

Healthcare Delivery among Yoruba Bone-setters in Southwest Nigeria and the Need for Collaboration with Orthodox Orthopedic Healthcare Services: A Mixed Method Study

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Abstract

This study covers three purposively chosen states; Ogun, Ondo, and Oyo, in southwestern Nigeria. Primary data were collected using three sets of questionnaires. The respondent-driven sampling (RDS) technique was employed in selecting the respondents for the study. A total of 69 traditional bonesetters (TBS), 130 TBS patients, and 15 orthopedic surgeons were interviewed. The study reveals that majority (91.2%) of the TBS in the study area claimed that they had received an average of 11 patients from orthodox hospitals in the year preceding the survey while about 9.0% of the respondents reported that

they had on the average advised 6 patients per year to relocate to orthodox hospitals. The study also reveals the views of TBS areas of need from government to include recognition (93.7%) and integration into the country's health system (63.5%). A majority (93.3%) of the orthopedic surgeons reported having received patients from TBS, and each surgeon had received, on average, 37 patients per year. All the orthopedic surgeons surveyed believed that TBS lacked knowledge in the management of bone injuries, apart from setting bones. Other issues considered critical by the doctors in the management of fractures by TBS included lack of training in the biology of bones (86.7%) and inability to refer cases to modern health facilities (73.3%). The proportion of orthopedic surgeons who had ever thought of a possible interaction between TBS and orthopedic surgeons was 80.0% while 86.7% would advise the establishment of such interaction. Furthermore, the study reveals that more than half (54.6%) of TBS patients made a TBS clinic their first choice for treatment. The paper concludes that integration will go a long way to improving the health of the population, thereby significantly reducing deaths or disability-adjusted life years (DALYs) lost.

Introduction

The word orthopedics, which was coined in 1741 by Nicholas Andry, was derived from Greek words "*orthos*" for "correct" or "straight" and "*paidon*" for "child" (Ponseti 1991). This was developed from the knowledge of the process of traditional bone setting where a splint made of bamboo is tied round the particular limb in order to immobilize the fractured limb. The term "integration" in this essay means the incorporation of the knowledge of traditional medicine into modern healthcare and ensuring that it meets modern safety and efficacy standards (Shetty, 2010). The need for integration is also borne out by the fact that modern medicine is desperately short of new treatments due to the number of years it takes for a new drug to get through the research and development pipeline to manufacture, and also the growing resistance of illnesses to existing drugs (Shetty 2010).

Conventional practitioners' arguments that traditional medicine is laden with problems of imprecise dosage, poor diagnosis, charlatanism, exaggerated claims of abilities, and inadequate knowledge of anatomy, hygiene, and disease transmission have created mistrust between the practitioners of traditional medicine and modern medicine (Hillenbrand 2006). Sofowora (1996, in Hillenbrand 2006) and Richter (2003) have also attributed resistance to integration of traditional medicine by the conventional medicine practitioners to primary philosophical distinctions. Conventional medicine is based on the results of experiments and views about illnesses as the result of how the

pathological agents respond to various treatments, while traditional medicine accepts that disease can have supernatural causes.

Literature Review

The process of integrating traditional medicine into modern medicine is gradually gaining ground globally. According to a United Nations report, from 1970 to 2007 the number of National Institutes for Traditional Medicines increased from 12 to 62 (UN 2009). In Africa, initiatives such as the African Network for Drugs and Diagnostics and Innovation are encouraging the mining of traditional medicine. Ghana and Nigeria are among African countries rolling out educational campaigns and launching anti-counterfeiting technologies to better monitor drug procurement (Shetty 2010). Shetty (2010) concluded that traditional medicine has much to offer global health. Hillenbrand (2006) opined that the fact that patients use conventional and traditional healthcare simultaneously calls for an improved dialogue between practitioners of both medicines in Cameroon.

The World Health Organization (WHO) presented the aims of collaboration between traditional and modern medicine. The aims include: to support and integrate traditional medicine into national healthcare systems in combination with national policy and regulation for products, practices, and providers to ensure safety and quality; to ensure the use of safe, effective, and quality products and practices, based on available evidence; to acknowledge traditional medicine as part of primary healthcare; to increase access to care and preserve knowledge and resources; and to ensure patient safety by upgrading the skills and knowledge of traditional medicine providers.

Puckree et al. (2002), in a study in Durban, Kwa-Zulu Natal, reported that 70% of 300 patients surveyed would consult traditional healers as a first choice, while the most popular type of healers known as the *Sangomas* had as many as 20 patients per day. The authors also revealed that a large number of patients consulted traditional healers for potentially life-threatening conditions and hence concluded that traditional healing is an integral component of healthcare, although very little ground work has been done to integrate it into Western medicine.

