ORIGINAL RESEARCH

# The experiences of adult patients receiving treatment for femoral shaft fractures at a public referral hospital in Lilongwe, Malawi: A qualitative analysis

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*East Cent Afr J Surg*. 2022;27(1):1-9
https://doi.org/10.4314/ecajs.v27i1.1

## Abstract

### Background

Malawi has a rising burden of musculoskeletal trauma, coupled with insufficient surgical capacity to manage common, debilitating injuries like femoral shaft fractures. Nonoperative treatment remains the standard of care, with surgery available only at central hospitals. We sought to understand how patients navigate the Malawian health system and the barriers they face while seeking care.

### Methods

We performed in-depth, semistructured interviews of 15 adults with closed femoral shaft fractures during their hospitalization at Kamuzu Central Hospital, a public referral hospital in Lilongwe—Malawi's capital city. We additionally interviewed 1 patient who left Kamuzu Central Hospital to seek care at a private hospital. An English-speaking investigator performed all interviews with a Chichewa-speaking medical interpreter. Interviews focused on patients' pathways from injury to present treatment (health system navigation), impressions of the hospital and care received, and the effects of injury and treatment on patients and their families. Interviews were audio recorded, translated, and transcribed in English. We coded the transcripts and performed thematic analysis.

### Results

We identified 6 themes: high variability in health system navigation; frustrations with the biopsychosocial effects of hospitalization; lack of participation in decision-making and uncertainty about treatment course; preference for surgery (vs traction) based on patients' experiences and observations; frustrations with the inequitable provision of surgery; and patients' resignation, acceptance, and resilience in the face of hardship. Many patients receiving nonoperative treatment described the devastating financial burden imposed upon them and their families by their injuries and prolonged hospitalization. These patients viewed nonoperative treatment as inferior to surgery and suspected that richer patients were receiving more timely care.

### Conclusions

This qualitative study suggested a need to standardize care for femoral shaft fractures in Malawi, increase the availability and timeliness of surgery, and increase transparency and communication between providers and patients. These remedies should focus on improving the quality of care and achieving equity in access to care.

**Keywords:** trauma, patient experience, health system navigation, femoral shaft fracture, trauma care system, Malawi

## Introduction

The global burden of trauma-related death and disability is high, disproportionately affecting low- and middle-income countries.[1]-[4] Trauma-related disability can push the poorest patients deeper into poverty due to associated healthcare costs and decreased economic productivity.[5],[6] Significant injury-related disability can be prevented with quality trauma and surgical care.[7],[8] However, surgery remains out of reach for many patients, especially in low- and middle-income countries.[9],[10]

Eighty-three per cent of Malawi's 19 million people live in rural areas, and half the population lives below the national poverty line.[11],[12] The incidence of musculoskeletal trauma is high, resulting in many trauma-related admissions to Malawi's public hospitals.[13]-[17] Femoral shaft fractures (FSFs) are increasingly common and are potentially debilitating if not treated appropriately.[13] Approximately 1 adult with an FSF presents to each district hospital—and 4 to each central hospital—every week in Malawi.[18] No public hospital nationwide has the minimum required resources to adequately treat FSFs.[19]

The public hospital system in Malawi has 3 tiers: rural health centres providing basic medical and maternity care only, district hospitals staffed by general doctors and clinical officers (nonphysician clinicians), and central hospitals staffed by specialists (including surgeons). Operative treatment of FSFs—the international gold standard [20]—is performed only in central hospitals.[13] Orthopaedic clinical officers manage up to 90% of the orthopaedic workload nationally, primarily providing nonoperative treatment.[21],[22] However, 24 of the 25 district hospitals and all 4 central hospitals in Malawi have reported barriers to performing skeletal traction, the nonoperative treatment that remains the standard of care in Malawi.[19],[23] Patients receiving skeletal traction in Malawi experience prolonged hospitalization; moreover, about 20% experience complications and 9% die in hospital.[24] Patients on skeletal traction in Malawi have described longstanding pain, emotional distress, and significant financial strain for themselves and their families.[25],[26]

It is unclear how adults with FSFs navigate these myriad challenges. In this qualitative study, we aimed to understand patients' pathways through the Malawian health system to receive care (henceforth termed 'health system navigation') and to examine patients' perceptions of their treatment. We sought to identify barriers that could be addressed to improve accessibility to essential musculoskeletal trauma care.

