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Understanding the problems affecting the functioning of the J.D. Allen operating theatre

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Understanding the Problems Affecting the Functioning of the J.D. Allen Operating Theatre

A research report submitted to the Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, in partial fulfilment of the requirements for the degree of Master of Medicine in the branch of Anaesthesiology

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Johannesburg

2016

DECLARATION

I, Kamal Gosai, declare that this research report is my own work. It is being submitted for the degree of Master of Medicine in the branch of Anaesthesiology in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination at this or any other University.

..... (Signature)

..... day of ....., 2016

ABSTRACT

Background: In recent years, waiting periods for surgery have increased dramatically. This may significantly impact patient outcomes from a variety of surgical conditions. Delayed surgical procedures are often a symptom of the dysfunction of one or more of the diverse elements which interact in the work of an operating theatre (OT). Attempts to address the problems have often been limited to addressing single issues in a manner suggestive of a Newtonian linear understanding of cause and effect. Historically, this view has led to short term interventions with limited if not adverse outcomes. There is limited understanding of the systems which are at work in the OT in which doctors, nurses and support staff interact.

Aim: The aim of this study was to take the first step towards understanding the nature of problems faced by various stakeholders who are directly involved with patients' and their transit through the J.D. Allen OT at Chris Hani Baragwanath Academic Hospital (CHBAH).

Methods: This study was conducted in the J.D. Allen OT at CHBAH, using a qualitative, contextual, exploratory, descriptive research design. Five focus group discussions were held with purposefully selected nurses, cleaners, porters, anaesthetists and surgeons. Data saturation was achieved and the data was analysed using thematic analysis, ensuring that trustworthiness was established.

Results: Three main themes have emerged reflecting:

- Broken relationships and not owning the workspace - participants highlighted poor communication and social interactions amongst different stakeholders which may result in a failure of teamwork towards the common goal of patient care. This was due to a lack of incentivisation and workplace morale.
- The battle to get work done - reflects the complex nature of problems experienced including staff and equipment shortages which hinders efficient patient flow. Fatigue and burnout amongst staff is prevalent. A lack of leadership and accountability by management was also highlighted.
- This exists within the context of the legacy of "Bara" - which highlights that the hospital has a history of being overburdened and is remarkably failing as it functions at the edge of chaos. Problems encountered by the OT team were thus complex in nature.

Conclusion: There are many diverse elements which interact with each other and the system in unpredictable ways. The J.D. Allen OT has the features of a complex adaptive system (CAS).

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CHAPTER 1: OVERVIEW OF THE STUDY

1.1 Introduction

The background, problem statement, aim, objective, research definitions and assumptions, demarcation of study field, research methodology, significance and outline of the study are presented in this chapter.

1.2 Background

The waiting period before an operation may cause patients significant levels of anxiety. (1). Efficient operating theatre (OT) utilisation may serve to decrease long waiting periods. It therefore seems logical to relate long waiting periods to poor OT utilisation. The situation however is more complex than this. Despite all the money and effort that have been put into making OTs run like “well-oiled” machines, many are still less effective than they should be (2, 3). This translates into poor quality healthcare.

A similar situation was encountered in the J.D. Allen OT at the Chris Hani Baragwanath Academic Hospital (CHBAH). The various members of the OT team faced a multitude of problems daily that never seemed to end. As a result of these problems, patients were often cancelled and their surgeries rescheduled. Waiting lists for surgery therefore grew longer. The OT team often shared ideas and perspectives on where they thought the problems lay, but everyone had a different answer. It was therefore necessary to understand how the interactions in the OT were causing problems.

It also seemed obvious that the J.D Allen OT could not simply copy another country or organisation’s working system as a solution. This follows an example given by Paina and Peters (4) of how the British National Health Service is a product of a specific socio-cultural and political heritage which therefore cannot be copied in another country that

does not have the appropriate political processes, structures and institutions in place to make it work. Instead one would have to dig deeper; whilst considering the history of the OT, to discover the roots of the problems, in order that one may be able to understand them, before one could solve them.

CHBAH is one of forty Gauteng provincial hospitals that is administrated by the Gauteng Department of Health. It was built during the Second World War after the Secretary of State in London asked the South African Government if it would provide healthcare facilities for Imperial troops of the Middle East Command. Field Marshall Smuts officially opened the hospital on 23 September 1942. After the war, the South African Government bought the hospital from the British Government and planned to use it for the black population of the Witwatersrand. Over the next 30 years, the hospital grew in size and status. The hospital provides for Soweto and is also a referral hospital for a large part of the country. CHBAH is a microcosm of what was happening in South Africa. It reflects the stresses of the broad socio-economic and political changes in South Africa. Just like the Phoenix on the CHBAH coat of arms, the hospital also rises out of its own ashes every time. (5)

Yet, despite the picture of survivorship painted above, the situation in the J.D Allen OT was far from ideal. Negative attention from the media has highlighted how waiting lists for surgery have spiraled unprecedentedly out of control, thereby emphasising the plight of the patients (6).

1.3 Problem Statement

There was a perception of inefficient utilisation of the J.D. Allen OT at CHBAH which was increasing the length of OT waiting lists. This might have impacted negatively on the level of care and thus quality of service delivered to patients in addition to being cost-ineffective.

The problems faced by the various stakeholders in the OT are multifactorial in nature. Time motion studies would assist in highlighting where the problems lie, but would fail to elucidate the root cause of these problems. Since the OT is such a dynamic and complex system within the hospital, it needs to be understood in a more holistic manner. Various stakeholders have different perspectives regarding the functioning of the OT; all of which contribute to a richer understanding of the functioning of the OT.

Information in this regard is lacking within the South African context, especially in the public sector and in J.D. Allen OT. In order to be able to identify possible areas for improvement, it is necessary to firstly describe and understand the various factors contributing to the perceived inefficient use of valuable and scarce OT resources.

1.4 Aim

The aim of this study was to take the first step towards understanding the nature of problems faced by various stakeholders who are directly involved with patients' and their transit through the J.D. Allen OT at CHBAH.

1.5 Objective

The objective of this study was to explore and describe the direct OT stakeholders' perceptions of problems influencing the functioning of the J.D. Allen OT.

1.6 Research definitions and assumptions

The following definitions and assumptions were used in this study.

Stakeholder: is "a person such as an employee, customer, or citizen who is involved with an organisation, society, etc. and therefore has responsibilities towards it and an interest in its success." (7) Stakeholders can either be direct or indirect.

Direct stakeholder: in this study included the J.D. Allen **OT team** that consisted of surgeons, anaesthetists, nurses, administrative clerks, porters and cleaners.

The surgeons were comprised of the head, consultants, registrars, medical officers, and interns. They practice across various surgical specialties which include: general and vascular surgery, orthopaedics, urology, neurology, maxillofacial, plastic and reconstructive, ear, nose and throat, and paediatric surgery.

The anaesthetists were comprised of the head, consultants, registrars, medical officers and interns.

The nursing personnel were comprised of the nursing manager, operational manager, professional nurses, staff nurses and auxiliary nurses. The nurses work across various operating rooms and in different areas within the OT, for e.g.: reception, stock room, theatre sterile services unit and the recovery room.

The clerks, cleaners and porters together constituted the theatre operators without any hierarchical rank amongst them. They fall under the leadership of the OT nursing manager and work across various operating rooms and in different areas within the OT, for e.g.: reception, stock room, theatre sterile services unit and the recovery room.

Although it was recognised that patients are direct stakeholders in the functioning of the OT, they were not for practical reasons included in this study. Firstly it is unethical to expect patients who are in their post-operative recovery period to attend a focus group discussion. Furthermore it would also have been unfair to expect patients to return to the hospital from home to attend a focus group discussion. Within the CHBAH context, it would have implied inconvenience and cost for patients to take time off work and travel to the hospital.

Indirect stakeholder: in this study refers to any other member of the healthcare system who is involved with the OT, e.g.: hospital managers, directors, financial officers, intensive

care unit and ward personnel, maintenance personnel, pharmaceutical and equipment suppliers, etc.

1.7 Demarcation of study field

This study was conducted in the J.D. Allen OT at CHBAH. This is a large, tertiary, academic hospital occupying 0.70 km² with 3 200 beds and approximately 6 760 staff members. It is affiliated with the University of the Witwatersrand and is located in Soweto, Johannesburg. (5) This complex consists of 25 OTs and approximately 65 000 surgeries are done per annum.

1.8 Research methodology

1.8.1 Research design

A qualitative, contextual, exploratory, descriptive research design was used in this study.

1.8.2. Study population

The study population of this study consisted of the J.D. Allen OT team of direct stakeholders.

1.8.3. Study sample

Purposive sampling was used to select the participants for the five focus group discussions. The group sizes varied from 4 to 10 participants.

1.8.4. Data collection, management and analysis

After the relevant approvals were obtained, data was collected by means of five focus group discussions in the library room at the Department of Anaesthesiology. I was the moderator of the focus group discussions and was guided by a focus group discussion guide that I formulated. The focus group discussions were audio recorded and I made field notes during and immediately after each focus group discussion. The audio

recordings were transcribed verbatim by a transcriber and I verified the transcripts. Data was analysed using the six steps of thematic data analysis as suggested by Braun and Clark (8). Trustworthiness was ensured using Lincoln and Guba's (9) model of trustworthiness.

1.9 Significance

Data regarding efficient functioning of OTs is lacking within the South African context of healthcare, especially in J.D Allen OT and the public sector. The results of this study will shed light into the multitude of factors and potential problems hindering the efficient transit of a patient through theatre. By identifying these factors, it paves the way for implementation of quality improvement programmes in order that we may be able to better serve patients, and deliver a higher quality of healthcare satisfying all stakeholders involved. Waiting lists may also be reduced.

1.10 Outline of research report

The following chapters will be presented in this research report.

- Chapter 1: Overview of the study
- Chapter 2: Literature review
- Chapter 3: Research methodology
- Chapter 4: Results and discussion
- Chapter 5: Summary, limitations, recommendations and conclusion.

1.11 Summary

An overview of the study is presented in this chapter. A literature review is presented in the next chapter.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

A review of the literature about OT efficiency, why it is economically important, the limitations of current OT efficiency research and how to understand OTs to improve quality of healthcare is presented in this chapter.

2.2 Operating theatres: an expensive resource

The OT is one of the most expensive units in the hospital (10). Its capacity limits the volume of surgical work that can be done. Despite this, an Audit Commission (2003) report on OTs, involving seventy National Health System (NHS)[1] Trusts[2] in the United Kingdom (UK), revealed that lengthy waiting lists resulted from an average utilisation of only 73% of planned sessional operating hours (11). As the cost of healthcare rises and demand increases, maintenance of standards requires more efficient use of already limited existing resources.

In the late 1980s, the National Audit Office (12) and the NHS Management Executive in England produced key reports on theatre utilisation (commonly known as the Bevan report) (13). They found that the actual utilisation of scheduled theatre operating time was only around 70%. The Bevan report recommended that "hospitals should aim to use 90% of planned theatre time. These findings highlight the potential for improvement in how theatres are utilised". (14)

Approximately seven million operations were performed in England and Wales from April 2005 to April 2006 (15). The OT accounted for 33% of the total peri-operative hospital

[1] *The National Health Service (NHS) is the shared name of three of the four publicly funded healthcare systems in the United Kingdom (UK), namely: NHS (England), NHS Scotland, NHS Wales. Only the English NHS is officially called the National Health Service*

[2] *A trust is a public sector corporation that provides health services on behalf of the English NHS and NHS Wales*

costs (10). In the 2010 to 2011 financial period, the average annual cost of running a single OT for 27 hours per week in Scottish NHS Trusts was £1.5 million (16). OTs are core business in healthcare. The intense clinical activity conducted by a large number of personnel using multiple types of resources and equipment generate high cost (17). It is thus economically desirable to optimise the utilisation of such an expensive resource.

2.3 The need for effective functioning OTs

In 2009, a modular improvement programme called The Productive Operating Theatre was created by the NHS Institute in the UK. It demonstrated that theatre efficiency is economically important and aimed to improve theatre efficiency, safety and patient care, saving £7 million for an average UK Trust that consisted of 16,5 theatres. (18)

Efficiency is an important issue for profitability in organisations that work for profit. In the same way, increased efficiency allows for more operations to be performed in non-profit healthcare organisations for the same unit cost. (17) The pressures of lengthy surgical waiting lists together with potential financial benefits therefore serve to amplify the importance of effecting efficient theatre usage. Yet, as the use of hospitals in Northern Europe for citizens awaiting operations highlighted, all was not well in the OTs. In fact, despite all of the money and effort that had been put into making them run like “well-oiled machines”, many OTs were still less effective than they should have been. (2, 3)

The length of time endured waiting by patients who are on waiting lists for treatment has been under the spotlight in recent times. When patients were asked what made them most anxious about having surgery, among one of the top concerns was the waiting period before their operation (1). It might seem obvious to relate poor theatre utilisation to long waiting times, but the situation is much more complex than this (14). This is because other issues such as the availability of staff, bed capacity, emergency workload and the organisation of outpatient clinics also influence waiting times (3). Improving throughput and efficiency in terms of how theatres are administrated and managed is however still an important factor in minimising waiting times.

