

A Review of Factors Influencing Patronage of Traditional Bone Setters (TBS) in Nigeria

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Abstract: This paper reviews the factors influencing patronage of traditional bone setters (TBS) by bone fracture patients, despite the services of modern orthopaedic surgeons (MOS) and well-equipped medical orthopaedic centers in Nigeria. Major causes of bone fractures in Nigeria include: road traffic accident, road side fall, workplace fall, fall at home, fall from heights, gun-short injury, assault, sports, etc. Categories of bone fractures include: closed fractures, open fractures, joint injuries, soft tissue injuries, bone infections, spine injuries, etc. Socio-cultural factors such as education, level of income, residence, exorbitant medical charges, pressure/advice from family and friends, fear of amputation, strikes in hospitals, delayed attention, lack of ambulance services and essential amenities in rural areas, general attitude of medical health workers and cultural belief in supernatural causes of accidents, etc influence the patronage of traditional bone setters (TBS) in Nigeria. Appropriate government policies, regular training, education and sensitization of TBS, public enlightenment on benefits and complications associated with the practice, as well as accessible and affordable medical orthopaedic services are recommended to improve service delivery and reduce the complications in traditional bone setting in Nigeria.

Keywords: Bone fracture patients, Traditional Bone Setters (TBS), Modern Orthopaedic Surgeons (MOS), Patronage.

1. INTRODUCTION

1.1. Background of the Study

In many parts of the developing world, a large proportion of fractures, musculoskeletal injuries and diseases continue to be treated by traditional bonesetters, who are readily available and often have a good local reputation (Thanni, 2000; Eshete, 2005; Onuminya, 2006). A traditional bone setter (TBS) has been defined as follows: (i). A person recognized by the community in which he or she lives as competent to make diagnosis using local sociocultural methods and contribute to the physical, mental, social and spiritual wellbeing of the members of their communities (Lawal et al. 2011). (ii). A traditional practitioner of joint manipulation, who educate themselves from tradition and takes up the practice of healing without having had any formal training in accepted medical procedures (Singh et al. 2013). (iii). A lay practitioner of bone manipulation, well versed - at least, according to the view of patrons and his community at large - in the medical art of restoring broken bones to full functionality (Ezeanya-Esiobu, 2019). Traditional bone setting is the practice of treating musculoskeletal disorders by untrained persons within a community setting using traditional appliances (Diamond et al. 2017). The practice of bone setting is ancestral in nature (Singh et al. 2013). It is an old practice and a highly specialized aspect of traditional medicine (Ogunlusi et al. 2006; Owoseni et al. 2014). Traditional bone setters (TBS) believe that their abilities to perform the art are inherited from their forefathers (Chika and Onyekwelu, 2019). Traditional bone setting has been practiced for millennia as a cultural adaptation to bone fracture care, and the records are usually kept by

oral tradition (Bassey et al. 2009; Nwachukwu et al. 2011). Bone fracture care is dominated by the traditional bone setters (TBS) and modern orthopaedic surgeons (MOS) in Nigerian healthcare delivery system (Alonge et al. 2004; Nwokeke and Oyefara, 2018). It is a known fact that majority of bone injuries in our society are treated by traditional methods. Even the elite often-times shows evidence of doubt in the efficacy of orthodox methods of bone treatment (Udosen et al. 2006). According to Agarwal and Agarwal (2010), bone setting has its strengths and weaknesses. With current socioeconomic conditions and the types of health needs prevailing in developing countries, it would be difficult to abolish traditional bone setting. These providers have widespread community acceptance and support. Traditional bone setting arose as an adaptive approach to injury care. With the advent of new technologies and advancements in medicine, traditional fracture care evolved into what is recognized today as contemporary orthopaedics (Nwachukwu et al. 2011).

Figure 1 and Figure 2 show pictures of some bone fracture patients in Nigeria.



Fig.1. Bone fracture patients (waiting for care).

Source: Nwachukwu et al. (2011).



Fig.2. Bone fracture patients (in their on-site living accommodation).

Source: Nwachukwu et al. (2011).

