**TITLE PAGE**

**SOCIO-DEMOGRAPHIC FACTORS INFLUENCING PRACTICE OF TRADITIONAL BONE SETTING AMONG RESIDENCE OF BAYAN FADA COMMUNITY OF DASS LOCAL GOVERNMENT AREA, BAUCHI STATE**

**BY**

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**CHAPTER ONE**

**Introduction**

**1.1 Background ~~to~~ of the Study**

Traditional Bone Setter (TBS) is a practitioner of joint manipulation. The TBS can ~~also~~ be described ~~defined~~ as the practitioner who educates themselves from tradition and takes up the practice of healing without having any formal education or training in the accepted medical procedures (Singh, 2015). The practice of bone setting is ancestral in nature and is passed on ~~up~~ to the generations, though there is no documentation of the procedures. Some outsiders also receive their training via apprenticeship Bindra, S.(2015). Bone setting practices have its roots in most countries and may be based on demographic settings.Demographic can cover whole societies or groups defined by criteria such as education, nationality, religion, and ethnicity (Nwankwor, 2018).

As far back ~~early~~ as 1900 BCE in Babylon, King Hammurabi organized a code of laws to regulate medical practice and set penalties for failure. That code mentions specifically the “Gallabu” bonesetters who handled minor surgery, dentistry and slave branding. The first known written instructions for surgery and bone setting dated to 1600 BCE (Solagberu in Ugwu, 2018). The Edwin Smith Papyrus, an American Egyptologist, described the appropriate treatment of fractures. By the fifth century ACE, the writings of Sustra in India offered instructions for limb amputation and concept of creating iron prosthetics. Hippocrates also wrote a treatise on fractures and dislocations known for its accuracy of anatomy and physiology, which addressed compound fractures, reduction, dressing and immobilization. After the descend of the Roman Empire, advances in medicine slowed. The Roman Catholic Church became the governing body for the social and religious activity. Church leaders believed that sickness was a penalty for sin and called for prayer and fasting (Singh, 2015). The priest’s servants, the barbers, were the only ones permitted to perform surgical operations. Because of day to day interaction with the people, barbers had an opportunity to perfect their techniques. By the 15th century, a barber’s guild had formed in England to help, recruit, train and regulate its members and competed with the surgeon’s guild to treat the same ailments. The 17th century witnessed a better understanding of anatomy, the discovery of circulation of blood, and a new technique for amputation using a flap. Nicholas Andre published the first textbook on preventing and correcting musculoskeletal deformities in children. Thereafter Hunter’s research on tendon healing, discovery of X-rays by Roentgen and many others paved the path for transition from bone setting to today’s orthopedic surgeon (Thanni, in Ali et al, 2020).

TBS basic treatment includes bandaging techniques, management of inflammation, sprains, strains, dislocations, methods of early healing of fractures and strengthening of bones using medicinal products such as oils. The tribes of South Australia made splints from clay, and the Shoshone Indians soaked strips of fresh rawhide in water and wrapped them around limbs (Thanni, in Ali et al, 2020).

According to the researcher, Bayan Fada (Behind Palace) community is situated in Dass Local Government Area of Bauchi state Nigeria has been endowed with talented traditional medicine personnel that are specialized in Traditional Bone setting within the community. Born setting implies the treatment of fractured and dislocated bones and various other muscular-skeleton complains especially as a branch of traditional medicine carried out by a person without professional qualification (Singh, 2015).

The functionsof TBS mainly include management of fractures, dislocations, congenital anomalies along with their associated complications (Idris & Basheer in Ali et al., 2020**).** According to an estimate, 10 – 40% of the patients with fractures and dislocations in the world are managed by the unorthodox practitioners (Idris & Basheer in Ali et al., 2020**).**

The practice is passed on by oral tradition and there is no regulation review and even peer criticism, equality is not guaranteed and complications are higher (Nwankwor, 2018). This is unlike orthodox method which are regulated often and subjected to regular review on the basis of evidences. The regulations and practitioners undergo structured training (Odatuwa-Omagbemi et al, 2018).

In view of lack of structured training for traditional bone setters in Nigeria, it is therefore not surprising that the practice is associated with so many problems which include the process of establishment of diagnosis that is surrounded in mystery and a notorious inability to identify cases beyond their ability and consequences, non-existence of referral system (Odatuwa-Omagbemi et al, 2018). Usually, following failure of a bone setter, the patient voluntarily discharge him/herself to another bone setter (Solagberu in Ugwu, 2018). This in fact is unlike what happen in Turkey where the practitioners referred difficult cases to orthodox (Hatipoglo in Innocent, 2016). Through patronage of traditional bone setters influences number of factors, a major reason is the perceived cheaper fees. However, this has been better characterized to be that multiple payment cash allowed by bone setters and even payment in kinds, clothes and life animals (Thanni, in Ali et al, 2020). There are so many valid reasons for patronage of traditional bone setting compared to hospital, where there are protocols and queues before patience can be seen.

Bone setting is the process of manipulation of bone or reduction by a bone setter. A bone setter is a practitioner of joint manipulation before the advent of chiropractors, osteopaths and physical therapies. Bone setters were the main providers of these types of treatments. Bone setters also reduce joint dislocation and reset bone fracture (**Owoseni, Taiwo** and Ayodele, 2014). Traditional means being part of the relief customs, or way of life of a particular group of people (demographic) that have not changed for long time **(**Aniago, 2015).

**1.2** **Statement of the Problem**

Traditional bone setting is the treatment of fractured and dislocated bones and various other muscular-skeleton complains especially as a branch of traditional medicine carried out by a person without professional qualification (Singh, 2015). Broken bones are set with tab or ‘Jabiras’ (Splint), these are of varying lengths and sizes of wood/corn stokes and set of four or more firmly tied around the fracture with strings or date palm fronds after padding it with cloth (Aniago, 2015). This method has changed very little over the years. Identical splint has been found in an Egyptian mummy of the fifth dynasty (circa 500 years ago) at Nga Ed Der 500 miles from Luxor (Aniago, 2015).

