



## High quality care following orthopaedic injury in Zambia: A qualitative, patient-centred study



Ferdinand B.R. Mayer, MSc<sup>a,b,\*</sup>, Anadi Bulaya, BSc, MBChB<sup>a,c</sup>, Caris E. Grimes, BSc, MBBS, MEd, FRCS MD<sup>a,d</sup>, Simba Kaja, MBBS, FCS Orth.<sup>c</sup>, John K.H. Whitaker, PhD<sup>a,e</sup>

<sup>a</sup> King's Centre for Global Health and Health Partnerships, Faculty of Life Sciences and Medicine, King's College London, UK

<sup>b</sup> University of Exeter Medical School, University of Exeter, UK

<sup>c</sup> Department of Orthopaedics, Ndola Teaching Hospital, Zambia

<sup>d</sup> Medway NHS Foundation Trust, Kent, UK

<sup>e</sup> Academic Department of Military Surgery and Trauma, Royal Centre for Defence Medicine, Birmingham, UK

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### ABSTRACT

**Background:** Injuries are a significant cause of mortality and morbidity, particular in low- and middle-income countries (LMICs). While there is a focus on increasing injury care capacity, less attention is given to assessing, improving, and understanding the quality of care provided, especially from a patient perspective. This study therefore aims to understand what patients from a Zambian orthopaedic ward believe good quality care to be, to identify its key components, and contribute to better understanding what patients believe local healthcare priorities could be.

**Methods:** Patients admitted to the orthopaedic ward of a Zambian tertiary care hospital were invited to take part in-depth face-to-face interviews. Interviews were continued until thematic saturation was achieved. Interviews were recorded and transcribed. Analysis was done using an inductive grounded theory approach.

**Results:** Of 13 patients approached, 12 consented to take part. Analysis of the themes from the transcripts led to the emergence of four core categories of quality care which are important to the patient: i) restoring the patient to normality (category: 'restoring normality'), ii) establishing trust between patients and providers ('trusting the provider'), iii) respecting the patient and allowing them to maintain autonomy ('autonomy and respect') iv) finding ways for patients to enjoy their time in the hospital ('enjoying life'). From these results, a patient perspective theory of quality care emerged. This theory posits the idea that high-quality care in this context needs to fulfil these four core categories. Additionally, these core categories were ranked on significance and priority.

**Conclusion:** The hierarchy of core categories could help to identify areas to improve care quality in this setting. Not only has this study helped to determine local priorities for achieving high-quality care but can encourage others to test injured patient perceptions of care quality in comparable settings.

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### Introduction

Injuries are an important and growing cause of mortality and morbidity in low- and middle-income countries (LMICs) [1]. However, very little data on the quality of available health care following injury exists in these settings [2]. This is primarily due to a priority on expanding capacity [2]. Whilst increasing access to care

services is an important focus in global health, ever more attention is being placed on understanding and improving the quality of delivered care by these services [2]. Although there is no universal definition of healthcare quality, the WHO defines it as the “degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” [3]. Quality is frequently divided into several components, most of which are based on the US Institute of Medicine’s landmark study which describes the six domains of quality healthcare: patient centredness (providing care in line with priorities, values and needs of the individual), safety (avoiding harm), timeliness (short wait times), effectiveness (achieving

\* Corresponding author.

E-mail addresses: [fm434@exeter.ac.uk](mailto:fm434@exeter.ac.uk) (F.B.R. Mayer), [anadhbulaya@gmail.com](mailto:anadhbulaya@gmail.com) (A. Bulaya), [caris.grimes@kcl.ac.uk](mailto:caris.grimes@kcl.ac.uk) (C.E. Grimes), [john.k.whitaker@kcl.ac.uk](mailto:john.k.whitaker@kcl.ac.uk) (J.K.H. Whitaker).

desired health outcomes), efficiency (reducing waste and maximising benefits), and equitability (consistent quality and accessibility for all) [4]. The WHO includes 'integration' (providing a full range of services throughout someone's life) as a seventh component in 2018 [3].

Recently, Coccolini and colleagues published a list of 82 trauma quality indicators (TQI) based on a literature review and expert opinion [5]. These TQI include metrics like length of stay, unexpected return to the operating theatre, long-term physical and psychological morbidity, and intangible cost quantification. They divided the TQI into six categories: prevention, structure, process, outcome, post-traumatic management, and society integrational effects. This list provides a helpful way through which to compare and evaluate trauma care quality systems and are based on the previously well described Donabedian three categories from which inferences about care quality can be made: structure (the context in which care is delivered), process (combination of all actions that make up healthcare) and outcome (the effects of healthcare) [6]. Crucially, *The Lancet* Global Health Commission on High Quality Health Systems (HQSS) further developed these constructs, including resilience as a function of quality and emphasising the purpose of health systems as being "for people" [2].

