Nigerian Medical Journal
NIGERIA MEDICAL ASSOCIATION
Print ISSN 0300-1652, E-ISSN 2229-774X

Original Article

A Study to Evaluate the Practice and Training in Obstetric Ultrasound at Accredited Obstetrics and Gynaecology Training Institutions in Nigeria

***Ehigha Enabudoso[1], Janet Akinmoladun[2], Solomon Igbarumah[3], Hadijat Olaide Raji[4], Anthonia Inibokun Njoku[5], Ibraheem Awowole[6], Joyce Ikubor[7], Osikhueme Ogbebor[8], Labaran Aliyu[9].**

[1]Department of Obstetrics and Gynaecology, University of Benin, Nigeria. [2]Department of Radiology, University of Ibadan, Nigeria. [3]Department of Obstetrics and Gynaecology, St Philomena Catholic Hospital, Benin City, Nigeria. [4]Department of Obstetrics and Gynaecology, University of Ilorin, Nigeria. [5]Department of Obstetrics and Gynaecology, Ambrose Alli University, Ekpoma, Nigeria [6]Department of Obstetrics and Gynaecology, Obafemi Awolowo University, Ile-Ife, Nigeria.[7]Department of Radiology, Delta State University, Abraka, Nigeria. [8]Department of Radiography and Radiation Science, University of Benin, Nigeria. [9]Department of Obstetrics and Gynaecology, Bayero University, Kano, Nigeria.

Abstract

Background: There is a global trend towards domiciling Obstetric and Gynaecologic ultrasound scan services and training within the Obstetrics and Gynaecology Department. This requires readiness on the part of the Obstetrics and Gynaecology residency programmes to offer hands–on training and mentorship to its trainees. This study aims to assess the services and training potential of these centres in Obstetrics and Gynaecology ultrasound in Nigeria.

Methodology: A cross-sectional descriptive questionnaire-based survey among the various tertiary health facilities which offer post graduate fellowship training in Obstetrics and Gynaecology in Nigeria was conducted. A list of all the centres accredited for obstetrics and gynaecology residency training by the National Postgraduate Medical College of Nigeria was obtained. An obstetrician was identified, and a pretested self-administered questionnaire was mailed to him as a hard copy and an electronic copy was forwarded as well. The questionnaire was filled by the Obstetrician and returned for collation. The completed forms were populated into an excel spreadsheet and summary and descriptive statistics carried out.

Results: There was a valid 71% response rate from the 56 accredited centres. Thirty five percent of the centres had established subspecialty units. Only 10% had fully functional ultrasound service that catered for over half of their clients. Half of the responding centres did not have any ultrasound scan machines, and these too lacked any trained personnel in ultrasound within the department. Nearly all respondents supported the drive towards an obstetrician led ultrasound scan service but majority cited lack of protocols, trained personnel and dedicated time as major impediments to achieving this ideal.

Conclusions: There is a lack of preparedness for domestication of obstetric ultrasound service and training in the obstetrics and gynaecology Department in Nigeria. There is the need to address the acute shortage of personnel to expand the frontiers of ultrasound service and training.

Keywords: Ultrasound; Training; Residency.

Corresponding Author: *Ehigha Enabudoso, Department of Obstetrics and Gynaecology, University of Benin, Nigeria.
Email: drehigha@yahoo.com

How to cite this article: Enabudoso E, Akinmoladun J, Igbarumah S, Raji HO, Njoku AI, Awowole I, et al. A study to evaluate the practice and training in Obstetric ultrasound at accredited Obstetrics and Gynaecology training institutions in Nigeria. Niger Med J 2022; 63;(1): 29-34

Quick Response Code:

Introduction

Ultrasonography has become a core diagnostic tool in Obstetrics and Gynaecology and it is an indispensable component of modern antenatal care. [1-2] It permits assessment of fetal and maternal morphology, including indicators of fetal well-being, with the advantages of being portable, quick, and relatively safe. It has also been shown to improve feto-maternal bonding [3]. These and its real time nature facilitate highly detailed monitoring of pregnancy, thereby improving preparedness for complications and other undesirable occurrences in pregnancy.[4] This has the advantage of early preparation for management or referral as appropriate. Obstetric ultrasound has therefore been considered as a tool for reducing maternal and fetal morbidity and mortality [5]. Since its introduction in Africa over three decades ago, it has remained the mainstay of diagnostic imaging in the care of women [6].

