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PARENTAL SOCIOECONOMIC STATUS AND MANAGEMENT OF SICKLE CELL ANEMIA IN KANO STATE, NIGERIA

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ABSTRACT

This study investigated parental socioeconomic status and management of sickle cell anaemia in Kano State, Nigeria through an observational cross-sectional research design. The population of the study consisted of all parents (Mothers) of sickle cell anaemia patients attending Murtala Mohammad Specialist Hospital from which a sample of 380was drawn through purposive sampling technique. However, only 375 were returned duly completed and used for data analysis. The instrument used was a researcher-developed questionnaire named parental socioeconomic status and management of sickle cell anaemia in Kano State, Nigeria. The instrument was validated and standardized with are liability of 0.89 through test-retest method. Descriptive statistics of frequencies, percentages, and Chi-square tests were used to analyze the data. The results of the study revealed that high parental socioeconomic status significantly influenced1) the management of acute pain of sickle cell anaemia (p-value 0.001);2) the management of chronic pain (p-value 0.001);3) the management of neuropathic pain (p-value 0.001) of sickle cell anemia patients as compared to low SES. It was recommended therefore that government should improve public policies that would provide sickle cell disease patients with

better access to medical treatment, living condition and integration into society;enlightenment campaign on genotype knowledge so that people become more aware of the risk involved in wrong matching;the government should come up with measures to improve the socioeconomic status of the citizen, and also provide free drugs so that low-income earners can use the drugs in managing the pains.

Keywords: Parental, Socioeconomic status, Management, Sickle cell anaemia, Nigeria

INTRODUCTION

Sickle cell disease (SCD) is a group of genetic disorders that are characterized by the development of abnormal haemoglobin (Hgb S), abnormal red blood cells, and the resultant complications (Olowoyeye&Okwundu, 2010). It is an autosomal recessive disorder that affects both sexesalmost proportionally (Piel et al, 2010). Although the disease affects most regions of the world, its prevalence is high in Africa, the United States (U.S.), the Caribbean, Central and South America, Saudi Arabia, India, and the Mediterranean (Centers for Disease Control and Prevention, 2011). With more than $1.1billion estimate of the cost for annual medical care for SCD patients, of which over threequarter goes to hospitalization care (Kauf, Coates, Huazhi, Mody-Patel &Hartzema, 2009), SCD places a disproportionate economic burden on families and relatives of the patients. Given the grave burdenit places on families, communitiesand the healthcarefacilities,implies that SCD is a significant public health concern. Anemia, a condition characterized by fewer than anormal number of red blood cells in the blood (Ndu&Samoye, 2013), is a major public health problem worldwide and is often ignored in both developed and developing countries. The most group most at risk are pre-school children, pregnant women and adolescents (WHO, 2009).

Genetic counseling and pre-marital screening is the primary prevention of SCD (Memish&Saeedi, 2011), even though it does not very much affect marriage decisions (Alswaidi, Mimish, O'Brien, Al- Hamdan, Al-Enzy, Alhanyi& Al- Wadey 2012); which makes secondary prevention essential in reducing the burden of SCD. This includes the use of curative therapy, supportive management, symptomatic management, preventive management, and abortive management (Ballas et al, 2012). The main curative therapy for SCD is the use of stem cell

transplantations. Other secondary prevention strategies include palliative care, comprehensive clinical care and self-care management (Akinyanju, Otiaigbe&Ibidapo 2005). Because self-care management does not require the presence of health care practitioner or visitation to ahealth facility, this management strategy is more cost-effective for patients and particularly desirable and applicable to developing countries and low-income population (Jenerette, Brewer & Leak, 2011).