According to study conducted by Udosen in Ali et al (2020) in the Calabar metropolis, it has shown that the majority of the clients claims that the modern bone setting is less effective. The reason of this include, high cost, delay in treatment in hospital, fear of operation/amputation, fear of medical Jargons and application of plaster of Paris in the ~~specialist~~ hospital. Literature revealed that out of 90% of patients attending general hospital Dass with cases of different forms of fracture especially long bone fracture such as Tibia, femor, humerus, radius and ulna, only 15% received complete treatments in the hospital, the remaining 85% go for traditional bone setting (Medical record and statistics unit general hospital Dass, 2014). In view of this, the researcher tends to carry out the study on the reasons for the acceptance of traditional bone setting on simple fracture among residence of Bayan Fada community of Dass LGA.

In the context of the previous researches, the issue resulted many problems of bone straightening in the community for over 3 years. Awareness and sensitization workshop was carried out to educate those traditional bone setting practitioners in Bayan Fada Community on the use of x-rays to identically find out the exact problem and how to set any bone setting.

As a result of that, many of those practitioners discarded the training, and the awareness workshop and continue to practice their previous settings.

**1.3** **Objectives of the Study**

1. Find out the level of acceptance of traditional bone setting in Bayan Fada community.
2. Assess the acceptance of traditional bone setting in Bayan Fada community based on gender.
3. To access the orthodox method of bone setting in Bayan Fada community.

**1.4** **Research Questions**

What are the reasons behind the acceptance of traditional bone setting in Bayan Fada community?

What is the state of acceptance of orthodox method of bone setting in Bayan Fada?

How successful is the traditional bone setting in Bayan Fada community?

**1.5** **Significance of the Study**

Findings of the study will provide empirical evidence on the socio-demographic factors influencing practice of traditional bone setting among residence of Bayan Fada community of Dass L.G.A. Bauchi State. The study will:

1. Inform government decisions on allocation of resources and commitments toward management of fracture and other musculo-skeletal conditions.
2. Identify key areas for health care workers to improved in the management of fracture and other musculo-skeletal conditions.
3. Guide inhabitants of Bayan Fada community to make informed decision when seeking health care for fracture and other musculo-skeletal conditions.
4. Stimulate further researches on same or similar topic based on the recommendation of the study.
5. Add on the existing body of scientific knowledge and serve as a source of literature for nursing and health care.

**1.6** **Scope of the Study**

The study will be delimited to assessing socio-demographic factors influencing the practice of traditional bone setting among Bayan Fada community, Dass LGA, Bauchi State.

**1.7** **Operational Definition of Terms**

**Acceptance**: A person’s assent to a reality of a situation.

**Fracture**: This refers to the Break of Bone which required the need for adjustment or setting.

**Reduction**: Restoring to normal or near normal.

**Mal-Union**: Refers to a situation where the joined bone did not properly to unite itself after an attempt have been made by TBS.

Complicated fracture: Fracture with associated injury to internal organs.

Non-Union: Refers to Failure of the bone to be united.

**CHAPTER TWO**

**LITERATURE REVIEW**

1. **Introduction**

In Nigeria, the traditional bone setters perhaps more than any other group of traditional care-givers enjoy high patronage and confidence by the society. Indeed, the patrons of this service cuts across every strata of the society including the educated and the rich. Many reasons account for this including the belief that diseases and accidents have spiritual components that need to be tackled along with treatment. The age of their clients varies from the newborn with musculoskeletal deformity to the very elderly with fractures. The commonest problems treated by them are fractures and dislocations. The practice is wide-spread in Nigeria including areas well served with health care facilities such as Bauchi, Dass and Specifically Bayan Fada of Dass which is the area under investigation. Unfortunately, however, the outcome of their intervention in trauma care frequently leads to loss of limbs, lifelong deformities and sometimes death. A thorough study of this practice is cannot be completed without a thorough understanding of Fractures- meaning, types and causes as may be seen in the related literature.

Therefore, the assertion above, in the literature is reviewed under the following sub-heads:

1. Meaning of a fracture
2. Types of fractures
3. Causes of a fracture
4. Symptoms of Bone Fractures
5. Concept of traditional bone setting
6. History/Training Methodology of Traditional Bone setting
7. Reasons for Patronage
8. Methods used in treatment
9. Limitations/ Weaknesses of Bone setting
10. Strength of traditional bone setting
11. The future of traditional bone setting in Nigeria
12. Practices of Traditional Bone Setting in Nigeria
13. Characteristics of Bone Fractures

## Complications causes by traditional bone setting in Nigeria

1. Traditional bone setting practices at Bayan – Fada, Dass L.G.A, Bauchi State
2. Summary of Literature review

**2.1 Meaning of a fracture**

A fracture, also known as a broken bone, is a condition that changes the contour (shape) of the bone. Fractures often occur when there is a high force or impact put on a bone (Ezeanya-Esiobu, 2019).

Fractures are common because millions of them occurred year in-year out and can be caused by a number of things. People break bones in sports injuries, car accidents, falls, or from osteoporosis (bone weakening due to aging) (Owoseni, Oluwadare and Ibikunle , 2014 as cited in Ali et al , 2020). Although most fractures are caused by trauma, they can be “pathologic” (caused by an underlying disease such as cancer or severe osteoporosis). There are more than one million “fragility” fractures every year that are due to osteoporosis. Medical care is needed immediately after a bone is fractured.

**2.2 Types of fractures**

There are many types of fractures according to Sina, Taiwo and Ayodele (2014):

* A fracture can be closed (the skin is not broken) or open, which is also called a compound fracture (the skin is open and the risk of infection significant).
* Some fractures are displaced (there is a gap between the two ends of the bone). These often require surgery.
* A partial fracture is an incomplete break of a bone.
* A complete fracture is a complete break of a bone, causing it to be separated into two or more pieces.
* A stress fracture, sometimes called a “hairline fracture,” is like a crack and may be difficult to see with regular X-rays.

These are the different types of partial, complete, open, and closed fractures:

* **Transverse**: the break is in a straight line across the bone.
* **Spiral**: the break spirals around the bone.
* **Oblique**: the break is diagonal across the bone.
* **Compression**: the bone is crushed and flattens in appearance.
* **Comminuted**: the bone fragments into several different pieces.
* **Avulsion**: a fragment of bone is pulled off, often by a tendon or ligament.
* **Impacted**: the bones are driven together.