## Methods

### Study design

We performed semistructured, in-depth interviews of 16 adults who were receiving treatment for closed FSFs. We previously found that hospitals in Malawi's Central Region reported fewer patients admitted with FSFs than would be expected based on population size, possibly due to barriers to hospital presentation.[18] We also previously found that adults presenting for fracture care to Kamuzu Central Hospital (KCH)—the only public referral hospital in the Central Region—were at an increased risk of late presentation compared with patients presenting to other hospitals in Malawi.[27] This may be due to relatively deficient transportation infrastructure in the Central Region, perceived poor quality of care, long wait times at KCH, or increased attendance at nongovernmental hospitals by patients. Thus, we focused our study on the experiences of patients who had been admitted to KCH.

We interviewed patients aged 18 years or older; who were actively receiving inpatient treatment for a closed FSF; and who were without concomitant head, thoracic, abdominal, spine, or vascular injuries. Fifteen interviews were conducted at KCH, and 1 interview was conducted at Beit Cure International Hospital, a private mission hospital in Blantyre—the largest city in Malawi's Southern Region. Nurses on the orthopaedic wards helped identify individuals who met the study's inclusion criteria. We purposefully interviewed individuals who represented a diversity of age, gender, socioeconomic status and occupation, rural versus urban living situations, and experience of FSF care in Malawi.[28]

### Data collection

We conducted semistructured interviews using an interview guide, ensuring consistency of content while allowing patients to elaborate freely and raise new topics. The interview guide (Supplementary File) was designed by applying topics from the social cognitive theoretical framework, including outcome expectation,[29] self and collective efficacy,[30] behavioural capability,[31] observational learning,[32] and incentive motivation.[33] A multidisciplinary team of investigators in the United States and Malawi reviewed and refined the interview guide for clarity and cultural sensitivity before the interviews were carried out.

All interviews were conducted from 17-30 April 2019 by an English-speaking senior orthopaedic surgery resident (K.J.A.H.), facilitated by a professional Chichewa-speaking medical interpreter, both of whom were trained and experienced in qualitative research methods. After participants provided written informed consent, interviews were conducted in private, either in a private room or a screened-off area of the ward. The full conversations were audio recorded and then transcribed in English by the professional medical interpreter. Patient identifiers were removed from transcripts before the analysis. The College of Medicine Research and Ethics Committee (COMREC P.02/18/2353) in Malawi and the Institutional Review Board at Brigham and Women's Hospital, Boston, MA, USA (Protocol #: 2019P000035) approved this study.

### Data analysis

The transcribed interviews underwent thematic analysis, which classifies textual data into themes.[34] First, 2 investigators (K.J.A.H. and L.A.) performed open readings of a subset of transcripts, iteratively identifying repeated concepts, which were captured as codes and organized into a codebook.[35] The codebook was used to code all transcripts

**Table 1.** Characteristics of key informants (N=16)

| Variable | n (%) |
|---|---|
| **Gender** | |
| Female | 6 (38) |
| Male | 10 (62) |
| **Age, years** | |
| 18-29 | 7 (44) |
| 30-44 | 4 (25) |
| 45-60 | 2 (13) |
| ≥60 | 3 (19) |
| **Residence** | |
| Rural | 8 (50) |
| Urban | 8 (50) |
| **Occupation** | |
| Businessperson | 1 (6) |
| Farmer | 5 (32) |
| Housewife | 2 (13) |
| Informal labourer | 1 (6) |
| Motorcycle driver | 1 (6) |
| Office worker | 1 (6) |
| Plumber | 1 (6) |
| Skilled worker | 1 (6) |
| Student | 3 (19) |
| **Mechanism of injury** | |
| Fall | 7 (44) |
| Road traffic injury | 9 (56) |
| **Current treatment** | |
| Skeletal traction | 4 (25) |
| Skin traction | 7 (44) |
| Intramedullary nailing (postoperative) | 3 (19) |
| None, awaiting treatment | 2 (13) |
| Complications | |
| Nonunion | 5 (33) |
| None | 10 (67) |

using the web application Dedoose (SocioCultural Research Consultants LLC, Los Angeles, CA, USA). At regular intervals, we informally assessed agreement between coders and reassessed the codebook to ensure it adequately captured newly emerging concepts.[36]

