

## ORIGINAL RESEARCH ARTICLE

# The Knowledge Base and Acceptability of Prenatal Diagnosis by Pregnant Women in Ibadan

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## Abstract

This cross-sectional study evaluated knowledge and acceptability of prenatal diagnosis among 500 pregnant women at the University College Hospital, Ibadan. Most participants were aged 25-34 years, self-employed, Muslim, monogamy, secondary school leavers, on income of < ₦10,000.00 (US\$ 67.00)/month. Attitudinal mean score was dependent on age ( $p = 0.006$ ), educational attainment ( $p = 0.001$ ), marital status ( $p = 0.025$ ) and religion ( $p = 0.012$ ). Knowledge mean score was influenced by marital status ( $p = 0.028$ ). Overall, acceptance of prenatal diagnosis was high. There was a direct correlation between acceptance and educational attainment: 41.5%, 31.5%, 19%, 19% of women who agreed to have prenatal diagnosis had tertiary, secondary school, primary school and no formal education respectively. Determinants of acceptability were age, educational attainment, marital status and religion. Being married significantly affected knowledge scores, while tertiary education, being divorced, unskilled and self-employed positively influenced attitude towards prenatal diagnosis. (*Afr J Reprod Health 2014; 18[1]: 127-132*).

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**Keywords:** Prenatal Diagnosis Knowledge Acceptance

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## Résumé

Cette étude transversale a évalué la connaissance et l'acceptabilité du diagnostic prénatal auprès de 500 femmes enceintes au Centre Hospitalier Universitaire d'Ibadan. La plupart des participantes étaient âgées de 25-34 ans, travailleuses indépendantes, musulmanes, monogames, diplômées des écoles secondaires, ayant des revenus de < ₦ 10,000.00 (US \$ 67.00) / mois. Le score moyen sur les attitudes était une fonction d'âge ( $p = 0,006$ ), le niveau de scolarité ( $p = 0,001$ ), l'état matrimonial ( $p = 0,025$ ) et la religion ( $p = 0,012$ ). Le score moyen de la connaissance a été influencée par le statut matrimonial ( $p = 0,028$ ). Dans l'ensemble, l'acceptation du diagnostic prénatal a été élevée. Il y avait une corrélation directe entre l'acceptation et le niveau de scolarité : 41,5 %, 31,5 %, 19%, 19% des femmes qui ont accepté que le diagnostic prénatal ont été scolarisées respectivement au niveaux tertiaire, secondaire, primaire et aucune éducation formelle. Les déterminants de l'acceptabilité étaient l'âge, le niveau d'instruction, l'état matrimonial et la religion. Le fait d'être mariée a affecté les scores sur la connaissance de manière significative, tandis que l'enseignement supérieur, le fait d'être divorcée, non qualifiées et indépendante a influencé positivement l'attitude envers le diagnostic prénatal. (*Afr J Reprod Health 2014; 18[1]: 127-132*).

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**Mots-clés:** diagnostic prénatal, connaissances, acceptation

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## Introduction

Prenatal diagnosis employs a variety of techniques to determine the health and condition of an unborn fetus or embryo. Without the knowledge gained by prenatal diagnosis, there could be an untoward outcome for the fetus or the mother or both. Congenital anomalies account for 20 to 25% of perinatal deaths, a major marker of quality of health care delivery<sup>1</sup>.

Screening can also be used for prenatal sex discernment. Common testing procedures include amniocentesis, ultrasonography including nuchal translucency ultrasound, serum marker testing, or genetic screening. In some cases, the tests are administered to determine if the fetus will be aborted, though physicians and patients also find it useful to diagnose high-risk pregnancies early so that delivery can be scheduled in a tertiary care hospital where the baby can receive appropriate care<sup>1</sup>.

