

National Survey on Discharge against Medical Advice among Patients with Musculoskeletal Trauma in Nigeria

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Abstract

Background: Patients in our environment sometimes discharge themselves against medical advice. Many of them do this due to the cost of treatment and a belief in the efficacy of traditional bone setters (TBS). This is the first multi-center study in our environment comparing the differences across ethnic groups, religions, and geographical regions. **Aim:** The study aimed to highlight the burden of DAMA among patients with musculoskeletal injuries. **Patients, Materials and Methods:** This was a health facility-based cross-sectional study of patients with musculoskeletal injuries who presented to the Accident and Emergency departments of five selected health facilities across Nigeria over a six-month period. **Results:** A total of 601 patients were enrolled in this study. One hundred and ninety-four (32.3%) respondents discharged themselves against medical advice and the major reason given for the discharge against medical advice (DAMA) was the cost of treatment (49.1%) and a preference for the care given by TBS by relatives (33.5%) and the respondents (29.8%). The educational status of respondents, ethnic group, and access to health insurance, duration of admission, and frequency of fractures were predictors of DAMA. Respondents with postgraduate qualifications were much less likely to DAMA, adjusted odds ratio 0.36; confidence interval: 0.15–0.86, $P = 0.021$. Furthermore, respondents from Ibibio, Fulani, and Tiv ethnic groups were 3.79, 2.58, and 2.56 times more likely to DAMA, respectively. Respondents with health insurance coverage were less likely to DAMA. **Conclusion:** The prevalence rate of DAMA amongst patients with musculoskeletal trauma in Nigerian tertiary hospitals is relatively high. The predictors of DAMA identified in this study call for improvements in education and mandatory health insurance cover. From the findings in this study, reducing out-of-pocket costs to patients may be the most important step in improving access to orthodox treatment of musculoskeletal injuries. Further studies are suggested to determine why some ethnic nationalities had a higher prevalence of DAMA.

Keywords: Discharge against medical advice, musculoskeletal trauma, Nigeria, predictors

INTRODUCTION

Patients with musculoskeletal injuries often discharge themselves against medical advice. The reasons for this may include difficulty with paying for orthodox care and patients' belief in the efficacy of traditional bone setters (TBS) in the management of wounds and fractures. A study in our environment revealed that almost half of those who patronized TBS initially went to a hospital for initial care.^[1] The traditional bone setting has survived for many centuries, due to a dearth of modern facilities, high cost of treatment, and personal religious beliefs.^[1-2] Some patients believe that the outcome of care from TBS treatment was better than that from orthodox treatment.^[3] In some studies, the level of education of the participants did

not seem to influence the decision of patients to utilize TBS treatment as they found that about 79% of patients in their study had education up to and above secondary (high) school level.^[1,3] More than half of patients had education up to tertiary level.^[1]

The success rate of TBS treatment is not fully known. However, the literature is replete with records of complications of

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care which include but are not limited to infections (such as chronic osteomyelitis), compartment syndrome, neglected dislocations, gangrene, and nonunion and malunion.^[1-5] The ratio of orthopedic surgeons to patients in Nigeria is put at about 1–500,000 patients.^[6] This is over 30-fold less than various international recommendations of about 1 orthopedic surgeon to about 16,000 patients.^[7] It is suggested that up to 90% of patients in rural areas use traditional healers including TBS for various ailments due to lack of adequate primary healthcare.^[2] The local incidence of discharge against medical advice (DAMA) is put at 5.7%.^[8,9]

This study aimed to highlight the burden of DAMA in patients with musculoskeletal injuries in Nigeria, as well as to add to the body of knowledge about this problem.

The objective of this study was to determine the prevalence and predictors of DAMA among patients with musculoskeletal injuries in Nigeria and make recommendations on how to reduce the number of patients who discharge themselves against medical advice.

PATIENTS, MATERIALS AND METHODS

Study area

This study was conducted in Nigeria and included five public hospitals. All the hospitals included offer tertiary-level care. These were the National Hospital, Abuja, the Federal Teaching Hospital Gombe, the Alex-Ekwueme Federal University Teaching Hospital, Abakaliki, the University of Uyo Teaching Hospital, and the National Orthopaedic Hospital, Igbobi, Lagos.

Study design

The study was a health facility-based cross-sectional study of patients with musculoskeletal injuries who presented to the accident and emergency departments of the selected health facilities over a six-month period from February 1, 2019 to July 31, 2019.

