

Profile of Women Seeking Fetal Gender at Ultrasound in a Nigerian Obstetric Population

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Objective: To determine the proportion of women that wanted to know fetal gender at ultrasound, characterize them and document reasons for wanting to know fetal gender.

Methodology: A cross-sectional study on consecutive pregnant women at 20 weeks or more gestation that presented for prenatal ultrasound at a private hospital in Nigeria from May to December 2005.

Results: Of the 1135 women, 167 (14.7%) sought to know the fetal gender. Significant independent factors included ethnic group, as women from the predominant Hausa–Fulani were less likely when compared to those of other ethnic groups (OR: 0.4, 95% CI: 0.2–0.7). Women with tertiary education were 6.6 times (OR: 6.6, 95% CI: 3.3–13.2) more likely. Women with a previous male baby were 30.6 times more likely (OR: 30.6, 95% CI: 13.6–68.5), while those with previous female baby were 54.3 times more likely (OR: 54.3; 95% CI: 23.4–125.8) to seek fetal gender. Main reasons for seeking fetal gender were preference for a particular fetal gender (57%); what wears to buy for the baby (24%) and curiosity (18%).

Conclusion: About 15% of the study group requested to know fetal gender and it was associated with ethnic group, maternal educational level and gender of the previous baby. The most common reason for wanting to know fetal gender was the desire for a particular gender.

Keywords: Fetal gender, Antenatal ultrasound, Nigeria

Introduction

Ultrasound scanning or imaging is one of the investigations often requested during the antenatal period. The request could be routine for all pregnant women or indicated for obstetric reasons. The value of the selective use of ultrasound screening for specific indications, such as possible fetal malformation, placenta position and multiple pregnancies, has been clearly shown. However, the evidence that supports the routine use of ultrasound for antenatal screening of normal pregnancy has not yet been firmly established in spite of its widespread use.¹ Ultrasonographic assessment of the fetal gender is possible from the first trimester.^{2,3} The clinical importance of identifying fetal gender includes determination of the chorionicity in twins, aneuploidy and in gender-linked conditions. In some settings, pregnant women might present themselves for ultrasound for varying reasons including determination of fetal gender for social reasons. Studies have shown that determination and disclosure of fetal gender to pregnant women may be associated with either positive or negative parental attitude.^{4,5} Those who oppose fetal gender determination and disclosure have concerns about risk of error, the time involved in making a determination of fetal gender and that the information may lead women to abort pregnancies when the fetus is not the wanted gender. In India and China, for example, there are legislations against the use of ultrasonography and amniocentesis for fetal gender determination because of cultural aversion to female infants and selective induced abortions of unwanted genders.^{6,7} Gender selection abortions in preference for male gender could adversely affect the demographic profile of countries.

Despite these limitations, some authors argue that disclosure of fetal gender upon request respects a woman's rightful autonomy over personal health information and thus should not be denied.⁸

Nigeria is a country with diverse cultures and wide variations in the health indicators for the different geopolitical zones. Islam is the dominant religion in the north while Christianity is the dominant religion in the south. There is no known law for or against fetal gender disclosure. Like in many traditional African societies, patrilineal social arrangement is the norm, thus considerable importance is placed on the presence of a male member in the family.⁹ It is these unwritten cultural demands that make some women express their desire to know fetal gender before childbirth. Gender selection in the context of wanting to terminate pregnancy because the fetus is not of the desired gender is not the practice in Nigeria; rather, couples would continue to try for new pregnancy until the desired gender is achieved. It is not unusual to have a woman with a seventh, eighth or greater pregnancy because of the quest for a particular gender!

Sokoto, an urban town in northern Nigeria, is populated predominantly by the Hausa–Fulani of the Islamic faith. Many physicians that attend pregnant women request an ultrasound scan for various reasons. Some women would ask for fetal gender at the time of the scan irrespective of the indication for the scan, while others would simply collect the ultrasound result at the end of the procedure and take back to the referring health care provider. To the best of our knowledge, there has not been any previous work on women who seek fetal gender from the northern part of Nigeria with all its peculiarities. It is also appropriate for clinicians to have background information and characteristics of their patients or clients. It is in this context that we sought to determine the proportion of women that directly seek to know fetal gender at ultrasound, characterize them and document their reasons for wanting to know fetal gender.