**2.3 Causes of a fracture**

According to Owoseni et al as cited in Ali et al (2020), Fractures occur when a force that is stronger than the bone itself is applied to a bone. Fractures can occur from falls, trauma, and a direct blow to a bone. Repetitive forces caused by running can cause a fracture, as well. These running fractures are often called stress fractures; these are small cracks in the bone. Osteoporosis may also cause a fracture in older people.

**2.4 Symptoms of Bone Fractures**

According to  [Mathias (2018) interview, explained that,](https://www.onhealth.com/content/4/85199) Broken bones may cause many other symptoms besides pain. You may notice some combination of the following at the site of injury, including:

* Bruising
* Swelling
* Warmth
* Weakness
* Deformity

You may also get the chills or feel dizzy or woozy if you break a bone. Some people pass out. You may notice that the affected area of the body does not look right. You may not be able to move the affected area as you normally would. A broken bone may look like it is bent at an odd angle.

Other signs and symptoms as stated According to Sina et al (2014**),** may include:

* **Arm:** Pain, swelling, abnormal bend, difficulty using or moving arm, warmth, bruising, or redness
* **Elbow:** Pain, swelling, bruising, stiffness, a ‘pop’ noise at the time of fracture, or visible deformity
* **Wrist:** Pain, swelling, decreased use of hand and wrist, a crooked or deformed appearance, and unable to hold a grip
* **Hand:** Pain, swelling, tenderness to touch, stiffness, and weakness. Deformities are not always common.
* **Finger:** Pain, swelling, unable to move the finger, a shortened finger, or a depressed knuckle
* **Leg:** Severe pain, swelling, tenderness, bruising, obvious deformity, and the inability to walk
* **Knee:** Pain, swelling, bruising, inability to straighten the knee and the inability to walk
* **Ankle:** Severe pain, swelling, tenderness to touch, bruising, deformity, and the inability to walk
* **Foot:** Severe pain, swelling, bruising, numbness in toes and foot, decreased range of motion, inability to walk comfortably, and visible deformity
* **Toe:** Pain, swelling, discoloration, and bruising. You should be able to walk, but not comfortably.

**2.5 Concept of bone setting**

Bone setting is the process of manipulation of bone or reduction by a bone setter. A bone setter is a practitioner of joint manipulation before the advent of chiropractors, osteopaths and physical therapies. Bone setters were the main providers of these types of treatments. Bone setters also reduce joint dislocation and reset bone fracture (Tela in Alegbeleye (2019). Traditional means being part of the relief customs, or way of life of a particular group of people (demographic) that have not changed for long time (Agarwal and Agarwal cited in Ali et al (2020).

According to Bassey et-al cited in Ali et al (2020), Bone setting refers to the manipulation or “setting” of fractured bones, ruptured sinews and muscles in order to alleviate an injury. This is one of the five traditional branches of Traditional Nigerian Medicine (TNM) and is considered to be the basis for the development of modern chiropractic and osteopathy. Traditional bone setting is a holistic care process to cure the balance of the skeleton, muscles and joints, which might cause pain. Before the advent of chiropractors, osteopaths, and physical therapists, bonesetters were the main providers of this type of treatment.

Traditional bone setting is the treatment of fractured and dislocated bones and various other muscular-skeleton complains especially as a branch of traditional medicine carried out by a person without professional qualification (Singh, 2013., 2015). Broken bones here, are set with tab or Jabiras (Splint), these are of varying lengths and sizes of wood/corn stokes and set of four or more firmly tied around the fracture with strings or date palm fronds after padding it with cloth. This method has changed very little over the years.

A literature search of relevant published articles in standard recognized scientific journals was done by the authors including publications from all regions of Nigeria and other countries. A search of Pub Med and AJOL was also done using search terms – bonesetter, traditional bone setters and traditional bone setting in Nigeria. Cross references of the articles which did not appear in PubMed were also reviewed (Worku, Tewelde, Abdissa and Merga, 2019).

Thirty-one articles detailing the following areas which were considered most relevant by the authors were reviewed and analyzed.

1. History/training methodology of traditional bone setting

2. Reasons for patronage of traditional bone setting

3. Different methods of treatment in traditional bone setting

4. Problems/complications of traditional bone setting.

**2.6 History/Training Methodology of Traditional Bone setting**

Bone setting practices have its roots in most countries and may vary by name, art and place. As early as 1900 BCE in Babylon, King Hammurabi organized a code of laws to regulate medical practice and set penalties for failure. That code mentions specifically the “Gallabu” bonesetters who handled minor surgery, dentistry and slave branding. The first known written instructions for surgery and bone setting date to 1600 BCE. The Edwin Smith Papyrus, an American Egyptologist, described the appropriate treatment of fractures. By the fifth century ACE, the writings of Sustra in India offered instructions for limb amputation and concept of creating iron prosthetics. Hippocrates also wrote a treatise on fractures and dislocations known for its accuracy of anatomy and physiology, which addressed compound fractures, reduction, dressing and immobilization. After the descend of the Roman Empire, advances in medicine slowed. The Roman Catholic Church became the governing body for the social and religious activity. Church leaders believed that sickness was a penalty for sin and called for prayer and fasting. The priest’s servants, the barbers, were the only ones permitted to perform surgical operations. Because of day to day interaction with the people, barbers had an opportunity to perfect their techniques. By the 15th century, a barber’s guild had formed in England to help, recruit, train and regulate its members and competed with the surgeon’s guild to treat the same ailments. The 17th century witnessed a better understanding of anatomy, the discovery of circulation of blood, and a new technique for amputation using a flap. Nicholas Andre published the first textbook on preventing and correcting musculoskeletal deformities in children. Thereafter Hunter’s research on tendon healing, discovery of X-rays by Roentgen and many others paved the path for transition from bone setting to today’s orthopedic surgeon.

