

PREFERENCE AND REASONS FOR PEOPLE CHOOSING A PLACE OF FRACTURE CARE: A CASE STUDY IN SIX COMMUNITIES OF ASSIN NORTH DISTRICT, GHANA

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Abstract

Background: Studies in the African Sub-region have highlighted injuries and its associated morbidity and mortality as an emerging public health problem, making it necessary to develop a holistic approach to handle injury outcomes in Ghana. The study purposed to assess the preference and reasons for people choosing a place of fracture care among the general population in the Assin North District of the Central region of Ghana.

Method: A prospective cross-sectional study was employed in which 237 participants were randomly selected from six communities in the Assin-North District of the Central Region. Structured questionnaires after verbal informed-consent were used to collect data. The data collected was analyzed using descriptive statistics and chi-square test.

Results: A total of 237 participants were interviewed, 14.8% of them had a history of fracture for which 60% sought treatment with Traditional Bone Setters (TBS). About 27.8% of respondents preferred TBS treatment over orthodox fracture care. Most of them (69.6%) were

females with more than half (56.1%) being young adults. Only gender ($p=0.029$) and religion ($p=0.043$) were associated with the study group's preference of fracture care. Common reasons for choosing a particular place of fracture care included "perceived" healing methods (77.6%), past experience (20.7%), time to fracture healing (11.8%), and cost of treatment (9.3%). Generally, fear of complications such as mal-union (60.8%), stiff knee (62.1%), delayed union (69.6%), amputation (63.3%), and infection (76%) were some of the reasons why participants chose hospital care over TBS.

Conclusion: People make decisions about where to seek fracture treatment (either at a hospital or with a traditional bonesetter) influenced by cost of treatment and knowledge of complications that may result from poorly handled fracture-care. The study showed the need to improve knowledge about the potential benefits of orthodox fracture-care using scientifically tested and reproducible methods which have been shown to consistently improve outcomes.

Key Words: Preference, traditional bone setting, Orthodox, place of fracture care, Assin North District

Introduction

According to a Global Burden of Disease (GBD) Study Report, 973 million people suffered injuries and 4.8 million people died from injuries in 2013.¹ An earlier report by Peden et al reveals that about 90% of deaths from severe injuries occur in low- and middle-income countries (LMICs).² The same report notes that injury is increasingly becoming a cause of death and disability in children in LMICs.²

The use of traditional medicine is a very common practice in most developing countries;^{3,5-9} it is often preferred to the use of orthodox methods. In Ghana, the use of traditional medicine is very common, probably because it is readily available and accessible in most communities. A Traditional Bone Setter (TBS) is a traditional practitioner known for treating fractures and

dislocations, who educates him/herself from observation of traditional methods of caring for patients with fractures and takes up the practice of fracture-care without having had any formal training in accepted medical procedures.^{4,9-11} Bone setting practice is common in indigenous rural populations and contributes a significant proportion of alternative medicine practice especially in rural communities of Asia, Africa and South America owing to considerable gaps in healthcare delivery resulting from a shortage of both trained personnel and infrastructure.^{4,10-12} TBS care are easily accessible, cheaper and believed to give quick results, making them the first choice of natives in developing countries.^{11,12}

Despite the active role of TBS in fracture care, a good number of patients return to orthodox facilities with various complications such as sepsis, mal-union, non-union, limb gangrene, joint stiffness, chronic osteomyelitis, and many more.^{8,13} These sometimes avoidable complications are left for orthopedic surgeons to correct or treat and such patients may be left with lifelong deformities and other sequelae of inappropriate initial fracture care. The earlier inadequate attempts make subsequent orthopaedic management very

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complicated and costly, sometimes leading to limb amputations which regrettably strengthens the belief of some people that the only orthodox treatment option available is amputation.⁸

Reviewed literature have concentrated on patients with fracture complications who received treatment from either TBS or orthodox facilities,^{3,8,9,15–18,18–21} but little is known of the views of the general population, their preferences and possible reasons for selecting a particular place of fracture care. This study is in line with an initiative of the Ghana College of Physicians and Surgeons with the AO Alliance through the Paediatric Fracture Solutions to engage Traditional bonesetters, caregivers, parents, and children to improve knowledge, attitudes and behaviour relating to injury prevention and management.²¹ This study assessed the preferences and reasons for the choice of a place of fracture care in six communities of Assin North District in the Central Region of Ghana.