The data were collected by trained research assistants made up of resident doctors in the various hospitals where the study was conducted.

Study population

All patients with musculoskeletal injuries in the selected hospitals who were either discharged after treatment or who discharged themselves against medical advice and consented to the study.

Exclusion criteria

All patients who were referred by the managing physician to other institutions for their treatment were excluded from the study.

Sample size determination

The Cochran formula ($n = Z^2pq/d^2$) for sample size calculation for population more than 10,000 was used where $Z = 1.96$, P is the proportion of prevalence of DAMA from previous studies ($P = 5.9\%$),^[9] $q = 1-p$ ($q = 0.94$) and d is the degree of accuracy desired set at 0.05. The minimum sample size of 93 participants per hospital was therefore calculated

after a nonresponse rate of 10% was added to get a total of 465 participants. However, a total population of all patients with musculoskeletal injury within the study period, who consented to be part of the study were added and this gave us a total of 601 respondents.

Sampling technique

Five geopolitical zones were selected from the six zones in Nigeria through balloting. Simple random sampling was used to select one state each from the five zones and subsequently one tertiary hospital was selected in each of the selected states. Consecutive and consenting patients with trauma presenting to the Accident and Emergency Department of the 5 tertiary hospitals were added to the study for 6 months from February 1, 2019 to July 31, 2019.

Data collection

A pretested interviewer-administered questionnaire was used to collect information from patients that gave their consent to participate in the study. This questionnaire was administered as an exit interview at the point of normal discharge or DAMA whether at the emergency section or on the ward.

Data and statistical analysis

The primary outcome variable was DAMA while the predictors of the primary outcome variable were the sociodemographic characteristics of the respondents, possession of health insurance, duration of admission and type as well as the frequency of fractures. The prevalence of DAMA was calculated as the proportion of patients who were discharged against medical advice relative to the total number of patients seen with musculoskeletal injury within the study period. Sociodemographic characteristics, whether a patient had health insurance or not, type of injury, and frequency of fractures were cross-tabulated against DAMA and statistical tests of significance were conducted using Chi-square test statistics. Reasons for DAMA were also identified. Duration and cost of admission were also cross-tabulated against DAMA and the t -test was used as test for significance. All the questionnaires were reviewed by the investigators for completeness, and incomplete or wrongly filled questionnaires were identified and omitted. Data were extracted and analyzed using the IBM Statistical Software for the Social Sciences (SPSS) version 23 created 2015 (IBM Corp, Armonk, New York State, USA). Tests of statistical significance were done and statistical significance was found when $P < 0.05$. Frequencies and proportions were calculated for categorical variables, while means and standard deviations were calculated for numeric/quantitative variables. Multivariate logistic regression was done to ascertain predictors of DAMA among the patients. The results of the analysis are presented in Tables 1-4.

This study was approved by the ethics committees of the National Hospital, Abuja (Approval letter number NHA/EC/015/2018), the Federal Teaching Hospital Gombe (NHREC/25/10/2013), the Alex-Ekwueme Federal University Teaching Hospital, Abakaliki (Fetha/Rec/vol2/2018/090;15/08/2018-03/2018), the University of Uyo Teaching Hospital (UUTH/AD/S/96/

VOL. XXI/168) and the National Orthopaedic Hospital, Igbobi, Lagos (OH/90/C/IX). Informed written consent was obtained from the participants or from their parents if they were below the age of 18 years before administering the data collection tools. Confidentiality was maintained by the noninclusion of self-identifying characteristics in the questionnaire.

RESULTS

Table 1 shows that the respondents cut across all age groups, but the majority (55.9%) were between the ages of 18–39 years and the mean age was 33.3 ± 15.4 years. There were 460 males (76.5%) and 141 females (23.5%). Most (54.7%) of the respondents were married. One hundred

Table 1: Relationship between discharge against medical advice and respondents' sociodemographic characteristics

