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Effects Of Family Support, Self-Esteem, Gender And Age On The Psychological Well-Being Among Sickle Cell Patients In Southwest Nigeria

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ABSTRACT: This study investigated the effects of family support, self-esteem, gender and age on the psychological well-being of sickle cell patients in selected hospitals and health care centres in southwest Nigeria and proffers some recommendations. Descriptive research design was adopted for the study with the target population comprising sickle cell disease patients currently receiving treatment in various hospitals and health care centres in southwest Nigeria. A random sampling technique was used to select 272 participants. The instrument used to collect data was a single self-constructed questionnaire. The data collected were analyzed using regression analysis at 0.05 alpha level of significance. Findings revealed that, the linear combination effect of family support and self-esteem on the psychological well-being of sickle cell disease patients in Ibadan metropolis was significant ($F(2,269) = 4.667$, $R = .183$, R2 .034, Adj. $R^2 = .026$; $P < .05$) Based on the findings, the study deduced that significant effect of family support, self-esteem, gender and age existed among the sickle cell disease persons in Ibadan metropolis, Oyo State and this affects their coping strategies. It is therefore recommended that family, friends and caregivers of persons plagued by sickle cell disease should support them financially and morally to help them meet their psychological and social needs.

KEY WORDS: *Sick-cell, Self-esteem, Patient, Family-support, Society.*

1. INTRODUCTION

Sickle cell disease represents a life-threatening situation for the patient and a severe trauma for the family. When an individual is diagnosed with sickle cell disease, the family system is faced with many new stressors and demands (e.g., repeated hospitalizations with extensive and often painful treatments for the patient, alterations in the family-patient relationship and sibling care, parental occupational and role changes, and concerns about the long-term effects on both the patient and family) (Wilhamson, 2000). Uppermost in the minds of parents (in the case of a child), spouse (in the case of a married patient) and other family members is the question of whether the affected individual will survive this serious illness.Sickle cell disease is indeed the second leading cause of mortality in children and adults (Ward, 2008). However, childhood sickle cell survival rates in particular now approach 70 to 80% for some types of leukemia, and rates above 90% for Hodgkins' disease, retinoblastoma, and germ cell tumours have been reported (Eiser, 2006).

Improved survival rates in sickle cell have been brought about by more potentially toxic and intensive treatment regimens, and the long-term physical, psychosocial, and familial effects on the patients and families is still being determined. Recent advances in paediatric sickle cell survival, for instance, have led to a need for a shift in the research away from an emphasis on coping with a disease that was invariably fatal to gaining a better understanding of how the child, parents, and family unit adapt and recover both during the active treatment phase and in long-term survival. Identifying the modifiable family psychosocial risk and resistance factors associated with treatment can help target those who are at particular risk and identify and implement sound pro-active intervention strategies (Sand, 2005).Sickle cell is a hereditary disease that destroys red blood cells by causing them to take on a rigid "sickle" shape (Bellow, 1999). According to the Encyclopedia Britannica (2009), the disease is characterized by many of the symptoms of chronic anemia (fatigue, pale skin, and shortness of breath) as well as susceptibility to infection, jaundice and other eye problems, delayed growth, and episodic crises of severe pain in the abdomen, bones, or muscles. It is also widely known that sickle cell anemia occurs mainly in persons of

African descent. The disease also occurs in persons of the Middle East, the Mediterranean, and India.Ewa and Ewa (1998) have observed that sickle cell anemia is caused by a variant type of hemoglobin, the protein in red blood cells that carries oxygen to the tissues of the body, called hemoglobin S (Hb S). Hb S is sensitive to deficiency of oxygen. When the carrier red blood cells release their oxygen to the tissues and the oxygen concentration within those cells is reduced, Hb S, in contrast to normal hemoglobin (Hb A), becomes stacked within the red cells in filaments that twist into helical rods. These rods then cluster into parallel bundles that distort and elongate the cells, causing them to become rigid and assume a sickle shape. This phenomenon is to some extent reversible after the cells become oxygenated once more, but repeated sickling ultimately results in irreversible distortion of the red cells. The sickle-shaped cells become clogged in small blood vessels, causing obstruction of the microcirculation, which in turn results in damage to and destruction of various tissues.
According to Brainhard (1999), sickle cell anemia is caused by the inheritance of a variant hemoglobin (Hb S) gene from both parents. (This inheritance of variant genes from both parents is known as the homozygous state.) A person who inherits the sickle cell gene from one parent and a normal hemoglobin gene (Hb A) from the other parent (an inheritance known as the heterozygous state) is a carrier of the sickle cell trait. Because the red blood cells of heterozygous persons contain both Hb A and Hb S, such cells require much greater deoxygenation to produce sickling than do those of persons with sickle cell anemia. The great majority of persons with the sickle cell trait thus have no symptoms of disease, although certain manifestations—mainly associated with vigorous exertion at high altitudes—have been seen. The overall mortality rate of persons with the sickle cell trait is no different from that of a normal comparable population.