Methods

Study design and setting

A prospective cross-sectional design was employed to study the preferences and reasons for choosing a place of fracture care of the inhabitants of six communities in the Assin North District of Central Region, Ghana from June 13th to July 2nd, 2018. The six (6) communities within the district had been adopted as a “social laboratory” to facilitate the training of University of Cape Coast medical students under the Community-Based Experience and Service (COBES) Programme, with ethical approval from the same institution to undertake non-invasive research. These communities included Breman, Dense, Aboteriyie, Ahuntamu, Assin Akyeano, and Assin Kushea.

Participants and data collection

A total of 300 participants were selected and proportionate allocation for the six communities was done based on the estimated population from the 2010 Population and Housing Census:²² 20 Participants were selected from Breman, 15 from Dense, 20 from Aboteriyie, 20 from Ahuntamu, 45 from Assin Akyeano and 180 from Kushea.

The approximate number of households in each of the six communities was obtained from the COBES Coordinator. We calculated the sampling interval (total number of households in a community / minimum sample required) for each community. We employed systematic sampling using the sampling interval to select the 300 households from the six communities based on the proportionate allocation for the six communities.

The participants were randomly sampled each from different households and those who consented to participate were interviewed with a structured questionnaire.

Data collected included their demographic characteristics, history of fracture or injury, place of treatment of the injury, preferred place for fracture care, reasons for choosing a place of fracture care and reasons for preference of orthodox care over TBS and vice-versa.

Data analysis

The data was captured and analyzed using SPSS IBM version 21. The ages of participants were categorized and expressed in proportions. Descriptive statistics such as frequencies and percentages were used to summarize the socio-demographic characteristics, history of fracture or injury, place of treatment of the injury, preferred place for fracture care, reasons for choosing a place of fracture care and reasons for preference of orthodox care over TBS or vice versa. The Chi-square test method was used to assess the association between socio-demographic characteristics and preference of fracture care at the 5% significance level.

Ethical considerations

Approval was sought from the Authorities of the Community-Based Experience and Service (COBES) programme of the University of Cape Coast to use their study site. The principles of the Helsinki Declaration on human research ethics was strictly followed throughout the study.

Results

Demographic characteristics participants and Place of fracture care

The demographic characteristics of participants have been summarized in Table 1. Most (69.6%) of them were females. Young adults accounted for 56.1%, middle-aged participants (31.6%) and elderly participants constituted 12.2% of total participants. There was a significant association between participants' place of preference for fracture care and gender ($p=0.029$) at 5% level of significance.

Religion and Preferred place of fracture care

The majority of the participants were Christians: 61.6% Protestants and 11% Catholics. Fantis (45.6%) and Ashantis (44.7%) were over-represented in the study subjects. There was a significant association between participants' place of preference for fracture care and religion ($p=0.043$) at 5% level of significant (Table 2).

Table 1: Demographic characteristics of participants and Place of fracture care

| Characteristics | Total, N=237 (%) | Orthodox n=171 (%) | TBS n=66 (%) | X ² (df) | P-value |
|---------------------------|---------------------|-----------------------|-----------------|---------------------|---------|
| Gender | | | | 4.8 (1) | 0.029 |
| Male | 72 (30.4) | 45 (62.5) | 27 (37.5) | | |
| Female | 165 (69.6) | 126 (76.4) | 39 (23.6) | | |
| Age groups (years) | | | | | |
| Young Adult (18-44) | 133 (56.1) | 95 (71.4) | 38 (28.6) | 0.09 (2) | 0.957 |
| Middle age (45-64) | 75 (31.6) | 55 (73.3) | 20 (26.7) | | |
| Elderly (65+) | 29 (12.2) | 21 (72.4) | 8 (27.8) | | |