TBS basic treatment includes bandaging techniques, management of inflammation, sprains, strains, dislocations, methods of early healing of fractures and strengthening of bones using medicinal products such as oils. For instance, the tribes of South Australia made splints from clay, and the Shoshone Indians soaked strips of fresh rawhide in water and wrapped them around limbs. The practice of traditional bone setting (TBS) is extensive in Nigeria and it enjoys enormous patronage by the populace. However, the outcome of the intervention of TBS treatment is usually poor with profound effects on the patient. There are many publications highlighting different aspects of this subject but none has summarized the entire practice and problems as a single publication. Objective: This work aims at reviewing the entire subject of traditional bone setting in Nigeria in a single article to enable easy understanding and appreciation of the practice and problems of traditional bone setting by orthodox practitioners.

In many developing countries, the traditional care of diseases and afflictions remain popular despite civilization and the existence of modern health care services.

Virtually all the reviewed publications agreed that this method had existed for decades and indeed clusters of family and tribes practice it and practitioners keep it as a family secret. The training is passed from one generation to another through skills and experience acquired as part of an ancestral heritage. However, there are no scientific inquisitions and there is no peer review of the results obtained. The training is also not formal and not structured. There is no certification and anyone can actually claim to be a practitioner particularly in the big cities.

**2.7 Reasons for Patronage**

According Nwankwor (2018), there are several reasons for the patronage of TBS:

1. Cheaper fees

2. Easy accessibility

3. Quick service

4. Cultural belief

5. Utilization of incantations and concoction

6. Pressure from friends and families

It is important to note that, Bone setting practice involves a remarkable degree of expertise and skill as it does not involve radiological aids. As this practice is passed on to the generations, TBS are extremely cautious about reputation and deliver the best treatment to the patients. The faith of people in bone setting cannot be ignored and the fame enjoyed by bone setters is so much that patients took voluntary discharge from orthodox hospitals to receive treatment from TBS. At the same time complications of TBS practice account for 50-60% of the limb gangrene in Nigeria, necessitating amputations in hospitals and thus warrants further study in other developing nations as well. Thanni in Ali et al (2020) studied factors influencing patronage of traditional bone setters and continuing popularity and concluded that the educational level of the respondents did not seem to influence the patronage of and believe in bone setters. The TBS are cheaper and utilize faster healing methods. The fear of heavy plaster of paris bandages, prolonged periods of immobilization and amputation influenced people to visit the TBS. In some cases, apathetic attitudes of orthodox hospitals or coaxing by relatives, neighbors and TBS canvassers led clients to TBS. In addition the TBS were viewed as ‘specialists’ for minor fractures , easily accessible , reassuring and also offering home treatment and thus the TBS enjoy strong regional influence and popularity. In the study on role of traditional bone setter in primary fracture care in Nigeria, Onuminya12 found that TBS services are well preserved as family practice and training is by apprenticeship, records are kept by oral tradition, there is no prescribed fee and patronage for TBS is high. The fracture diagnosis is based on assessment and experience. The TBS relies solely on the conservative method and all fractures are reduced by closed method and stabilized with an external traditional splint and a protracted period of immobilization. The outcome of TBS is good for close fractures of shaft of humorous, ulna, radius and tibia, but poor for periarticular and open fractures. Nonunion, malunion, traumatic osteomyelitis and limb gangrene were the common major complications of TBS treatment.

Ogunlusi et al as cited in Odatuwa-Omagbemi, Adiki, Elachi and Bafor (2018)) in a prospective study on why patients patronize TBS, included twenty – nine patients who presented at orthopedic outpatient clinic after attending TBS centers. The study revealed that the males accounted for large portion of the patients seeking TBS treatment. Duration of management at the TBS centre was as long as 18 months in a patient with closed femoral shaft fracture who ended up with a nonunion after prolonged treatment. Total 79.3% of the patients went to the TBS center from the sites of injury, including patients with multiple fractures. Fractures and dislocations were managed by using the typical splint made of bamboo, rattan cane and palm leaf axis knitted together to form a mat which was wrapped around the fracture site tightly along with the herbal concoction without consideration for reduction and alignment. The study also revealed that 72.4% of the patients attended TBS as they wanted cheaper and quicker services than the modern orthopedic treatment. The study also showed that many of the patients wanted quicker services for their acute problems and to return to work early, unfortunately they ended up with the primary pathologies poorly treated and complicated despite long period of management. Fear of amputation was the reason of patronage in 7% of patient’s .The complications of the TBS treatment were nonunion and malunion which accounted for 96.5%. As the complication rate of TBS was very high, the author concluded that affordable and accessible hospital services should be provided to reduce the TBS patronage.

The literature does witness some studies with either equal or far better results of TBS than orthodox practice. The universally accepted treatment for forearm fractures today is open reduction and internal fixation. Shang et al15tried the Chinese method of bone separator pads and splint immobilization in 2,221 forearm fractures and found that the method is not only simple, economical and effective but also eliminated delayed union and malunion. Fang et al16 used paper roll spreaders and wooden splints in 147 patients with forearm fractures. They concluded that by preserving interosseus membrane, manipulative reduction is greatly simplified and that the wooden splints were found to be much more effective and satisfactory than the plaster of paris for immobilization of fractures of shafts of both forearm bones. The randomized trials in buckle fracture of the distal radius have shown that they can be treated effectively in soft bandage17.In addition the modern practice of functional cast bracing, advocated by Sarmiento and Latta18 bears close resemblance to some of the bamboo bandaging pattern of the traditional bone healers.

Hemmia et al in Ezeanya-Esiobu (2019), in the study on long term effectiveness of bone setting, light exercise therapy and physiotherapy for prolonged back pain concluded that traditional bone setting seemed more effective than exercise or physiotherapy on back pain and disability, even one year after therapy.

**2.8 Methods used in treatment**

The different methods used in Nigeria are:

Use of splints and bamboo stick or rattan cane or palm leaf axis with cotton thread or old cloth. This is wrapped tightly on the injured part and left in place for the first 2-3 days before intermittent release and possible treatment with herbs and massage. This release of the splint is however not uniformly practiced. Massage and manual traction of the affected bone.

This may be done exclusively or in conjunction with the use of traditional splint and herbs application. Fractures that fail to heal with the routine treatment of splinting and massaging may be given further traditional treatment by way of scarifications, sacrifices and incantations. Some recent reports from South-Western and Central Nigeria confirm that some of the practitioners have started inculcating some orthodox practices into their treatment albeit wrongly. This includes wound dressing and suturing 12 and even use of radiological aids13.

