Original Article

Why do people prefer traditional bonesetters in Sudan?

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Abstract:

Background: In Sudan as in other developing nations, traditional bonesetters play a significant role in primary fracture care. There is widespread belief in our society that TBS are better at fracture treatment than orthodox practitioners.

Significant numbers of patients with fractures present first to the traditional bonesetters before coming to the hospital and therefore this mode of care delivery cannot be overlooked in Sudan.

Objectives: A prospective study designed to determine the reasons of why a considerable number of people prefer to go to the traditional bonesetters in Sudan.

Patients and methods: This prospective two stages study was carried out in two different stages, 1st stage in 2006 targeted general population, and the 2nd stage in the period from May 2009 to September 2009 targeted traditional bonesetters and their patients. In the 1st stage of the study we distributed a predesigned questionnaire to general population, while in the 2nd stage of the study we visited different traditional bonesetter in order to interview them and their visitors and completing the early prepared Performa. We excluded the too elderly patients and children who have no decisions to choose TBS.

Results: In the 1st stage of study the participants were 199 of them, 192 participants responded well to the questionnaire. The reasons why they went to traditional bonesetters were; in 71 participants (37%) was their beliefs, in 27 (14.06%) was due to the low cost, and in 27 (14.06%) was due to fear of plaster. In the 2nd stage of the study 276 participants fulfilled the criteria of the research. The reason why they went to traditional bonesetters; in 63 candidates (22.8%) was their beliefs (P value < 0.003), in 53 (19.2%) was low cost (P value < 0.05), and in 46 (16.7%) was due to fear of cast or amputation. Study included sixteen traditional bonesetters, of them 14 were males and 2 were females. One of them has a bachelor graduation from faculty of sciences. 11 (68.8%) traditional bonesetters accepted the idea of regular training under medical supervision.

Conclusion:

Despite an adequate number of physicians practising in the region, traditional bonesetters continue to be consulted. Study showed that a belief is the most leading cause of consulting traditional bonesetters, other causes including fear of plaster or amputation and less cost. We recommend that the efficacy of their treatments have to be further assessed.

Keywords: Traditional bonesetter (TBS); Beliefs, medical services.

In Sudan there is traditional medical practitioners - herbalists, bone-setters and religious practitioners. Traditional healers and bonesetters were practicing long before orthodox medicine was introduced to the developing world[1].

Presently both orthodox and traditional medicines coexist side by side and both are patronized by patients[2].

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The traditional bonesetter's practice is a highly specialized form of traditional medicine[3]. It is usually passed from father to son but some outsiders also receive their training via apprenticeship[2].

Traditional bone setting is an old practice found almost in all communities of the world[4]. Traditional Bone setting (TBS) is popular in Africa because its practitioners lay claims to supernatural influences[5-8]. Superstition, ignorance and poverty are the basis for continued patronage despite complications[5-7]. There are however many complications attributed to the TBS[9-16].

Although we do not know how many people are successfully treated by the TBS, commonly reported complications include gangrene of the affected limb, nonunion, malunion, contractures, osteomyelitis, and limb shortening[9,11,13,14]. Despite these complications, there is a great demand for TBS services, and in fact some patients elect to leave orthodox hospitals in favour of treatment by a TBS. Possible reasons for this include cultural beliefs, ignorance, third-party advice[3], quicker and cheaper services, and the fear of amputation at an orthodox hospital[2]. Payment for TBS services is usually made in cash or in kind. Rehabilitation is virtually nonexistent among TBS services. Since not all the patients treated by TBS report back to the orthodox hospitals (except those with complications), we believe that there must be many patients with minimally displaced fractures who have been successfully treated by them. While many fractures do heal properly with traditional treatment, bonesetters often do not appreciate the dangers of the complications arising from their practices[17-22].

TBSs often use splits made from strips of wood tightly bound around the limb[15], which may not be removed when pain increases after immobilisation.

Death may result from complications such as tetanus and septicaemia[17].

In many studies, observation of hospital practice showed increasing incidence of patients return to seek hospital care. This high rate of return to orthodox care suggests that people's confidence in the TBS is highly misplaced and their internal locus of control in decision-making is reawakened by TBS failure[13,23,24].