Prenatal diagnosis needs to be differentiated from routine antenatal screening. The National Institute for Health and Clinical Excellence (NICE) and the UK National Screening Committee (UK NSC) have laid down standards for antenatal care, including the routine screening tests that should be offered to all pregnant women<sup>2</sup>. These screening tests do not always give a definitive prenatal diagnosis and may just show the probability of a problem with the fetus. In most cases, further diagnostic tests are required to confirm and diagnose the fetal abnormality.

Prenatal diagnosis is therefore offered to all pregnant women if they have positive antenatal screening results. However, some women may be offered definitive prenatal diagnosis from the outset without any preceding screening tests; for example:

If there is a family history of an inherited condition, if they have had a previous pregnancy with fetal abnormality, if they have been exposed to illness such as toxoplasmosis or rubella during the pregnancy, If they have been exposed to teratogens, such as certain drugs or radiation, during the pregnancy, If the woman has type 1 diabetes mellitus, epilepsy or myotonic dystrophy.

The primary aim of a prenatal diagnosis is to provide an accurate diagnosis that will allow the widest possible range of informed choice to those at increased risk of having children with genetic disorders or with congenital abnormalities<sup>3</sup>.

Most information available to us in Nigeria is from advanced nations. In highly industrialized nations it had been estimated that about 70% of miscarriages and 20% of perinatal deaths are due to congenital anomalies<sup>4-5</sup>.

An incidence of 0.5% congenital malformation and hydrocephalus being the commonest abnormality detected on ultrasound study was reported in Nigeria<sup>6</sup>.

The stillbirth and perinatal mortality rates were, respectively, 71 and 78 per 1000 deliveries. Predictors of perinatal mortality were mother's age, lack of prenatal care, unbooked status, prematurity, and birth asphyxia<sup>5</sup>.

Perinatal mortality rate remains unacceptably high in Nigeria. Fresh stillbirth accounted for most perinatal deaths. Interventions to improve the utilization and quality of prenatal care, in addition

to the quality of intrapartum care, would considerably reduce perinatal deaths<sup>6</sup>.

The results from this study suggest that with the use of autopsy, teratology may contribute significantly to the prevailing high perinatal mortality in Lagos more than was previously thought of<sup>6</sup>. The perinatal mortality rate remains unacceptably high in Nigeria<sup>6</sup>.

Our intentions were to find out the level of awareness of prenatal diagnosis among the pregnant women utilizing our facility and determine the predictors of acceptance of prenatal diagnosis procedures.

## Methods

This was a prospective cross sectional study of pregnant women who received ante natal care at the University College Hospital, (UCH).Ibadan, five hundred pregnant women who consented to participate in the study were randomly selected, and ethical approval was granted by the hospital ethical committee.

A self-administered structured questionnaire was the tool used for the study; the contained sections were bio social variables, history of previous pregnancies, deliveries and recurrent spontaneous abortions, the followings were the knowledge assessment questions: sickle cell disease diagnosis before birth, causative organism, infectivity, transmission, and manifestation of disease, curability, benefit of early diagnosis, morbidity and mortality of pregnant sickle cell patient.

The followings were aimed at eliciting attitudes of the study group: the use of malaria prophylaxis, exercise and volume of water intake per day, willingness to diagnosis of sickle cell disease in pregnancy.

Data collected was coded and primarily entered into the computer on Microsoft Excel 2010 sheet and there after exported to the Statistical package for the Social Sciences (SPSS version 15, Inc. Chicago, IL, USA) for exploratory and statistical analysis. Frequency tables and graphs were generated for relevant variables. Descriptive statistics such as means and standard deviations were used to summarize quantitative variables while categorical variables were summarized with

proportions. Knowledge score was generated from an aggregate of 10 items on knowledge questions and thereby having a maximum score of “10” and a minimum score of “0”.

A similar procedure was employed to generate scores on the attitude platform, scores were awarded in order of importance and it was aggregated to give a maximum and minimum of “60” and “0” respectively. The chi square test was used to investigate associations between any two categorical variables. Moreover, a binary logistic regression was used to model statistically significant variables that are likely to predict acceptance of prenatal diagnosis. All tests were declared significant at the 5% level of significance. Regression analysis was done to establish the variables with stronger correlation with knowledge scores and those with attitude’s scores.