2.4 The concept of OT efficiency

There is still no overall definition for the concept of theatre efficiency. However, standards have been derived from the Association of Anaesthetists of Great Britain and Ireland theatre efficiency guide (19) and the New South Wales Health Operating Theatre Management Project Report 2002 (20). Essential elements for the efficient use of OTs are appropriate facilities, equipment and operational layout, trained staff, effective management and good communication. A multitude of surrounding resources such as staffing levels, bed availability, theatre supplies and peri-operative planning and assessment also influence efficiency. (19, 20)

An improvement in efficiency can either be achieved by increasing the amount of work performed and/or reducing costs. Attention to issues such as equipment costs, salaries and staffing ratios may assist in reducing cost. When attempting to improve the amount of work performed, both utilisation and productivity need to be considered. Utilisation is a measure of the amount of clinical work done in a staffed operating theatre, while productivity is a measure of the quantity and quality of work performed within a block of allocated surgical time. (21)

Most operating theatres focus on maximising utilisation in an attempt to improve efficiency. Utilisation rates are dependent not only on quick turnovers, but also on appropriately booked schedules that have correctly estimated case durations and therefore start and finish on time. Key audits by the UK Audit Commission (2003) served to strengthen the concept of theatre utilisation as a key performance indicator (11).

England and Wales stopped collecting statistics on the number of cases performed within and outside of scheduled theatre sessions in the mid-1990s. The Department of Health and the Welsh Assembly Government now collect data from all hospitals on cancelled operations as well as the types and numbers of operations actually performed. However, this data still gives no information about a key resource in OTs: time. (11) A multitude of factors influence the utilisation of time in the OT.

2.5 How is OT efficiency achieved?

2.5.1. Limitations of current OT efficiency research

Various methods to evaluate and quantify theatre efficiency have been used. These include assessment of start-time delays and lists that run late as well as the proportion of available theatre time this is actually used for anaesthesia and surgery. The NSW Health Department (20), UK District Audit Commission (22) and NHS Modernisation Agency (23) have described various key theatre performance indicators such as patient flow and theatre time utilisation.

Theatre utilisation may serve as a performance indicator for theatre efficiency. However, studies on theatre performance have shown that the concept of theatre utilisation alone is a poor indicator of theatre efficiency. The heterogeneity between different hospitals and inconsistent methodologies used to calculate theatre utilisation within them, impede its meaningful use as a benchmarking tool for theatre performance. It is therefore prudent to maintain some scepticism concerning the validity of a "target" utilisation rate. (24, 25)

The retrospective nature of some studies relied upon post-surgery reconstruction and analysis of data. This was qualitatively informative, but only when complete accounts of delays and problems were thoroughly documented; which was not often the case. These studies also failed to provide exact times for each step of the patients' transit through theatre. Time data appeared to be rounded off leading to inaccuracies regarding actual delays. (24, 25)

In addition, data for many studies on delays in theatre was collected by either a single observer or observers from within a single discipline only. This posed the problem of collecting accurate and impartial data, because even though the problem of inter-observer variability was eliminated by having only one observer, it instead gave rise to bias in how the delays were identified and categorised; especially if the observers were self-reporting as was often the case. For example, if anaesthetists collected the data, they

identified and classified delays according to how it affected them, i.e.: from their perspective. This did not paint the full picture. It also then created conflict within the multi-disciplinary team. (26-30)

In addition, studies of theatre utilisation in which proformas or questionnaires were used to collect data were often confounded by what is commonly referred to as the Hawthorne effect (31).

Still, a common theme which emerged from the literature was the multi-factorial nature of peri-operative problems faced in and around the OT as well as the concept of and concern for improving quality of patient care. (32)

2.5.2. Understanding the OT to improve quality of healthcare

OT efficiency is a performance indicator for quality of healthcare. Defining quality of healthcare is difficult however. The Institute of Medicine 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” (33). The importance of multiple perspectives in determining quality of care is highlighted in this definition. Both the individuals and the populations receiving the healthcare offer valid perspectives of assessing quality. Also implied in this definition is the notion that quality also has multiple dimensions. The outcomes of care and the process of care are essential for understanding quality. Patients’ values and preferences also determine which health outcomes are “desired”.

The challenge for healthcare professionals seeking to improve quality of healthcare is multifactorial. Healthcare workers are trained to work harder, do their individual tasks well and call it quality. Change is therefore threatening and stressful and ideas for change are often met with resistance. More promising change ideas often come from examining the process of care “from the balcony”, allowing one to see where the interactions between tasks in the process offer opportunities to change the way the work occurs (34).

The peri-operative coordination and transition of patient care between different individuals, disciplines, departments, and institutions highlights the need to initiate improvements incorporating all stakeholders. Including representatives from all aspects of the OT team can help identify some of these interactions and avoid over-emphasis on isolated tasks within the process (35). A multi-disciplinary team approach is therefore essential for success in quality improvement.

Healthcare organisations (and their departments such as the OT) have traditionally been assumed to operate like machines in accordance with the Newtonian laws of cause and effect; thereby expecting linear relationships between actions and results. This classic reductionist perspective leads managers to focus on controlling the behaviour of workers in an attempt to fit the pieces together and get them to perform like cogs in machines, as well as trying to predicting the future outcomes of such actions. (36) However, researchers and administrators are increasingly becoming aware that healthcare organisations do not meet such mechanistic expectations; rather they are much more complex than this model suggests.

Healthcare takes place within complex systems. To improve the delivery of healthcare, one must begin firstly by identifying the various systems and understanding how they interact and work together (37). From this viewpoint, improving the delivery of care is not a matter of working harder but of working differently. Berwick (38) has dubbed this “the central law of improvement: every system is perfectly designed to achieve the results it achieves.” Improving results therefore often requires redesigning the system.

Nolan (39) defines a system as “a collection of interdependent elements that interact to achieve a common purpose”. Because of the numerous interactions and interdependencies within a system, the effect of a change within one part of the system can have unexpected “ripple-effects” in other parts of the system. Improvement efforts require knowledge of the system to identify and make changes that will truly be improvements. As Berwick (38) said: “Not all change is improvement, but all improvement is change”.

The OT is one of the most complex work environments in the healthcare system. Complexity is evident in the surgical procedures and patients, as well as the intense level of coordination and technology required to effectively manage dynamic and rapidly changing conditions. (40) For example, the outcomes of two patients coming for the same surgery may not be similar; especially when complications arise during one of their procedures. Outcomes are therefore unpredictable and non-linear. Furthermore, the OT and supporting structures outside of the OT consists of multiple "elements" such as stakeholders, patients, (Intensive Care Unit) ICU beds, resources and equipment that are all tightly intertwined via a network of interactions that connect them.

According to Augustinsson (41), one way to explain the phenomenon of complexity is "by reference to the possibility of applying a routine to carry out a particular task. The more a task is characterised by regularities the more we can think of applying routines." However, since everyday work is characterised by predictable and unpredictable scenarios as well as regularity and irregularity; therein lies the highest degree of complexity. This aptly describes the milieu within the OT.

Complexity science has long been used to explain and describe behaviour in natural and biological systems that is characterised by emergent properties and non-linear dynamics. This is based on diverse populations of individuals capable of undergoing spontaneous self-organisation and interacting with each other (36). Recent research in psychology, organisational management and behaviour indicates that human systems also behave in a complex fashion (42). Complexity science is now being used to advance our understanding of healthcare systems and organisations (43). Complex Adaptive Systems (CAS) theory provides a different way of thinking about healthcare organisations by promoting an understanding of the interacting elements within the system. This helps determine policy development for healthcare organisations as well as how they should be evaluated and managed. It also helps to foster the spread of innovation within them (44).

The term "complex" emphasises that the necessary ability to perform a task is not owned by any one part of the system, but rather emerges as a result of dynamic, non-linear and interactive co-operation between interdependent elements within the system.

"Adaptive" means that the system change eventually emerges through successive adaptations. (45)

Consequently, the work of the OT is determined by complex, adaptive, interdependent and "tightly coupled" organisational relationships between hospital departments. This is based upon the process of a timely exchange of resources, information and services required for the delivery of patient care. "Breakdowns" within inter-departmental relationships manifest as failures within these complex processes, which lead to situations of uncertainty, rapid change and constraint in the work of the OT. This causes a disruption of established routines and staff are then forced to work with increased emotional and time pressures. They then focus on working quickly instead of working safely. (46)

Tucker and Edmonson's (47) concept of first order problem-solving may be used to explain OT workers' behaviour. It explains how OT workers attend to problems with a "quick-fix" which supports short term productivity. However, because the underlying causes are not addressed, problems are continuously allowed to recirculate throughout the system.

A "systems approach" to the above problem is conceptualised as "root-cause analysis" which encourages service leaders to seek out the underlying problems preconditioned within their inter-personal and organisational environment, thereby enabling them to make wiser, more informed decisions regarding quality improvement. (48)

This is an unconventional approach to clinical research; however similar studies in other high-risk domains including aviation, industrial and public health sectors have led to major system redesigns and improvements in safety and performance. (40, 49-51)

The real world problems faced within the OT are complex and dynamic and are not confined to traditional boundaries. According to Jackson (52), "the systems concepts enshrine a commitment to "holism" - to looking at the world in terms of "wholes" that exhibit emergent properties, rather than believing, in a reductionist fashion, that insight

comes from breaking down wholes into their fundamental elements". This is critical if plans for improvement are to be realised.

Arora and Sevdalis (53) succinctly propose that "the systems approach may provide the understanding required to balance high stake decisions with the best interests of the patient, in a manner which allows each doctor to fulfil their duty of care - both as an individual practitioner and within a healthcare team".

One is reminded of the following quote: "Countless minor incidents - the kind you can never really foresee - combine to lower the general level of performance, so that one always falls short of the intended goal." – Claus von Clausewitz in *On War*, circa 1818

2.6 Summary

OTs are one of the most expensive units within the hospital. Efficient usage is therefore important in order to make it cost-effective and also to reduce length of waiting lists for surgery. Increasing utilisation and productivity within a set period of time may be a way to improve efficiency. However, a multitude of factors influence the utilisation of time in the OT. Therefore, simply analysing usage of time within the OT would merely highlight where problems lie, but would fail to elucidate the underlying causes of those problems. Decreasing waiting lists for surgery is economically desirable and would improve quality of healthcare from all perspectives. In order to be able to achieve this, healthcare organisations need to viewed, understood and managed as CASs. This is critical if plans for improvement are to be realised.

A literature review is presented in this chapter. The research methodology is presented in the next chapter.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The problem statement, aim, objective, ethical considerations, research methodology, trustworthiness and summary of the study are presented in this chapter.

3.2 Problem statement

There was a perception of inefficient utilisation of the J.D. Allen OT at CHBAH which was increasing the length of OT waiting lists. This might have impacted negatively on the level of service and quality of care delivered to patients, in addition to being cost-ineffective.

The problems faced by the various stakeholders in the OT are multifactorial in nature. Time motion studies would have assisted in highlighting where the problems lied, but would fail to elucidate the root cause of these problems. Since the OT is such a dynamic and complex system within the hospital, it needed to be understood in a more holistic manner. Various stakeholders have different perspectives regarding the functioning of the OT; all of which contribute to a richer understanding of the OT functioning.

Information in this regard is lacking within the South African context, especially in the public sector and in J.D. Allen OT. In order to be able to identify possible areas for improvement, it was necessary to firstly describe and understand the various factors contributing to the perceived inefficient use of valuable and scarce OT resources.

3.3 Aim

The aim of this study was to take the first step towards understanding the nature of problems faced by various stakeholders who were directly involved with patients' and their transit through the J.D. Allen OT at CHBAH.

3.4 Objective

The objective of this study was to explore and describe the direct OT stakeholders' perceptions of problems influencing the functioning of the J.D. Allen OT.

3.5 Ethical considerations

Verbal assent was obtained from the Heads of the Departments of Anaesthesiology and Surgery and the OT Nursing Manager at CHBAH prior to planning this study.

Approval to conduct this study was obtained from the Human Research Ethics Committee (Medical) (Appendix A), the Postgraduate Committee (Appendix B & C) of the University of the Witwatersrand and the CEO of CHBAH (Appendix D). The study was supported through an individual research grant obtained from the Faculty Research Committee of the University of the Witwatersrand (Appendix E).

Nominated participants were invited by providing them with an information letter (Appendix F). Informed consent was obtained at the commencement of each focus group discussion regarding participation (Appendix G) and for audio recording of the interview (Appendix H).

This study was conducted in accordance with the Declaration of Helsinki (54) and the South African Good Clinical Practice Guidelines (55).

The human rights of all participants to self-determination, privacy, fair treatment and protection from discomfort and harm was ensured in accordance with the guidelines above.

