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KNOWLEDGE AND ATTITUDE OF HEALTHCARE PROVIDERS TOWARDS PRENATAL DIAGNOSIS OF SICKLE CELL ANAEMIA IN UNIVERSITY COLLEGE HOSPITAL, IBADAN, NIGERIA

Oladipo I.O.* and Bello O.O.**

** Department of Human Kinetics and Health Education, University of Ibadan.*

**Paediatrics Department, University College Hospital, Ibadan Nigeria.*

Abstract

The purpose of this study was to examine the knowledge and attitude of health professionals towards prenatal diagnosis of sickle cell anaemia in UCH Ibadan, Nigeria. The study also aimed at knowing the impact of culture and religion on the attitude of healthcare professionals towards prenatal diagnosis. The descriptive survey design was adopted for the study; 618 respondents purposively sampled among nurses, doctors and laboratory scientists were used. The results revealed that healthcare providers have good knowledge of prenatal diagnosis and availability of prenatal diagnostic facilities in the country; and that religion and culture should be considered if prenatal diagnosis will be used as a means of controlling sickle cell anaemia. It concluded that genetic counselling with prenatal diagnosis could be a reliable way of curbing the menace of sickle cell anaemia.

Keywords: Healthcare professional, sickle cell anaemia, prenatal diagnosis

Introduction

The birth of children has been found to be the most sustaining factor in the institution of marriage. Many couples view birth and raising of children as the ultimate goal of family life, that is, the climax of a successful marriage. However, this happiness may be short-lived by a recurring indisposition or death of the much cherished offspring, particularly between infancy and adulthood. Sickle cell anaemia is a severe haemolytic anaemia that results from inheritance of the sickle haemoglobin gene. This gene causes the haemoglobin molecule to be defective. The sickle haemoglobin (HbS) acquires a crystal-like formation when exposed to low oxygen tension. The oxygen level in various bloods can be low enough to cause this change; consequently, the erythrocyte containing HbS losses its round, pliable, biconcave disk shape and becomes deformed, rigid and sickle-shaped. These long rigid erythrocytes can adhere to the endothelium of small vessels; and when they adhere to each other, blood flow to a region or an organ may be reduced (Elston, 2000).

Sickle cell is a condition that affects the normal oxygen-carrying capacity of red blood cells. When the cells are deoxygenated and under stress in sickle cell conditions, they can change from round flexible disc-like cells to elongated sickle

or crescent moon shape. The effect of these changes is that the cells do not pass freely through small capillaries and form clusters, which block the blood vessels. This blockage prevents oxygenation of the tissues in the affected areas resulting in tissue hypoxia and consequent pain (known as sickle cell crisis pain). Other symptoms of sickle cell disorders, as reported by Streetly (2004), are: severe anaemia, susceptibility to infections and damage to major organs.

Sickle cell disease (SCD) is a major health problem in many countries with a wide spectrum of clinical severity. The SCD can cause numerous disorders that vary with respect to degree of anaemia, frequency of crises, extent of organ injury, and duration of survival. This disease affects over two million people in Nigeria with a generally severe clinical course (Ayatollahi and Haghshenas, 2004). Arkutu (1995) traced the abnormality leading to sickle cell disease to originate in the gene a person inherited from his parent. If both parents suffer from the disease, i.e., each has a pair of the sickle cell gene, all their children will have the disease. If both are carriers (i.e. each has one sickle cell gene), each child has a 25% chance of being completely normal, and a 50% chance of having the severe form of the disease. If one parent is normal and the other a carrier, each child has a 50% chance of being born completely normal and a 50% chance of being a carrier.

Kark (2002) affirmed that the disease usually occurs in periodic painful attacks, eventually leading to damage of some internal organs, stroke and usually resulting in early death. Frequencies of the carrier state determine the prevalence of sickle cell anaemia at birth. For example, in Nigeria, by far the most populous country in the subregion, 24% of the population are carriers of the mutant gene and the prevalence of sickle cell anaemia is about 20 per 1000 births. This means that in Nigeria alone, about 150,000 children are born annually with sickle cell anaemia (World Health Organization, 2006).

Sickle cell anaemia can be prevented. Couples at risk of having affected children can be identified by inexpensive and reliable blood tests. Chorionic villus sampling from nine weeks of pregnancy can be performed for prenatal diagnosis. Adoption of such measures goes hand-in-hand with health education. However, prenatal diagnosis can raise ethical questions which differ from one culture to another. Experience has shown that genetic counselling coupled with the offer of prenatal diagnosis can lead to a large-scale reduction in births of affected children. The risk of having affected children can be detected before marriage or pregnancy; however, to do so requires a carrier screening programme (WHO, 2006).