Science and technology can help bring about a better understanding of the art of bonesetting. Scientific and technological equipment could be employed or used to examine the art of bonesetting processes. Folk bonesetters in China demonstrated in ancient times that people accomplished a scientific therapy that is applicable, relevant, and innovative to modern ways of thinking (Xu). Traditional Chinese Medicine (TCM) experts wrote over 2,000 years ago that Chinese healers had mastered a magical bonesetting therapy, called

zhenggushu, through which the doctors could cure fractures with their bare hands.

Oguachuba (1986) in his comparative analysis of treatment outcomes from native and orthodox treatment of dislocation and fracture dislocation of hip joints in Jos, Nigeria suggested a careful assessment of TBS practice before advocating for interaction with an orthodox form of treatment. This was as a result of his findings, which revealed that certain types of fracture cases should not be managed by TBS. The implication of this is that there are certain types of fracture cases that can be adequately managed by TBS. A recognition and appreciation of this fact will or can lead to integration into at least the primary health care system. A workable system of integration can be put in place. Nwankwo and Katchy (2005), in a prospective study in Enugu, Nigeria, reported the need to avert unnecessary limb loss due to mismanagement of limb injury. The authors proposed not only the education of the public in general, but also the enlightenment of TBS as to which of their practices and procedures are harmful.

Ogunbodede (2000), in his preliminary exploration of the possible application of African traditional methods of bonesetting in orthodox dentistry in southwest Nigeria concluded that the use of splints by traditional bonesetters for the sole purpose of immobilization provided guided mobility of the fractured limb as opposed to fixed immobility of orthodox treatment. According to the author, and in agreement with Medicom (1979), this may significantly accelerate the healing process, as there is significant scientific evidence to suggest that mobile fractures (and even joints) heal faster than those that are completely immobilized. The author's suggestion included the fact that a further investigation to this approach is necessary with a view to adopting it in the management of fractures should it be found to be more effective.

Ogunbodede (2000) further submitted that the early commencement of physiotherapeutic exercise as soon as a slight degree of union is achieved in traditional healing processes reduces pains. This is unlike the pains and discomfort experienced by patients who are made to postpone physiotherapeutic exercise until union has been achieved following several weeks of immobilization. This further shows the effectiveness of the use of guided immobility adopted by traditional bonesetters. The approach will also be useful in jaw fractures.

Nwachukwu et al. (2011) reported that in spite of the fact that contemporary orthopedic trauma care in Nigeria is at par with similar treatments in the United States, the majority of fracture victims initially visit traditional bonesetters before going to the hospital. The authors further reported that patients only present themselves to the hospital if and when serious complications arise. The orthodox medical practitioners' antagonism towards and criticisms

of the practice of traditional bonesetting have not diminished the high patronage of TBS in Nigeria. About 85% of Nigerian patients with fractures go first to the traditional bonesetters before coming to the hospital (Onuminya 2004; Omololu et al. 2008). These authors also revealed that the number of patients patronizing TBS as an alternative and/or final option for treatment is on the increase. This paper therefore assesses the justification for a possible integration of traditional bonesetting practices into orthodox orthopedic practices.

Methods

The study area for this paper is Southwest Nigeria, one of the six geopolitical zones (drawn up according to ethnic identity) in Nigeria and is comprised of Ekiti, Lagos, Ogun, Ondo, Osun, and Oyo States. The zone houses a major ethnic group known as the Yoruba. Other major ethnic groups in Nigeria, namely the Igbos and the Hausas, also reside here. The zone encompasses coastal lowlands with both rain and guinea savannah vegetation.

A multistage probability sampling procedure was employed for the study. Each of the states is made up three senatorial districts and each of the senatorial districts is comprised of local government areas. Three of the region's six states were randomly selected using the ballot method. Two senatorial districts were randomly selected from each of the selected states by balloting. In each of the two senatorial districts selected, two local government areas (one urban and one rural) were purposively selected for the study.

The study employed Respondent-Driven Sampling technique (RDS), since the size and boundary for the target population is unknown (Heckathorn, 1997). RDS is a chain-referral, non-probability sampling technique which assumes that the best way to access members of a hidden population is through their peers (Heckathorn, 1997; Johnston and Sabin, 2010). RDS was basically employed in the identification of the target audience (TBS and TBS patients formerly or currently being treated by TBS). The first respondent was identified through a community leader resident in the areas. All orthopedic surgeons in public tertiary health facilities in the study area who were available and are willing to participate in the study were interviewed.

