

Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia

Johannes Jacobus le Roux

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Declaration

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



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Abstract

Background

Caregiver presence at their children's induction of anaesthesia is practiced daily around the world. International studies demonstrated conflicting emotions in caregivers present at induction of anaesthesia of their children. These positive and negative emotions ranged from comforting and reassuring, to traumatising and disturbing. Research exploring the attitudes and perceptions of caregivers regarding this practice is limited within the African context.

Aims

The aim of this study was to describe caregivers' attitudes and perceptions regarding their presence at induction of their children's anaesthesia.

Methods

This descriptive, phenomenological, qualitative study was conducted in 2020 at Chris Hani Baragwanath Academic Hospital, a 3200-bed facility in South Africa. Twenty caregivers of children (aged 2 to 8 years) undergoing elective surgery were recruited. Data was collected through face-to-face, in-depth, semi-structured individual interviews using purposive sampling. Interviews ranged between 11 and 55 minutes in duration and were conducted within 24 hours of induction of anaesthesia. The audio recorded interviews were transcribed and subjected to inductive reflexive thematic analysis.

Results

Six themes were developed: Fulfilment of caregiver role, A positive experience, A traumatic experience, Not prepared for the experience, My world is my reality, and Your world is a place different to mine.

Conclusion

A caregiver's perception of the induction process is influenced by multiple factors. A finding specific to our cohort is the interplay between complex multifaceted cultural beliefs and anaesthesia of their children. By acknowledging and addressing these beliefs, a caregiver's presence can be tailored to ensure a positive experience for all involved at induction.

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Table of contents

Declaration	ii
Abstract	iii
Acknowledgements	iv
List of figures	viii
List of tables	ix
Abbreviations.....	x
Statement	xi
Position statement.....	xii
Section 1: Review of the literature.....	1
1.1 Introduction	1
1.2 The Caregiver's perspective	2
1.2.1 A negative experience	2
1.2.2 A positive experience.....	4
1.3 The Anaesthetist's perspective	5
1.4 The Child's perspective.....	5
1.5 CPIA and the challenges in developing countries.....	7
1.6 Summary.....	8
1.7 References.....	9
Section 2: Author's guidelines	16
Section 3: Draft article	32
Section 4: Proposal	52

4.1 Introduction and problem statement	53
4.2 Aim and objectives	56
4.2.1 Aim.....	56
4.2.2 Objectives	56
4.3 Research assumptions	56
4.4 Demarcation of study field	57
4.5 Ethical considerations	57
4.6 Data collection	58
4.6.1 Research design.....	58
4.6.2 Study population	59
4.6.3 Study sample	59
4.6.4 Data collection	60
4.6.5 Data management	61
4.6.6 Data analysis	61
4.7 Trustworthiness.....	63
4.8 Significance of the study	64
4.9 Potential limitations	64
4.10 Project outline	65
4.11 Financial plan	65
4.12 References.....	66
4.13 Appendices	70
4.13.1 Appendix 1 Permission letter from the Medical Advisory Committee	70

4.13.2 Appendix 2: Letter from the Head of the Department of Anaesthesiology	71
4.13.3 Appendix 3: Letter from the Head of Department of Paediatric Surgery .	72
4.13.4 Appendix 4: Caregiver information letter	73
4.13.5 Appendix 5: Caregiver consent.....	74
4.13.6 Appendix 6: Interview guide.....	75
Section 5: Annexures	76
5.1 Ethics approval	76
5.2 Graduate studies approval.....	77
5.3 Turnitin report.....	78

List of figures

Figure 3.1 Data collection and methodology flow diagram.....39

List of tables

Table 3.1 Interview guide.....37

Table 3.2 Caregiver demographics.....40

Table 3.3 Fulfilment of caregiver role and A positive experience.....42

Table 3.4 A traumatic experience and Not prepared for the experience.....43

Table 3.5 My world is my reality and Your world is a place different to mine.....45

Abbreviations

MMed	Master of Medicine degree
Wits	The University of the Witwatersrand
PPIA	Parental presence at induction of anaesthesia
CPIA	Caregiver presence at induction of anaesthesia
USA	United States of America
UK	United Kingdom
SA	South Africa
CHBAH	Chris Hani Baragwanath Academic Hospital
JLR	Researcher Johannes Jacobus le Roux
CR	Researcher Cara Redelinghuys

Statement

The Research Report consists of a literature review, author's guidelines, draft article, study proposal, and annexures. The study proposal is included for background reference and is not for examination.

The formatting of this Research Report complies with the University of the Witwatersrand's Style Guide for Theses, Dissertations and Research Reports. The formatting of the draft article complies with the rest of the Research Report and may therefore differ from the author's guidelines of *Pediatric Anesthesia*, the journal to which it is intended to be submitted. These differences include the referencing style, margins, and numbering of figures and tables.

Position statement

I am a registrar in the Department of Anaesthesiology at the University of the Witwatersrand (Wits). I previously worked as a medical officer at Greys Hospital in Pietermaritzburg in the Department of Anaesthesiology for two years. I chose the Wits Anaesthesiology academic circuit because I believe that the experience registrars get during training in this department is of an exceptional standard, with education par excellence in both generalist and specialised fields in anaesthesiology.

