that it is acceptable to oversee labia majora to prevent infection and fusion, and for patient comfort [20]. Between 15 % and 91 % of Egyptian health professionals surveyed, supported FGM/C if performed by a doctor to minimise harm (Table 5) [25–27].

Health professionals believed that laws will only be effective with the implementation of better awareness and education for patients and the community about FGM/C [24, 33].

Discussion

Our review confirms that the practice of FGM/C continues and remains prevalent in some African countries despite many having adopted laws against this practice. We found 10 studies confirming that health professionals working in high income countries such as Australia, New Zealand, United Kingdom, Italy, Sweden, Belgium, Spain and Switzerland care for women and girls with FGM/C [4–7, 10–12, 21–23]. Some have been approached to perform FGM/C in babies or young children [20, 24, 34, 37]. Furthermore, health professionals in Australia and New Zealand, the UK, Belgium and Switzerland believed that it was likely that some of their patients with FGM/C had the procedure done in these high income countries despite legislation making FGM/C illegal. Some health professionals did not know about anti-FGM/C laws or were unsure what these laws covered and what their obligations were under the laws [11]. There have been few prosecutions for FGM/C in countries where such laws exist [38]. Laws are not a deterrent if communities perceive that the risk of detection is low and there are few prosecutions [4, 5, 38]. To prevent the practice of FGM/C, health professionals felt that laws were not enough and needed to go hand in hand with awareness campaigns and education for patients and communities, including the men in those communities [24]. This is supported by the recently published UK Multi-Agency Practice Guidelines on Female Genital Mutilation [5].

Our systematic review is limited by the quality of the published studies, many with small sample sizes and low response rates. Although attitudes to FGM/C

may differ according to the gender of the health professionals surveyed, this could not be assessed in our review due to inadequate sample description, seven of the 18 studies failing to report the gender of respondents.

The level of knowledge about FGM/C among health professionals varied with most unable to recognise the 4 different types of FGM/C described by the WHO. Few were able to identify countries where FGM/C is prevalent and therefore did not know that women from these countries are at high risk of FGM/C. Health professionals who regularly worked with women from high risk communities and where the health service was targeted to these communities had better knowledge of FGM/C. However, even in a clinic in the UK that sees many women with FGM/C, only 26 % felt that they had adequate training about FGM/C [23].

Only two studies included in our review reported on psychological and psychosocial problems, either immediate or long-term, which are associated with FGM/C [27, 30]. This is consistent with findings from a study by Mulongo et al. and supports the need to raise awareness in health professionals about these under-recognised consequence of FGM/C and the need to provide counselling services to support women and girls affected by FGM/C and their families [8].

Most of the studies surveyed obstetricians, gynaecologists, nurses, midwives and other health professionals working with pregnant women. Only two surveys reported separate data for paediatricians [6, 7]. Paediatricians have an important role in recognising children at risk, preventing FGM/C by counselling parents and communities, reporting children to authorities, and in treating children who have undergone FGM/C and are suffering complications [5, 6, 19]. Of the 18 studies included in this review, only 5 addressed prevention of FGM/C, mainly through counselling women who have FGM/C and have recently given birth, against FGM/C for their daughters [4–6, 10, 11]. This is appropriate as the strongest predictor of a child undergoing FGM/C is the mother having undergone FGM/C herself [5]. However, in a study of Belgian obstetricians and gynaecologists 65 % said they would not undertake to counsel women to prevent FGM/C among their daughters [10]. This may be because they feel inadequately trained and resourced to advocate against FGM/C. In a large survey of Belgian midwives, which was not included in our systematic review as it was only recently published on-line, the majority lacked adequate access to education and guidelines about FGM/C to provide adequate care, and to counsel mothers against FGM/C for their new born daughters [39].

Health professionals need education and guidelines relevant to FGM/C provided both in basic medical training and in continuing medical education. They wanted

more information about how to speak with families about this culturally sensitive issue, how to recognise children who might be at risk of FGM/C and how to treat women and girls who have undergone FGM/C. The RACP guidelines on FGM/C provide a short summary of recommendations for paediatricians who may be faced with FGM/C, however, there is no practical guidance of what to do and what to say when dealing with a child with FGM/C or at risk of FGM/C and her family, often within a complex medical and socio-cultural context [40]. Health professionals also called for better education about anti-FGM laws and their obligations under these laws.

As FGM/C often occurs in the community, there is a need for community health workers, general practitioners, community nurses and community paediatricians to be educated about FGM/C and to be provided with clear guidelines about what actions they need to take to prevent FGM/C, including guidance about when and how to report children to child protection authorities. Health professionals must also be provided with appropriate structures within the healthcare system, including referral pathways and specialist services for women and girls with FGM/C, and girls who may be at risk of FGM/C. Such pathways, integrating community prevention with inter-agency, inter-sectoral collaboration including schools, health services and community groups, has been recommended and is being implemented in the UK [5, 19]. Furthermore, healthcare systems, practitioner credentialing bodies and communities have an important role in education and prevention of the medicalization of FGM/C [41].

Conclusion

This is the first literature review of health professionals' knowledge, attitudes and practice related to FGM/C. Only 18 studies were identified between the years 2000 and 2014, suggesting that this topic is under-researched. The review highlighted the need for easily accessible educational resources and evidence-based guidelines to enable health professionals to provide culturally sensitive medical and psychological care for women and girls who have undergone FGM/C. Furthermore, health professionals, especially paediatricians and family doctors, need skills to recognise women and girls at risk of FGM/C; they need resources to enable them to counsel girls and their families and communities to prevent this harmful and illegal practice. Most of the research papers reported on obstetricians, gynaecologists and other health professionals dealing with pregnant women. As the immigrant communities in high income countries become larger and increasingly multicultural and ethnically diverse, health professionals are more likely to see women and girls with FGM/C or at risk of FGM/C, in their

clinical practice. Further research is needed to determine knowledge gaps and needs for education and resources among other groups of clinicians including paediatricians, general practitioners and community health workers.

Abbreviations

FGM/C: Female genital mutilation or cutting; PRISMA: Preferred reporting Items for systematic reviews and meta-analyses.

Competing interests

The authors have no competing interests.

Authors' contributions

YZ and EE initiated the study, wrote the funding application, set the aims and methodology, including the search strategy. YZ screened the search publications, analysed and interpreted the data, and drafted the manuscript. PS assisted with search strategy development, conducted the search, screened the abstracts and assisted with data extraction. AP screened the search publications, extracted the data and assisted in writing the results. All authors revised the manuscript, provided comments and agreed with the final submitted version. All authors read and approved the final manuscript.

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