A mixed study approach was employed for this study. That is, the design included both quantitative and qualitative approaches. The quantitative approach involved the use of a structured questionnaire which contained both closed- and open-ended questions. The questionnaires were administered on the TBS, orthopedic surgeons, and TBS patients. Key in-depth interviews (KII) were employed for the qualitative approach. The KIIs were administered on the same set of respondents as for the quantitative approach. The

KIIs centered mainly on the respondents' views about possible collaboration between TBS and orthopedic surgeons. The data-collection instruments for the TBS and TBS patients were translated into the Yoruba language and interviewers were trained on the techniques of data collection. The data collection instruments for the orthopedic surgeons were self-administered.

The data instruments for the study were validated through a pre-test carried out in a local government area not selected for the study. The pre-tested instruments were examined to ensure that all variables of measurement were adequately captured, consistent, and reliable for the realization of the objectives of the study. The proposal for the study was submitted to the research and ethical committee for ethical clearance and approval. The informed consent of respondents was sought before the commencement of any of the interviews. In all, a total of 69 TBS, 130 TBS patients, and 15 orthopedic surgeons were interviewed. The quantitative data collected were analyzed using SPSS version 17. The descriptive statistical technique was employed to describe the variables of interest while content analysis was employed for the qualitative data.

Limitations of the Study

The study has some limitations, which include: (i) the challenge of sampling frame for TBS and TBS patients and hence the difficulty in determining their respective sample sizes before data collection. RDS was employed to identify the respondents; (ii) language barrier was also a challenge especially among the Hausas resident in the study area. The interviewers sought the services of an interpreter since the data collection instruments were designed in English and Yoruba (being the dominant languages in the region); (iii) a majority of TBS were not willing to divulge information especially about the products used and process involved in the treatment of their patients. They say such information is not meant for non-family members, and also feared that the interviewers were modern medical practitioners. Efforts were made to build a good rapport with them, assuring them that all information given would be treated in strict confidence; (iv) voice and video recording were not allowed by many of the TBS, as they were scared that the interviewers might be security agents in disguise. Interviewers resorted to note-taking verbatim for subsequent translation; and (v) the road network, especially in the rural areas of the region, posed a challenge. Interviewers made use of commercial motorcycles and also walked to some destinations.

Results and Discussion

Distribution of Respondents by Location

The distribution of the three groups of respondents by location is presented in Table 1. The table reveals that of the 69 TBS interviewed, 39.1% were resident in Ogun State while 30.4% each were resident in Ondo and Oyo States. Of the total number of TBS patients interviewed (130), Ogun State residents constituted 56.9% while 30.8% and 12.3% were resident in Oyo and Ondo States respectively at the time of the survey. A total of 15 orthopedic surgeons were interviewed, of which 26.7% were attached to tertiary health facilities in both Ogun and Ondo States, while 46.7% of them were from University College Hospital, Ibadan, Oyo State.

Table 1
Distribution of respondents by location

Location (State)	Respondents		
	TBS	TBS Patients	Orthopedic Surgeons
Ogun	27 (39.1)	74 (56.9)	4 (26.7)
Ondo	21 (30.4)	16 (12.3)	4 (26.7)
Oyo	21 (30.4)	40 (30.8)	7 (46.7)
Total	69 (100.0)	130 (100.0)	15 (100.0)

Source: Authors' survey, 2014 (Note: Figures in brackets represent percentages)

Background Characteristics of TBS

The background characteristics of TBS who participated in the study are presented in Table 2. More than half (56.5%) of the respondents were urban residents while 43.5% of them were rural residents. The median age of respondents was 48 years with a standard deviation of 13.8 years. The youngest and oldest of the respondents was 20 years and 82 years old respectively. Respondents in the age range of 46–58 years constituted 41.2% of the total number of respondents interviewed. About 15.0% of the respondents were at least 59 years old, while 44.1% were at most 45 years of age.

The sex distribution of respondents shows that more than four-fifths (88.4%) were males while the remaining were females (11.6%). The median income of the respondents was ₦37,500 per month. A majority (93.9%) earned at most ₦100,000 while the rest, with a minimum of ₦101,000 per month, constituted 6.0% of the respondents. This income may also include earnings from other occupation engaged in by the TBS.