Anonymity was ensured by allocating each participant with a number representing their identity, thereby avoiding the recording of names in both the audio recording and field notes.

Confidentiality between participants within each focus group could not be guaranteed. However, at the beginning of each discussion, participants were encouraged to maintain confidentiality. The audio recording and transcripts were only accessible to me, my supervisors and the transcriber.

I will store the audio recordings in a locked and secure location for a minimum of two years after publication or six years in the absence of publication, after which I will destroy them. (56)

3.6 Research methodology

3.6.1. Research design

Qualitative research methods, also known as naturalistic inquiry (57), were developed within the human and social sciences, and refers to theories on human experience (phenomenology) and interpretation (hermeneutics). They include various strategies for the systematic collection, interpretation and organisation of textual material obtained through observation or while talking with people. The aim of such research is to investigate and understand the meaning of social phenomena by exploring and describing the behaviour, perspectives and experiences of people in their natural environment. (58) In this study, the aim was to understand the functioning of the J.D. Allen OT.

This study was therefore conducted using a qualitative, contextual, exploratory, descriptive research design.

De Vos (59) describes context as a “small-scale world” of, amongst others, clinics, hospital wards or OTs. Context thus refers to a specific location within a system. This study was conducted contextually within the J.D. Allen OT at CHBAH.

The J.D. Allen OT is a large complex consisting of sixteen theatres designated for all surgical disciplines except cardiothoracic surgery. There were an average of one hundred

and eighty nurses with five clerks, thirty two theatre operators, twenty one porters, forty anaesthesiologists, and a varying number of surgeons depending on which surgical disciplines were operating on any given day.

Exploratory studies are designed to increase the knowledge of the field of study (60). This study was exploratory in nature since it aimed to explore, describe and understand the working conditions and problems experienced by direct stakeholders involved in the J.D. Allen OT.

Descriptive research provides a portrayal or account of the characteristics of a particular group, event or individual in real-life situations in order to describe what exists, determine the frequency with which something occurs, discover new meaning and categorise information. (60) A descriptive study aims to describe phenomena or examine the relationship between variables. There is no intention to predict or determine cause-effect relationships and thus no treatment or intervention is tested. (31) This study was descriptive in nature as it aimed to describe situations and problems experienced by the direct stakeholders of the J.D. Allen OT as they naturally occurred.

3.6.2. Study population

The study population of this study consisted of the J.D. Allen OT team.

3.6.3. Study sample

Sample size

The sample size required by this type of study was determined by the scope, depth, and nature of information that was required to gain insight into the experiences of the participants (60). The focus was thus on quality and not quantity (61).

The different categories of the OT team were divided into five groups. One discussion with each of these groups was conducted:

Group 1: nurses and clerks (these personnel work in close conjunction with each other and therefore constituted this group) (10 participants)

Group 2: cleaners (4 participants)

Group 3: porters (5 participants)

Group 4: anaesthetists (8 participants)

Group 5: surgeons (7 participants).

Recommendations on the ideal size of a focus group discussion vary. Stewart and Shamdasani (62) suggest that group sizes should be in a range of 4 to 12 members. If the group is too small, the discussion may be relatively unproductive and it may be difficult to obtain multi-perspective, diverse information (63). Groups larger than 10 members may be difficult to control and may stifle each person's opportunity to contribute to the discussion (64).

Participants from various levels of rank and hierarchy within each discipline were included. Further due to the depth and scope of information required in this study, group sizes of 4 to 10 participants were used.

Sampling method

A purposive sampling method (sometimes called judgemental or selective sampling) was used. Purposive sampling is a non-probability sampling method in which participants are consciously selected based on personal judgement about which ones will be most informative (65).

The Heads of the Departments of Surgery, Anaesthesiology and the OT Nursing Manager were consulted for assistance in deciding who best to sample from within their respective disciplines. This was done on the basis that they have insight regarding their personnel and were thus in a better position to help identify potential participants who were would be more articulate, experienced, communicative and thus informative. They were eager to help as they believed the study was important in providing information regarding the problems in the J.D. Allen OT. They therefore went out of their way to nominate potential

participants who they believed would contribute meaningfully to the study. They gave me a list of potential participants who I then invited.

Notwithstanding this, I ensured that the focus groups consisted of at least one representative member from every level of hierarchy or rank within each discipline. This was done to obtain diversity in participants in order to gain a variety of perspectives about problems in theatre.

3.6.4. Data collection

Focus group discussions

A focus group discussion is a method of data collection in which a discussion, under the guidance of a moderator, is held with an appropriately representative number of participants who are believed to be of informative value regarding the subject under investigation. The discussion should be held in a private, permissive, non-evaluative, and non-threatening environment and facilitate group interaction. This method of data collection is used to gain insight into the dynamic relationships, concerns, problems, opinions, attitudes and motivations related to current and projected human activity, and thus has the potential to elucidate multiple dimensions of complicated phenomenon. (60, 65, 66) It was thus deemed appropriate to gather data regarding the functioning of the J.D. Allen OT in this way.

It was anticipated that each discussion would last at least one hour, but they lasted longer due to the emergent nature of this study and the high levels of engagement and ownership of the discussion. According to Polit and Beck (65), “data saturation refers to the collection of qualitative data to the point where a sense of closure is attained because new data yields redundant information”. Once this point is reached, the sample is considered adequate and the data are “rich and thick” (31). The participants and I reached a consensus regarding data saturation at the end of each discussion before it was terminated.

Timing of interviews

Potential participants were invited in person to take part in the focus group discussion on Wednesday afternoons in the library room within the OT at the Department of Anaesthesiology. This was a convenient, easily accessible and private location. Academic meetings are held every Wednesday afternoon at CHBAH. Half-day elective surgical lists are thus conducted on those days and typically end at midday. The remainder of the afternoon thereafter is thus conveniently suited to conducting focus group discussions without hindering service delivery to patients. Personnel from each group were also more likely to be available during that time.

The focus group discussion guide

An interview guide is not a formal questionnaire; it serves only as a summary of the issues and objectives to be covered in the focus group. It also serves as a topic guide and memory aid for the moderator conducting the group discussion. The moderator is free to ask questions, probe and explore within those topics under investigation in order to elucidate and illuminate that particular subject. Thus the moderator is free to establish a conversational style by wording questions spontaneously in order to build a conversation within a particular subject area, but with the focus on the predetermined subject. Great flexibility is however ensured in that participants may raise issues not in the guide, which would be pursued accordingly, since it may represent unexpected findings and contribute to the value of the discussion. (61, 67)

Based on the aim of this study, a focus group discussion guide was formulated. This consisted of a summary of the problem statement, as well as the aim and objective of this study. Key questions to initiate the topic and stimulate discussion were also included (Appendix I). These were:

- What are the problems which you experience while working in the OT?
- How does it make you feel?
- What do you think is the cause?
- How do you think it affects everyone, including patients?
- How should your problems be solved?
- How can our quality of work be improved?

Moderator

It was decided with the supervisors that I would moderate, facilitate and conduct the focus group discussions. The moderator introduces and directs the discussion and encourages participation in an unbiased manner. An informal, naturalistic, conversational style was used. I ensured that the groups understood that I was there to gain insight regarding the study topic, despite having knowledge on the topic myself. Participants were encouraged to interact with each other and formulate ideas in an attempt to draw out cognitive structures not previously articulated. I attempted to remain neutral and non-judgemental and ensured that my body language and facial expressions reflected interest and objectivity. (60, 63, 65, 67)

Conducting of the focus group discussion

I greeted and welcomed the participants upon their arrival at the library room and began to develop a friendly, communicative rapport with them. Participants were all familiar with me and with each other. This facilitated transparency and created a feeling of warmth and recognition. In an attempt to maintain anonymity within the data recording, but still ensure an audit trail, participants were allocated a number which represented their identity during the discussion. Names were thus neither recorded in the field notes, nor the audio recordings and transcripts. Refreshments were made available to facilitate comfort of the participants. Once all participants had been introduced, and seated in a casual, informal, non-confrontational and comfortable manner, the actual work of the interview began.

At the beginning of the interview, I explained the general purpose of the group and provided a brief introduction of the topic to be discussed. Group rules were established. I also explained that the participants had all been invited because their input was important and that they were not being evaluated or judged in any way. Participants were also encouraged to express their opinions, experiences and feelings freely and spontaneously. They were then all asked to sign an informed consent form documenting confidentiality and the need for audio recording (Appendix G).

Field notes

Field notes are both descriptive and reflective. (65, 68): I recorded the following field notes:

- **Observational notes:** these were descriptions of events experienced through listening to the participants whilst observing their body language and behaviour. They contained the who, what, where and how of the situation and had as little interpretation as possible. According to Sim (69), this therefore included what participants said, how they interacted with one another and accurate attribution of quotations to individual group members.
- **Methodological notes:** As Wilson (68) explains, were instructions to myself, critiquing my tactics and personal reminders about approaches that may be fruitful in subsequent discussions.
- **Personal notes:** As Wilson (68) explains, were notes about my own reactions, reflections and experiences.

In addition to the field notes, all group discussions were audio recorded in order to increase the accuracy of data collection.

Audio recording

Prior to the conduct of each focus group discussion, I tested the volume and quality of audio recording in the library room using two strategically placed audio recorders. These devices were placed on a clean, stable surface in full view of all the participants. Backup battery chargers were available. (61)

3.6.5. Data management

Field notes were typed, paginated, labelled and filed to become the basis of analytic memos. Audio recordings were transcribed verbatim by a transcriber. I then listened to each audio recording whilst simultaneously reading through the transcript in order to ensure accuracy of transcription. Corrections were made and a final typed copy was produced. (65)

3.6.6. Data analysis

Data was coded using MAXQDA© version 11.1.0 which is a qualitative data analysis software. Braun and Clarke's (8) six-phase method for thematic data analysis was followed. These phases entailed:

- Phase 1: In order to familiarise myself with the data, I read over all the transcripts and field notes a few times.
- Phase 2: This enabled me to identify commonly repeated ideas and opinions amongst participants across each focus group. These words reflecting common thoughts and perceptions amongst the participants were then grouped into codes using the entire data set. For example - whenever any participant mentioned issues relating to equipment and how it impacted on their work, this was coded under the main heading of equipment with subcodes being issues with supply, maintenance, failure and shortage. The researcher's supervisor followed the same coding process simultaneously and the resultant codes were then compared between researcher and supervisor to ensure confirmability.
- Phase 3: Relevant and related codes were then grouped into potential themes which emerged from what participants said; for example - participants explained how a shortage of equipment prevented them from doing their work properly. The equipment code was therefore grouped into the theme of the battle to get work done.
- Phase 4: The themes that emerged were then compared in relation to the coded extracts which constituted each theme in order to ensure congruence.
- Phase 5: I then generated names and definitions for each theme using emergent key words from what participants had said; for example – participants spoke of poor relationships amongst each other and mentioned how they felt ownership of their workplace was important. They also described how it was a constant battle to get work done. Participants felt that nothing ever changes and that the hospital is and was always the same, thereby alluding to the legacy of Baragwanath.
- Phase 6: Finally, a scholarly analysis in the form of this research report was produced.

3.7 Trustworthiness

Lincoln (57) defines trustworthiness as “the degree of confidence qualitative researchers have in their data”.

Lincoln and Guba’s (9) five criteria for trustworthiness of a qualitative inquiry, namely: credibility, transferability, dependability, confirmability, and authenticity were used to ensure trustworthiness in this study.

Credibility strategies

Credibility alludes to confidence in the truth of the data and the interpretation thereof and is analogous to internal validity in quantitative research (31, 60, 65). Confidence in the truth was established through the following techniques:

- **Prolonged engagement:** I established rapport with the participants at the beginning of each interview. This enabled me to maintain prolonged engagement with them until data saturation occurred.
- **Reflexivity:** I used reflective field notes and bracketing In order to ensure reflexivity.
- **Triangulation:** Data triangulation was achieved by using person triangulation in that different categories and ranks of participants were sampled for the focus group with the aim of validating data through their multiple perspectives on the phenomenon.
- **Comprehensive and vivid recording of the information:** Comprehensive recording of data was done through field notes and audio recordings and also an audit trail. An audit trail is the systematic documentation of material that allows an independent auditor to draw their own conclusions regarding trustworthiness (65).
- **Member checking:** Member checking was continuously performed during the discussions. The content of the data analysis was also verified with higher ranking participants from each group.

- **Peer review and debriefing:** The proposal of this study was reviewed by the postgraduate committee of the University of the Witwatersrand. One of the supervisors also co-coded the data using MAXQDA©. Their codes were then compared against mine and congruence was demonstrated across the entire data set.

Transferability

Strategies in this study aimed at enhancing transferability were the use of purposive sampling, data saturation, comprehensive and vivid recording of the information, thick descriptions and the maintenance of an audit trail. The thick descriptions included were: demarcation of the study field, details about the stakeholders and verbatim quotes in the results.

