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2
3 **SOCIODEMOGRAPHIC DETERMINANTS OF**
4 **FAMILY FUNCTIONING OF PEOPLE LIVING**
5 **WITH HIV/AIDS ACCESSING CARE AT A**
6 **NIGERIAN TERTIARY HEALTH CENTRE**
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12 **ABSTRACT**
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Aims: To assess the family functioning and identify its determinants among adult PLWHA at Bowen University Teaching Hospital, Ogbomoso.

Study design: The study is a descriptive cross-sectional study.

Place and Duration of the Study: The study was conducted in the Antiretroviral (ARV) Clinic of the Bowen University Teaching Hospital, Ogbomoso, Nigeria from January 2014 to March 2014

Methodology: Sixty-one HIV-infected patients aged 18 years and older were selected using the systematic random sampling. Data was collected using a pre-tested, structured, researcher-administered questionnaire which had a section on respondents' socio-demographic characteristics and incorporated the General Functioning scale of the Family Assessment Device to assess their family functioning. The data were analysed using SPSS and presented as descriptive and inferential statistics.

Results: The mean age of the 61 respondents was 37.1 ± 8.1 years and 43 (70.5%) of them were females. Most of the respondents were married (65.6%) and the proportion of those with primary education (37.7%) was highest. A mean GF score of 1.8 ± 0.6 indicated overall healthy family functioning. The proportion of respondents with healthy family functioning was highest for the married among all marital categories and decreased with increasing level of education. These associations of marital status and level of education with family functioning were statistically significant ($P = 0.02$ and 0.04 respectively)

based on the result of Fisher's exact test.

Conclusion: The fact that larger proportions of the respondents were married and had low education level was found to have influenced the finding of a high rate of healthy family functioning in this study. Therefore, regular family functioning assessment as part of routine evaluation of PLWHA is suggested, and interventions that can temper the dysfunctional influences of formal education on family functioning should be incorporated into HIV/AIDS care.

Keywords: Sociodemographic determinants, Family functioning, HIV/AIDS, Nigerian

3. *Research Papers and Short Notes* should follow the structure of Abstract, Introduction, Methodology, Results and Discussion, Conclusion, Acknowledgements, Competing Interests, Authors' Contributions, Consent (where applicable), Ethical approval (where applicable), and References plus figures and/or tables.)

1. INTRODUCTION

The epidemic of HIV/AIDS remains one of the world's most serious health challenges, with 34 million people were living with HIV at the end of 2011 globally. The burden of the epidemic continues to vary considerably between countries and regions, but Sub-Saharan Africa which accounted for 69% of the people living with HIV worldwide in 2011, remains the most severely affected. Nigeria has an expanding population of people living with HIV/AIDS (PLWHA) and the disease continues to contribute significantly to public health problems, having now permeated all strata of the population.² Previous studies have shown that HIV/AIDS profoundly affects the family and not just the individual, since there is almost always a family that is also impacted for every person infected with HIV.^{3,4}

Family functioning encompasses family communication styles, traditions, roles and boundaries, and the degree of fusion, flexibility, adaptation, and resilience. It is a measurable index which describes the way in which members of a family interact, react to, and treat other family members.⁵ When a family unit effectively copes with cultural, environmental, psychosocial and socioeconomic stresses throughout the family life cycle, the functioning is reckoned to be healthy.⁶ Healthy functioning families strive to maintain stability and continuity within the family system while adapting to various life events, including adverse ones. Unhealthy functioning families, on the other hand, are unbalanced, or **extreme**, in cohesion, communication, flexibility or adaptation to life events.⁵

The PLWHA have to cope with a number of challenges, including physical health symptoms, problems with medications, stigma and fear of AIDS-related death, and might thus find it difficult to perform their family roles. Such limitations may negatively affect their children, partners or extended families who must take up some added responsibility with consequent potential to severely impact their family relationships and functioning. Nevertheless, the family represents concentric circles of an individual's social surroundings and hold immense potential for strength and support during times of need and crisis, like HIV-infection presents.⁷ The support offered by a well-functioning family may help a HIV-infected member cope better with the different **phases scourges** of the disease such that his/her general well-being and quality of life improve. This in turn possesses the power to transform the infected person from a despondent dependant to a positively motivated member of the family and economically productive citizen in the community. Hence, family functioning has the potential to influence multiple areas of HIV-infected persons' life and mitigate the negative effect of the disease on the society at large.

