RESEARCH ARTICLE

HONG KONG JOURNAL OF PAEDIATRICS RESEARCH
Hong Kong J Pediatr Res 2020; 3(1):8-19

ISSN(e): 2663-5887
ISSN(p): 2663-7987

Coping strategies of mothers of school aged children with sickle cell disease in Enugu Metroplis, Eastern Nigeria

Ifeyinwa N. Obi[1], Princewill U. Njoku[1], Blessed Nworuh[1]

[1] Department of Public Health, Federal University of Technology, Owerri, Imo State, Nigeria

*Corresponding Author: Princewill U. Njoku, Department of Public Health, Federal University of Technology, Owerri, Imo State, Nigeria. Email: njoku174@gmail.com

Abstract

Background: Sickle cell disease (SCD) is one of the commonest but preventable inherited diseases. The management of such chronic disease is burdensome, especially to the mothers in the family. Aim: The aim of the study was to determine the coping strategies of mothers of school age children with SCD accessing treatment in health facilities in Enugu metropolis. Study Design and Setting: This is a cross sectional study carried out in the University of Nigeria Teaching Hospital Enugu and Enugu State University Teaching Hospital. Materials and Methods: A sample size of 292 mothers were randomly (balloting) drawn from a total population of 460 mothers and structured questionnaire used as instrument for data collection. Statistics: Data analysis was done using chi-square test and significance was tested at P<0.05. Results and Conclusion: The result on stressors confronting the mothers shows six factors which were; hospital factors, child factors, financial factors, psychological factors, disease factors and family factors. The association between these factors and marital status of these mothers were significant (P<0.05), aside from disease factors which had no significant association with the marital status of the mothers. (X2=0.000, P =1.000, df =2). Hospital factors were coped through confronting the impediments 180(61.6%), financial factors were coped through complaints 202(69.1%), child factors were coped through confronting the stressors, psychological factors were coped through complaints 140(47.9%), disease factors were coped through complaints 292(100.0%) and family factors were mainly coped through confronting the stressors. There were significant associations between coping mechanisms adopted by mothers and mothers marital status (P<0.05), aside from coping mechanisms on disease factors which had no significant association with marital status of the mothers. This study has shown that both married and single mothers of children with SCD experience significant impediments which they adopted various ways of coping. It is therefore important that policy makers in government and private clinics provide the necessary psychological care and support to mothers who are facing these challenges so as to assuage the level of stress they undergo.

Keywords: Sickle cell, Coping Strategies, School Aged Children, Stressors.

INTRODUCTION

Sickle cell disease (SCD) is one of the commonest but preventable inherited diseases. It is a disease of the red blood cells and is a lifelong ailment which has been with man since the existence of man. Sickle cell disease affects all races of the world; it affects the people of tropical Africa, Mediterranean Sea, Middle East and South India. Sickle cell disease was first discovered in the African American populations in 1910 [1], it has contributed significantly to the high childhood mortality rate.

Managing a life-long chronic illness such as sickle cell disease (SCD) is burdensome on those affected and has been correlated with the psychological well-being of the sufferers [2-4]. Of equal concern should be the burden of disease on the mothers within the family. In the case of a disease that affects children from birth, it is the mother who bears most of the burden and is

therefore subject to the most stress. Stress, if not coped with, may be detrimental to health and manifest in problems such as coronary heart disease. While the results of stress have been amply documented in research on the male population, less is known about what happens when women experience stress [5,6]. Studies have found that working class women, who often lack strong social support systems, are three times more likely to experience coronary heart disease than their counterparts in white collar jobs [5].

According to McBride and Black, mothers appear to be more sensitive to troubled children, because it is the mothers who born the children [7]. They are more likely to feel responsible for a diseased condition. Breslay established that, except in rare instances, it is the mother who will provide the extraordinary care required by a developmentally disabled child [8]. Studies have shown that psychological distress among mothers of children with SCD may influence the prognosis of the child [9-11]. A particularly stressful aspect of SCD management is the unpredictability and episodic nature of the illness and its attacks on children. These continued attacks result in shopping around for a 'cure', placing mothers in the hands of often unscrupulous spiritual, herbal and even orthodox healers. There is also fear and anxiety related to the future of subsequent pregnancies [3].

An estimate of about 2.3% of the Nigerian population suffers from sickle cell disease and about 25% of Nigerians are healthy carriers of the abnormal hemoglobin gene [12]. Families who have children with sickle cell disease (SCD) endure numerous potentially stressful experiences and daily hassles related to the biological complications of SCD. These ordeals can cause difficulties with finances, work, transportation and changes to daily routines.