Chi-square (X²), degree of freedom (df)

Table 2: Religion and Preferred place of fracture care

| Religion | Total, N=237 (%) | Orthodox n=171 (%) | TBS n=66 (%) | X ² (df) | P-value |
|-------------|---------------------|-----------------------|-----------------|---------------------|---------|
| | | | | 9.84 (4) | 0.043 |
| Catholic | 26 (11.0) | 15 (57.7) | 11 (42.3) | | |
| Protestants | 146 (61.6) | 107 (73.3) | 39 (26.7) | | |
| Muslim | 33 (13.9) | 29 (87.9) | 4 (12.1) | | |
| Traditional | 5 (2.1) | 2 (40.0) | 3 (60.0) | | |
| Other | 27 (11.4) | 18 (72.2) | 9 (27.8) | | |

Chi-square (X²), degree of freedom (df)

Education and preferred place of fracture care

Table 3 shows the highest level of education attained by participants and their preferred place of fracture care. One hundred (42.2%) of the participants had Middle/ Junior High School education while only ten (4.2%) had tertiary education. One-fourth (25.3%) of the respondents were illiterate. Generally, most of the participants at each level of education preferred orthodox fracture care to TBS, and education was found not to be associated with participant preference (P=0.610).

Income and preferred place of fracture care

As shown in Table 4, more than half (58.2%) of the participants earned less than GHC250.00 per month. Fewer, 4.2% (10) earned above GHC1,000.00. Furthermore, participant's preference for orthodox fracture care was higher across various levels of income, but no significant association was found between average monthly income of participants and preferred place of fracture care (p= 0.616).

Table 3: Preferred place of fracture care and participants' highest level of education

| Education | Total, N=237 (%) | Orthodox n=171 (%) | TBS n=66 (%) | X ² (df) | P-value |
|----------------------------|---------------------|-----------------------|-----------------|---------------------|---------|
| None | 60 (25.3) | 43 (71.7) | 17 (28.3) | 2.7 (4) | 0.610 |
| Primary | 40 (16.9) | 30 (75.0) | 10 (25.0) | | |
| Middle/ JHS | 100 (42.2) | 73 (73.0) | 27 (27.0) | | |
| SHS/ Technical/ Vocational | 27 (11.4) | 20 (74.1) | 7 (25.9) | | |
| Tertiary | 10 (4.2) | 5 (50.0) | 5 (50.0) | | |

Chi-square (X²), degree of freedom (df)

Table 4: Average monthly income of participants and preferred place of fracture care

| Average Monthly income (GHC) | Total, N=237 (%) | Orthodox n=171 (%) | TBS n=66 (%) | X ² (df) | P-value |
|------------------------------|---------------------|-----------------------|-----------------|---------------------|---------|
| <250 | 138 (58.2) | 97 (70.3) | 41 (29.7) | 1.80 (3) | 0.616 |
| 250-500 | 71 (30.0) | 54 (76.1) | 17 (23.9) | | |
| 501-1000 | 18 (7.6) | 14 (77.8) | 4 (22.2) | | |
| >1000 | 10 (4.2) | 6 (60.0) | 4 (40.0) | | |

Chi-square (X²), degree of freedom (df)

Choice of place for fracture care

The proportion of participants with history of fracture was 14.8% (n=35). As illustrated in Figure 1, 27.8% (66) of respondents preferred TBS fracture care over orthodox care. However, 60% (n=21) of participants with history of fracture sought treatment with a TBS (actual place of treatment). There was a significant difference in preference for TBS treatment between the entire sampled population and participants with history of fracture ($X^2=8.08$; p-value=0.004).