The marital status of the respondents showed that 84.1% were currently married while 11.6% were single. In addition to these were those either widowed (2.9%) or separated (1.4%). Among those who had ever been married,

the mean age at marriage was 28 years with a standard deviation of 4.9 years. Those whose age at marriage fell between 20 and 29 constituted 68.9% of the respondents, while those who got married as teenagers constituted 3.3% and those whose age at marriage was after their 29th birthday constituted 27.8%. About 69.0% of the respondents had only one spouse, while about 30.0% had at least two spouses. However, the modal number of spouses was one. The median number of children ever born by the respondents who have ever been married was four. The proportion of respondents with 1–4 children was 59.0% while 31.2% of the respondents had 5–8 children and 9.8% of the respondents had at least nine children.

The data in Table 4 show that 39.1% had secondary education while 12.9% had post-secondary education. It is interesting to note that 83.9% of the respondents had Western education. This, however, contrasts with the findings of Addis et al. (2002), where about half of the respondents were illiterates. The proportion of TBS with at least a secondary education is lower than what was reported in the findings of Oboirien and Khalid (2013).

Bonesetting was not the only occupation of the respondents. More than half (57.5%) of them were into farming while others were involved in trading (20.0%), transportation (5.0%), and proprietorship of Quranic schools (5.0%). Table 4 reveals that the median household size of the respondents was six and about 45.0% of them had a household size of 6–10. Among respondents who were single, 66.7% of them had only one sexual partner, while 33.3% of them had two at the time of the survey. This may help determine the number of children who are likely to be trained in bonesetting as a family practice.

The religious affiliation of the respondents revealed that 54.4% were Muslims while 39.7% were of the Christian faith. This may be unexpected, since the Christian faith would seem naturally linked to orthodox medicine as a result of the large number of faith-based hospitals in the country. Traditional worshippers and others (no religion) constituted 4.4% and 1.5% respectively. It is expected that since traditional medicine is based on traditions, most practitioners would necessarily be traditional worshippers. Interviews, however, showed that the majority of the bonesetters did not see any conflicts between religious affiliation and bonesetting practice.

Table 2
Distribution of TBS by Background Characteristics

Background Characteristics	N	Frequency	Percentage
Place of Residence	69		
Urban		39	56.5

Rural		30	43.5
Age (completed years)	68		
20–32		14	20.6
33–45		16	23.5
46–58		28	41.2
59–71		7	10.3
>71		3	4.4
Sex	69		
Male		61	88.4
Female		8	11.6
Income (₦)	66		
<100,999.99		62	93.9
101,000–200,999		2	3.0
201,000–300,999		1	1.5
>300,999		1	1.5
Marital Status	69		
Single		8	11.6
Married		58	84.1
Separated		1	1.4
Widowed		2	2.9
Age at Marriage (completed years)	61		
<20		2	3.3
20–29		42	68.9
>29		17	27.8
Number of Spouses	61		
None		1	1.6

1		42	68.9
>1		18	29.5
Number of Children Ever Born (CEB)	61		
1-4		36	59.0
5-8		19	31.2
9-12		6	9.8
Level of Education	69		
None		6	8.7
Primary		16	23.2
Arabic/Quranic		5	7.2
Modern III/JSS III		6	8.7
Secondary		27	39.1
NCE/OND		7	10.1
HND/BSc		1	1.4
MSc/PhD		1	1.4
Other Occupation	40		
Farming		23	57.5
Trading		8	20.0
Artisan		4	10.0
Transport		2	5.0
Quaranic School		2	5.0
Others (Politics)		1	2.5
Household Size	65		
6-10		29	44.6
>10		12	18.5
Number of Sexual Partners	3		

1		2	66.7
2		1	33.3
Religion	68		
Christianity		27	39.7
Islam		37	54.4
Traditional		3	4.4
Others		1	1.5

Source: Authors' survey, 2014

Background Characteristics of TBS Patients

Table 3 reveals that male respondents constituted 72.3% of the number interviewed. Children aged 3–12 constituted 5.4% while young adults constituted 36.2%. The average age of the respondents was 33 years with a standard deviation of 14 years. More than half (58.5%) of the respondents were married while 38.2% were single. The respondents interviewed also consisted of those who were separated (1.6%), divorced (0.8%), or widowed/widower (0.8%).

A description of the respondents with regard to their ages at the last injury they had reveals that 40.7% reported their age as at last injury to be 20–34. This is followed by older adults (35–50 years) (30.1%) Those who had their last bone injury as teenagers constituted 13.0%, while 9.8% had their last bone injury when they were at least 51 years of age. The average age as at last injury, was 32 years.