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Figure 1. Sonographic appearance of female genitalia



Figure 2. Sonographic appearance of male genitalia

Methodology

This was a cross-sectional study that was conducted at Karaye Hospital (a privately owned specialist hospital), Sokoto, Nigeria. The hospital started offering ultrasound services in 1994 and has a large clientele for obstetric ultrasonography drawn from pregnant women within Sokoto metropolis and its environs. There are three certified sonologists of comparable clinical competence at the centre that perform the obstetric scans.

Consecutive pregnant women at 20 weeks or more gestation were recruited for the study between May and December 2005. These women are usually referred to the center by health care providers or from other hospitals for either a routine scan or for specific obstetric indications. Occasionally, a pregnant woman might come on self-referral for an obstetric scan. During the procedure, only women that sought to know fetal gender were so informed. Such women were then prompted for the exact reason for wanting to know the fetal gender and the reason was documented.

The ultrasound scan was performed with Siemens Sonoline SL-1 machine using a transabdominal 5.0 MHz probe. Fetal gender was identified by the presence of the sonological features of external genitalia at the perineum. The female fetus was recognized by the two labial folds which show as two oblong echogenic structures separated by an echo free area (Fig. 1). The male fetus was recognized by the presence of the scrotal sac as a rounded echogenic structure separated by an echogenic median raphe and the phallus as an echogenic cylindrical structure (Fig. 2).

Other information obtained from the women that had an obstetric scan within the study period included biosocial and demographic data (age, ethnic group, religion, occupational status, educational level, gravidity and parity) and indications for the scan. The information obtained was entered into Statistical Package for Social Science (SPSS) 12.0 software for analysis. Bivariate analysis was performed using the Chi-square test, multivariate analysis was performed using a logistic regression model for those that sought to determine fetal gender. The level of statistical significance was set at 0.05 at 95% CI.

Results

One thousand one hundred and thirty-five (1135) pregnant women had obstetric ultrasound scan during the study period (May–December 2005). The age range was from 14 to 48 years with a mean of 25 years. The Hausa–Fulani constituted the

majority ethnic group (71.5%) and the remainders were Igbo (10.5%), Yoruba (7.4%) and others (10.6%). The predominant religion was Islam (80.4%), Christians constituted 19.4% and those whose religion was not indicated formed less than 0.3%. Concerning the level of education, 33.7% had no formal education; those with primary education were 11.4%, secondary were 34.0% and tertiary constituted 20.9%. The majority of the women were housewives (87.1%) while the remainder were civil servants (7.2%) and students (5.6%). Pregnant women that were multiparae constituted the largest group (37.9%) while the smallest group were the grandmultiparae (15.0%). Nulliparae constituted 26.6% and primiparae were 20.5%. Most women were referred by health workers for the ultrasonography (97.5%) while a few (2.5%) were self-referrals (Table 1).

One hundred and sixty-seven women (14.7%) sought to know fetal gender during the procedure. Of this, 158 were referred by different health care providers while the remaining nine were self-referral. Bivariate analysis between the baseline profiles of this group of women and their seeking to know fetal gender during ultrasonography revealed that factors such as tribe (<0.0001), religion (<0.0001), educational level (<0.0001), parity (0.002) and the gender of the previous baby among those with previous delivery (<0.0001) significantly influenced such decisions (Table 2).

Further analysis using a logistic regression model to identify independent predictors among the significant variables was then performed. On tribal group, Hausa–Fulani women were significantly less likely to seek fetal gender determination compared to those categorized as others (OR: 0.4, 95% CI: 0.2–0.7). Women with higher educational level were more likely to ask for fetal gender compared to those with no educational level. Women with tertiary educational level were 6.6 times more likely (OR: 6.6, 95% CI: 3.3–13.2), while those with secondary education were 3.7 times more likely (OR: 3.7, 95% CI: 1.9–7.4) when each was compared with those with no formal education. Furthermore, women whose previous children were male were 30.6 times more likely to ask for gender (OR: 30.6, 95% CI: 13.6–68.5) while those with previous female children were 54.3 times more likely (OR: 54.3, 95% CI: 23.4–125.8) (Table 3).