**2.9 Limitations/ Weaknesses of Bone setting**

The problems identified in the literature have no regional variation in Nigeria. All documentations reviewed, agreed that the commonest cause of extremity gangrene in musculoskeletal injuries is the intervention in management by the TBS. Other complications frequently seen include chronic osteomyelitis, non-union, mal-union, joint stiffness, chronic joint dislocations, Volkmann is chaemia, sepsis and tetanus. In addition some of practitioners actually come to orthodox centers to canvass and take away patients posing as relations. Many failures of bone setting procedures have been reported, leading to a bad reputation of the providers. Bone setters have been widely criticized for their use of irrational methods.

Oginni cited in Owoseni, Oluwadare and Ibikunle (2014) calculated a high failure rate of 66.7% among patients who voluntarily opted out of TBS treatment. The traditional bandaging method of applying splints directly to the skin has often being mocked more than the traditional tourniquet fracture splint. The commonly reported complications include gangrene of the affected limb, nonunion, malunion, contractures, osteomyelitis and limb shortening. On the other hand, Chowdhury et al (2018) in their prospective study to analyze complications of fracture treatment by TBS and factors predisposing to complications in Dinajpur district concluded that out of 120 patients, 16.7% had a fracture union in acceptable position with near to normal range of movement at different joints whereas 83.8% had complications in the form of malunion (77%), delayed union (6.8%), nonunion (13.5%), gangrene (1.5%), compartment syndrome (2.7%), extensive blister formation and cellulites (20.3%), Volkmann’s ischemic contracture (3.4%) and rest had stiffness of elbow and shoulder. Hag and Hag (2012) in their study on complications of fractures treated by traditional bone setters in Khartoum, Sudan reported compartment syndrome (14.3%), osteomyelitis (8.6%), and restriction of movement (11.4%), Volkmann’s contracture (5.7%) and gangrene (8.6%) which ended in amputation to be the complications of bone setting. Besides these complications, there is a great demand for TBS services, so much that some patients elect to leave orthodox hospitals in favour of treatment by a TBS.

The possible reasons for this include cultural beliefs, ignorance, and third-party advice, short supply of trained orthodox man power in rural areas, quicker and cheaper services and the fear of amputation at an orthodox hospital14. The rehabilitation is seldom a part of TBS services. Since not all the patients treated by TBS report back to the orthodox hospitals, except those with complications, it is believed that there must be many patients with minimally displaced fractures who have been successfully treated by them.

**2.10 Strength of traditional bone setting**

The literature has depicted that even though the medical facilities have been provided to the populations but in remote areas the approach of health care system was not found to be satisfactory (Ugwu, 2018). The scarcity of availability of medical care in remote area has helped local non-qualified practitioners named as TBS to promote their approach among the population. Eighty percent of the total population in Nigeria for example, reside in rural areas where TBS have performed their services for the welfare of the society. According to Ugwuanyi and Ejikeme (2013), the non-reliable doctor patient ratio in rural population has led to the promotion of the TBS services and healing related complication have arisen with greater pace but up to date data is not available. The complications of TBS treatment namely gangrene, mal-union, non-union have been produced due to lack of proper training and non-documenting approach in spite of that the faith of patients in TBS can’t be ignored and if adequate training along with certification courses is devised for the TBS, they can be of great help in primary health care thus reducing the load on the health care systems of the developing nations.

**2.11 The future of traditional bone setting in Nigeria**

In Nigeria, about 85% of patients with fractures present first to traditional bone setters. It is therefore of public health importance that the practice of this discipline be well understood.

One of the most important flaws of the practice of the TBS presently in Nigeria is the process of training and acquiring skills in bone setting, which is not formal, undocumented and uncontrolled with attendant continuous decline in imparted knowledge and hoarding of information. Furthermore, the practice is passed on by oral tradition and there is no regulation, review and even peer-criticism. Quality is therefore not guaranteed and complications are high. This is unlike orthodox training, which is regulated, open and subject to regular review on the basis of new evidences.

Usually, following failure of a bone setter, the patient usually will voluntarily discharge himself/herself to another bonesetter or to the hospital. This in fact is also unlike what happens in Turkey, where the practitioners usually refer difficult cases. In recognition of this deficiencies therefore, some authors have advocated a formal training for the TBS and their incorporation into the primary care system in Nigeria. This idea is worth trying as training programmes targeted at the bone setters in Nigeria and other countries have been known to had to an improvement in their performance and a reduction in complications. Though patronage of the TBS is influenced by quite a number of factors, a major reason is the perceived cheaper fees. However, this has been better characterized to be that multiple little payments are allowed by bonesetters and even payment in kind with clothes and life animals. Other reasons include the wide belief in our community that sickness and afflictions usually have spiritual aspects that need to be cured with traditional means like the use of incantations and concoctions. Furthermore, in Nigeria strong social and family ties still exist. Friends and family are therefore an important group in the choice of the type of treatment and injured or sick relative will receive. However, there are some valid reasons for patronage of the TBS and these include easy accessibility and quick service rendered by the TBS compared to hospitals where there are protocols and queues before patients can be seen. Indeed, in a number of communities especially in Northern Nigeria and to some extent in Southern Nigeria, orthodox centers are several hundreds of kilometers away.

It is important to state that the patronage of traditional treatment in Nigeria is independent of educational status and religious belief (Chowdhury et al 2018). The treatment methods are essentially similar with minor variations depending on family and community practice. The complication of treatment is usually a function of the method applied. Where splints have been applied, compartment syndrome, extremity gangrene and Volkmannischaemia are known and regularly occurring complications and where massaging and pulling are the preferred treatment option, they usually lead to heterotrophic ossification and non-union and scarifications have been known to lead to chronic osteomyelitis, sepsis and tetanus. These problems however will continue to exist except urgent steps are taken to regulate the present practice of the trade in Nigeria. Successes, which have been, acknowledged by some authors are few with majority of authors agreeing that the practice is dangerous as presently practiced. Though the practice in Nigeria is similar in many respects to what obtains in other countries an important difference is the total absence of referral in the practice of the practitioners in Nigeria lack of any form of structured training26 and the near impunity with which they practice their trade.