Haemoglobinopathies constitute the most frequent monogenic disorders worldwide (Theodoridou et al., 2008). Drescher (1999) noted that sickle cell disease is probably the commonest inherited disorder in tropical Africa. Besides, about 25% of African stock carries the sickle cell gene, but only 2-3% suffers from sickle cell (Oyedeji, 1995). Sickle cell heterozygote survives and procreates without hindrance; but at least in Africa, the homozygote usually dies young before reaching the age of reproduction. However, with improving medical facilities, many more are surviving into adulthood and the fertile ones among them

who get pregnant constitute a high risk group during pregnancy and in the puerperium (Rapparport, Velaquiz and Williams, 2004). In Nigeria, the prevalence of haemoglobin sickle cell (which is probably the commonest sickle cell disease) is 1-3%, with an annual incidence of about 80,000. This poses a severe burden on the affected individual, family and nation at large (Adeyemi and Adekanle, 2007). The disorder is uniformly distributed among the various ethnic groups in Nigeria with the prevalence of the carrier state (HbA+S) as high as 26% of the total population. It is also pertinent to note that Nigeria has the highest prevalence of sickle cell anaemia in the world (Durosinmi et al. 1995).

In Ibadan, an average of 40 sufferers per month were admitted into University College Hospital for various associated illnesses, such as severe bone pain crisis, severe anaemia, malaria, cerebrovascular accident, acute chest syndrome, etc (Haematology Day Care Unit, 2008). This frequency of admission rate often leads to interruption of academic progress and absence at work; there is also stigmatization, often associated with frequent hospital admissions, and sometimes loss of job. Considering the economic, financial, emotional implication and associated mortality of sickle cell disease, there is a need for a more pragmatic and aggressive intervention to curb the menace of the disease, a task that can be achieved through prenatal diagnosis.

Wonkam, Njamnishi and Angwafo (2006), noted that there is poor knowledge of genetic tests among medical students and physicians. Thomas, Oni, Alli, Hilaire, Smith, Leavy, and Barnasse (2005) also documented that to ensure effectiveness of prenatal diagnosis as a means of controlling sickle cell anaemia, health workers must be knowledgeable and be familiar with the participatory processes involved. Supporting this, Petrou, Bruigatelli, Ward and Modell (1992) also affirmed that acceptability of prenatal diagnosis by the populace is largely dependent on the availability of correct and complete information given by health professionals such as medical personnel and nurses who are directly involved in prenatal diagnosis. Because prenatal diagnosis is an invasive procedure, it is important to assess the knowledge and attitude of health workers who are likely going to be involved in promoting and carrying out the programme. The hypotheses tested in the study are: Nigeria healthcare providers will not have significant knowledge of prenatal diagnosis and available facilities to diagnose sickle cell disease; and religion and culture will not significantly affect the attitude of Nigeria healthcare providers towards prenatal diagnosis of sickle cell disease.

Methodology

The descriptive survey research design was used for the study. Purposive sampling technique was used to select three groups of healthcare providers who have direct care delivery with patients: nurses, doctors and laboratory scientists. Sixty percent (60%) of the population in each group were selected. The total number of respondents was 618. A self-developed structured questionnaire was used for data collection.

Table I: Breakdown of the Respondents per Profession

Profession/ Department	*Total Population*	*60% of Total Population*
Nurses		
Medical Unit	96	58
Surgical Unit/Theatre	102	61
Psychiatry	106	63
Obstetrics and Gynaecology	42	26
Ear, Nose and Throat	24	14
Out-Patient Unit	58	34
Accident and Emergency Unit	45	28
Paediatrics	118	70
Neurosurgery Unit	29	18
Total	**620**	**372**
Doctors		
Surgical Unit	100	60
Medical Unit	60	36
Psychiatry Unit	26	16
Obstetrics and Gynaecology	84	50
Ear, Nose and Throat	37	22
Family Medicine	47	28
Laboratory Medicine	40	24
Paediatrics	53	32
Anaesthesia	33	20
Total	**480**	**288**
Laboratory scientists		
Haematology	20	12
Chemical Pathology Unit	18	11
Histopathology Unit	10	6
Microbiology Unit	7	4
Total	**55**	**33**

Results and Discussion

A total of 693 questionnaire forms were distributed while 618 were adequately completed and returned. The population was made up of doctors, nurses and laboratory scientists working at the University College Hospital, Ibadan, Nigeria. Two hypotheses were formulated and the data collected was subjected to statistical analyses.

Table 2: Demographic data of the respondents (n=618)

Sex	**Frequency**	**Percentage (%)**
Male	198	32.04
Female	420	67.96
Age		
20-30	200	32.4
31-40	220	35.6
41-50	150	24.3

51-60	48	7.7
Religion		
Christianity	366	59.2
Islam	252	40.8
Others	Nil	0.0
Profession		
Doctors	270	43.7
Nurses	320	51.8
Laboratory Scientists	28	4.5
Marital Status		
Single	210	34.0
Married	398	64.4
Divorced	10	1.6

Table 3: Haemoglobin Genotype of the Respondents

Haemoglobin Genotype	*Frequency*	*Percentage (%)*
AA	257	41.6
AS	320	51.8
AC	5	4.9
SS	5	0.8
SC	3	0.5
Not known	3	0.5

The results that are striking from table 2 include the large number of the respondents that were females. The reason for this may be because nursing is a female dominated profession. Likewise, the religion of the respondents cut across only Christianity and Islam. The results on haemoglobin genotype of the respondents revealed that 0.5% do not know their genotype. This implies that some of these professionals may fall victim to marrying others who carry the sickly trait if they themselves are carriers, thus increasing the number of sufferers.