Variable (<i>n</i> =601)	DAMA			Test statistics (<i>P</i>)
	Yes, <i>n</i> (%)	No, <i>n</i> (%)	Total, <i>n</i> (%)	
Age groups				
<18	22 (28.6)	55 (71.4)	77 (12.5)	3.26 (0.353)
18-39	113 (33.6)	223 (66.4)	336 (55.9)	
40-65	57 (32.9)	116 (67.1)	173 (28.8)	
>65	2 (13.2)	13 (86.7)	15 (2.5)	
Gender				
Male	149 (32.4)	311 (67.6)	460 (76.5)	0.01 (0.919)
Female	45 (31.9)	96 (68.1)	141 (23.5)	
Marital status				
Married	97 (29.5)	232 (70.5)	329 (54.7)	FT 5.01 (0.394)
Single	87 (35.5)	158 (64.5)	245 (40.8)	
Child	4 (33.3)	8 (66.7)	12 (2.0)	
Widowed	3 (37.5)	5 (62.5)	8 (1.3)	
Separated	3 (60.0)	2 (40.0)	5 (0.8)	
Divorced	-	2 (100.0)	2 (0.3)	
Educational status				
Primary/preschool	44 (37.6)	73 (62.4)	117 (19.5)	FT 15.31 (0.007)
Secondary	70 (27.9)	181 (72.1)	251 (41.8)	
Tertiary	46 (28.4)	116 (71.6)	162 (27.0)	
Postgraduate	2 (25.0)	6 (71.6)	8 (1.3)	
Vocational	7 (63.6)	4 (36.4)	12 (1.8)	
None	25 (48.1)	27 (51.9)	52 (8.7)	
Ethnicity				
Tiv	1 (50.0)	1 (50.0)	2 (0.3)	68.08 (<0.001)
Hausa	62 (49.6)	63 (50.4)	125 (20.8)	
Ibibio	42 (47.7)	46 (52.3)	88 (14.6)	
Yoruba	16 (45.7)	19 (54.3)	35 (5.6)	
Fulani	22 (41.5)	31 (58.5)	53 (8.8)	
Igbo	32 (13.9)	198 (86.1)	230 (38.3)	
Others	19 (27.9)	49 (72.1)	68 (11.3)	
Religion				
Christianity	117 (28.2)	298 (71.8)	415 (69.1)	12.63 (0.002)
Muslim	77 (42.1)	106 (57.9)	183 (30.4)	
Traditionalist	-	1 (100.0)	1 (0.2)	
Others	-	2 (100.0)	2 (0.3)	
Occupation				
Unemployment	45 (28.3)	114 (71.1)	159 (26.5)	6.65 (0.574)
Business	33 (27.7)	86 (72.3)	119 (19.8)	
Professionals	32 (33.7)	63 (66.3)	95 (15.8)	
Farmers	27 (37.0)	46 (63.0)	73 (12.1)	
Unskilled workers	17 (40.5)	25 (59.5)	42 (7.0)	
Tricycle/bike drivers	13 (30.2)	30 (69.8)	43 (7.2)	
Skilled workers	13 (38.2)	21 (61.8)	34 (5.7)	
Vehicle drivers	12 (42.9)	16 (57.1)	35 (4.7)	
Clergy	2 (25.0)	6 (75.0)	8 (1.3)	

FT: Fisher's exact test, DAMA: Discharge against medical advice

and fifty-nine (26.5%) and 119 (19.8%) were unemployed and business persons, respectively. Two hundred and fifty one (41.8%) of the respondents were educated up to secondary education while 162 (27.0%) had up to tertiary education. Only 52 (8.7%) had no form of education. The largest ethnic groups found in this study were Igbo 230 (38.3%) and Hausa 125 (20.8%) respectively. The majority of were Christians 415 (69.1%) while there were 183 Moslems (30.4%)

In Table 1, there was no statistically significant difference in DAMA with respect to age, gender, marital status, and occupation. However, the percentage of respondents with vocational education (63.6%) and no form of education (48.1%) who decided to DAMA were more compared to those with formal education who decided to DAMA. This difference was statistically significant $P = 0.007$. Similarly, respondents from Tiv (50.0%), Hausa (49.6%), Ibibio (47.7%), and Yoruba (45.7%) ethnic groups also had a larger percentage of respondents that decided to DAMA compared to other ethnic groups. This difference was also statistically significant $P < 0.001$. The DAMA percentage amongst Muslims (42.1%), adherents of traditional African religion (50%), and others (50%) were also more compared to Christians (28.2%). This difference was also statistically significant with $P = 0.002$ [See Additional File 1 titled tables]. Most of the respondents had not visited a caregiver before the presentation (60.4%). Most of those that had initially visited another care giver, went to a public health center (51.7%), private health center (31.6%), or a TBS facility (13.7%).