The reasons for seeking fetal sex amongst the 167 women were: 'wants a particular gender', 98 (57%); 'what wears to buy', 41 (24%); 'just curious', 32 (18%); 'no reason', 2 (1%).

Discussion

Seeking to know the gender of the unborn child by prospective mothers occurs in many societies. In some cultures, there are

Table 1 Baseline profile of the study population (n=1135)

Variables	Frequency	Percentage
Ethnic group		
Hausa-Fulani	812	71.5
Igbo	119	10.5
Yoruba	84	7.4
Others	120	10.6
Religion		
Christianity	220	19.4
Islam	912	80.4
Others	3	0.3
Educational status		
None	383	33.7
Primary	129	11.4
Secondary	386	34.0
Tertiary	237	20.9
Occupation		
Civil servant	82	7.2
House wife	989	87.1
Student	64	5.6
Gravidity		
Primigravida	284	25.0
Multigravida (2-4)	554	48.8
Grandmultigravida (>4)	297	26.2
Parity		
Nullipara	302	26.6
Primipara (1)	233	20.5
Multipara (2-4)	430	37.9
Grandmultipara (>4)	170	15.0
Source of referral		
Health care provider	1107	97.5
Self-referral	28	2.5
Sought fetal gender		
Yes	167	14.7
No	968	85.3

signs that pregnant mothers associate with certain fetal gender even if of doubtful accuracy. For instance, the female gender is said to be associated with more fetal movements. Walker and Conner reported that 57% of their respondents

Table 2 Bivariate analysis between the baseline profiles and seeking for fetal gender determination during ultrasonography (n= 167)

Variables	% within the category	p value
Ethnic group		
Hausa-Fulani	10.1	<0.0001*
Igbo	26.1	
Yoruba	23.8	
Others	28.3	
Religion		
Christianity	27.7	<0.0001*
Islam	11.8	
Others	33.3	
Educational status		
None	3.4	<0.0001*
Primary	7.0	
Secondary	17.9	
Tertiary	32.1	
Parity		
Nulliparous	17.5	0.002*
Primiparous	18.5	
Multiparous	14.5	
Grandmultiparous	5.9	
Sex of the previous baby (n=110)		
Female	30.6	<0.0001*
Male	40.1	

*Statistically significant at p<0.05.

Table 3 Multiple logistic regression model of predictors for seeking fetal gender determination during obstetric ultrasonography

Variables	β coefficient	OR	95% CI	p value
Ethnic group				
Others (rc)	-	-	-	-
Hausa-Fulani	-1.044	0.4	0.2-0.7	0.007*
Igbo	-0.117	0.9	0.4-1.9	0.757
Yoruba	-0.093	0.9	0.4-2.0	0.818
Religion				
Others (rc)	-	-	-	-
Christianity	0.011	1.0	0.06-17.9	0.994
Islam	0.179	1.2	0.07-20.5	0.902
Educational status				
None (rc)	-	-	-	-
Primary	-0.064	0.9	0.4-2.4	0.896
Secondary	1.321	3.7	1.9-7.4	<0.0001*
Tertiary	1.884	6.6	3.3-13.2	<0.0001*
Parity				
Nulliparous	1.914	6.8	0.9-49.8	0.06
Primiparous	0.006	1.0	0.3-3.2	0.991
Multiparous	-0.287	0.8	0.3-2.1	0.582
Grandmultiparous (rc)	-	-	-	-
Sex of the previous baby				
No previous child (rc)	-	-	-	-
Male	3.420	30.6	13.6 - 68.5	<0.0001*
Female	3.995	54.3	23.4 - 125.8	<0.0001*

rc: reference category; *statistically significant at p<0.05.

had fetal gender belief based on intuition, instinct, feelings, symptoms and signs.¹⁰

The accuracy and popularity of ultrasound in determining fetal gender is no longer in doubt even in developing countries like Nigeria.^{9,11} The risk for error in determination of fetal gender is estimated to be less than 3% and it is advised that prospective parents should be made aware of this possibility with disclosure.¹² Even then, this margin of error will also depend upon the expertise of the operator, timing of the scan, the fetal lie, amniotic fluid volume and the quality of the machine. In this study, there was no difficulty in positively identifying fetal gender for those women that requested to know since it was confined to pregnancies at 20 weeks or more gestation. On a few occasions, a repeat scan after a week or two cleared any possible doubt for those women that wanted to know fetal gender.