1.2. Historical Overview

According to Nwachukwu et al. (2011), a closer examination of the Nigerian healthcare system sheds some light on why it has been particularly difficult to integrate contemporary western Orthopaedics with indigenous practices. The first hospital in Nigeria was established in 1873. It took another 40 years until Nigerians could actually use that hospital, and even then, only select elite Nigerians were welcomed. Nigerian physicians only began to receive training in Orthopaedics after the country's Independence in 1960. Thus, while the Nigerian populace at large has been using the western medical approach for only a matter of decades, they have been using traditional methods for millennia. Naturally, integration of the traditional and contemporary approaches will be slow and deliberate, especially because of the contemporary approach's association with an oppressive colonial past. Nigeria has three national orthopaedic hospitals located at Lagos, Kano and Enugu states, established in 1943, 1959 and 1975 respectively, but with fewer than 200 orthopaedic surgeons nationwide. While the number of traditional bonesetters is not accurately documented, it is widely accepted that traditional fracture care is utilized more than westernized orthopaedic services. Nwokeke and Oyefara (2018) observed that too many requirements for registration for orthopaedic surgeons might have accounted for the dearth of orthopaedic doctors in Nigeria. Furthermore, there are only two postgraduate medical colleges involved in the training and certification of resident doctors in Nigeria, namely: The National Postgraduate Medical College of Nigeria located at Lagos-Badagry expressway and the West African College of Surgeons located at Yaba, Lagos state. The aforementioned constraints therefore affect the development of modern orthopaedic services in Nigeria.

1.3. Major Causes, Categories and Distribution of Bone Fractures in Nigeria

Major causes of bone fractures in Nigeria include: road traffic accident, road side fall, workplace fall, fall at home, gun-short injury, assault, sports, fire arm injury, pathologic fractures and other unspecified means (Eze, 2012; Owumi et al. 2013; Amupitan et al. 2015). Categories of bone fractures/injuries include: closed fractures, open fractures, joint injuries, soft tissue injuries, bone infections, spine injuries and others (Diamond et al. 2017). Motorcycle related accidents account for about 76% of severe open fractures of the lower limbs in Nigeria (Nwokeke and Oyefara, 2018). Distribution of bone fractures in Nigeria are mainly on the clavicle, humerus, radius, ulnar, metacarpals, femur, tibia, fibula, and forearm (Nwadiaro et al. 2006; Diamond et al. 2017). Types of bone injuries include: humeral fractures, radioulnar fractures, femoral fractures, tibiofibular fractures, clavicular fracture, dislocations (shoulder, elbow, metacarpophalangeal joint), multiple fracture, and brachial plexus injury (Nwadiaro et al. 2006; Yusuf et al. 2015).

1.4. Functions of Traditional Bone Setters (TBS)

The functions of TBS mainly include management of fractures, dislocations, congenital anomalies along with their associated complications (Singh et al. 2013). According to Ajima and Ubana (2018) and Okpoko et al. (2018), traditional bone setters in African traditional medicine perform the function of orthopedics in orthodox medicine. They use herbs, roots, barks and different types of human bones, which are respectively used to handle similar parts of the body of the living. Most traditional bone setters make pain relief medicine and rituals for the healing of their clients; they effectively handle referral cases from orthodox hospitals. Ezeanya-Esiobu (2019) noted that traditional bonesetters are renowned for their efficacy in the treatment of bone injuries in the communities where they practice. Through the practice of apprenticeship and on the job training, traditional bonesetters pass down the knowledge of bone manipulation, herbal topical applications and sometimes oral ingestions to the next generation often consisting of family members. Indigenous bonesetters take care to protect their reputation and therefore they give their very best to the restoration of their client's bone health. Most traditional bonesetters are renowned men of competence in their field. Majority of patients (56.9% - 85%) with fractures present first to traditional bone setters before going to hospital (Dada et al. 2011; Ekere and Echem, 2011; Lawal et al. 2012; Adegberigbe et al. 2013; Okpoko et al. 2018). The practitioners are mostly illiterates and do not have knowledge of anatomy, physiology, radiology and sources of complications, and they rely on experience, intuition, and ancestral/supernatural power (Thanni, 2000; Udosen et al. 2006; Ekere and Echem, 2011; Singh et al. 2013; Sina and Ayodele, 2015).

1.5. Treatment Procedure

Generally, traditional bone setters (TBS) diagnose or use their palms and fingers to feel and access the type and extent of damage to broken bones without X-ray (Sofowora, 2006; Nwokeke and Oyefara, 2018). They lack basic knowledge of anatomy and physiology (Udosen et al. 2006). Traditional bone setters do not utilize anesthesia in their treatment

procedures; therefore, they do not relax the patients adequately to set dislocated joints (Onuminya, 2004; Okpoko et al. 2018). The treatment procedure in traditional bone setting involves the use of splints made of wood, bamboo or rattan cane which are usually bandaged around the fracture to immobilize the site, herbal dressings and hot fomentations are also applied (Sofowora, 2006; Dada et al. 2011; Ekere and Echem, 2011; Nwachukwu et al. 2011). Herbal cream application, native bamboo splinting, frequent pulling and massage with or without scarification are applied and repeated at irregular intervals until the fracture heals; treatment is carried out while the patient is either sitting or lying down in a mat (Udosen et al. 2006; Nwokeke and Oyefara, 2018). Incantations, prayers, recitations, divinations and other fetish means are sometimes applied in treating bone fractures traditionally (Sofowora, 2006; Dada et al. 2009; Khan et al. 2015).