Ultrasound imaging is affirmed to be a safe, effective, and efficient tool when utilized by, or under the direction of appropriately trained physicians [4-7]. This underscores the importance of adequate training to achieve its optimum utilization and benefits. Various international societies and regulatory bodies have produced curricula and guidelines to standardize training and use of ultrasound [8-13]. Proposed accreditation requirements include adequacy of training and qualification of personnel, equipment, infection control and other quality assurance measures, guidelines, scheduling and reporting procedures and adequate patient load. [10,11] In addition, simulation-based learning has also been variously proposed as an invaluable tool in teaching obstetric ultrasound [13,14]. However, reports from around the world have shown substantial non-conformity with the proposed curricula [8,14-18]. Some of the reasons adduced include lack of dedicated scanning time, absence of protocols and lack of training curriculum [18-19].

It is known that the commonest ultrasound service is that in Obstetrics and Gynaecology[2]. Being the mainstay of diagnostic imaging in feto-maternal care, ultrasound experience is now inevitable in the practice of obstetrics and gynaecology.[14,17] Standardized obstetric and gynaecologic ultrasound training modules are now pre-requisites for the completion of the postgraduate obstetrics and gynaecologic training programmes in many countries.[9,15] This facilitates bundling of care, efficient task-sharing, effective decision-making, prompt response to emergencies and improvement of the overall quality of care rendered to women. To achieve this however demands integration of structured training programmes and formal, protected training time into the curriculum of specialist trainees in obstetrics and gynaecology. [14,18]. A useful innovation that may improve education in contemporary training programmes in ultrasound is the use of simulation training.[13]

Despite the above, many departments of obstetrics and gynaecology do not have ultrasound machines domiciled in the department, and where available, the requisite skills for optimal utilisation are often insufficient especially in Low- and Middle-Income Countries. This may create a gap in the delivery of quality health service to the women in these countries. Formulating effective strategies to improve such quality of care however relies heavily on accurate data regarding the policies at the training institutions, skilled Personnel to deliver the service, and ultrasound machines that are easily accessible to the obstetrics and gynaecology team for training ad service delivery. As this information is not readily available in Nigeria presently, it becomes a necessary first step to conduct a survey of the various training centers accredited for postgraduate fellowship training in Obstetrics and /gynaecology by the National Postgraduate Medical College of Nigeria. Information gathered may then be used to design programmes to improve obstetrics and gynaecology ultrasound scan training towards better service delivery.

Methods

This cross-sectional, descriptive questionnaire-based survey was conducted among the 56 tertiary hospitals that were accredited by the National Postgraduate Medical College of Nigeria for specialty

training in obstetrics and gynaecology in 2018. An obstetrician, preferably in maternal-fetal medicine was contacted in each center, and the purpose-designed, pre-tested self-administered questionnaire was mailed to consenting consultants in both electronic format and hard copy.

Relevant information regarding the organization of obstetric services, feto-maternal subspecialty units, availability and number of departmental-domiciled ultrasound scanning machines, availability of Personnel who had been trained to proficiency in obstetric scan and information regarding any factor which may militate against provision of departmental-domiciled ultrasound services were obtained. Descriptive and inferential analyses were performed on the data obtained.

In the event of an ambiguity, the authors sought relevant information from the involved Personnel.

Results

Fifty-six questionnaires were sent to all the 56 tertiary institutions that were accredited for Obstetrics and Gynaecology fellowship training by the National Postgraduate Medical College of Nigeria. Of these 56, 40 questionnaires were returned and properly filled, giving a retrieval rate of 71%. The responding centres included twenty Federal Teaching Hospitals, sixteen Federal Medical Centres and four State Specialist Hospitals. These forty responding centres spanned the six geopolitical regions of the country and included the 6 largest teaching hospitals in the country.