Caregiver presence at induction of anaesthesia (CPIA) is practiced daily at Chris Hani Baragwanath Academic Hospital (CHBAH). Typically after induction the caregiver is escorted out of the operating theatre by a health care worker and is usually asked to wait in the waiting area until the operation is finished. While rotating in paediatric anaesthesiology, I witnessed a diverse spectrum of emotions displayed by caregivers during anaesthesia induction, ranging from satisfaction and enjoyment to the polar opposite of sadness and fear. I found this to be especially poignant, while striving for holistic care in a resource-constrained busy environment, our practice prioritises the patient at the exclusion of the caregiver.

After witnessing the wide range of emotions that caregivers displayed during and after the induction process, I became curious to determine the cause of their reactions. Was fear the predominant emotion, and if so, was it fear for their child or fear of the unknown? Did they feel helpless? Could it be that this experience brought back memories of a previous traumatic experience? Did the experience not meet their expectations? I strongly believe that within the answers to these questions lies the solution to comforting and assisting caregivers. There are international studies that show benefit to the child and the attending anaesthetist with the caregiver present at induction, these benefits however, do not automatically translate to the caregiver.

If we as anaesthetists can better understand how caregivers in South Africa (SA) perceive and experience the anaesthetic induction of their children, we can change our current practice and turn CPIA into a positive experience for everyone involved.

Section 1: Review of the literature

1.1 Introduction

Parental presence at induction of anaesthesia (PPIA) is defined as “the interaction of the child, parent, anaesthetist, and peri-operative nurse in the induction room for the duration of anaesthesia induction” (1).

The term PPIA represents a challenge when applying parental constructs to the diverse family forms currently existing in South Africa (SA). These different family forms can be divided into four different household groups: nuclear (spouse/partner couple living with their own children), lone parent, extended household (not nuclear or lone, but all members are related), and composite (some household members are not related). Parental absence may be related to a range of reasons such as non-marital childbearing, adult employment strategies, labour migration, urban housing constraints, limited availability of affordable care, schooling opportunities, divorce or separation, and any combination of these. In the context of labour migration and non-marital childbearing, many grandparents assume the role of primary caregivers. The concept of the nuclear family with a spouse or partner couple residing with their own biological children seems to be perpetuated in modern culture. In the SA context, caregiver presence at induction of anaesthesia is a more appropriate term (CPIA), as 62% of children are cared for by a person other than the biological parent of the child, such as a grandparent or other family relative (2).

CPIA is not a new concept and has been practiced for decades (3, 4). A systematic review done by Erhaze et al (1) in 2016 revealed that a significant debate surrounds this practice worldwide. The concept of CPIA can be broken down into the three different role players involved in the process. The child undergoing anaesthesia, the anaesthetist administering the anaesthesia, and the caregiver present witnessing the induction process. Each role player has a different perception of the same situation. Although multiple studies have been conducted in the Americas (4, 5, 10, 16, 17), Europe (7, 8, 20), and Asia (9, 18, 19) on the subject of CPIA describing the advantages and disadvantages from these three different viewpoints, research from the African continent is limited (21). No studies were identified exploring the attitudes and perceptions of SA caregivers towards CPIA.

1.2 The Caregiver's perspective

The experience a caregiver has in theatre with regards to CPIA can fundamentally be described as either negative or positive.

1.2.1 A negative experience

Numerous studies have been done between 1990 and 2020, evaluating the caregivers' negative viewpoints associated with CPIA. These include: caregiver discontent, upset, displeasure, anxiety, and the physiological stress response associated with CPIA (5-10).

Caregiver discontent associated with participation at induction of anaesthesia was examined by Vessey et al (5) in 144 caregivers in the early '90s. The most upsetting factors were found to be: separation from the child after induction, seeing and feeling the child go limp during induction, witnessing the child's distress before induction, and being reminded of past negative experiences. In one extreme example, the father stated "I re-experienced watching my own mother die". Content analysis of responses to the open-ended questions identified three common themes: a sense of helplessness, lack of psychological support, and loss of control by not being permitted to watch the procedure (5). There was no correlation between the magnitude of caregiver discontent and caregiver education level, the child's age, or previous experience of participation in anaesthetic induction (5, 7).

Most studies relating to CPIA interrogate the fundamental question of whether caregivers want to be present at induction of anaesthesia, and their reasoning. A survey by Braude et al (11), published in 1990, evaluated the attitudes of caregivers present at induction in 90 caregivers. They demonstrated that 32% of caregivers who participated in CPIA would have declined to be present had they known their child would be sedated at induction.

Results obtained from an Australian questionnaire survey by Henderson et al (6) in 1993, revealed that 12% of caregivers did not wish to be present during the induction of their child. The major reason identified was to avoid displeasure.

Another study conducted by McEwen et al (7) at Sheffield Children's Hospital in the United Kingdom (UK) from 1994, found that even though most of the caregivers would choose to accompany their child to the operating room for induction, 64% of these caregivers were still dissatisfied by the experience. A similar result to Henderson et al (6) was obtained in Kuwait by Purva et al (12) in 2001. A questionnaire survey of 80 caregivers showed that even though 89% of caregivers wished to be present for the induction process, the remaining 11% did not want to be present at all.

