

Stress and Coping Strategies of Parents of Preterm Infants in Selected Tertiary Health Institutions in Ekiti State

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Background: Preterm birth is one the leading causes of death among children below the age of five years and involves all births that occur before 37 weeks of gestation. This study therefore examined the stress and coping techniques of preterm infants parents in Ekiti State University Teaching Hospital and Federal Teaching Hospital, Ekiti State.

Methodology: This study adopted quantitative research method and study was conducted among parents of preterm infants in two selected teaching hospital Ekiti State Nigeria. Sample size was determined using Fischer's formula and the sample consisted of 82 respondents selected using purposive sampling technique. Data were collected using a standardized instrument (Family Inventory of Life Events and Changes) developed by McCubbin & Patterson (1983) with reliability index of 0.83. Data collected were analyzed using descriptive statistics of frequency, percentages, mean, standard deviation and tables while inferential statistics of chi-square and correlation were used to test stated hypothesis at 0.05 level of significance.

Results: The results showed that majority (32.1%) of preterm babies were jaundiced and were male (58.9%). Parents of preterm infants experienced moderate (85%) level of stress. However, finances and business strains were identified as major stress experienced by preterm infant parents. Overall coping level was high (65.2%) and coping strategies employed were seeking information and advice; positive reframing; and seeking for assistance. The findings also revealed

no correlation between perceived stress and coping technique; no significant association between the socio-demographic factors and stress experienced by parents of preterm infants.

Conclusion: This study showed that parents of preterm infants experienced stress but developed coping techniques to suppress their level of stress. It is therefore recommended that nurses should develop proper understanding about the parents' stressful situations to provide a holistic care to the neonates and their parents.

Keywords: Stress; coping technique; preterm birth; neonates; NICU.

1. INTRODUCTION

Preterm birth is considered one of the leading causes of death among children below the age of five years and involves all births that occur before 37 weeks of gestation or fewer than 259 days since the first day of a woman's last menstrual period. It is estimated that preterm birth occurs for a variety of reasons including spontaneous delivery, early induction of labour or caesarean birth, whether for medical or non-medical reasons [1]. The incidence of preterm birth is considered to be associated with biological and environmental factors like cervical insufficiency, previous abortion, foetal malformation, high Body Mass Index (BMI), late or no healthcare during pregnancy, smoking, stress, and exposure to certain environmental pollutants among other factors [2].

Other significant factors associated with preterm birth include multiple pregnancies, infections and chronic conditions such as diabetes and high blood pressure. More so, there could also be a genetic influence and these myriads of factors have led to an estimated global preterm birth prevalence of 5% to 18% (WHO, 2020a). According to World Health Organization [3] prevalence of preterm births is higher in low- and middle-resource countries compared to the more affluent nations of the world. As indicated in the World's report [4], more than 60% of preterm births occur in Africa and South Asia with the highest prevalence occurring in India (3,519,100), China (1,172,300), Nigeria (773,600), Pakistan (748,100), Indonesia (675,700), United States of America (517,400), Bangladesh (424,100), Philippines (348,900), Democratic Republic of the Congo (341,400), and Brazil (279,300).

The birth of a preterm child is a significant sign of stress in the family and providing care for a preterm child can exert significant amount of stress on the family of the new born as have been demonstrated by several studies [5-8], compared to women who have full-term births,

mothers of preterm babies tend to have more emotional distress after 24-72 hours following birth [5], reduced quality of life [9]. This is as a result of various financial and emotional strains that parents have to go through in taking care of the child.

The burden of caring for a preterm child is often more aggravated in low-/middle- income countries with highest prevalence of preterm births [1]. However, in high countries, pregnant women are able to have access to better socioeconomic conditions, lifestyles and nutrition, which often result into healthier pregnancies, and modern neonatal care technology as well as highly specialized and skilled health care givers. This is not often the case in low-income countries where modern technology is either not available, or properly manned and not accessible to the people who need them [5]. Consequently, having preterm births in such circumstances can lead to higher healthcare implications for both the mother and the child because the health of an infant is closely linked to the mother's health and the care she receives in pregnancy and childbirth [10].