**Table 1:** Distribution of the respondents’ socio-demographic characteristics

Age group(years)	Frequency (n=500) %
Below 25	50 (10.0)
25 – 29	167 (33.4)
30 – 34	161 (32.2)
35 – 49	102 (20.4)
50 above	20 (4.0)
<b>Occupation</b>	
Student	32 (6.4)
Unemployed	41 (8.2)
Unskilled	25 (5.0)
Civil Servant	85 (17.0)
Self employed	281 (56.2)
Professionals	36 (7.2)
<b>Education Status</b>	
None	14 (2.8)
Primary school	89 (17.8)
Secondary school	224 (44.8)
Tertiary	173 (34.6)
<b>Marital Status</b>	
Single	25 (5.0)
Married	464 (92.8)
Separated	11 (2.2)
<b>Income per month</b>	
Less than US \$67.0	281 (56.2)
US \$ 68.0—140.0	97 (19.4)
US \$ 141—200.0	30 (6.0)
US \$ 201 -- 333.00	22 (4.4)
Greater than 333.00	18 (3.6)
Not indicated	52 (10.4)
<b>Religion</b>	
Christianity	213 (42.6)
Islam	287 (57.4)
<b>Family type &amp; size</b>	

Monogamy	365 (73.0)
Polygamy	135 (27.0)

## Result

Five hundred questionnaires were administered and statistically analyzed the study group consist of women mostly between the age bracket 25 and 34years (65.8%), self-employed (56.2%), Muslim (57.4%), in monogamous family setting (73%), mostly secondary school leavers (44.8%) on income of less than ₦10,000.00.(US\$ 67.00) a month (56.2%) as shown in Table 1.

There was little or no difference in the knowledge base of the participants who agreed to prenatal diagnosis and those of them who declined, the mean scores were (5.72± 1.72) and (6.02± 1.79) which is statistically insignificant, while on the attitude scores, those with favourable attitude were in the majority, the mean score was (60.28 ± 11.72) while the mean for those who were not favourably disposed was (51.49 ± 11.85) this observation was statistically significant.

Socio demographic characteristics and willingness to accept prenatal diagnosis were subjected to bivariate analysis: age, educational attainment and religion were statistically associated, further analysis with the multivariate logistic regression nullified the observed association.

Marital status was the only determinant of import observed when the knowledge of the participants was analyzed.

Age range 30 to 34 years, unskilled, self-employed and tertiary education were the demographic predictors of attitude towards acceptance of pre natal diagnosis, see Table 2.

The knowledge’s mean score was influenced by marital status (p 0.028) the overall acceptance of prenatal diagnosis procedure by the study group was high (68%). There was a direct correlation between acceptances of the procedure and the educational attainment of the participants, 41.5% of all the participant who agreed to have prenatal diagnosis had tertiary education, 31.5% were secondary school leavers, 19% were primary school leavers while 19% of them had no formal education. Age and religion were other strong determinants shown in this study, the age group 30 to 34 years (40%) were in the majority,

participants of Christian faith (75%), were more likely to accept prenatal diagnosis. The overall

knowledge evaluation of the participants was 55% and the attitudinal estimate was 50%.

