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Maternal Perspectives of Prenatal Sonogram in a North-Eastern Population in Nigeria

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Abstract; Limited information exists on maternal perspectives of prenatal sonogram in north-eastern Nigeria. This study was aimed at documenting the views and expectations of pregnant women concerning prenatal sonogram as well as their level of awareness of its purpose, limitations and safety in a predominantly Moslem society. A survey was carried out on a convenience sample of 150 patients referred from ante-natal clinics for prenatal sonogram, by administering semi-structured questionnaires. The results show that 61.3% of the women had prenatal sonogram, with little or no information about the purpose, capabilities and limitations of the procedure. 24.7% had neither formal western nor Islamic educational background that may have influenced their perceptions. Most of the women (81.3%) were sponsored by either government or their husbands, 72.7% perceived sonogram to be affordable and 63.4% viewed sonographic results as reliable. The perceived main reasons for having a prenatal sonogram were to determine the expected date of delivery and foetal well-being, and to obtain reassurance of maternal health. Sex determination and number of foetuses were the least considered reasons. The study indicates that providing pregnant women with adequate information and sensitising them to the purpose and limitations of sonograms is necessary to guarantee its rational utilisation. Improving patient care, enhancing the skill of sonographers and providing more facilities would improve the services and patients' perspectives of prenatal sonography.

Key words: *Sonogram, Perspectives, Prenatal, Maternal.*

Introduction

Professor Ian Donald (1910-1987), an obstetrician from Scotland, introduced the diagnostic use of ultrasound in clinical medicine. He pioneered the use of ultrasound in obstetrics and gynaecology to evaluate the foetus without exposure to the dangers of X-ray. The idea was conceived from the use of ultrasound to identify submarines during the Second World War [1]. Prenatal sonography, otherwise known as obstetric ultra-sonography, has grown in popularity over the last 20 years and is rapidly becoming a standard component of antenatal care.

In the United States, for instance, at least 60–70% of pregnant women undergo routine prenatal sonogram at some point in the pregnancy [2]. In routine antenatal care, it is used mainly to check the normal progression of pregnancy and identify deviations from the norm. Guyer et al. [3] noted that with the increasing availability of ultrasound scans, prenatal sonography runs the risk of becoming the de facto standard of care without supportive clinical evidence. The routine use of ultrasound technology has, however, been viewed critically from different angles. Many pregnant women are known to overestimate the diagnostic capabilities of ultrasound.

To optimise the use of ultrasound in pregnancy, adequate information on the limitations of ultrasound as a diagnostic tool in prenatal care becomes a necessity. This study is aimed at investigating how pregnant women in Maiduguri, a major city in north-eastern Nigeria, perceive ultrasound scan. This information will help the healthcare providers to carry out more effective health counseling.

Materials and methods

The research was carried out in three hospitals with ultrasound facilities in Maiduguri, Borno State. The selected hospitals were University of Maiduguri Teaching Hospital, Nakowa Specialist Hospital, and Borno Medical Clinic. Data were collected from a convenience sample of 150 patients who were referred and reported for obstetric ultrasound to the radiology departments of the hospitals during July-October 2008. Ethical approval was obtained from Department of Radiography of the University of Maiduguri.

The instrument for data collection was a semi-structured questionnaire consisting of 18 questions in both open and close-ended form. It is divided into three sections. Section A contains five questions on demographic data. Section B contains 12 questions on the participant's perspective of prenatal sonogram. Section C is an open-ended question about opinions on how to improve ultrasound services. This instrument was validated on the background of a previous study on maternal perspectives of obstetric sonogram by Stephens et al. [4].

The patients were enlightened on the purpose of the study and thereafter the questionnaires were administered. The questionnaire was self-administered, but illiterate participants were guided through the questionnaires, and their responses were recorded. Only participants referred from the antenatal clinic were included in the study. Initially, 180 patients were recruited, 60 from each hospital. Of these, 21 patients declined participation and nine questionnaires were left incomplete due to the clinical condition of those patients at that time. Most of those who declined had no valid reason, except for lack of interest and knowledge of scientific research purposes.

Data Analysis :The data were analysed descriptively using frequency tables and percentages.

Results

Thirty-two patients (21.3%) were below 20 years of age, 57 (38.0%) were 21-25 years old, 24 (16.0%) were 26-30 years old, and 26 (16.7%) were 31-35 years old. Of the 150 women, 28 (18.7%) had paid for their sonograms,

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while a larger number (102; 68%) had their husbands pay for the services. Only 20 (13.3%) respondents were being sponsored by government. Twenty-nine out of the 150 respondents (19.3%) were civil servants, 21 (14.0%) were engaged in private business, 17 (11.3%) were students or apprentices, and the remaining 83 (55.3%) were housewives.