In addition, the mental and emotional stress of having a pre-term child, coupled with the financial strain of having to pay for care in the hospital takes lots of toll on the parents which further affects the parents in many different ways [11]. In other words, the mother misses the joy of being able to hold her baby, breastfeed and bond right after delivery [12]. On the other hand, the father misses the expectation of being a father and also being able to nurture the mother and baby. Instead, they have to relate with the child, sometimes at a distance [13]. However, the outcome of a stressor is dependent firstly on the availability of resources to deal with the stress and the perception of the family about the situation. Ability to perceive, deal with, and handle the stressor well significantly affects a family's ability to persevere through the stressful period. This invariably requires efficient coping techniques by the parents of preterm infants [14].

Therefore, this study aimed to examine the stress and coping strategies of preterm infants parents in two (2) selected teaching hospitals, Ekiti State, Nigeria.

1.1 Objectives of the Study

1. To identify the type of stress experienced by parents of preterm infants;
2. To identify the factors that are associated with experience of stress among parents of preterm infants and
3. To determine the stress coping techniques adopted by parents of preterm infants

1.2 Hypotheses

1. There is no significant association between socio-demographic factors (gender, occupation, level of education, income) and perceived stress of parents with preterm infants.
2. There is no significant association between perceived stress and coping techniques among parents of preterm infant

2. METHODOLOGY

2.1 Research Design

This study adopted quantitative research methods to determine the level of stress and coping strategies among the parents of preterm infants.

2.2 Study Setting

This study was carried out among the parents of preterm infants in two (2) teaching hospitals (Ekiti State University Teaching Hospital and Federal Teaching Hospital, Ekiti State). These Tertiary health facilities serve as referral centres for various healthcare facilities within the State including private health centres and hospitals, maternity homes and primary health centres. The facilities accommodate comprehensive management of preterm labour, delivery and special care for the neonates.

2.3 Study Population

The population for the study was eighty-two (82) parents of preterm infants admitted to neonatal intensive care units (NICU) of Ekiti State

University Teaching Hospital and Federal Teaching Hospital, Ekiti State, Nigeria.

2.4 Sample size and Sampling Technique

the sample size was determined using Fischer's formula $z = \text{standard normal deviate} = 1.96$; $P = \text{prevalence/estimate of preterm births, } 5.7\%$ [15]; $D = \text{Margin of error, } 0.05$; $q = 1 - P$. facilities were selected using purposive sampling technique and samples were selected using convenient sampling technique for a period of eight (8) weeks among parents of preterm infants. that were present at the time of data collection.

2.5 Tools for Data Collection

Data were collected using 2 standardized instruments 'Family Inventory of Life Events and Changes (FILE) developed by [15] and Family Crisis Oriented Personal Evaluation Scales (F-COPES) developed by [16] to identify problem solving and behavioural strategies utilized by families in difficult situations. Family Inventory of Life Events and Changes (FILE) scale has 55 items grouped into nine subscales: (1) intra family strains or difficulties in family relationships, such as strains between parents and children or between ex-spouses; (2) marital strains; (3) pregnancy and childbearing strain; (4) financial and business strain; (5) work-family transitions and strains; (6) illness and family "care" systems; (7) losses (deaths in nuclear and extended family); (8) transitions "in and out" (children being launched or returning home after leaving); (9) family legal violations. Each item on the scale has separate weight of scores which is assigned only if the respondent replies 'yes' or 'no' to the question, 'yes response attract a score of 1 while a 'no' attracts a score of zero. The FILE total score ranges from 0 – 55. Scores for each subscale are computed by summing the weighted items in the subscales. Also, Family Crisis Oriented Personal Evaluation Scales (F-COPES) scale comprises 7 coping behaviour items which focused on (1) the ways a family internally handles problems between its members; and (2) the ways the family handles external demands that affect the whole family. Consequently, the scale assesses five factors of coping: (i) acquiring social support, (ii) reframing, (iii) seeking spiritual support, (iv) mobilizing family to acquire and accept help, and (v) passive appraisals. Each item on the scale is measured on a Five-point Likert scale of strongly disagree (1) to strongly agree (5). This helps to identify the coping resources most often used by the family.

2.6 Data Analysis

Data collected were coded and analysed using statistical package for social sciences (IBM SPSS) version 25.0; variables were analyzed using descriptive statistics of frequency table, percentages, mean and standard deviation while hypothesis were tested using chi-square and correlation coefficient at 0.05 level of significance.

