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Influence of Socio-Demographic Characteristics on the Utilisation of a Chorionic Villus Sampling Service in Nigeria

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Abstract

Background: Chorionic Villus Sampling was introduced in Nigeria because of the large population affected by the sickle cell gene. Previous studies examined some selected sociodemographic characteristics of the clients. There is the need to determine their impact on the utilization of the service.
Objective: To describe the sociodemographic characteristics of chorionic villus sampling clients and their influence on the utilization of the service. The genotypes of the fetuses are also determined.
Patients and Method: Two hundred and twenty two clients had chorionic villus sampling from 1st January 2001 to 31st December 2003. One hundred and seventy seven had complete data that was analysis retrospectively. Genotype results were obtained in 157 clients. Epi- info statistical package was used for data analysis.
Results: The mean age of the clients was 31.3 $\pm$ 4.8 years and the mean parity was 3.8 $\pm$ 1.7. Halve of them had no previously affected child. The dominant religion was Christianity (83.6%) and most of them (74.8%) had completed secondary education. The bulk (98.9%) of the clients were in the high socioeconomic group. The Yoruba tribe constituted the bulk (62.7%) of the clients. Most (68.4%) received information through health workers or clinics. The commonest genotype is AS (47.1%).
Conclusion: There is a class bias in the utilization of the service. A re-evaluation of information dissemination strategy especially through the mass media is needed to reach out to the majority of clients who need the service.

Key Words: Sociodemographic, Chorionic villus sampling (CVS), Prenatal diagnosis (PND), Genotype, Nigeria.

Introduction

Nigeria is the most populous country in Africa, with an estimated population of about 120 million people. It also has a fertility rate of 5.5 and a crude birth rate of 39 per 1000[1, 2]. It is estimated that about 25 -30 percent of the population carry the sicke cell gene and about 100,000 children are born annually with a serious sickle cell disorder[3, 4, 5]. The concern about the high prevalence of this condition necessitated the setting up of a prenatal diagnosis unit in Nigeria in 1987[6].

There are evidences to suggest that the success of innovation such as prenatal diagnosis depends on the inherent socio demographic characteristics of the population. Previous epidemiologic surveys suggest that majority of Nigerians live below the poverty line, have high level of illiteracy and live more in the rural areas[2, 5]. The combined effect of these, coupled with the absence of a good and effective communication network may lead to the disenfranchisement of a segment of the population from enjoying the service. Since the availability of prenatal diagnosis service for the detection of sickle cell disorder in Nigeria, the overall attendance has remained fairly constant. This is despite the desire and effort of the team to make the service much more widely and readily available to the vast majority of the population.

This study draws inspiration from an earlier study, part of which reviewed the influence of some socio demographic characteristics on effective PND coverage [4]. This study therefore aims at examining the various socio demographic characteristics of CVS clients in Nigeria and their influence on the utilization of the service. Inferences drawn from the study shall form the pivot of suggestions for an enhanced utilization in the future. The genotypes of the fetuses are also discussed.

Patients and Method

The patients were the women that were counseled and had CVS done for the prenatal diagnosis of SCD between 1st January 2001 and 31st December 2003 at the PND Unit of the sickle cell organization of Nigeria. Specially designed clinic data cards were used for the clients. Extracted information included age, parity, number of previously affected children, religion, tribe and source of information or referral. The economic status was determined through the husbands' occupation, since scientific stratification does not readily apply in Nigeria. The three major tribes recognized in Nigeria (Hausa, Igbo, and Yoruba) were used for the classification of tribes. Although religion

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was strictly Christianity, Islam and traditional/atheist, the denominations or sects within the broad religions were further determined and analyzed. The genotype of the fetuses was determined.

The statistical package of Epi-Info was used for data entry and analysis. Proportions and percentages were used to summarize categorical variables while means and standard deviations were estimated for numerical variables

Results

Data was available on one hundred and seventy seven clients representing 79.7 percent of the total CVS done during the period.