An inductive thematic analysis was then performed, wherein themes were extracted from the coded text. Transcripts were interpreted through iterative cycles of reading and reflection until dominant themes were identified.[37] We analysed each transcript in isolation and in comparison with others to fully appreciate the contextual richness of each patient's response and differences in experience and perception.[38] This allowed us to (1) compare patients' pathways through the Malawian health system, (2) examine patients' frustrations and perceptions of their injuries and subsequent hospitalizations, and (3) examine patients' treatment preferences and expected outcomes. We used deidentified quotations from the transcripts to support themes that emerged.

## Results

### Participants

Of the 16 patients, 6 were women, and 10 were men. Ages ranged from 19 to 85 years. Rural and urban residents were equally represented among the study participants. The most common occupation was farmer (n=5), followed by student (n=3). Seven patients were injured after falling, and 9 were injured during road traffic collisions. Four participants were undergoing skeletal traction, whereby a metal pin had been inserted through the proximal tibia, and weight was attached to the pin with a cord and hung over the end of the bed, applying longitudinal traction on the limb and immobilizing the patient. Seven patients were undergoing skin traction, whereby traction was achieved not via metal pins but via strips of cloth tape applied directly to the patient's skin. Skin traction is recommended in Malawi only for temporary stabilization. Three patients had undergone intramedullary nailing (operative treatment), and 2 were awaiting treatment with no form of immobilization. Five of the 16 patients had nonunions (Table 1). The median time since injury was 12 weeks.

### Thematic analysis overview

We identified 6 themes: high variability in health system navigation; frustrations with the biopsychosocial effects of hospitalization; lack of participation in decision-making and uncertainty about treatment course; preference for surgical treatment (vs traction) based on patients' experiences and observations; frustrations with the inequitable provision of surgery; and patients' resignation, acceptance, and resilience in the face of hardship. Many patients receiving nonoperative treatment described the devastating social and financial burden of prolonged hospitalization. These patients viewed nonoperative treatment as inferior to surgery and suspected that richer patients were receiving more timely care.

**Table 2.** Health system navigation reported by key informants

| Patient # | Time from injury to initial hospital | Initial hospital | Initial treatment method | Time from initial treatment to referral | Time from referral to current treatment | Current treatment method | Total time since injury |
|---|---|---|---|---|---|---|---|
| 1 | <1 day | District hospital | None | 30 min | 5 days | s/p IMN | 1 month |
| 2 | <1 day | District hospital | None | 1 day | 11 days | Skeletal traction | 3 months |
| 3 | <1 day | Mission hospital | None | <1 day | <1 day | Skin traction | Unknown |
| 4 | 1 day | Kamuzu Central Hospital | Skin traction | – | 6 months | None, awaiting surgery | 7 months |
| 5 | <1 day | Private health centre | None | 2 days | 1 day | Skin traction | 3 weeks |
| 6 | <1 day | Private health clinic | None | Unknown | Unknown | Skeletal traction | 1 month |
| 7 | <1 day | Health centre | Skin traction | 1.5 months | <1 day | Skin traction | 3.5 months |
| 8 | <1 day | Kamuzu Central Hospital | Skin traction | – | <1 day | Skin traction | 2.5 weeks |
| 9 | <1 day | Health centre | Skin traction | 1 month | 2.5 months | None, awaiting surgery | 5.5 months |
| 10 | <1 day | District hospital | Skin traction | 2 months | 3 weeks | s/p IMN | 5 months |
| 11 | <1 day | District hospital | Skin traction | 2 months | Unknown | Skeletal traction | 4 months |
| 12 | <1 day | Health centre | None | 2 days | <1 day | Skin traction | 6 days |
| 13 | <1 day | Kamuzu Central Hospital | Skin traction | – | <1 day | Skin traction | 2 months |
| 14 | 1 day | Health centre | Splint | 2 days | 2 weeks | Skeletal traction | 1 month |
| 15 | <1 day | Kamuzu Central Hospital | Skin traction | – | <1 day | Skin traction | 2 months |
| 16 | <1 day | Health centre | Splint | 1 hour | 2 weeks | s/p IMN | 1 month |

s/p IMN, postoperative after intramedullary nailing (i.e., surgical treatment)