According to Nwachukwu et al. (2011), the first step in traditional bone setting is to identify whether a fracture is open or closed; the bonesetters refer open fractures to a local clinic for wound care and closure. Upon the patients' return to the bonesetters, the limb is manipulated and treated as a closed fracture. For closed fractures, the bonesetters identify the fracture site using palpation and clinical signs. Once the fracture site has been identified, the bonesetters attempt to reduce the fracture to its anatomical position. Following reduction, the bonesetters apply an herbal cream (known as "Ufie") to the affected limb while delivering an incantation. After reduction and embalming, the affected limb is splinted to prevent limb movement. For lower extremity fractures, weight bearing on the affected limb is prohibited. Splinting materials include cloths, hard cardboard and plywood. Once the limb is splinted, the patient is begun on a standard care pathway, which involves 51 days of complete limb immobilization followed by a 51-day period of rehabilitation and return to function. During the immobilization period, the splinting materials are changed every four days, at which point the traditional bonesetter reapplies the herbal cream and massages the limb. For patients with lower extremity fractures, during the immobilization period, the patient is given a personal mat on which they can be carried around by family members or support staff. During the second 51 days, patients are gradually mobilized and the bonesetter continues to massage and embalm the limb weekly while also counseling the individual on gait training. The care process in the final 51 days is directed at the discretion of the bonesetter based on the signs and symptoms of the patient.

1.6. Complications of Traditional Bone Setting in Nigeria

Generally, the complications from traditional medicine include: severe itching, swollen legs, severe headache, constant vomiting (Silas et al. 2015). Specifically, the complications from traditional bone setting include: infected open fractures, limb-length discrepancy, fracture with compartment syndrome, brachial plexus injury, gangrene of the affected limbs, posterior and anterior dislocations, delayed union, nonunion, malunion, contractures, chronic osteomyelitis, mismanaged fractures, advanced bone tumors, ischemic limbs from tight tourniquet splints, limb shortening, irreducibility, paralysis, stiffness/ankylosis, osteoarthritis, sepsis and even death from tetanus and septicaemia (Eshete, 2005; Ogunlusi et al. 2006; Nwadiaro et al. 2006; Idris et al. 2010; Ekere and Echem, 2011; Lawal et al. 2011; Singh et al. 2013; Yusuf et al. 2015; Abang et al. 2018).

Despite documented complications, criticisms and antagonism from orthodox medical practitioners, the practice and patronage of traditional bone setters (TBS) is extensive in Nigeria and in developing countries (Onuminya, 2004; Nwadiaro et al. 2006; Dada et al. 2011; Onyemaechi et al. 2014; Sina and Ayodele, 2015). In addition, patronage of TBS has been increasing irrespective of age, education, gender, and economic status of bone fracture patients because the practice is believed to be rooted in the culture of the people (Thanni, 2000; Nwokeke and Oyefara, 2018). This study therefore reviews the factors that influence the patronage of traditional bone setters (TBS) among bone fracture patients in Nigeria, despite complications associated with the practice and the availability of hospitals equipped with modern orthopaedic facilities in the country.

2. FACTORS INFLUENCING PATRONAGE OF TRADITIONAL BONE SETTERS (TBS) IN NIGERIA

Several research works have been conducted to determine the factors responsible for patronizing traditional bone setters (TBS) in Nigeria. According to Dada et al. (2011) and Eyisi (2019), the reasons for patronage of traditional bone setters in Nigeria are cheaper fees, easy accessibility, quick services, cultural belief, utilization of incantations and concoctions and pressure from friends and families. A survey conducted by Thanni (2000) indicated that belief in indispensability, desirability and usefulness of TBS contributed to patronage of TBS. Lawal et al. (2011) observed a widespread acceptance and patronage of traditional bone setting among the people of Kastina state. The reasons for patronage of

traditional bone setters were pressure from family members, perceived low cost and instant service. Nwadiaro et al. (2006) undertook a combination of retrospective and prospective study of complications arising from traditional bone setting in Plateau and Nasarawa States and southern parts of the Kaduna and Bauchi states. The preponderance of children in the first decade of life who were largely dependent on parental decisions was found to be a factor that influenced patronage of TBS in the states.