Dependability

Dependability refers to the stability of data over time and conditions, wherein if the study were to be repeated with the same or similar participants in the same or similar context, the findings would be similar. Due to the scope of this study, dependability could not be ensured over time. However dependability was ensured through the credibility strategies of triangulation, dense descriptions and an audit trail.

Confirmability

Reflexivity, triangulation, member checking, peer review, debriefing and co-coding were used to ensure confirmability.

Authenticity

Authenticity was achieved by the conveyance of the experiences, perceptions and feelings of the participants through the use of thick descriptions in the presentation of the results.

3.8 My personal reflections

I am an anaesthetist immersed within the study context and I was familiar with the participant stakeholders. It was a struggle to separate my voice from theirs completely because I felt that if I were one of the participants, I would have voiced the same experiences as they did. It was a mentally taxing process that required constant personal checking before, during and after each discussion. In order to assist me with this bracketing process, a literature review was done before the study was conducted as well as immediately after all the data was collected.

It took a tremendous amount of footwork to be able to find and personally invite the purposely selected participants to attend the discussion. I received mixed reactions from them from the outset, ranging from fear of punitive action to concerns regarding what had changed or happened and why they were being suddenly approached and asked to participate.

Participants were all invited in a timeous manner, which gave them enough time to think and reflect carefully about the topic in question. I noticed an air of excitement across all groups as they entered the library room. I sensed a feeling of purpose, strength, resolve; a feeling that they had all come with an agenda. This was proven by the fact that some participants had attended with hand-written notes in their hand, ready for the discussion, for fear that they might forget to mention something of importance to them. This particularly applied to the nurses and theatre operators. One of the surgeons also had hand-written notes in order that she could be efficient with voicing her experiences, in a desperate attempt to save a few minutes of valuable time, which she could then dedicate towards her work in the theatre. She opened by explaining this to the group and apologising for this fact. She claimed that they were severely short-staffed and thus overworked and extremely busy. I understood and empathised because I work within the study context and also because every group spoke about the same issue of being short-staffed. The fact that these participants did this and explained their reasoning in this way served to aptly illustrate their point about being short-staffed in practical and real terms.

I opened each interview with a careful balance of being casually non-threatening to being formal enough whilst explicitly explaining to participants that even though they knew who I was, and that I was therefore in all likelihood going to be somewhat familiar with what they had to say, they needed to try to treat me as if I knew nothing. I explained that I was not allowed to make suggestions or hints and that I expected them to be open and honest. This was done in order to prevent their familiarity with me within the study context from encumbering their opinions. I felt that this enabled participants to be explicit and diverse. In addition I was afraid that my efforts in attempting to explore the problems at J.D. Allen OT, would be thwarted by each focus group simply coming forward and complaining about one another. My fears were instantly allayed by the first group comprised of nurses and clerks, who surprised me with the diverse selection of experiences and perspectives they chose to discuss. This trend was continued by all the subsequent groups. My spirit was thus uplifted with each discussion as I felt that I was gaining valuable insight.

I was humbled and touched by many of the problems and challenges experienced by participants. The degree to which participants; who are colleagues of mine from all walks of life, could come together to discuss the same things for once; patient care, was a humbling and touching experience for me. This is because I have been at CHBAH for six years now, and I do maintain a personal feeling of ownership and nostalgia; in many respects it's a second home for me.

I will now describe my experience of each discussion separately.

The group of nurses were especially keen once they understood the purpose of the discussion. They were the biggest group in terms of number of participants and I felt a real sense of sincerity from them when they described their various experiences. They triggered "goose-bumps" on my skin on several occasions when they discussed issues related to dissatisfaction about workload and compensatory remuneration and about the inequality of our employment system. They also saddened me the most when they expressed how disheartened they were with all the problems they were experiencing.

Whilst interviewing the porters, I was very aware of a feeling of division between us; and from that point of view, I had deliberately tackled the discussion in an additionally cautious and respectful manner and tone. I emphasised early on that I recognised them as an essential part of the healthcare team. I sensed some tension would arise due to the way that I know how porters are judged and treated by doctors and allied staff in general. This was a challenging interview as I constantly found myself revalidating their value and worth; this in an attempt not to thwart my aim of gaining insight into their perspectives.

I was surprised by the cleaners when they discussed issues unrelated to their actual duties, roles and challenges within theatre. I did not expect that they would have many other duties and challenges besides just cleaning theatre. Furthermore, I did not expect them to say much about quality of patient care, yet they shed some very interesting perspectives regarding quality of patient care in theatre and their disapproval of how things are currently being done, especially regarding how patients who have been starved watch staff eat in the corridors. They humbled me once again as I felt that it was a learning process for me.

I experienced a feeling towards the end the first three discussions, that there was an expectation that I would bring about positive change and improvement after my study; almost like a saviour or up-and-coming hero. I felt a certain level of accountability towards them. I felt that they wished that I could do something powerful with my research so that they would be uplifted from their disheartened and demoralised states of being in their hopelessly stagnant and challenging environment. This has been challenging for me to deal with. I feel it is an overwhelmingly huge burden which is somewhat impossible to achieve given the nature of the complexity of all the problems within this system, and the fact that I am simply one person alone within the study context. My sincere hope however is that participants' voices may be heard through this report and that it may serve as a stimulus for positive change and improvement.

I was intimidated by my fellow anaesthetists because for the first time since I had been conducting the discussions, I as the researcher felt as if I was being judged by my peers and seniors regarding the nature of my inquiry and what I was seeking to gain. I felt that

they judged me by assuming that I already knew what they were going to say, and so the discussion would probably be a waste of time. I overcame this by making it clear at the beginning of the discussion that I was the researcher and was not going to contribute to the discussion. There were moments when they gave me the impression that they were waiting for me to make a suggestion about a new issue to discuss. I listened and responded reflectively to what they had said, thereby emphasising my role as the researcher. This resulted in them stimulating further discussion. I gained valuable insight regarding the higher working processes involved in running theatre with regards to the theatre committee meetings and existence thereof.

The surgeons were interviewed last as they were the most difficult group to rally together given their pressurised and dynamic work schedules. I empathised with this fact and appreciated their attendance greatly. Every second during this discussion was precious for they were all required to avail themselves should any urgent need arise. They made this clear from the beginning when some of them apologised for the fact that they needed to keep their cellphones on in order to attend to calls and that may have to leave at short notice. I felt that the interview was thus very formal, but efficient because my opinion of surgeons is that they are problem and solution orientated, and so the fact that they saw the discussion as a task to complete during their tight schedules, was by no means restrictive; in fact it was rather productive and efficient. Interestingly despite having gained valuable experience as a facilitator of focus groups during the first four discussions, I had to break my barrier of bracketing during this interview. They managed to get under my skin and target the one issue that I had anticipated was inevitably going to surface - the contentious confrontational relationship between surgeons and anaesthetists. There were three moments where I had to step out of my role as the researcher to be able to defend anaesthetists. This was when a surgeon discussed the fact that we tended to enforce the “16:00 is end-of-workday” rule which meant that anaesthetists often tended to postpone patients by not starting a new case after 15:00. He failed to see the wider repercussions of this; despite his colleagues having discussed them earlier on, when they explained how when anaesthetists finished late in theatre, it resulted in them seeing patients (who were scheduled for the next day) much later in the afternoon, by which time the surgeons would already have left the hospital. Thus if any

patient required further pre-operative preparation, this would not be done, which would result in patients being cancelled. I did however manage to maintain my composure and illustrate or highlight to them how the issues were all inter-related and compounded by each other. I wondered afterwards how they perceived me. Did they then start seeing my research as highly tainted and biased? Did they still believe that I managed to remain objective enough to elucidate the true meaning of the issues being discussed? My fears were allayed when the same surgeon tried twice later to make the same point, thus proving that my defence did not affect his determination to explain his experiences. The other surgeons did not feel as strongly about this issue and the discussion thus continued productively.

In closing, I strongly felt that participants spoke with much integrity and sincerity during all of the focus group discussions. What came across loudly was how participants all wanted and needed their voices to be heard, they all sang the same song regarding the problems, but with different perspectives.

3.9 Summary

The research methodology is discussed in this chapter. The results and the discussion thereof are presented in the next chapter.

CHAPTER 4: RESULTS AND DISCUSSION

4.1 Introduction

The results of the study are presented and discussed in this chapter. The objective of this study was to explore and describe the direct OT stakeholders' perceptions of problems influencing the functioning of the J.D. Allen OT at CHBAH.

Participants highlighted poor communication and social interactions between different stakeholders. This was seen to be due to a lack of incentivisation and workplace morale. A lack of leadership and accountability by management was also highlighted. They also felt that frequent staff and equipment shortages hindered efficient patient flow. Their constant struggle to get work done resulted in them feeling fatigued and burnt out. Participants highlighted that the hospital has a history of being overburdened and was remarkably failing as it functions at the edge of chaos. Problems encountered by the OT team were thus complex in nature.

Direct extracts from the transcripts have been italicised and referenced using the following schema, for example: (N:1), where the letter "N" denotes the representative focus group transcript according to the following: nurses (N), cleaners (C), porters (P), anaesthetists (A) and surgeons (S). The number after the letter represents the participant who spoke those words within that group.

4.2 Demographics

The constitution of each focus group as well as the duration of each discussion is shown in Table 4.1.

Table 4.1: The constitution of the focus groups and the duration of each discussion

Focus Group	Number	Duration of discussion (minutes)
Nurses	**10**	**117**
• Assistant nursing manager	1	
• Registered nurses	4	
• Staff nurses	3	
• Enrolled nurse	1	
• Senior ward clerk	1	
Cleaners	**4**	**60**
• Senior	1	
• Junior	3	
Porters	**5**	**78**
• Senior	1	
• Mid-level	3	
• Junior	1	
Anaesthetists	**8**	**70**
• Consultant	4	
• Senior registrar	2	
• Junior registrar	2	
Surgeons	**7**	**67**
• Consultant	2	
• Senior registrar	3	
• Junior registrar	3	

4.3 Emergent themes

Participants brought forth and discussed a wide variety of topics from which three main themes emerged, namely:

- Broken relationships and not owning the workspace
- The battle to get work done
- The legacy of "Bara[3]".

Broken relationships and not owning the workspace

This theme emerged from what participants said about the *"ambience of our working space" (A:1).* Poor social relationships as well as a lack of respect amongst the various stakeholders within the OT team hindered teamwork towards the common goal of quality patient care. Participants felt that their work was not financially rewarding enough to motivate them to take initiative by working harder and more efficiently when the need arose. This manifested as a lack of ownership and accountability of problems as well as a lack of responsibility towards patients; and as such, they were not owning their workspace. This was compounded by neglect and a lack of support from management.

The surgeons and anaesthetists strongly felt that there was no motivation for nurses to work harder in view of the constant burden of patients; and that workplace morale was low which contributed to the fact that the nurses were not motivated to work more efficiently. This was spoken with much disdain during the discussions.

> *"…there is no pressure for them, there is no motivation for them to do 20 cases where they can do five and go home…" (A:1)*

The nurses further highlighted the fact that the healthcare team was comprised of people from different professions and who as such, seemed to have differing motivations and work ethics.

[3] "Bara" is the colloquial term that the greater population and the people of Soweto refer to CHBAH as.

Closely linked to this was the issue of financial dissatisfaction within the healthcare sector. The nurses in particular explained how they felt that salaries are not tiered appropriately for the different levels of healthcare, which consequently deal with different amounts of work. They felt this to be highly unfair and it angered them.

> *"…what you find here is that we are all put on the same scale; if not lesser, than level 1 and level 2 hospitals.[4] Level 1 and 2 hospitals' workload is nothing compared to level 3, Baragwanath especially; now if the authorities could please look at this issue, how dare you give somebody who has got 5 cases per day more salary than somebody that has got 55!?..." (N:3)*

A corollary of this was the lack of an incentivisation and appraisal system, which was repeatedly mentioned by the participants as well.

> *"…there is no appraisal and it doesn't seem like there is any structure related to productivity…" (A:6)*

An emergent dimension was that the surgeons and anaesthetists felt that nurses needed to foster a culture of ownership and responsibility with regards to problems that arose and the general work process.

> *"…what is it that we are not doing that would make your working environment better so that we can be more productive, so that we can actually lead the team…I don't think they own the process of what's happening in theatre, I just think they are part of the conveyor belt to do what needs to be done." (A:1)*

Relationships between the various stakeholders were another concept which emerged within this theme, and was strongly felt by all the groups. This was closely related to individual emotions and attitudes, as well as communication between the various members of the healthcare team. Participants explained how the teamwork that is so critical to their line of work, occasionally fell apart due to personal *"vendettas" (S:4)*, at an expense to patient care.

[4] Level 1: district hospital with limited specialist services,
Level 2: regional hospital with at least two specialist services,
Level 3: academic and private hospitals with most specialist services.