### *High variability in health system navigation*

Five patients initially presented to local health centres, 4 to district hospitals, 3 to mission or private health facilities, and 4 presented directly to KCH. Of the 4 patients who presented to KCH initially, 3 were immobilized on arrival with skin traction, and the other was fitted with a cast. The 12 patients who presented first to other facilities underwent a variety of initial interventions, including splinting (n=2), skin traction (n=4), and no immobilization (n=6). The patients who underwent splinting or no immobilization were all referred to KCH within 2 days. Four patients remained in skin traction for 1-2 months before referral. The total time since injury for the entire cohort varied from 6 days to 7 months. Health system navigation for each patient is summarized in Table 2, and representative patient pathways are shown in the Figure.

Patients recognized and expressed frustration with this seeming lack of standardization of care, especially with delays in treatment provision. One man, aged 25-29 years, said, ‘We want an explanation about the treatment and if it is being given out accordingly. Some people are here 5-6 months. Some stay here for only 6 weeks. We wonder why so many different things are happening that are unfair.’

### *Frustrations with hospitalization*

Patients who had experienced prolonged hospitalizations, usually while receiving skin or skeletal traction, expressed feelings of being trapped and powerless. A male patient, aged 18-24 years, said, ‘When I was at home, I was able to go to school. I’ve been stationary here for a month. This place is like a detention [in prison].’

