

Circumcision practice among trained circumcisers in Ghana

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Background: In Ghana, circumcision is performed by both formal and informal health service providers (traditional circumcisers). Although circumcision-related morbidities are common with both formal and informal providers, they are more common among the formal health service circumcisers. This study evaluates circumcision practice by formal circumcision providers in Ghana.

Materials and methods: This was a cross-sectional study of circumcision practised by medical circumcisers in Ghana. A questionnaire was developed using Google forms and the link sent by email to trained medical circumcisers from all over Ghana. The questionnaire surveyed the demographics of respondents and their circumcision practice. Data was analysed with PASW Statistics for Windows, Version 28.0. Chicago: SPSS Inc.

Results: A total of 361 circumcisers completed the questionnaire, 80.5% females and 19.5% males. Most (69.8%) were 30–39 years old and the majority (73.3%) were midwives. Three hundred and fifty-eight (99.2%) of them offer pre-circumcision counselling and 315 (87.3%) offer post-circumcision counselling. Only 44 (12.2%) circumcisers obtain informed consent, and 333 (92.2%) administer anaesthesia for circumcision. Penile block with Lidocaine was the most common (352; 97.5%) form of anaesthesia administered. The Gomco clamp technique was the most common circumcision technique used by 238 (65.9%) circumcisers, followed by the dorsal slit technique (190; 52.6%). Bleeding was the most common post-circumcision complication encountered.

Conclusion: Among healthcare personnel in Ghana, midwives perform the majority of circumcisions and there is a high rate of anaesthesia for circumcision. However, the circumcisers need to be encouraged to obtain informed consent for circumcision.

Keywords: trained circumcisers, circumcision, health personnel, circumcision practice, Ghana

Introduction

Male circumcision is the surgical removal of all or part of the foreskin of the penis and is performed for cultural, religious, social or medical reasons.^{1,2} An estimated one in three males worldwide are circumcised, with almost universal coverage in some places and very low prevalence in others.³ Approximately 90% of infant males are circumcised in West Africa and 95% in Ghana.¹ Circumcision in Ghana is performed by formal health service providers such as nurses, midwives and doctors in health facilities and also by informal providers such as traditional circumcisers.⁴

Although circumcision-related morbidities are common in both formal and informal providers,⁵ it's been reported that in Ghana, hygiene practices such as hand washing and disinfection of the penile area were poorer in formal healthcare providers than informal providers.⁴ In 2016, Appiah et al. also reported that most circumcision-related tragedies reported to the urology unit of the Komfo Anokye Teaching Hospital were circumcised by formal health service providers in health facilities.⁶

Little is known about the practice of circumcision by formal health service providers in Ghana. This study is to evaluate all aspects of the practice of circumcision by health personnel in Ghana and make recommendations to improve their practice. It aims to look at the circumcision techniques that they use, timing of circumcision, use of anaesthesia, place of circumcision, complications encountered and the post-circumcision treatment offered.

Materials and methods

This was a cross-sectional study of circumcision as practised by medical circumcisers in all regions of the country. A questionnaire was developed using Google forms and the link sent by email to 596 trained medical circumcisers identified from all 16 regions of Ghana. The study was conducted for three weeks in January 2022 and respondents were sent weekly reminders by email to encourage them to complete and return the questionnaire.

The questionnaire included questions regarding: i) demographics of respondent; ii) pre-circumcision evaluation of patient; iii) circumcision techniques used; iv) use of anaesthesia; v) post-circumcision care; and vi) outcomes of circumcision.

At the end of the study, data was captured using the Epi-data software and analysed with PASW Statistics for Windows, Version 28.0. Chicago: SPSS Inc. The x2 test was to evaluate differences in proportions and any significant results are reported at $p < 0.05$.

Results

A total of 361 respondents completed and submitted their questionnaires. These included respondents from all the regions in the country. There were 80.5% females and 19.5% males ($p < 0.001$). Most of the circumcisers were in the age group of 30–39 years and the majority were midwives (73.3%), followed by general nurses (15.7%) and nurse assistants (4.4%), as shown in Table I. Most (225; 62.5%) of the circumcisers have been performing

circumcisions for more than three years, whilst 81 (22.5%) have done it for one to two years, and the remaining 54 (15%) for less than one year. As shown in Table II, the majority (60.9%) performed at least one circumcision every week and about one-third (106; 29.4%) of participants performed most of their circumcisions at patients' homes, whilst the remaining 255 (70.6%) performed the majority of their circumcisions at health facilities ($p < 0.001$).

