Original Article

Trauma Managed by Bonesetters

# An Observational Study of Trauma Managed by Bonesetters: Complications, Delays, Orthopaedic Outcomes, and Healthcare Costs

**Mohammad Aslam Mengal, Saddam Mazar, Zahid Khan, Eamaan Abid, Nargis Taj and Saima Azam**

## ABSTRACT

**Objective:** This study is to evaluate the role of traditional bonesetter (TBS) practices in the management of trauma in Balochistan, Pakistan, focusing on the complications, treatment delays, patient outcomes, and associated healthcare costs.

**Study Design:** Observational study.

**Place and Duration of Study:** This study was conducted at the Orthopeadic Surgery Shaikh Khalifa Bin Zayyad Al Nayyan Medical Complex Quetta from 15th November 2021 to 14th November 2023.

**Methods:** A total of 200 trauma patients previously treated by bonesetters, mostly children, were included. Data were collected on demographics, type of injury, bonesetters' interventions, complications (e.g., malunion, infection), and time delays before hospital admission. Financial analysis included costs due to extended hospitalization, corrective surgeries, and rehabilitation.

**Results:** Among the 200 cases, 65% experienced complications, including malunion (35%) and infections (20%). The average delay in receiving proper orthopaedic care was 21 days. Paediatric patients treated by bonesetters had an average hospital stay 30% longer than those receiving direct hospital care, requiring additional corrective surgeries. Healthcare costs were significantly higher, with a 40% increase in expenses due to extended treatment.

**Conclusion:** Bonesetters' mismanagement of trauma, particularly among children, leads to higher complication rates, delays in appropriate care, and increased healthcare costs. Public health efforts should focus on community education and integrating bonesetters into formal healthcare systems to mitigate these adverse effects.

**Key Words:** Fracture, Bone, Malunions, Costs, Health Care

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## INTRODUCTION

In Pakistan, the practice of traditional bonesetting is deeply embedded in the healthcare landscape, especially in rural and remote regions such as Balochistan, where accessible healthcare infrastructure is scarce. Many trauma patients in these areas turn to bonesetters for care, particularly in treating fractures and musculoskeletal injuries, due to the affordability, accessibility, and cultural familiarity of these services[1,2].

Affiliation: Department of Orthopaedic Surgery Sheikh Khalifa Bin Zayyad (SKBZ) Al Nahyan Medical Complex, Quetta, Balochistan

Correspondence: Dr Mohammad Aslam Mengal, Assistant professor Orthopaedic Surgery & Paediatric Surgery, Head of Department Orthopaedics, (Postgradute Medical Institute) SKBZ, Quetta.
Contact No: 0334-3345607
Email: mamengal@gmail.com

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Although advancements in orthopaedic care are available in tertiary hospitals in cities like Quetta, much of the rural population remains reliant on traditional healers due to a combination of logistical challenges, economic constraints, and deeply rooted cultural practices. This attraction to bonesetters is not Balochistan specific; provinces like Sindh, Punjab and Khyber Pakhtunkhwa are also observed high trends of bonesetter use in rural suburbs which have few health infrastructure[3,4].

The prominence of bonesetters in Pakistan can also be attributed to the perceived access that they provide; particularly in rural Balochistan, travelling to city hospitals takes time and money. Bonesetters are thought to handle 30–40% of trauma cases in Pakistan, and even more in remote regions such as Balochistan where access to modern care is severely restricted[5,6]. Furthermore, the cultural and historical trust in bonesetters as traditional healing practitioners adds to its popularity. In many communities, especially in rural areas, bonesetters are thought to have a high level of understanding about musculoskeletal injuries and provide "natural" remedies that resonate better with the local cultural perspectives. In Balochistan, this cultural trust is reinforced by a range of socio-economic

elements, such as taboo and fear behind visiting the hospital and even culturally motivated hindrances amongst females regarding seeking formal healthcare[7,8].

