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Attitude and practice of medical professionals towards prenatal ultrasound screening for congenital anomalies

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Abstract

Background: Congenital anomalies are among the leading causes of perinatal morbidity and mortality worldwide. The advent of prenatal ultrasound screening for anomalies has profoundly affected perinatal care positively. This study was aimed at obtaining the views of the practitioners which usually constitute an integral part of the success of any practice, including screening for congenital anomalies.

Method: This is a cross-sectional descriptive survey conducted during a practical ultrasound training course. It involved the use of a self-administered semi-structured questionnaire. The responses were codified and relevant statistical analysis was performed.

Results: Seventy-seven medical professionals participated in the workshop and filled the questionnaires. 71% of the respondents were Consultant Obstetricians. Only few (13%) respondents refer patients for routine fetal anomaly scans while 70.1% reserved referral to only cases at high risk of congenital malformations. Informed consent-mostly verbal (90%)-for fetal anomaly scan was routinely obtained by less than half (46%) of the respondents. Protocols to guide practice, diagnosis, decision and management of congenital anomalies *in utero* existed in only few centers. 75% of the respondents will advocate pregnancy termination for lethal fetal anomalies, while 27.3% will advocate pregnancy termination for anomalies that will reduce quality of life.

Conclusion: Since congenital anomalies is one of the leading causes of perinatal morbidity and mortality, there is need for established protocols to guide the practice, diagnosis, decision and management of these congenital anomalies found in pregnancy so as to improve the quality of care.

Keywords: *Congenital anomalies, prenatal ultrasound, medical professionals*

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Résumé

Contexte: Les anomalies congénitales sont parmi les principales causes de morbidité et de mortalité périnatales dans le monde entier. L'avènement du dépistage par ultrasons prénatal pour les anomalies a profondément affecté les soins périnatals positivement. Cette étude visait à obtenir les points de vue des praticiens qui constituent généralement une partie intégrante du succès de toute pratique, y compris le dépistage d'anomalies congénitales.

Méthode: Il s'agit d'une enquête descriptive transversale réalisée lors d'un cours pratique d'échographie. Il s'agissait de l'utilisation d'un questionnaire semi-structuré auto-administré. Les réponses ont été codifiées et des analyses statistiques pertinentes ont été effectuées.

Résultats: soixante-dix-sept professionnels de la santé ont participé à l'atelier et ont rempli les questionnaires. 71% des répondants étaient des obstétriciens consultants. Seuls quelques répondants (13%) se réfèrent aux patients pour les analyses d'anomalie fœtale de routine, tandis que 70,1% ont réservé la recommandation uniquement aux cas à risque élevé de malformations congénitales. Le consentement éclairé - principalement verbal (90%) - pour l'analyse de l'anomalie fœtale a été habituellement obtenu par moins de la moitié (46%) des répondants. Les protocoles pour guider la pratique, le diagnostic, la décision et la gestion des anomalies congénitales dans l'utérus n'existaient que dans quelques centres. 75% des répondants préconiseront la fin de la grossesse pour les anomalies fatales mortelles, tandis que 27,3% préconiseront la fin de la grossesse pour des anomalies qui réduiront la qualité de vie.

Conclusion: Étant donné que les anomalies congénitales sont l'une des principales causes de morbidité et de mortalité périnatales, il est nécessaire de disposer de protocoles établis pour guider la pratique, le diagnostic, la décision et la prise en charge de ces anomalies congénitales découvertes pendant la grossesse afin d'améliorer la qualité des soins.

Mots-clés: *Anomalies congénitales, échographie prénatale, professionnels de la santé*

Introduction

Congenital anomalies can be defined as structural or functional anomalies (e.g. metabolic disorders) that occur during intrauterine life and can be identified prenatally, at birth or later in life [1]. Congenital anomalies are among the leading causes of perinatal morbidity and mortality worldwide [2]. According to the WHO, worldwide "around 1% of infants have a major congenital anomaly" with a greater proportion occurring in developing countries [1]. It is estimated that about 10% of neonatal deaths could be attributed to congenital anomalies and about 94% of severe congenital anomalies occur in the developing world [1, 3].