Three hundred and fifty-eight (99.2%) of the circumcisers offer pre-circumcision counselling to patients and guardians whilst the remaining three (0.8%) do not. Three hundred and fifteen (87.3%) offer counselling on post-circumcision care of the wound, 200 (55.4%) counselled on the risks and possible complications of circumcision, 177 (49%) counselled on the steps of the procedure, and 155 (42.9%) counselled on the benefits of circumcision. However, only 44 (12.2%) obtained written informed consent, whilst the remaining 317 (87.8%) did not obtain written consent. Seventy (19.4%) had referred patients to higher centres after their initial assessment of the patient. The reasons for these referrals were stated by 50 (13.9%) as a genital anomaly, 19 (5.3%) as premature baby, 14 (3.9%) as sick patient, and 11 (3%) a suspicion of a bleeding tendency. Three hundred and thirty-three (92.2%) of the circumcisers offer anaesthesia for circumcision, whilst the remaining 28 (7.8%) do not. The commonest form of anaesthesia offered is penile block with Lidocaine (352; 97.5%), followed by local anaesthetic spray or cream used by six (1.7%) circumcisers, and three (0.85) circumcisers use sedation for circumcision.

The Gomco clamp technique was the most common circumcision technique, used by 238 (65.9%) circumcisers, followed by the dorsal slit technique (190; 52.6%), plastibel technique (105; 29.1%) and nine (2.5%) performed the amputation/freehand technique.

One hundred and twenty-seven (35.2%) reported adverse events or complications after circumcision. The complications observed are listed in Table II.

Table I: Demographics of respondents

Age group (years)	Frequency (%) <i>n</i> = 361
< 20	1 (0.3)
20–29	57 (15.8)
30–39	252 (69.8)
40–49	42 (11.6)
50–59	9 (2.5)
60 and above	0
Profession	Frequency (%) <i>n</i> = 361
Midwife	267 (74)
General nurse	57 (15.8)
Nurse assistant	20 (5.4)
Anaesthetist	8 (2.2)
Physician assistant	5 (1.4)
Trained birth attendant	2 (0.6)
Perioperative nurse	2 (0.6)
Total	361 (100)

Table II: Circumcision practice by respondents

Average number of circumcisions per month	Frequency (%)
1	43 (12)
2	48 (13.3)
3	50 (13.9)
4	57 (15.8)
5	55 (15.2)
6–10	65 (18)
> 10	43 (11.9)
Total	361 (100)
The commonest location for performing circumcisions	
Location	Frequency (%)
Home	106 (29.4)
Hospital	100 (27.7)
Clinic	14 (3.9)
Health centre	82 (22.7)
CHIPS compound	59 (16.3)
Total	361 (100)
Age of majority of patients circumcised	
Age	Frequency (%)
Less than one week	2 (0.5)
Between one week and one month	266 (73.7)
Between one and six months	82 (22.7)
Older than six months	1 (0.3)
Adolescent boys less than 18 years	6 (1.7)
Adult males older than 18 years	4 (1.1)
Total	361 (100)
Post-circumcision treatment	
Post-circumcision treatment	Frequency (%)
Topical antibiotics e.g. penicillin ointment	231 (64.1)
Oral/suppository paracetamol	89 (24.7)
Oral antibiotics	9 (2.5)
Topical antiseptics e.g. iodine or chlorhexidine	10 (2.8)
Vaseline cream	3 (0.8)
Topical antibiotic + oral paracetamol	1 (0.3)
Post-circumcision complications	
Post-circumcision complication	Frequency (%)
Excessive bleeding	96 (26.6)
Redundant foreskin	24 (6.6)
Insufficient foreskin for penile coverage	16 (4.4)
Infection	8 (2.2)
Retained plastibel ring	11 (3)
Disfigurement of penis	5 (1.4)
Glans or penile amputation	1 (0.3)

Two hundred and eighty (77.6%) of the circumcisers routinely administer medication to patients after circumcision, whilst the remaining 81 (22.4%) do not.

Table II lists the post-circumcision medication routinely administered by the circumcisers.

Three hundred and one (83.4%) routinely review their patients after the circumcision wound heals, whilst the remaining 60 (16.6%) do not review their patients after circumcision.

Discussion

Circumcision practices differ in developed and developing countries. In developed countries such as the United States, circumcision is performed mainly by paediatricians, family practitioners and obstetricians,^{7,8} whereas, in developing countries, circumcision is performed by both medical and non-medical or traditional circumcisers. In 2012, Gyan et al. observed that the majority (58%) of circumcisions in rural Ghana were performed by traditional circumcisers whilst healthcare workers performed the rest.⁴ Similar to the findings in this study, they observed that nurse practitioners performed the majority of circumcisions among all formal health service providers in Ghana. This study further observed that midwives were the category of nurses who performed most of the circumcisions followed by general nurses, as seen in Table I. The majority (69.8%) of circumcisers in this study were in their fourth decade, whilst researchers from other parts of sub-Saharan Africa found that the average age of medical circumcisers was 41 years.⁹

It is interesting to note that although all participants in this study are health personnel, almost one-third of them confirmed performing most of their circumcisions in patients' homes. In rural Ghana, a study found that circumcisions performed by health workers (drug sellers, nurses, doctors) were done at health facilities, whilst those performed by non-health workers (traditional circumcisers, domestic workers, etc.) were performed at home.⁴ Circumcision at home is usually done by non-health workers but this study shows that although participants mostly performed circumcisions in health facilities, almost one-third (29.4%) of trained medical personnel also visit homes to perform circumcisions. In their study, Gyan et al. found that families with low socio-economic status and those who lived far from health centres were more likely to accept home circumcision by non-health workers who often render free circumcision services or accept non-cash payments.¹⁰ Home circumcision by trained medical persons may not be offered to families with low socio-economic status as trained medical personnel are not likely to visit homes for free circumcision services or accept non-cash payments. The main challenge with home circumcision is with the maintenance of adequate hygiene and asepsis. We recommend that a study be performed to compare complication rates of home circumcisions and complication rates of hospital-based circumcisions among medically trained circumcisers.