Ogunlusi et al. (2006) listed quicker services, cheaper services, fear of amputation, strike in government hospitals, delayed attention, negligence, cash and carry hospital practice and bureaucratic delivery associated with modern orthopaedic surgeons (MOS) as factors influencing patronage of TBS by patients at Ilesa, Osun state. Udosen et al. (2006) and Sina and Ayodele (2015) listed poverty, ignorance and superstitious beliefs as the factors influencing patronage of TBS in Cross River and Ekiti states respectively. According to Yusuf et al. (2015), factors influencing patronage of TBS care in Ado-Ekiti, Ekiti state were: belief that TBS are better in fracture treatment, achieve faster fracture healing, are easily accessible and are more affordable. The most prominent reason for preference in TBS was the belief of being better in fracture treatment than orthodox practitioners. The findings of Okpoko et al. (2018) revealed that Igbo people of southeastern Nigeria see bone setters as effective way of addressing orthopaedic challenges. Eze (2012) reported that cost of payment for services at government or private hospitals, poor road network, lack of official public ambulance services and essential amenities in rural areas, posting extremely few, young and inexperienced doctors without knowledge of orthopedic care to work in big general hospitals in rural areas contributed to increased patronage of TBS among patients in Ogori, Edo state. Other reasons were: lack of the services of other supporting health care workers like laboratory scientists, radiographers, adequate number of nursing staff and physiotherapists and these may be partly responsible for the inefficient rural orthopedic care delivery. Dukiya and Egwim (2015) surveyed trade-medical bone setters centre in Minna, Niger state and found that they were patronized because their services were relatively cheaper, socio-culturally acceptable and accessible.

Nwachukwu et al. (2011) stated that shortage of surgeons formally trained in fracture care predisposed bone fracture patients to seek care from traditional bonesetters in Enugu, Enugu state. Abang et al. (2016) listed external locus of decision making, greater faith and belief in TBS compared to orthodox medicine, and cheaper fees as factors influencing patronage of TBS in Calabar, Cross River state. Other factors were: poor attitude of hospital staff, fear of amputation, and patients being unconscious during the injury, delay in treatment in hospital, forceful removal of patients from hospital against their will, dissatisfaction with hospital treatment, cultural and religious beliefs. In addition, Abang et al. (2018) reported that most patients in Calabar, Cross River state patronized traditional bonesetters for treatment and application of tight splints to stabilize fracture. Popoola et al. (2012) reported that health workers in Benue state believed that patronage of TBS was because it was cheaper than MOS, acceptance of TBS and opinion on incorporation into MOS were based on the outcome of relations who had patronized TBS.

Furthermore, Popoola et al. (2013) noted that leave against medical advice (LAMA) influenced patronage of TBS among orthopaedic patients in Makurdi, Benue state. Causes of LAMA were: disagreement about treatment/duration, financial constraints, socio-cultural belief in TBS, desire to transfer, no relation accessible to support care, slow improvement, communication gap between patient and healthcare worker, etc. Similarly, Onyemaechi et al. (2014) listed advice of relatives and friends, cheaper cost, sociocultural beliefs, easy accessibility, fear of amputation, and fear of operation as the main factors influencing patronage of TBS in Makurdi, Benue state.

Amupitan et al. (2015) reported that patronage of traditional bone setters (TBS) in Jos, Plateau state, was found to be slightly higher with the less educated group. The highly educated still presented to TBS but they had the tendency to seek treatment faster because they wanted to report back to work faster. According to Aderibigbe et al. (2013), reasons for patronage of TBS in Ilorin, Kwara state were because services of TBS were cheap, acceptable and accessible. Factors that influenced the decision were attitude of health workers, delay in hospitals, fear of amputation and fear of operation in hospitals, belief that TBS therapy is preferable to orthodox medicine, and influence from family and friends. Oboirien and Khalid (2013) reported that proximity and availability of service, low cost of service, short duration of treatment, individual preference and quality of service were the factors influencing patronage of TBS in Sokoto state.