About 15% of the study group requested to know fetal gender. This percentage is small compared to the study from Boston, MA, USA, where 95% of women sought fetal gender determination.¹³ The report from southwest Nigeria found 69% of women wanting to know fetal gender.¹⁴ A questionnaire survey from another southern city in Nigeria found that 64% of women were interested in knowing fetal gender.¹⁵ It is possible that some women in this present study did not even know that fetal gender could be determined by ultrasound scan since one-third of the study group had no formal education. Even among those who might know that fetal gender could be determined from ultrasound, it is possible that some were too shy to ask the sonologist. A recent study from Syria also reported cases of women being too shy to ask the doctor about the gender of the baby during the scan.¹⁶

It is of interest that during the time of the study, fetal gender determination was not a specific indication for ultrasound request from the health care providers that referred the women. The reason for this is difficult to image. It is possible that some health care providers had assumed that a request for a routine scan late in gestation should include gender determination and therefore need not expressly state it. It could also mean that screening for gender-linked disorders is not a common practice in the environment.

Bivariate analysis on women that sought fetal gender determination and their biosocial variables revealed that educational status, ethnic group, religion, parity, mode of referral and gender of previous baby had significant positive influence.

Further analysis using logistic regression model to identify likely independent predictors revealed that educational status, ethnic group, mode of referral and gender of the previous child remain statistically significant. The effects of religion and parity as independent predictors were blunted following the logistics regression analysis. Those from ethnic groups such as Igbo, Yoruba and other minorities had higher proportion of women that sought fetal gender when compared to the majority ethnic group of Hausa–Fulani. Although the exact reason for this is not known, the concept of 'Kunya' or 'shyness' among the women folks of the Hausa–Fulani ethnic group could contribute to the low rate of fetal gender seekers. 'Kunya' is a cultural manifestation of modesty and humility, thus it is not uncommon for a Hausa–Fulani woman to close her eyes and avoid any communication throughout the period of an ultrasound scan.

From this study, the higher the educational status of the woman, the more the tendency to seek for fetal gender at ultrasound. Women with secondary education were 3.7 times more likely to ask while those with tertiary education were 6.6 times more likely when compared with those with no formal education. It could be argued that those without formal education or minimal education might not even know that fetal gender could be determined at ultrasound and hence would not ask. Some authors have already shown that women with higher educational level have better knowledge of prenatal ultrasonography as a tool for gender determination.¹⁴

Furthermore, women whose previous babies were female were more likely to seek fetal gender determination than those with previous male babies. The premium attached to the male child in most African traditions has already been highlighted and that could be responsible for the anxiety to know if a woman does not already have one.

Several reasons have been cited depending upon the community why women seek to know fetal sex. From this study, the reasons were centred on what wears to buy, seeking a particular gender and mere curiosity. It shows that what hitherto was considered as attributes of Western societies like choice and colour of clothes to buy for the baby may have gradually crept into our society. It also means that most of the reasons for seeking fetal gender in our environment are innocuous, hence we are in support of the suggestion that if fetal gender has been determined; a patient's request for disclosure should be respected either directly or by indicating it in a report to the referring health professional.^{8,14} Undesired fetal gender has not been an indication for termination of pregnancy in our practice. As a policy, we disclose to those women that request to know and indicate fetal gender when determined with a symbol in the report to the referring health care provider.

In conclusion, only 15% of the study group directly sought to know fetal gender at the time of obstetric scan. Certain ethnic groups, higher maternal education, self-referral and those with previous children of the same gender were more likely to seek fetal gender. Desire for a particular gender and the type of baby's cloths to buy was the main reasons for wanting to know

fetal gender in the study group. If the sonologist sees any of these characteristics on the request form, it is advisable to determine fetal gender during the scan aside the indication for the scan, for such women are likely to ask of fetal gender at the end of the procedure.

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