In 2018, a qualitative analysis done by Waseem et al (8) evaluated caregiver satisfaction with regards to CPIA in the United States of America (USA). Ninety-six caregivers were contacted by telephone for a qualitative, semi-scripted interview. The perception of induction as being "distressing to witness" was a theme reported by caregivers who were present during induction. Fifty percent of the caregivers described the experience as traumatic to witness. Caregivers labelled the event as "depressing", "upsetting", "emotional", and "hard to watch".

Sadeghi et al (9) showed that even though CPIA might improve the perceived quality of anaesthesia induction in some cases, it does not decrease caregiver anxiety. In a prospective randomised study by Carlsson et al (13) it was established that visiting the operating theatre prior to induction of anaesthesia did not decrease caregiver anxiety associated with CPIA. Ayenew et al (14) evaluated the prevalence of caregiver anxiety in 2019 and concluded the overall parental anxiety was 74%. When caregiver anxiety is excessive, it negatively affects the caregivers' coping skills while the children are undergoing surgery (15).

CPIA is not just psychologically distressing but has physiological effects on caregivers. The correlation between CPIA and caregivers' physiological stress response was examined in 2003 by Kain et al (10) in the USA. CPIA was associated with an increase in heart rate and skin conductance level of the caregiver present at induction. Skin conductance level is a measure of skin conductance resulting from sweat gland activity, which is modulated by the level of emotional stress experienced at that moment. The author demonstrated that CPIA was associated with an increase in the heart rate and skin conductance level in all 80 caregivers enrolled.

The increase in heart rate and skin conductance level observed is a reflection of the psychological stress the caregivers experience during induction of anaesthesia of their children. Caregiver heart rate throughout the induction process peaked at two points: the first was just before induction of anaesthesia and the second was immediately as the caregivers left the operating theatre, separating from their child. The stress associated with CPIA may pose a risk of cardiac dysrhythmias or myocardial ischaemia in some caregivers. When the potential for serious cardiac events is combined with the potential for other injuries, the liability from CPIA may be greater than previously appreciated (16).

1.2.2 A positive experience

In contrast to the aforementioned studies evaluating the caregivers' negative perceptions, numerous studies have shown that CPIA has been associated with positive outcomes and increased caregiver satisfaction (8, 9, 16-20).

According to Waseem et al (8) many caregivers believe they contributed to the whole experience in a positive and constructive way. The factors motivating caregivers to be present during induction include caregiver anxiety, child anxiety, caregiver curiosity, caregiver fear, the caregiver's sense of duty, caregivers' own anaesthetic experience, to comfort their children, and the feeling of expectation by medical staff (16, 18).

Caregiver attitudes and children's cooperation towards CPIA were studied in one hundred caregivers by Leelanukrom et al (19) in Thailand in 2002. They concluded that 87% of caregivers thought their presence was beneficial to their child. A similar result was obtained in 2014 in a randomised controlled trial done by Sanchez et al (20) in Spain, in which CPIA and perceived quality of anaesthesia were evaluated. Caregivers of 60 patients were randomised into two groups: one group where CPIA was implemented, and a control group. The overall perceived quality of anaesthesia was higher in the group where CPIA was implemented. Some of the caregivers who participated in CPIA reported they were less anxious than those who were not present, although these results have been disputed in controlled studies (9, 21, 22).

Leuhmann et al (23) showed that perceived caregiver anxiety is reduced when a family-centred approach is adopted in paediatric induction of anaesthesia.

The main focus of a family-centred approach is having a caregiver present during the induction process.

1.3 The Anaesthetist's perspective

CPIA remains a controversial topic among anaesthetists, and is not universally practiced around the world (24). In a survey of anaesthetists in the UK and the USA, Kain et al (25) noted in 1996 that caregivers were present in 75% of anaesthetic inductions in the UK, but in less than 5% in the USA. While anaesthetists in the USA agreed that there are benefits to CPIA, only a minority perform this practice routinely (26).

Specific reasons why anaesthetists may refuse CPIA include the need for rapid-sequence induction, patient fragility, the complexity of the situation, inexperience by the anaesthetist, local hospital policy, unsuitable theatre design for caregivers to be present, disruption of the operating room, need for additional support staff to escort caregivers, and the possibility of legal implications if the caregivers faint and sustain injuries (6, 11, 26-29).

The decision to allow CPIA depends on local hospital policy and the discretion of the attending anaesthetist (29). According to Lerman (16), CPIA should be seen as a “therapeutic option to potentially alleviate anxiety in the caregiver present or the child undergoing anaesthesia”, and not be seen as a “parental right”. He states that alleviating the anxiety of the child should take precedence over alleviating the anxiety of the caregiver and that it is the responsibility of the attending anaesthetist to judge which of the available therapeutic options best satisfies the needs of the child.

A survey done in 1996 among 222 SA anaesthetists, including anaesthetists from both the public and private sector, showed that 55% would agree to allow caregivers to accompany children at induction of anaesthesia (28).

1.4 The Child's perspective

A study by Chorney (30) showed that more than 40% of children displayed distress during the process of induction. Children's perioperative distress can lead to short and long term complications and negative clinical outcomes (31).