Ossai et al. (2018) observed that people patronized traditional bone setters in Abakiliki, Ebonyi state due to low cost/accessibility, ignorance/fear of amputation, good service delivery and experience of the traditional bone setters. Diamond et al. (2017) noted that bone fracture patients in Port-Harcourt, Rivers state visited TBS because of the strong

faith they had in the competence of the TBS, cheaper cost, health workers' strike and advice by health workers to visit TBS. A report by Owumi et al. (2013) indicates that TBS are patronized in Ibadan, Oyo state because of cheaper fee/affordability, proximity/easy accessibility, quick service and fear of implant/amputation. Nwokeke and Oyefara (2018) extensively investigated the socio-cultural factors influencing health-seeking behaviour (HSB) among bone fracture patients in Surulere, Somolu, Kosofe and Ikeja Local Government Areas of Lagos state. Socio-cultural factors as education, regular income and occupation, residence, and belief in supernatural causes of accidents, negligence and the use of Plaster of Paris associated with MOS were found to influence patronage of TBS in the state. Other factors that influence health-seeking behaviour of bone fracture patients were age, sex, marital status, occupation, attitude of health workers, delay in hospitals, fear of amputation, exorbitant charges, unhygienic practices and high rate of complications associated with TBS among others.

3. DISCUSSION

Analysis of research findings by Nwokeke and Oyefara (2018) revealed that males majorly patronize traditional bone setters (TBS). This is justified because most men are prone to injuries and accidents due to the rough nature of their jobs and activities, thereby agreeing with the results obtained by Ogunlusi et al. (2006), Shaikh (2008), Lawal et al. (2011), Siddiqui et al. (2011), Owumi et al. (2013), Amupitan et al. (2015), and Khan et al. (2015). Majority of bone fractures reported by Nwokeke and Oyefara (2018) occurred within the productive age group (25 – 54 years) of the respondents. This is in consonance with the findings obtained by Thanni (2000), Udosen et al. (2006), Lawal et al. (2011), Aderibigbe et al. (2013), Owumi et al. (2013) and Ossai et al. (2018). Aderibigbe et al. (2013) also maintained that working populations are mostly involved in bone trauma due to involvement in injury-prone activities. Level of education influences patronage of TBS in Nigeria. This assertion is in tandem with the research findings of Prosser (2007) who noted that education increases the possibility of health education and health information and therefore improves health-seeking behavior. Similarly, Idris et al. (2010), Ekere and Echem (2011) and Diamond et al. (2017) observed that patronage of TBS cut across educational status of the patients. Income levels of bone fracture patients influence their patronage of TBS in Nigeria, which is in harmony with the result obtained by Oboirien and Khalid (2013). This fact corresponds with the reports of Shaikh (2008), Siddiqui et al. (2011), Aderibigbe et al. (2013) and Abubakar et al. (2013), who maintained that the behaviour of human beings varies in case of sickness depending on their respective sociocultural, economic and demographic circumstances. This is also in concordance with the report of Ogbeidi (2012) who maintained that the proportion of Nigerians living in poverty is increasing every year, which consequently affects their health-seeking behavior despite the paradoxical growth of the economy. Similarly, Ojua et al. (2013) maintained that the problem of fake drugs, inactive or inefficient healing or curative strength of the orthodox services, high cost, and poor distribution, etc has made trado-medical services enjoy high patronage in Nigeria. This agrees with the findings of Silas et al. (2015) and Okpoko et al. (2018) who stated that traditional medicine has contributed immensely to healthcare delivery system in Nigeria. In addition, the finding also agrees with the report of Igwilllo et al. (2019) who maintained that natural medicine and traditional systems of medicine have been applied to treat several diseases and ailments in Nigeria including musculoskeletal pain. Belief in supernatural causes of accidents influences patronage of traditional bone setters (TBS) in Nigeria. In fact, bone fracture patients who believe in supernatural causes of accident are more likely to visit TBS than the patients who do not believe in supernatural causes of accidents. This fact agrees with the report of Owoseni et al. (2014) who noted that Africans believe that diseases and accidents have spiritual components that need to be addressed along with the treatment of diseases. The fact also corresponds with the findings of Nwokeke and Oyefara (2018) who listed belief in supernatural forces as one of the factors influencing health-seeking behaviour of bone fracture patients in Lagos state. Similarly, Babar et al. (2004) maintained that cultural beliefs and practices often lead to self-care, home remedies, delayed health-seeking and consultation with traditional healers especially in rural communities. The strong belief of the people in traditional bone setters (TBS) irrespective of the complications associated with the practice is in harmony with the findings of Dada et al. (2009). As is evident from the foregoing, the decision to patronize either traditional bone setters (TBS) is influenced by the aforementioned factors in Nigeria. This fact confirms the findings of Nwokeke and Oyefara (2018) who observed that factors promoting good health-seeking behaviours are not solely rooted in the individual but are dynamic, collective and negotiated.