An estimated 1 in 12 blacks worldwide are said to carry the sickle cell trait, while about 1 in 400 has sickle cell anemia (Fields, 2005). If both parents have the sickle cell trait, the chances are that 1 in 4 children born one of them will develop sickle cell anemia. However, through amniocentesis (analysis of amniotic fluid surrounding a fetus), a testing procedure done in the early stages of pregnancy, it is possible to detect sickle cell anemia in the fetus (Sand, 2005). The Hb S gene is distributed geographically in a broad equatorial belt in Africa and also is found, though less often, in other parts of the continent and in the Americas.
The persistence of Hb S has been explained by the fact that heterozygous persons are resistant to malaria. When the red cells of a person with the sickle cell trait are invaded by the malaria parasite, the red cells adhere to blood vessel walls, become deoxygenated, assume the sickle shape, and then are destroyed, the parasite being destroyed with them.There is no cure for sickle cell anemia; most care is devoted to alleviating symptoms. Infants and young children with the disease are given regular daily doses of penicillin to prevent serious infection. In some cases blood transfusions are given regularly to prevent organ damage and stroke and to relieve the worst symptoms of red blood cell loss. In severe cases bone marrow transplantation has been of some benefit. The drug hydroxyurea reduces the principal symptoms of sickle cell anemia. Hydroxyurea apparently activates a gene that triggers the body's production of fetal hemoglobin.

This type of hemoglobin, which is ordinarily produced in large amounts only by infants shortly before and after birth, does not sickle. Hydroxyurea therapy increases the proportion of fetal hemoglobin in the bloodstream of adult patients from 1 to about 20 percent, a proportion high enough to lessen markedly the circulatory problems that arise during crises.The complications of sickle cell anaemia result in several occupational health issues. Sickle cell crisis can be precipitated by dehydration, exposure to cold, infection and environments with low oxygen tension, e.g. work at high altitudes. As a result, occupations such as commercial divers and aircrew are considered unsuitable for individuals with the SS trait. Individuals with AS are also frequently restricted from military aircrew roles, although the evidence showing problems associated with AS is lacking in practice. Serious forms of thrombotic crisis—'lung' and 'brain' syndromes, are characterized by acute dyspnoea, pleuritic pain and episodes resembling transient ischaemic attacks (Nalbandian, 1998). These could result in significant incapacitation during work activities. While some individuals with sickle cell anaemia manage well with relatively low haemoglobin, it would be reasonable to avoid occupations, where potential exposure to substances such as lead and amino and nitro compounds could exacerbate the chronic haemolysis; however, the risks may have been exaggerated (Stockinger, 2001).

While many individuals with SS can go through life with few complications, there is a subset who undergo repeated crisis, neurological complications and incapacitating bone disease. With the success of several treatment initiatives such as hypertransfusion, bone marrow transplantation, hydroxyurea treatment raising haemoglobin F which protects against sickling, prophylactic antibiotics and pneumoccal vaccine, the course and prognosis of sickle cell disease has improved. From an employment perspective, absence from work either for treatment or complications is an issue.

The nature of the work, the risks involved, the potential to make reasonable adjustments in order to avoid discriminatory issues5 and the likelihood of complications need to be assessed before any decision is made regarding suitability for employment. Past history from the GP or Specialist such as frequency of crisis (severe > 3/year), genotype (SC better prognosis than SS), should form part of the risk assessment.
The presentation of complications of SS can give rise to diagnostic challenges to an occupational health department. The painful crisis gives rise initially to vague pain but can progress to severe pains with a bizarre distribution. A thrombotic crisis can manifest in one or several systems and sequestration can lead to serious and multiple infections. Frequent episodes of in-patient treatment or therapy can result in psychological problems resulting in prejudice and a lack of tolerance in work colleagues and from management. Chronic complaints are usually a result of repeated episodes of vascular occlusions. Vision may become impaired with a proliferative retinopathy and chronic pulmonary fibrosis is increasingly being recognized as a cause of respiratory complications. In terms of prevention, avoidance of cold temperatures, excessive exertion and dehydration whilst at work is simple but practical advice. While many SS individuals are employed in a wide variety of jobs, unemployment is high (> 70%) in such groups, in part reflecting the course and complications of the condition.