Immediate complications that can occur in the operating theatre include crying accompanied by desaturation, secretions, laryngospasm, and emergence delirium (32, 33). Postoperative maladaptive behaviour may be present in 30-54% of children during the first 2 weeks following surgery (34), and in up to 7% of children after 1 year (35). These include night-time crying, enuresis, separation anxiety, nightmares, apathy, withdrawal, decreased appetite, thrashing, and inconsolability (31).

Numerous different methods have been explored, and are being explored, aiming to reduce the stress levels of these children. These include pharmacological and non-pharmacological methods. Pharmacological methods include the use of: midazolam (36,37), fentanyl (38), clonidine (39), chloral hydrate (38), melatonin (40), dexmedetomidine (41), and ketamine (42). Non-pharmacological methods include: CPIA (43), the use of medical clowns (43,44), audio-visual aids such as video games (43,45), mask introduction and exposure (46), hypnosis (44), art therapy (47), toys (47), music therapy (48), traditional or web-based informational and orientation programs (49), and family-centered perioperative preparation workshops (49,50).

Extensive research has been done regarding CPIA and perioperative child anxiety levels, focussing on the effect the caregiver's presence has on the child during the induction process and its postoperative implications on the child (1, 24, 43).

In a recent qualitative Swedish study by Andersson et al (51) published in 2020, 28 children between the ages of 4 and 13 participated and were interviewed after the surgery. The children thought the presence of their caregivers during induction of anaesthesia reduced their own anxiety. Research done by Ozdogan et al (52) in 2017 found that a lower salivary cortisol level was present in children who were accompanied by their mothers during the induction process, indicating that caregiver presence at induction may reduce stress during this period.

Contradictory to the previous two studies, the literature shows that in most cases caregiver presence does not appear to alleviate the child's anxiety (1, 24, 29, 43). In 2015, Manyande et al (43) supported these findings in a systematic review of 28 studies including 2681 patients, that the presence of a caregiver with the child during induction of anaesthesia did not reduce the child's anxiety.

Anxious caregivers were found to be a strong predictor of a higher incidence of perioperative distress in children (22, 53-55).

A study in 2017 by Rosenberg et al (53) deduced that there was a direct correlation between caregiver perioperative anxiety and postoperative analgesic requirements in their children. Analgesic requirements in the post-operative stage were found to be higher in the children of caregivers who were anxious.

Topalel et al (54) examined the relationship between age and perioperative anxiety levels and concluded that an inverse relationship exists between the child's age and anxiety levels. Similar studies have reported a significant relationship between age and perioperative anxiety (56, 57). Younger children were found to be more anxious.

Several studies suggest that premedication is more effective than CPIA in reducing the level of anxiety in children at induction (1, 17, 43, 54). A survey done by Kruger et al (27) in 2016 in Canada revealed that the majority of caregivers would prefer a premedication for their child prior to surgery.

A study conducted by Sadeghi et al (9) in 2017 found that CPIA in combination with oral midazolam was superior in reducing perioperative anxiety, compared to either modality alone. However, a few studies do not recommend perioperative premedication because of its possible side effects and additional cost and workload (58, 59).

1.5 CPIA and the challenges in developing countries

Few studies have been done in developing countries investigating CPIA, especially on the African continent. In 2002 Amanor-Boadu (60) conducted a study in Nigeria, evaluating the effect that CPIA has on unsedated Nigerian children presenting for day case surgery and the behaviour of the caregiver present. One hundred and eighteen children and their attending caregivers were studied. It was found that induction heart rates were significantly higher in the children whose caregivers were absent. A questionnaire survey concluded that all the caregivers, except one who cried and another one who was too anxious, would welcome the opportunity to be present at induction should their children require anaesthesia in the future.

Caregiver ethnicity and language may impact desire and motivation to be present at induction. This subsequently impacts the effectiveness of CPIA and child anxiety at anaesthesia induction, as evident in a study done by Fortier et al (61) in 2012 in the USA.

Analysis controlling for group differences in socioeconomic status and demographic variables revealed that Hispanic caregivers (English- and Spanish-speaking) reported significantly greater levels of desire to be present for their child's induction compared to English-speaking Caucasian caregivers. English-speaking Hispanic caregivers also reported greater levels of beliefs about the impact of anxiety on children's anaesthesia induction compared to English-speaking Caucasian caregivers (61).

1.6 Summary

Numerous papers have been published on the subject of CPIA, with the majority of the research focussing predominantly on perioperative caregiver anxiety and child anxiety levels. Few articles address the subject of the caregiver's perceptions and attitudes regarding their presence at induction.

CPIA is welcomed at Chris Hani Baragwanath Academic Hospital (CHBAH) and practiced daily by most anaesthetists performing paediatric anaesthesia. It is utilised as a way to improve patient co-operation in theatre prior to induction, and potentially decreasing perioperative anxiety levels in the patient. It is not, however, clear whether these benefits are at the emotional expense of the caregiver.

By understanding how caregivers in SA perceive CPIA, the practice of CPIA can be tailored to be beneficial to all participants in the induction process.