Mothers of children with SCD are at risk for excessive anxiety, depressed mood, guilt, social isolation and personal health problems [12]. Psychosocial issues for people with SCD and their families mainly result from the impact of pain and symptoms on their daily lives and society's attitudes to SCD and those affected [13]. Mothers of children with SCD may struggle to meet the demands of parenting. The nature of the child's disease, the need to manage symptoms, and the complexity of treatment all cause emotional strain [14]. Despite the high prevalence of sickle cell disease in Nigerian infants and recurrent morbidity as well as the high risk of early death, there is a paucity of data on the coping patterns, psychosocial impact and health-related quality of life of sickle cell disease on mothers of children with SCD [15]. Against this backdrop, the present study explores the the coping strategies of mothers of children with SCD in Enugu Metropolis, South Eastern Nigeria.

MATERIALS AND METHODS

Study Design and Study Area

This is a cross sectional study design carried out at Enugu State University Teaching Hospital (ESUTH) and University of Nigeria Teaching Hospital (UNTH), Enugu. ESUTH and UNTH are centrally located and easily accessible to all Enugu neighborhood and neighboring cities. As high hospitals, this characteristic puts ESUTH and UNTH in a pole position of proffering immediate solution to Health care challenges like sickle diseases.

Study Population

The study population were mothers whose children were accessing treatment for SCD at University of Nigeria Teaching Hospital Enugu and Enugu State University Teaching Hospital (ESUTH). The population of these mothers were determined during the study. Each day the researcher and the research assistants visited these hospitals, they take the number of the women present and the study lasted one month for both hospitals. These hospitals were visited two times every week (Mondays and Thursdays), identification numbers were given to the mothers in order not to count a mother twice. A total of 250 mothers were encountered at UNTH, while 210 mothers were seen at ESUTH in the course of the study.

Sample Size and Sample Method

Sample Size

The sample size was a total of two hundred and ninety-two (292) mothers selected from 460 mothers from UNTH and ESUTH respectively. One hundred and fifty-four (154) were drawn from UNTH while One hundred and thirty-eight (138) were from ESUTH. The sample size was determined using Taro Yammane sample size formular.

Sampling Method

Simple random sampling method (balloting) was used in selecting the mothers from each hospital. The selection was done every study day, physically among already counted mothers who came with their children for SCD treatment. Ballot papers were written "Yes" or "No" and were picked by the

mothers of the sick children. Mothers who picked "Yes" were selected while those who picked "No" were not selected. The balloting was done separately for each hospital and lasted for a period of four weeks, for both hospitals.

Instrument for Data Collection

A structured questionnaire was used to collect data from the respondents. The questionnaire has three sections: the first section sought information on the socio-demographic characters of the mothers. The second section sought information on stressors experienced by the mothers of school aged children with SCD. The information on stressors experienced by these mothers has six subsections; these subsections are stressors arising from: I. Hospital factors; II. Financial factors; III. Child factors; IV. Psychological factors; V. Disease Factors; VI. Family factors. The third Section sought information on the coping strategies adopted by the women to alleviate the stressors. The section also contains the relationship between stressors and marital status of the mothers and also the relationship between coping strategies and marital status. The questions in the questionnaire are clear and concise and have about 20 questions with multiple choice answers.

Method of Data Collection

Before the study started, permission was obtained from heads of institutions. Thereafter the researcher and research assistants sensitized the selected Mothers on the aim and importance of the study at the different Hospitals each day of the study, since selection was done every day of the study. Four research assistants trained for the work administered the copies of questionnaire to the respondents. The literate mothers filled the questionnaires themselves and were cleared of doubts where they were confused. However, the questions were translated to local language for the non-literate mothers and their answers were filled by the research assistants. The questionnaire administration lasted between 3-5 minutes for each respondent.

Method of Data Analysis

Descriptive method was used to summarize the data variables. Frequency distribution table was constructed for all class variables and data were expressed as percentage of distribution. Chi-square test was used to analyse the level of significance of relationship between stressors and marital status and also between coping strategies and marital status, which was interpreted as calculated value > tabulated value at $P<0.05$.

Ethical Consideration

Ethical approval was sought and obtained from the ethical research committee of the following institutions:

1. School of Health Technology, Federal University of Technology, Owerri, Nigeria (FUTO).
2. Enugu State University Teaching Hospital (ESUTH)
3. University of Nigeria Teaching Hospital (UNTH), Enugu.

RESULT

Socio-demographic characters of the mothers of school aged children with SCD in Enugu metropolis.

The results of social demographic characters (Table 1) of the women investigated their age groups, marital status, employment status, educational status and number of children suffering SCD per mother. Regarding the age limits, 69(23.6%) women were between 18-24 years ,79(27.2%) were between 25-30years, 55 (18%) were between 31-34 years, 49 (16.7%) were between 35-40 years, while 40(13.7%) were 40 years and above. Also, the marital status, shows that 200(68.5%) were married mothers and 92(31.5%) mothers were either single mother or separated mothers.