With nearly5% of the global populations carrying the genetictraits for haemoglobin disorders, Africa contributed up to 200,000 babies born with anaemia annually (World Health Organization, 2006). The pattern of distribution of carriers, who are more in the global population than the sufferers, in a certain area determines the prevalence of sickle-cell anaemia at birth (WHO, 2006). Nearly one-fourth of Nigeria's population carries the mutant gene; this explains the high prevalence (20 per 1000 births)of sickle-cell anaemiain the country.In fact, the country accounted for half of the global newborn with sickle cell anaemia annually (World Health Organisation, 2006).The most prevalent type of sickle cell disorder in Nigeria is the homozygous sickle cell disorder (SS) also known as sickle cell anaemia. Another type such as sickle cell-haemoglobin C disorder (SC) is more pronounced in the southwestern part (Adekile, 1999).Variability in the incidence of the disease within Nigeria exists, the highest incidence in the Northern region (Mabayoje, 1996).The poorattitude and declining level of awareness of the people on genetic compatibilitybefore marriage plays a significant role in the frequent mortality of the newborn in Nigeria, more especially in the rural areas(WHO 2006).Nigeria accounts for 3/4 of infant sickle cell cases and about as much infant mortality in Africa; it also accounted for half of thecontinent's annual infants born with the ailment (WHO 2008).Between 2015 and 2016, about 18000 sickle cell anaemia children were born. This aim of the study, therefore,was to assess parental socioeconomic status and management of sickle cell anaemia in Kano State.

METHODOLOGY

Study Design

An observational cross-sectional survey design was used.The population of this study comprised of all parents of sickle cell anaemia patients atMurtala Muhammad Specialist Hospital(MMSH Kano). This facility received a total of 18,025 outpatient cases between 2015 and 2016 as it is the

widest referral base, especially from the northern part of Nigeria (Kano State Hospital Management Board, 2015). A total of 380 samples was drawn through purposive sampling technique.However,only 375 completed questionnaires were retrieved from the respondents.As inclusion criteria, only mothers attending outpatients department whose children are not in crisis at the time of administering the questionnaire and those who had consented to participate in the study were included.

Data Collection Instrument

The instrument for data collection was a researcher-developed modified Likert type questionnaire named "Parental Socioeconomic Status and Management of Sickle Cell Anemia in Kano State." The questionnaire comprised five sections A,B,C, D and E: Section 'A' sought demographic information of the respondents, section 'B' sought information on socioeconomic status of parents of the sickle cell patients, section 'C' sought information on management of acute pain in sickle cell patient, section 'D' soughtinformation on management of chronic pain in sickle cell patients, andsection 'E' sought information on management of neuropathic pain in sickle cell anaemia patients with four questions on each section. The five-point modified Likert scale was scored as follows : Strongly agree (S.A) = 5points, Agree (A) = 4points,Undecided (U.D) = 3point, Disagree (D) = 2points and Strongly disagree (S.D), = 1point. The possible highest point a participant can score is 20 points, themedium is 10points and the lowest is 4points. Therefore, anybody that scored 13 points and above was regarded as Agree and any subject that scored 5-12 was regarded as Disagree. Similarly, for the scoring of SES questionnaire, the scores were merged as High, Middle and Low. The highest point a respondent can score is 30. For any respondentwho scored21-30 was regarded as high, 11-20 was regarded as middle and 1-10 was regarded as low SES.

Validation of the Instrument

To ensure that the instrument measures exactly what it is supposed to measure, it was validated as appropriate. The face and content validity were conducted by experts from the Department of Physical and Health Education.

Reliability of the Instrument

A pilot study was conducted on 20 participants sampled from the neighbouring city of the actual study site. A test-retest method was conducted, two weeks after the initial administration of the instrument,and Pearson's product moment correlation (PPMC**)** was used to determine the reliability of the instrument which yielded arobustcoefficient of 0.89.

Data Collection and Analysis

With the help of two trained research assistants, data were collected via questionnaire administration to the sampled participants. This exercise took four weeks to administer and retrieved completed the questionnaire. Being a descriptive study, the demographic information of the respondents were organized and presented using frequency counts and percentages. Chi-square was used to analyze the relationship between our dependent and independent variables. All the tests were carried out at 0.05level of significance.

RESULTS AND DISCUSSION

Results

Table 1: Demographic Distribution of the Respondents' Characteristics

Characteristics	Frequency	Percentage(%)
Age		
0-3Yrs	125	33.3
4-7Yrs	216	57.6
8-11Yrs	34	9.1
Sex		
Male	135	36
Female	240	64
Parental SES		
High	234	62.4
Middle	110	29.3
Low	31	8.3

As shown in table one, while more than a half (57.6%) of the children were aged between 4 – 7years, a third of them was aged between 0 – 3years.The 64% of female indicated that there were nearly twice as female sickle cell children as there is male. In addition, about two-thirds of the respondents were classified in the high socio-economic category; only 110 (29.30%) belong to a middle socio economic category and less than 10% were of the low socioeconomic category.