Patients and methods:

Two stage prospective study carried out to identify the reasons of why do some people in Sudan prefer treatment by TBS. 1st stage of study was carried out in Aljazeera province during which a predesigned and tested questionnaire was distributed in random manner in a general population, the 2nd stage of the study was conducted in Khartoum. Khartoum is one of the 26 states of Sudan. It has an approximated area of 27,122 km^2 and an estimated population of approximately 8,600,000. Khartoum city is the capital of the Khartoum State and is the national capital of Sudan

This prospective two stags study was designed and carried out in two different periods, to evaluate all patients with musculoskeletal injury seeking treatment strictly by the TBS in Aljazeera province and Khartoum region.

The first stage was conducted in 2006, and targeted a general population. While the 2nd stage conducted in the five months period from May to September 2009, and targeted two groups; TBS and their patients. In the 1st stage of the study a predesigned questionnaire was distributed to general population, while in the 2nd stage of the study different clinics of traditional bonesetter were visited in order to interview them and their visitors and complete the early prepared Performa. The elderly patients and children who have no decisions to choose TBS were excluded.

The data collected included demography, details of age, sex, level of education, initial injury, reasons for patronage of TBS, estimated cost of treatment, patient's comments and feelings about previous treatment(s) at the TBS versus hospitals, reason for abandoning the TBS and patient's expectations of orthodox treatment.

Concerning the traditional bonesetters the data collected includes the details of education levels, duration of practice, the way he/she got the practice of bone setting, the acceptance of regular medical training and collaboration with orthopaedic surgeons.

The collected data managed statistically using appropriate SPSS computer package.

Finally data were expressed as mean ±SEM and compared using the Student's *t* test where appropriate. Categorical data are presented as numbers with percentages and compared using χ^2 analysis.

Results:

The first stage of the study;

The total numbers of participants from general population in this stage were 199 of them 136 (68.3%) were males. Age ranged

between 15 and 72 years (mean ± SEM was 35.44 ± 3.71). 74 (37.2%) participants were from rural while 125 (62.8%) from urban descents. The distribution of participants according to their work was varying (Table1).

Table1: Distribution of candidates from general population according to their occupation.

OCCUPATION	NO. (%)
Student	45 (22.6)
Government employee	27 (13.6)
Self employee	27 (13.6)
Businessman	21 (10.6)
Housewife	20 (10.0)
Farmer	16 (8.0)
Government worker	14 (7.0)
Soldier	10 (5.0)
Others	19 (9.6)
TOTAL	199 (100)

38% of the participants from urban community preferred to be treated by TBSs while 48% from rural descent preferred to be treated by TBSs, P= 0.021. Their education level varies from illiterate to more than 12 years schooling. Education level found to be of no role in the preference of treatment selection. 192 participants out of 199 responded well to the questionnaire.

The reason for going to TBS was; in 71 participants (37%) was their beliefs, in 27 participants (14.06%) was due to the low cost of TBS, and in 27 participants (14.06%) was due to fear of plaster (Fig 1).

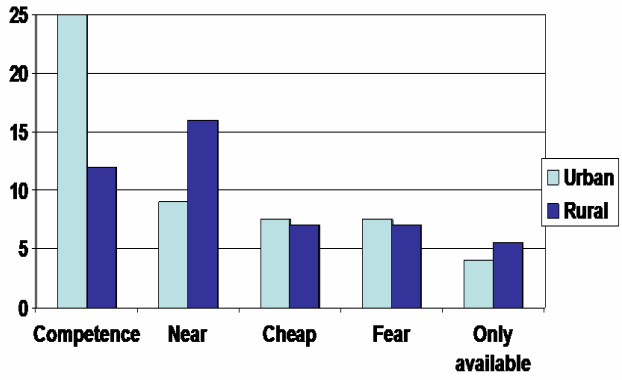

Fig 1: Reasons of preference of TBSs by general population.

The second stage of the study;

In this stage 276 TBS's visitors filled the criteria of our research, too extremes of age was excluded from the research because of second person interference.

Of them 183 (66.3%) were males. Their Mean age ± SEM was 39.3 ± 0.82. According to their residence 213 (77.2%) were urban dwellers. Their level of education was variable; 28 (10.1%) of them were illiterate, 187 (67.7%) had some degrees of education (pre university), 58 (21%) graduated from university, and 3 (1.1%) found to have a postgraduate level (Table 2).

Table 2: Level of education of TBS's visitors

Level of education	Frequency (%)
Illiterate	28 (10.1)
Primary school	54 (19.6)
Intermediate school	51 (18.5)
High secondary school	82 (29.7)
Graduate	58 (21.0)
Postgraduate	3 (1.1)
Total	276 (100)

Ninety nine (35.9%) of the visitors had a past history of treatment by an orthodox practitioner in their previous condition, while 177 (64.1%) were not.