In Africa, although studies that directly assessed the family functioning of HIV/AIDS patients are scarce, it is not out of place to expect that how the family functions will impact individual members' life either positively or negatively, considering that African family systems are fundamentally characterised by strong emotional ties binding members together and promoting sharing and mutual dependence. A cross-sectional survey of 160 HIV/AIDS patients in Nigeria showed better quality of life among married than unmarried women.⁸ Physical, emotional, and social support (received by the married women from their husbands), which the authors adduced for this difference are all indices of a well-functioning family. Similarly, Odili and colleague⁹ opined that the family is the most important component of the immediate environment of the HIV/AIDS patient and that a good and supportive home environment can help the patient feel better.

Iwelunmor *et al*¹⁰ from a study of 204 participants made up of both PLWHA and their family members in South Africa found that family functioning can make or mar the life of an infected members. Supportive strong families are the first and best approach to caring for infected family members and their support makes multiple levels of positive impact on both PLWHA and family relationships. On the other hand, the family can be a source of stress if members react to the diagnosis with disbelief, shock, and confusion, or succumb to stigma and HIV-related discrimination. Stigma often leads to social isolation and loneliness not only for the PLWHA, but also for the household caregivers, inhibiting families from providing adequate support.

64 The family system's concept of interdependency supports the link between family experience and individual well-being.
65 Therefore, this study seeks to assess the family functioning and identify its determinants among adult PLWHA at Bowen
66 University Teaching Hospital, Ogbomosho. The information thus gathered could then be of immense usefulness in the
67 proactive advocacy for the development and incorporation of HIV-specific family interventions and policies into the care of
68 PLWHA. This in turn could improve outcomes in family functioning and relationships of PLWHA and, by extension their
69 overall well-being.

71 2. METHODOLOGY

73 The study was carried out in the Antiretroviral (ARV) Clinic of the Bowen University Teaching Hospital, Ogbomosho located
74 about 86 kilometres north of Ibadan, south-western Nigeria. The hospital is a referral centre for many other hospitals in
75 and around Ogbomosho. The patients were mainly from Ogbomosho and nearby cities and towns. The ARV clinic runs once
76 a week and caters for a total of about 395 HIV-infected adults according to the hospital record at the end of June 2013.

77 The study was a hospital-based cross-sectional study conducted between January 2014 and March 2014. The study
78 population consisted of male and female HIV-infected adults aged 18 years and above who attended the ARV clinic of the
79 study centre within the study period and also satisfied the inclusion criteria. The patients enrolled into the clinic are those
80 who were found to be HIV-positive based on the recommended serial immunoassay-based rapid HIV testing, using
81 Determine™ HIV-1/2 kit (Alere Medical Co., Ltd, Japan), Uni-Gold™ HIV kit (Trinity Biotech Plc, Ireland) and/or HIV 1/2
82 STAT-PAK® kit (Chembio Diagnostic Systems, Inc, USA).¹¹

83 The sample size was calculated to be 61 using the formulae¹²:

$$84 n = \frac{Z^2 pq}{d^2}$$

85 and

$$n_f = \frac{n}{1 + \left(\frac{n}{N}\right)}$$

86 These 61 participants were selected using the systematic random sampling technique after obtaining their informed
87 consent and the requisite ethical approval. Data were collected using a pretested questionnaire administered by the
88 researchers. The questionnaire included sections on sociodemographic characteristics (age, gender, religious affiliation,
89 marital status, occupation, level of education and ethnicity) and family functioning measured with the General Functioning
90 (GF) scale of the Family Assessment Device.¹³ Data entry and analysis were done using the statistical package for social
91 science (SPSS) software, version 16.0 (SPSS Inc., Chicago, Illinois, USA).

92 The standard occupational classification system designed by the Office of population Census and Surveys, London
93 (OPCS 1991)¹⁴ and modified for Nigeria^{15,16} was used to classify respondents into socio-economic classes 1 to 3 as
94 follows:

95 **Class 1:** Skilled worker e.g. professionals and managerial officers and retirees of this cadre;

96 **Class 2:** Unskilled workers e.g. Artisans and traders;

97 **Class 3:** Dependants. e.g. Retirees of class 2, those not on pensions, house wives of class 2 cadre, students.

