

## Research Article

# Willingness to Patronize Traditional Bone Setters Among Patients Attending General Out-Patient Department of Federal Teaching Hospital Abakaliki, Nigeria

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## Abstract

**Background:** Traditional bone setters still receive high patronage in developing countries. The study was designed to determine the willingness to patronize traditional bone setters among patients attending the general out-patient department of Federal Teaching Hospital Abakaliki, Nigeria.

**Methods:** Descriptive cross-sectional study design was adopted. Systematic random sampling technique was used to select 400 patients attending the general out-patient department of the hospital. Information was obtained using a pretested interviewer administered questionnaire. Data analysis was done using SPSS statistical software version 22 and the level of statistical significance was determined by a p value of < 0.05.

**Results:** The mean age of the respondents was 32.3±11.1 years and majority 51.0%, were males. Majority of respondents 84.5%, were aware of traditional bone setters. Less than one third 29.5%, have utilized the services of traditional bone setters before. Majority 50.5%, were of the opinion that traditional bone setters receive more patronage, however majority 54.8% prefer the services of Orthopedic Surgeons. The highest proportion 41.8%, were of the opinion that bone setters have more treatment failures. According to the respondents, the major reasons people patronize the bone setters were low cost/accessibility, 48.3% and ignorance/fear of amputation, 26.3%. A minor proportion 29.0%, were willing to patronize traditional bone setters in future and the major reasons included good service delivery 40.5%, and low cost 30.2%. Predictors of willingness to patronize traditional bone setters in future included being previously treated by a traditional bone setter, (AOR= 10.1, 95% CI: 6.1-16.8), and being in low socio-economic class, (AOR= 2.0, 95% CI: 1.2- 3.2).

**Conclusions:** The respondents were of the opinion that traditional bone setters have more patronage than orthopedic surgeons even though they were aware of the higher risk of treatment failure with their services. This calls for concern however individuals who have utilized the services of the bone setters were willing to patronize them again. This indicates that there are some good works associated with the bone setters. Thus, in view of the numerous complications following their interventions, there may be the need to monitor the activities of the bone setters to enhance their competence and encourage referral. Also, the practice of orthopedic surgery should be brought closer to the people.

**Keywords:** Willingness; Traditional Bonesetters; Patients; Tertiary Hospital; Abakaliki; Nigeria

## Introduction

The practice of traditional bone setting has been of old and it is found in almost all communities of the world [1]. For instance, an approximate 10-40% of patients with fractures and dislocations globally are managed by unorthodox practitioners [2]. Also, there is evidence that bone setters were in practice in England in the 16<sup>th</sup> and 17<sup>th</sup> centuries. Incidentally as it is still obtainable in Africa today, the methods of that practice was handed over by oral tradition from father to son and in most cases continued within the same family [3]. In-fact, one of the founding fathers of orthopaedics in the United

Kingdom was the son of a traditional bone setter [4].

As expected, the practice of traditional medicine has been in Africa long before the introduction of orthodox medicine. Its vastness necessitated the emergence of several specialized areas including traditional bone setting, traditional birth attendant and herbal healing [5]. In Nigeria, it has been ascertained that traditional bone setters enjoy more trust and patronage than the other groups of traditional care givers [6]. The popularity of traditional bone setters in Africa is enhanced by the claim by its practitioners that they have supernatural influences [7,8]. The result is that in Nigeria, majority of

the people rank the bone setters far ahead of orthopedic surgeons in the treatment of musculoskeletal injuries [6]. For example, in Eastern Nigeria, it was reported that 85% of patients who presented with femoral fractures in an orthopaedic hospital visited the traditional bone setters first before presenting at the hospital [9]. Perhaps spurred by this high level of societal recognition, the bone setters have ventured into other areas like treatment of congenital anomalies and management of patients with bone infections and tumors [10].

Even though the practice of bone setting may differ, from community to community certain features of the practice are common to all the practitioners. For example, diagnosis of fracture is done mainly by physical assessment and this is dependent on the experience of the practitioner. Consequently, most of the bone setters employ the conservative method including use of herbs splint and massage in the management of all bony injuries [11]. There is evidence that the outcome of treatment with the bone setters is good for closed fractures of the shaft of the humerus, ulna, radius and tibia but poor for peri-articular and open fractures [12]. Thus even though instances abound where fractures heal properly with traditional treatment, bone setters often do not appreciate the dangers of use of splintage which could result in gangrene that may require an amputation [12,13]. Other complications that could result from treatment with the bone setters include non-union, mal union, contractures, osteomyelitis and limb shortening [14,15].