Result on employment status reveals that 78(26.7%) women were government workers, 114(39.0%) were private workers, 65(22.3%) were traders and 35(12.0%) were not working. Also, their educational status, reveals that 10(3.4%) were not educated at all, 36(12.3%) had only primary school education, 146(50.0%) had up to secondary school education and 100(34.3%) had tertiary education. The study also investigated number of children suffering SCD per mother. It was seen that, 248(84.9%) mothers had one child suffering SCD and 44(15.1%) mothers had more than one child suffering sickle cell disease.

Impediments experienced by the mothers of school aged children with SCD in Enugu metropolis.

The impediments experienced by these women were investigated (Table 2). Results on hospitals factors shows that 40(13.6%)women strongly agreed to the unavailability of hospitals that treat SCD, 55(18.8%) women agreed to unavailability of hospitals, 107(36.6%) women disagreed to unavailability of hospitals that treats SCD while 90(31.0%) strongly disagreed to unavailability of hospitals that treat SCD. Furthermore, 20(6.8%) women and 42(14.3%) women strongly agreed and agreed respectively to unsatisfactory services by health personnels, while 130(44.5%) women and 100(34.4%)

women disagreed and strongly disagreed respectively to unsatisfactory services by health personnels. 112(38.3%) and 140(47.9%) women strongly agreed and agreed respectively to be unable to keep medical appointment while, 25(8.5%) and 15(5.3) women disagreed and strongly disagreed to be unable to keep medical appointments.

Result regarding financial factors, shows that 154(32.7%) women and 71(24.3%) women strongly agreed and agreed respectively to high cost of treatments/drugs while, 47(16.0%) women and 71(24.3%) women disagreed and strongly disagreed respectively to high cost of treatments/drugs. 110(37.6%) women and 96(32.8%) women strongly agreed and agreed respectively to high cost of transportation to health facilities while, 53(18.1%) and 33(11.5%) disagreed and strongly disagreed respectively to high cost of transportation to health facilities. 82(28.0%) women and 110(37.6%) women strongly agreed and agreed respectively to high cost of special prescribed diet while, 70(23.9%) and 30(10.5%) disagreed and strongly disagreed respectively to high cost of special prescribed diet.

Results on child factors show that 133(45.5%) women and 60(20.5%) women strongly agreed and agreed respectively to absenteeism from school due to recurrent illness, while 57(19.5%) women and 42(14.5%) women disagreed and strongly disagreed respectively to absenteeism from school due to recurrent illness. 202(69.1%) women and 50(17.1%) women strongly agreed and agreed respectively to low performance in academics while, 25 (8.5%) and 15(5.3%) women disagreed and strongly disagreed respectively to low performance in academics. 130 (44.5%) and 80(27.3%) women strongly agreed and agreed respectively to poor growth deformities of children with SCD while, 50(17.1%) and 32(11.1%) women disagreed and strongly disagreed respectively to poor growth and deformities of children with SCD.

Results on psychological factors shows that 202 (69.1%) and 50 (17.1%) women strongly agreed and agreed respectively to fear for occurrence of crisis at the odd time while, 30(10.2%) and 10(3.6%) women disagreed and strongly disagreed respectively to fear of occurrence of crisis at odd time. 92 (31.3%) and 97(33.2%) women strongly agreed and agreed respectively to thought for alternative means treatment while, 83% (28.4%) and 20(6.9%) women disagreed and strongly disagreed to thought of alternative means of treatment. 240(82.1%) and 32(10.9%) women strongly agreed and agreed respectively to fear of having more children with SCD, while 15(5.1%) and 5(1.9%) woman disagreed and strongly disagreed respectively to fear of having more children with SCD.

Results on Disease factors show that all the 292(100%) women strongly agreed to fear of recurring crisis, fear of sickness or infections and fear of death. Results on family factors show that 99(33.9%) women and 109(37.3%) women strongly agreed and agreed respectively to fear for rivalry/jealousy among the sick child siblings while, 64(21.9%) and 20(6.9%) women disagreed and strongly disagreed respectively to fear for rivalry/jealousy among the sick child's sibling. 47(16.0%) and 99(33.9%) women strongly agreed and agreed respectively to reduced job performances in the family while, 73(25%) women each disagreed and strongly disagreed respectively to reduced job performances in the family. 39(13.3%) and 50(17.1%) women strongly agreed and agreed respectively to impacts on marriage while 70(23.9%) and 133(54.3%) disagreed and strongly disagreed respectively to impacts on marriage. 97(33.2%) and 103(35.2%) strongly agreed and agreed respectively to effect of child SCD on family social life while, 85(29.1%) and 7(2.5%) disagreed and strongly disagreed respectively to effect of child SCD on family social life.