4. CONCLUSION

Since bone fracture care in Nigeria is majorly provided by traditional bone setters (TBS), it is obvious that the practice is ingrained in the culture and tradition of the people. Patronage of traditional bone setters (TBS) in Nigeria is positively influenced by level of education, income and believe in supernatural causes of accidents and diseases. Other factors include: pressure/advice from family members and friends, delay in medical orthopaedic centres, fear of amputation and exorbitant charges associated with modern orthopaedic services. In addition, cultural belief, residence, and accessibility of health facility influence the ability of bone fracture patients to patronize traditional bone setters.

5. RECOMMENDATIONS

Traditional bone setters should be regularly trained by means of instructional workshops, seminars and practical demonstrations to improve their knowledge, skills and service delivery. The public must be enlightened on the dangers associated with patronizing traditional bone setters with their attendant complications. The complications in traditional bone setting can be minimized and the art improved with training, education and sensitization of traditional bone setters (TBS) and bone fracture patients. Medical orthopaedic services should be made affordable and accessible to prevent delays and enhance quicker attention to reduce the rate at which bone fracture patients leave hospitals for traditional bone setting homes against medical advice. Health policy makers should consider the results obtained from this review and encourage collaborative understanding and partnership between medical orthopaedic surgeons and traditional bone setters in Nigeria. There should be collaborative efforts between modern orthopaedic surgeons and traditional bone setters in order to integrate modern fracture care in Nigerian healthcare delivery system. Provision of more orthopaedic hospitals with experienced orthopaedic doctors especially in rural communities is also recommended.

REFERENCES

- [1] Abang, I.E., Asuquo, J., Anisi, C.O., Agweye, P., Essiet, I. and Ikpeme, I.A. (2018). Indications and pattern of limb amputation: a tertiary hospital experience, South-South, Nigeria. *Recent Adv Biol Med.* 4:42-46.
- [2] Abang, I.E., Asuquo, J., Ngim, N.E., Ikpeme, I.A., Agweye, P., Urom, S.E., Anisi, C. and Mpama, E. (2016). Reasons for patronage of traditional bone setters. *Nigerian Journal of Surgery.* 22(2):102-106.
- [3] Abubakar, A., Van Baar, A., Fischer, R., Bomu, G., Gona, J. K. and Newton, C.R. (2013). Socio-cultural determinants of health-seeking behaviour on the Kenyan coast: A qualitative study. *PLoS ONE* 8(11): e71998. doi:10.1371/journal.pone.0071998.
- [4] Aderibigbe, S. A., Agaja, S. R. and Bamidele, J. O. (2013). Determinants of utilization of traditional bone setters in Ilorin, North Central Nigeria. *Journal of Preventive Medicine and Hygiene.* 54 (1): 35- 40.
- [5] Agarwal, A. and Agarwal, R. (2010). The practice and tradition of bonesetting. *Education for Health.* 23(1): 1-8.
- [6] Ajima, O.G and Ubana, E.U. (2018). The concept of health and wholeness in traditional African religion and social medicine. *Arts and Social Sciences Journal.* 9(4): 1-5.
- [7] Alonge, T.O., Dongo, A.E., Nottidge, T.E., Omololu, A.B. and Ogunlade, S.O. (2004). Traditional bonesetters in South Western Nigeria – friends or foes? *West African Journal of Medicine.* 23(1): 81-84.
- [8] Amupitan, I., Onche, I.I. and Ode, M.B. (2015). The impact traditional bone setters place on operative management of femoral fractures in Jos North Central Nigeria. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS).* 14(6): 6-9.
- [9] Babar, T., Shaikh and Hatcher, J. (2004). Health-seeking behaviour and health service utilization in Pakistan: challenging the policy makers. *Journal of Public Health.* 27 (1): 49–54.
- [10] Basse, R., Aquaisua, A., Edagha, P.A. and Basse, E. (2009). The practice of traditional bone setting in the South-South Region of Nigeria. *The Internet Journal of Alternative Medicine.* 8 (2): 1- 6.
- [11] Chika, A.T. and Onyekwelu, J. (2019). Traditional bone setters' gangrene: an avoidable catastrophe, 8 years retrospective review in a private orthopedic and trauma center in South-East Nigeria. *Niger J Gen Pract.* 14:1-5.
- [12] Dada, A., Giwa, S. O., Yinusa, W., Ugbeye, M. and Gbadegesin, S. (2009). Complications of treatment of musculoskeletal injuries by bone setters. *West African Journal of Medicine.* 28 (1): 333–337.