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Section 2: Author's guidelines

Contents

- 2.1. Submission
- 2.2. Aims and Scope
- 2.3. Manuscript Categories and Requirements
- 2.4. Preparing Your Submission
- 2.5. Editorial Policies and Ethical Considerations
- 2.6. Publication Process After Acceptance
- 2.7. Post Publication
- 2.8. Editorial Office Contact Details

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Section 3: Draft article

Attitudes and perceptions of caregivers regarding their presence at induction of anesthesia

Johannes Jacobus Le Roux, MBChB(Pret), DA(SA), Dip PEC(SA),
Dip Int Med(SA), Dip HIV Man(SA)^{1, 2}

Cara Redelinghuys, MBChB(UCT), DCH(SA), DA(SA), MMed(WITS), FCA(SA)^{1, 2}

1. Department of Anesthesiology, School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

2. Department of Anesthesiology, Chris Hani Baragwanath Academic Hospital

Corresponding Author

JJ le Roux

Department of Anesthesiology
Chris Hani Baragwanath Academic Hospital
26 Chris Hani Rd
Diepkloof
Soweto
Johannesburg

Email: kobusleroux@hotmail.co.uk

Contact Number: +27 11 933 9335

Orchid ID: <https://orcid.org/0000-0003-3922-8910>

Running title: Caregiver views on presence at induction

Key words: Africa; anesthesia; anesthesiology; attitude; caregivers; parents

Abstract

Background

Caregiver presence at their children's induction of anesthesia is practiced daily around the world. International studies demonstrated conflicting emotions in caregivers present at induction of anesthesia of their children. These positive and negative emotions ranged from comforting and reassuring, to traumatizing and disturbing. Research exploring the attitudes and perceptions of caregivers regarding this practice is limited within the African context.

Aims

The aim of this study was to describe caregivers' attitudes and perceptions regarding their presence at induction of their children's anesthesia.

Methods

This descriptive, phenomenological, qualitative study was conducted in 2020 at Chris Hani Baragwanath Academic Hospital, a 3200-bed facility in South Africa. Twenty caregivers of children (aged 2 to 8 years) undergoing elective surgery were recruited. Data was collected through face-to-face, in-depth, semi-structured individual interviews using purposive sampling. Interviews ranged between 11 and 55 minutes in duration and were conducted within 24 hours of induction of anesthesia. The audio-recorded interviews were transcribed and subjected to inductive reflexive thematic analysis.

Results

Six themes were developed: Fulfilment of caregiver role, A positive experience, A traumatic experience, Not prepared for the experience, My world is my reality, and Your world is a place different to mine.

Conclusion

A caregiver's perception of the induction process is influenced by multiple factors. A finding specific to our cohort is the interplay between complex multifaceted cultural beliefs and anesthesia of their children. By acknowledging and addressing these beliefs, a caregiver's presence can be tailored to ensure a positive experience for all involved at induction.

Clinical implication

Numerous studies have been done globally evaluating how a caregiver perceives the practice of being present at their child's induction, broadly describing the research findings as either a positive or negative experience. Cultural beliefs in South Africa (SA) influence how a caregiver perceives the induction process of their child. The current practice of caregiver presence at induction of anaesthesia (CPIA) can be modified to accommodate cultural beliefs to ensure a positive experience for all parties involved at induction.

Introduction

Parental presence at induction of anesthesia (PPIA) is defined as "the interaction of the child, parent, anaesthetist, and peri-operative nurse in the induction room for the duration of anesthesia induction" (1).

The term PPIA represents a challenge when applying parental constructs to the diverse family forms that currently exist in SA. The concept of the nuclear family with a spouse or partner couple residing with their own biological children is a modern construct. In the South African context, CPIA is a more appropriate term, as 62% of children are cared for by a person other than the biological parent of the child, such as a grandparent or other relatives (2).

CPIA is not a new concept and has been practiced for decades (3). A 2016 systematic review by Erhaze et al (1) revealed that debate surrounds this practice worldwide.

Multiple studies on CPIA have been conducted in the Americas (3-7), Europe (8-10), and Asia (11-13) describing the advantages and disadvantages from the perspectives of the various role players involved in the induction process.

International research has shown a dichotomy in emotions in caregivers present at induction of anaesthesia, ranging from reassuring to traumatizing. Research from the African continent is however limited (14). No studies were identified exploring the attitudes and perceptions of SA caregivers towards CPIA. SA is a country rich in diversity and culture, where multiple ethnic groups, speaking different languages coexist. The objective of this study was to describe the caregivers' experience of being present at induction of anaesthesia.

Methods

Design and setting

A descriptive, phenomenological, qualitative study design was chosen utilizing an inductive reflexive thematic approach as described by Virginia Braun and Victoria Clarke (15). Reflexive thematic analysis requires the researcher to move back and forth between the steps involved in thematic analysis. This study design is well suited to datasets that relate to people's personal experiences or perceptions. It is an objective way of demonstrating results from a highly subjective set of data (16).

Individual, face-to-face, semistructured interviews were conducted at Chris Hani Baragwanath Academic Hospital in SA, where greater than 2700 paediatric surgical procedures were performed in 2020. The researchers who conducted the interviews were not directly involved in the anesthetic management of the patients.

Ethical considerations

The Human Research Ethics Committee (Medical) of the University of the Witwatersrand approved this study (M200662). All caregivers gave verbal and written informed consent to participate in this study.