"…it points to the adversarial relationship that the surgeons and anaesthetists have in this hospital,…it affects patient care, when the surgeons and the anaesthetists are at each other's throats the whole day…it's unacceptable. We need to develop more professional relationships between anaesthetics and surgeons…" (S:4)

Participants also admitted how certain basic values such as respect amongst the various stakeholders within the OT team were not always professionally maintained as would be expected, and also that their attitudes were *"terrible". (N: 5)*

"We are nurses and they are doctors and we have to respect each other from all angles across professions. Our attitudes are really terrible." (N:5)

"Another thing that hurts me, they said we are cleaners, when they call us, they call us cleaners, they don't consider us as theatre operators." (C:4)

"…when I come back to the theatre, they say 'Bloody porters' there was one doctor who said 'bloody porters', 'useless porters',…he's from ward 4, how long has he been gone." (P:2)

Breakdowns in communication had almost led to grave errors and potentially disastrous patient complications. It also led to staff unknowingly and unnecessarily being exposed to communicable diseases from patients. Participants cited increased work pressure as the reason for failure of vital information being passed on between the various stakeholders.

"…there is miscommunication and sometimes no communication between the anaesthetists, scrub sisters and the surgeon, and sometimes we ask for patients and the patient comes but the surgeon is not ready for them, the scrub sister has never been told about the patient and this kind of a problem can delay and it can waste time…" (A:4)

"…brought to theatre and only on the table to realise that it was the wrong patient, so that highlights the issue of communication…" (S:1)

The cleaners felt that they were not allowed to say anything to the doctors regarding their feelings and perspectives about patient care. It speaks to how they were not allowed to own their workspace either as a result of broken relationships between them, the surgeons and the anaesthetists. They mentioned how they:

> *"don't feel happy to be cleaning a theatre or maybe a corridor whilst the patient is here already, It does not give happiness to the patient…while you are still cleaning, you open the theatre door…And the patients when they see blood they start shivering…And once the patient is panicking, you know the BP goes up…And then you cancel the patient." (C:1)*

The also described how they observed doctors sipping on beverages in the corridors just outside theatre, whilst between surgeries, where the next starved and hungry patient would be waiting to go in. This was deemed to be extremely inconsiderate and unprofessional.

> *"We don't want the patient especially children to see somebody busy eating. It is not fair for children to be seeing someone sipping on tea yet they have been starved since last night, perhaps adult patients might understand. You're taking your cold drink to comfort a crying baby, don't you think that she is crying for that cold drink?" (C:3)*

The battle to get work done

The words "battle" (A:6) and "fight" (A:6) were used by the anaesthetists when they described what it felt like to work in the emergency and elective theatres daily. What was supposed to be an ordinary and almost automatic process, sounded like it was a constant and daily struggle. The seemingly simple process of bringing patients to theatre and having their operations performed in a smooth and timely manner should not be a constant uphill battle. Participants sounded worn-out, tired and frustrated. A slow start to the day was established to be the norm.

> *"…the battle to actually get a patient in theatre uhmm specifically first thing in the morning there is a significant delay there. So while the theatre has to be cleaned*

after a 24 hour period, this is protracted and to try and get staff, whether it would be the cleaning staff, the scrub team... I just don't find that there is an active participation from everyone to get things going…" (A:6)

"…if you would look at the operational flow, from getting a patient from the ward right until the end, the patient leaving the theatre, I think there are problems all along so there are often delays…" (A:6)

Participants further explained how they knew that the reasons for the delays were multifactorial in nature and how due to the large size and capacity of the hospital, that was naturally expected. Nevertheless, they sounded fed-up and frustrated.

"…I think it's just that there are so many factors because I mean it is such a big hospital, and just one factor goes wrong and there is a delay and everyday it is usually a different factor. And I don't know how you fix that, I don't know how you fix all the factors…" (A:7)

Linked to this was the challenge experienced with regard to sending for patients, who either then cannot be found, or for various reasons were not ready to be brought to theatre. Reasons ranged from lack of adequate documentation or consent, to patients still being sent for pre-operative investigations. The porters were angry and frustrated at how this affected their work in that they either then returned late to theatre; or worse, returned without the patient they were initially sent for. They would then bear the brunt of angry doctors who had been waiting for those patients.

"The delaying of patients from the ward to the theatre… uhmm the sisters give us the slip, they don't phone the ward, they just give us the slip and we will go to the ward, where you find the patient is totally not ready; no consent form, and I can't take a patient from the ward without a consent form." (P:1)

"Yes and when you're in the ward there, if they tell you that the patient is not ready, what are you gonna do? I am going to sit down and wait for the patient to get ready. When I am coming back there is gonna be a question on why I took so long, and I am the one who is supposed to explain that and that is wrong." (P:1)

"…you are so enthusiastic to start your work and there is no patient there, the first one is not in the ward and the second one is not ready…" (N:7)

"…the preparation of patients is not optimal and that results in the cancellation of cases…" (A:5)

Another problem highlighted was the serious shortage of ICU and High Care (HC) beds. Nurses explained how patients ended up waiting longer than necessary in recovery, whilst awaiting an ICU or HC bed. Porters explained how they saw parents of children who were awaiting surgery become angry and frustrated, after their childrens' operations were postponed daily due to the shortage of post-operative ICU and HC beds. They further went on to describe how they are unwittingly left with the unofficial responsibility of attempting to counsel patients in light of their situations, following which they try to calm them down. Surgeons explained how the availability of those beds for post-operative care determined how they scheduled their patients for theatre.

"…it is something that is happening very often they are full; the wards are full…" (N:4)

The cleaners highlighted with great dismay how, due to the severe shortage of cleaning equipment, they were forced to clean different areas, such as the kitchen and other non-septic" theatres using the same dirty cleaning instruments which were used to clean a septic theatre before that. They were also told by their supervisors to literally "beg, borrow and steal" mops and other cleaning equipment which they required from other areas of the hospital like casualty.

"There is a kitchen in the emergency, there is no mop for the kitchen, so you clean the blood in the theatre and then you take that mop with the blood and clean the kitchen with it. Even septic theatre." (C:4)

The surgeons further emphasised the detrimental effects of such unhygienic practices.

"…it's an enemy on our theatre, and this is the unabated presence of flies and mosquitoes in theatre, you know it defies the last 150 years of development in

medicine and it shows how collectively stupid we can behave because it was and it is over and over being mentioned and addressed but we can't control it." (S:3)

Another important concern highlighted by nurses and porters alike was the issue of safety within the J.D. Allen Theatre Complex and the lack of hospital security staff at the various entrances. This was compared and contrasted to the private healthcare sector where they were of the opinion that one would find security controlling access at the various entrances.

"…you feel that you are not safe because they can come in and do whatever, I mean you have got an entrance, the glass door, reception and the emergency; there are just too many entrances that are not attended. Especially at night where you are all by yourself; they can do whatever you know…" (N:1)

"…then the husband came with friends and they were wearing the EFF attire and so we told them ok guys you cannot jump that red line, stand outside... he wanted to fight physically…" (P:2)

Participants across all the focus groups spoke at length about the countless issues regarding fixed equipment and consumable supplies. Problems regarding equipment ranged from serious challenges faced during the procurement process, to dire shortage, to lack of maintenance, and eventually to complete breakdown and failure of equipment. Nurses mentioned how the pharmacy is often out of stock of medication; porters complained about broken stretchers, broken lifts and potholes in the corridors as well as leaks in the roof; theatre operators were dismayed at the sheer lack of cleaning material and equipment, including mill-tanks and mops. They also complained about the shortage of sharps-containers that are supposed to be used for disposing of hazardously sharp medical waste material. They also stated how specialised cleaning and sterilising machines that were supposed to be available In the Theatre Sterilising Services Unit, have been broken for more than five years now; without being repaired; and that they were forced to manually hand-wash reusable surgical instruments and equipment. They explained how they sometimes found exposed needles and sharp surgical blades within

the equipment and how due to fear of injury, they donned 2 to 3 pairs of gloves when washing the instruments. Surgeons complained about the shortage of linen, broken diagnostic and therapeutic scopes, neurosurgical and maxillofacial drills, orthopaedic sets and hardware, and the anaesthetists echoed the same sentiments. Orthopaedic surgeons were resorting to borrowing from the private sector in a desperate attempt to continue working, but this was inconsistent at best.

> *"…there has been times at Bara when we just don't operate because we don't have linen and then we run out of the paper linen so theatre will have to shut down completely until we have autoclaves sent in from other hospitals." (S:6)*

> *"…another issue we have is the chronic equipment shortage, especially in orthopaedics, they share equipment and they borrow stuff and they get sets from private which they don't know until like half an hour before the case if it's gonna arrive or not, so while they might prepare something, some things might not be available until the last minute so it just makes it hard to prepare." (A:2)*

> *"…it is a problem because you will find that you're using one sheet for 5 patients." (P:1)*

> *"You find yourself turning the linen, if there is blood on this side, you have to turn it." (P:2)*

> *"…it will also help with the equipment because really we are actually struggling quite a lot especially in our department in neurosurgery because we are using a drill and everything, most of the time things won't be working and it's such a problem because it also compromises the patient, I think that's a real issue." (S:2)*

There was an extremely important moment of silence during the discussion with the nurses which served only to emphasise how emotionally disheartened they all felt when one nurse dejectedly said:

"…I am just not going to fight. All trolleys are broken and not working, we need them in the wards because they have no beds and it is problems everyday so we are just going to live like that. Nothing happens." (N:6)

Those words struck loud and resolute amidst the silence. I found myself trying to comfort her by asking her to elaborate, in a desperate attempt to keep the discussion going. She looked and sounded tearful, as she declined my offer. The message was clear. We moved on.

This sentiment of fighting a losing battle was echoed by the porters and anaesthetists as well.

"…corridor from the theatre to ward 48. It's full of potholes and sometimes when we are pushing a patient, maybe with a hip replacement, maybe when it hits the pothole, the patient feels the pain and they always cry and at that time he/she is looking at you as if you're the one who is driving the stretcher rough but then it is the potholes." (P:1)

"I don't know if it always alleviates the problem, sometimes it makes the problem worse, because sometimes the private rep might decide that his set is now needed in a private hospital so and they rather take it to Sunninghill and then when your patient is about to go in, then you realise you don't have a set. It doesn't always make the problem better, sometimes it makes it worse."(A:2)

Participants from all five groups felt despondent, demoralised and hopeless.

The nurses and clerks further expanded upon the tremendous challenges they experience with regards to the supply chain and procurement of consumables. This ranged from inexperienced staff with no insight who are put in charge of ordering; to corruption within the chain; to the supply chain often letting them down at the last minute whilst failing to communicate problems and difficulties from early on, thus highlighting the issue of poor communication once again. They also explained how suppliers did not seem to understand or care for a sense of urgency with regards to expediting the supply and delivery process; despite knowing that it was a requirement for patient care. In addition,

the surgeons and anaesthetists who are end-users are neither involved nor consulted for input in the tender bidding and contract agreement process; thereby leading to receipt of stock that is either of inferior quality, or worse completely incorrect. This leads to end-user dissatisfaction and created situations of tension in the workplace.

> *"…you know the suture that you need to give to the doctor but you don't have on your shelf…, you need the proper 3/0s because the other 3/0 breaks and all that. So that really really makes you as a scrub nurse; knowing exactly what you are supposed to give to the surgeon; and you don't have it, it makes you so frustrated and sometimes I get palpitations." (N:7)*

> *"People do get frustrated very quickly and nurses get abused in the process because the language that will be used at the time will be inappropriate." (N:8)*

The issue of staff shortages regarded as "*the usual crisis." (S:6)* generated much discussion amongst all the focus groups. It was very apt when one surgeon set the tone regarding this issue, by beginning her barrage of complaints with the following statement: *"I would love to sit and chat, but unfortunately work beckons and we're short-staffed, it's the usual crisis." (S:6)*

Participants across all the groups cited a severe shortage of staff to be a massive and seriously consequential problem that has been longstanding.

> *"The biggest problem with theatre operators in that they don't improve in terms of their numbers is that whenever an operator goes on pension, he is not being replaced, whenever an operator passes on, he has never been replaced but in all that we run theatres with limited staff." (C:1)*

Participants from all groups felt that management did not care about them. There was a strong perception that staff in the higher positions of management were in denial about the real problems that participants were experiencing. Participants thus felt unsupported and were forced to tackle problems on their own. As a result, they were left feeling overworked and overwhelmed, leading to situations where they did what was necessary to 'survive' through their workday.

"If you go to the management level meeting, at super level, then the favourite line is that doctors are complaining and they shouldn't complain, they must be more positive, they must have a more positive attitude." (A:2)

"...I think there is a disconnection, there is a denial of there being a problem, a denial that the nurses are short and so that the nurses who are at the cold front aren't getting supported, it's not being acknowledged that they are overworked, they are overwhelmed and I think while they are in that situation they won't really own the problem, I think that they do have to do something to survive…" (A:2)

Inherent here is the issue of leadership of the OT and the hospital; also the accountability of these leaders was strongly emphasised by the both the surgeons and anaesthetists.