3. RESULTS

3.1 Socio-Demographic Characteristics

Majority of the respondents were mothers 58(72.5%), professionals 27(33.8%), with tertiary

level of education 52(65.0%) and earn less than 40,000 naira 30(37.5%) on monthly basis. The neonates were age less than seven days 38(48.2%), more than half were male 47(58.9%) with diagnosis of jaundice 27 (32.1%) as presented in Table 1.

3.2 Type of Stress Experienced by Parents of Preterm Infants

The study examined different types of perceived stress experienced by the parents of preterm infants and the findings revealed that parents of preterm infants experienced financial and business strains (72.6%) in the course of caring for their preterm infants. The perceived types of stress examined were reported in Table 2.

Table 1. Socio-Demographic Characteristics of the Respondents (n=80)

Socio-demographic factors	Frequency	Percentage
Average family monthly income		
≤40000	30	37.5
40001-50000	19	23.8
50001-80000	12	15.0
80001 and above	19	23.8
Parents		
Fathers	22	27.5
Mothers	58	72.5
Occupation		
Professional	27	33.8
Self-employed	12	15.0
Civil servant	18	22.5
Business/Trading	15	18.8
Others	8	1.0
Highest Level of Education		
None	1	0.1
Primary	4	0.5
Secondary	23	28.8
Tertiary	52	65.0
Age of the neonate (Days)		
Less than 7	38	48.2
8-14	19	23.2
15-21	14	17.9
22 and above	9	10.7
Gender		
Male	47	58.9
Female	33	41.1
Diagnosis		
Jaundice	27	32.1
Respiratory diseases	14	17.9
Feeding intolerance	16	19.6
Prematurity	16	19.6
Malaria	1	1.8
Excessive crying	1	1.8
Breech	1	1.8
Declined to respond	4	5.4

Table 2. Types of perceived stress among parents of preterm infants s (n=80)

S/N	Types of perceived stress	Yes		No	
		F	%	F	%
A	Intra family Strains				
1	Increase of husband/father's time away from family	60	75.0	20	25.0
2	Increase of wife/mother's time away from family	33	41.3	47	58.8
3	A member appears to have emotional problems	48	60.0	32	40.0
4	Increase in conflict between husband and wife	29	36.3	51	63.7
5	Increase in arguments between parent(s) and child(ren)	25	31.3	55	68.8
6	Increase in conflict among children in the family	26	32.5	54	67.5
7	Increased difficulty in managing school age child(ren) (6 - 12 yrs)	34	42.5	46	67.5
8	Increased difficulty in managing preschool age child(ren) (2.5 - 6 yrs)	37	46.3	43	53.8
9	Increased difficulty in managing toddler(s) (1 - 2.5 yrs)	41	51.2	39	48.8
10	Increased difficulty in managing infant (s) (0 - 1 yrs)	46	57.5	34	42.5
11	Increase in the amount of "outside activities" which the children are involved in	45	56.3	35	43.8
12	Increased disagreement about a member's friends or activities	33	41.3	47	58.8
13	Increase in the number of problems or issues which don't get involved	39	48.8	41	51.2
14	Increase in the number of tasks or chores which don't get done	46	57.5	34	42.5
15	Increased conflict with in-laws or relatives	37	46.3	43	53.8
B	Marital Strains				
16	Spouse/parent was separated or divorced	21	26.3	59	73.8
17	Spouse/parent had an "affair"	18	22.5	62	77.5
18	Increased difficulty in resolving issues with a "former" or separated spouse	24	30.0	56	70.0
19	Increased difficulty with sexual relationship between husband and wife	34	42.5	46	57.5
C	Pregnancy and Childbearing Strains				
20	Spouse had unwanted or difficult pregnancy	28	35.0	52	65.0
21	An unmarried member became pregnant	24	30.0	56	70.0
22	A member had an abortion	24	30.0	56	70.0
23	A member gave birth to or adopted a child	24	30.0	56	70.0
D	Finance and Business Strains				
24	Took out a loan or refinanced a loan to cover increased expenses	51	63.7	29	36.3
25	Went on welfare	55	68.8	25	31.3
26	Change in conditions (economic, political , weather) which hurts the family investments and/or income	64	80.0	16	20.0
27	A member started a new business	64	80.0	16	20.0
28	Change in Agric market	62	77.5	18	22.5
29	Purchased or built a home	36	45.0	44	55.5
30	A member purchased a car or other major item	43	53.8	37	46.3
31	Increased financial debts due to overuse of credit cards	64	80.0	16	20.0
32	Increased strain on family "money" for medical/dental expenses	72	90.0	8	10.0
33	Increased strain on family "money" for food, clothing, energy, home care	73	91.3	7	8.8
34	Increased strain on family "money" for child(ren)'s education	55	68.8	25	31.3
E	Work-Family Transitions and Strains				
35	Decrease in satisfaction with job/career	53	66.3	27	33.8
36	A member changed to a new job/career	29	36.3	51	63.7
37	A member lost or quit a job	25	31.3	55	68.8
38	A member retired from work	25	31.3	55	68.8
39	A member was promoted at work or given more responsibilities	41	51.2	39	48.8
40	Family moved to a new home/apartment	29	36.3	51	63.7
41	A child/adolescent member changed to a new school	39	48.8	41	51.2
F	Illness and Family Care Strains				
42	Parent/spouse became seriously ill or injured	29	36.3	51	63.7
43	Child became seriously ill or injured	30	37.5	50	62.5
44	Close relative or friend of the family became seriously ill	29	36.3	51	63.7
45	Increased responsibility to provide direct care or financial help to husband's and/or wife's parents	33	41.3	47	58.8
G	Losses				
46	A parent/spouse died	7	8.8	73	91.3
47	A child member died	10	12.5	70	87.5