Sampling and recruitment

Purposive sampling was used to recruit participants. Purposive sampling, also known as judgmental, selective, or subjective sampling, is a form of non-probability sampling in which researchers rely on their own judgment when choosing members of the population to participate in their surveys (16). The researcher identified caregivers that accompanied their children to hospital, and invited them to partake in study based on the inclusion and exclusion criteria. The caregiver inclusion criteria required that their children be younger than 18 years of age and undergoing elective surgery. Caregiver exclusion criteria included caregiver age less than 18 years and those unable to communicate in English.

Data collection

All the interviews were conducted in English, audio-recorded, and semistructured according to an interview guide. The interview guide, outlined in Table 3.1, was developed based on the research question and existing literature (4-13, 18).

Only the researcher and the caregiver were present during the interview. Participants' responses to the interview questions and their nonverbal cues while answering questions were noted in field notes for subsequent analysis.

Table 3.1 Interview guide

Icebreaker questions Is this your first time at Chris Hani Baragwanath Academic Hospital? When did you arrive at the hospital?
General questions Age of child Gender Nature of operation Caregiver's relationship to the child Age of caregiver Level of education Home language
Questions regarding induction of anesthesia Were you present when your child underwent anesthesia? If yes: Was it your first time escorting someone to theatre? Did you want to be present watching your child undergo anesthesia today? Can you tell me more about the experience? Why did you choose to be present? How did you feel the moment when you saw your child fall asleep? Did you have any fears/concerns? Were you happy being present? If so, why? Did you know what was going to happen today in theatre or how it was going to be? How did being there when your child went to sleep affect you? Would you do it again or recommend it to someone? Is there anything else you would like to tell me about your experience of being there when your child went to sleep for the operation? Do you think your child benefited from you being present for induction? Do you have anything else you would like to tell be about your experience in theatre? Do you have any questions? If no: Would you have liked to be present for the anesthesia induction? Why did you not go to theatre? Were you happy not being present? If your child had another operation, would you reconsider being present for induction? Do you have any questions?

Data analysis

Inductive reflexive thematic analysis requires the researcher to analyse the data iteratively, to move back and forth between the six steps involved in the analysis process, and to develop codes and themes directed by the content of the data (15).

Audio recordings were transcribed verbatim by researcher Johannes le Roux (JLR) and checked for accuracy by researcher Cara Redelinghuys (CR). The first step required the researcher to read and reread the transcripts of the interviews to become intimately familiar with its contents. Step two focussed on generating codes from the transcripts on a line-by-line basis by researcher JLR. The codes were reviewed by researcher CR. Step three involved the development of initial themes by researcher JLR. The iterative and inductive process of reflexive thematic analysis helped the researcher identify patterns across the entire data-set, which assisted in the active development of themes from the codes.

Theme development is a co-production on the part of the researcher, the data, and the context (15). Step four involved reviewing themes by checking them against the entire dataset. The themes were discussed between the researchers and adapted. This stage of analysis was used to establish if the themes told a convincing story, one that strives to answer the research question. Step five focused on developing a detailed analysis of each theme and naming the theme. The final step involved contextualising the analysis to existing literature. Having interviewed 20 caregivers, the data reached the point of no new codes or themes and was therefore deemed saturated. The data collection and methodology are summarised in flow diagram Figure 3.1.

Measures to ensure trustworthiness

Trustworthiness of the qualitative results was considered using the principles of confirmability, credibility, transferability and dependability (17).

Confirmability

Confirmability was ensured by having a researcher collect the data who was not involved in the care of the child. The caregivers were more likely to share their thoughts and experiences without the concern that their responses would affect the care of their children. Debriefing sessions between both researchers helped prevent biases from only researcher JLR's perspective on the data collected.

Credibility

Credibility was ensured by having researcher CR review the transcripts and themes, and to confirm that the themes were developed from data collected in the transcripts.

Credibility was also ensured by inviting free responses without judgement from a sufficiently large and representative sample of caregivers.