The characteristics of the clients are shown in Table 1. The mean age of clients in this study was 31.3 $\pm$ 4.05 years with a range of 23 - 41 years. The bulk of the clients were however between 25 and 34 years (70.0%). The mean parity was 3.8 $\pm$ 1.7 with a range of 0 - 11. Halve of the clients had no previously affected child while no client had more than 3 previously affected children as at the time of sampling (Fig 1). It is noteworthy that one client had given birth to 11 children, of which only 2 were affected.

The religious, educational and occupational characteristics are also depicted in Table 1. The overwhelming majority (83.6%) were Christians with Protestants denomination accounting for 43.5 percent. Moslems accounted for 10.2% of the study population while others (traditional religion and atheists) accounted for 6.2%. Almost all (99.4%) the clients had at least secondary level of education. The client that had only primary level education has other characteristics that are similar to the average client. More Christians than Muslims acquired at least secondary education, while more Muslims than Christians had only primary education. With respect to the husbands' occupation, professionals and top income earners constituted the majority (48.0%), while 22.6 percent and 28.3 percent were businessmen and civil servants respectively.

The Yoruba tribe mostly utilized the service consistently. The Hausa Fulani tribe had the least utilization record consistently for the study period. Most of the clients (68.4%) obtained information about the service from health workers and clinics. The others however got informed through the mass media (newspaper & television) (14.7%) as well as through friends and relatives (16.9%).

The results of the DNA analyses indicate a fetal Hemoglobin genotype AA in 30 (19.1%) cases, AS in 74 (47.1%) cases, SS in 53 (33.7%) cases.

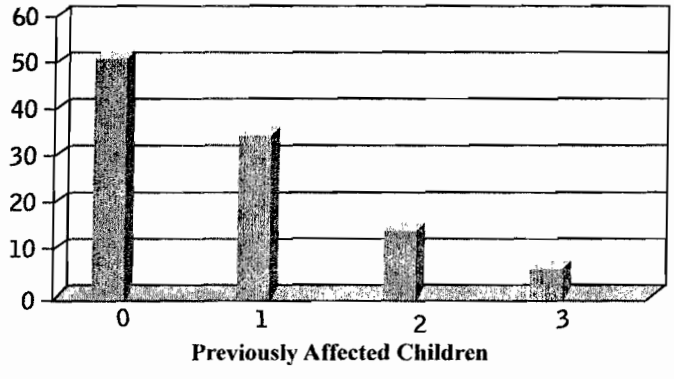
Table 1:
Maternal Characteristics

Characteristics	Number (n=177)	Percentage (%)
Age (Years)		
< 24	15	8.5
25 - 34	124	70.0
> 35	38	21.8
Parity		
0	-	-
1 - 2	46	25.9
3 - 4	75	42.5
> 5	56	31.6
Religion		
Christianity	148	83.6
•Catholic	47	26.6
•Anglican	24	13.5
•Pentecostal	77	43.5
Islam	18	10.2
Others	11	6.2
Education		
Primary	1	0.6
Secondary	45	25.4
Tertiary	131	74.0
Occupation		
Professional/ Top income earners	85	48.0
Business	40	22.6
Civil servants/ Middle income earners	50	28.3
Others(e.g. unskilled workers)	2	1.1

Discussion

Our study showed that the utilization of chorionic villus sampling (CVS) service in Nigeria is restricted to a particular class of clients. It is generally known that the utilization of any given service is often times a reflection of the socio demographic characteristics of the population in the community. Nigeria is a heterogeneous population with over 70% of the population living in the rural areas[5]. Poor communication and inadequacy of orthodox health care

Figure 1:
Distribution of Previously Affected Children



facilities and poverty in the rural areas makes the utilization of this type of service to remain poor. This can therefore explain the restricted utilization to mainly the urban dwellers, in the high socioeconomic group. Prenatal diagnosis was however introduced for the benefit of the population that lives in both the rural and urban areas.

This was a retrospective study that was conducted on 79.7% of the total women sampled, leaving out 21.1% who for various reasons did not complete the clinical data cards satisfactorily. This is not unexpected, as counseling for the procedure is non directive, thus allowing a woman to opt out of any aspect of the procedure at any time. Also the location of the study centre could create a bias in the population studied as well as the small sample size, which appear small to be fully representative of the entire population. Nevertheless, the majority of the women reside in Lagos, which is often said to be fairly representative of the entire nation. Our findings from the study could therefore reflect those of other Nigerian women who should utilize the service.