The development of prenatal screening for anomalies has profoundly affected perinatal care positively. In the developed world, ultrasound has been the preferred method of imaging fetal abnormalities for several decades. This is because of its advantages, including safety for the mother and fetus, cost-effectiveness, easy accessibility and real time imaging [4,5]. For many anomalies, early prenatal diagnosis provides the opportunity to influence perinatal management favorably by changing the site of delivery for immediate postnatal treatment; altering the mode of delivery to prevent hemorrhage or dystocia; early delivery to prevent ongoing fetal organ damage; or treatment *in utero* to prevent, reverse, or minimize fetal organ injury as a result of a structural defect [6,7].

The prenatal diagnosis and announcement of a fetal anomaly to a couple has far reaching implications. Skillful counseling of such a couple is therefore crucial toward obtaining the best possible outcome in the given circumstance. The multidisciplinary team has the responsibility to provide sufficient information about the anomaly to permit the parents to make informed decision [8]. While many have argued that counseling should be reserved for genetic counselors in the case of fetal anomalies, this role is being increasingly assumed by clinicians generally, especially in regions with dearth of qualified genetic counselors [9].

Interruption of pregnancy is one of the options the clinician-counsellor can offer a couple when severe foetal anomaly is diagnosed during prenatal sonographic screening. The benefits of such an extreme intervention- like lower perinatal mortality rate and huge cost savings by avoidance of long-term care for major malformations- outweigh any other consideration significantly [10,11].

However, uncertainties about the full nature or extent and exact prognosis of any detected anomaly coupled with limited facilities for genetic diagnostics cast doubt on the clinical utility of prenatal sonographic screening for congenital anomalies in low resource countries. These perceived inadequacies also pose a challenge to evidence-based counseling by the practitioner.

Ultimately, the view of the referring medical practitioner is integral to the success of any practice including sonographic screening for congenital anomalies. While prenatal diagnosis is gaining traction in our environment, the attitude of the doctors towards the practice is crucial for its widespread adoption in order to improve quality of care and aid design of relevant programs for necessary interventions. Therefore, this article aims at assessing the attitude of medical professionals to prenatal ultrasound screening for congenital anomalies.

Materials and methods

This cross-sectional descriptive survey was conducted during a practical obstetric ultrasound training course organized by the Fetal Medicine Unit of the University of Benin Teaching Hospital, Benin City, Nigeria. The ISUOG [International Society for Ultrasound in Obstetrics and Gynaecology] approved course which covered basic and advanced obstetric ultrasound scan including fetal anatomical survey and Doppler velocimetry attracted participants from Nigeria and Ghana in West Africa.

The survey involved the use of a self-administered semi-structured questionnaire (appendix I) which was applied on the participants of the training programme. The questionnaire sought information on the biodata, clinical practice level and scope of sonographic practice of the respondents. It then sought information on the attitude and current practice of the respondents as it pertains to fetal anomaly ultrasound scans as well as termination of pregnancies following ultrasound diagnosis of different severities of fetal anomalies. The responses were then coded into the computer and relevant analysis carried out.

Results

Seventy-seven medical professionals participated in the workshop and filled the questionnaire. 58(75.3%) were males while 19(24.7%) were females. The age range was between 20 and 60 years, with the highest number 32(41.6%) of participants in the 40-50years age group.

Sixty-three participants (81.8%) worked in tertiary hospitals while the others worked in General or private hospitals. Consultant Obstetricians constituted 71% of the participants while the

remaining 21% included resident doctors, general practitioners, sonographer and nurses.

Figure 1 is a graphical representation of the years of experience since graduation of the respondents. About half of the respondents were between 5 and 15 years post-graduation. The geographical spread of the respondents as presented in figure 2 shows that all the geopolitical zones of Nigeria were represented at the course with majority from the South-South and North-Central geopolitical zones of Nigeria while a handful came from Ghana.