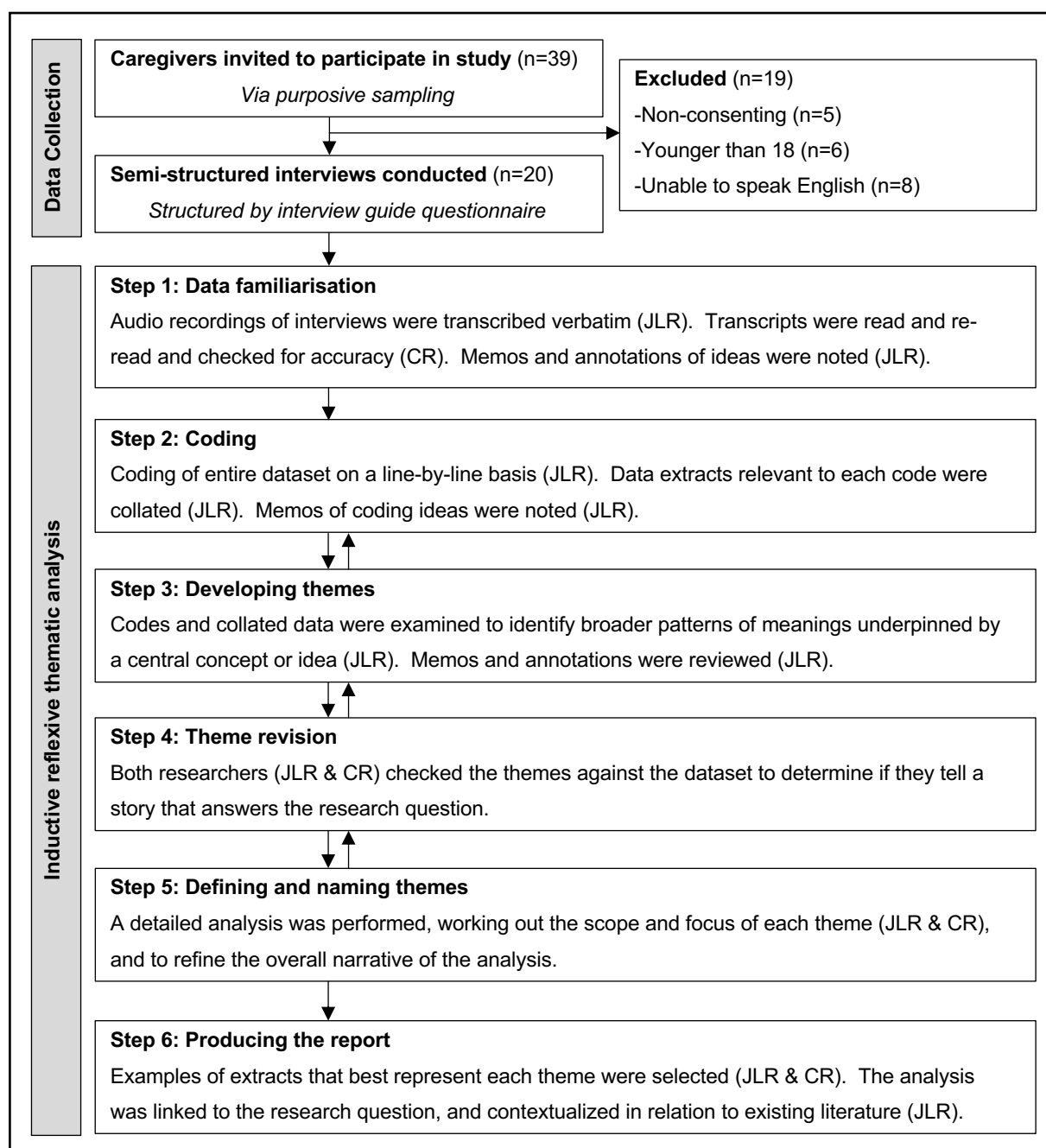


Figure 3.1 Data collection and methodology

Transferability

Transferability of this study was ensured by providing information on the number of researchers involved in the study, the data collection methods used, the number and length of data collection sessions, and the period over which data was collected.

Dependability

Dependability was addressed by having researcher CR review the activities of researcher JLR to confirm that techniques for meeting the credibility and transferability standards were met. These included reviewing the method of data collection, the interpretation of findings, and the reporting of results.

Results

Data collection and analysis occurred over three months, from October to December 2020. Thirty-nine caregivers were approached to participate in the study and twenty caregivers gave consent. Twelve of the interviews were conducted within 30 minutes of induction of anesthesia in an interview room located within the theatre complex. Eight of the interviews were conducted within 24 hours of induction in interview rooms located within the different hospital wards.

Interviews lasted between 11 and 55 minutes. The ages of the patients at the time of surgery ranged from 2 to 8 years. Caregiver demographics are summarized in Table 3.2.

Table 3.2 Caregiver demographics

Demographic	n = 20
Caregiver present	
Mother	19
Father	1
Caregiver age	
20-24	3
25-29	9
30-34	6
35-39	2
Occupational status	
Employed	6
Unemployed	14
Highest level of education	
Primary (Grade 0 – 7)	12
Secondary (Grade 8 – 12)	7
Tertiary (University/College)	1
Home language	
English	2
Sepedi	1
Sotho	3
Siswati	1
Swahili	1
Tswana	7
Zulu	5
Previous theatre experience	
First time in theatre environment	18
Second time in theatre environment	2
Interview	
Conducted within 30 minutes of induction	12
Conducted within 24 hours of induction	8

Six themes were created from the data. Quotations were grouped together under specific codes, which were then used to develop themes. A summary of the six central themes, codes, and representative quotations are presented in Table 3.3, Table 3.4, and Table 3.5.

Fulfilment of caregiver role

When exploring the motivation for CPIA, different reasons were described by the caregivers to justify their presence at induction. Caregivers (n=10) thought that their presence would benefit their children by calming them down and providing support. “She needs my support, most of the people there are strangers, she needs her mother” (Interview 9). It was important for caregivers to understand what was happening in theatre (n=8) and to see that their child was comfortable and safe (n=7). “I want to know what happens there” (Interview 7). “I need to see he is fine” (Interview 20). Assisting the medical team in the induction process was also noted to be a motivation for CPIA (n=4).

“I want to help the doctor to make my son sleep” (Interview 4). For some of the caregivers (n=6), their attendance was at their child’s request, while for others (n=5) it was because they were advised by other caregivers to attend.