Association between impediments confronting mothers and marital status of mothers of school aged children with SCD in Enugu metropolis.

The association between impediments confronting mothers and marital status of the mothers of school aged children with SCD was investigated (Table 3). The result showed that, 50(25%) married mothers and 62 (67.3%) single mothers saw hospital factors as very stressful, while 25% (12.5%) married and 10(11.0%) single mothers saw hospital factors as not stressful. There is a significant association between hospital factors and marital status of mothers of school aged children with SCD (X^2 = 50.83, P = 0.000, df= 2).

Similarly, on financial factors, 122 (61.0%) married mothers and 72(78.2%) single mothers saw financial factors as very stressful while, 20(10.0%) married mothers and 5(5.5%) single mothers saw financial factors as not stressful. There is a significant association between financial factors and marital status of mothers of school aged children with SCD (X^2 = 8.441, P = 0.014, df=2).

120 (60.0%) married mothers and 80 (86.9%) single mothers saw child factors as very stressful while only 11(5.5%) married mothers saw child factors as not stressful. There is a significant association between child factors and marital status of mothers of school aged children with SCD (X^2 = 27.12, P = 0.000, df=2). There is also a significant association between psychological factors and marital status of mothers of school aged children with SCD (X^2 = 4.781, P =0.091, df=2) and between family factors and marital status of the women (X^2 = 3.780, P = 0.151, df=2).

However, there was no significant association between disease factors and marital status of women (X^2 = 0.000, P = 1.000, df=2) as all the mothers of school aged children with SCD see disease factors as being very stressful.

Coping mechanism adopted by mothers of school aged children with SCD in Enugu metropolis

Three major coping mechanisms were identified in the study (Table 4). Results on hospital factors shows that most of the women confronted impediments associated with hospitals (180(61.6%), 72 (24.6%) women complained while 40(13.8%) ignored the hospital impediments. Confrontation was seen to be prevalent coping mechanism adopted by mothers on hospital factors.

Regarding financial impediments, 202 (69.1%) women complained about impediments arising from financial factors, 50 (17.1%) confronted financial factors while 40 (13.8%) ignored financial factors. The prevalent coping mechanism on financial adopted by the mothers was complaints. Also, on child factors, 210 (71.9%) confronted impediments associated with child factors, 60(20.5%) women complained about impediments associated with child factors and 22(7.6%) women ignored impediments associated with child factors. Results on psychological factors show that 72(24.6%) women confront impediments associated with psychological factors, 140 (47.9%) women complained, while 80(27.5%) women ignore impediments associated with psychological factors. Also, 180 (61.6%) women confronted impediments associated with family factors, 72(24.6%) women complained about family factors while 40(13.8%) women ignored family factors. However, all the women complained about impediments associated with disease factors.

Association between coping mechanism adopted by mothers and marital status of the mothers of school aged children with SCD in Enugu metropolis.

Relationship between coping mechanism and marital status of the mothers of school aged children with SCD is presented in table 3.5. Results on hospital factors show that majority of the women both married 133(65.0%) and single 47(51.0%) confront hospital factors. 42 (21.0%) married mothers and 30 (32.6%) single mothers complained, while 25 (12.3%) married and 15 (16.4%) single mothers ignored hospital factors. There is a significant association between hospital coping mechanism and marital status of the women (X^2 = 6.490, P= 0.039, df= 2).

On financial coping mechanism, 132 (66.0%) married mothers and 70(76.0%) single mothers complain about financial stress factors. 35 (17.5%) married mothers and 15 (16.3%) single mothers confront financial factors, while 33 (16.5%) married mothers and 7(7.7%) single mothers ignore financial factors. This also shows a significant relationship between financial coping mechanism and marital status of the women (X^2 = 4.610, P = 0.099, df=2).

Results on child factors shows that 80% of married mothers confront child stress factors and 54.3% of single mothers also confront child factors. There is a significant relationship between child factor coping mechanism and marital status of mothers (X^2 = 20.51, P= 0.000, df = 2). Also, a significant relationship was seen between psychological coping mechanism and marital status of mothers (X^2 = 28.5, P = 0.000, df = 2), as majority 120 (60.0%) of married mothers complain about psychological factors while most single 52(48.6) mothers ignore psychological factors. There is a significant relationship between family factors coping mechanism and marital status of mothers (X^2 = 23.2, P = 0.000, df = 2). However, in this study, no significant relationship occurred between disease coping mechanism and marital status of mothers, as all the mothers complain about disease factor (X^2 = 0.000, P = 1.000, df = 2).

DISCUSSION

SCD sufferers, as well as their caregivers are faced with several factors such arising from hospitals, inadequate funds, disease/illness, psychological, child factors as well as family factors. Hence, parents or caregivers of these children tend to have worse health related quality of life, compared to those without SCD children which impacts negatively on their behavior and self-esteem [16,17].