Table 2 shows that more than half of the respondents (317 (52.7%)) had a fracture at a single site while 184 (30.6%) had no fracture and 140 (16.6%) had fractures at multiple sites. Those who had no fractures had dislocations or various soft tissue injuries such as major lacerations, ligament injuries, large friction burns, or contaminated wounds that could not be closed primarily. There were 46.1% of the respondents with closed fractures while 23.3% had open fractures. The table also shows that only 55 (9.2%) of the respondents had enrolled in a health insurance scheme. Many of the decisions for admission were influenced by respondents' relations and friends at 43.8% while 40.8% were self-influenced. The mean admission duration of respondents was 14.4 ± 30.4 days and the mean cost of admission for the hospitals was ₦130,573.91 (approximately \$400).

Table 2 also shows that 6 (10.9%) of the 55 respondents with health insurance chose to DAMA compared to 188 (34.4%) of the 546 respondents without health insurance and this was statistically significant $P < 0.001$. Ninety percent of those whose admission was influenced by bystanders chose to DAMA. Over 80% of those who decided to come for admission on their own or were influenced to do so by their driver/pastor/employer and health care workers chose not to DAMA. This dropped to 57% for those influenced by relations/friends/neighbors and to 46.2% when law enforcement agents were the influencers, $P < 0.001$. About 44.4% of respondents with closed fractures

Table 2: Association between discharge against medical advice and other respondents' characteristics

Variable	DAMA			Test statistics (P)
	Yes, n (%)	No, n (%)	Total, n (%)	
Respondent has health insurance (n=601)				
Yes	6 (10.9)	49 (89.1)	55 (9.2)	142.64 (<0.001)
No	188 (34.4)	358 (65.6)	546 (90.8)	
Admission decision influencer				
Self/no one	44 (18.0)	201 (82.0)	245 (40.8)	FT 62.66 (<0.001)
Health worker	8 (19.0)	34 (81.0)	42 (7.0)	
Relation/friends/neighbours	113 (43.0)	150 (57.0)	263 (43.8)	
TBS	5 (50.0)	5 (50.0)	10 (1.7)	
Law enforcement agents	14 (53.8)	12 (46.2)	26 (4.3)	
Driver/pastor/employer	1 (20.1)	4 (80.0)	5 (0.8)	
Bystanders	9 (90.0)	1 (10.0)	10 (1.7)	
Type of injury				
Closed fracture	123 (44.4)	154 (55.6)	277 (46.1)	91.00 (<0.001)
Open fracture	62 (44.3)	78 (55.7)	140 (23.3)	
No fracture (such as major lacerations, ligament injuries, large friction burns or contaminated wounds that could not be closed primarily)	9 (4.9)	175 (95.1)	184 (30.6)	
Frequency of fractures				
Fracture at single site	137 (43.2)	180 (56.8)	317 (52.7)	91.74 (<0.001)
Fracture at multiple sites	48 (48.0)	52 (52.0)	140 (16.6)	
No fracture (as described in previous row)	9 (4.9)	175 (95.1)	184 (30.6)	
Mean estimated cost of admission				
Mean difference	₦94,351.11	₦77,004.60	₦171,355.71	2.2** (0.024)
Mean admission duration days				
Mean duration difference	9.78	7.83	17.62	3.67** (<0.001)

**t-test. FT: Fisher's exact test, DAMA: Discharge against medical advice, TBS: Traditional bone setters

and 44.3% with open fractures chose to DAMA while only 4.9% of those with no fracture did so, $P < 0.001$. Among those with single and multiple fractures, 123 (44.4%) and 48 (48.0%) chose to DAMA compared to those with closed fractures, $P < 0.001$. The estimated cost and duration of admission were associated with DAMA. Respondents who chose to DAMA spent an average of ₦77,004 (\$164) and stayed for shorter admission periods (approximately 8 days) compared to those that did not DAMA, $P < 0.001$ [see additional file 1 titled tables].

Table 3 indicates that 194 (32.3%) respondents chose to DAMA and the major reasons given were the cost of treatment or commodities (49.1%) and a preference for TBS by relatives (33.5%) and the respondents (29.8%). One hundred and nineteen (61.3%) of the respondents that chose to DAMA intended to receive treatment from a TBS [See additional file 1 titled tables].