48	Death of husband's or wife's parent or close relative	15	18.8	65	81.3
49	Married son or daughter was separated or divorced	24	30.0	56	70.0
H	Transitions In and Out				
50	A member was married	47	58.8	33	41.3
51	Young adult member left home	31	38.8	49	61.3
52	A member moved back home or a new person moved into the household	27	33.8	53	66.3
I	Family Legal Violations				
53	A member went to jail or juvenile detention	6	7.5	74	92.5
54	A member was picked up by the police or arrested	6	7.5	74	92.5
55	Physical or sexual abuse or violence in the home	6	7.5	74	92.5

Table 3. Level of stress experienced by parents of preterm infants(n=80)

Extent of Stress	frequency	%	$\frac{x}{n}$
Low Stress	5	6.3	$z \leq 15.5$
Moderate Stress	68	85.0	$15.5 \geq z \leq 29.6$
High Stress	7	8.7	$29.7 \geq z \leq 43.7$

x = score in McCubbin Scale of Stress, n = total number of items in McCubbins Scale, z = weighted stress value

3.3 Level of Stress Experienced by Parents of Preterm Infants

Parent of preterm infants showed moderate level of stress (85%) as presented in Table 3.

3.4 Coping Techniques Adopted by Parents of Preterm Infants

Coping techniques adopted by the parents were assessed using the F-COPE questionnaire were presented in Table 4. The findings revealed that preterm infants parents mostly adopted "having faith in God" (Mean= 3.66, S.D = 1.4). Facing the problems head on and trying to get solution right away was also a coping technique often used by preterm parents (Mean=3.5, SD = 1.5). "Seeking information and advice from persons in the families who have faced the same similar problems" and "Seeking professional counseling and help for family difficulties" had the same mean score but different SD (Mean =3.31, S.D=

1.5, 1.6) respectively. "Seeking information and advice from family doctor" and "Defining the family problem in a more positive way so as not to be too discouraged" were two coping strategies with less than weighted mean of 3.00; hence, they were termed poor coping strategies with value of (Mean =2.86, S.D= 1.4) and (Mean =2.90, S.D= 1.3) respectively.

3.5 Pattern of Stress Experienced by Parents of Preterm Infants

The pattern of stress experienced by preterm infants parents were reported in Fig. 1. over two-third of the respondents reported finance and business strains, work family transition strains, transition in and out, and intra family strains as perceived stress experienced. On the other hand, marital strain, pregnancy and child bearing strains, losses and family legal violation were not the perceived stress experienced by the respondents.