98 The General Functioning (GF) scale is a 12-item questionnaire which constitutes part of the larger Family Assessment
99 Device.¹³ It consists of six positive items/statements (e.g., in times of crisis we can turn to each other for support) and six
100 negative items/statements (e.g., we don't get along well together). Family members rate how well each statement
101 describes their family by selecting from among four alternative responses: strongly agree, agree, disagree and strongly
102 disagree. The questionnaire is designed to be completed by family members over the age of 12 years. The responses
103 strongly agree, agree, disagree and strongly disagree to the positive items (statements 2, 4, 6, 8, 10 and 12) were scored
104 1, 2, 3 and 4 respectively but 4, 3, 2 and 1 respectively for the negative items (statements 1, 3, 5, 7, 9 and 11). The scores
105 of the 12 items were added together and divided by 12 to calculate the total score, such that the total score ranged from 1
106 to 4. The higher the total score, the less healthy the family functioning. The GF scale has been used alone as a brief
107 measure of overall family functioning, possessing a good reliability and well-proven validity. It is brief and easy to
108 administer, and has been recommended as a global assessment of family functioning.^{17,18} Total scores of <2 on the GF
109 scale was taken as healthy family functioning, and scores ≥2 as unhealthy family functioning.¹³

110 Data were presented in tables. Means for continuous variables and proportions for categorical variables were calculated
111 to describe the respondent population. A further comparison was drawn through cross-tabulation of the variables. The
112 statistical significance of the differences between the means of more than two groups was tested using one-way ANOVA
113 (analysis of variance) whereas the statistical significance of associations among categorical variables was tested with
114 Fisher's exact test.^{19,20} All *p* values were two-tailed and the level of significance was set at *P* < 0.05 for all statistical
115 comparisons.

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3. RESULTS AND DISCUSSION

The information displayed in Table 1 shows that the proportion (41.0%) of respondents within age group 40- 49 years was highest (mean age was 37.1 years) and more than two-thirds (70.5 %) of them were females. The majority (68.9%) were christians while the rest (31.1%) were muslims. Most respondents were married (65.6%) and the proportion of those with primary education **only** (37.7%) was highest. The overwhelming majority (85.3%) of the respondents belonged to socioeconomic class 2 and almost all of them were Yoruba (90.2%). Three-fifth (60.7%) of the respondents had healthy family functioning. A mean GF score of 1.8 indicates overall healthy family functioning.

TABLE 1: SOCIODEMOGRAPHIC CHARACTERISTICS AND FAMILY FUNCTIONING OF RESPONDENTS

Variables (N=61)		Frequency	Percentage
Age groups (years)	20 – 29	12	19.7
	(Mean = 37.1 ± 8.1 years)		
	30 – 39	21	34.4
	40 – 49	25	41.0
	≥50	3	4.9
Gender	Male	18	29.5
	Female	43	70.5
Religion	Christianity	42	68.9
	Islam	19	31.1
Marital Status	Single	5	8.2
	Married	40	65.6
	Separated/Divorced	7	11.5
	Widowed	9	14.7
Level of Education	No formal education	7	11.5
	Primary	23	37.7
	Secondary	20	32.8
	Tertiary	5	8.2
	University	6	9.8
Socioeconomic Class	Class 1	8	13.1
	Class 2	52	85.3
	Class 3	1	1.6
Ethnicity	Hausa	1	1.6
	Yoruba	55	90.2
	Igbo	1	1.6

	Others	4	6.6
Family Functioning	Healthy	37	60.7
(Mean GF score = 1.8 ± 0.6)	Unhealthy	24	39.3

N = Total number of respondents; *GF* = General functioning

The cross-tabulation presented in Table 2 reveals that the proportion of respondents with healthy family functioning rose with increasing age, higher for males than females, and for Muslims than Christians. It was highest for the married among all marital categories and for class 2 among the Socio-economic classes, decreased with increasing level of education up to tertiary education (levels higher than secondary but lower than university) but had no regular pattern for the ethnic groups since majority of the respondents were Yoruba. However, the association was statistically significant only for marital status ($P = 0.02$) and level of education ($P = 0.04$) based on the result of Fisher's exact test.

(When you do a Fischer's exact test in a greater than 2 x 2 table, i.e. a 4 x 2 table in the case of your 'marital status' and 'level of education', and you find significance, you once again need to do want to ask additional questions, such as whether the difference between two groups of each of the 'marital status' groups was significant such 'single' and 'married'; 'married' and 'divorced' and so on. In the same manner, each of the groups in 'level of education'. You could do a 2x2 Fisher's exact test for each of these pairwise comparisons, but there are multiple possible pairs, so you need to correct for the multiple comparisons. One way to do this is with a modification of the Bonferroni-corrected pairwise technique suggested by MacDonald and Gardner (2000). You do a Fisher's exact test on each of the possible pairwise comparisons, then apply the Bonferroni correction for multiple tests.)