Table 1: Socio-demographic Characteristics of Mother of School-Aged Children with SCD

Parameters	Number of mothers	Percentage
Age (yrs)		
18 – 24	69	23.6
25 -30	79	27.2
31-34	55	18.8
35-40	49	16.7
Above 40	40	13.7
Total	292	100.0
Marital Status		
Married	200	68.5
Single	92	31.5
Total	292	100.0
Educational Status		
None	10	3.4
Primary	36	12.3
Secondary	146	50.0
Tertiary	100	34.3
Total	292	100.0
Number of school aged children suffering SCD per mother		
Mothers with one child suffering SCD	248	84.9
Mothers with more than one child suffering SCD	44	15.1
Total	292	100.0
Employment Status		
Govt. employee	78	26.7
Private employee	114	39.0
Traders	65	23.3
None	35	12.0
Total	292	100.0

Table 2: Stressors experienced by mothers of school aged children with SCD in Enugu Metropolis

Impediments	Number of mothers	Response from mothers: Strongly agreed	Agreed	Disagreed	Strongly disagreed
Hospital Factors					
Inadequate numbers of hospital treating SCD	292	40 (13.6)	55(18.8)	107(36.6)	90(31.0)
Unsatisfactory services by health personnels	292	20(6.8)	42(14.3)	130(44.5)	100(34.4)
Inability of mothers to keep medical appointments	292	112(38.3)	140(47.9)	25(8.5)	15(5.3)
Financial Factors					
High cost of treatment/drugs	292	154(52.7)	71(24.3)	47(16.0)	20(7.0)
High cost of transportation to health facilities	292	110(37.6)	96(32.8)	53(18.1)	33(11.5)
High cost of special prescribed diet	292	82(28.0)	110(37.6)	70(23.9)	30(10.)
Child Factors					
Absenteeism from school due to recurrent illness	292	133(45.5)	60(20.5)	57(19.5)	42(14.5)
Low performance in accademics	292	202(69.1)	50(17.1)	25(8.5)	15(5.3)
Poor growth and deformities	292	130(44.5)	80(27.3)	50(17.1)	32(11.1)
Psychological Factors					
Fear of occurance of crisis at odd time	292	202(69.1)	50(17.1)	30(10.2)	10(3.6)
Thought of alternative means of treatment	292	92(31.5)	97(33.2)	83(28.4)	20(6.9)
Fear of having more children with SCD	292	240(82.1)	32(10.9)	15(5.1)	5(1.9)
Disease Factors					
Fear for re-curring crisis	292	292(100)	0(0.0)	0(0.0)	0(0.0)
Fear for sickness /infections	292	292(100)	0(0.0)	0(0.0)	0(0.0)
Fear for death	292	292(100)	0(0.0)	0(0.0)	0(0.0)
Family Factors					
Fear for rivalry/jealousy among the sick child's siblings	292	99(33.9)	109(37.3)	64(21.9)	20(6.9)
Reduces job performance in the family	292	47(16.0)	99(33.9)	73(25.0)	73(25.1)
Impacts on marriage as you give all the time to the sick child	292	39(13.3)	50(17.1)	70(23.9)	133(54.3)
Affects family social life	292	97(33.2)	103(35.2)	85(29.1)	7(2.5)

Table 3: Coping strategies adopted by mothers of school age children with SCD accessing treatment in health facilities in Enugu Metropolis

Variables	Total Number Of Mothers (%)	Coping Mechanism		
		Confront (%)	Complain (%)	Ignore (%)
Hospital Factors	292(100.0)	180(61.6)	72(24.6)	40(13.8)
Financial Factors	292(100.0)	50(17.1)	202(69.1)	40(13.8)
Child Factors	292(100.0)	210(71.9)	60(20.5)	22(7.6)
Psychological Factors	292(100.0)	72(24.6)	140(47.9)	80(27.5)
Disease Factors	292(100.0)	0(0.0)	292(100.0)	0(0.0)
Family Factors	292(100.0)	180(61.6)	72(24.6)	40(13.8)

Table 4: Association between Stressors and marital status of the mothers of school aged children with SCD accessing treatment in Enugu Metropolis