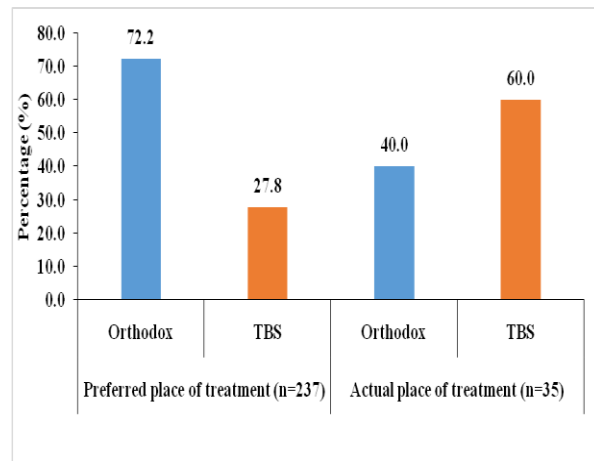


Fig 1. Participant's preferred and actual place of choice for fracture care

Reasons for preferred place of fracture care

As shown in Table 5, the majority of the participants (77.6%) indicated they chose a particular place of fracture care based on healing methods. Other reasons include past experience (20.7%), the time it took to heal (11.8%), cost of treatment (9.3%), traditional beliefs (8%), fear of amputation (5.9%), distance from treatment facility (5.5%) and fear of infections (5.1%).

Table 5: Reasons for choosing a particular place of fracture care

| Reasons | Number of respondents (n=237) | Percentage (%) |
|----------------------|-------------------------------|----------------|
| Cost of treatment | 22 | 9.3 |
| Distance to facility | 13 | 5.5 |
| Time it took to heal | 28 | 11.8 |
| Healing methods | 184 | 77.6 |
| Past experience | 49 | 20.7 |
| Fear of amputation | 14 | 5.9 |
| Fear of infections | 12 | 5.1 |
| Traditional beliefs | 19 | 8.0 |

Reasons for preference of orthodox care over TBS

The perceived reasons why participants chose Hospital treatment over TBS have been summarized in Table 6. Generally, fear of complications such as mal-union (60.8%), stiff knee (62.1%), delayed union (69.6%), amputation (63.3%), and infection (76%) were some of the reasons why participants chose hospital care

over TBS. The majority said they would go for Hospital treatment because they believed that Hospital doctors would spend more time with patients (76%), treatment of fractures would take a long time to heal (73%), doctors were more skillful in treatment of fracture than bonesetters (76.4%), and Hospital treatment was always effective (77.2%).

Table 6: Perceived reasons why one will choose treatment at the hospital over TBS

| Reasons | Yes, n (%) | No, n (%) |
|---|------------|-----------|
| Fear that bone will not unite well (mal-union) | 146 (60.8) | 91 (39.2) |
| Fear that they will have stiff leg (fixed knee) | 147 (62.1) | 90 (37.9) |
| Bone healing will delay (delayed union) | 165 (69.6) | 72 (30.4) |
| Fear that limb will be cut off (amputation) | 150 (63.3) | 87 (36.7) |
| Treatment at the hospital reduce risk of infection | 181 (76.4) | 56 (23.6) |
| Doctors spend more time with patients | 180 (76.0) | 53 (24.0) |
| TBS Treatment of fractures take a long time to heal | 173 (73.0) | 64 (27.0) |
| Doctors are more skillful in treatment of fracture than bonesetters | 181 (76.4) | 56 (23.6) |
| Treatment at hospital are always effective | 183 (77.2) | 54 (22.8) |
| Doctors are more competent in fracture care than bone setters | 186 (78.5) | 51 (21.5) |

Discussion

Fracture treatment by Traditional Bonesetters (TBS) has long been accepted in African settings and continues to play an integral role in healthcare delivery. Ghana as a sub-Saharan African country has a significant and vibrant TBS practice and it is not uncommon to see complications that accompany poorly managed injuries or fractures.^{8,11,13,23,24} The Trauma and Orthopaedic Surgeons practising in Ghana, like other developing countries, are at the fore-front of the battle to treat these complications to improve health, quality of life and reduce disabilities. This makes fracture care in hospitals complex, protracted and expensive. This study assessed the preference and reasons for people choosing a place of fracture care in six communities of Assin North District in the Central region of Ghana.