With these complications in mind, it becomes obvious that treatment with bone setters is associated with a high treatment failure [16]. Thus it has been observed that one of the challenges of an orthopaedic surgeon in Nigeria is the management of complications from treatment by traditional bone setters [15]. This study was designed to determine the willingness to patronize traditional bone setters among patients presenting at the General-out patient department of Federal Teaching Hospital Abakaliki, Nigeria.

## Methodology

### Description of study area

The study was carried out at Federal Teaching Hospital Abakaliki Ebonyi state, Nigeria. It is a tertiary health institution owned by the Federal Government of Nigeria. It came into existence in December, 2011, when the former Federal Medical Centre Abakaliki absorbed the defunct Ebonyi State University Teaching Hospital Abakaliki. It is a 602 bed facility with specialist physicians in almost all fields of Medicine. The health facility also offers Residency training for doctors in several fields of Medicine and is also the teaching hospital for medical students in the College of Health Sciences of Ebonyi State University Abakaliki, Nigeria. The General out-patient department is the first point of call for all adult patients in need of healthcare services at Federal Teaching Hospital Abakaliki unless such a case is classified as a medical emergency. The out-patient unit of the hospital remains open on every working day of the week except national public holidays.

### Study area

This was a descriptive cross-sectional study.

### Study population

These were adult patients presenting at the General out-patient

department of Federal Teaching Hospital Abakaliki, Nigeria. All patients who were less than 18 years were excluded from the study. Any patient who refused to give consent to participate was excluded from the study.

### Sample size determination

The minimum sample size for the study was determined by the formula used for single proportions [17]. A sample size of 400 respondents were included in the study based on a type 1 error ( $\alpha$ ) of 0.05, a tolerable margin of error of 0.05 and the proportion of 40.0% that were willing to patronize a traditional bone setter in case of a fracture in the general out-patient department of a tertiary hospital in south-south Nigeria [18].

### Sampling technique

A systematic random sampling technique using facility register was used to select the patients as they presented in the general outpatient department of the hospital on each day of data collection. The last six months attendance at the out-patient clinic was used to determine the sampling frame. An average of 1124 clients present in the general outpatient department on a monthly basis and this served as the sampling frame. Sampling interval was determined by dividing the sampling frame of 1124 by the sample size of 400, hence a sampling interval of 3 was obtained. So every third patient was included in the study based on the order of registration of patients on each day of data collection. The index patient on each day of data collection was selected using a simple random sampling technique of balloting.

### Study instrument

A pre-tested semi structured questionnaire which was developed by the researchers was used for data collection. The questionnaire was administered to the patients by trained research assistants.

### Data management

Data entry and analysis was done using IBM Statistical Package for Social Sciences (SPSS) version 22. Frequency tables and cross-tabulations were generated. Chi square test of statistical significance and multivariate analysis using binary logistic regression were used in the analysis, and the level of statistical significance was determined by a p value of  $< 0.05$ .

Multivariate analysis using binary logistic regression was used to determine the predictors of willingness to patronize traditional bone setters among the respondents. Variables that had a p value of less than 0.2 on bivariate analysis (gender, socio-economic class and having patronized the bone setters before) were entered into the logistic regression model to determine the predictors of willingness of the patients to patronize bone setters, (socio-economic class and previous use of traditional bone setters). The result of the logistic regression analysis were reported using adjusted odds ratio and 95% confidential interval and the level of statistical significance was determined by a p value of  $< 0.05$ .

The socio-economic status index was developed using Principal Component Analysis (PCA), in STATA statistical software version 12. The input to the PCA included information on estimated household monthly income and ownership of ten household items that included gas cooker, television, refrigerator, cable television, electric fan, air