Table 1 Distribution of patients according age and mode of sponsorship

Age range (years)	No. of respondents	Mode of sponsorship		
		Self	Govt	Spouse
<20	32	2	3	27
21-25	57	5	6	44
26-30	24	10	3	11
31-35	26	1	6	19
>35	11	4	2	5

Table 2 Maternal beliefs about the reasons for prenatal sonogram

Indication/reason	Frequency	%
To determine sex of foetus	3	2
Growth, size and position of foetus	9	6
Age/ date due	54	36
Health/wellbeing of foetus	44	29.3
Number of foetuses	0	0
Clinician's discretion	18	12
Maternal health	22	14.7

Thirty-four of the women (22.7%) had basic primary education, 25 (16.6%) had secondary education, and 53 (35.3%) had post-secondary education. A quarter of the participants (25.3%) had no formal education (neither secular nor Islamic). Most respondents (143; 95.3%) were married; the remaining 4.7% were single mothers.

Ninety-two of the patients (61.3%) had a previous sonogram. All the patients were referred for the scan by their clinicians.

Table 2 shows the perceived reasons for prenatal sonogram. The perceived reasons in order of frequency were age determination of foetus and expected date of delivery, 54 (36%), health and well-being of the foetus, 44 (29.3%), maternal health and reassurance, 22 (14.7%), clinician's discretion, 18 (12%), anticipated growth of fetus, 9 (6%), and sex determination, 3 (2.0%).

Table 3 describes the maternal views of the cost, reliability, risk to foetus and possibility of infection following prenatal sonography. Patients' views were scored on a five-point visual analogue (VAS) score. Most respondents (72.7%) perceived the procedure as inexpensive compared to other routine tests performed antenatally. Only 18 patients (12%) considered prenatal sonography to be expensive.

Ninety-five of the 150 respondents (62.2%) considered the results of prenatal sonogram to be reliable.

Only 69 women (46.0%) were likely to seek obstetric sonography without the clinician's consent whereas 54 (36.0%) would not go for it unless referred by their clinicians.

Only four patients (2.7%) believed that an infection can be contracted during a prenatal sonogram.

Table 3 also reveals widespread ignorance of various aspects of sonography. Almost half of the patients (65; 43.3%) responded "I do not know" to the question about the possible risk to the foetus, 40% responded similarly to the question about possible infection, and one third of them (49; 32.1%) responded the same way about the reliability of sonography.

Table 4 shows the opinions of pregnant women on how prenatal sonographic services can be improved. This includes training of more personnel 20 (13%), increasing the number of facilities offering prenatal sonography 22 (14.7%), proper explanation to patients 13 (18.7%), and increasing awareness of obstetric sonography 12 (8.0%). Other suggested ways of improvement include a reduction in the cost of the service 12 (8.0%) and in patients' waiting time 19 (12.7%). Only 42 of the women (28%) considered the services satisfactory.

Table 3 Maternal perceptions of the cost implications, reliability and probable risks of prenatal sonogram

Parameter scale	Risk to fetus n (%)	Infection n (%)	Cost n (%)	Reliability n (%)
I strongly disagree	44 (29.3)	51 (34)	57 (38.0)	3 (2)
I disagree	38 (25.3)	35 (23.3)	52 (34.7)	3 (2)
I do not know	65 (43.3)	60 (40)	23 (15.3)	49 (32.1)
I agree	3 (2.0)	3 (2.0)	11 (7.3)	40 (26.6)
I strongly agree	0 (0)	1 (0.7)	7 (4.7)	55 (35.6)

Table 4 Maternal views on how to improve the use of prenatal sonogram

Opinions	Frequency	%
Training of more personnel	20	13.3
Increase in facilities	22	14.7
Explain results to patient	13	8.7
Enlighten patients more	12	8.0
Reduce cost of scan	12	8.0
Reduce patient waiting time	19	12.7
Service is satisfactory	42	28.0
I do not know	10	6.7

Discussion

Ultrasound has become a routine part of antenatal care for pregnant women in most countries with developed health services [4]. In Nigeria, the use of prenatal ultrasound has become very widespread and popular over the years. If not controlled, this technology is open to misuse and could be a drain on the limited human and economic resources without a corresponding improvement in foetal and maternal outcomes. Similar views have been presented by others [5,6]. There is a need to utilise clinical imaging on the basis of sound clinical reasons. This

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is especially important for developing countries with lean resources.

That 72.2% of respondents found that ultrasonography was not expensive might be explained by the fact that they were largely dependent on their spouses or government for payment of services. This opinion of the cost-effectiveness of pre-natal sonogram agrees with those in previous studies [7,8].