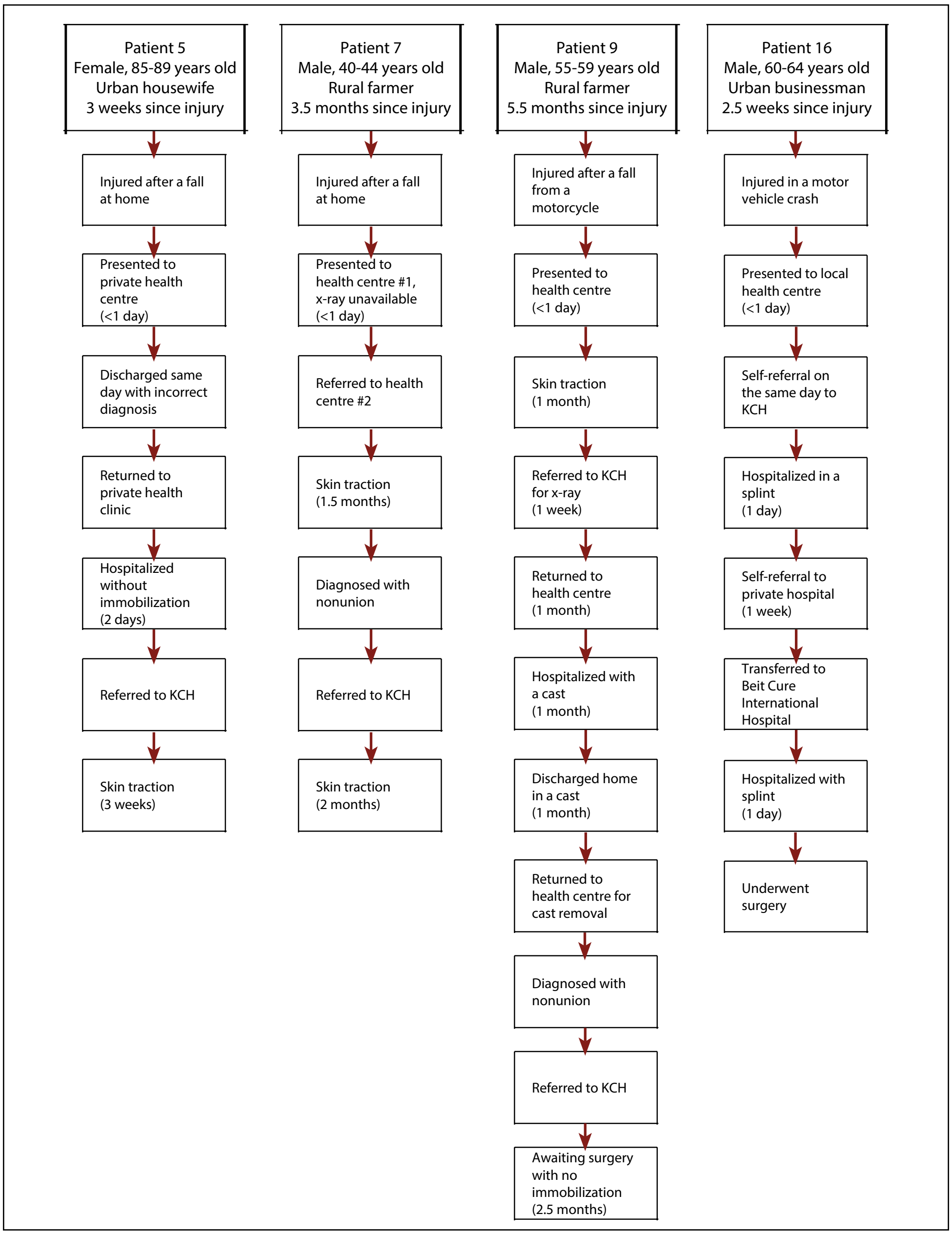

**Figure.** **Representative patient pathways**

KCH, Kamuzu Central Hospital (Lilongwe, Malawi)

Patients recognized the shortcomings of the hospital system, describing limited resources, which contributed to their frustrations. A female patient, aged 60-64 years, explained, 'It was difficult. There was no PoP [plaster of Paris for casts or splints] to treat me.' A male patient, aged 40-44 years, recalled, 'After x-raying, they referred me here because they had no equipment.'

Patients also described overcrowded and unsanitary conditions on the inpatient wards, which they felt needed to be addressed by hospital leadership. A male patient, aged 25-29 years, said, 'There is no washing of bed sheets. This can cause a lot of problems for our health. Tell them to do laundry. We just sleep here. Nothing is being done. Look at the cockroach… They [hospital leadership] should come and see how things are here. They have written, "Health is life", as you can see on that wall there, but look at our bed sheets—where is life in this state?'

Moreover, prolonged hospitalization put significant strain on patients and their families. Patients worried about their housing security, childcare, and education: 'I haven't been able to get money to pay my house rent for 2 months; that's my worry' (man, 40-44 years old). One woman, aged 60-64 years, said, 'I am a farmer and also looking after 4 orphans. There is no one to take care of them. It's harvest time, and crops have been [unharvested] in the field since I came here in February.' A male patient, 50-54 years of age, said, 'I used to pay the school fees [for my children], but now the resources are minimal because I'm not able to move.'

### *Limited patient participation in decision-making*

In the setting of the many frustrations associated with hospitalization, patients also described grappling with profound uncertainty. Patients described not knowing their doctors, not being asked for their consent to undergo procedures, and not knowing their treatment plans. Many patients also felt powerless to share their frustrations with healthcare providers, as a male patient, aged 25-29 years, recounted: 'It's difficult… We do not have powers to speak or tell them [the doctors] what to do… We have just been receiving treatment without being told what the medication is going to do in our bodies… They just come, call names, and give us treatment. So, you can't ask anything.'

Patients expressed deference to the doctors and often did not expect to participate in the choice of treatment, as expressed by a man, aged 55-59 years: 'The patient is not supposed to tell the doctor what to do. The doctors know everything.'

Some patients expressed an outright fear that questioning their providers or sharing their frustrations might negatively impact their care. One man, aged 18-24 years, worried, 'It may risk my life… I can't speak [about my difficulties with treatment], or they will hate me more and stop treatment.'

## Preference for surgery

Drawing from their own experiences, experiences of family members and friends, or observations of other patients on the wards around them, patients described a strong preference for surgery over skin or skeletal traction. Many felt that surgery would lead to a better outcome and quicker return to home or work: 'When patients are operated on, they walk upright and go home to continue working' (man, 55-59 years old).

In contrast, patients receiving skin and skeletal traction described the pain and frustration of the prolonged treatment method. A female patient, 60-64 years of age, explained, 'The treatment [skeletal traction] is not effective. I want to go home. This is more painful than surgery itself. It's not helping because I can't sleep. I am always in pain… I'm always crying. I'm not happy… because I'm not healed.' This seemed to contribute to patients' frustration with the limited availability and long delays associated with surgery. Another woman, aged 20-24 years, recalled, 'I was told… that I would go for surgery. It's now been 7 months without any surgery. They told me that there are a lot of people waiting for surgery. [If I had undergone surgery] I could have been using maybe only 1 crutch by now.'