STATEMENT OF THE PROBLEM

It is against this background that this study intends to examine effects of family support, self esteem, gender and age on the psychological well-being of sickle cell patients in southwest Nigeria and proffer some recommendations. The general objective of this study is to examine effects of family support, self esteem, gender and age on the psychological well-being of sickle cell patients in selected hospitals in Ibadan metropolis, Nigeria. The specific objectives include:

- To examine the effects of family support on the psychosocial well-being of sickle cell patients.
- To examine the effects of self esteem on the psychosocial well-being of sickle cell patients.
- To examine the effects of gender on psychosocial well-being of sickle cell patients.
- To examine the effects of age on psychosocial well-being of sickle cell patients.
- To suggest ways through which the psychological well-being of sickle cell patients can be improved using social work intervention.

From these research objectives, four hypotheses were developed and tested at 0.05 level of significance.

II. METHODOLOGY

The study adopted a simple descriptive survey design, with the population comprising sickle cell patients randomly selected from institutions and hospitals caring for the sickle cell patients in all the states of southwest Nigeria. A total of 300 of such patients were identified and co-opted into the study after due consultations with them and their carers. Participation was voluntary and participants were assured of confidentiality in the use of data obtained from them. Each respondent was allowed to fill the questionnaire at his or her convenience but the researcher guided respondents as necessary. Primary data for the study was elicited from respondents through the use of a self-constructed questionnaire that was adapted from various sources. The questionnaire was divided into two sections, A and B. Section A contained respondents' demographic. Section B contained 30 4-point rating items with response categories ranging from strongly disagree (SD) to strongly agree (SA). The questionnaire were adapted from three different standardized scales: these are Family Support and Psychological Well-Being Scale, Self- Esteem and Psychological Well-Being Scale, and Sickle Cell and Psychological Well-Being Scale. The Self-efficacy scale was adapted from Schwerzer et al. (1999). This instrument has high content reliability. The Cronbach's Alpha of the scale was found to be between .76, and .82, with test-retest reliability resulting in .67, and .76 respectively. The Family Support Scale was developed from Amy C. Watson & Patrick W. Corrigan (2003) Stop Family Support Work Sheet which has Cronbach's Alpha of between .79, and .85, with test-retest reliability resulting in .68, and .79 respectively. The reliability of instrument was achieved through test-retest and yielded reliability co-efficient of .78 and .67 after the test-retest. A total of 300 questionnaires were distributed but only 280 were retrieved out of which 272 were found useful. The analysis of the socio-demographic variables were carried out using descriptive statistics of frequency distribution and percentages and presented in the form of tables and charts, and the hypotheses were tested using chi-square and regression statistical methods.

III ESULT AND DISCUSSION

The demographic characteristics of the respondents considered relevant to the study were gender, educational qualification, religion, and marital status.

Gender of Respondents

Sex	Frequency	Percentage
Male	125	46.0
Female	147	54.0
Total	272	100.0

Source: Fieldwork, 2012

Gender is considered as important variable, especially as it relates to how sickle cell disease patients are affected by social support and how it shapes their psychological disposition towards the disease. Table 1 showed that the female respondents constituted the higher number. Female respondents comprised 147 or 54.0%, though slightly higher than their male counterparts, who were 125 or 46.0%. The prevalence of sickle cell disease among the female population is understandable. According to Brown (2005), women have lower resistance to sickle cell disease because of their sexuality and physiological make-up. This is why women with sickle cell disease are often advised to steer clear of physically demanding work and life-style that could predispose them to illness because of their weaker resistance and coping ability.