In view of the societal confidence, which the TBS enjoy in Nigeria, it is important that efforts be made at regulating their practice including the establishment of a sound referral system and adoption of a standard training curriculum. Though a number of deficiencies of the bone setters have been highlighted in this paper, it is obvious that they can be trained to function at the primary level especially in the rural areas.

2.12 **Practices of Traditional Bone Setting in Nigeria**

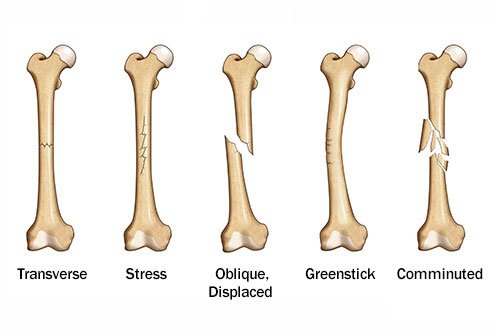
The functionsof Traditional Bone Setting (TBS) mainly include management of fractures, dislocations, congenital anomalies along with their associated complications (Ali et al, 2020). The practice of bone setting is ancestral in nature and is passed on to the generations, though there is no documentation of the procedures. Some outsiders also receive their training via apprenticeship. According to an estimate, 10 – 40% of the patients with fractures and dislocations in the world are managed by the unorthodox practitioners. The practice is passed on by oral tradition and there is no regulation review and even peer criticism, equality is not guaranteed and complications are higher (Onuminya in Odatuwa-Omagbemi, 2018). This is unlike orthodox method which are regulated often and subjected to regular review on the basis of evidences. The regulations and practitioners undergo structured training (Chika and Onyekwelu (2016)).

In view of the lack of structured training for traditional bone setters in Nigeria, it is therefore not surprising that the practice is associated with so many problems which include the process of establishment of diagnosis that is surrounded in mystery and a notorious inability to identify cases beyond their ability and consequences, non-existence of referral system. Usually, following failure of a bone setter, the patient voluntarily discharge him/herself to another bone setter (Solagberu, in Aniago, 2015),). This in fact is unlike what happen in Turkey where the practitioners referred difficult cases to orthodox (Hatipoglo cited in Owumi, B.E., Taiwo, P. A. and Olorunnisola, 2013). Through patronage of traditional bone setters’ influences number of factors, a major reason is the perceived cheaper fees. However, this has been better characterized to be that multiple payment cash allowed by bone setters and even payment in kinds, clothes and life animals (Worku et al, 2019). There are so many valid reasons for patronage of traditional bone setting compared to hospital, where there are protocols and queues before patience can be seen.

**2.13 Characteristics of Bone Fractures**

Doctors use a variety of terms to characterize bone breaks. The degree of the break and whether or not there is an [open wound](https://www.onhealth.com/content/1/first_aid_wounds) associated with the break are a few factors doctors use to characterize bone fractures. A closed fracture is one that does not break through the skin. It is also called a simple fracture. The opposite is a compound, or open fracture. This type of fracture where the bone breaks through the skin. A partial fracture is one where the bone is not broken all the way through (Ali et al, 2020). A complete break describes a fracture where the bone is broken into two or more pieces. If the pieces of a broken bone line up, this describes a non-displaced break. If the pieces of a broken bone do not line up, this describes a displaced fracture. A greenstick fracture is one in which the bone bends and cracks, similar to a tree branch that is bent. These types of fractures usually happen in children under the age of 10 who have soft bones.

Take a keen looked at the samples below:



**2.14 Traditional bone setting practices at Bayan – Fada, Dass L.G.A, Bauchi State**

Traditional bone setting is an age long practice in Dass, Bauchi and most societies Nigeria. It has flourished in spite of the advent of orthodox fracture management in Nigeria and many other African countries. However, complications emanating from their practice have led to suggestions on the need for intervention and control of their activities. A structured interview of two traditional bone setters in the Bayan - Fada of Dass L.G.A, Bauchi State, Nigeria was carried out. In addition, the researcher visited their 'clinics' to make on the spot assessment of their practice Bayan - Fada of Dass L.G.A.

Results/findings**:** The two practitioners ('A' and 'B') interviewed were both males who inherited the trade from their parents. Practitioner 'A' has both out-patient and in-patient practices while 'B' only treat outpatients in addition to home visits. Basically, both practitioners have similar method of injury treatment which consists of; massaging/manipulation to reduce fractures/dislocations after which the area may be scarified before application of a herbal mixture (Bur gun) followed with bandaging and splinting.

From this interview, it is obvious that the current practice of traditional bone setters in the Bayan - Fada region of Dass L.G.A is still crude and far from ideal. There is thus need for a review of their practice with reorientation of their psyche, training, standardization, certification/licensing, legislative control and eventual integration at the primary health care level.

## **2.15 Review of related empirical studies of traditional bone setting practices in Nigeria**

Traditional bone setting (TBS) practice is an important part of health care delivery in many developing countries and has been in Nigeria for long. Despite the complications that arise from the cultural practice, TBS services is still in high demand by a significant number of people. This study was conducted to determine the factors that influence the utilization of TBS practice (Chowdhury et al, 2018). Complications arising from the practice of traditional bone setting according to Hoff in Kuubiere B.C, et al (2013) a is a major contributor to the challenges the orthodox orthopaedic practitioner in Nigeria faces. For example, a study was carried out in Warri, South-south, Nigeria. And the case notes of patients with musculoskeletal injuries who had prior treatment by traditional bone setters with resulting complications before presenting at our health facility for treatment were reviewed and relevant information extracted and entered in an already prepared proforma. Data were analyzed using SPSS version 17 and results presented in form of means, percentages, ratios and tables. The **results show that** 43 cases were reviewed in a period of 8 years. There were 21 males and 22 females. The average age of patients was 44.8 ± 20.3 years. The most frequent age group affected was that of 40-49 years. 45.8% of the initial injuries were due to road traffic accidents while 39.5% resulted from falls. Femoral fractures and humeral fractures formed 20.4% and 14.8% of cases respectively. 40.8% of traditional bone setters complications observed were non-union of fractures of various bones followed by mal-union in 24.5% of cases.