**Table 1:** Socio-demographic characteristics of respondents.

Variable	Frequency (n=400)	Percent (%)
<b>Age of respondents</b>		
Mean ±(SD)	32.3±11.1	
<b>Age of respondents in groups</b>		
<25 years	100	25.00%
25-29 years	101	25.30%
30-34 years	64	16.00%
≥ 35 years	135	33.80%
<b>Gender</b>		
Male	204	51
Female	196	49
<b>Ethnicity</b>		
Igbo	382	95.5
Yoruba	11	2.8
Ethnic minorities	7	1.8
<b>Marital status</b>		
Never married	221	55.3
Married	173	43.3
Widowed	6	1.5
<b>Religion</b>		
Christianity	391	97.8
Islam	9	2.3
<b>Educational attainment</b>		
No formal education	4	1
Primary education	15	3.8
Secondary education	134	33.5
Tertiary education	247	61.8
<b>Employment status of respondents</b>		
Student/Unemployed	131	32.8
Self-employed	172	43
Salaried employment	97	24.3
<b>Socio-economic class</b>		
Low socio-economic class	200	50
High socio-economic class	200	50

conditioner, motor vehicle, generator, electric iron and washing machine. For calculation of distribution cut points, quartiles, (Q) were used. Each respondent was assigned the wealth index score of his/her household. The quartiles were Q1 = poorest, Q2= the very poor, Q3= the poor and Q4= least poor. This was further dichotomized into low socio-economic class comprising the poorest and very poor groups and high socio-economic class made up of respondents categorized as the poor and least poor.

In determining the factors affecting the willingness of the patients to patronize traditional bone setters, age of the respondents was categorized into two, those ≤ 32 years and those more than 32 years. The basis for this was the mean age which was 32.3±11.1years.

**Table 2:** Awareness and willingness of the respondents to patronize traditional bone setters.

Variable	Frequency (n=400)	Percent (%)
<b>Aware of traditional bone setters</b>		
Yes	338	84.5
No	62	15.5
<b>Have patronized traditional bone setters before</b>		
Yes	118	29.5
No	202	70.5
<b>Will patronize bone setters in future</b>		
Yes	116	29
No	175	43.8
Not certain	109	27.3
<b>Reason to patronize the bone setters</b> (n=116)		
Skilled/good service delivery	47	40.5
Cheap	35	30.2
Personal choice	20	17.2
No specific reason	14	12.1
<b>Will encourage family members to patronize traditional bone setters</b> (n=400)		
Yes	120	30
No	159	39.8
Not certain	121	30.3
<b>The group that has more patronage</b>		
Traditional bone setter	202	50.5
Orthopedic Surgeon	115	28.8
Not sure	83	20.8
<b>The group preferred for treatment</b>		
Orthopedic Surgeon	219	54.8
Traditional bone setter	107	26.8
Not certain	74	18.6
<b>The group that has more treatment failures</b>		
Traditional bone setters	167	41.8
Orthopedic Surgeon	129	32.3
Not certain	104	26

**Ethical consideration**

Ethical approval for the study was obtained from the Health Research and Ethics Committee of Federal Teaching Hospital Abakaliki, Nigeria. The respondents were required to sign or thumb print to a written informed consent before the interview and the nature of the study, its relevance and the level of their participation were made known to them. Respondents were assured that participation in the study was voluntary and nowhere on the questionnaire were the names of the respondents written. Also, all information provided through the questionnaire were kept confidential.

**Results**

Table 1 shows the socio-demographic characteristics of the

**Table 3:** Reasons why people patronize traditional bone setters.

Variable	Frequency	Percent (%)
	(n=400)	
Why people patronize traditional bone setters		
Low cost/accessibility	193	48.3
Ignorance/ fear of amputation	105	26.3
Good service delivery	178	44.5
No specific reason	24	6

respondents. The mean age of the respondents was 32.3±11.1 years. Majority of the respondents 51.0%, were males. Majority 61.8%, have attained tertiary education and the highest proportion of the respondents 43.0%, were self-employed.

Table 2 shows the awareness and willingness to patronize traditional bone setters among the respondents. Majority of the respondents 84.5%, were aware of traditional bone setters. Less than a third of the respondents, 29.5% have patronized traditional bone setters before and 29.0% were willing to patronize them in future. The major reasons for patronizing the bone setters were skilled/good

service delivery 40.5%, and cheapness 30.2%. Majority 50.5%, were of the opinion that the bone setters have more patronage and also have more treatment failures 41.8%, than orthopaedic surgeons.

Table 3 shows the reason why people patronize traditional bone setters. The highest proportion of the respondents 48.3%, perceive low cost/accessibility as the main reason people patronize traditional bone setters. Other reasons included ignorance/fear of amputation 26.3%, and good service delivery 19.5%.

Table 4 shows the factors affecting willingness of respondents to patronize traditional bone setters in future among the respondents. Respondents in the low socio-economic class were two times more likely to patronize traditional bone setters when compared with those in the high socio-economic class, (AOR= 2.0, 95% CI: 1.2- 3.2). Also, the respondents who have patronized traditional bone setters before were ten times more likely to patronize them in future when compared with those who have not utilized their services before, (AOR= 10.1, 95% CI: 6.1- 16.8).