Table 4. Coping Techniques adopted by parents of preterm infants (n=80)

S/N	Coping techniques adopted by parents	5	4	3	2	1	Mean	S.D	Remark
1	Having faith in God	28	25	7	12	8	3.66	1.4	GS
2	Seeking professional counselling and help for family difficulties	16	35	4	8	17	3.31	1.5	GS
3	Facing the problems "head on" and trying to get solution right away	30	19	2	19	10	3.50	1.5	GS
4	Seeking information and advice from the family doctor	14	14	13	25	14	2.86	1.4	PS
5	Defining the family problem in a more positive way so that we do not become too discouraged	9	22	14	22	13	2.90	1.3	PS
6	Accepting that difficulties occur	22	19	5	14	20	3.11	1.6	GS

S/N	Coping techniques adopted by parents	5	4	3	2	1	Mean	S.D	Remark
7	expectedly Seeking information and advice from persons in other families who have faced the same similar problems	29	12	7	19	13	3.31	1.6	GS

GS = Good Score, PS = Poor Score

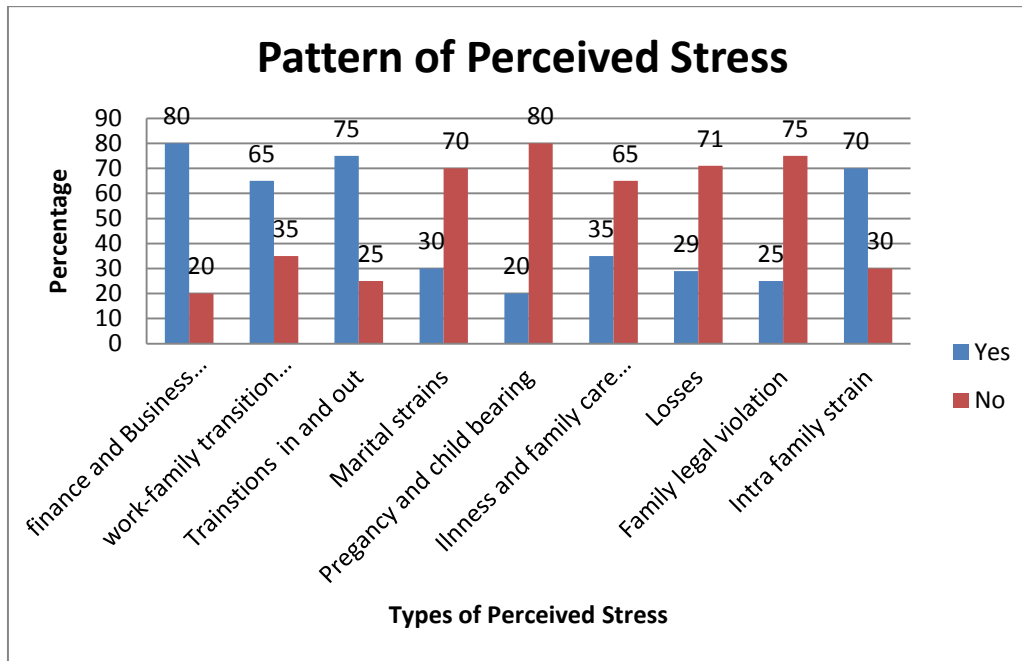


Fig. 1. Pattern of perceived stress experienced by the respondents

Table 5. Fisher's-Exact Test for the relationship between Socio-demographic factors and perceived stress of parents with preterm infants

Socio-demographic factors	Perceived Level of Stress			χ^2	p value
	Low	Moderator	High		
Average family monthly income					
≤40000	4	19	7	2.740	0.867
40001-50000	5	12	2		
50001-80000	2	7	3		
80001 and above	4	12	3		
Sex					
Fathers	1	20	1	10.295	0.004*
Mothers	14	30	14		
Occupation					
Professional	4	14	9	10.424	0.196
Self-employed	1	11	0		
Civil servant	4	12	4		
Business/Trading	4	10	1		
Others	2	3	1		
Highest Level of Education					
None	0	0	1	9.630	0.086
Primary	0	4	0		
Secondary	6	16	1		
Tertiary	9	30	13		

χ^2 : Fisher's-exact Test

3.6 Relationship between Socio-demographic Factors and Perceived Stress of Preterm Infants' Parents

A Fisher's-exact test (χ^2) showed that there was no statistically significant relationship between socio-demographic factors such as occupation ($\chi^2 = 10.424, p = .196$), level of education ($\chi^2 = 9.630, p = .086$), income ($\chi^2 = 2.740, p = .867$) and perceived stress of parents with preterm infants; however, gender with ($\chi^2 = 10.295, p = .004$) shows significant relationship this suggest that male and female parents

perceived stress differently as presented in Table 5.

3.7 Relationship between Perceived Stress and Coping Technique among Parents of Preterm Infants

There is no significant relationship between perceived stress and coping strategies adopted by preterm infants' parents. Chi square Test between Perceived Stress and Coping techniques among Parents of Preterm babies was presented in Table 6.