While 124 (44.9%) of visitors were seen by doctors in their current condition, 152 (55.1%) were not.

Of those who were seen by orthopaedists, the reasons of why do they changed to TBSs were varied; in 13 (10.5%) visitors the TBS is the only available nearby service, 96 (77.4%) due to different medical causes (delay in medical services, fear of cast or amputation, occupied wards, less trained doctors, and high cost of hospital treatment (21.8%, 20.2%, 16.1%, 9.7% , 9.7%, respectively), and in 15 (12.1%) because of their beliefs (Fig 2).

Seventy eight (28.3%) of visitors had a previous history of treatment by TBSs, while 198 (71.7%) were none.

Among those with a history of treatment by TBS, their TBS diagnosis was; dislocation in 38 (48.7%), fracture in 25 (32.1%), sprain in 15 (19.2%) (Fig 3). When asked about the out come of their treatment; it was excellent in 23 (29.5%), and poor in 5 (6.4%) (Table 3).

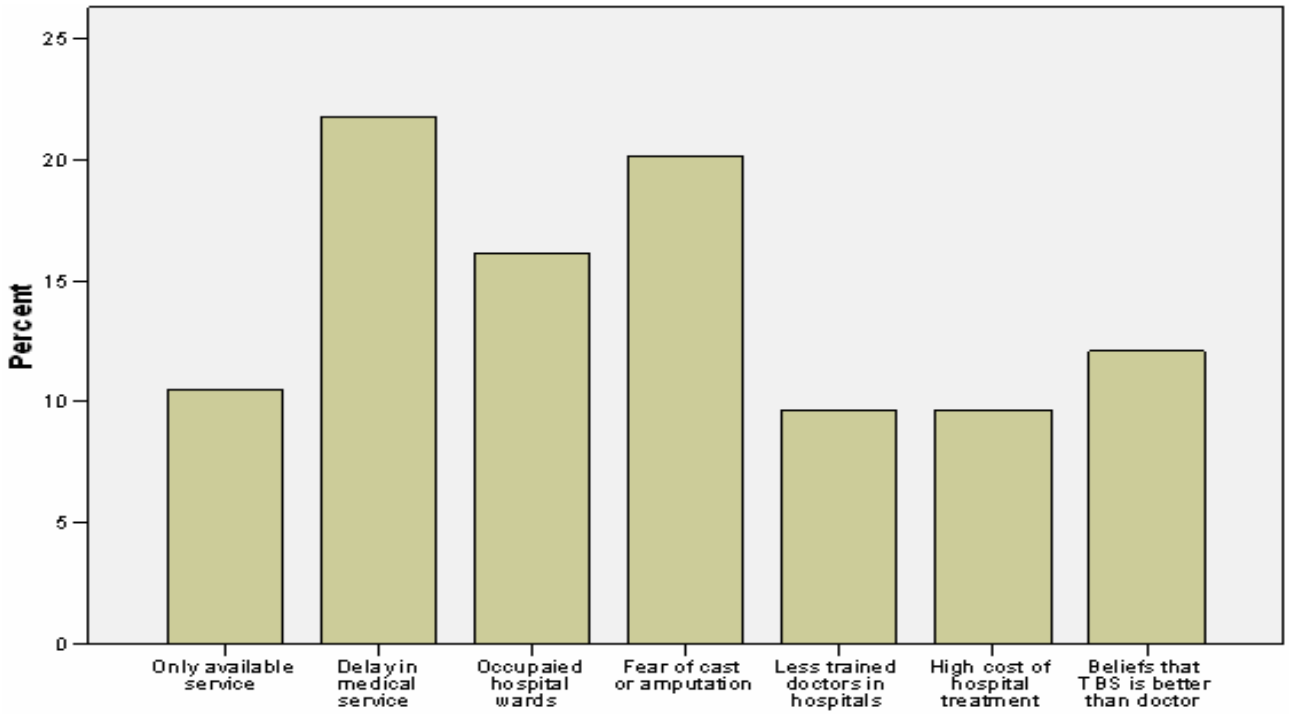

Fig 2: Why candidates changed into TBSs

Table3: Outcome of treatment by TBSs.