There are several components that are consistent within care quality frameworks and provide a useful way of dissecting healthcare provision [3,4,7]. Currently, however, most of the quality indicators are developed through expert opinion and do not shed sufficient light on patient perspectives on care quality [8]. This is of particular importance in LMICs where there is little research regarding quality in emergency and trauma care from a patient perspective [9]. The components making up quality healthcare are varied and quality is a normative concept, with its meaning constructed by communities and patients [10]. It is therefore imperative to further understand and study the ideas and thoughts that individual patients in a specific setting have about healthcare quality in order to provide injury care that is of appropriate quality [11,12].

It is estimated that trauma accounts for 10% of surgical procedures in Zambian district facilities [13] and is expected to grow as motor vehicle use and associated injuries are increasing annually [14]. As planned development of services progresses, it is necessary to ensure that they are of high quality and appropriate for the patient. We used a grounded theory approach to explore the patient perspective of what constitutes quality of care in a lower-middle-income perspective. We sought to identify Zambian orthopaedic trauma patients' priorities and ideas about what injury care quality means, in order to develop a patient-generated model of high-quality injury care to ultimately inform trauma healthcare service development in this and similar contexts.

## Materials and methods

### Setting and participants

The study was conducted on orthopaedic wards at Ndola Teaching Hospital, a Zambian tertiary hospital in the Copperbelt district, in May and June 2019. The hospital serves a wide geographic area, including wealthy urban centres and rural surroundings with mostly subsistence economies. Although inpatient stays and operations are free, patients must pay for consumables including most medicines, and often prohibitively expensive surgical implants.

Patients were identified from those admitted following an orthopaedic injury. The participants were limited to orthopaedic injury as these generally stable patients who required extended hospitalisation which allowed the researchers to develop the rapport necessary for the grounded theory methodology. Participants had to be 18 years or older, able to give informed consent, as well as

able and willing to hold a conversation about the subject of quality. Patients were approached following doctors' rounds. Reasons and motivation for the project were clearly outlined, which was important as many patients were initially worried that their responses would impact their care. Patient recruitment ceased following thematic saturation, whereby no new information or ideas were being elicited (i.e. 'saturation').

### Interviews

Two of the authors (FM and AB) conducted semi-structured in-depth interviews using an *a priori* question guide (see Appendix A) allowing the pursuit of relevant themes and in-depth conversation. Most interviews were conducted in English though two were conducted in the local Bemba language with use of a translator. Individual interviews lasted until no new information was elicited. No repeat interviews were carried out. The interviews were audio recorded and transcribed verbatim by FM. Transcripts were not returned to participants for comments and/or corrections.

### Analysis

A grounded theory method was used. As an inductive process, understanding 'emerges' from the data, such as interviews and fieldnotes, leading the researcher to construct a theory about the topic of interest [15]. Grounded theory coding and analysis was done by FM following the framework of Charmaz (2014). Transcripts were initially coded line-by-line using NVivo 12.5.0 (*QRS International*). During the selective phase, the first round of categories (primary categories) emerged. A list of these codes was created to see which ones could be coalesced. The resulting peripheral categories (secondary categories) were checked back with the transcripts to see if they were appropriately categorised. Through an iterative process, core categories emerged which provided the foundation of the subsequent grounded theory. A more thorough description of the analysis process along with a description of the authors can be found in the electronic supplementary material.

### Ethical considerations

Participant information and consent documents were provided along with verbal clarifications. Once participants had read the document, or had it read to them, and had any questions answered, consent forms were signed. Ethical approval was granted by the King's College London Research Ethics Office (LRU-18/19-10,551) and the Tropical Diseases Research Centre, Zambia (IRB reg. no. 00002911, FWA no. 00003729).

The study is reported in accordance with the COREQ guidelines for qualitative research (see supplementary material) [16].

## Results

Thirteen patients were invited to participate, of which twelve agreed. One patient refused to be interviewed because they feared participation would affect their care negatively, despite assurances to the contrary. The average interview duration was 39 min (range 16 – 89 min). An overview of the participants can be found in Table 1. A more personal description of the participants can be found in the supplementary material.