Table 2: Relationship between parental socioeconomic status and the management of acute pain of sickle cell anaemia patients (**n** = 375).

Variables	n	χ^2	df	p-value
Socio-econ stat				
High				
Agree	104			
Disagree	130			
Middle				
Agree	76	41.248	2	0.001*
Disagree	34			
Low				
Agree	30			
Disagree	01			

χ^2= 41.248, df = 2, P< 0.05, *significant p-value

The information on table2 revealed the responses of the participants as to whether SES influence the management of acute pain of sickle cell anaemia patients. Among the high SES, 104 (44.4%) of the respondents while 130(55.6%) disagreed. For middle SES on the other hand, 76(69%) agreed and 34(21%) disagreed. Finally,for the low SES 30(96.7%) agreed and 01(3.3%) disagreed that parental socioeconomic status influences the management of acute pain. The p-value of the chi-square statistics showed that the difference in the socioeconomic status significantly (p-value 0.001) influence the management of acute pain.

Table 3: Relationship between parental socioeconomic status andthe management of chronic pain of sickle cell anaemia patients (**n** = 375).

Variables	n	χ^2	df	p-value
Socio-econ stat				
High				
Agree	122			
Disagree	112			
Middle				
Agree	77	22.547	2	.001*
Disagree	33			
Low				
Agree	28			
Disagree	3			

χ^2= 22.547, df =2, P<0.05, * significant p-value

The information in table3 showed the opinions of the participants as to whether SES influence the management of chronic pain of sickle cell anaemia patients. More than a half (52.1%) of the respondents in the high SES category agreed and 112(47.9%) disagreed; while for middle SES 77(70%) agreed and 33(30%) disagreed; finally, in the low SES 28(90.3%) agreed and 3(9.7%) disagreed that parental socioeconomic status influence management of chronic pain in sickle cell anemia patients. Statistical computation shows that chi-square (χ^2) value of 22.547 df 2 and $p < 0.05$. The p-value (0.001) of the chi-square statistics indicated that there was a statistically significant association between socioeconomic status and management of chronic pain in sickle cell anaemia parents. Therefore,it proved that socioeconomic status does influence the management of chronic pain of the patients.

Table 4: Relationship between parental socioeconomic status and the management of neuropathic pain of sickle cell anaemia patients (**n** = 375)

Variables	**n**	**χ^2**	**df**	**p-value**
Socio-econ stat				
High				
Agree	109			
Disagree	125			
Middle				
Agree	75	35.997	2	.001*
Disagree	35			
Low				
Agree	30			
Disagree	1			

χ^2= 35.997,df = 2, P<0.05, *significant p-value

The information in Table4demonstrated the respondent's views regarding whether parental socioeconomic status influences the management of neuropathic pain of sickle cell anaemia patients. Among the participants of the high SES category, 109(46.6%) agreed and 125(53.4%) disagreed; For the middle SES, on the flip side, 75(68.2%) agreed and 35(31.8%) disagreed; finally, among the low SES, 30(96.7%) agreed and 1(3.3%) disagreed that parental socioeconomic status influence the management of neuropathic pain in sickle cell anaemia. However, the chi-square statists revealed that there is a statistically significant (p-value 0.001) association between SES and management of neuropathic pain among the patients.