Age of Respondents

Age	Frequency	Percentage
14 –19	86	31.6
20-25	85	31.3
26-31	69	25.4
32-36	19	7.0
37+	13	4.8
Total	272	100.0

Source: Fieldwork, 2012

Age is a very important consideration in a discussion where sickle cell disease is concerned. As a debilitating disease, it affects people psychologically and if it affects a young person, the impact on their psyche would be very devastating. Table 2 showed that majority of the sickle cell disease patients were less than 20 years of age (31.6%). These were people in the 14 – 19 age brackets. This is a very sad development indeed because people in that age bracket are adolescents. This is perhaps appropriate because people with sickle cell disease are said to hardly last beyond the age of 23, but its prevalence among adolescents should be a source of deep concern. Following closely were people in the 20-25 years bracket (31.3%), and then 26-31 (25.4%). This statistics should be frightening indeed because of the prevalence of sickle cell disease among the younger population.

Educational Qualification of Respondents

Educational Qualification	Frequency	Percentage
Primary School	95	34.9
Secondary School	161	59.2
Tertiary	16	5.9
Total	272	100.0

Source: Fieldwork, 2012

Education has often been regarded as a major factor of influence on the personality of the individual; it predisposes the respondent to new ideas, widens mental horizons and develops a system of assessment of new ideas. Education is particularly singled out as an important variable that could determine how a sickle cell disease patient would be affected by family support, and other variables in this study. The findings show that majority of the respondents (59.2%) were in secondary school, followed by those in primary school (34.9%), while only a few indicated that they had some form of tertiary education (5.9%). This shows that most

respondents were not very well educated. The implication of this is two-fold. First, it shows that sickle cell disease appears to be more prevalent among younger people in secondary and primary school. Second, it gives us an idea about how people in that category are likely to respond to the disease. In terms of response, they are likely to be helpless since they are still dependants.

Distribution of the Respondents by Religion

Religion	Frequency	Percentage
Christianity	122	44.9
Islam	150	55.4
Total	272	100.0

Source: Fieldwork, 2012

The table shows that the respondents who are Christians were 122 (44.9%), while those of the Islamic faith were 150 (55.4%). This data shows that majority of the people currently receiving treatment for sickle cell disease are Muslims. This is so perhaps because Ibadan metropolis is home to a sizeable number of Muslims.

Discussion of Hypothesis

Hypothesis One ($H_0$1)

There will be no significant joint effect of family support and self-esteem on psychological well-being of sickle cell disease patients.

Regression	381.299	2	190.649		
Residual	10989.874	269	40.855	4.667	.010
Total	11371.173	271			

R = .183
R2 = .034
Adj. R2 = .026

Table 2 showed that the linear combination effect of family support and self-esteem on the psychological well-being of sickle cell disease patients in Ibadan metropolis was significant (F(2,269) = 4.667, R = .183, R2 .034, Adj. R^2 = .026; P < .05). The null hypothesis is rejected. By implication, showing family support and having self-esteem to sickle cell disease patients will greatly improve their condition and enhance their ability to cope psychologically.This finding confirms the submissions of Stanley and Stephenson (2005), Albert (2001), Kayode, (2003) and Douglas (2005) that sickle cell disease patients would show positive signs of improvement if they are empathised with and provided necessary family support. The importance of this result does not rest on the confirmation of opinions but on the weight of its implications for sickle cell disease patients persons and society.

Self-esteem and family support ultimately influences health outcomes via relevant biological pathways. A recent review examined the evidence linking family support to physiological processes that might influence disease risk (Uchino, Cacioppo, & Kiecolt Glaser, 2006). In particular, the study focused on the cardiovascular, endocrine, and immune systems as potential pathways by which social support might influence health. Most of the studies examined investigated the association between empathy and social support and cardio vascular function. There were more than 50 such studies, and most focused on blood pressure. Blood pressure is an important variable because over time, elevations in blood pressure can be a risk factor for cardiovascular diseases. In fact, there is increasing concern about the potential risk of elevated blood pressure even below the range that is normally considered hypertensive (MacMahon, 2000). Overall, research has suggested and found that individuals with high levels of social support had lower blood pressure than individuals with lower levels of social support. It is noteworthy that there was also evidence linking social support to better blood pressure regulation in hypertensive patients. Most of these studies were interventions that utilized the patient's spouse as a source of support to help the patient control his or her blood pressure. These intervention studies provide direct evidence for the health relevance of social support and suggest that recruiting familial sources of support may be a particularly effective (and cost-effective) intervention strategy. Finally, recent studies suggest that social support can reduce the magnitude of cardiovascular changes during stressful circum stances, a finding consistent with this one.