TABLE 2: ASSOCIATION BETWEEN FAMILY FUNCTIONING AND SOCIODEMOGRAPHIC CHARACTERISTICS OF RESPONDENTS

Variable	Categories	Healthy [n(%)]	functioning	Unhealthy functioning[n(%)]	P-value
(N=61)					
Age Group	20 – 29	6 (50.0)		6 (50.0)	0.43
	30 – 39	12 (57.1)		9 (42.9)	
	40 – 49	16 (64.0)		9 36.0)	
	≥50	3 (100.0)		0 (0.0)	
Gender	Male	13 (72.2)		5 (27.8)	0.27
	Female	24 (55.8)		19 (44.2)	
Religion	Christianity	25 (59.5)		17 (40.5)	1.00
	Islam	12 (63.2)		7 (36.8)	
Marital status	Single	0 (0.0)		5 (100.0)	0.02
	Married	28 (70.0)		12 (30.0)	
	Separated/Divorced	4 (57.1)		3 (42.9)	
	Widowed	5 (55.6)		4 (44.4)	
Level of education	No formal education	6 (85.7)		1 (14.3)	0.04
	Primary	15 (65.2)		8 (34.8)	

	Secondary	13 (65.0)	7 (35.0)	
	Tertiary	0 (0.0)	5 (100.0)	
	University	3 (50.0)	3 (50.0)	
Socio-economic class	Class 1	3 (37.5)	5 (62.5)	0.15
	Class 2	34 (65.4)	18 (34.6)	
	Class 3	0 (0.0)	1 (100.0)	
Ethnicity	Hausa	1 (100.0)	0(0.0)	0.49
	Yoruba	34 (61.8)	21 (38.2)	
	Igbo	0 (0.0)	1(100.0)	
	Others	2 (50.0)	2 (50.0)	

143 **N=** Total number of respondents; **n (%)** = Number (Percentage) of respondents in a cell;

144 **P-value** = level of significance (for Fisher's exact test)

146 The results shown in Table 3 reveals that married respondents had the lowest mean GF score while single (unmarried)
 147 respondents had the highest among all marital groups, indicating that they had the best and worst functioning families
 148 respectively. The last column in the table shows the level of significance (*P-value*) when the difference between the mean
 149 GF score for married respondents was compared with those of other marital groups using one-way ANOVA; the difference
 150 between married and single respondents was statistically significant.

151 **TABLE 3: COMPARISON OF MEAN GENERAL FUNCTIONING (GF) SCORE AMONG MARITAL GROUPS (N=61)**

Marital Status	Mean GF score	P-value
Single	2.24	0.02
Married	1.67	–
Separated/Divorced	2.03	0.18
Widowed	2.03	0.74

153 **GF=** General Functioning

154 This study demonstrated that larger proportion (60.7%) of the respondents had healthy family functioning. Studies have
 155 indeed identified a number of challenges that can compromise family functioning of PLWHA such as health-seeking
 156 demands, treatment adherence, stress, financial difficulties, and stigma.³ However, during difficult times such as HIV/AIDS
 157 presents, it becomes imperative for members of a family to stay close, and to help and support each other, with emphasis
 158 on mutual dependence and sharing. This is particularly so in the family-oriented African society where families are tightly
 159 knit by strong emotional ties that bind members together.¹⁰ Thus many families are able to successfully overcome these
 160 challenges, seeing in them the opportunity to improve the family's functioning.

162 It is also plausible that the social isolation, stigma and discrimination which the society often imposes on PLWHA will
 163 cause sufferers to seek solace within their family, and thereby improving the family functioning. Walsh²¹ has noted that the
 164 concept of family resilience extends our understanding of healthy family functioning to situations of adversity; although
 165 some families are shattered by crisis or chronic stresses, it is remarkable is that many others emerge strengthened and
 166 more resourceful. When HIV-affected families are ashamed of their association with the disease, fearing that others will
 167 scorn them, their quest to uphold family pride can as well motivate close personal relationships within the family and
 168 promote mutual support among family members, thereby improving family cohesiveness and functioning.

169 In addition, awareness of the family of the HIV status of affected members can be the reason for the higher proportion of
 170 healthy family functioning we found. In our study as reflected in Table 1, the married (65.6%) and the widowed (14.7%)
 171 constituted the majority of the respondents. The latter were often accompanied to the clinic by their children who were
 172 aware of the parents' status while the former usually came in the company of their mostly seroconcordant spouses, or
 173 with the knowledge of the few serodiscordant ones. Previous studies have found that disclosure of HIV status to family
 174 members helps to cope with the disease, ensures family support for PLWHA, reduces the levels of aggressiveness and

175 negative self-esteem among the children of PLWHA, ensures fewer secrets between family members, and lowers the
176 level of family conflict.^{3,10}

177 Furthermore, economic power contributes to the functionality of the family²² and, financial difficulties and health-seeking
178 demands are among the challenges that have been shown to compromise family functioning in families living with HIV.³
179 However, HIV/AIDS treatment is free for the patients in this study, a vibrant support group helps patients with gifts,
180 including fare for the very indigent, and follow up visits were only once in 4 to 8 weeks. Consequently, additional financial
181 burden or distress imposed by health-seeking demands which could have impaired family functioning is lessened.