Table 1 depicts the distribution of the delivery rates and the availability of subspecialty units in the surveyed centres. It also includes information on the source of obstetric ultrasound reports in the centres. Majority of the centres had a delivery rate of between 1,500 and 3,000 per annum. About a third of the centres had divisions into subspecialty units that included the Maternal Fetal Medicine unit. Subspecialization seemed to be associated with centres that had a higher delivery rate though this association was found not to be statistically significant [p-value 0.608; CI: 0.374 – 5.5365]. Regarding the source of obstetric ultrasound reports, only a tenth of the surveyed departments had majority of their obstetric scans being performed through the department-domicile ultrasound service. None of the departments had a wholly self-serving department domicile ultrasound service.

Table 1: Data on Obstetric service delivery, departmental subspecialty organization and the source of ultrasound scan results in the surveyed centers

Variable	Frequency (%)
Delivery rate Number/annum	
<1,500	8 (20)
1,500 – 3,000	22 (55)
>3,000	10 (25)
Departmental division into subspecialty units	
Yes	14 (35)
No	26 (65)
Source of majority of ultrasound reports	
From outside the hospital	10 (25)
Within the hospital but outside the Obstetric Department	26 (65)
Within the Obstetric Department	4 (10)

Figure 1 depicts availability of departmental ultrasound machines at the surveyed centres. Only 17 [42.5%] of the surveyed obstetric units had functioning departmental ultrasound machines. These were the ones that had some form of ultrasound scanning service and allowed residents various degrees of

ultrasound practice. Of these 17 centres with functioning ultrasound machines, eight had at least two functioning machines while only five centres had functioning transvaginal probes.

Only four of the centres had a written protocol for antenatal obstetric ultrasound scan. Twenty-four [60%] of the respondents reported not having a consultant or resident doctor with any form of practical ultrasound training in the past. Twenty-five (62.5%) respondents were dissatisfied with the present level of obstetric ultrasound service and believe that there was need to progress towards an obstetrician led obstetric ultrasound service.

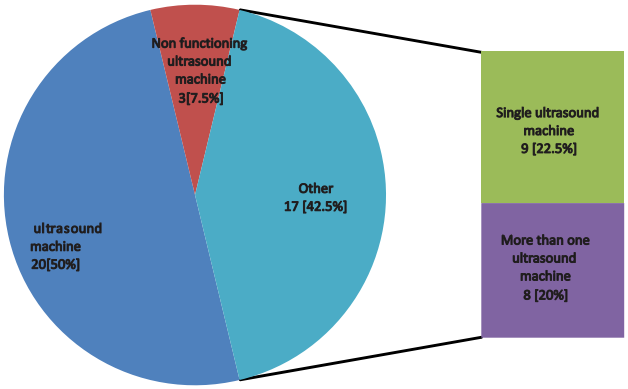

Figure 1: Distribution of tertiary training centers with respect to Obstetric department-domiciled ultrasound machine.

Table 2 shows the respondents perception of the impediments to the implementation of an obstetric department-domicile ultrasound service. The lack of protocols guiding the practice of obstetric ultrasound scan ranked as the highest of these. Other reported major contributors were lack of self-confidence, lack of training and absence of dedicated time for ultrasound.