A previous study reported a similar mean age for the women who had CVS[7].The parity in this study ranged from zero to eleven with the 42.5% of the clients being of para 3 and 4. About a third of the clients were para 5 and above. Various reasons could explain this observation, which include the high fertility rate in Nigeria, being 5.5 children per woman and the low mean age of marriage, being 16.9 years [2]. Another explanation is the fact that mortality associated with sickle cell disease babies is usually high, making it necessary for the mother to achieve pregnancy soon after she discovers that a baby is a affected by the sickle gene or following the death of one[5]. In this study, 96.6% have at least 2 previously affected children.

In the traditional and religious environment of Africa communities, PND present most clients with ethical dilemas[5]. Virtually all religions condemn any attempt to determine the medical status of the unborn child and more so at any attempt to seek an abortion [8]. This is unlike what obtains in some parts of the world where there is religious backing for the termination of pregnancy before three months of gestation [9]. There is a predominance of Christians over Muslims among the women, which tend to suggest a positive influencing role of Christianity. However, cognizance must be taken of other factors such as location of service centre and epidemiological factors that may be at play in influencing the attitude of the population to the service.

The level of education is known to have a positive influence on the knowledge and attitude to an innovation [10]. Generally, Christians tend to acquire higher levels of formal education than their Moslems counterparts in most parts of Nigeria. It is therefore reasonable to expect a positive impact of this on the pattern of attendance and utilization of the procedure. This study corroborates the above assertion and is also consistent with the observation of a previous study[4]. Another possible explanation is that of tribal influence. The major tribe that consistently utilized the services is the Yoruba followed by the Igbo. These tribes are known to have a higher percentage of Christians than the Muslims, unlike the Hausa Fulani tribe where Muslims predominates.

Apart from educational influence, the pattern of utilization may also be a reflection of the convenience, cost of travel from other states to Lagos, as well as availability of information [4,10]. The Igbo tribe also utilize the service fairly well. When we analyze the influence of occupation on utilization, it became obvious that majority of the clients belong to the high-income group or top cadre workers and civil servants. CVS, like most other recent innovation in medicine attract a high cost and only those who can afford the service have access to it [5,8,11]. Better financial status has been adduced as one of the reasons why most of the clients are from Lagos [4].

In this study, the ratio of distribution of AA, AS and SS was roughly 1: 2: 1.2. This is in agreement with the statistical prediction for an autosomal recessive gene and also in line with the gene frequency finding in a previous study[7, 12]. This study showed that health workers and clinics still constitute an important route for the dissemination of information on CVS in Nigeria. This is contrary to another study, which reported that the mass media is the most popular source of health information[13]. Our observation is however explainable. In Nigeria, the first time most people get information about sickle cell disorder is usually when an affected child manifests the symptoms of the disease or its complications or a laboratory diagnosis is made. This is because most doctors, specialists and health workers live and work in urban areas, where such children are referred to in conditions of emergencies. On such occasions, part of the counseling may be on PND. Next to that is the information obtained from friends and relations who usually have experienced the trauma of a SCD or have done CVS. Unlike in other disease conditions especially HIV/AIDS, which goes with a lot of media supports, the media support for SCD and CVS is very negligible. The media as a source of information in this study is low.

Conclusion

In conclusion, this study has reported on the socio demographic characteristics of PND clients in Nigeria and also shown that a particular class of Nigerians is enjoying the service. Women in this class are mostly Christians, from the Yoruba or Igbo tribe with at least

secondary level of education. Usually they would have an affected child and obtained the information in the course of caring for the child during medical crises.

The above information should help clinicians and policy makers to decide on the best ways of reaching out to the population at risk. Some of the recommended steps include the following:

1) Introduction of a systematic, community oriented and sustained media publicity about the service, its benefits and availability in Nigeria.
2) Training of more experts to cover PND centers which should be established across the various regions in Nigeria.
3) Encouragement of private sector participation in the funding of PND programme
4) Incorporation of premarital education and counseling into the religious activities to sensitize and enlighten couples about the possibility of congenital defects.
5) Making the service more affordable through government subsidy and the national health insurance scheme.

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