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Evaluation of neonatal circumcision training for resident doctors in a developing country

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Summary

Background
There is a high prevalence of neonatal circumcision (NC) in Sub-Saharan Africa. However, when providers do not have adequate training on the procedure, neonatal circumcision can result in complications. There are indications that the reported high complication rate of NC in the current setting might be a reflection of inadequate training of the providers. In order to establish a framework for better training of providers of NC, it may be necessary to evaluate the providers' opinions of their training and competence of the procedure.

Objective
The opinions of surgical, paediatric, and obstetrics-gynaecology resident doctors were evaluated for their exposure to, training on and perceived competence of neonatal circumcision.

Study design
The resident doctors in surgery, paediatrics and obstetrics-gynaecology (OBGYN) at two teaching hospitals in southeastern Nigeria were surveyed using a self-developed questionnaire. The self-assessment survey evaluated the residents' exposure and training on NC, and their perceived competence of the procedure. The responses from the different specialties were compared. Data were analysed using Statistical package for Social Sciences (SPSS).

Results
The summary of findings is shown in Table below:

The confidence in the ability to perform the NC did not significantly differ between the sexes (male 53/87 vs female 6/15; $P = 0.22$) and the level of training (SHO, Senior house officer 7/17, Registrar 24/42, senior registrar 28/43; $P = 0.24$).

Discussion
A substantial proportion of residents who encountered neonatal circumcision considered their training in NC to be sub-optimal, despite their perceived exposure to the procedure. Notwithstanding this deficiency of training, the majority of the residents planned to perform NC and this presaged an expectedly higher rate of complications. Well-thought-out and structured training, comprising lectures, workshops and hands-on training, for the resident doctors and the other providers of NC might address these shortcomings and minimise complications. This may further be strengthened with a government policy on circumcision. The limitations of the study included: (1) It was a self-assessment survey and this introduced bias in the assessment of competency; (2) There were no outcome measures in the survey for those who had practical exposure vs those who did not.

Conclusion
The resident doctors perceived that their exposure, training and competence in NC might be sub-optimal. Curriculum modification that incorporates appropriate hands-on training in NC might address these deficiencies.

Table Summary of the response of the resident doctors in the various specialties.

Aspects	Surgery (%) $n = 53$	Obstetrics-gynaecology (%) $n = 25$	Paediatrics (%) $n = 24$	Total $n = 102$
Response rate	53/59 (89.8%)	25/28 (89.3%)	24/27 (88.9%)	102/114
Had formal training in neonatal circumcision	21 (39.6%)	8 (32%)	8 (33.3%)	37
Comfortable performing neonatal circumcision	34 (64.2%)	14 (56%)	11 (45.8%)	59
Believe that structured training is lacking	53 (100%)	25 (100%)	24 (100%)	102
Plan to undertake neonatal circumcision in practice	31 (58.5%)	10 (40%)	11 (45.8%)	52

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Introduction

Neonatal circumcision (NC) is frequently undertaken for ritual religious and cultural reasons, and less commonly for medical reasons [1–3]. The prevalence of neonatal circumcision is reported to be about 84% in some studies from Sub-Saharan Africa [2,4]. There are indications that the procedure may be scaled-up in future as a long-term strategy for cost-effective HIV prevention, especially in Sub-Saharan Africa [5–7]. Prompted by the expected increase in prevalence of circumcision, many studies have evaluated ways of reducing the complications [8,9]. Reported overall complication rates range from 2.1 to 73% and they vary from institution to institution and depend on the providers of the procedure [2,4–9]. However, significant complications like meatal stenosis, prepuce-glans adhesion, buried penis, urethral fistula, and glans amputation have been reported in up to 20% of children that have undergone NC [4]. In a setting with high birth rates, the morbidity and cost of these complications can be enormous [8]. Studies have shown that structured training of providers of circumcisions will minimise complications [1,8,9]. There are indications that a significant number of doctors performing neonatal circumcision have received informal and unstructured training on the procedure [8–11].