Table 2: Most important factor impeding the availability of Obstetric Department-Domiciled Ultrasound Services in Nigerian Training Institutions (N=40)

Variable	Frequency [%]
Unavailability of protocols on obstetric ultrasound service	22 [55]
Cost of ultrasound machines	5 [12.5]
Unavailability of ultrasound machines	4 [10]
Unavailability of trained personel	4 [10]
Lack of departmental dedicated time for ultrasound service	2 [5]
Lack of self confidence in ultrasound scan	2 [5]
Electrical power concerns	1 [2.5]

Discussion

The results of this survey revealed that majority of the accredited tertiary training institutions in Nigeria have sub-optimal capacity for Obstetrician-led Obstetrics and Gynaecology ultrasound services and training. These results are not in tune with the global trend for improved training and ultrasound service delivery by obstetric department Personnel[16]. Salvesen et al [16] stressed the importance of

obstetrician-led ultrasound services and opined that as the professionals directly responsible for the care of their clients, Obstetricians may be able to generate better clinically oriented reports. It is also an essential component of the point of care service to which ultrasound evaluation is often called[14]. This view has been corroborated by the guidelines and curricula on ultrasound training for obstetric residents from other countries9,10,13. Acquisition of proficiency in obstetric ultrasound scan has also become a mandatory competence that must be achieved in the postgraduate training curriculum in those countries. Availability of competent trainers is essential to achieving this. [2,14,15].

Sub-specialty training in Obstetrics and Gynaecology, availability of ultrasound scan machines and appropriately trained personnel are essential in achieving the goal of the obstetrician-led obstetric ultrasound training and clinical service. However, this study shows these essential prerequisites are not available in most of the centres accredited for Obstetric training in Nigeria. This therefore creates significant impediments to the achievement of the global trend. This behoves on the postgraduate colleges to appreciate this deficit and address it effectively. One strategy to address the unavailability of appropriately trained Personnel may be to commission indigenous, accessible centres of excellence to champion the training of obstetric ultrasound scans, especially in training institutions where the skills are already available.[2] Enabudoso et al had reported their positive experience on skill acquisition after an indigenous but internationally accredited standard obstetric ultrasound training programme.[20]

The absence of protocols and lack of dedicated time for an ultrasound service are also of genuine concerns. This observation is similar to a previous report by Leonardi et al in a survey of the ultrasound training for obstetric residents in Canada [7]. In their study, it was reported that the absence of protocols seriously hampered obstetrics and gynaecology ultrasound training for residents in the obstetric departments. Alrahmani et al also reported that 41% of senior residents in Obstetrics and Gynaecology in the United States that participated in their survey reported that the biggest obstacle in ultrasound training is lack of dedicated faculty time [18]. With the expansion of knowledge and practice including further sub-specialization requirement in Obstetrics and Gynaecology training, postgraduate trainees have become even more engaged. Time must be specifically allotted for skill acquisition and practice for the trainees to achieve proficiency.[14]

This study represents the first step in Nigeria to formally address the perennial issue of sub-optimal preparedness of Obstetrics and Gynaecology Departments at provision of ultrasound scan services to their clients. A strength of the study was the extra steps undertaken to validate all the responses, including contacting the responsible Obstetrician at any center where the response appeared ambiguous.

Conclusion

There is sub-optimal capacity for the provision of obstetrician-led ultrasound services and training in ultrasound in majority of the accredited postgraduate training institutions in Nigeria, despite the near-consensus on the need to progress towards Obstetrician-led ultrasound service. The need for protocols, sub-specialization and protected training periods are essential for success implementation of the strategy in Obstetrics and Gynaecology.

References

1. Ross AB, DeStigter KK, Coutinho A, Souza S, Mwatha S, Matovu A. Ancillary benefits of antenatal ultrasound: an association between the introduction of a low-cost ultrasound program and an increase in the numbers of women receiving recommended antenatal treatments. BMC Pregnancy Childbirth. 2014; 14: 424.
2. Stanton K, Mwanri L. Global maternal and child health outcomes: the role of obstetric ultrasound in low resource settings. J Prev Med. 2013; 1: 22-29.