Ho1: Nigeria healthcare providers will not have sufficient knowledge of prenatal diagnosis and availability of facilities to diagnose sickle cell disease

From table 4a, the calculated X^2 value of 78.012 is greater than the critical value of 5.99. Likewise, the calculated P value of 0.00 is less than 0.05 level of significant. It thus implies that Nigeria health care providers have significant knowledge of prenatal diagnosis of sickle cell anaemia. Likewise, table 4b shows that the health care providers have significant knowledge of availability of facilities to diagnose sickle cell anaemia prenatally. However, it is important to note that a greater percentage of the nurses (212) do not know whether these facilities exist in the country or not Kagu, Abjah and Ahmed (2004) also reported that health professionals and medical students in the Northern Nigeria are not well informed about where the facilities to diagnose sickle cell anaemia prenatally are obtainable in Nigeria.

Table 4a: Chi-square analysis on healthcare professionals and knowledge of prenatal diagnosis

Item	*Profession*	*Yes*	*No*	*DF*	X^2	*P*	*Remarks*
Prenatal diagnosis is a test usually offered between 8-12 weeks of pregnancy to detect foetal abnormality	Doctors	236	34				significant
Sickle cell anaemia can be inherited if both parents are carriers of sickle cell trait Cerebrovascular accident, premature death, multiple organ failure are some of the complications of sickle cell anaemia	Nurses	275	45	2	78.012	0.00	
Sickle cell anaemia can be prevented through prenatal diagnosis of sickle cell anaemia and preventive termination of pregnancy	Lab Scientists	18	10				

Critical Value= 5.99

Table 4b: Analysis on healthcare professionals and knowledge of diagnostic facilities

Item	*Profession*	*Yes*	*No*	*DF*	X^2	*P*	*Remarks*
Prenatal diagnostic facilities for sickle cell anaemia are available in Nigeria	Doctors	199	71				
Prenatal diagnostic facility is accessible to an average Nigerian	Nurses	108	212	2	18.348	0.00	significant
	Lab scientists	11	17				

Critical value= 5.99

Ho2: Religion and culture will not significantly affect the attitude of healthcare providers towards prenatal diagnosis of sickle cell disease

Table 5a: Analysis on religion and attitude of healthcare professionals to prenatal diagnosis

Item	*Religion*	*Yes*	*No*	*Df*	X^2	*P*	*Remarks*
My religion is in support of prenatal diagnosis of sickle cell anaemia	Christianity	210	135				
My religion is in support of preventive termination of pregnancy	Islam	74	199	1	14.147	0.00	significant

Critical value= 3.84

Table 5a shows that religion significantly affects the UCH healthcare providers towards prenatal diagnosis of sickle cell disease. The results agreed with the facts that individuals with strong religious views are likely to decline prenatal diagnosis (Petrou, Brugiatelli, Wand and Modell, 1992). The result also indicated that 54% (334) of the respondents decline support for preventive termination of pregnancies purposely because of their religion. This is the same view of Jamaican mothers who declined preventive termination of affected pregnancy if PND confirms SCA majorly on religious grounds (Jones, Senicle, Croldstein and Serjeant, 1988). Likewise, the result in table 5b signified that 94.1% (385) of the respondents declined preventive termination of pregnancy purposely because of their cultural belief. It thus connotes that despite the stigmatization associated with too frequent illness and hospitalization, many respondents still decline termination of affected pregnancy.

Table 5b: Analysis on culture and attitude of healthcare professionals to prenatal diagnosis

Items For Culture	*Yes*	*No*	*Df*	X^2	*P*	*Remarks*
My culture is in support of prenatal diagnosis of sickle cell anaemia	-	209				
My culture is in support of preventive termination of pregnancy	24	385	1	12.76	0.00	significant

Critical value= 3.84

Conclusion and Recommendations

The results and findings of this study revealed that healthcare professionals in Nigeria have adequate knowledge of prenatal diagnosis of sickle cell anaemia. This implies that the professional training programme that was used to prepare those groups of health care providers took care of this component. It also revealed that more of the doctors than nurses are aware of the availability of the facility for prenatal diagnosis in the country. However, culture and religion significantly affect their attitude towards prenatal diagnosis of sickle cell anaemia. Upon all, genetic counselling and prenatal diagnosis still remain better ways of preventing the menace of sickle cell anaemia

Based on the findings, it is clear that there is a need to recognise diversity within different faith groups and to consider the beliefs and prophecies of individuals as it may constitute a great impediment to acceptance of prenatal diagnosis by most people. Religious leaders need to be educated on the need to educate the congregation better and dispel myths and misunderstandings about prenatal diagnosis of sickle cell anaemia and preventive termination of pregnancy. Finally, there is a need to convince the healthcare professionals on the need of prenatal diagnosis of sickle cell anaemia despite their religion or cultural inclination.

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