Table 3
Background Characteristics of TBS patients

Background Characteristics	N	Frequency	Percent- age
Sex	130		
Male		94	72.3
Female		36	27.7
Age (in completed years)	130		
3–12		7	5.4
13–19		18	13.8

20–34		47	36.2
35–50		41	31.5
>50		17	13.1
Marital Status	123		
Single		47	38.2
Married		72	58.5
Separated		2	1.6
Divorced		1	0.8
Widow/Widower		1	0.8
Age (in completed years) at Last Injury	123		
3–12		8	6.5
13–19		16	13.0
20–34		50	40.7
35–50		37	30.1
>50		12	9.8
Cause of Last Injury	130		
Motor Accident		48	36.9
Motorbike Accident		52	40.0
Bicycle Accident		4	3.1
Domestic Accident		23	17.7
Occupational hazard		2	1.5
Others		1	0.8

Source: Authors' survey, 2014

Background Characteristics of Orthopedic Surgeons

The socio-demographic characteristics of orthopedic surgeons are presented in Table 4. A total of 15 orthopedic surgeons were available for interview in the study areas. The median age of the surgeons was 37 years with

a standard deviation of about 6 years. Their ages ranged between 28 and 51 years with 40.0% of them falling in the 36–40 age group. All the respondents were males.

The table shows that their average monthly income was ₦267,785.70 with a standard deviation of ₦144,481.70. Half of the respondents earned between ₦200,000 and ₦250,000 monthly. Respondents who earned less than ₦200,000 constituted 28.6% while 20.0% of them earned more than ₦250,000. As for marital status, two of them were single and the rest had gotten married between 31 and 35 years of age, with the average age at marriage about 32 years with a standard deviation of about 2 years.

Half of the respondents had either one or two children while 41.7% had more than two children. Only one respondent had yet to have a child. The religious affiliation of the respondents revealed that 86.7% and 13.3% were Christians and Muslims respectively. The Yorubas constituted 60.0% of the respondents while Igbos and Others constituted 13.3% and 26.7% respectively. The surgeons had put in an average of 8 years working as orthopedic surgeons. A fifth (20.0%) of them had worked for more than 10 years while those who had worked for 5–10 years constituted 46.7%. About a third (33.3%) of the respondents had worked for less than five years.

The median number of bone injuries each surgeon had managed in the last one year was 105. Respondents who had managed at most 100 bone injuries in the last one year constituted 50.0% while 28.6% and 21.4% had managed 101–300 and more than 300 bone injuries respectively. Of the nine respondents who had set bones in the one year preceding the survey, 66.7% of them had set at most 100 fractured bones, while 33.3% had set at least 101 fractured bones.

Table 4
Background Characteristics of Orthopedic Surgeons

Background Characteristics	N	Frequency	Percent-age
Age (in completed years)	15		
<36		5	33.3
36–40		6	40.0
>40		4	26.7
Sex	15		
Male		15	100.0
Female		–	

Monthly Income (₦)	14		
<200,000		4	28.6
200,000–250,000		7	50.0
>250,000		3	20.0
Marital Status	15		
Single		2	13.3
Married		13	86.7
Age at Marriage	13		
<31		5	38.5
31–35		8	61.5
Number of Children Ever Born	12		
0		1	8.3
1–2		6	50.0
3–4		5	41.7
Household Size	13		
1–4		7	53.8
>4		6	46.2
Religion	15		
Christianity		13	86.7
Islam		2	13.3
Tribe	15		
Igbo		2	13.3
Yoruba		9	60.0
Others		4	26.7
Years of Experience	15		
5–10		7	46.7

>10		3	20.0
Number of Bone Injuries Managed in the Previous Year	14		
<101		7	50.0
101-300		4	28.6
>300		3	21.4
Number of Bones Set in the Previous Year	9		
<101		6	66.7
101+		3	33.3

Source: Authors' survey, 2014

TBS Views on Possible Interaction with Orthodox Orthopedic Surgeons

Table 5 presents the experiences and practices which suggest possible benefits of interaction between TBS and orthodox medical services.