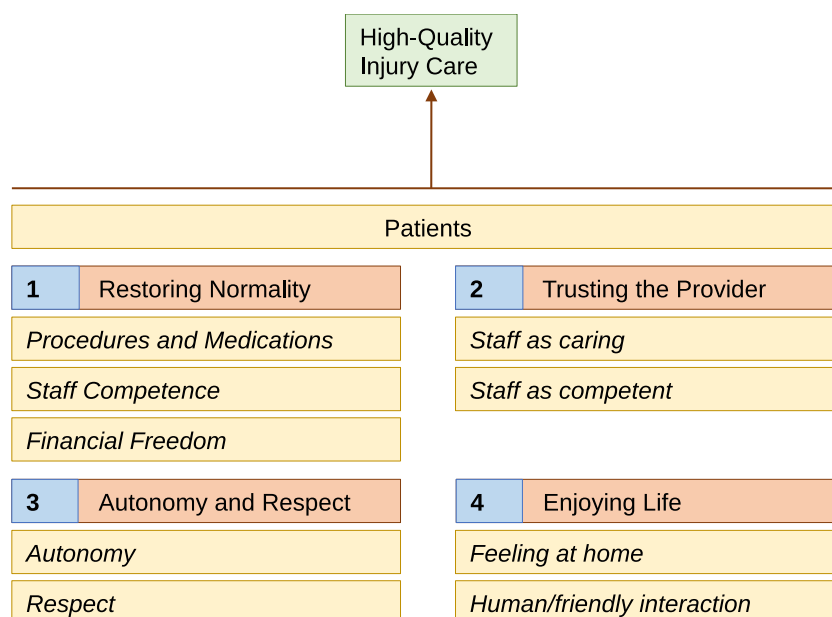
A total of four core categories of high-quality injury care emerged: 1) Restoring normality, 2) Trusting the provider, 3) Autonomy and respect, and 4) Enjoying life. (Fig. 1)

### Restoring normality

Many patients stated a primary wish to return to normality; the bio-psycho-social and financial state prior to the injury. This was

**Table 1**  
Overview of the Participant Characteristics.

Patients Label	Sex	Age	Profession	Mechanism of Injury	Injury Type	Treatment	Interview Duration (minutes)
Pt1	Male	40s	Truck driver	RTC	Fractured femur	Cast, skeletal traction	49
Pt2	Male	50s	Taxi driver	RTC	Multiple long bone fractures	Cast, skeletal traction	35
Pt3	Male	30s	Printer	Fall	Fractured femur	Cast, skeletal traction	30
Pt4	Male	40s	Unemployed	Assault	Fractured jaw	Uncertain	16
Pt5	Male	20s	Student	Pathological fracture	Fractured femur	Amputation	51
Pt6	Male	20s	Student	RTC	Non-union fractured tibia/ fibula	Cast, skeletal traction	89
Pt7	Female	60s	Gardener	Fall	Fractured pelvis	Splint	27
Pt8	Female	20s	Student	RTC	Fractured femur	External fixation	23
Pt9	Male	40s	Plumber	RTC	Fractured tibia	External fixation	27
Pt10	Female	20s	Unemployed	RTC	Fractured pelvis	Pelvic splint	32
Pt11	Female	30s	Grocer	RTC	Fractured femur	Cast, skeletal traction	28
Pt12	Male	40s	Accountant	RTC	Fractured femur	ORIF	64



**Fig. 1.** Overview of the core components that make up high-quality injury care.

deemed the most important hallmark of high-quality treatment. Appropriate procedural care and medications were fundamental to this.

*“The only thing that will help me recover faster is after I have an operation...But without that [...] I’ll just be bedridden...” (Pt 8)*

Staff competence was also a central feature of care quality. In short, staff should “know what to do” (Pt8). This applied not just to clinicians but to all hospital workers.

*“When you find a good hospital, there should be, the doctors how they are treating the patients. And also these students, they know how to treat the patients. Even the cleaners they know how to clean.” (Pt 10)*

It was frequently stated that a high-quality hospital would cover the cost of treatment. Providing optimal treatment without a financial burden would allow the return to physical and emotional normality.

*“I can emphasize is the medication. We, we don’t have to be buying our own medicines. My own femur plates...The government should do that...” (Pt 9)*

**Trusting the provider**

Trust was defined as having confidence that the provider will support the patient both physically and emotionally, and work together for the patient’s interests. Trust was primarily established

through the kindness of the staff, although competence of the staff played a role.