Impediments/ Marital Status	N=292	Stress Level			X^2	P-Value
		Very stressful	Stressful	Non-stressful		
Hospital Factors						
Married Mothers	200(68.5)	50(25.0)	125(62.5)	25(12.5)		
Single Mothers	92(31.5)	62(67.3)	20(21.7)	10(11.0)		
Total	292(100.0)	112(38.4)	145(49.7)	35(11.9)	50.83	0.000
Financial Factors						
Married Mothers	200(68.5)	122(61.0)	58(29.0)	20(10.0)		
Single mothers	92(31.5)	72(78.2)	15(16.3)	5(5.5)		
Total	292(100.0)	194(66.4)	73(25.0)	25(11.6)	8.441	0.014
Child Factors						
Married Mother	200(68.5)	120(60.0)	69(34.5)	11(5.5)		
Single Mothers	92(31.5)	80(86.9)	12(13.1)	0(0.0)		
Total	292(100.0)	200(68.5)	81(27.7)	11(3.8)	27.12	0.000
Psychological Factors						
Married Mothers	200(68.5)	146(73.0)	50(25.O)	4(2.0)		
Single Mothers	92(31.5)	69(75.0)	17(18.4)	6(6.6)		
Total	292(100.0)	215(73.6)	67(22.9)	10(3.5)	4.781	0.091
Disease Factors						
Married Mothers	200(68.5)	200(100.0)	0(0.0)	0(0.0)		
Single Mothers	92(31.5)	92(100.0)	0(0.0)	0(0.0)		

Total	292(100.0)	292(100.0)	0(0.0)	0(0.0)	0.000	1.000
Family Factors						
Married Mothers	200(68.5)	49(24.5)	71(35.5)	80(40.0)		
Single Mothers	92(31.5)	42(45.6)	25(27.2)	25(27.2)		
Total	292(100.0)	91(27.7)	96(32.9)	105(39.4)	3.780	0.151

Table 5: Association between coping mechanism and marital status of the mothers of school aged children with SCD accessing treatment in health facilities in Enugu Metropolis

Variables/Marital Status		Coping Mechanism				
	N=292	Confront	Complain	Ignore	X^2	P-Value
Hospital Factors						
Married Mothers	200(68.5)	133(66.7)	42(21.0)	25(12.3)		
Single Mothers	92(31.5)	47(51.0)	30(32.6)	15(16.4)		
Total	292(100.0)	180(61.6)	72(24.7)	40(13.7)	6.490	0.039
Financial Factors						
Married Mothers	200(68.5)	35(17.5)	132(66.0)	33(16.5)		
Single mothers	92(31.5)	15(16.3)	70(76.0)	7(7.7)		
Total	292(100.0)	50(17.1)	202(69.2)	40(13.7)	4.610	0.099
Child Factors						
Married Mother	200(68.5)	160(80.0)	30(15.0)	10(5.0)		
Single Mothers	92(31.5)	50(54.3)	30(32.6)	12(13.1)		
Total	292(100.0)	210(71.9)	60(20.5)	22(7.6)	20.51	0.000
Psychological Factors						
Married Mothers	200(68.5)	52(26.0)	120(60.0)	28(14.0)		
Single Mothers	92(31.5)	20(21.7)	20(21.7)	52(48.6)		
Total	292(100.0)	72(24.7)	140(47.9)	80(27.4)	28.51	0.000
Disease Factors						
Married Mothers	200(68.5)	0(0.0)	200(100.0)	0(0.0)		
Single Mothers	92(31.5)	0(0.0)	92(100.0)	0(0.0)		
Total	292(100.0)	0(0.0)	292(100.0)	0(0.0)	0.000	1.000
Family Factors						
Married Mothers	200(68.5)	140(70.0)	50(25.0)	10(5.0)		
Single Mothers	92(31.5)	40(43.4)	22(23.9)	30(32.7)		
Total	292(100.0)	180(61.6)	72(24.7)	40(13.7)	23.21	0.000

In this study, the socio-demographic characteristics of mothers of school aged children with SCD were similar to those of other studies carried out in other parts of Nigeria [2,18]. Whilst only about half of the mothers had secondary school education, 34.3% completed tertiary education, 12.3% has only primary education and 3.4% did not have any formal education. In addition, the socio-economic stratification of the mothers was similar to parents of children with other illness in south western Nigeria [2,19,20], except having associated mothers in present study with number of children suffering SCD. There is therefore no reason to suggest that the participants involved in this study differed in socio-demographic characteristics from the general population in our environment other than the illness variables.

This study investigated six basic factors that affect mothers of children suffering SCD, the first was the hospital factors which comprised of; unavailability of hospitals treating SCD, unsatisfactory services by health personnels and mother's inability to keep medical appointments. These were big challenges to mother mothers, especially the single mothers who saw them as very stressful events unlike most married mothers who saw hospital factors as just stressful events. The discrepancy existing on hospital factors between married and single mothers would be given to the fact that, some married mothers involve their husbands in the treatment and taking care of the children with SCD, as a result reducing the impediments facing them. More than half of the mothers agreed that hospital factors are coped with by confronting the situation. They confront the situation either by, getting suitable hospitals that treat SCD, trying their best to keep medical appointments and reporting medical personnels who have not discharged their duties well. These are consistent with the work of Olley, Brieger and Olley, which reported varying ways mothers of children with SCD confront hospital stress factors [4].