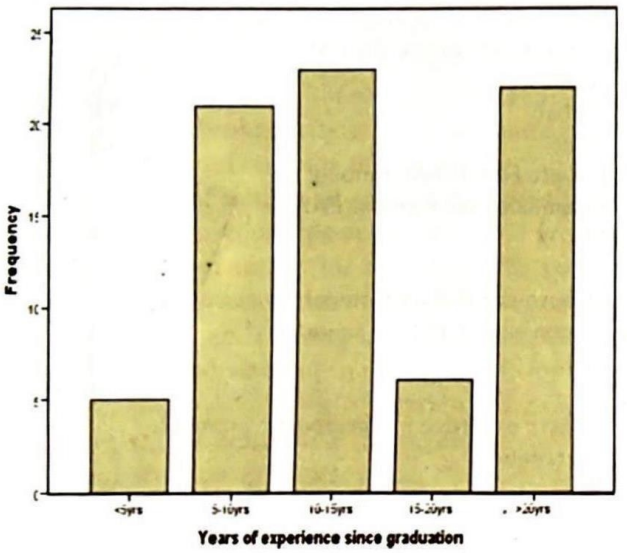

Fig. 1: Distribution of the years of experience of the participants

Table 1 shows the attitudes of respondents toward prenatal diagnosis of congenital anomaly by ultrasound scan. A very high proportion (88%) of respondents feel that fetal anomaly scans should be done between 18 and 22 weeks gestational age while about one in ten respondents feel it should be done earlier. Eighty-eight percent (88%) of respondent did not consider expertise in 3D and 4D ultrasound scans to be a sure proof of high proficiency in fetal anomaly scan. All respondents believe fetal anomaly scan is inadequate to rule out congenital malformations in all cases even in the best hands.

The perspectives of the respondents on termination of pregnancy for fetal anomalies and awareness of existing abortion law are seen in table 2. While 79.2% of the respondents will advocate pregnancy termination for lethal fetal anomalies, 27.3% will advocate pregnancy termination for anomalies which may reduce the quality of life of the baby. Almost all respondents were aware of the existence of an abortion law in their country.

Table 3 shows the current practices of respondents with regards to preparation, procedure, and communication as it pertains to fetal anomaly scans. Only few (13%) respondents refer patients for routine fetal anomaly scans while more than two-thirds (70.1%) reserve referral for fetal anomaly scans to only cases at high risk of congenital malformations. Informed consent for fetal anomaly