It was also pointed out how the nursing manager's solution to the shortage of staff was to simply reshuffle staff around by taking people from the already small pool of recovery room staff and redeploying them to other areas of theatre where there was a shortage. The recovery room would end up being manned by mostly inexperienced junior staff, which could potentially have dire consequences for the often sick patients who had just come out of their surgeries and were still recovering from the effects of their anaesthetic medication.

Cleaners and nurses both described how they inherited duties beyond their job description and how they were thus additionally overworked and overwhelmed; in addition to their normal duty of cleaning theatre and the surrounding areas.

*"I am a theatre operator [cleaner], but I am stationed in orthopaedic theatres and I work as a receiving clerk**,** so when I receive instruments from different companies, I would have to take them, wrap them and take them to TSSU [*Theatre Sterilising Services Unit] *to be sterilised. At the same time if the theatre operator who was supposed to be working that side in orthopaedics is not there, there is nobody else to replace. I must do the receiving and I must do theatre operation at the same time and that causes a lot, lot, lot of stress." (C:1)*

"…as a nurse, we are expected to be doing nurses' duties and…for the stock that we are using in the department should be done by a clerk but they are not ordering, there is no clerks that are being allocated in some areas where ordering is required, and then nurses are to do nursing duties plus ordering and doing stock control and so many things." (N:11)

A corollary of this is that junior staff, who in an effort to assist, were often finding themselves performing duties that staff who were more experienced were supposed to be doing. As one surgeon pointed out, this has led to potentially dire consequences such as the wrong patients being brought to theatre.

"…nurses are also working under a lot of duress, uhmm a lot of pressure with patients having to be escorted to different places at different times and they are short-staffed you know and this is coming after we have had a discussion about these patients; wrong patients being brought to theatre and so on and yeah, one issue that has been singled out is pressure. We often have junior staff members in the ward that are trying to help out, but end up being slotted in the deep end and having to carry out duties that people who are experienced should be doing you know…" (S:1)

Participants also complained about not even being given or enabled to take a tea or lunch break during the course of their daily duties and that this directly impacted on their work. The constant burden of waiting patients as well as pressure from surgeons and anaesthetists were cited as reasons for feeling this way.

"…you will work 7 to 7; there is no break…" (N:5)

"The sister has to go for lunch at least one meal, that's not a sin. Just one meal…" (N:5)

"…She hasn't had tea or lunch, so her attitude will never be the same. So she is both going to bottle up and she is going to have that attitude and that's why we have got so many problems, people are angry and they are exhausted. (N:5)

The message was clear - participants felt exhausted, demoralised and burnt out as a result. They also explained the repercussions of being overworked which was a higher rate of absenteeism.

> *The shortage is what's causing the attitude problem also, people are exhausted and there are no people coming to work and people get sick more often when there is a shortage…" (N:5)*

Consequentially, they described how this would also cause them to lose focus on the ultimate goal of patient care.

> *"…if you have got limited staff members and you use them over and over again, they would get burnt out and demoralised and to them work will be just work more than trying to help the patients." (A:5)*

> *"…and then with the exhaustion and everything, then she starts. So we are going to experience a missing swab or something like that." (N:5)*

The legacy of "Bara"

The groups of anaesthetists and surgeons both identified how CHBAH is overburdened with patients who could rather have been managed at Level 1 and 2 hospitals instead, but who, for various reasons, inappropriately arrived at the surgical pit and thus could not be turned away. They also alluded to the fact that the entire healthcare system is overburdened and therefore under much strain. An interesting perspective that further emerged was how it would seem that CHBAH was carrying this entire strained system on its shoulders, because: *"it is Bara and it doesn't close." (S:4)* - CHBAH is colloquially known as "Bara". It emerged that the hospital had a substantial legacy within the South African context.

> ***"**You see that goes back to the National Health Plan, you see the problem is not limited to theatre, the clinics are overburdened, and everywhere else, Bara is carrying the whole of South Africa well because it is Bara and it doesn't close." (S:4)*

"I think that's the problem you get in cases like the septic list and like obstetrics, it's just so demoralising, just so disheartening and you're never gonna end up making a dent in there so they will just give up and don't even try." (A:2)

There was a moment during the discussion with the surgeons when one surgeon eloquently stated that they were: *"building on a heritage of something we took over" (S:3).* It was refreshing to hear his unique and holistic perspective, which felt to me as if he created a defining moment within that discussion every time he spoke. Even though it was one surgeon's words alone, they somewhat encompassed the inter-complexity of everything from the history, to the different levels of the healthcare system, all the way through to the individual perspective. This particular surgeon has been a member of staff since 1998 and has thus experienced J.D. Allen OT through many of its changes. He was the oldest and longest employed participant within the surgical group. His insight and valuable input was thus appreciated. His colleagues listened intently and echoed his sentiments wholeheartedly, hence highlighting and increasing the importance of everything he articulated.

He described how J.D. Allen OT is the largest OT he had ever seen and that many *"complex and technical operations" (S:3)* are performed where the *"logistics are highly complex". (S:3)*

He explained how there has been a history of violence within a dysfunctional society with poor social behaviour which reflects not only in their patients, but in staff's attitudes and behaviour as well. He further explains that they inherited this system and its nature and somehow just managed to keep it going.

Another notion that emerged, which was echoed by the anaesthetists as well, was the fact that since the J.D. Allen OT was such a *"complex assembly line"*, it should not therefore be left *"really to the end-worker to do his job"*, but rather that such a complex system thus necessitated *"an intermediate management"* to *"do a lot of things"* and *"organise"* the *"end-workers"* to do their jobs; otherwise one would *"fail dismally"*. (S:3)

Thus highlighting the current reality that staff were facing, whereby it was felt that they are: "*remarkably failing and the degree we are failing is actually surprising what we are getting done on a daily basis through personal initiative, through improvisation, through cutting corners through doing short-cuts" (S:3)*, therein highlighting the remarkably positive "*capacity of anarchy to produce something by lack of supervision". (S:3)*

The same surgeon therefore described how there was in essence a "waxing and waning" sort of pattern with regards to the overburdened emergency waiting list of patients; in the sense that it would regularly spiral out of control and then, through sheer self-organisation and personal initiative in the face of a management that remained in denial; would be brought back into control by the end-workers. He highlighted the reluctance of stakeholders to take ownership of the problems and stated how "*this problem actually belonged to nobody". (S:3)*

The system was seen to suddenly collapse due to its supporting 'pillars'; who in reality were the over-worked end-workers; being utterly exhausted and thus failing to cope any longer. It is also evident in his words how management in general seemed content with this recurring pattern of events, as they didn't seem to care that staff were being over-worked because this meant that they were stabilising the failing system, despite this being in transgression of South African labour regulations. End-workers are not being supported at all.

More importantly also is the fact that despite actions and measures being taken to stabilise the system when it spirals so out of control, these stabilising measures are never perfect or ideal, but instead rather "*problematic because it causes additional chaos" (S:3).*

It thus emerged that there were numerous problems within the J.D. Allen OT. The different voices of the participants highlighted the multiple important perspectives that each stakeholder had to offer regarding the problems. The discussion which follows will provide a framework for the understanding and analysis of these problems.

4.4 Discussion

This discussion will be broken down into two parts:

The participants' reflections suggested that the J.D. Allen OT needs to be seen as a CAS with various dynamically interacting and non-linear relationships amongst the direct and indirect stakeholders. They related lack of incentives to poor workplace motivation and described poor attitudes and lack of communication. A simple problem such as a patient not being adequately prepared and ready for theatre had a "ripple-effect" causing long delays and wastage of limited theatre time. Staff and equipment shortages prevented them from working efficiently; instead forcing them to improvise in an effort to deliver patient care. They adapted to their circumstances by drinking "on-the-go" instead of taking a lunch break in the face of the constant patient load. This resulted in them feeling overworked and burnt out from the constant struggle to get work done. They felt that this impacted negatively on patient care. The description of the emergency theatres in the J.D. Allen OT emerged as a fitting example of a CAS and therefore aptly characterises the wider CAS that is J.D. Allen OT. The literature on CAS theory is defined, explained and discussed further by elucidating the results of this study within the context of a CAS in section 4.4.1.

Organisations such as the J.D. Allen OT should be understood as a CAS and managed from a systems thinking perspective in order to bring about improvement. Section 4.4.2 motivates for this idea using references from the literature.

4.4.1. Complex Adaptive Systems

Complexity in this context refers to the intricate inter-relationships that arise from the interaction of elements, which "are able to adapt and co-evolve with a changing environment" (70).

A CAS is comprised of a set of characteristics which includes, but is not limited to, the following:

Multiple, diverse interacting elements

Elements refers to individual people, groups, wards, ICU, suppliers, etc. This refers to the characteristics of individual elements, their relationships and how they all differ (44). The J.D. Allen OT consisted of a vast number of connected and interdependent stakeholder elements that interacted dynamically in order to deliver healthcare. These included the direct stakeholders such as the various members of the OT team as well as patients. Patients were dependent on the direct stakeholders within the J.D. Allen CAS to deliver quality care. The direct stakeholders were in turn dependent upon the support of indirect stakeholder elements such as: management, ICU, HC, the wards, suppliers of equipment and medical goods, and maintenance, etc. Complexity was manifest not only in the large number of stakeholders, but also in the diversity of each individual stakeholder as highlighted by the nurses; who explained that different stakeholders had different personal and professional motivations and patient care was thus not always prioritised. The global characteristics of the J.D. Allen CAS thus arose from the characteristics of individual stakeholder elements and their relationships but were not reducible to these characteristics; i.e.: the properties of the whole were distinctly different from the properties of the parts. For example, the quality of a surgical team arises from the properties of the individual nurses, cleaners, porters, anaesthetists and surgeons, but is not reducible to these properties. Quality and efficiency of the J.D. Allen OT was therefore more than the sum of the talents of its individual workers; instead it was an emergent property of the whole system. This means that managerial tasks should go beyond getting the best employees, to facilitating the emergence of the OT itself.

Rich and dynamic interactions together with connectivity and interdependence

Elements in a CAS interact dynamically with one another meaning that there is a continual presence of multiple interactions with their accompanying responses, surprises and challenges (44). Interactions between elements are rich meaning that they affect other elements and can be physical or involve the exchange of information (36). Connectivity and interdependence means that an action or decision taken by any

individual may affect related elements. That affect will not have uniform or equal impact, but will vary depending on the state of each related element at that time. The greater the interdependence between related elements, the wider the “ripples” of perturbation or disturbance throughout the system. (71)

Multiple patterns of physical and non-physical interactions were discovered between the stakeholders. Of concern was that a significant pattern of broken relationships between the various stakeholder elements emerged which also led to a constant battle to get work done.

The nature and quality of relationships were found to be dependent on individual emotions and attitudes which participants felt were “*really terrible.” (N:5).* Stakeholders did not always show respect and act professionally when interacting with one another. Surgeons spoke of the “*adversarial relationship” (S:4)* they share with anaesthetists and highlighted how that negatively affected teamwork and patient care. Surgeons and anaesthetists felt that nurses needed to foster a culture of ownership for and responsibility with regard to problems that arose and their work. Cleaners and porters felt disrespected. Overall, the members of the OT team all felt that management did not care about them. They all felt under-supported and unappreciated. *“Miscommunication and sometimes no communication” (A:4)* between stakeholders led to all stakeholders being exposed to increased risk of error and danger. The shortage of staff, equipment, consumables, ICU beds, etc. as well as the challenges in interacting with suppliers affected the provision of patient care demonstrating the interdependence and connectivity of elements as well as how the rich nature of interactions affects so many other elements within the J.D. Allen CAS.

The essence of a CAS was thus captured in the relationships amongst the elements, rather than in the elements themselves. The environment for elements (people) in a CAS is characterised by interconnections that each individual element has with other elements in the system. In order to understand a CAS requires understanding the patterns of relationships among elements rather than simply understanding the nature of individual elements. In other words, the relationships among the clinical staff of J.D. Allen OT were

critical to the overall performance of the organisation. Simply put, we speak of well-functioning surgical teams and recognise that the relationships among team members is more important in understanding this concept than the competency of each individual member. (36, 44)

Non-linearity causing the "ripple-effect"

Interactions are non-linear meaning that small changes can make a big difference (72, 73). The non-linear nature of interactions within J.D. Allen OT also contributed towards the battle to get work done. An example that emerged from the data is how the porters were sent to fetch patients from the ward, only to return empty-handed because patients, for various reasons, were not ready. This small mishap inevitable translated into a large delay in receiving patients in the OT for their surgery which led to patients being cancelled and operating lists not being completed at the end of the day. This further translated into waiting lists for surgery becoming longer. This may have been avoided by a simple telephone call from the OT reception to the ward enquiring whether patients were ready and notifying them to prepare for collection. The connectivity and interdependence of elements within the J.D. Allen CAS is also highlighted here as is apparent with the "ripple" effect that is seen. In addition, porters then faced angry doctors shouting at them for arriving without patients. Individuals with the J.D. Allen CAS had different information about the system, but none understood it in its entirety.