For instance, Gerin, Pieper, Levy, and Pickering (2002) compared physiological reactivity of subjects who participated in a debate task when a supportive person (an individual who agreed with the participant) was or was not present. The presence of the supportive person was associated with lower blood pressure and heart rate changes during the task. The ability of social support to reduce cardiovascular changes during stress is important because it has been hypothesized that heightened physiological reactivity to stress may increase the risk for the development of cardiovascular disorders (Manuck, 2004). The finding of lowered cardiovascular reactivity when social support is available may also have implications for individuals who have existing cardiovascular disease, as heightened cardiovascular changes when psychological Stressors are experienced can induce a temporary imbalance of oxygen supply and demand in the heart (Krantz, 1991). This imbalance can lead to potentially dangerous cardiac conditions in such at-risk populations. In their review of the literature, Uchino and Holt-Lunstad (2007) examined 19 studies that tested the possibility that social support may be related to aspects of immune function. They reported that an association between social support and immunity would be important because the immune system is responsible for the body's defence against infectious and malignant (sickle cell disease) diseases. In general, the available studies suggest that social support is related to a stronger immune response. For instance, natural killer cells are an important line of defence against virus-infected and some tumour cells.

Hypothesis Two ($H_0$2)

There will be no significant relative effect of family support and self-esteem on the psychological well-being of sickle cell disease patients.

Model	Unstandardized Coefficient		Unstandardized Coefficient	t	Sig.
	B	Std. Error	% Beta contribution		
(constant)	18.495	3.617		5.113	.000
Family support	.188	.097	.119	1.946	.053
Self-Esteem	.173	.088	.120	1.974	.049

In table 3, it is shown that there is a positive relative effect of self-esteem and family support on psychological well-being and empathy (B= .120, P < .05). There is also a positive significant relationship between psychological well-being and social support (B= .119, P < .05). The null hypothesis is rejected. This therefore means that self-esteem and family support are a major driving force in improving the psychological well-being of sickle cell disease patients. This confirms the submission of Gregory (2005) that providing a range of family support to sickle cell disease patients would not only ensure their integration into society, it would also enhance their sense of dignity and psychological well-being. The finding is also in conformity with the finding of Howard (1999) that if people are denied adequate attention and lack adequate family support, it elicits negative emotions from the subjects affected by these things. It is noted that being supported and shown a reasonably amount of attention has a correlation to the way and manner an individual acts, and this is usually positive. In a review by Uchino and Holt-Lunstad (2007), it was noted that several studies found that individuals with high levels of social support had stronger natural killer cell responses (i.e., ability to kill susceptible tumour cells) than individuals with lower levels of social support. The associations between social support and immune function are consistent with the results of a recent study by Cohen, Doyle, Skoner, Rabin, and Gwaltney (2007), who examined whether social support predicted susceptibility to the common-cold virus. In this study, consenting participants were directly exposed to common-cold viruses (i.e., via nasal drops) and quarantined for 5 days. Individuals who had more diverse social networks (i.e., relationships in a variety of domains, such as work, home, and church) were less likely to develop clinical colds than individuals with less diverse networks. The authors discussed the possibility that having a diverse social network may be particularly beneficial as support may be obtained from a variety of sources. It is important to note that many of the studies that found an association between family support and immune function were conducted with younger adult populations.

Hypothesis three ($H_0$3)

There will be no significant relationship between psychological wellbeing and family support of sickle cell disease patients

Variables	Mean	Std. Dev.	N	r	P	Remark
Psychological wellbeing	29.4449	6.4777				
Family Support	30.7353	4.0799	272	.140*	.021	Sig.

It is shown in the above table that there were positive significant relationships between psychological well-being and family support of sickle cell disease patients in Ibadan metropolis (r = .140*, N = 272, P < 0.05).

The null hypothesis is rejected. By implication, sickle cell disease patients will show better psychological disposition to their condition if they have adequate self-esteem.This finding is in support of the findings of Herbermas and Anderson (1995), Neylor (2000), Brian, (2004) and Thomas (2005) that many people afflicted with terminal illnesses have found hope and psychological succour when they have self-esteem. The importance of this result does not rest on the confirmation of opinions but on the weight of its implications for sickle cell disease patients and society.