Out come	Frequency (%)
Poor	5 (6.4)
Acceptable	14 (17.9)
Good	36 (46.2)
Excellent	23 (29.5)
Total	78 (100.0)

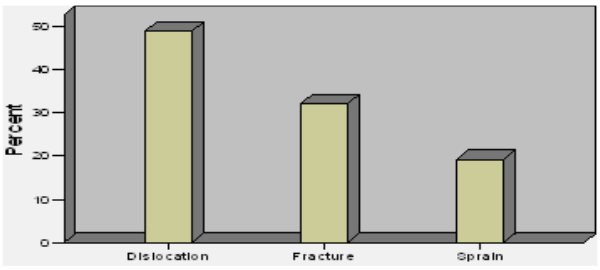

Fig 3: Diagnosis in the past condition

The decision to contact the TBSs was a self decision in 88 (31.9%), family in 100 (36.2%), relatives in 60 (21.7%), and friend decision in 28 (10.1%) (Fig 4).

The reasons for going to TBS; in 63 (22.8%) were their beliefs (P value < 0.003), in 53 (19.2%) was low cost of the TBS (P value < 0.05), and in 46 (16.7%) was due to fear of cast or amputation (Table 4).

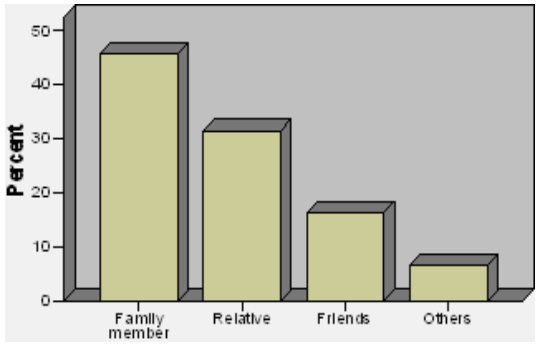

Fig 4: Decision of being treated by TBS

Table 4: Overall general reasons of preference of TBS

Reasons of preference of TBS	Frequency (%)
Only available service	27 (9.8)
Low cost	53 (19.2)
Less time consuming	55 (19.9)
Beliefs	63 (22.8)
Fear of cast or amputation	46 (16.7)
Others	32 (11.6)
Total	276 (100.0)

During this stage of our study we visited 21 traditional bonesetters (TBSs), respondents to our predesigned questionnaire were 16; of them 14 were males and 2 females (mean age ± SEM 48.9 ± 2.4 years). In terms of formal

education status, 2 (12.5%) were illiterate, 7 (43.8%) had some elementary education, 6 (37.5%) had high secondary school's level of education, and 1 (6.3%) claimed to have a Bachelor degree of sciences.

Source of their knowledge in bone setting was varied; in 56.3% of TBSs was from self education, parents or from relatives, and in the reminder 43.7% from other different sources (Table 5).

Table 5: Level of education and source of knowledge of TBSs

	Level of education of the TBS						Source of treatment Knowledge				
Sex of TBS	Il	'ri	Int	HSS	Gr	Total	SE	Pa	B/S	O	Total
Female	0	0	0	2	0	2	0	2	0	0	2
Male	2	4	3	4	1	14	1	0	6	7	14
Total	2	4	3	6	1	16	1	2	6	7	16

Il= Illiterate, Pri = Primary school, Int=I ntermediate school, HSS = High secondary school, Gr= Graduate, SE= Self education, Pa= Parent, B/S= Brother or Sister, O= Others

Eleven (68.8%) of TBSs accepted the idea of having a regular medical training in dealing with simple traumatic problems under supervision by orthopaedic surgeons and the reminder 5 (31.2%) did not.

Discussion:

Orthopaedic and Trauma surgeons working in Sudan like that from different regions in Africa are overburdened by unnecessary complications as they spend their expertise in correcting complications rather than practice modern Orthopaedics [2,5,23,25]. These complications pose economic, physical and social burden to the affected individuals, families and the society[5].

The mean age of the visitors in the current study ± SEM was (39.3 ± 0.82) years. This shows that among patients involved in the study the young adult patients mostly patronize the bone setters.

The study revealed that males (66.3%) accounted for a large portion of patients seeking TBS treatment and showing that males are predominantly injured.

Hundred fifty two of the TBS's visitors (55.1%) went to TBS from the start of their injury, this result agrees with Ogunlusi et al's study where 79.3% of patients were seen initially by TBS[2]. This could be dangerous especially in those that could have sustained concomitant life threatening injuries.