Economic reasons for the dependence on bonesetters are also great. The ever-increasing cost of hospital-treatment, including surgery, stay in hospitals and follow-ups, is well beyond the reach of many families living amid high poverty rates mostly found in rural Balochistan. In contrast, bonesetters charge far less initial outlay but this savings are offset in the long term due to complications associated with malunion, nonunion and infections resulting hence higher cost of health care in the long run[9,10]. Interestingly, about 36.7% malunion among the patients treated by bonesetters and nearly 20% nonunion fracture requiring an expensive corrective surgery was reported from rural Sindh in a study conducted during 2020[11]. Alongside such physical complications, the financial burden of increased treatment days and hospital admissions adds to families' woes and worsens the inefficiencies in our healthcare system.

The health outcomes related to the treatments given by bonesetters are so poor that they often have delayed healing and also leads to complications like infections, nerve damage, compartment syndrome and gangrene. In places such as Balochistan, the limited education of bonesetters along with non-aseptic methods leads to these complications; things like tightly applied splints or herbal medications do more harm than good[2,12]. To give another example, it is not uncommon for patients to only seek medical treatment after bonesetter treatments have failed and at this point, injuries have typically become more severe making it harder and expensive to treat them. Bonesetters are common in other provinces of Pakistan too; in Punjab, Sindh and Khyber Pakhtunkhwa, bonesetters are frequently the primary healthcare provider for fractures, especially in far-flung districts where health facilities remain out of reach[4,6].

This research intends to assess the treatment outcomes, associated delays, and cost of treatment for fractured bones after parents sought the intervention of bonesetters and later took their child to the orthopaedic units. It reviews the impact of bonesetter practices on healthcare and patient outcomes in a tertiary orthopaedic unit in Pakistan. Evidence-based recommendations are proposed to inform public health policies on integrating bonesetters into the healthcare system.

In order to tackle the present problem of bonesetters in Pakistan, focused approaches are needed to enhance healthcare access, raise awareness about the risks of traditional trauma care, and improve overall patient outcomes[1,10].

# METHODS

It was a descriptive study in the Department of Orthopaedic Surgery, Sheikh Khalifa bin Zayyad Al Nahyan Medical Complex, Quetta from 15th November 2021 to 14th November 2023. It intends to examine trauma cases treated by traditional bonesetters (TBS) initially, for complications, delays, patient outcomes, and healthcare costs in both paediatric and adult populations. Approximately 200 participants were targeted to ensure robust data collection for statistical analysis.

Eligible participants included trauma patients of all age groups, from both genders and all ethnicities who initially sought care from bonesetters prior to their hospital presentation. Paediatric patients were included if they were treated by bonesetters before arriving at the hospital. Exclusion criteria encompassed patients with injuries from road traffic accidents requiring immediate surgical intervention and those with congenital or pathological fractures.

Data collection included structured interviews and medical record reviews, focusing on demographics, injury characteristics, and bonesetter treatment details. Complications such as malunion, nonunion, infection, and limb function loss were documented. Healthcare costs, encompassing both direct and indirect expenses, were calculated. Patient satisfaction and perceptions of bonesetter and formal healthcare services were assessed using a validated questionnaire.

The study determined sample size using a 95% confidence level and a 5% margin of error. Data analysis employed SPSS v16.0 with descriptive statistics summarizing demographics and outcomes. Inferential tests assessed associations between demographics, bonesetter treatment, and clinical results. A p-value of $<0.05$ was regarded as statistical significance level.

# RESULTS

The observational study focused the outcomes of trauma patients who initially sought treatment from traditional bonesetters before presenting to a tertiary care hospital in Quetta, Balochistan. A total of 200 patients were included in this observational study.