**Table 2:** Linear Regression of Demographic Predictors of Attitude

	Coefficient	Std error	t-value	P-value
(Constant)	34.455	5.610	6.142	0.000
Age less than 25*	1.000			
Age25_29	3.473	2.290	1.516	0.130
Age30_34	6.359	2.310	2.753	0.006
Age35_49	6.313	2.468	2.558	0.011
Age50	1.645	3.828	0.430	0.668
Student*	1.000			
Unemployed	4.940	3.283	1.505	0.133
Unskilled	11.387	3.740	3.045	0.002
Civil Servant	3.975	3.007	1.322	0.187
Self-employed	7.564	2.624	2.883	0.004
Professionals	4.228	3.482	1.214	0.225
None*	1.000			
Primary	4.710	4.043	1.165	0.245
Secondary	6.611	3.900	1.695	0.091
Tertiary	10.284	4.039	2.546	0.011
Single*	1.000			
Married	-1.109	2.921	-0.380	0.704
Separated	-8.588	5.357	-1.603	0.110
Islam*	1.000			
Christian	1.626	1.386	1.173	0.242
Monogamy*	1.000			
Polygamy	0.609	1.475	0.413	0.680
Inc less than 10000*	1.000			
Inc10_20	0.298	1.632	0.182	0.855
Inc21_30	4.290	2.912	1.474	0.141
Inc31_50	2.728	3.160	0.863	0.388
Inc50	2.767	3.533	0.783	0.434

## Discussion

Prenatal diagnosis procedures are not popular in Nigeria; available data were mostly from advanced nations of the world.

The modal age group of participants in the study was 25 to 34 years; this is similar to the modal age group of 28 to 29 years observed elsewhere<sup>7</sup>.

In 2009, the mean age of women at the birth of their first child varied significantly across the Organization for Economic Co-operation and Development countries: 21.3 years of age in Mexico to 30.5 years in New Zealand<sup>8</sup>, the figure for Nigeria is not available, the country's figure is likely to be within the above range, because, the modal age of acceptance of pre natal diagnosis in this study is within range of what is in vogue in some of the developed countries.

The overall acceptance of prenatal diagnosis at our Centre was 68%, the same percentage was posted by researchers on the same topic elsewhere<sup>7</sup> this is however, lower than 78% in France<sup>8</sup>, a lot lower than 95% acceptance among the Israel Arab women<sup>9</sup>.

Age, educational attainment and religion were weakly associated with acceptance of pre natal diagnosis in this study, there was a direct correlation between education and acceptance; this is in tandem with a Finnish study<sup>10</sup>, another one in America<sup>11</sup> and Greece<sup>12</sup>.

The knowledge of the disease in question is expected to be a determinant of the willingness to have screening done for the disease entity; sickle cell disease which is a common hereditary condition in this environment was used to assess the knowledge of the participants in this study. This study showed that knowledge score was a

weak determinant of willingness to accept prenatal diagnosis, as shown in (table 2). This observation is at variance with the result of a similar study in UK where Down syndrome was used as the disease in question<sup>11</sup> however; it was in tandem with the Greece's study<sup>12</sup>, acceptance of the test was more attitudinal than the level of awareness/knowledge, because, a good proportion of women who were knowledgeable<sup>12-13</sup> were not willing to accept the prenatal diagnosis. This was observed in a similar study elsewhere, the implication is that knowledge is not the sole determinant; we have to find out what factors determine the attitudes displayed by the participants.

Marital status was found to be a determinant of awareness of pre natal diagnosis in this study, this is not in conformity with other studies, it is mainly because majority of the participants were married.

Participants within the age group 30 – 34 years and tertiary education are variables which positively affected the attitude towards prenatal diagnosis, this is not unexpected because the women with tertiary education, who are of older reproductive age are more likely to have had experience which informed their favourable predisposition, we cannot possibly explain why been self-employed and being unskilled could positively influence acceptance.

## Conclusion

The determinants of acceptability of the procedure are age, educational attainment and marital status. The attitude and knowledge estimation was of average value.

## Recommendations

We are of the opinion that the pregnant women should be educated on the importance of prenatal diagnosis to increase acceptance level.

## Contribution of Authors

AOA, OOO and AOF were involved in conceiving and retirement of the idea. AOA and OOO refined the data collection tool. AOA collected the data. OOO planed the analysis and refined the analysis results. All authors proof read the manuscript AOF

searched data base for references cited in the manuscript.

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