Table 5
TBS Experiences and Practices

Variables	N	Frequency	Percentage
Have there been any cases of relocation from orthodox hospital?	68		
Yes		62	91.2
No		6	8.8
Number of such relocation	61		
<10		34	55.7
10-19		19	31.1
>19		8	13.2
Reason for relocation from orthodox hospital (Multiple response)			
Patient too difficult		54	88.5
Patient couldn't afford bill		44	72.1

Patient's case has spiritual undertone		29	47.5
Patient's case not healing as fast as expected		52	85.2
Patient has disdain for environment		17	27.9
Non-union of bones		42	68.9
Have there been relocations to orthodox hospitals?	68		
Yes		6	8.8
No		62	91.2
Number of such relocation	6		
<10		5	83.3
10-19		-	-
>19		1	16.7
Reason for relocation to orthodox hospitals (multiple response)			
Patient's case was too difficult		1	25.0
Because of wounds		4	66.7
Loss of too much blood		1	16.7
Have there been outright rejections of cases (by TBS)?	66		
Yes		7	10.6
No		59	89.4
Reasons for rejection	7		
Over bleeding from wounds which need proper suture		1	14.3
No remedy for the injury		1	14.3
Instructed divinely		1	14.3
Involvement of police		1	14.3
Can't afford the bill		1	14.3
Case too much		1	14.3
Too late before presentation		1	14.3

Area in need of government assistance (multiple response)			
Recognition		59	93.7
Integration into country's health system		40	63.5
Provision of grants/funds		48	76.2
Access to bank loans		23	36.5
Training facilities on biology of bones		22	35.5

Source: Authors' survey, 2014

A majority (91.2%) of the TBS in the study area claimed that they had received patients from orthodox hospitals. The average number of such relocations was reported to be 11 in the year preceding the survey, with a minimum of 2 and a maximum of 55. More than half (55.7%) had at most nine of such cases while 13.2% had more than 19 such cases. About 89.0% of the respondents claimed that the reason why patients came to them was because the difficulty of the case was too much for the orthodox doctors to handle. This was closely followed by a second reason, lack of healing as quickly as expected (85.2%). Other reasons as claimed by the respondents include inability of patients to continue to pay the hospital bill (72.1%), non-union of bones (68.9%), and the belief that the case had a spiritual undertone (47.5%).

About 9.0% of the respondents reported that they had cause to relocate or to advise to relocate on the average six patients per year to orthodox hospitals. A quarter (25.0%) of them agreed that such action was taken when the case was too difficult for them to handle, while wounds (66.7%) and loss of blood (16.7%) were other reasons for such advice. Seven of the respondents had had cause to reject some cases outright due to over bleeding from wounds which needed suturing (14.3%), or due to divine instruction (14.3%), involvement of the police (14.3%), or late presentation of the case (14.3%).

The table further reveals the views of TBS regarding their areas of need from government. These include recognition (93.7%), integration into the country's health system (63.5%), provision of grants/funds (76.2%), access to bank loans (36.5%), and training facilities on biology of bones (35.5%).

Orthopedic Surgeons' Views on Possible Interaction with TBS

Table 6 reveals that 93.3% of the orthopedic surgeons interviewed reported having received patients from TBS.

Table 6
Orthopedic surgeons' experiences and practices

Variables	N	Frequency	Percentage
Ever received patients from TBS	15		
Yes		14	93.3
No		1	6.7
Number of patients received from TBS	10		
<11		5	50.0
11-20		2	20.0
>20		3	30.0
Opinion about TBS (multiple response)			
Lack of training in biology of bones		13	86.7
Inability to refer cases to modern health facilities		11	73.3
Lack of knowledge in the management of bone injuries apart from bone setting		15	100.0
Unhygienic environment		12	85.7
High cost of management		4	26.7
Lack of will to learn		10	66.7
Any improvement in the operations of TBS over years	15		
Yes		2	13.3
No		12	80.0
Can't say		1	6.7
Ever thought of interaction between TBS and orthopedic surgeons	15		
Yes		12	80.0
No		3	20.0
Advise establishment of interaction between TBS and orthopedic surgeons	15		
Yes		13	86.7
No		2	13.3

Source: Authors' survey, 2014

The average number of patients so received in the year preceding the survey was about 37. Half of the orthopedic surgeons had received between 1 and 10 such patients in the reference period. The minimum and maximum numbers of such cases were one and 250 respectively. All the orthopedic surgeons surveyed believed that TBS lack knowledge in the management of bone injuries apart from setting bones. Other issues considered critical by the surgeons in the management of fractures by TBS include lack of training in the biology of bones (86.7%), unhygienic environment (85.7%), inability to refer cases to modern health facilities (73.3%), and lack of will to learn (66.7%).

A majority (80.0%) of the orthopedic surgeons indicated that there had been no improvement in the management of bone injuries by traditional bonesetters over the years. The proportion of orthopedic surgeons who had ever thought of a possible interaction between TBS and orthopedic surgeons was 80.0% while 86.7% would advise the establishment of such interaction.