*“When you’re a friend to them, you can easily open up, what’s pain inside you...” (Pt 3).*

Importantly, patients also had more confidence in the hospital if it has hygiene standards.

*“If the place is clean, then it means that the quality of work which will be found in that hospital will be excellent.” (Pt 12).*

**Autonomy and respect**

Patient control and being shown respect were important determinants of high-quality care. Patients losing—at least temporarily—certain functions, still wanted control over some basic daily necessities. Frequently, ‘bedsiders’ provided food and electric kettles for hot water, soap, and towels, which allowed the patient to not entirely rely on hospital staff. Bedsiders are loosely defined as informal caregivers (usually family, relatives, or friends) for an inpatient during their hospital stay. They helped give the patient a sense of person and agency that had been somewhat removed by being in the hospital.

*“They [the bedsiders] bring beans, potatoes, anything, any food, what I want to eat, they bring for me...This is important for me.” (Pt 10)*

A low-quality ('bad') hospital would therefore undermine this sense of person.

*"A bad hospital? Doctors...they are heartless. Even the nurses they don't talk to a patient...They will shout at her [the patient], so I can say that it's a bad hospital." (Pt11)*

#### Enjoying life

The pleasures of daily living while in hospital were significant, with several patients reporting 'feeling at home' as an important part in high quality patient-centred care, especially for those with long inpatient stays. This sense of enjoyment was independent of having autonomy over its source. In other words, it did not matter whether or not the patient had specifically demanded it. Enjoying good food, having the means to maintain personal hygiene, and forms of entertainment were all sources of joy. As Pt8 put it;

*"When you're eating, you even have a different mind [...] You are happy you are eating [tasty food]". (Pt 8)*

Another cause for joy were friendly interactions between staff and patients.

*"The relationship, the public relations, between us patients and those who are work on us, it's very important...You come, you greet your patients: 'good morning, good morning, good morning'. Just a greeting can enlighten you. Maybe you are down, down in attitude or you are low, but when someone comes and puts a smile on you, you even change." (Pt 12)*

More quotations on each theme can be found the supplementary material.

#### A theory of high-quality care

Through the use of the grounded theory approach, a theory of high-quality care emerged, describing fundamental priorities and ideas of injury quality for patients. Core categories were ranked based on perceived importance by participants (Fig. 2). For example, whilst 'enjoying life' was important, 'restoring normality' was perceived as being more valuable to the participants.

#### Discussion

To our knowledge, this study is the first to explore patients' ideas and expectations regarding high-quality injury care in a Zambian tertiary care context. Through the use of a grounded theory approach, we have constructed a theory of high-quality orthopaedic injury care in Zambia which includes four core categories: 'restoring normality', 'trusting the provider', 'autonomy and respect', and 'enjoying life'. In this setting, it may guide practice and policy priorities as the injury care system is expanded. For example, we came to formally understand the importance of financial support for patients with orthopaedic injuries ('restoring normality'). Many patients explained that the costs associated with the surgery were too great, forcing them to go for the non-surgical option, which drastically increased their time in hospital. Other patients stated that the overall costs meant they had to borrow money which was a significant source of worry and anxiety. This may motivate policy makers to instigate mechanisms to cover these costs. Additionally, being able to choose and eat nutritious food emerged as being extremely important for the patients' perception of high-quality care, suggesting that more resources could be allocated to the dietary sector in this hospital. Perhaps unsurprising was the importance of professionalism and kindness of the staff. Placing this inside the quality-care model may serve as an important reminder for continuous professional education as well as ensuring that staff are adequately trained and rested. Lastly, it became clear that patients valued autonomy: having the option to clean and wash themselves, as well as providing mobility aids for

independent movement around the ward. Implementing these may be a relatively small financial cost but would greatly improve the quality of care as perceived by the patient. These are valuable insights that are of a practical value in the study setting and may therefore inspire others to conduct similar research to determine local expectations and ideas on quality.

It is important to compare our theory of high-quality care to other models, of which there are several. Most notable is the Institute of Medicine's STEEEP (safe, timely, effective, efficient, equitable, patient centred) model, which has been widely used to guide quality improvement efforts as well as the model by the WHO, which has added 'integration' as a seventh component [3,4]. In addition, the Lancet HQSS has been working to promote high-quality health system and they should be guided by the following four values: they are for people, they are resilient, efficient, and equitable [2]. Certain findings from our study fit well within these common frameworks. The need for effective treatment, financial support, caring staff, and patient autonomy and respect, for example, correlate with WHO's domains of effectiveness, equity, and patient centredness [4]. Importantly, our study helps to elucidate what it means of healthcare to be 'for people', as it directly asked them. As such, it was important to develop a new, context specific framework instead of only using the existing models.