**Table No. 1: Patient Demographics and Injury Characteristics**

| | | % | Number of Patients |
|---|---|---|---|
| **Total Sample Size** | | 100% | 200 |
| **Gender Distribution** | Male | 65% | 130 |
| | Female | 35% | 70 |
| **Average Age** | 35.4 years (Range: 18–75 years) | | |
| **Age Distribution** | Paediatric (Under 18 years) | 10% | 20 |
| | Adult (18 years and older) | 90% | 180 |
| | 18–30 years | 30% | 60 |
| | 31–50 years | 40% | 80 |

| | | | |
|---|---|---|---|
| | 51–75 years | 30% | 60 |
| **Ethnic Distribution** | Pashtun | 45% | 90 |
| | Baloch | 35% | 70 |
| | Others | 20% | 40 |
| **Income Level** | Low-income households | 70% | 140 |
| **Types of Injuries** | Fractures | 80% | 160 |
| | Soft tissue injuries | 15% | 30 |
| | Dislocations | 5% | 10 |
| **Mechanisms of Injury** | Falls | 45% | 90 |
| | Road traffic accidents | 35% | 70 |
| | Sports-related injuries | 15% | 30 |
| | Other causes | 5% | 10 |

**Table No. 2: Initial Management and Delays**

| Primary Management by Bonesetters: | |
|---|---|
| Treated by bonesetters | 75% (150 patients) |
| Referred to bonesetters after hospital visit | 25% (50 patients) |
| | |
| Average Duration from Injury to Hospital Presentation | 12.6 days (Range: 3–45 days) |
| Delay in Seeking Hospital Care: >7 days delay | 65% (130 patients) |

**Table No.3: Complications, Surgical Interventions, and Recovery Outcomes**

| | | % | Number of Patients |
|---|---|---|---|
| **Surgical Interventions Before Visiting Hospital** | **Patients undergoing prior intervention** | 40% | 80 |
| **Complications Due to Bonesetter Management** | **Malunion** | 40% | 80 |
| | **Nonunion** | 20% | 40 |
| | **Infections** | 10% | 20 |
| | **Loss of limb function** | 5% | 10 |
| **Outcome and Recovery** | **Complete recovery after hospital management** | 75% | 150 |
| | **Prolonged recovery or further intervention** | 25% | 50 |
| **Patient Perceptions** | **Loss of confidence in hospital care** | 20% | 40 |
| **Cultural Influences in Healthcare Seeking** | **Family or community pressure** | 60% | 120 |
| **Further Surgical Interventions Required** | **Post-bonesetter treatment** | 25% | 50 |

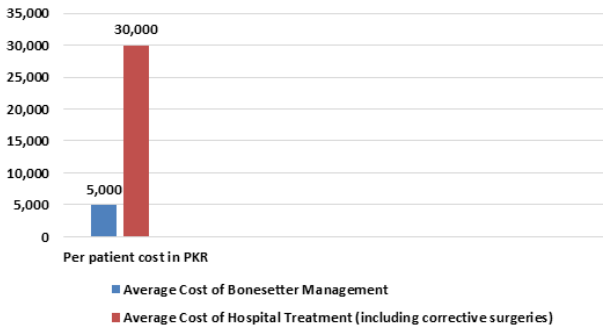


**Figure No. 1: Average Healthcare Costs comparison.**

# DISCUSSION

This study examines the complex relationship between traditional bonesetting practices and modern medical care in Balochistan. Bonesetters are often the first choice due to cultural beliefs, availability, and affordability, but their treatments can lead to serious complications. These complications create significant healthcare burdens, raising concerns about the safety and efficacy of traditional practices[1,2].

Our study revealed that 75% of patients first sought care from bonesetters, demonstrating a heavy dependence on traditional healers in the province of Balochistan. However, this trend is consistent with findings from similarly rural areas of Pakistan, where 30–40% of trauma cases have been reported to be treated by traditional healers, owing to the difficulty accessing remedial hospitals[3,4]. The geographical isolation of rural Balochistan and underdeveloped health infrastructure limits patient access to tertiary care centers in Quetta and other cities[5].

The most important finding was that 40% of patients developed malunion, 20% nonunion and 10% infection after intervention by bonesetter (high rate of complications). Such complications are primarily attributed to non-sterile techniques and unscientific approaches associated with bonesetting practices typically[6,7]. Studies from rural Sindh have similarly documented high complication rates, with malunion observed in 36.7% of patients treated by bonesetters[8]. The inadequate management of fractures by bonesetters not only leads to long-term disabilities but also necessitates corrective surgeries and extended rehabilitation, increasing the recovery period for 25% of patients[9,10].