Feedback loops and unawareness of the system as a whole

Interactions can have direct or indirect feedback loops, referred to as recurrence. The feedback loops can be positive (reinforcing or stimulating), or negative (inhibitory or detracting). Dead-end feedback loops lead to repetitive behaviour. (44, 73) Individual elements all have information about the system, but are unaware of the performance of the system as a whole (36, 44). Many participants spoke about the severe lack of workplace motivation. It appeared that attempting to increase patient throughput by simple measures such as working faster did not seem to make any immediate or visible improvements in the system (from the various individual stakeholders' perspectives). Negative feedback thereby set the stage for lack of motivation and low morale. This however exists on a micro-economic level, and unfortunately every individual behaving

independently in this way therefore failed to see the negative wider macro-economic consequences of inefficient or poor throughput of patients in the J.D. Allen CAS. This is another example of individuals not understanding the system as a whole. There was thus poor awareness of the need to improve the wider organisational system through which care was delivered. This can be seen as a significant barrier to improvement.

The issue of "*the usual crisis" (S:6)* of a staff shortage demonstrated a multitude of properties within the J.D. Allen CAS. Stakeholders were taking on extra roles and performed additional duties beyond their normal job descriptions, when the context and demand called for it. Without further incentives, this led to staff feeling overworked and burnt out. This created negative feedback in efficiency of patient care as stakeholders therefore worked slower because they were then not motivated to perform their normal duties efficiently. From an organisational viewpoint, this is counter-productive. Dead-end feedback loops that emerged were how consumables were ordered despite end-users being dissatisfied with their quality, and how equipment was repetitively hand-washed when sterilising machines were broken. Dead-end feedback loops were also evident where due to staff shortages, junior staff were repetitively left to perform duties and face responsibilities meant for experienced staff. Co-evolution occurred here *"through improvisation, through cutting corners through doing short-cuts" (S:3)*, as this was the only way that stakeholders could maintain continuity of the system.

Open system existing "far-from-equilibrium" and requiring exploration of the "space-of-possibilities", then through creativity and innovation, leading to spontaneous self-organisation

The organisation is part of a wider system or multiple systems. "When an organisation moves away from equilibrium (i.e.: from established patterns of work and behaviour), new ways of working are created and new forms of organisation may emerge" (71, 73). A far-from-equilibrium situation often existed whereby a shortage of orthopaedic hardware and equipment was causing cancellation of patients. Exploration of the "space-of-possibilities" refers to the situation that arises when an individual element is faced with a constraint. That individual then finds new methods of operating, because the "far-from-equilibrium" state forces them to experiment and explore their "space-of-possibilities",

and this exploration helps them discover and create novel ways of working and new patterns of relationships (71, 73). The orthopaedic surgeons thus explored their "space-of-possibilities" in order to discover new patterns of relationships, different structures and ways of working. Creativity and innovation is when a team or an organisation is faced with a problem or a constraint, they need to be creative and find a new solution. They try out several possible alternatives until they find the most appropriate. This is a source of innovation that endows the system with new solutions (71, 73). Self-organisation and emergence is the spontaneous emergence of new forms of behaviour and order. Emergence of novel ways of thinking and working arise from the interaction of individual elements. It is a self-enhancing process that aims to retain and construct structure and relationships (71-73). Thus through spontaneous self-organisation, creativity and innovation, the surgeons resorted to borrowing sets from the private sector as a means of improvisation. The problem with this was that due to the dynamic, non-linear nature of the J.D. Allen CAS: *"It doesn't always make the problem better, sometimes it makes it worse."(A:2)* Self-organisation was also evident in how the anaesthetists were reluctant to start new surgical procedures after 15:00 due to their additional duties and commitments. It was also evident in how the members of the OT team working in the emergency theatres would work slowly and not be pro-active because they were overworked and felt burnt out.

Co-evolution and adaptability

This refers to the concept that elements in a CAS and its environment fundamentally influence the development of each other, i.e.: "a CAS does not simply change; it changes the world around it" (36). Surgeons and anaesthetists who were constantly under pressure to perform as much as possible under the limited time available, had developed a tendency to grab a quick drink whilst on-the-go, or make use of any available patient-free time to replenish themselves. This was another coping and "short-cut" taking method employed by stakeholders in an effort to try and save every bit of valuable time in order that they might dedicate more time towards patient care or other duties beyond the OT. This example fittingly highlights the nature of the overburdened system that stakeholders were working in and that their situations were far from ideal. It also describes co-evolution and adaptability whereby the surgeons and anaesthetists were

adapting to the increased patient burden and work pressures by drinking “on-the-go”; to the detriment of hungry patients who were then unfortunately forced to witness this. The system thus changed the doctors’ behaviour which then affected the patients in that environment. This might have translated into poor quality of care from patients’ perspectives.

History

CASs have a history, meaning that “they evolve and their past is co-responsible for their present behaviour” (74). It is important to consider the history of a CAS when attempting to develop and adopt strategies for improvement. Participants explained how the J.D. Allen CAS had a history and how that past was co-responsible for their present experiences. The participants in this study felt a certain level of inheritance regarding the level of complexity and dysfunction currently being experienced at J.D. Allen OT. This was evident when they described a history of violence and poor social behaviour between staff and patients alike. They also felt that Bara had not changed for the better and that the status quo that they had inherited still persisted. This inheritance of a poor social order was used to justify their practices, whether constructive, neutral or destructive (such as poor attitudes and unprofessional relationships); thus exacerbating the cycle of non-improvement of the system.

The emergency theatres at J.D. Allen OT – an example of complexity

The daily running of the emergency theatres at J.D. Allen OT provided a succinct example demonstrating many, if not all of the properties of a CAS and was thus seen to be representative of J.D. Allen as a whole. It involved a dynamic and rich interacting network of people, processes and communication in order to serve its purpose. This involved stakeholders from each of the participating groups as well as patients themselves who were at the very core of the system. They all came together to enable the common goal of delivering quality patient care. However, this was fraught with multiple chain-linked interdependent processes, such as: booking patients in the queue, calling for them to arrive at the OT from the wards via the porters, then contacting surgeons from the relevant departments and units to come and perform their operations, and thereafter

discharging the patient back to their respective wards via the recovery area. *"I think it's just that there are so many factors because I mean it is such a big hospital, and just one factor goes wrong and there is a delay and everyday it is usually a different factor. (A:7)*

Such a high degree of connectivity and interdependence created "ripple-effects" which spreads throughout the whole system when problems arose. The consequences were non-linear in that a slight delay in fetching or receiving of a patient for example (from a myriad of possible reasons as to why that ideally should not have occurred, but did) translated into an exponentially large backlog of patients building up in the queue awaiting surgery.

Thus it often occurred, as participants explained, that the emergency waiting list or queue of patients spiralled *"in an unprecedented way completely very out of control" (S:3)* due to a massive backlog of patients; after which they *"wait for something to happen and then someday something inspires" (S:3)* them *"again into control" (S:3).* This chain of events suitably described a "far-from-equilibrium" situation (away from established norms) and the system was thus in an unstable state; bordering on chaos.

This set into motion a balancing feedback loop within the system, enacted by the stakeholders themselves. *"Every health individual agrees that this is now a dire emergency and so we do something that we could have done all along" (S:3).* This unstable state of constraint thus pushed participants to explore their "space-of-possibilities" and test different solutions in order to look for novel and effective ways of balancing the system. Participants then *"create new lists or even cancel elective lists which is of course problematic because it causes additional chaos" (S:3).* Such was the nature of co-evolution in that the system did not simply change itself, it also changed the world around it and affected other systems. Thus *"through personal initiative, through improvisation, through cutting corners, through doing short cuts…" (S:7)* and through self-organisation, there was emergence of order and stability, through discovering novel ways of working by forming new ideas, lists and relationships. The system was pulled back into order and stability "*and then we are back in control" (S:3).* The system was seen as

dynamic and unpredictable. However it was still possible to find inherent order among the mess and chaos. This is a remarkable feature of the J.D. Allen CAS.

In closing, every action taken by various individuals led to emergence of new order thus becoming a part of the history of the organisation. The wheel was thus not being reinvented, rather it was constantly being adapted to suit the ever changing environment (like changing tyres on a car to suit the conditions being encountered each time, e.g.: wet road vs. gravel, etc.). *"…this is our history and there is a lot we are not reinventing every day here but we are really building on a heritage from something we took over."(S:7)*

4.4.2. The benefit of understanding J.D. Allen as a CAS - J.D. Allen - using complexity and adaptation for systems based solutions

Ludwig von Bertalanffy (75) was one of the first to describe the idea that systems thinking represents an attitude to understanding how things work. The application of this concept forces leaders, planners and managers to focus on processes, interactions and causes of poor outcomes; rather than isolated components of the system, individual players or interim results. "When only the superficial symptoms of complex problems are addressed, the underlying problem typically remains unsolved, and can even be exacerbated if the solution feeds into a vicious cycle." – J.D. Waldman in *Thinking Systems Need Systems Thinking,* 2007 (76).

4.5 Summary

The results and the discussion of the study are presented in this chapter. A summary of the study is presented in the next chapter.

CHAPTER 5: SUMMARY, LIMITATIONS, RECOMMENDATIONS AND CONCLUSION

5.1 Introduction

A summary of the study, limitations of the study, recommendations and a conclusion is presented in this chapter.

5.2 Summary

5.2.1. Aim

The aim of this study was to take the first step towards understanding the nature of problems faced by various stakeholders who are directly involved with patients' and their transit through the J.D. Allen OT at CHBAH.

5.2.2. Objective

The objective of this study was to explore and describe the direct OT stakeholders' perceptions of problems influencing the functioning of the J.D. Allen OT.

5.2.3. Methodology

This study was conducted in the J.D. Allen OT at CHBAH, using a qualitative, contextual, exploratory, descriptive research design. The study population consisted of the J.D. Allen OT team. One focus group discussion was held with each group of nurses, cleaners, porters, anaesthetists and surgeons. Group sizes ranged from 4 to 10 participants who had been purposefully selected by their managers and heads of departments. I made audio recordings and documented field notes during and immediately after each focus group discussion. Audio recordings were transcribed by a transcriber and verified by me. Data was coded using MAXQDA© version 11.1.0. Braun and Clarke's (8) method for thematic data analysis was then used. Lincoln and Guba's (9) five criteria to ensure trustworthiness were followed.

5.2.4. Results

The three main themes which emerged were that of: broken relationships and not owning the workspace, the battle to get work done, and the legacy of "Bara". Participants described their relationships as *"adversarial" (S:4)* and their attitudes as *"terrible" (N:5)*. They felt *"stressed" (C:1)*, *"angry" (N:5)* and *"exhausted" (N:5)*. These spoke to poor interactions, *"miscommunication and sometimes no communication" (A:4)* between the various elements of the J.D. Allen OT as a result of the OT team feeling *"overworked" (A:2)* and *"overwhelmed" (A:2)*, "burnt out" (A:5) and "demoralised" (A:5). The rich, dynamic and non-linear interplay between the interdependent elements meant that efficient patient throughput and OT functioning was ultimately compromised when problems arose. This connectivity between elements also meant that problems were complex and challenging. Participants thus experienced *"palpitations" (N:5)* as a result of the *"usual crisis" (S:6)* of chronic problems that *"frustrated" (N:5)* them. They blamed the history of "Bara", citing that they were *"building on a heritage of something" (S:3)* that they *"took over" (S:3)* and that they were *"remarkably failing" (S:3)* because the *"problems actually belonged to nobody" (S:3)*. Despite the OT team often self-organising *"through personal initiative, through improvisation, through cutting corners through doing short-cuts" (S:3)*, it did not *"always make the problem better, sometimes it makes it worse."(A:2)* Surgical waiting lists continued to grow as a result of the J.D. Allen OT being inefficiently utilised. It also emerged that the J.D. Allen OT is a CAS.

5.3 Limitations

The open-discussion based nature of the focus group discussions precluded the ability to maintain the strictest confidentiality, since senior managers and participants from higher levels, who were also part of the groups, knew what was said by their subordinates within that group. Confidentiality was then based on my encouraging participants to foster mutual trust, understanding and agreement amongst themselves.

In addition, although it was recognised that patients are direct stakeholders in the functioning of the OT, they were not for practical reasons included in this study. Firstly it would have been unethical to expect patients who were in their post-operative recovery period to attend a focus group discussion. Furthermore it would also have been unfair to expect patients to return to the hospital from home to attend a focus group discussion. Within the CHBAH context, it would have implied inconvenience and cost for patients to take time off work and travel to the hospital.