The study revealed that out of 237 community participants interviewed, 14.8% of them had a history of fracture, and 60% of those with a history of fracture sought treatment with TBS practitioners. This finding supports literature that TBS facilities are the most preferred place of fracture care among trauma patients in Ghana and other African countries.^{12,14,16,17,19,20}

The findings of this study further indicates that a greater proportion of participants who had history of

fracture (60%) preferred TBS treatment to orthodox care compared to that of the entire sampled population (27.8%). The observed difference in preference for TBS treatment between the entire sampled population and participants with history of fracture was highly significant (p -value=0.004). Our study sharply contrasts the findings of Nottidge et al. who reported that 64% of the sampled population preferred fracture care by a TBS.¹⁸ The observed difference in pre-event and event preference can be explained using the influence of socio-demographic factors and other external influences like relatives, cost and beliefs.^{8,24-27} In addition to one's traditional belief and external influence from close relatives and "well-wishers", orthodox care is perceived to be for emergency care and provision of surgical interventions at an expensive rate.¹³⁻¹⁵ In such unplanned event like injuries, patients or their relatives make decisions considering financial strength, rate of healing, and proximity to an orthodox care facility.^{8,13-15,20} Again, it was not surprising that participant's gender and religious affiliation were identified as the factors influencing their choice of place for fracture care ($p=0.029$ and $p=0.043$ respectively). Irrespective of one's age, choosing a place of fracture care may be influenced by the level of education and financial status.³⁰

We also identified that greater proportions of our study population were young adults (56.1%) and females (69.6%). This adult group represents the active work force of our economy and requires the best health care services to reduce disabilities or deaths particularly in low and middle-income economic nations of Africa. Therefore, making the right choices for treating limb fractures is relevant to the economic growth of such nations.

Analysis of complications presented at Hospitals or TBS centers have highlighted a number of reasons for high TBS patronage over orthodox orthopaedic care.^{8,13-16,24,26,28-30} They reported the cost of treatment, fear of amputation, distance to treatment center, healing approach, beliefs, family influence among others as the reasons why patients patronize TBS more often than orthodox orthopaedic care facilities. Consistent with these findings, this study revealed that majority of the participants (77%) will select a particular place of fracture care based on healing methods, and other reasons being past experience, perceived time to healing, cost of treatment, traditional beliefs, fear of amputation, distance to facility and fear of infections.

Generally, the attitude of people towards orthodox care in Assin North was positive; it was observed that majority of our study participants (72.2%) without a history of fracture or musculoskeletal injury preferred Hospital care over TBS care. Among several reasons for this preference was the fear of complications with some highlights like mal-union, stiff knee, delayed union, amputation, and infection. These reasons suggested that a good knowledge of treatment outcomes of Hospital settings among the general population will influence one

to choose orthodox fracture-care over TBS care. In addition, most of these people believe that orthodox doctors are more skillful in the treatment of fractures than bonesetters, and that Hospital treatment is always effective. Building patients' confidence in Orthopaedic care is a key determinant for a patient to choose orthodox care over TBS. However, external factors like the cost of treatment and the influence of relatives and "well-wishers" undermine individual patients' trust in Hospital-based care.^{14-16,24,26,28,30}

Conclusion

People make decisions about where to seek fracture treatment, either in a Hospital or a traditional bone setting centre. This decision may be influenced by the cost of treatment, fear of amputation, distance from treatment center, healing approach and beliefs. People are more likely to go for Hospital-based orthopaedic care over TBS, if they have a good knowledge of the complications that may result from poorly handled fracture-care. There is an urgent need for mass-education of the populace on the advantages of accepting orthodox fracture care methods which have been scientifically validated and have been shown to deliver far better outcomes. A holistic approach should be adopted by relevant stakeholders to embark on mass campaigns to enhance awareness of the outcomes of fracture care from both orthodox orthopaedic practitioners and TBS, and also to address the high cost of treatment that discourages people from accessing Hospital-based fracture care.

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