Several components of our theory are also described in other quality studies in non-Western settings. One of the few studies researching quality in emergency and trauma care from a patient perspective in LMICs was conducted by Yarney and Atinga. Their review established four domains: attentive prehospital care, ward quality and privacy, medical supplies and social and relational care [9]. The last three components are reflected in our research. In particular, the presence of medical supply as a means to 'restore normality', and social and relational care as 'enjoying life' and 'autonomy and respect'. Yarney and Atinga '2017' have included 'respect' as part of the larger domain 'patient centredness'. However, our theory includes a distinct domain of 'autonomy and respect' since it was such a prominent feature present in virtually all patient interviews. While 'autonomy' is included in certain PROMs (the EQ-5D-5 L instrument includes a question on self-care, for example), this aspect remains relatively elusive in trauma research. According to our findings, however, the participants valued true autonomy suggesting that the quality of trauma care would improve if the staff engaged in more real shared decision making with the patient and provided the equipment to move more independently (e.g. wheelchairs) [17]. Our study also emphasises the importance of bedside care, which has recently been formally explored in the Zambian context and concur with our results [18]. Likewise, our finding that caring staff and professional expertise are crucial for quality care, is shown to be an important factor for healthcare seeking behaviour in Zambia [19,20]. The relevance of food for maintaining well-being and thus providing high-quality care is also seen in the Zambian orthopaedic context [21]. Our study therefore corroborates some of the themes that have been identified by previous research but frames them in a single model of quality injury care specific to Zambian orthopaedic injury patients.

There are several aspects which our patient derived theory of high-quality injury care does not include but are described elsewhere in the literature. These are primarily related to quality of the health system as a whole. According to *The Lancet* HQSS, high-quality health care should be equitable, resilient, and efficient [2]. The WHO's model also includes equity, efficiency, and integration [4]. While patients in our study do mention some of these aspects indirectly, they were mostly concerned with the treatment they received and not with how the healthcare system performed as a whole. They also did not mention the WHO's component of vertical and horizontal healthcare integration. Our theory therefore does not include the larger perspective of looking at high-quality