It is also interesting that 44.9% of the patients initially were taken to hospitals before being withdrawn and attended treatment by TBS. This result is comparable to studies by Olorun et al[13], Solagberu[24] and Dada et al[26], where the incidence were 50%, 43% and 40% respectively. This high percentage requires an audit of our orthodox system in order to correct over inadequacies.

Different kind of fractures and dislocation were managed by the TBS in this study using the splints, herbs, cautery, skin lashes, pads and manipulation without consideration for a perfect anatomical reduction and alignment. It is important to raise the level of awareness of our community about the narrow limit of the TBS in making a diagnosis and proper treatment of orthopaedic and trauma problems and this only can be tackled through a proper health education programs.

The reasons for continued patronage or preference and the attitude of the people and the TBSs are similar in studies conducted in Africa[2,5,23,27].

Patronage as shown in this study is determined by several factors. These factors were found not to be restricted to a particular group of people but involve people from every social strata and academic classes.

Study showed continued preference of TBS by Sudanese is based on their belief that it is better in treating fractures, more available at

hand and nearby and their way of management usually results in faster healing and relief than the orthodox measures. This is almost similar to studies conducted by others[19,23,28,29].

Of that the most pronounced cause of preference of the TBS was the public beliefs of being better in treating fractures than orthodox practitioners.

Study also highlighted that the TBS treatment is also believed to be cheap to the visitors.

Many of them patronized the TBS for financial reasons and many of them wanted quicker services for their acute problem so as to go back to work early. Education programs for the community letting them to be aware that quick and cheaper services do not equate to good functional outcome. The study revealed that 30.8% of the visitors attended TBSs because they wanted cheaper and quicker services than modern orthopaedic treatment. This is comparable to the study by Thanni, who also found out that many people patronize TBS because the services are cheaper[23].

There is an erroneous belief in traditional Africa that the only available option for treatment of fractures in hospitals is amputation[2,5,23].

Fear of amputation was the reason of patronage in a small percentage of this study (16.7%), this closely agrees with Ogunlusi's study who found that the fear of amputation was in 7%[2]. It is important to educate people and let them know that Modern Orthopaedic Services does primarily save the limbs, and amputation is carried out on limbs that cannot be saved or for dead ones. We revealed that one of the important preference determinant factors included the opinions of family and friends. We found that the decision of seeking treatment at TBS in 68.1% of visitors is non self decision (family members and friends); this closely agrees with Solagberu and Dada et al, where they found that the initial idea of visiting TBS was from an external person in 75% and 25 of cases respectively[24, 26]. The influence of this group is important because of the existing social system in Sudan where family and friends will normally contribute towards defraying the cost of treatment.

The levels of education of the TBSs in the current study were found ranging from illiterate to higher education level.

Study had revealed that the willing of the TBSs to co-operate with the orthopaedic practitioner, this result almost similar to result by others[15, 30].

Conclusion and recommendations:

Although there is a number of qualified orthopaedic surgeons and well-equipped hospitals in Sudan at the moment, treatment is still obtained from traditional bonesetters by a large number of our population.

In spite of the complications, TBS continue to have patronage from both the highly educated and the illiterate. Possible reasons for this include culture and beliefs, ignorance and third-party advice, and also overcrowding of hospitals with trauma cases.

More collaborative effort is needed to raise awareness of complications that may arise from seeking management in TBS.

In Sudan the experience of midwifery training program was successful. Exposing local traditional bonesetters to a similar program worth a trial.

To achieve that, an extensive study of the current status of TBS including the obstacles and motivations for change is mandatory.

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References:

1. Hoff W. Traditional health practitioners as primary health care workers. Trop Doct. 1997;27 Suppl 1:52–55.
2. Ogunlusi JD, Okem IC, Oginni LM. Why patients patronize traditional bone setters. Internet Journal of Orthopedic Surgery. 2007;4(2):1-7.