- [13] Dada, A.A., Yinusa, W. and Giwa, S.O. (2011). Review of the practice of traditional bone setting in Nigeria. *African Health Sciences*. 11(2): 262 – 265.
- [14] Diamond, T.E, Ibeanusi, S. E. B. and Echem, R. C. (2017). Traditional bone setters in Port Harcourt Nigeria: perception, patronage and practice: a prospective cross-sectional study. *British Journal of Medicine & Medical Research*. 21(12): 1-8.
- [15] Dukiya, J. J. and Egwim, E. (2015). The role of tradomedical centres in road accident victims rehabilitation: A case study of Minna, Nigeria centres. *ISABB-Journal of Health and Environmental Sciences*. 2(3): 11-18.
- [16] Ekere, A. U. and Echem, R. C. (2011). Complications of fracture and dislocation treatment by traditional bone setters: A private practice experience. *The Nigerian Health Journal*. 11(4): 131-138.
- [17] Eshete, M. (2005). The prevention of traditional bone setter's gangrene. *Journal of Bone Joint Surgery*. 87-B:102-103.
- [18] Eyisi, I. (2019). Assessing the effect of training of traditional bone setters in Enugu state South East Nigeria. *Journal of Health, Medicine and Nursing*. 58: 72-84.
- [19] Eze, K.C. (2012). Complications and co-morbidities in radiographs of patients in traditional bonesetters' homes in Ogwa, Edo state, Nigeria: a community-based study. *European Journal of Radiology*. 81: 2323 – 2328.
- [20] Ezeanya-Esiobu, C. (2019). *Indigenous Knowledge and Education in Africa*. Springer Nature Singapore Pte Ltd, Singapore. pp. 81-95.
- [21] Idris, A.S., Mohammed, O.B and Basheer, E.S. (2010). Why do people prefer traditional bonesetters in Sudan? *Sudan Journal of Medical Sciences*. 5(3): 199-206.
- [22] Igwillo, U.C., Abdullahi, M.M., Etatuvie, S.O., Mbaoji, C.O., Chukwuemeka, A.E. and Leo, A.J. (2019). Applications of natural medicine (traditional medicine/complementary and alternative medicine) in Nigerian healthcare delivery system. *International Journal of Recent Research in Life Sciences*. 6(3): 16 – 22.
- [23] Lawal, Y. Z., Ajibade, A., Maitama, M. I., Dahiru, I. L., Ogirima, M. O. and Ejagwulu, F. S. (2012). Challenges of managing severe open lower limb fractures in northern Nigeria. *Nigerian Journal of Orthopaedics and Trauma*. 11 (2): 68 – 74.
- [24] Lawal, Y.Z, Ilyasu, Z. and Sambo, M.N. (2011). Clients, cost and consequences of unorthodox fracture and bone diseases care in northern Nigeria. *Sahel Medical Journal*. 14 (2): 56 – 62.
- [25] Nwachukwu, B. U., Okwesili, I. C., Harris, M. B. and Katz, J. N. (2011). Traditional bonesetters and contemporary orthopaedic fracture care in a developing nation: historical aspects, contemporary status and future directions. *The Open Orthopaedics Journal*. 5: 20-26.
- [26] Nwadiaro, H.C., Nwadiaro, P.O., Kidmas, A.T. and Ozoilo, K.N. (2006). Outcome of traditional bone setting in the Middle belt of Nigeria. *Nigeria Journal of Surgical Research*. 8 (1 – 2): 44- 48.
- [27] Nwokeke, C.C. and Oyefara, J.L. (2018). Influence of sociocultural factors on the health seeking behaviour of patients with bone fracture in Lagos state, Nigeria. *African Journal for the Psychological Study of Social Issues*. 21(1): 1-20.
- [28] Oboirien, M. and Khalid, A. (2013). Knowledge and belief about traditional bone setters' practices in Sokoto, North-West Nigeria. *The Internet Journal of Orthopedic Surgery*. 21 (2): 1-5.
- [29] Ogbeyidi, M.M. (2012). Political leadership and corruption in Nigeria Since 1960: a socio-economic analysis. *Journal of Nigeria Studies*. 1(2): 1- 25.
- [30] Ogunlusi, J., Okem, I. and Oginni, L. (2006). Why patients patronize traditional bone setters. *The Internet Journal of Orthopaedic Surgery*. 4 (2): 1-4.
- [31] Ojua, T.A., Bisong, P.O. and Ishor, D.G. (2013). Theoretical overview and sociocultural implications of urban dwellers patronage of trado-medical homes and services in Nigerian urban centres, *International Journal of Development and Sustainability*. 2(1): 183-193.