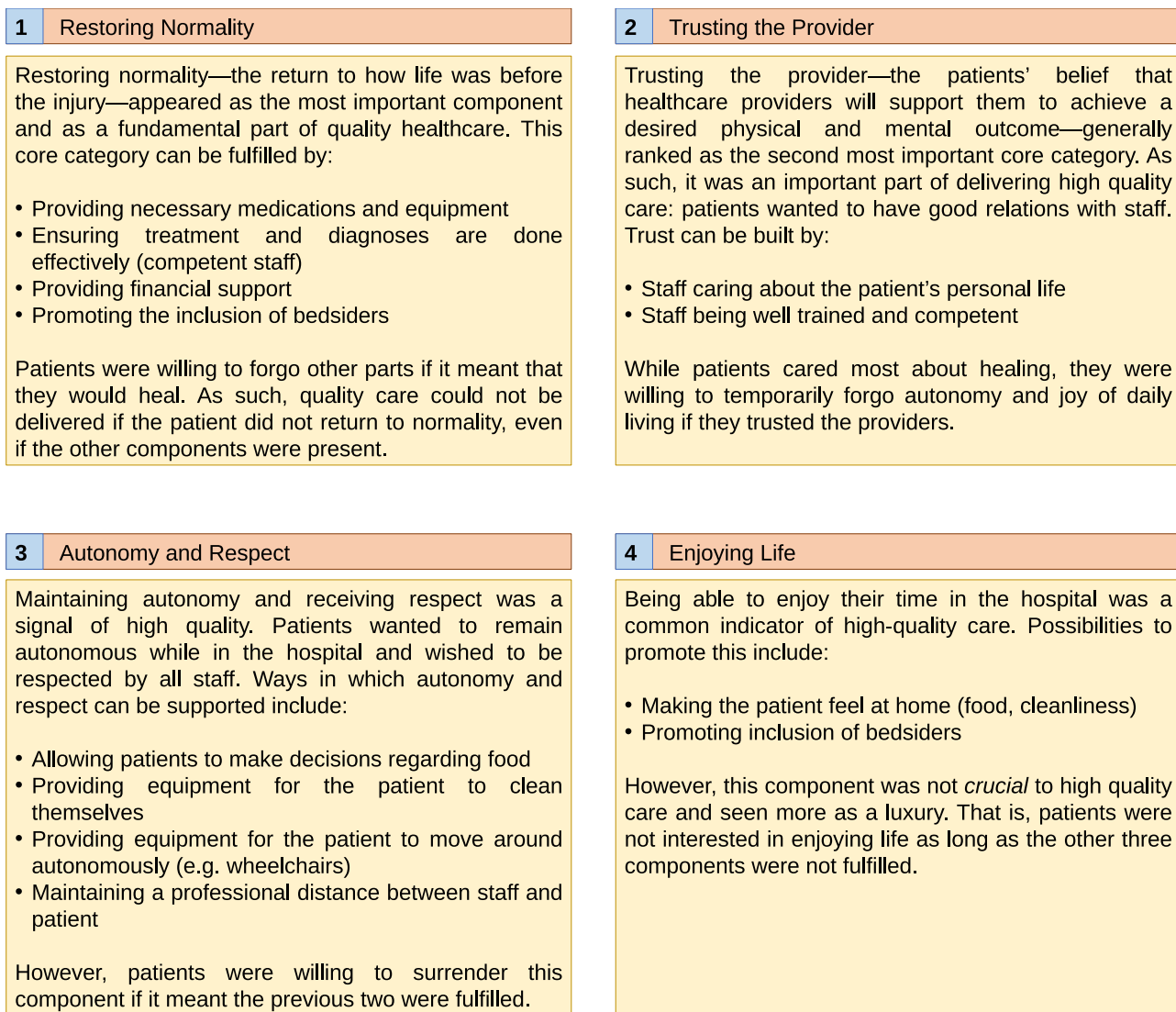


Fig. 2. Overview of the hierarchy of the patients’ core categories of delivering high quality medical care, numbered in order of priority.

healthcare systems, such as how resilient, efficient, and integrated it is.

This study has several limitations. As most coding and theory development was done by one researcher (FM) from a high-income country, personal biases and preconceptions would have influenced the narrative and shaped the analysis despite best efforts to avoid this. Most notably, in order to facilitate a discussion, quality was often rephrased as ‘preferences’. Indeed, it could be possible that when the interviewers spoke about quality, respondents were talking about value and preferences. As such, if quality is not truly what people wanted, many of the responses in this project—and indeed most of the analysis—would have been misinterpreted. Qualitative analysis should always be interpreted within its geographical, social, and temporal context. Additionally, it is recommended that the final theory is discussed with the participants to check for agreement. This was not done due to inability to re-establish contact all the participants. An important limitation was the selection bias of interviewing patients at the hospital. Those who were at the hospital had the means to get there. For example, one patient had to rely on the entire family to save enough money to pay for transport. It is therefore very possible that some people with injuries are simply not able to go to a hospital. It is therefore imaginable that the participants interviewed

in this study had a comparatively high financial and social capital. Another limitation is the sampling of the participants, which was primarily based on patients’ willingness to participate in conversations about the subject. Importantly, all participants were from the orthopaedic ward with mostly long bone fractures and were thus lucid. Patients with other traumatic injuries or pathologies may frame quality substantially different as their conditions cause other limitations.

**Conclusion**

This study developed a theory of what high quality injury care is to patients on a Zambian orthopaedic ward. The four major components of this theory are: i) restoring the patient to normality, ii) establishing trust between patients and providers, iii) respecting the patient and allowing them to maintain autonomy, iv) finding ways for patients to enjoy their time in the hospital. For patients, the more these components are achieved, the higher the quality of injury care delivered. Our theory of high-quality injury care may help stakeholders understand some of the patient priorities on an orthopaedic ward in Zambia and raise awareness of what matters to patients. This could lead the way to providing high-quality injury care in this context. As presented here, our theory does not

include other important system-wide dimensions like efficiency or traditional measures such as surgical site infection rates. It should therefore be used as part of wider existing framework of a health system that provides high quality injury care and existing injury care quality measures. Future research may wish to uncover patient (and provider) ideas on quality in other medical specialities and geographic locations which could then be used to explore how perception and the meaning of quality differ between time and place. This may lead to a better understanding of what quality injury care means to patients across a larger system and ensures that health systems are robust, relevant, and effective for the local population.

### Declaration of Competing Interest

None.

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### Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:[10.1016/j.injury.2022.07.006](https://doi.org/10.1016/j.injury.2022.07.006).

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