Neonatal circumcision is commonly practised in Ghana and this study showed that almost 75% of trained circumcisers mostly perform circumcisions on neonates between one week and one month old. This is similar to a study by Appiah et al., where more than 90% of circumcisions were carried out in the first month of life.⁶ A systematic review of complications of circumcision among neonates, infants and older children found that circumcision is safest in the neonatal period. The authors attributed this to the simpler nature of circumcision in the neonatal period and the fact

that suturing is usually not necessary in neonatal circumcision as compared to post-neonatal circumcision.¹

Almost all participants (99.2%) offer pre-circumcision counselling to patients and guardians. Three hundred and fifteen (87.3%) offer counselling on post-circumcision care of the wound, 200 (55.4%) counselled on the risks and possible complications of circumcision, 177 (49%) counselled on the steps of the procedure, and 155 (42.9%) counselled on the benefits of circumcision. This high rate of pre-circumcision counselling is probably because these are medically trained circumcisers; this is one distinguishing feature between the practice of circumcision by trained and untrained circumcisers. Since only 44% of them obtained written informed consent from guardians, this should be seen as a significant step towards good practice, as non-trained circumcisers tend not to obtain written informed consent. It is recommended that parents and guardians confirm their consent in writing by signing a consent form, especially for non-therapeutic circumcisions like those commonly performed in Ghana.

Another benefit derived from training is evident in the fact that participants seemed to be aware of contraindications to circumcision, as about 20% had deferred circumcision on account of congenital anomalies, prematurity, a sick child or a suspected bleeding disorder. Identification of these problems will reduce the complication rates.

Most (92.2%) of the participants offered anaesthesia for circumcision. This is another positive aspect of undergoing training for circumcision, as a previous study in Ghana found that no untrained medical circumciser offered anaesthesia for circumcision.¹¹

The commonest circumcision technique was the Gomco clamp circumcision, followed by dorsal slit and then the plastibel technique. The amputation technique, which used to be a popular circumcision technique among medical circumcisers in Ghana, was the least common technique used in this study, practised by fewer than 10% of participants. This suggests changing trends of circumcision among medical circumcisers. In neonates, the amputation technique of circumcision is fraught with major complications such as glans amputations due to excision of the foreskin without the glans penis in view. However, the device techniques such as the Gomco clamp or plastibel techniques protect the glans penis from injury, whilst the dorsal slit technique ensures that excision of the foreskin is done with the glans penis under direct vision, thus protecting it from injury. These techniques are safer than the amputation technique and therefore likely to significantly lead to a reduction in major circumcision-related injuries.

Haemorrhage is the most common perioperative complication of circumcision and consistent with this, excessive bleeding was the most common complication, reported by a quarter (26.6%) of participants.¹² Unlike the plastibel technique which has a low risk of bleeding, the Gomco clamp technique risks excessive bleeding after the foreskin is cut and the clamp removed.¹³ Bleeding with the Gomco clamp can be minimised if the nut is turned very firmly to tighten the clamp on the foreskin and the tightened clamp is

retained long enough to sufficiently constrict all vessels under the foreskin before it is excised.

Almost two-thirds (64.1%) of participants routinely administer topical antibiotics (penicillin ointment) to patients after circumcision. The authors believe that this practice may have contributed to the relatively low rates of infection, reported by only eight (2.2%) participants in this study.

Although five (1.4%) participants reported complications which resulted in a disfigured penis, only one participant reported glans amputation. This participant also practised the freehand or amputation circumcision technique which is known to have a high risk of glans or penile shaft amputation in neonates.¹¹ The authors recommend that the amputation technique should not be employed in neonatal circumcision.

Limitations of the study

This study is limited by the low response rate (61%) of emailed survey. However, the authors believe that the large number of participants in the survey is likely to give a reasonable representation of how circumcision is practised by medical circumcisers in Ghana.

Conclusion

In conclusion, midwives perform the majority of circumcisions among health personnel in Ghana and there is a high rate of anaesthesia use for circumcision among health personnel. Although there is sufficient counselling of patients and guardians, medically trained circumcisers need to be encouraged to obtain written informed consent for circumcision as this study found that very few of them do so.

Conflict of interest

Not applicable.

Funding source

The study received no external funding.

Ethical approval and consent to participate

Ethical approval was obtained from the Ethics Review Committee of the Ghana Health Service. The ethics number is GHS-ERC:

002/12/21. This study did not involve patients and no biological samples were taken. The study participants were comfortable and provided written consent by signing the declarations on the consent form. Participation was voluntary.

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