### *Frustration with inequitable provision of surgery*

Many patients perceived that surgery was not available to all patients, and many suspected that favouritism or corruption was allowing richer patients to undergo surgery sooner. A male patient, aged 25-29 years, said, 'Some [patients] are well known and well-to-do people that can't be in hospital long… [I feel] very pathetic because we are poor; that's why we are still in this state [waiting for surgery].' Another man, aged 40-44 years, speculated, 'There must be something happening in secret since the hospital services are [supposed to be] free… You can be on the [operating] theatre list and then you get sent back [to the wards]. It must be that someone has their own pocket theatre list. Why have we been put on hold for so long?... I believe there's underground corruption happening.'

### *Acceptance, resignation, and resilience*

Recognizing the severity of their injuries and the need for formal medical care, several patients demonstrated a sense of acceptance and resignation that they had nowhere else to go. According to a male patient, aged 30-34 years, 'This is how it's supposed to go. I have to follow… I can't go anywhere else to get treatment. This is the only place to get treatment.'

Many patients continued to show resilience in the face of tremendous hardship, frustration, and uncertainty. Patients who described the frustrations of prolonged hospitalization also demonstrated gratitude to be in the hospital and confidence in their providers' abilities to heal them. They described drawing their strength to persevere from their families and from God: 'I pray to God a lot; I pray for God to give my doctor strength and ideas to operate on me' (man, 50-54 years old).

Moreover, despite the many challenges they faced, some patients remained optimistic. This optimism seemed to be rooted in the belief that they would eventually undergo surgery and return to their lives and families; 'I'm expecting that I will get a better treatment [surgery], and I will be ok; I am expecting that things will change' (woman, 60-64 years old).

# Discussion

In our interviews, adults with closed FSFs described a lack of trauma care standardization in Malawi, with limited access to surgery. Based on their experiences and observations, patients demonstrated a strong preference for surgical over nonoperative treatment and suspected that richer patients were unfairly receiving more timely surgery. Hospitalization was fraught with challenges and frustrations resulting from limited hospital resources, unsanitary and crowded conditions, lack of participation in decision-making, and uncertainty about treatment. Many patients also described the devastating financial burden imposed upon them and their families by prolonged hospitalization.

In patients' descriptions of their journeys, we noted a high degree of variability in the provision of immobilization interventions in the acute injury setting, time to referral for definitive treatment, treatment methods used, and duration of hospitalization. Many patients described not having had their injured limbs immobilized at the health centres or district hospitals where they first presented. Skin traction was applied, not as a temporary stabilization, but inappropriately as the definitive treatment for 7 of the 16 patients interviewed. These observations are concerning because when care practices differ, the quality of care and safety can be compromised.[39] In many healthcare facilities in Malawi, clinical officers—nonphysician clinicians—are the most highly educated providers.[40] Their level of training and competence, especially in terms of basic trauma care and fracture stabilization, should be investigated. Standardization of care practices that promote adherence to evidence-based guidelines may be a useful method of improving care delivery.

The limited availability of surgery was a theme of almost every interview. Only 3 patients we interviewed had undergone surgery, 1 of whom left KCH and paid for surgery at a private hospital. Despite limited communication with providers regarding treatment options, patients demonstrated a strong preference for surgery, based mainly on their experiences and observations. Patients undergoing skin or skeletal traction, or awaiting surgery for a nonunion, described the tremendous physical, emotional, and financial strain that prolonged hospitalization placed on them and their families. Haug et al.[25] similarly found that inpatients undergoing prolonged skeletal traction experience anxiety, indignity, and emotional distress, with significant economic consequences for patients and their families.[25] Future investigations should aim to quantify these indirect costs of injury.

Patients recognized the benefits of surgical treatment, which allows for early weight bearing and is associated with lower complication rates, improved quality of life, and improved function.[24],[41] Many of the patients we interviewed perceived unfair inconsistencies in care, particularly that richer patients preferentially received surgery. Preferential treatment can undermine healthcare delivery by worsening inequalities in access.[42],[43] The prevalence and root causes of this issue must be investigated further in Malawi. Implementation of a standardized surgical waiting list—adhering to a first-come, first-served policy within the constraints of clinical necessity and triage—may decrease the ambiguity and frustrations with the inequitable provision of surgery.