Proper self-esteem is supposed to help to understand and anticipate the behaviour of the other. Apart from the automatic tendency to recognise the emotions of others, one may also deliberately engage in empathic reasoning. Two general methods have been identified here (Goldie 2000). A person may simulate 'pretend' versions of the beliefs, desires, character traits and context of the other and see what emotional feelings this leads to. Or, a person may simulate the emotional feeling and then look around for a suitable reason for this to fit.Some research suggests that people are more able and willing to have self-esteem and empathize with those most similar to themselves. In particular, empathy increases with similarities in culture and living conditions. Empathy is more likely to occur between individuals whose interaction is more frequent (Levenson and Reuf, 1997, and Hoffman 2000). A measure of how well a person can infer the specific content of another person's thoughts and feelings has been developed by William (1997). William has developed a video-based method to measure empathic accuracy and have used this method to study the empathic inaccuracy of maritally aggressive and abusive spouses, among other topics.

Hypothesis Four:

There will be no significant relationship between psychological and self-esteem wellbeing of sickle cell disease patients.

Variables	Mean	Std. Dev.	N	r	P	Remark
Psychological Well-being	29.4449	6.4777				
Self-Esteem	29.8272	4.4955	272	.141*	.020	Sig.

*Sig. at .05 level

It is shown in the above table that there were positive significant relationships between psychological well-being and self-esteem of sickle cell disease patients in Ibadan metropolis ($r = .141$, $N = 250$, $P < 0.05$). The null hypothesis is rejected. The result is consistent with many studies which report that the association of self-esteem and psychological well-being may influence physical health outcomes via relevant physiological processes. Spiegel, Bloom, Kraemer, and Gottheil (1999) found that breast sickle cell disease patients randomly assigned to a support group lived almost twice as long as patients simply given routine oncological care. There is also indirect evidence of beneficial effects from general psychosocial interventions that include social-support intervention (Linden, Stossel, & Maurice, 2006). For instance, Fawzy (2003) evaluated the effects of a 6-week structured group intervention that provided education, problem-solving skills, stress management, and social support to sickle cell disease patients. A 6-year follow-up revealed that only 9% of individuals in the structured group intervention had died, compared with 29% of individuals in the no-intervention condition.

IV. CONCLUSION

Based on the findings of this study, it can be concluded that when sickle cell disease patients are given necessary mental, instrumental and informational support including positive social interaction, their social and psychological wellbeing will be adequately met. They will also be able to effectively come to terms with their health conditions.The findings also indicate the centrality of gender and education in addressing the problem of sickle cell disease. As this study has shown, sickle cell disease is more prevalent among the female population, and should, therefore, be a source of worry, particularly to health workers. The factors which predispose women to the ravaging attack of sickle cell disease should be properly investigated and addressed. More than marriages and healthcare systems and the kind of lifestyle they inaugurate should be given a lot of consideration. Through education and proper marriage counselling, people should know how to avoid sickle cell disease.

4.1.IMPLICATION OF FINDINGS

The findings from the study have useful implications for friends, family, caregivers and significant others of the sickle cell disease patients. The findings also have implications for social workers, government, health workers and non-governmental organizations. It will help the social network of relationship of the sickle cell disease patients to provide the needed and necessary support to enhance the wellbeing and psychological rehabilitation of the sickle cell disease patients. The findings will help the social workers to organize enlightenment programmes that would encourage people to pay more attention to their lifestyle and the implications of this to their health.

Health workers will find the data relevant because it will enlighten them about how best to sensitize people about terminal illness like sickle cell disease. The findings will help the government to provide necessary facilities at sickle cell disease hospitals that would help patients to cope better with the debilitating impact of the disease on them.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations are made:

[1] Family, friends and caregivers of the sickle cell disease patients should support them financially and morally to help them meet their psychological and social needs and also enhance their effective treatment and ability to cope.

[2] Social workers and non-governmental organizations should organize enlightenment programmes to sensitize people about those conditions and lifestyles that can easily predispose them to sickle cell disease. Philanthropists, churches, mosques, social organization and members of the public should also be encouraged to support indigent sickle cell disease patients undergoing treatment in sickle cell disease hospitals.

[3] Government should provide necessary facilities in the sickle cell disease hospitals and centres to enhance effective treatment and increase survival rate among sickle cell disease patients

[4] After care service should be established and adequately funded by the government to monitor and assist sickle cell disease patients that have been treated and needing continuous check -up.

[5] Government should provide for job opportunity, free education and adequate feeding for the indigent sickle cell disease patients. This will help them to pursue independent living and be productive at both the individual and communal levels of social arrangement.

[6] Social workers should enlighten people on the difference between sympathy and empathy and the need to show empathy to sickle cell disease patients.

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