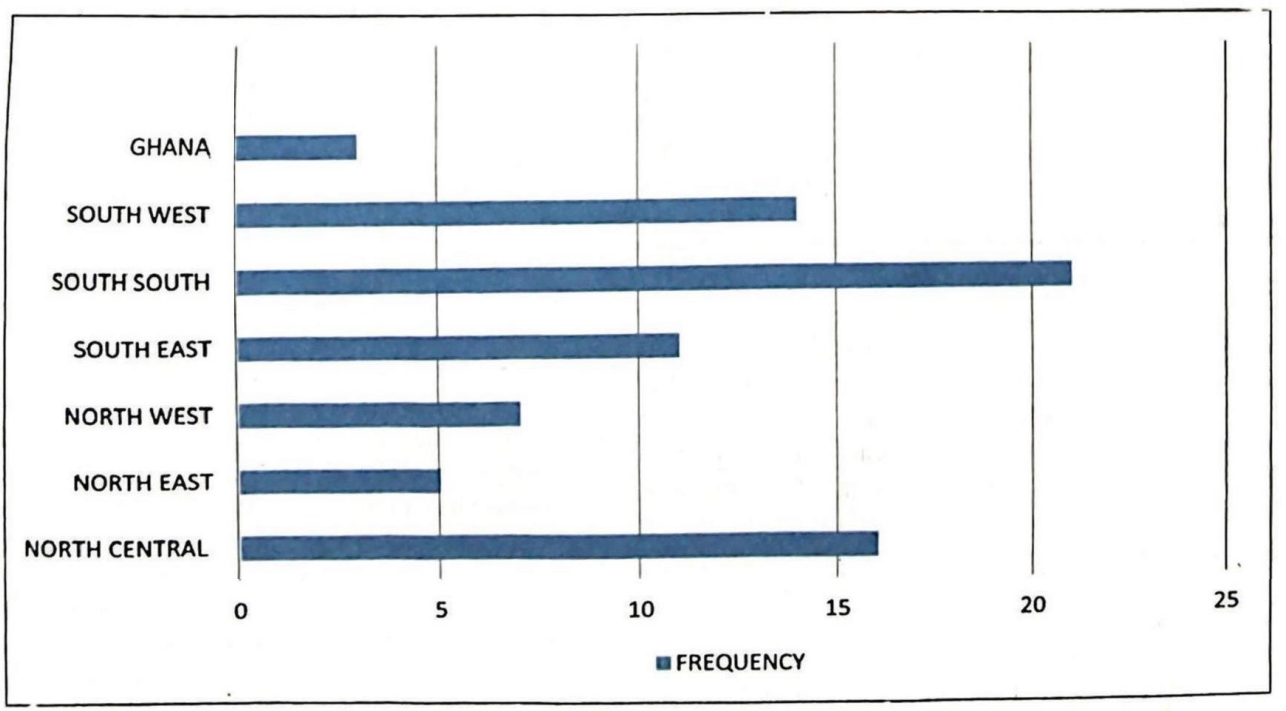

Fig. 2: Composition of participants by geographical zones

Table 1: Attitude of respondents to fetal anomaly scan

Question	n (%)
At what GA do you believe fetal anomaly scan is best done?	
<18wk	8(10.4)
18-22wk	68(88.3)
>22wk	1(1.3)
Is expertise in 3D or 4D ultrasound a sure proof of competence in FAS?	
Yes	9(11.7)
No	68(88.3)
Does fetal anomaly scan rule out presence of all fetal anomalies?	
Yes	0(0)
No	77(100)

GA: Gestational age
FAS: Fetal anomaly scan

Table 2: Perspectives of respondents on termination of pregnancies with fetal anomalies

Question	n(%)
Are fetal anomalies common in Nigeria?	
Yes	58(75.3)
No	19(24.7)
TOP for lethal anomalies?	
Yes	61(79.2)
No	16(20.8)
TOP for anomalies that may reduce quality of life?	
Yes	21(27.3)
No	56(72.2)
TOP for confirmed Down syndrome?	
Yes	27(35.1)
No	50(64.9)
Knowledge about abortion law?	
Yes	73(94.8)
No	4(5.2)

TOP: Termination of pregnancy

scan was routinely obtained by less than half (46%) of the respondents. However, verbal consent was the usual practice by over 90% of those who claim to routinely obtain informed consent for fetal anomaly scan. Majority (65%) of the respondents practice where there is lack of established protocol for communicating results of fetal anomaly scan to the patient and referring physician. Similarly, established protocol for managing pregnancies with ultrasound diagnosed fetal anomaly or expertise for prenatal therapeutic intervention were not available in the practice of most of the respondents.

Table 3: Practice of fetal anomaly scan by respondents

Question	n (%)
Is patient referral for FAS routine for all pregnancies	
Yes	10(13)
No	67(87)
Is patient referral for FAS routine for only high risk pregnancies	
Yes	54(70.1)
No	23 (29.9)
What type of informed consent do you routinely obtain for FAS?	
Written	3(3.9)
Verbal	32(41.6)
None	42(54.5)
Is there established protocol for communicating result of FAS?	
Yes	12(15.6)
No	65(84.4)
Is there established protocol for managing pregnancies with fetal anomalies?	
Yes	8(10.4)
No	69(89.6)
Is there expertise for therapeutic prenatal intervention?	
Yes	8(10.4)
No	69(89.6)

FAS: Fetal anomaly scan

Discussion

This study captures the views of a cross-section of medical professionals as it pertains to the practice of prenatal sonographic screening for fetal anomalies in Nigeria. The sample represents high level manpower which provides prenatal and perinatal care in the country. The findings of this study therefore reflect some of the perceptions which shape the practice of fetal anomaly scans, and are worthy of consideration in order to curb the growing mortality attributable to congenital anomalies in Nigeria.

Fetal anomaly scans are normally done between 18 and 22 weeks of gestation, usually with 2D grey scale ultrasound. The use of 3D and 4D ultrasound has additional utility for better detection of facial abnormalities [12,13]. Fetal anomaly scan, like all ultrasound studies, is however observer dependent and may not be able to detect all possible fetal structural abnormalities. The perspectives of a high proportion of the respondents in this study align with the aforementioned facts. This result is not unexpected given the high representation of

specialist obstetricians in the study sample. Further studies may be required to find out the perspectives of middle and lower level obstetric practitioners, such as nurses, midwives and community health workers, toward fetal anomaly scans.