Table 4 shows a multivariate regression analysis performed to determine predictors for DAMA. Educational status of respondents, ethnic group, access to health insurance, duration of admission, and frequency of fractures were predictors of DAMA. Respondents with postgraduate qualifications were less likely to DAMA compared to those with primary/preschool, adjusted odds ratio (AOR) 0.36; confidence interval (CI): 0.15–0.86, $P = 0.021$. Furthermore, respondents from the Ibibio, Fulani, and Tiv ethnic groups were 3.79, 2.58, and 2.56 times more likely to DAMA, respectively, compared to the Igbo, this difference was statistically significant with $P < 0.001$, 0.024, and 0.050 respectively. Respondents with health insurance were less likely to DAMA, $P = 0.007$, AOR = 0.26; CI: 0.98–0.68. The duration of admission was also a predictor of DAMA, AOR; 0.97, $P < 0.001$; CI: 0.93–0.9. Those with single-site fractures were also less likely to DAMA, $P < 0.001$, AOR 0.41; CI: (0.01–0.10). However, the religion professed and the type of fracture the respondents had were not predictors of DAMA in the study period [See additional file 1 titled tables].

DISCUSSION

The results of this study indicate that DAMA is common among patients with musculoskeletal trauma in Nigerian tertiary hospitals. The prevalence of DAMA (32.1%) in this study is higher than the prevalence of 0.26% seen in a study in Catalonia, Spain.^[10] The prevalence in this study is also higher than the prevalence of 5.6% and 13.9% reported by Ngim *et al.* and Popoola *et al.*^[8,11] in their separate single-center prospective studies in the South-south and North-central regions of Nigeria, respectively. The reason for these differences in the prevalence of DAMA is not evident. In this study, the main reason for DAMA was the cost of treatment or other commodities. This is at variance with nonacceptance of treatment options being the main reason as reported by two separate studies done in public hospitals by Ngim *et al.* and Ndukwu *et al.*^[8,9] However, the results of this study were similar to those of Fadare *et al.*

Table 3: Discharge against medical advice and reasons for discharge against medical advice

Variable	Frequency, n (%)
DAMA (n=601)	
Yes	194 (32.3)
No	407 (67.7)
Reasons for DAMA	
Cost of treatment or other commodities	79 (49.1)
Preference by relatives for TBS	54 (33.5)
Preference by patient for traditional bone setter	48 (29.8)
Preference by those paying patient's bills for TBS	24 (14.9)
Lack of confidence in the physician	2 (1.2)
Where DAMA patients intend to get treatment (n=194)	
TBS	119 (61.3)
Other orthopedic surgeons	23 (11.9)
Unspecified	19 (9.8)
No treatment	17 (8.8)
Nonspecialist doctor	7 (3.6)
Private facility	5 (2.6)
Self-treatment	3 (1.5)
Outside the country	1 (0.5)

DAMA: Discharge against medical advice, TBS: Traditional bonesetters

Table 4: Predictors of discharge against medical advice

Variable	Wald	P	AOR (95% CI)
Educational status			
Primary/preschool (1)	12.87	0.025	
Secondary	0.17	0.680	0.83 (0.34-1.99)
Tertiary	5.75	0.017	0.37 (0.16-0.84)
Postgraduate	5.31	0.021*	0.36 (0.15-0.86)
Vocational	1.17	0.279	0.35 (0.05-2.36)
None	0.03	0.860	1.16 (0.21-6.23)
Ethnic groups			
Igbo (1)	19.64	0.003	
Yoruba	0.05	0.822	0.91 (0.40-2.04)
Hausa	1.87	0.171	2.01 (0.73-5.48)
Ibibio	10.67	<0.001*	3.79 (1.71-8.46)
Fulani	5.13	0.024*	2.58 (1.14-5.89)
Tiv	3.83	0.050*	2.56 (0.99–6.56)
Others	0.11	0.741	1.69 (0.07–38.33)
Religion			
Christian (1)	4.95	0.175	
Muslim	0.00	0.999	760.96 (0.00-0.00)
African traditional religion	0.00	1.000	331.34 (0.00-0.00)
Others	0.00	1.000	0.12 (0.00-0.00)
Patient has health insurance	7.37	0.007*	0.26 (0.98-0.68)
Duration of admission	34.02	<0.001*	0.94 (0.93-0.96)
Type of fracture			
Open fracture (1)	0.82	0.36	
Closed fracture	2.65	0.104	0.56 (0.27-1.13)
Frequency of fracture			
No fracture (1)	50.95	<0.001*	
Single site Fracture	47.55	<0.001*	0.41 (0.01-0.10)
Multiple site Fracture	2.39	0.122	0.65 (0.38-1.12)

*Statistically significant. AOR: Adjusted odds ratio, CI: Confidence interval

and Jimoh *et al.*,^[12,13] who observed that the cost of care was, the main reason for DAMA.