182 Our study identified a number of variables that influence the family functioning of the respondent. Of the
183 sociodemographic variables, marital status ($p = 0.025$) and level of education ($p = 0.037$) of the respondents had
184 statistically significant association with family functioning. The proportion with healthy family functioning was highest for
185 the married respondents (Tables 2) and they also had the lowest mean General Functioning (GF) score of 1.67 (Tables
186 3), indicating that they had the best functioning families among all marital categories. When further comparison was done
187 between the mean GF score of married respondents and those of other marital categories using one-way ANOVA, a
188 statistically significant difference was found between the scores of married and single respondents.

189 These findings could be explained by the earlier stated mutual dependence and sharing within the family as well as the
190 physical, emotional, and social support enjoyed by the married respondents and which might not be readily available to
191 other marital groups, especially the singles and the separated/divorced who happened to have the worse functioning
192 families in this study. The fact that single (never married) respondents belonged to the worst functioning families (Table 3)
193 may be a pointer to the reason they got infected with HIV in the first place since a significant negative association
194 between family functioning and HIV risk behaviour has been reported in the literature.^{22,23}

195 This study further revealed that the proportion of respondents with healthy family functioning decreased in a statistically
196 significant manner ($p = 0.037$) with rising level of education. This decrease was rather very sharp (65.0% to 0%) between
197 secondary and tertiary education (higher than secondary but lower than university) levels (Tables 2). Previous authors
198 have noted that the family is an important social institution which has close connections with formal education. While it
199 has served as a propitious ground to most people who have emerged literate and reasonably knowledgeable from an
200 education system, it is also true that formal education has dysfunctional aspects which breed unhealthy family
201 functioning.²⁴

202 First, the educated person is more likely to exhibit signs of disrespect to older people in the family when his/her views,
203 knowledge and advice are, as often happens, rated above those of the illiterate family members during important
204 decision-making in the family. As such, formal education undermines age and experience as the cardinal determinants of
205 authority, influence and respect, and by so doing weakens the traditional family authority structure and values.²⁴

207 (This Reviewer is not able to find such discussed in the annotated reference here. Beside, in discussing something as
208 controversial as such a statement, discuss several references on this in discussing both sides)

210 Second, higher levels of education are associated with economic empowerment which has the tendency of reducing a
211 person's dependency on the family for support. Thus, formal education potentially promotes individualism and hampers
212 the economic co-operation function of the family.²⁵

214 (Such a Discussion or Conclusion is not found in this Reference annotated. Also, in the paragraph above, the second
215 sentence is not a rational conclusion leading from the first sentence.)

217 Additionally, higher levels of education make people more civilized and modernized and this has the tendency to affect the
218 beliefs and practices of members of the family. For example, in many traditional African cultures, a young woman was
219 taught the art of home making, motherhood, patience and submissiveness to her husband and in-laws such that she was
220 able to settle down to a successful and stable marriage.²⁶

222 (This Reviewer is not able to find such discussed in the annotated reference here. Beside, in discussing something as
223 controversial as such a statement discuss several references on this in discussing both sides)

225 With increased education levels comes increased movement away from these traditional ways of life, with consequent
226 marital instability and poor family functioning. (Such is not a sound conclusion for you to make and there is no basis for it.
227 Even if you actually found such discussed in the annotated reference, in discussing something as controversial as such a
228 statement discuss several references on this in discussing both sides)

230 4. CONCLUSION

231
232 The proportion of respondents with healthy family functioning was high in this study, and the fact that larger proportions
233 were married and had low education level was found to have influenced these findings. Regular family functioning
234 assessment should be part of routine evaluation of PLWHA, and interventions such as family counselling that will temper

235 the dysfunctional influences of formal education on family functioning and reinforce the positive traditional family practices
236 and values should be incorporated into HIV/AIDS care.

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239 **COMPETING INTERESTS**

240

241 None

242

243 **ETHICAL APPROVAL**

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245 A written approval of the hospital's sub-committee on ethics of human experimentation was obtained before subjects were
246 recruited for the study. The subjects were adequately informed about the nature of the study before their consent was
247 obtained. All ethical principles guiding a research of this nature was adhered to.

248

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252 (List the References in the style required under 'Instructions for Authors' directed by this Journal).

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