TBS Patients' Views on Possible Interaction between TBS and Orthopedic Surgeons

Table 7 reveals that more than half (54.6%) of the respondents made a TBS clinic their first choice for treatment.

Table 7
TBS Patients' Experiences

Variables	N	Frequency	Percentage
First place of visit for treatment	130		
Public Hospital		36	27.7
Private Hospital		23	17.7
TBS		71	54.6
Last place visited for treatment	130		
Public Hospital		-	-
Private Hospital		2	1.5
TBS		128	98.5
Changed place of treatment in-between	130		
Yes		66	50.8

No		64	49.2
If Yes to where	66		
Public Hospital		-	-
Private Hospital		-	-
TBS		66	100.0
Reasons for TBS preference (multiple response)	65		
Prompt attention to treatment		51	78.5
Nearness to point of accident		3	4.6
Low cost of treatment		29	44.6
Use of natural remedies		48	73.8
Quick recovery		42	64.6
Duration of stay in TBS clinic (weeks)	64		
0–8		37	57.8
9–17		22	34.4
>17		5	7.8
Ever relocate from one TBS to another TBS	66		
Yes		13	19.7
No		53	80.3
Number of times visited TBS for bone injury treatment	130		
1		110	84.6
2		17	13.1
3		2	1.5

5		1	0.8
Any improvement in TBS treatment over the years	20		
Yes		20	100.0
No		-	-
Area(s) TBS have improved (multiple response)	20		
Knowledge of biology of bones		9	45.0
Cleanliness		6	30.0
Preparation of treatment remedies		15	75.0
Would you suggest possible interaction between TBS and orthodox health practitioners?	127		
Yes		105	82.7
No		22	17.3

Source: Authors' survey, 2014

For every patient surveyed that made a public hospital their first choice for treatment, two other respondents would choose a TBS clinic. Also, for every surveyed patient that made a private hospital their first choice for treatment, three other respondents would choose a TBS clinic. This further shows the rate at which victims patronize TBS. This is also evident from their response with regard to the last place visited for treatment, as only 1.5% of the respondents made a private hospital their last place visited for treatment. The rest visited TBS clinics.

In all, about 51.0% of the patients surveyed had cause to change place of treatment during the course of treatment, and all of them left for treatment at the TBS clinics. This partially corroborates the findings of Chowdhury et al. (2011), who reported that 30% of patients initially taken to a hospital shifted to TBS. Prompt treatment (78.5%) and use of natural remedies (73.8%) were the most cited reasons for preferring TBS clinics. Other identified reasons for TBS clinic preference included expected quick recovery (64.6%) and low cost of treatment. These findings agree with those of Idris et al. (2010), Aderibigbe et al. (2013), Oginni (1995), and Nwachukwu et al., (2011).

The duration of stay in a TBS clinic for patients surveyed ranged from days to weeks and months. The median duration of stay was eight weeks with a standard deviation of about six weeks. The minimum and maximum duration of stay were one day and 28 weeks respectively. Of those who changed place of treatment in favor of TBS, more than half (57.8%) spent eight weeks at the TBS clinic while 7.8% of the respondents spent more than 17 weeks at the TBS clinic. About a fifth (19.7%) of the respondents had to leave one TBS for another TBS. Reasons for this action included:

“The bone did not set when it was done by the first TBS. I had to go elsewhere where it was broken and reset.” (female, rural, Ondo State)

“The money the first TBS demanded was too much; also he did not allow one to use modern medicine. He did not allow x-rays, etc.” (male, rural, Ogun State)

“[Patient changed residence] from Lagos to Ibadan.” (male, urban, Oyo State)

“. . . imperfect treatment and non-union of bones.” (female, rural, Oyo State)

“Their work was not effective. I was advised to seek treatment elsewhere.” (male, urban, Ogun State)

“I did not get adequate treatment where I first went.” (male, urban, Ogun State)

“The environment was disgusting. I had disdain for the environment.” (female, urban, Oyo State)

With regard to the number of times patients ever had a bone injury that required a visit to a TBS, 84.6% had it only once, while 15.4% had it more than once, and all agreed that there had been improvement in the treatment procedures of TBS. Preparation of treatment remedies is one area of improvement identified by a majority (75.0%) of the respondents. Table 3 also reveals that 82.7% of the respondents interviewed alluded to the fact that there should be interaction between TBS and orthodox medicine practitioners.