The financial factors facing mothers is very high in this study. Two third of the mothers reported that the expenses of their child's illness were very high. These expenses include, cost of treatments and drugs, cost of transporting the sick child to hospitals and cost of providing special diet for the child. Considering the expenses these mothers undergo, it must be stressful paying the child's hospitals bills, catering for the family's basic needs such as, food, school fees, clothing and house rents. Like hospital stress factors, financial stress factors are high among single mothers. The reason could be, as single mothers, they try to balance the financial needs of the house in order to provide all the basic needs. Since they do not have spouses, all the financial burdens in the house are on them, it must be very stressful settling these financial burdens.

In Nigeria, like many other developing countries, national programme on health insurance are not functioning adequately, making caring for a child with chronic illness such as SCD a great financial burden and stress to their care givers especially single mothers [21]. The predominant financial coping mechanism adopted by the mothers was to complain. A greater number of the mother's express complaint through, anger, self-blame, weep and prayers. Most times, some single mothers complain to their relations, who may help pay off their hospital bills. However, some rich mothers confront their financial stress, because they could afford the cost of treatments and hospital bills.

Child factors which occur in the form of frequent school absenteeism as a result of re-current crisis, low performance in school and poor growth/deformities were another major stress to the mothers as shown in this study. Most mothers confronted child stress factors through avoiding re-current crisis by providing the children with medications promptly and providing them with adequate nutrition. Some develop adequate and concrete educational plan that is less tedious and bearable for the child's condition.

Another important factor which has a serious health concern to mothers is the psychological factors. Psychological factors were based mainly based on fear. The fear of occurrence of crisis at odd times, thought of alternative means treatment and fear for having more children with SCD, all these weighs in the minds of mothers, who subsequently suffered depression and other health related problems. This is consistent with a case-control study on psychosocial and family functioning on children with SCD and their mothers in Atlanta, Georgia, where they found sickle cell patients and their care givers experiencing more depressive symptoms than the control [22]. Similar studies in developing countries like Nigeria also agreed with this high depression among caregivers of patients with chronic illness [2,18]. Most Mothers have coped differently with psychological stress by avoiding re-occurrence of crisis at odd times through giving prompt medications and being always prepared in case of emergencies. Some made up their minds not to give birth again, just to relief them the fear of bearing another child with SCD.

Greater number of mothers complains about their psychological stress. They do this to seek people's opinions and counsels, in order to know how best to deal with fear and other psychological stress. However, this study recorded some mothers who just ignore psychological stress associated with child SCD. Some of them who ignore psychological factors are too religious or people who believe in divination and God's intervention in their case.

All the mothers in this study strongly agree that disease factors which were seen as fear of re-occurring crisis, fear of sickness/infections and fear for death were very stressful. Some mothers reported that at some stage in their child's conditions, they gave up hope waiting for a miracle to happen. At this point, the child's sickness must have sapped them all the money they had, and they were left with no other option than death. Reporting on how they coped with it, they revealed that there was no way to cope with it but to complain. Some said you can only lament, cry, express anger and depression, you can't fight death or ignore your child as she/ he dies in pains. A study in Nigeria on mother's stress in SCD shows that some mothers complain about disease stress factors rather than confronting or ignoring them [4].

Family social life and interaction have been described as significant areas of social life for SCD patients and their families [2]. In this study, most mothers give all their time to their sick children and agreed that due to time and are given to their sick children, it has given rise to jealousy among other children, reducing their job performance in the house, impacting on their marriage and affecting the family's entire social life. The way mothers relate with their ill children generally generates feelings of neglect in other members of the family especially the siblings of the ill child and this is a major factor in family dysfunction [16]. This neglect, especially when experienced too frequently has been described as risk factors in the psychopathology of psychosocial problems in chronic physical illness [4]. However, these factors are confronted by majority of mothers. In this study, mothers try to balance the feelings among other siblings. They buy things for other children, so as to remove the feelings of neglect in them. Some mothers make out time for their families to balance the lost time in caring for their ill children. This is consistent with the study of Adegoke and Kuteyi, which reported mothers confronting family social factors associated with child SCD.

CONCLUSION

This study has shown that both married and single mothers of children with SCD experience significant impediments which they adopted various ways of coping. It is therefore important that policy makers in government and private clinics provide the necessary psychological care and support to mothers who are facing these challenges so as to assuage the level of stress they undergo.

Conflict of Interest

The authors declare that there is no conflict of interest.

Financial Support

None declared.

Author's Contribution

This is research carried out by Ifeyinwa N. Obi and Princewill U. Njoku, While Dr. (Mrs.) Blessed Nworuh was the research supervisor.