The observed complications of traditional bone setters’ practice in this study were similar to those previously reported in the literature. These complications constitute a significant challenge to the orthopaedic practitioner in Bayan Fada, Dass, Bauchi, Nigeria and Africa at large, with an associated negative socioeconomic impact on our society. Government and other relevant stakeholders need to unite and take decisive actions to mitigate this problem.

Similarly, a descriptive cross-sectional study was carried out using a semi structured questionnaire to gather information from 400 randomly selected residents of ilorin West LGA in north central Nigeria. Multistage sampling technique was used in selecting the respondents (Chowdhury et al, 2018). The respondents were between the ages of 18-72 years with a mean age of 36.3 +/- 12.3. Three hundred and three (77.3%) of the respondents know of TBS practice as a way of getting treatment for bone injuries. More than two third 210 (69.3%) of the respondents who know TBS practice as a form of treatment for bone injuries think that TBS therapy is preferable to Orthodox medicine in handling bone injuries. Reasons for preference are that it is cheap 134 (63.8%), acceptable 123 (58.6%) and accessible 109 (51.9%) to them. More than half (52.3%) of the respondents had patronized TBS treatment at one time or the other. Main reason for patronage of TBS was influence from family members and friends (53.6%). However, factors that influence the respondents decision to utilize TBS treatment include attitude of health workers 310 (77.5%), delay in hospitals 284(71.0%) fear of amputation 272 (54.35) and fear of operation 217(54.3%) in hospitals. There was a statistically significant (p < 0.05) relationship between respondents age, sex, marital status, occupation, ethnicity as well as the income level of the respondents and the utilization of TBS.

The results indicated that, Utilisation of TBS is quite popular among the studied population because it is believed to be cheap, acceptable and accessible to them and a high proportion of the respondents utilize TBS notwithstanding that they live in a community where they have better access to orthodox medical care. Influence from family and friends is the main reason for consulting TBS. Regulations should be made concerning the advertisement of TBS practice by relevant agencies and the public should be made aware through health education on the dangers of TBS treatment. A 24 month prospective observational study was conducted from February 2012 to January 2014. All the patients were recruited from the orthopedics outpatient clinic. The demographic data of each patient, the type of injury, presentation to hospital or not, reasons for leaving the hospital, reasons for patronage of the TBS and their impression of the outcome of TBS' treatment, effect of educational background on patronage of TBS and reason for presenting to hospital for orthodox treatment.Analysis was done with SPSS software Version 20 ([Innocent](https://www.nigerianjsurg.com/searchresult.asp?search=&author=Innocent+Egbeji+Abang&journal=Y&but_search=Search&entries=10&pg=1&s=0),  [Asuquo](https://www.nigerianjsurg.com/searchresult.asp?search=&author=Joseph+Asuquo&journal=Y&but_search=Search&entries=10&pg=1&s=0), [Ngim](https://www.nigerianjsurg.com/searchresult.asp?search=&author=NE+Ngim&journal=Y&but_search=Search&entries=10&pg=1&s=0), [Ikpeme](https://www.nigerianjsurg.com/searchresult.asp?search=&author=Ikpeme+Asanye+Ikpeme&journal=Y&but_search=Search&entries=10&pg=1&s=0)   [Agweye](https://www.nigerianjsurg.com/searchresult.asp?search=&author=P+Agweye&journal=Y&but_search=Search&entries=10&pg=1&s=0),  [Urom](https://www.nigerianjsurg.com/searchresult.asp?search=&author=SE+Urom&journal=Y&but_search=Search&entries=10&pg=1&s=0),  [Anisi](https://www.nigerianjsurg.com/searchresult.asp?search=&author=C+Anisi&journal=Y&but_search=Search&entries=10&pg=1&s=0), and  [Mpama](https://www.nigerianjsurg.com/searchresult.asp?search=&author=E+Mpama&journal=Y&but_search=Search&entries=10&pg=1&s=0), 2016).

A total of 79 patients were recruited for the study and they had different reasons for patronizing TBS. These reasons include an external locus of decision making in 19 (24.1%) patients, and greater faith in TBS compared to orthodox medicine in 16 (20.3%). Twelve (15.2%) believed that TBS are more competent than orthodox medical practitioners while another group 11 (13.9%) considered the fees of TBS cheaper than those in the hospital. The delay in treatment in the hospital, forceful removal of patients from hospital against their will and nonsatisfaction with hospital treatment accounted for 5 (6.3%). Poor attitude of hospital staff, fear of amputation, and patients being unconscious during the injury accounted for 2 (2.5%). Their ages ranged from 17 to 83 years, with mean age of 36.8 ± 11.8 years. The male: female ratio was 1.5:1.

It was further recommended that, evenwith recent advancements in the practice of orthopedics and trauma, there is still a very high patronage of the TBS by most of our patients. This is largely due to the dependence of the patients on their sponsors for treatment, while the influence of cultural and religious beliefs continues to play a major role in these decisions.

**2.16 The Theory of Functionalism.**

Functionalism sees society as an organic whole, with each of its parts working to maintain the others. This is similar to the way in which parts of the body work to maintain each other and the body as a whole. To study the function of a social practice or institution is to analyze the contribution which that practices or institution makes to the continuation of the society as a whole. The best way to understand this is through organic analogy; to study a bodily organ, we need to show how it relates to the other part of the body. Functionalist perspective on health and medicine was formulated largely by Talcott Parsons. He explained that a healthy population is essential to the society. Healthy people can perform the social roles that are necessary to keep the society function optimally. Illness, then, is dysfunctional as it prevents people from performing their social roles, at least temporarily. Thus, the traditional bonesetters play a vital role in the overall functioning of a society by making members who have fractures regain their health. If those who have fractures are not treated, just like the organic analogy as explained by the functionalist, it will hamper the continued existence of the society, as the role they are supposed to play toward the survival of the society were affected. The practice of traditional bone settings has though existed for centuries, there has however been campaigns against its patronage, especially by the orthodox practitioners. Despite this campaign, it still survives till today. This indicated that the practice of traditional bone setting has an important role that it is playing in the society, to have continued to exist. It would have ceased to be in existence, if it has no role that it is played in the society. The functionalists explained that the society comprises of structures with each part laying different role toward ensuring the continual survival of the society. They used the organic analogy to explain this whereby organism contains different part, with each part carrying out a particular function toward the sustenance of the organism. Though the functionalist perspective identified the social institution bone setting as being vital toward the overall functioning of the society by making the members healthy, the failure to recognize that there may be better ways of managing fractures, due to their rigidity and maintaining status quo therefore led to the need to another theory to explain this study Modernization theory

1. The modernist theorists on the other hand look at how society evolves from tradition to modernity. They explained that societies will join the - developed‖ world when they do away with their traditions and adopt modernity as a way of life.