Justification for Interaction

The orthopedic surgeons interviewed presented the following arguments/reasons for advising the establishment of interaction between themselves and TBS.

“They obviously play a major role in patients’ outcomes and hence cannot be ignored.” (Owo, Ondo State)

“By interaction, learning and modification of practices will be enhanced, thereby reducing the number of casualties among their patients.” (Ijebu-Ode, Ogun State)

“... could lead to exchange of knowledge.” (Ibadan, Oyo State)

“If they are taught the rudiments of medicine, they might become safe and useful, like the traditional birth attendants in obstetrics and gynecology.” (Ibadan, Oyo State)

“... could enable them know the limitations of traditional techniques in managing fractures.” (Ibadan, Oyo State)

The reasons given by the TBS patients in support of interaction between TBS and Orthopedic surgeons include:

“Both parties can share from one another’s experience and our health system will move forward. Contribution from both ends would lead to improved work in the health sector.” (Female patient, urban, Ogun State)

“Doctors cannot do it all; also TBS cannot do it all. They should complement each other’s efforts.” (Male patient, rural, Oyo State)

“It will save many accident victims from having their legs/hands cut off in hospitals.” (Male patient, rural, Ondo State)

“The interaction is a welcome development. It will improve the TBS work, expose them to modern medicine while they will also use their spiritual experience to complement modern medicine.” (Female patient, rural, Ogun State)

Orthopedic surgeons’ responses as to the positive impact of TBS on the community include:

“[TBS are] able to offer some assistance to a few patients with minor musculoskeletal injuries.” (Abeokuta, Ogun State)

“[TBS is an] alternative in rural areas that cannot be covered by Primary Health Care (PHC).” (Owo, Ondo State)

“[TBS can] assist in management of uncomplicated fractures.” (Owo, Ondo State)

“[TBS treatment is] readily available and cheaper” (Abeokuta, Ogun State)

The negative impacts as highlighted by the orthopedic surgeons far outnumber the positive impacts. The negative impacts included:

“[TBS is] an important cause of loss of limbs. Destruction of limbs, gangrene.” (Abeokuta, Ogun State)

“Increase in bone structure abnormality” (Owo, Ondo State)

“Increase in morbidity and mortality” (Owo, Ondo State)

“Many centers manage patients with low success rates and many others with complications.” (Ibadan, Oyo State)

“[TBS] plays on the intelligence of the populace and then denies them proper care.” (Ibadan, Oyo State)

“affect economy adversely” (Abeokuta, Ogun State)

“increase cost of management” (Owo, Ondo State)

“non-union of bones, waste of patients’ time” (Abeokuta, Ogun State)

“false information” (Owo, Ondo State)

“unnecessary, untimely death” (Ibadan, Oyo State, Ogun State)

The negative impacts of TBS on the community as reported by the patients included:

“I don’t like their dirty environment.” (Male, urban, Ogun State)

“They could complicate issues for patients because they do not have much knowledge of biology of bones.” (Female, rural, Oyo State)

“There are some who don’t know the work but they deceive people by collecting money from them.” (Male, rural, Ogun State; female, rural, Ogun State)

“Some are not genuine; they only take advantage of people.” (Male, urban, Ogun State)

Conclusion

This study reveals that 93.7% of TBS want government recognition while 63.5% of TBS want to be integrated into the health system of the country; 86.7% of orthopedic surgeons would advise the establishment of an interaction between them and TBS; and 82.7% of TBS patients suggested an interaction between TBS and orthopedic surgeons. Also this study deduces that since TBS have had positive impacts on the community, they should be recognized, and that since they have had negative impacts on the community and yet still enjoy high patronage and preference, that they should be recognized and officially monitored by health authorities.

For interaction to be possible, both health sectors (traditional bonesetting and modern orthopedics) must be open to such interaction. This was supported by Ogunbodede (1991), who concluded in his study that the work of traditional healers is not integrated into orthodox dental practices because dentists are not open to the prospect of collaborating with traditional healers, let alone utilizing any of their methods. It was also reported by Nwachukwu et al. (2011) that there is tension between Western and indigenous musculo-skeletal practices.

This study has revealed that patronage of TBS is still high in the study area and also that a sizeable proportion of TBS patients end up in modern health facilities for treatment. Therefore, integration will go a long way to improving the health of the population, thereby significantly reducing deaths or disability-adjusted life years lost. This integration can be achieved by employing or adapting the model of innovation known as DIKW (Data, Information, Knowledge, and Wisdom) developed by Gayle (n.d.) as well as by using the training algorithm developed by Omololu et al. (2008).

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