The low rate of referral for routine prenatal sonographic screening service found in this study may be related to the level of availability of such service to the population. Bulas DI [2] opined that "regional differences in the availability of prenatal diagnosis can influence mortality rates". Data from this study suggests that fetal anomaly scan is not yet routinely done in Nigeria whereas nearly every pregnant woman in the US undergoes at least one such examination in the second trimester [13]. Lack of access to advanced obstetric ultrasound service may therefore account for the increasing perinatal manifestation of congenital anomalies in developing nations. Furthermore, this study identified areas in need of improvement with regards to the current practice of the respondents offering fetal anomaly scan. For instance, less than half of the respondents obtain informed consent, mostly verbal, for fetal anomaly scan. Also, lack of established protocol guiding the conduct and management of fetal anomaly scans in this survey was the norm in the practice of majority of the respondents, with only few exceptions. This suggests wide variations in quality of practice which has no place in modern clinical practice and tends to produce suboptimal outcomes for all involved [12,13]. Future studies with more robust design are therefore necessary to perform a root cause analysis on the inferred low quality of antenatal care in order to improve upon the local practice of prenatal diagnosis in Nigeria.

It has been reported that prenatal diagnosis and pregnancy termination for lethal congenital anomalies is associated with reduced infant mortality [14]. This study has shown a predominantly liberal attitude among the respondents to termination of pregnancy for diagnosed lethal fetal anomalies. This favorable disposition is highly encouraging in this environment with restrictive abortion laws even for lethal fetal anomalies. The large percentage (75%) in support of termination of pregnancy in this survey is in consonance with previous reports from the high income countries where the abortion laws are more liberal [15,16]. The reported attitude of respondents toward termination of pregnancy however depends on the presumed severity of the anomaly detected, being more restrictive with less severe anomalies. Almost 75% of the respondents will not offer pregnancy termination if the detected anomaly is severe but non-lethal. This finding is in line with the findings of previous studies [15-17]. These studies also found that the gestational age at diagnosis also has significant effect on this attitude. Despite the attitude of the respondents, it was reported that the majority however will comply with the patients' wishes on management including surgical obstetric interventions [15,17].

The abortion law is generally well known by most practitioners. The abortion law in Nigeria is highly restrictive and only allows termination of pregnancy to save the life of the mother [18]. In this strict context, fetal factors are not considered. While at present most centers are not practicing fetal diagnosis, as practice and training in Fetal Medicine improves, more of the unfavorable diagnosis of fetal anomalies will be made. Based on the attitude expressed by the respondents, there may be need for spirited advocacy to review the abortion law for fetal reasons.

This study has only performed and reported a baseline survey of attitudes of practitioners towards termination of pregnancy for fetal reasons. This is expected to be a prelude to a more detailed survey to assess factors responsible for the attitudes. However, previous studies reported the influence of religious beliefs on the attitudes. Garell *et al* discussed extensively the ethical dilemma and moral conflict involved in counseling and dealing with issues of congenital fetal anomaly, as reported in a qualitative survey of maternal health practitioners. They also raised the issues of the cost of caring for the child with fetal anomalies and the emotional, social and financial stress it imposes on the family and society [19]. This is worse in the low income countries where there is lack of social services even for the children with handicaps.

Overall, the findings from this study highlight the need for improvement of training in Fetal Medicine and prenatal diagnosis. It also reiterates the need for review of the abortion laws in Nigeria as detailed in a recent editorial commentary [20] especially on issues of lethal fetal anomalies. The ISUOG approved training offered by the Fetal diagnostic center in Benin City, Nigeria, attempts to contribute in a modest way to fill the gap in training and experience [21]. There is however need for an in-depth survey of the knowledge, attitude and practice of medical professionals at all levels of care toward prenatal ultrasound diagnosis in order to improve pregnancy outcomes in Nigeria, and this is underway.

Conclusion

Since congenital anomalies is one of the leading causes of perinatal morbidity and mortality, there is need for established protocols to guide the practice,

diagnosis, decision and management of these congenital anomalies found in pregnancy so as to improve the quality of care.

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