Acknowledgements

The authors are grateful to the management and ethical committees of the underlisted institutions for approving the study:

1. University of Nigeria Teaching Hospital Enugu (UNTH)
2. Enugu State University Teaching Hospital (ESUTH) And
3. The Department of Public Health, Federal University of Technology, Owerri.

REFERENCES

1. Durham,W.H. Co-evolution: Genes, Culture and Human diversity. Stanford, CA: Stanford University Press. 1991.
2. Ohaeri, J.U., & Sokunbi, W.A. Psychosocial burden of sickle cell disease on care givers in a Nigerian setting. Journal of National Medical Association, 2002; 94(12): 1058-1070.
3. Olatawura, M. P. Sickle cell disease- The psychological Aspects. African Journal of Psychiatry, 1976; 3, 373–377.
4. Olley, L. B., Brieger, W. R., Olley, B. O. Perceived stress factors and coping mechanisms among mothers of children with sickle cell disease in western Nigeria. Health Education Research, 1997; 12(2), 161–170.
5. Hall, P.; Brockington, I.F.; Levings, J.; & Murphy, C. A comparison of responses to the mentally ill in two com- munities. British Journal of Psychiatry. 1993; 162 : 99-108.
6. Kushnir T, and Kasan, R.. Major sources of stress among Women Managers, Clerical Workers and Working Single Mothers: Demand vs Resources. Public Health Review, 1995; 20, 215-29.
7. McBride, A.B, & Black, K.N, Differences that suggest female investment in, and male distance from, children sex roles, 1984;10, 231-246.

8. Breslay, N. Care of disable children and women's time use. Medical Care. 1983; 21, 620-629.
9. Aniowu, E, Watford, D, Brozovic, M, and Kirkwood, B. Sickle cell disease in a British Urban Community. British Medical Journal, 1981; 282, 285-296.
10. Diggs, L & Flower, E. Sickle cell anemia in the home environment. Clinical Pediatric. 1971; 10, 697-700.
11. Fleming, A.P, et al, Abnormal haemoglobins in the Sudan Savannah of Nigeria. Prevalence of haemoglobins and relationships between sickle cell trait, malaria and survival. Annals of tropical medicine and parasitology. 1979; 73, 161-172.
12. Afolayan, J. A., & Jolayemi, F. T. Parental attitude to children with sickle celldisease in selected health facilities in Irepodun Local Government, Kwara State, Nigeria. Studies on Ethno-Medicine. 2011; 5(1), 33–40.
13. Noll RB, McKellop, JM, Vannatta KM, Kalinyak K. Child-rearing practices of Primary Care Givers of Children with Sickle Cell Disease: The Perspective of Professionals and Care Givers. Journal of Paediatric Psychology, 1998; 23(2): 131-140.
14. Hopia, H., Tomlinson, P. S., Paavilainen, E. & Astedt-Kurki, P. Child in hospital: Family experiences and expectations of how nurses can promote family health. Journal of Clinical Nursing, 2004; 14(2), 212–222.
15. World Health Organization. Management of birth defects and haemoglobin disorders: Report of a joint WHO-March of Dimes meeting, Geneva, Switzerland, 2006; 17–19 May 2006.
16. Brown, B., Okereke, J., Lagunju, I., Orimadegun, A., Ohaeri, J., & Akinyinka, O. Burden of health-care of carers of children with sickle cell disease in Nigeria. Health Social Care Community. 2010; 18, 289-295.
17. Van Den Tweel, X.W., Hatzmann, J., & Ensike, E.. Quality of life of female carers of children with Sickle cell disease: A survey. Heamatologica 2008; 93(4), 588–593.
18. Tunde-Ayinmode M. F. Psychosocial impact of sickle cell disease on mothers of affected children seen at University of Ilorin Teaching Hospital, Ilorin, Nigeria. East Africa Medical Journal, 2007; 84(9), 410–419.
19. Adegoke, S. A., Dedeke, I. O. F., & Oyelami O.A. Childhood injuries in Ilesha, South-Western, Nigeria: Causes, Patten and Outcome. West African Journal of Medicine, 2010; 29(4), 253-258.
20. Ogunlesi,T., Runsewe-Abiodun, I., & Olanrewaju, D. Health care seeking behavior for childhood illnesses in a resource-poor setting. Jounal of Paediatric Child Health, 2009; 1440-1754 http://dx.doi.org/10.111/j.1440-1754.2009.01677.x
21. Adegoke, S. A., & Kuteyi, E. A.. Psychological Burden of Sickle Cell Disease on Family, Nigeria. African Journal of Primary Health Care & Family Medicine. 2012; 4(1), 1-6.
22. Levers, C. E., Brown, R. T., Lambert, R. G., Hsu, L., & Eckmann, J.R. Family functioning and social support in the adaptation of caregivers of children with sickle cell syndromes. Journal of Pediatric Psychology, 1998; 23(6), 377–388.