In Sub-Saharan Africa, there is scant data on the training and competence in neonatal circumcision among resident doctors that encounter neonates in their practice. In southeastern Nigeria, residency training in paediatrics, obstetrics-gynaecology, and surgery follow the relevant curriculum of the West African Postgraduate Medical College or the Nigerian National Postgraduate Medical College. In this study the opinions of surgical, paediatric, and obstetrics-gynaecology resident doctors were evaluated for their exposure to, training on and perceived competence in neonatal circumcision. It is hoped that this might give insight into the training and practice of NC, and provide a framework for the training of all providers of this procedure.

Materials and methods

In order to assess the trainee exposure, knowledge, and opinion on neonatal circumcision, the resident doctors in paediatrics, obstetrics-gynaecology, and surgery in two of the training centers were surveyed. Following ethical clearance by the hospitals' Health Research and Ethics Committee, the survey was given to the trainees. In addition, the respondents received a separate note detailing the voluntary nature of participation, the study procedure, risks, and confidentiality with regard to the information in the survey. Those who consented proceeded with the survey.

The survey instrument was a self-developed non-validated questionnaire. The domains explored in the survey (Appendix 1) were demographics, exposure and training during the undergraduate medical education, exposure and training during postgraduate medical education and opinion on best practices for neonatal circumcision. The responses from the trainees in different specialties were compared.

Data analysis

Completed questionnaires were fed into a preformed Statistical Package for Social Sciences (SPSS 15.0 version, SPSS Inc, Chicago, Ill) spreadsheet. This was used for data entry and analysis. Results were expressed as absolute values, percentages, median or mean. The percentage was sometimes of the total or the sub-group. Data were analysed by Chi-squared test as appropriate. In all, a critical *P*-value of <0.05 was regarded as significant and conclusions were drawn based on this level of significance.

Results

The overall response rate was 89.5% (102/114). The response rate among surgical residents was 89.8% (53/59), obstetrics-gynaecology 89.3% (25/28) and paediatrics 88.9% (24/27). There were 87 males (85.3%) and 15 females (14.7%) with a median age of 35 years (IQR = 6 years). Overall, 53 (52%) residents were from surgery, 25 (24.5%) from obstetrics-gynaecology and 24 (23.5%) from paediatrics. Table 1 show the sex and specialty distribution of the respondents.

Training in and exposure to neonatal circumcision

This is summarised in Table 2. Overall, 61 (59.8%) respondents (surgery 35, obstetrics-gynaecology 14, paediatrics 12) reported having exposure to the NC procedure. During the undergraduate training, 56 (54.9%) of the trainees (surgery 31, obstetrics-gynaecology 14, paediatrics 11) had exposure to neonatal circumcision in the form of lectures, observation of the procedure, and/or assisting during the procedure. However, 22 (21.6%) of the respondents had practical exposure in the form of assisting in the procedure during undergraduate training. On the other hand, 37 (36.3%) of the respondents (surgery 21, obstetrics-gynaecology eight, paediatrics eight) indicated having formal training in NC during residency. These 37 trainees consisted of four (23.5%) senior house officers (SHO), 16 (38.1%) registrars and 17 (39.5%) senior registrars. Despite this, 41(40.2%) of the trainees (surgery 29, obstetrics-gynaecology seven, paediatrics five) reported performing the procedure during residency. A total of 16/22 (72.7%) of the respondents who had practical exposure during undergraduate training reported performing the procedure during residency compared to 25/80 (31.3%) who did not have undergraduate practical exposure ($P < 0.001$).

Table 1 Distribution of the 102 resident doctors according to their sex, stage of trainingand specialty.

Specialty	Sex		Stage of residency training			Total
	Male	Female	SHO	Registrar	Senior registrar	
Surgery	49	4	6	23	24	53
Obstetrics-gynaecology	22	3	7	10	8	25
Pediatrics	16	8	4	9	11	24

SHO, Senior house officer.