Previous published reports indicated a higher rate of DAMA amongst patients with little or no formal education compared to the highly educated ones.^[11,14,15] In this study, DAMA was inversely related to the level of education, and low level of education was identified as independent predictor of DAMA. This confirms the finding in previous reports and calls for improvement in literacy rate as part of any measures aimed at reducing the very high rate of DAMA observed to the barest minimum.

The ethnicity of respondents was identified as an independent predictor of DAMA with the Igbo ethnic group being the least likely to DAMA compared to other ethnic groups. This is an interesting finding, but the exact reason is not evident. Nnadi and Kabat^[16] demonstrated that the Igbo ethnic group compared to Hausa and Yoruba was the least likely to combine orthodox and traditional treatment options for the same disease condition. This perhaps explains why DAMA was least likely, after resuscitation in the hospital, among Igbo patients with musculoskeletal trauma in this study.

As has been noted in previous studies, the cost of musculoskeletal trauma care is high and most of the patients lack health insurance cover, as also observed in this study.^[17,18] Consequently, the patients often have to bear the cost of their medical bills. This is often a challenge in musculoskeletal trauma-related emergencies in low-income nations. Thus, the lack of health insurance cover which was identified as an independent predictor of DAMA in this study may suggest that poverty is a particularly important factor involved in DAMA and patronage of alternative care. This underscores the importance of a mandatory and comprehensive health insurance scheme in this country. Reducing out-of-pocket costs for patients may have the greatest impact on improved access to orthodox care in our opinion.

Previously published reports indicate that the patronage of TBS care is a common health-seeking behavior among patients with fractures in our study environment.^[1,5,8,9,11,18-21] In this study, over 75% of patients had fractures. Most of them chose to DAMA due to the cost of treatment and almost two-thirds of those that chose to DAMA were planning to use TBS services after discharge. Published reports indicate that TBS care is in high demand among patients with musculoskeletal trauma despite the high complication rate of limb and life-threatening complications associated with this mode of care.^[8,22] TBS care with its level of sociocultural acceptability is perceived as a cheaper and more accessible option in musculoskeletal trauma and disorders in Nigeria.^[6] This belief that TBS care is cheaper than orthodox care can be inferred from this study by the fact that cost of treatment was the most common reason to DAMA and almost two-thirds of this subset of patients were planning to go to TBS for treatment. However, the fact that the most common reason to DAMA found in this study was the cost of orthodox care, may mean that the demand for TBS care was not as high as it may initially appear, but simply a consequence of the cost forcing patients to go to TBS as a secondary option.

The limitation of this study was that it was a tertiary hospital-based cross-sectional study and the data obtained may not be a representation of the entire population of patients with musculoskeletal trauma as data on those that presented in primary and secondary levels of care were not captured. Despite these limitations, this, a multicenter study has significant findings and can facilitate policy response and strategies aimed at reducing the rate of DAMA and associated patronage of TBS among patients with musculoskeletal injury to the barest minimum.

CONCLUSION

The prevalence rate of DAMA among patients with musculoskeletal trauma in Nigerian tertiary hospitals is relatively high. The independent predictors observed in this study call for improvement in the rate of attainment of higher educational levels and mandatory health insurance cover or subsidized cost of treatment of musculoskeletal trauma. Addressing the cost of orthodox treatment or reducing the out-of-pocket expenses borne by patients may give the single greatest impact in improving access to orthodox care for musculoskeletal injuries. There is a need for further studies targeted at ethnic nationalities noted in this study to have a higher prevalence for DAMA.

Ethics and consent to participate

Approval for this study was obtained from the ethics committees of the National Hospital, Abuja (Approval letter number NHA/EC/015/2018), the Federal Teaching Hospital Gombe (NHREC/25/10/2013), the Alex-Ekwueme Federal University Teaching Hospital, Abakaliki (Fetha/Rec/vol2/2018/090;15/08/2018-03/2018), the University of Uyo Teaching Hospital (UUTH/AD/S/96/VOL. XXI/168) and the National Orthopaedic Hospital, Igbobi, Lagos (OH/90/C/IX). Our questionnaire included an initial consent section to which written consent was mandatory before participants could continue to the questions.

Consent for publication

All authors gave consent for this publication.

Availability of data and material

All data generated or analyzed during this study are included in this published article [and its supplementary information files].

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Conflicts of interest

There are no conflicts of interest.

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