Table 6. Chi square Test between Perceived Stress and Coping techniques among Parents of Preterm babies

Stress Level	Coping technique adopted					Df	χ^2	P
	5	4	3	2	1			
Having Faith in God								
High	2	1	1	2	1	8	6.28	0.75
Moderate	25	23	6	8	6			
Low	1	1	0	2	1			
Seeking professional counselling and help for family difficulties								
High	0	3	0	1	3	8	13.32	0.25
Moderate	15	32	3	5	13			
Low	1	0	1	2	1			
Facing the problems head on and trying to get solution right away								
High	2	1	0	3	1	8	6.56	0.72
Moderate	27	15	2	16	8			
Low	1	3	0	0	1			
Seeking information and advice from the family doctor								
High	1	2	0	4	0	8	10.38	0.25
Moderate	13	10	11	20	14			
Low	0	2	2	1	0			
Defining the family problem in a more positive way so that we do not become too discouraged								
High	1	3	0	2	1	8	5.26	0.57
Moderate	8	18	12	18	12			
Low	0	1	2	2	0			
Accepting that difficulties occur expectedly								
High	2	1	0	1	3	8	4.92	0.90
Moderate	19	16	4	13	16			
Low	1	2	1	0	1			
Seeking information and advice from persons in other families who have faced the same similar problem								
High	3	1	0	2	1	8	5.69	0.58
Moderate	26	9	41	16	11			
Low	0	2	1	1	1			

4. DISCUSSION

The findings from the study showed moderate level of stress among parents of preterm infants. This findings was in tandem with the report of Madhi [17] that revealed moderate level of stress among their participants. In addition to this, Gurgani & Jogi [18] also reported moderate level of stress amount the preterm parents. This study also revealed that coping strategies adopted by the respondents were faith in God, seeking professional counseling, seeking information and advice from the family doctors. This showed that the parents exhibited high level of coping strategies. In support of these findings, Gurgani & Jogi [18] reported high level of coping strategies among preterm parents, however, in contrast to the findings from this study, [19], reported moderate level of coping which is also in agreement with the findings from [17] that reported moderate level of coping in different domains like cognitive domain, emotional coping domain, spiritual coping domain, and physical domain.

The findings from the study also revealed no statistically significant relationship between socio-demographic characteristics such as level of education, occupation, and average monthly income and stress perceived by the parents of preterm infants. This finding is at variance with the result of study conducted by [19] that showed a statistically significant association between the stress and coping strategies of mothers and their ages, educational level and occupation. However, in support of the findings from the study, [20] reported no significant association between parents' age, education level, occupation, infant birth weight and stress; except in occupation which was significant.

The study also revealed no statistically significant relationship between perceived stress and coping techniques among the respondents. The finding of the study was aligned with the results of [21] who also found out that there was no significant relationship between the level of stress and coping strategies used by parents of neonates admitted in intensive care units.

5. CONCLUSION

In conclusion, this study showed that majority of preterm babies were jaundiced and their parents experienced moderate level of stress. High coping level was observed among parents of preterm infants and coping strategies utilized include seeking information and advice; positive

reframing; and seeking for assistance. Finances and business strains were identified as major constraints experienced by preterm infants' parents. Socio-demographic factors were not associated with the level of stress experienced by the parents and the stress experienced is not a function of coping techniques adopted, thus there was no correlation between perceived stress and coping technique. Therefore, parent of preterm infant in neonatal intensive care unit need advice and support while taking care of the infants in NICU.

DISCLAIMER

The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

ETHICAL CONSIDERATION AND CONSENT

Ethical approval to conduct the study was obtained from the Ethics and Research Committee of Afe Babalola University, Ado-Ekiti. Ethical clearance was obtained from the Ethics and Research Committee of the two (2) selected teaching hospitals; Ekiti State University Teaching Hospital and Federal Teaching Hospital with reference/protocol number EKSUTH A67/2021/04/002 and ERC/2021/03/08/492B respectively. Also, the researcher had obligation to the subjects by getting their informed consent consistent with the principle of individual autonomy. Their voluntary participation, anonymity, privacy and confidentiality when collecting the data were also guaranteed. Their right to participate and not to participate was duly respected and any respondents that want to opt out during the study were allowed.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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