- [32] Okpoko, P.U., Okpoko, C.C., Okezie, J.K. and Sebs-Okolo, C. (2018). Indigenous medical knowledge and bone setting among the Igbo of Southeast Nigeria. *Journal of Education, Society and Behavioural Science*. 26(4): 1-9.
- [33] Onuminya, J. E. (2004). The role of traditional bonesetter in primary fracture care in Nigeria. *South African Medical Journal*. 94 (8): 652-658.
- [34] Onuminya, J. E. (2006) Performance of a trained traditional bonesetter in primary fracture care. *South African Medical Journal*. 96 (4): 320–322.
- [35] Onyemaechi, N.O.C., Lasebikan, O. A., Elachi, I.C., Popoola, S. O. and Oluwadiya, K.S. (2015). Patronage of traditional bonesetters in Makurdi, north-central Nigeria. 9: 275–279.
- [36] Ossai, E.N., Ofojebe, O.L., Ede, D.O., Diala, L.P. and Ogbonnaya, L.U. (2018). Willingness to patronize traditional bone setters among patients attending general out-patient department of Federal Teaching Hospital Abakaliki, Nigeria. *Austin Orthop*. 3(2): 1-7.
- [37] Owoseni, J. S., Taiwo, O. C. and Ayodele, I.M. (2014). Traditional bone setters and fracture care in Nigeria. *Merit Research Journal*. 2 (6): 74-80.
- [38] Owumi, B.E., Taiwo, P.A. and Olorunnisola, A. S. (2013). Utilization of traditional bone-setters in the treatment of bone fracture in Ibadan North Local Government. *International Journal of Humanities and Social Science Invention*. 2(5): 47-57.
- [39] Popoola, S.O., Kortor, J.N., Onyemaechi, N.O.C. and Oluwadiya, K.S. (2012). Knowledge and attitude of healthcare workers towards traditional bone setters in Benue state. *Nigerian Journal of Orthopaedic and Trauma*. 11(1): 1-7.
- [40] Popoola, S.O., Onyemaechi, N.O.C., Kortor, J.N. and Oluwadiya, K.S. (2013). Leave against medical advice (LAMA) from in-patient orthopaedic treatment. *SA Orthopaedic Journal*. 12(3): 58-61.
- [41] Prosser, T. B. (2007). Utilization of health and medical services: factors influencing health care seeking behaviour and unmet health needs in rural areas of Kenya. Retrieved from <http://ro.ecu.edu.au/theses/46> accessed on 16/12/15.
- [42] Shaikh, B. T. (2008). Understanding social determinants of health-seeking behaviours, providing a rational framework for health policy and systems development. *Journal of Pakistan Medical Association*. 58 (1): 33-36.
- [43] Siddiqui, M.S., Sohag, A.A. and Siddiqui, M.K. (2011). Health seeking behaviour of the people: knowledge, attitudes and practices (KAP) study of the people of urban slum areas of Karachi. *Professional Med J*. 18(4): 626-631.
- [44] Silas, J., Mamman, M., Laah, J.G. and Yusuf, R.O. (2015). An examination of the perception and patronage of traditional medicine in Kaduna state, Nigeria. *International Journal of Advancements in Research & Technology*. 4 (11): 1-19.
- [45] Sina, O.J. and Ayodele, I.M. (2015). Traditional bone-setters and fracture care in Ekiti state, Nigeria. *Altern Integr Med*. 4:182. Doi:10.4172/2327-5162.1000182.
- [46] Singh P., Singh P.P. and Bindra S. (2013). Traditional bone setting: origin and practice. *International Journal of Therapeutic Applications*. 11: 19-23.
- [47] Sofowora, A. (2006). *Medicinal Plants and Traditional Medicine in Africa*, Spectrum Books Ltd, Ibadan, Nigeria. pp. 191-289.
- [48] Thanni, L. O. A. (2000). Factors influencing patronage of traditional bone setters. *West African Journal of Medicine*. 19 (3): 220-224.
- [49] Udosen, A. M., Otei, O. O. and Onuba, O. (2006). Role of traditional bone setters in Africa: experience in Calabar, Nigeria. *Annals of African Medicine*. 5(4):170 – 173.
- [50] Yusuf, M.B., Popoola, S.O., Oluwadiya, K.S., Ogunlusi, J.D. and Ige, O.E. (2015). Management of complications of age-long tradition presented at Ado-Ekiti, Southwest Nigeria. *African Journal of Trauma*. 4:16-20.