Perceived barriers to healthcare access for rural Malawians include limited emergency services, limited healthcare capacity, poor health workers' attitudes, and perceived poor quality of health services.[44] Several patients we interviewed recognized that limitations of the health system likely contributed to delayed surgery and substandard care. Central hospitals in Malawi have reported insufficiencies in nursing and clinical staff, hospital beds, and operating theatres. In fact, central hospitals face challenges in providing even skeletal traction due to broken drills, limited traction pins, and inadequate traction frames and weights.[19] Improving hospital infrastructure, bolstering surgical staff, and improving the availability of material resources would all likely improve the patient experience navigating the Malawian health system. However, many of the patients' frustrations could be addressed by fostering a culture of quality improvement that is accountable to patients—a culture in which patients' experiences and outcomes are noted, acknowledged, and addressed.

Increased transparency and communication between patients and providers may also help address the profound uncertainty that many patients felt regarding their treatment plans and expected outcomes. Several patients described receiving a specific treatment without having consented. Informed consent helps patients understand treatment options and set outcome expectations, which can ultimately affect patient satisfaction.[45],[46]

In our interviews, patients shared the many challenges they faced when seeking care, enduring prolonged hospitalization, and bearing the perceived injustices of poor-quality care and inequitable provision of surgery. Patients were forced to accept these myriad challenges without recourse. The remarkable resilience of Malawian patients shone through in our interviews. Their hopes for good outcomes seemed tragically linked to (often false) hopes for undergoing surgery.

### Limitations

This study's findings must be interpreted with caution, recognizing that our patient population was not a representative sample of all Malawian patients with femoral shaft fractures. We chose to focus on care delivery at KCH, given the relatively high rates of delayed presentation previously observed there,[27] in an effort to examine challenges where they were perhaps the greatest. This was a qualitative study, undertaken to generate hypotheses. Thus, the experiences of the patients interviewed in this study are not representative, but rather demonstrate the breadth of experiences and common themes.

## Conclusions

In this qualitative examination of health system navigation, we found that patients with femoral shaft fractures who received treatment at KCH in Lilongwe, Malawi, were frustrated by high variability in care. The negative effects of prolonged hospitalization for nonoperative treatment led many patients to feel that surgery was a superior treatment, which was unfairly made more available to the rich. Our findings suggest a need to increase the equitable availability of surgery through capacity improvement and standardization of care along evidence-based guidelines. Patients may also benefit from increased transparency and communication with providers, as well as a culture of quality improvement and accountability led by hospital department leadership.

**Acknowledgements:** We would like to thank Paul Chidothi for his invaluable assistance with interview translation and transcription. Thanks to Emma Lape and Nora Lenhard for their advice and guidance during interview coding. Thanks to the nurses on the orthopaedic wards at Kamuzu Central Hospital, especially Beatrice Nkhambule and Vitowe Chinkhombe, for their assistance in facilitating our private interviews with patients. Thanks to the orthopaedic clinical officers and orthopaedic surgeons at Kamuzu Central Hospital for your transparency and support of this project. Without your commitment to quality improvement, nothing would be possible.

We give a special thanks to all the patients who participated in this study. May your words guide us as we strive to improve the quality and dignity of care for all patients in Malawi.

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**Peer reviewed**

**Competing interests:** N.M. is a member of the *East and Central African Journal of Surgery* editorial board but was not involved in the processing or peer review of this article, and he did not have any influence on the decision to accept this article for publication. The other authors declare that they have no competing interests related to this work.

**Received:** 8 Dec 2020 • **Revised:** 23 Jul 2021

**Accepted:** 27 Jul 2021 • **Published**: 26 Oct 2021

**Cite this article as:** Agarwal-Harding KJ, Atadja L, Chokotho L, Banza LN, Mkandawire N, Katz JN. The experiences of adult patients receiving treatment for femoral shaft fractures at a public referral hospital in Lilongwe, Malawi: a qualitative analysis. *East Cent Afr J Surg*. 2022;27(1):1-9. doi:10.4314/ecajs.v27i1.1