5.4 Recommendations

5.4.1. Recommendations for clinical practice

"One of the most profound results of complex systems research is that when systems are highly complex, individuals matter. It also helps to reveal the actions that should be taken in our complex context to improve our world for ourselves and others." - Yaneer Bar-Yam in *Making Things Work*, 2004 (77). To this end; and in view of the broken relationships that existed between the members of the J.D. Allen OT team, I recommend that stakeholders engage in various socialising and team-building exercises, in order that they may foster a culture of togetherness and to enable them to better own their workspace.

Good leadership and hands-on management is essential in order to realise positive change. A further recommendation using CAS theory as a toolbox for change is that managers and leaders of the J.D. Allen OT consider the adoption of a new mental model of systems thinking and focus on better understanding the J.D. Allen OT as a CAS, in order to be able to manage problems more powerfully. Implicit here is a "bottom-up" improvement approach; rather than the traditional "top-down" approach. In other words, positive and sustained improvement outcomes may emerge from a properly designed system with functional relationships.

5.4.2. Recommendations for further research

Patients are direct stakeholders, but were not included as a focus group in this study. In view of what has been discussed above, this does not preclude the necessity for data to be obtained from patients as well. However, my supervisors and I had decided that it was beyond the scope of this study. To this end, we recommend and motivate that a similar, smaller follow-up study on patients only, should be conducted in the future.

5.5 Conclusion

We are in the midst of a global transition from the industrial to the information age. "Current healthcare systems are malfunctioning because they are thinking systems being viewed as and managed like machines. In medical parlance, we have the wrong diagnosis and are therefore administering the wrong treatment." – J.D. Waldman in *Thinking Systems Need Systems Thinking,* 2007 (76). Now more than ever, healthcare is in need of fundamental change. "Between the healthcare we have and the care we could have lies not just a gap, but a chasm." – Institute of Medicine in *Crossing The Quality Chasm*, 2010 (78).

The J.D. Allen OT CAS faces real world problems. It is a human system that requires the adoption of systems thinking in order for improvement efforts to emerge triumphantly. "Complexity may seem overwhelming, but it is not a bad thing." - Yaneer Bar-Yam in *Making Things Work*, 2004 (77).

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APPENDICES

Appendix A:

Human Research Ethics Committee (Medical) Approval

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Kamal A Gosai

CLEARANCE CERTIFICATE	**M120744**
PROJECT	Understanding the Problems Affecting the Functioning of the JD Allen Operating Theatre
INVESTIGATORS	Dr Kamal A Gosai.
DEPARTMENT	Department of Anaesthesiology
DATE CONSIDERED	27/07/2012
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 25/04/2014 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Ms Juan Scribante

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

Appendix B:

Postgraduate Committee of the University of the Witwatersrand approval

Faculty of Health Sciences
Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172040

Reference: Ms Thokozile Nhlapo
E-mail: thokozile.nhlapo@wits.ac.za

24 February 2014
Person No: 0207089G
PAG

Dr KA Gosai
P O Box 1094
Southdale
2135
South Africa

Dear Dr Gosai

Master of Medicine: Approval of Title

We have pleasure in advising that your proposal entitled *Understanding the problems affecting the functioning of the J.D. Allen Operating Theatre.* has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

Appendix C:

Postgraduate Committee of the University of the Witwatersrand change of title of research approval

Faculty of Health Sciences
Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172040

Reference: Ms Thokozile Nhlapo
E-mail: thokozile.nhlapo@wits.ac.za

18 February 2014
Person No: 0207089G
TAA

Dr KA Gosai
P O Box 1094
Southdale
2135
South Africa

Dear Dr Gosai

Master of Medicine: Change of title of research

I am pleased to inform you that the following change in the title of your Research Report for the degree of **Master of Medicine** has been approved:

From:

To: **Understanding the problems affecting the functioning of the J.D Allen Operating Theatre**

Yours sincerely

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

Appendix D:

CEO (CHBAH) approval

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Division of the Deputy Registrar (Research)

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
R14/49 Dr Kamal A Gosai

CLEARANCE CERTIFICATE	**M120744**
PROJECT	Understanding the Problems Affecting the Functioning of the JD Allen Operating Theatre
INVESTIGATORS	Dr Kamal A Gosai.
DEPARTMENT	Department of Anaesthesiology
DATE CONSIDERED	27/07/2012
DECISION OF THE COMMITTEE*	Approved unconditionally

Unless otherwise specified this ethical clearance is valid for 5 years and may be renewed upon application.

DATE 25/04/2014 **CHAIRPERSON** .....
(Professor PE Cleaton-Jones)

*Guidelines for written 'informed consent' attached where applicable
cc: Supervisor : Ms Juan Scribante

DECLARATION OF INVESTIGATOR(S)
To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10004, 10th Floor, Senate House, University.
I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to a completion of a yearly progress report.**

PLEASE QUOTE THE PROTOCOL NUMBER IN ALL ENQUIRIES...

CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL
GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA
CEO: Dr S.B Mfenyana
24/05/2014
Date

.....05.14

Appendix E:

Faculty Research Committee of the University of the Witwatersrand

Individual Research Grant approval

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG
Research Office, Faculty of Health Sciences

FACULTY RESEARCH COMMITTEE INDIVIDUAL RESEARCH GRANTS
(Faculty Research Committee)

Awardee: DR KAMAL ARUNKUMAR GOSAI

School/Department: CLINICAL MEDICINE, ANAESTHESIOLOGY

Congratulations! The screening committee of the FRC has awarded funding for 2015 for your research application listed below:

Project Title: Understanding the Problems Affecting the Functioning of the J.D. Allen Operating Theatre.

Grant Number: 00125484321035121105000000000000005031

Grant Awarded (R): **4 900.00 (FRC)**

TOTAL(R): **4 900.00**

Please Note:

1. The award of this grant does not override the requirement, in appropriate cases, to obtain prior approval from one or more of the University's three Ethics Committees, or the Biosafety Committee, as the case may be.
2. No grant may be used for purposes other than those specified in the application approved by the University without written consent of the Head of the Research Office.
3. The monies awarded to you must be spent before the end of October 2015. Funding will not be carried forward into year 2016.
4. The support of the above grant must be acknowledged in any publications arising out of this research project.
5. A progress report must be submitted to the (Faculty Research Office) not later than **31 December 2015** irrespective of whether continued funding is to be sought.
6. Please contact Tholakele Nkosi (011 488 4344) with any queries re accessing your grant

M. Meela
Faculty Research Office
Tel: 011 717 2023
For: Chair of the FRC
cc: Head of School: Prof M Lukhele

Appendix F:

Information letter for potential participants

Dear colleague

My name is Kamal A. Gosai. I am conducting a research study for the fulfilment of my Mmed Degree and I would like to invite you to participate in this research study entitled: "Understanding the Problems Affecting the Functioning of Operating Theatres" (Number: M120744). You have been nominated by your senior as a potential participant in this study, as he/she felt that you would be able to contribute valuable information to the study.

The aim of the study is to find out about the various problems (if any) which Operating Theatre (OT) personnel might face whilst performing their daily work duties in the OT. It is also to understand their views and opinions about those problems.

The study involves one private and confidential focus group discussion in the library room at the Department of Anaesthesiology within the OT. The group will consist of you and some of your colleagues, each from different ranks within your department; up to and including at least one of your senior managers. The interview will be held on a Wednesday afternoon, provided you are free after your occupational duties have been completed. It will probably last for about one to two hours maximum. The date and time of the interview will be provided to you should you agree to participate.

Refreshments will be made available.

I will facilitate the group discussion which will be more like an informal, friendly discussion about the subject of the study, rather than a formal question and answer session. The only other people in the room will be my two supervisors who will be writing down anonymous notes about the group interaction and what is said. There will also be two audio recorders in the room which will be used to record the entire focus group discussion.

The purpose of the interview is to gather information from the group about the problems they face while doing their work in the OT. It is not an evaluation of your work performance and no data can or will be used to discriminate against you. Your seniors have been made well aware of the nature of this study and the purpose of this group discussion which is the potential improvement in patient care and service delivery. They have also been made aware that you may vent your frustration, and they have agreed that there will be no risk of retribution in any form whatsoever, since it is a private, open-forum discussion in which they will also have the opportunity to enlighten us all and perhaps shed some light on potential challenges they face. It is also not a test and there are no wrong or right answers. In addition, you will not be subjected to any harm.

The research report generated from this study will be handed in to the Wits University Department of Health Sciences as part of my Master of Medicine degree and may be published. It will have no identifying data and the initial results from the analysis of the data will be made known to all the participants to validate the accuracy of what was captured and determined.

The study offers no benefit to you directly but may result in positive changes and improvement in quality of patient care in the future.

This study has been approved by the Human Resource Ethics Committee (HREC) (Medical) (Number: M120744) and the Postgraduate Committee of the University of the Witwatersrand. Permission to conduct the study has also been obtained from the CEO, Nursing manager, and heads of both the Departments of Anaesthesiology and Surgery.

Your consent to participate in the study is entirely voluntary. You have the right to refuse participation or withdraw from the study at any time without giving any reason and without any discrimination against you.

All records from the interview, whether written or audio recorded will be treated with the strictest confidentiality and the raw data will only be accessible to me and my supervisors. The audio recordings will be stored by me in a locked and secure location, for a minimum of 2 years after publication or 6 years in the absence of publication, after which they will be destroyed. Your managers have also agreed to strict confidentiality and non-discrimination in keeping with the focus of this study on potential improvement in patient care and service delivery. Please note however that confidentiality within the focus group discussion itself is not possible.

I will need to audio record the interview, hence, if you agree to take part in this study, I will ask you to sign 2 separate consent forms. By signing the consent forms, you will give me permission to include you in the study as well as make an audio recording of the interview.

If you have any questions or concerns with regard to this study, you may contact one of the following people at any time:

Dr. Kamal A. Gosai (researcher): 072 444 6297

Professor Cleaton-Jones (Chairman of HREC): (011) 717 2301.

Furthermore, if you decide to agree and consent to participate, and you experience any difficulty or retribution from your senior manager after the interview has been conducted as a result of the information you divulged in the focus group discussion, kindly feel free to contact me, Kamal A. Gosai (researcher) using the number above and I will personally see to it that the matter is discussed with your senior managers and resolved timeously and amicably.

Thank you for taking the time to read this letter.

Yours sincerely

Dr. Kamal A. Gosai

072 444 6297

kamalgosai@gmail.com

Appendix G:

Informed consent for the interview from participants

I _____ hereby confirm that I have received, read and understood the above written information letter for participants regarding the study entitled: “Understanding the Problems Affecting the Functioning of Operating Theatres”, and that I have had sufficient opportunity to ask questions; all of which have been answered to my satisfaction.

I am aware that all information collected will be treated confidentially and that the results of the study, including any personal details, will be anonymously processed into a study report.

I understand that taking part in this study is voluntary and that I may, without prejudice, withdraw at any time.

PARTICIPANT

I hereby give consent to take part in this study.

_____ _____

(Participant signature) (Date)

STUDY DOCTOR

I _____ hereby confirm that the above participant has been fully informed about the nature, conduct, risks, and benefits of the above study.

_____ _____

(Study doctor signature) (Date)

Appendix H:

Informed consent for audio recording from participants

I _____ hereby confirm that I have received, read and understood the above written information letter for participants regarding the study entitled: “Understanding the Problems Affecting the Functioning of Operating Theatres”, and that I have had sufficient opportunity to ask questions; all of which have been answered to my satisfaction.

I am aware that all information collected will be treated confidentially and that the results of the study, including any personal details, will be anonymously processed into a study report.

I understand that taking part in this study is voluntary and that I may, without prejudice, withdraw at any time.

PARTICIPANT

I hereby give consent to take part in this study.

_____ _____

(Participant signature) (Date)

STUDY DOCTOR

I _____ hereby confirm that the above participant has been fully informed about the nature, conduct, risks, and benefits of the above study.

_____ _____

(Study doctor signature) (Date)

Appendix I:

Focus group discussion guide for moderator

Understanding the Problems Affecting the Functioning of Operating Theatres

1. Welcome and warm-up – establish rapport.
2. Introduction to nature of study and focus of group discussion:

Problem statement: There is a current perception of inefficient utilisation of the J.D. Allen OT at CHBAH. The reasons for potential problems are multifactorial. OT waiting lists increase as a result. This might impact negatively on the level of care and quality of service delivered to patients. It is also cost-ineffective.

Aim and Objective: The aim of this study was to understand the problems faced by various stakeholders who are directly involved with the patients' and their transit through the operating theatre by exploring and describing stakeholders' perceptions of the problems.

3. Establish focus group rules and norms, and answer questions.
4. Information letter and signing of consent forms.
5. Discussion and interaction:

Sample questions to stimulate conversation and discussion

Problems:

- What are the problems which you experience while working in the OT?
- How does it make you feel?
- What do you think is the cause?
- How do you think it affects everyone, including patients?

Suggestions for positive change or possible solutions:

- How should your problems be solved?
- How can our quality of work be improved?

6. Questions or any other contributions from group?
7. Thank group and attain closure.