### Discussion

Majority of the respondents 84.5%, were aware of traditional bone

**Table 4:** Factors affecting willingness to patronize traditional bone setters in future.

Variable	Willingness to patronize bone setters		p value on bivariate analysis	***AOR (95% CI) on multivariate analysis
	(n=400)			
	Yes	No		
	N (%)	N (%)		
<b>Age of respondents</b>				
<33 years	70 (28.2)	178 (71.8)	0.663	NA
≥33 years	46 (30.3)	106 (69.7)		
<b>Gender</b>				
Male	66 (32.4)	138 (67.6)	0.132	1.2 (0.7-2.0)
Female	50 (25.5)	146 (74.5)		1
<b>Marital status</b>				
Married	51 (29.5)	120 (70.5)	0.854	NA
Single**	65 (28.6)	162 (71.4)		
<b>Educational attainment of respondent</b>				
Tertiary education	72 (29.1)	175 (70.9)	0.933	NA
Secondary education and less	44 (28.8)	109 (71.2)		
<b>Employment status of respondents</b>				
Student/Unemployed	35 (26.7)	96 (73.3)	0.27	NA
Self-employed	57 (33.1)	115 (66.9)		
Salaried employment	24 (24.7)	73 (75.3)		
<b>Socio-economic class</b>				
Low socio-economic class	68 (34.0)	132 (66.0)	0.028	2.0 (1.2-3.2)
High socio-economic class	48 (24.0)	152 (76.0)		1
<b>Have patronized traditional bone setters before</b>				
Yes	74 (62.7)	44 (37.3)	<0.001	10.1 (6.1-16.8)
No	42 (14.9)	240 (85.1)		1

\*\*Never married, widowed

\*\*\*Adjusted odds ratio, 95% Confidence interval

NA Not applicable

setters and their practice. In a study in Ilorin, Nigeria, majority of the respondents, 77.3% were aware of the practice of traditional bone setting as a form of treatment for bony injuries [19]. Also, in a study in Garissa county Kenya, majority of members of the community that participated in the study 95%, were aware of traditional bone setting and as high as 90% of them have patronized their services [20]. It has been established that the practice of traditional bone setting is common in developing countries [21].

Less than a third of the respondents 29.5%, have patronized traditional bone setters before. This proportion is lower than that from a study in Ilorin, Nigeria where 52.3% of the respondents have patronized the bone setters at one time or the other [19]. The difference in the two findings could be attributed to the fact that while this study was a health facility based study, the one in Ilorin was community based. In support of this position, while majority of respondents in this study 54.8%, and another health facility based study 60.0%, preferred the services of orthopaedic surgeons [18], the reverse was observed in community based studies where majority of the respondents preferred the services of traditional bone setters to that of orthopaedic surgeons [18,19]. Thus, it could be said that utilizing orthodox healthcare services may increase the likelihood of preferring the services of orthopaedic surgeons to that of bone setters. However, in a community based study in middle belt states of Nigeria, majority of the respondents preferred orthodox fracture management to the services of traditional bone setters [22]. This finding could be attributed to the individual experiences and observations of the respondents of the services of orthopaedic surgeons and traditional bone setters. A minor proportion of the respondents 30.0%, were willing to encourage family members to patronize traditional bone setters. In a study in Makurdi, Nigeria, a similar proportion of the patients 29.2%, who presented for treatment by traditional bone setters did so based on the advice of relatives and friends [23].

A higher proportion of the respondents 50.5%, were of the opinion that traditional bone setters receive more patronage than orthopaedic surgeons in the study area. It has been observed that bone setters have widespread community acceptance and support especially in developing countries [24]. This community acceptance of traditional bone setters has been demonstrated in a number of ways. For example, in a study in Port Harcourt, Nigeria, after an injury, a higher proportion of the patients who participated in the study 78.6%, visited traditional bone setters first when compared with those who visited orthodox hospitals first, 10.2% [25]. This is similar to that observed in Minna, Nigeria [26]. Also, in that study in Minna, Nigeria, 30% of the patients who presented in orthodox hospitals left the hospitals for the bone setters when they observed that their bodies have healed [26]. A report from eastern Nigeria has it that 85% of patients who presented with femoral fractures in an orthopaedic hospital visited the traditional bone setters first before presenting at the hospital [9].