Only 35.3% of the women had formal education beyond senior secondary school, the rest either had only basic primary education or no form of formal education at all. This may be a contributing factor to the overall high level of ignorance exhibited by respondents in this study.

61% of the women have had previous experience of sonograms. Furthermore, our study showed that women do seek prenatal sonography on their own without referral by a clinician. This is in line with the work of Stephens et. al. [4], who reported that many women want sonography and are willing to pay for the examination even when accustomed to free healthcare.

A very interesting finding in this study is that despite their ignorance and perhaps some irrational expectations from sonogram, most of the reasons given by the patients for doing sonography are well within clinical jurisdiction. The reasons advanced for sonogram such as sex determination of foetus, confirmation of date of delivery, foetal health/ well-being, respectively, are clinically justifiable.

Women in the area studied are not particular about the sex or multiplicity of their foetuses. This is at variance with the findings of Stephens et al. [4], where a largest proportion of respondents wanted sonogram for sex determination. The reasons for this may be cultural as the majority of the patients in the North-eastern region of Nigeria are Moslems.

However, 14.7% of the respondents felt they were referred for prenatal scan on account of maternal health complaints. This finding still supports the work of Garcia et al. [11] that women often lack information about the purpose for which an ultrasound scan is being done as well as the technical limitations of the procedure. Generally speaking, the women may have a tendency of overestimation of the diagnostic power of ultrasound and prenatal therapeutic possibilities.

This study has revealed that given appropriate feedback and good patient-staff interaction, the satisfaction with and perspective of prenatal sonography could be enhanced. This is also in agreement with previous studies [12,13,14].

The restriction of the study to patients referred from antenatal clinics of the selected hospital may place a limitation on the assessment of patients' genuine interest to have the sonogram since they were obviously directed by the clinicians.

Selection bias could also exist because of the limited sample size chosen using convenience sampling drawn from a study population of patients in just three ultrasound departments of hospitals in a single state.

Future multi-centre studies are recommended to overcome these limitations.

It is hoped that maternal opinions, such as improved personnel training, patient care, better communication, reduced waiting time and increase in the number of available ultrasound facilities, if implemented, would improve the services. Proper education of the patients on the diagnostic abilities, benefits and limitations of prenatal ultrasound scan is important in changing the negative perceptions among women.

References

1. Hutchinson Educational Encyclopaedia. Staffordshire: Focus Multimedia Limited; 1999.
2. ACOG practice patterns. Routine ultrasound in low-risk pregnancy. Number 5, August 1997. American College of Obstetricians and Gynecologists. Int J Gynaecol Obstet 1997, 59:273-8.
3. Guyer B, Hoyert DL, Martin JA, et al. Annual summary of vital statistics-1998. Pediatrics 1999; 106:1229-46.
4. Stephens M B, Montefalcon R, Lane D A. The maternal perspective of prenatal ultrasound. J Fam Pract. (2000) 49: 601-4.
5. Ewigman B, Crane J, Frigoletto F, et al. Effect of prenatal ultrasound screening on perinatal outcome. N Eng J Med 1993; 329:821-7.
6. Bucher H, Schmidt J.: Does routine ultrasound scanning improve outcome in pregnancy? Meta-analysis of various outcome measures. BMJ 1993; 307:13-7.
7. Youngblood J. Should ultrasound be used routinely during pregnancy? An affirmative view. J Fam Pract 1989; 29:657-60.
8. Chervenak F, McCullough L. Should all pregnant women have an ultrasound examination? Croat Med J. 1998; 39:102-6.
9. iske D W. The subject reacts to test. American psychologist 1967: 22.
10. Ugwu AC, Ahamefule K, Egwu AO, Otu E, Okonkwo CA, Okafor LC. Patient Satisfaction with obstetric ultrasonography. Radiol Technol. 2007; 79[2]:113-8.
11. Garcia J, Bricker L, Henderson J, Martin M, Miranda M, Nielson J, Roberts T. Womens views of pregnancy ultrasound: A systematic review. Birth 2000, 29:4,225-50.
12. Ugwu AC, Idigo FU, Anakwue AC, Nwogu UB, Egwu AO. Patient satisfaction with obstetric sonography: A validation study. African Journal of Midwifery and Women's Health. 2008; 2(3):127-9.
13. Field T, Sandberg D, Quetel T, et al. Effects of ultrasound feedback on pregnancy anxiety, fetal activity and neonatal outcome. Obstet Gynecol 1985; 66:525-8.
14. Milne L, Rich O. Cognitive and affective aspects of the responses of pregnant women to sonography. Maternal Child Nurs J 1981; 10:15–39.