Discussion

The finding of this study revealed that parental socioeconomic status influences the management of acute pain of sickle cell anaemia patients. The evidence suggests those higher income earners are better off in the management of acute pain than the low-income earner. This finding was in line with the work of McGann and Nero (2013) who stated that low socioeconomic status has negative consequences on health and this may be connected to factors such as rising healthcare cost, eating a poor diet, inadequate housing that may result in overcrowding, poor sanitation and greater tendency of exposure to communicable diseases. This finding was also in agreement with the work of Pereira,Brener,Candoso and Proietti (2013) that clinical complications and recurrent hospitalizations and blood transfusions, associated with external domains such as unemployment, low income, and lack of access to health services negatively influence the life of this population. The finding also corroborated with many other findings(Lanzkron, Haywood,Segal & Dover, 2006;Aljuburi, Laverty, Cavit, Zhang, Phekoo& Bell, 2013)which speculated that people in vulnerable socio-economic situation are more exposed to the determining factors of the disease which ultimately can lead to worsening of the patient's overall health. Moreover, low socioeconomic status precipitatesin vulnerable social situations that affect patient's quality of life and makes them more government-dependent for financial and health care benefits. Thus, taking care of a patient with sickle cell anaemia implies extra financial burden on parents or caregivers and the effect is overwhelmingly greater for those living in low socioeconomic status.

Furthermore, the findings of the current study also suggested that parental socioeconomic status influenced the management of chronic pain of sickle cell anaemia patients. This evidence implies that chronic pain is generally better managed among the higher SES. This finding attests to the work of Pereira (2013) which states that low socioeconomic status increased often a risk for chronic pain disability. Additionally, it also supports the report of W.H.O (1994) that there is no other inherited disorder present at such high frequency in a large population and of comparable severity as sickle cell anaemia in Africa, and, with rising standard of living, sickle cell anaemia will become an immense medical, social and economic problem throughout the continent. According to various experts in the area of chronic diseases, the economic impact of SCA on families, health systems and government is immense. To the individuals and their families, the medical and psychological cost of managing the patient both directly and indirectly are

regrettably high since the patient live with the disease and cost are faced throughout the life-span of the patent(Berkowitz et al 2015). The study agrees with the work of Vichinsky et al., (2010) which states that chronic anaemia and recurrent acute painful vaso-occlusive crises which occur unpredictably require immediate management and this becomes a great burden and challenge to families whereby the caretaker are themselves living in poor states and vulnerable to other health problems.

In addition, the finding of this study indicated that parental socioeconomic status influenced the management of neuropathic pain over the year, lower SES has been associated consistently with virtually every aspect of poorer health including increased morbidity, decreased life expectancy, and higher infant mortality (Kreiger, 2001), low socioeconomic status is linked to patients with an array of pain sites such as musculoskeletal (Gallapher, 2011). The finding coincides withthe work of Smith et al (2011) which claimed that the more educated the individual is the more they can effectively manage pain. This could be attributed to the fact that higher education attainment is connected to better critical thinking skills, better ability to effectively seek health care system and more able to establish effective rapport with health care providers. On the other hand, people in vulnerable socioeconomic situations are more exposed to determining social factors of the disease, which can exacerbate the patients' general health. Therefore, medical and psychological attention should especially be given to such people (Paiva, Silver, Ralmalho&Cassorla 1993).Moreover, chronic diseases cause regrettable financial and economic burdens as well as biological health consequences to the affected individuals and their families, especially when they affect the individuals from the poor and marginalized families. (Aikins*et al*., 2010).

Conclusion

Based on the findings of the current study, it can be seen that parental socioeconomic status plays a vital role in the management of acute pain, management of chronic pain and management of Neuropathic pain in sickle cell anaemia parents. Therefore, government programs that target sickle cell patients should prioritized families who are of the lower income group to assist them in seeking a better care for the patients.

Recommendations

Based on the findings of this research, the following recommendations were drawn

- ✓ The government should empower,as a strategy to improve the SES of its citizen so they are better able to create wealth and cater for their affected children adequately, the parents of SCA patients with entrepreneurship skills.
- ✓ Doctors, nurses should create a session to educate parents of SCA patients especially those from the low SES on how to care and manage their wards effectively.
- ✓ Governmental and Non-governmental organizations should support parents of SCA patients especially those from low SES with donations and funds so that treatment is done at a subsidized rate
- ✓ The government should provide subsidized or free drugs in hospitals that can be distributed to parents of sickle cell anaemia patients.
- ✓ The government should improve public policies for these individuals, taking into account their low socioeconomic status, demographic characteristics, and difficulties in achieving the recommended treatment

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Conflict of Interest

The authors declare that there was no conflict of interest.

Ethical consideration

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