In spite of the widespread acceptance and patronage of the services of traditional bone setters, the highest proportion of the respondents 41.8% perceived that the bone setters have more treatment failures when compared with the orthopaedic surgeons. Evidence abound in support of this observation. For example, a study in middle belt of Nigeria came to the conclusion that the outcome of treatment with

the bone setters was bad [27]. Similarly, in another study in Makurdi, Nigeria, majority of the patients who patronized traditional bone setters lost confidence in them due to high complication rates [23]. Also, the report from Ibadan, southwest Nigeria is not different [15]. Incidentally these observations are not limited to Africa. For instance, in south-eastern region of Turkey, the complication rate after treatment with bone setters was found to be 54.8% [28]. Also, in a study in India, several complications were observed from treatment with traditional bone setters and these were attributed to lack of basic knowledge on fracture management and inability to embrace referral by the practitioners [29].

All these observations may have led to the postulation that one of the challenges of orthopaedic surgeons in Nigeria and Turkey is the management of complications from treatment by traditional bone setters [15,28]. Perhaps, it is due to this avalanche of complications following treatment from traditional bone setters that necessitated the call for the training of bone setters by orthopaedic surgeons in Nigeria [30]. This has been embraced by the bone setters in Sudan [31] and found to be of good effect in southern Ethiopia [32].

According to the respondents, the major reasons why people patronize traditional bone setters were low cost/ acceptability 48.3%, and ignorance/fear of amputation 26.3%. These were similar to findings from Bangalore, where the major reasons for patronizing traditional bone setters were easy accessibility and affordability [33]. This concept of accessibility makes it imperative that the practice of orthopaedic surgery should be brought closer to the people so as to facilitate acceptance. An enlightenment of the public in this regard will also be of benefit. Furthermore, there has been a belief that the services of traditional bone setters are cheaper since they use local resources [24]. and from a study in Ilorin, Nigeria, the major reason for patronizing traditional bone setters is that their services are cheap, 63.8% [19].

A minor proportion of the respondents 29.0%, were willing to patronize traditional bone setters in the future and the major reason for the willingness is because of their skills /good service delivery. This is similar to the results from a study in Calabar, Nigeria, where majority of the patients 51.0%, patronized traditional bone setters because they were of the opinion that they were more skillful than orthopaedic practitioners [34].

From the results of this study, the respondents who have previously patronized traditional bone setters were ten times more likely to patronize them in future when compared with those who have not utilized their services before. This may be an indication of good service delivery with good results from the bone setters which was the main reason for the respondents wishing to patronize them again from the results of this study. It is important to note that in a study on utilization of traditional bone setters in Ibadan, Nigeria, all the patients that participated in the study were willing to recommend the bone setters who treated them to others [35]. Also, from the results of a study in Kwara state, Nigeria, after family members, patients treated by bone setters were the next group that supported the referral of patients to the bone setters and this was because they were aware of the effective treatment by the practitioners [36].

Similarly, a study in Ekiti state Nigeria, on outcome of treatment

with traditional bone setters observed that approximately half of the patients that were treated 49.8%, indicated that the treatment outcome was excellent while 34.0% indicated that it was good. Only a minor proportion of the patients 2%, rated their treatment as poor [37]. In southern India, there is a report that majority of the patients that patronized Puttur, a traditional way of bone setting did so based on the advice of patients who have previously patronized the service [38]. It has been established that the outcome of treatment by traditional bone setters is good for closed fractures of the shaft of the humerus, ulna, radius and tibia but poor for peri-articular and open fractures [12]. This underscores the need to closely monitor the activities of the bone setters so as to enhance their competence in the areas where they are good and encourage referral in cases where their treatment failure rates are high.

Also, the respondents who were in the low socio-economic class were twice more likely to patronize traditional bone setters when compared with those in the high socio-economic class. Even though it has been observed that those who patronize traditional bone setters cut across every strata of the society including the educated and the rich [6], evidence abound that poverty has a big influence in patronizing the services of the bone setters [7,37].

## Conclusions

The respondents were of the opinion that traditional bone setters have more patronage than orthopedic surgeons even though they were aware of the higher risk of treatment failure with their services. This calls for concern however individuals who have utilized the services of the bone setters were willing to patronize them again. This indicates that there are some good works associated with the bone setters. Thus, in view of the numerous complications following their interventions, there may be the need to monitor the activities of the bone setters to enhance their competence and encourage referral. Also, the practice of orthopedic surgery should be brought closer to the people.

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