2. In constructing their accounts of development, they drew on the tradition-modernity distinction of classical sociologists. They placed most emphasis on norms and values that operate in these two types of society. They argued that the transition from the traditional to modernity depended on a prior change in the values, attitudes and norms of people.

3. They called for the total abandoning of the old form of doing things, for the adoption of the western ways. To synthesize these theories, functionalism and modernization theory, have a common perspective on the importance of ensuring that people who have fractures are treated and continue to contribute their own quota toward having a functional society, they however have point of divergence. While functionalism explain the relevance of the traditional bonesetters toward the continual survival of the society and believes in the maintenance of status quo , modernization theory looks at how the traditional bonesetters have adopted modern form in carrying out treatment among patients. Modernity has made it easier for the traditional bone setters to adopt modern form in the treatment of fracture. This is important as it not only reduce the rate of complication, but also assist in ensuring that proper treatment is received by the patients, which will aid them in their health restoration and optimal functioning in the society. Both the Traditional bonesetters and the western practitioners are practicing today in Nigeria. Until recently, the relationship that exists between these two kinds of practitioners can best be explained as being that of cat and mouse as the traditional bone setters ‘method of treatment was regarded as being fetish, primitive and not modern.

**2.16 Summary of Literature Review**

Chapter two, discusses literature review under the following sub-headings: Meaning of a fracture,Types of fractures, Causes of a fracture, Symptoms of Bone Fractures, Concept of traditional bone setting, History/Training Methodology of Traditional Bone setting, Reasons for Patronage,Methods used in treatment, Limitations/ Weaknesses of Bone setting, Strength of traditional bone setting, The future of traditional bone setting in Nigeria, Practices of Traditional Bone Setting in Nigeria, Characteristics of Bone Fractures, Complications causes by traditional bone setting in Nigeria, reivew of related empirical literature on Traditional bone setting practices at Bayan – Fada, Dass L.G.A, Bauchi State as well as the theoretical frame work of the study.

**CHAPTER THREE**

**RESEARCH METHODOLOGY**

**3.0 Introduction**

This chapter describe the methodology that will be adopted in collecting and interpreting data. The methodology will be presented under the following sub-headings; research design, setting, target population, sample and sampling technique, instrument for data collection, validity and reliability of the instrument, method of data collection, method of data analysis and ethical consideration.

**3.1 Research Design**

A descriptive survey research design will be used to assess the acceptance of traditional bone setting among the residents of Bayan Fada community of Dass LGA. According to Njodi and Bwala, (2011), a research in health education could be carried out using either survey or experimental design method. The choice of survey method in this research work is justified based on the facts that it will provide an unbiased data to the researcher.

**3.2 Scope of the Study (Demographic Setting)**

This study will be carried out in Bayan Fada community of Dass LFA of Bauchi state. The residents of Bayan Fada community are predominantly farmers, business men/women traditional healers and civil servants. The tribes mostly found in this community are Jarawa and Hausa.

**3.3 Target Population of the Study**

The population of the study will comprise of all households in Bayan Fada community in Dass L.G.A, Bauchi State, Nigeria which will be two hundred and fifty-three (253) households within the study area.

**3.4 Sample size and formula**

The sample for the study will be one hundred and thirteen (113) households which represents 45% of the target population. 45% will be used because Nwana, (1990) rule of the thumb states that, if the population is several hundreds 40-50% can be used as the sample size (Gemson and Kyamru, 2013).

**3.5 Sampling Technique**

The type of sampling technique that will be used by the researcher is systematic random sampling where the researchers will number the households and select the first household at random. The researcher will then select each odd number to be part of her sample.

**3.6 Instrument for Data Collection**

The researcher will adapt structured questionnaire as an instrument for data collection. Refer to appendix 1 in page 38 of the present study. The instrument will be through five likert scale of measurement ranging from Strongly Agreed (SA), Agreed (A), Strongly Dis-Agreed (SD), Dis-Agreed (D) as well as Undecide (U). This will consist of twenty (20) questions or items in a statement for all respondents and will be constructed based on the research questions and objectives.

**3.7 Validity of Instrument**

The questionnaire as a tool for collecting data will be constructed by the researcher and submitted to three lecturers from school of nursing ATBUTH Bauchi for validation and their input will be included in the final draft of the instrument.

**3.8 Reliability of Instrument**

The reliability of the questionnaire will be ascertained by the researcher through test-retest method by administering to selected people in another community who have the same characteristics through the pilot test to see whether they will be able to answer the questions without much stress so that the result will be correlated to obtain the coefficient of reliability and will be found to be reliable.

**3.9 Method of Data Collection**

An introductory letter of permission will be obtained from the school and consent will also be obtain from the community head and request two assistants who will assist in the administration and retrieval of the questionnaires.

**3.10 Method of Data Analysis**

Data to be collected will be analyzed using simple percentage to answer all the research questions posseted to determine “*Demographic Factors Influencing Practice of Traditional Bone Setting( DEFIPTRABS)* ”.

The arithmetic mean using the five likert scale method which will be based on the research questions formulated in the course of the study, will be use.

SA = Strongly Agreed 5

A = Agreed 4

D = Disagreed 3

SD = Strongly Disagreed 2

UD = Un-Decided 1

15/5 =3

A mean score of 3.00 and above will be considered agreed, while a mean score below 3.00 will be considered disagree.

**3.11 Ethical Consideration**

The anonymity and confidentiality of the respondents will be maintained and all the information will be used for academic purpose only. Plagiarism and falsification of data will be avoided.