3. Heidrich SM, Cranley SM. Effect of Fetal Movement, Ultrasound Scans and Amniocentesis on Maternal-Fetal Attachment. Nurs Res 1989; 38: 81-4.
4. Moreira PM, Gueye M, Faye Dieme ME, Mbaye M, Kane Gueye SM, Sarr OD, et al. Obstetrical Ultrasound in Senegal: Knowledge, Attitude and Practice. J Womens Health 2013; 3: 2 doi:10.4172/2325-9795.1000107
5. Carrera JM. Obstetrics Ultrasound in Africa; Is it necessary to promote their appropriate use? Donald Sch J Ultrasound Obstet Gynaecol. 2011; 5: 289-296.
6. Seffah JD, Adanu RMK. Obstetric Ultrasonography in low-income countries. Clin Obstet Gynecol. 2009; 52: 250-5.
7. Leonardi M, Luketic L, Sobel ML, Toor K, D'Souza R, Murji A. Evaluation of Obstetrics & Gynecology Ultrasound Curriculum and Self-Reported Competency of Final-Year Canadian Residents. J Obstet Gynaecol Can 2018; 40: 1580-85.
8. Cardwell MS, Mendez M. Obstetrics and Gynaecology Residency Ultrasonography Program Curriculum. Donald Sch J Ultrasound Obstet Gynaecol. 2014; 8: 16-21
9. Heinzow HS, Friedrichs H, Lenz P, Schmedt A, Becker JC, Hengst K, et al. Teaching ultrasound in a curricular course according to certified EFSUMB standards during undergraduate medical education: A prospective study. BMC Med Educ 2013; 13:84
10. Calhoun BC, Hume RF. Integrated obstetric curriculum for obstetrics and Gynaecology residency, radiology residency and maternal-fetal medicine fellowship programme at an American Institute of Ultrasound in Medicine diagnostic ultrasound centre. Ultrasound Obstet Gynaecol 2000; 16: 68-71.
11. Shah S, Noble VE, Umulisa L, Dushimiyimana JM, Bukhman G, Mukherjee J, et al. Development of an ultrasound training curriculum in a limited resource international setting: successes and challenges of ultrasound training in rural Rwanda. Int J Emerg Med. 2008; 1:193–196
12. Baatar D, Sarmiento J, Peinado J, Ho H. Development of a Competency-based Training in Obstetrics and Gynecology Ultrasound for Undergraduate and Graduate Medical Education. Donald Sch J Ultrasound Obstet Gynaecol. 2014; 8: 83-86.
13. Abuhamad A, Minton KK, Benson CB, Chudleigh T, Crites L, Doubilet PM, et al. Obstetric and gynecologic ultrasound curriculum and competency assessment in residency training programs: consensus report. Ultrasound Obstet Gynecol. 2018; 51: 150–155.
14. Nora D. Ultrasound Training in Obstetrics and Gynecology Residency: A National Portrait. Obstet Gynecol. 2018; 132: 45S.
15. Leonardi M, Murji A, D'Souza R. Ultrasound curricula in obstetrics and gynecology training programs. Ultrasound Obstet Gynecol. 2018; 52: 147–150
16. Salvesen KA, Lees C, Tutschek B. Basic European ultrasound training in obstetrics and gynecology: where are we and where do we go from here? Ultrasound Obstet Gynecol. 2010; 36: 525–529.
17. Green J, Kahan M, Wong S. Obstetric and Gynecologic Resident Ultrasound Education Project: Is the Current Level of Gynecologic Ultrasound Training in Canada Meeting the Needs of Residents and Faculty? J. Ultrasound Med 2015; 34: 1583-9
18. Alrahmani L, Borowski K, Codsi E. The Current State of Ultrasound Training in Obstetrics and Gynecology Residency Programs: Ultrasound Training in OB-GYN Residency Programs. J. Ultrasound Med. 2018; 37: 2201-7.
19. Igbarumah S, Enabudoso E. Experience, and use of ultrasound scan for fetal evaluation among obstetricians in an African Population. Annals of Biomedical Sciences, 2016; 15: 24-29.
20. Enabudoso E, Ogbebor OH. An international standard fetal ultrasound training programme organized in a low resource setting: The ISUOG-Benin city experience. Tropical J Obstet and Gynaecol. 2016; 33: 292-296.