3. Oyebola DD. Yoruba traditional bonesetters: the practice of orthopaedics in a primitive setting in Nigeria. J Trauma. 1980;20:312–322.
4. Oginni LM. Traditional Bone Setting in Western Nigeria. In Biodun Adediran (Editor) Cultural Studies in Ile-Ife Institute of African Studies, Obafemi Awolowo University Ile-Ife. 1995; 202-208.
5. Udosen AM, Otei OO, Onuba O. The role of traditional bonesetters in Africa: Experience in Calabar, Nigeria. Annals of Afr. Med. 2006; 5(4):170-173.
6. Ogunlusi DO, Ikem IC, Oginni. Why Patients Patronize Traditional Bone Setters. The Internet Journal of Orthopedic Surgery. 2007. Volume 4 Number 2.
7. Udosen AM, Etiuma AU, Ugare GA et al. Femoral Artery Aneurysm, a Complication of Traditional Bonesetting, (A case report). Nig J Surg. 2005.
8. Udosen AM, Ugare G, Ekpo R: Generalized Tetanus Complicating lower limb fractures managed by Traditional bonesetters. Tropical Doctor 2005; 35:237-239.
9. Alonge TO, Dongo AE, Nottidge TE et al. Traditional bonesetters in south western Nigeria–friends or foes? West Afr J Med. 2004;23(1):81–84.
10. Bickler SW, Sanno-Duanda B. Bone setter's gangrene. J Pediatr Surg. 2000;35:1431–1433.
11. Nwankwo OE, Katchy AU. Limb gangrene following treatment of limb injury by traditional bone setter (Tbs): a report of 15 consecutive cases. Niger Postgrad Med J. 2005;12:57–60.
12. Oguachuba HN. Mismanagement of elbow joint fractures and dislocations by traditional bone setters in Plateau State, Nigeria. Trop Geog Med. 1986;38:167–171.
13. Ola Olorun DA, Oladiran IO, Adeniran A. Complications of fracture treatment by traditional bonesetters in southwest Nigeria. Fam Pract. 2001;18:635–637.
14. Omololu B, Ogunlade SO, Alonge TO. The complications seen from the treatment by traditional bonesetters. West Afr J Med. 2002;21:335–337.
15. Onuminya JE. The role of the traditional bone setter in primary fracture care in Nigeria. S Afr Med J. 2004;94:652–658.
16. Onuminya JE. Performance of a trained traditional bone setter in primary fracture care. S Afr Med J. 2006;96:320–322.
17. Eshete M. Prevention of traditional bonesetter's gangrene. J Bone Joint Surg Br 2005; 87(8): 102-103.
18. Onuminya JE, Obekpa PO, Ihezue CH, Ukegbu ND, Onabowale BO. Major amputation in Nigeria: a plea to educate traditional bonesetters. Trop Doct 2000; 30: 133-135.
19. Onuminya JE, Onabowale BO, Obekpa PO et al. Traditional bonesetter's gangrene. Int Orthop 1999; 23: 111-112.
20. Wilson JN. Iatrogenic gangrene in the third world. Trop Doct 1991; 21: 137-138.
21. Garba ES, Deshi PJ, Ihejirika KP. The role of traditional bonesetters in limb computations in Zaria. Niger J Surg Res 1999; 1: 21-24.
22. Offaeli RO. Complications of methods of fracture treatment used by treaditional healers: A report of three cases necessating amputation at Ihiala, Nigeria. Trop Doct 1991; 21: 182-183.
23. Thanni IOA Factors influencing patronage of traditional bonesetters. West Afr J Med 2000; 19: 220-224.
24. Solagberu BA. Long bone fractures treated by traditional bonesetters: A study of patient's behaviour. Trop Doct 2005; 35: 106-108.
25. Udosen A M. The Role of Orthopaedic and Trauma Assistants in improving rural Orthopaedic and Trauma care: Annals of African Medicine. 2004; 3(3):150-152.
26. Dada A, Giwa S O, Yinusa W et al. Complications of Treatment of Musculoskeletal Injuries by Bone Setters. WAJM, 2009; 28(1): 333–337.
27. Ikpeme IA, Udosen AM, Okereke-Okpa I. Patients' perception of traditional bone setting in Calabar. Port Harcourt medical Journal 2007; 1:104-108.
28. Nkele CN. Pattern of occurrence, management and prevention of trauma in Nigerian oil industry Nigerian Journal of Orthopaedics and Trauma 2000; 2:97-100.
29. Thanni LOA, Akindipe JA, Alausa OK. Pattern and outcome of treatment of musculoskeletal conditions by traditional bonesetters in Southwest Nigeria. Nigerian Journal of Orthopaedics and Trauma 2003; 2:112-115.
30. Heinzerling ML. Attitudes of traditional healers toward Western medicine in rural Cameroon. Trop Doct 2005; 35: 161-164.
31. Shah RK, Thapa VK, Jones DH et al. Improving primary orthopaedic and trauma care in Nepal. Educ Health (Abingdon). 2003;16:348–356.