Although bonesetter treatments are initially more affordable—typically costing around PKR 5,000 (as in initial charges)—subsequent hospital visits and surgeries can drive up healthcare costs, with an average increase to PKR 30,000 (USD 150) per patient. Similar trends are reported in Khyber Pakhtunkhwa, where patients facing complications due to bonesetter treatment incurred healthcare expenses 2.5 times higher

than those who received immediate medical care[11,12]. This economic burden highlights the systemic issue where initial savings from traditional treatment often lead to significant long-term financial strain on both patients and the healthcare system[13].

Cultural factors also heavily influence patients' decisions to use bonesetters. Many participants reported a strong trust in bonesetters, often viewed as respected healers within their communities[14]. Additionally, societal pressures, especially in rural and conservative settings, contribute to the continued reliance on bonesetters. For instance, 60% of participants gave reasons related to family and community traditions for seeking care from traditional healers. Another qualitative study in rural Balochistan found that societal norms and discomfort with hospital settings, especially that of women, steer the greater proportion of patients towards treatment by bone setters rather than formal health care[15,16].

The results indicate the urgent need for health reforms in underserved regions like Balochistan, Pakistan. One potential solution is to integrate bonesetters into the formal health system where they can be trained in basic fracture management as well as sterilization and infection control to minimize associated iatrogenesis that emanates from their practices. This approach was successful in other countries such as Ghana, where training traditional healers improved patient outcomes[17,18]. Replicating the same model in Pakistan can build more trust within the community toward health care, as well as enhance patient recovery.

Investments in healthcare infrastructure will be essential in reducing the dependence on traditional healers. The establishment of more healthcare facilities, improved means of transport, and public health education on unattended injury risks due to lack of knowledge in such areas will be some of the important steps that need to be taken. Evidence from other rural settings demonstrates that when access to healthcare is improved, reliance on traditional practices tends to decline as communities become more aware of the benefits of modern medical care[19]. Our study suggests that many complications could have been avoided if patients had sought timely and appropriate care, reinforcing the need for targeted interventions.

The study calls for further investigation into the long-term effects of trauma treatment by bonesetters. Longitudinal research could shed light on recovery patterns and quality of life over time. Comparing these outcomes with those treated by certified orthopedic professionals would help refine healthcare approaches and guide future policy decisions.

This study has limitations, including potential biases in self-reported data on complications and outcomes. The cross-sectional design also restricts causal inferences between bonesetter treatment and long-term results. Future research should use a mixed-methods approach to provide a more thorough understanding of patients' experiences, perceptions, and decision-making.

In conclusion, this study underscores the reliance on bonesetters in rural Balochistan due to cultural and accessibility factors. High complication rates and economic burdens highlight the urgent need for better access to formal medical care and education on traditional treatment risks. Integrating bonesetters into the healthcare system and improving infrastructure can enhance patient outcomes. Policymakers and healthcare providers must take actionable steps to create a more effective and accessible healthcare system in Pakistan.

# CONCLUSION

Bonesetter trauma care in Balochistan poses serious risks like malunion, nonunion, and infections, leading to increased healthcare costs for corrective interventions. Cultural influences and past hospital experiences drive reliance on traditional methods, emphasizing the need for public education on safer medical options. Integrating bonesetters into formal healthcare systems and improving rural infrastructure can enhance trust and trauma care outcomes.

**Author's Contribution:**

| | |
|---|---|
| Concept & Design or acquisition of analysis or interpretation of data: | Mohammad Aslam Mengal, Saddam Mazar, Zahid Khan |
| Drafting or Revising Critically: | Eamaan Abid, Nargis Taj, Saima Azam |
| Final Approval of version: | All the above authors |
| Agreement to accountable for all aspects of work: | All the above authors |

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