A positive experience

Caregivers admitted that they did not regret being present for the induction process in theatre (n=14). They took comfort in knowing that their child was receiving the medical care needed. Caregivers stated that should their children require anesthesia again in the future, they would want to be present for the induction (n=11). They also acknowledged that they would recommend CPIA to other caregivers (n=12).

“I will tell others that they must go with, no matter what” (Interview 1)

“I know he is getting the help he needs” (Interview 4)

“I was grateful for being there” (Interview 15)

Table 3.3 Fulfilment of caregiver role and A positive experience

Theme: Fulfilment of caregiver role	
Code (n)	Quotation
Believing their presence will benefit the child (10)	"I try to calm him down, even though he fights" (Interview 1). "The time he was blowing the balloon, he kept on looking at me, smiling. You see...it was important for him" (Interview 4). "He needs me there, me being there, it's something to him" (Interview 5). "It makes the baby more relaxed and comfortable, they tend to listen more" (Interview 13).
For reassurance that the child is 'OK' (7)	"Rather than, they take your child, you don't even know where they going with him" (Interview 3). "I wanted to be with my son, to see he is fine" (Interview 5). "I think if I was not there, I will not know that my son was comfortable" (Interview 10).
To assist the medical team (4)	"I went inside the room with him, so that I can help the doctors" (Interview 16).
At the child's request (6)	"She asked me 'are you coming with me?', I said 'yeah I'm coming with you'" (Interview 11).
Advised by other caregivers (5)	"They said I must go with the baby" (Interview 6). "They gave me advice to do this" (Interview 8).
To know and understand what is happening (8)	"To familiarize myself with the theatre, and to see how they make the baby sleep" (Interview 12). "We are also curious, we want to know what you guys do in there" (Interview 16).
Theme: A positive experience	
Code (n)	Quotation
Positive feelings towards being present (14)	"It was good for me, now my heart is a bit better" (Interview 10). "I was happy to go inside, it changed my mindset about theatre" (Interview 12). "I was grateful for being there, I learned" (Interview 15). "I enjoyed the procedure" (Interview 16).
Future inductions (11)	"I'll be glad to go again" (Interview 3). "I will definitely go again" (Interview 18).
Advise to other caregivers (12)	"I would tell that person, even though it was scary, after they explain everything, you will calm down" (Interview 2). "Just do it for them, because your presence means more than anything there" (Interview 5). "It's good to go. And ask when you need to, don't keep quiet because silence it will kill you" (Interview 10). "Support your child, go to theatre" (Interview 15).

A traumatic experience

In contrast to the positive experiences, the induction process was described as traumatic and painful to witness (n=14). Caregivers described feelings of fear, sadness, and emotional pain. The child's behaviour and appearance during and after the induction process were noted to be particularly upsetting and disturbing to observe (n=11).

"I asked myself, why is he kicking? It was painful to see" (Interview 16)

"'Mommy, now they going to strangle me?'. I thought I was losing my child" (Interview 17)

Not prepared for the experience

Eighteen caregivers indicated that it was their first time in a theatre complex and thirteen stated they did not have any idea what to expect. Caregivers felt they were not emotionally prepared for the induction process (n=8).

“I was not ready. I was shocked. I didn’t know that you need to put pressure and press the baby down with force” (Interview 9)

“I wish I knew it was going to be like this” (Interview 19)

Table 3.4 A traumatic experience and Not prepared for the experience

Theme: A traumatic experience	
Code (n)	Quotation
Negative feelings towards being present (14)	“I wasn’t happy” (Interview 1). “I am shaking, I can’t talk” (Interview 2). “I’m afraid. My heart is so painful” (Interview 8). “It was so scary” (Interview 14). “It wasn’t nice at all. I was hurting for my child” (Interview 19).
Childs behaviour and appearance during induction (11)	“She was like, like loose...like she’s no more...” (Interview 2). “She was scared” (Interview 11). “She was crying” (Interview 15). “She looked a little bit different, like not the same” (Interview 8).
Theme: Not prepared for the experience	
Code (n)	Quotation
Uncharted waters (13)	“It was my first time” (Interviews 1, 14). “I have never been inside a place like this” (Interview 5). “This all is new for me” (Interview 12).
Not emotionally ready (8)	“I wish I knew before how today was going to be” (Interview 2). “I thought maybe when they say they will make him sleep, they will give him an injection or pillies (referring to pills) or something. I didn’t expect that balloon, it was making me scared” (Interview 4). “I don’t know what is going to happen there, that’s why I’m shaking” (Interview 7). “If only I knew how it worked inside, then I would be calmer” (Interview 11).

My world is my reality

Caregivers painted a picture of their reality by describing their cultural beliefs surrounding the theatre environment, and how these beliefs influence the experience of the induction process (n=11). Caregivers explained that it is not common practice to disclose to the community that they or their children will be receiving anesthesia. There is a local belief that the individual undergoing anesthesia is vulnerable to witchcraft during this period. Caregivers stated that one should only speak about the anaesthetic after it has happened, to protect the child from people in the community wanting to take advantage of this opportunity to perform witchcraft on them. This belief was not limited to a specific ethnic group in the interviews conducted.

“If you go to theatre, there is witchcraft. In our society as black people, I’m sure if you ask others you’ll find this information I am telling you about.”

(Interview 3)

“My mother told me that I must not tell everyone, because you don’t know what they (other people) wish for you and your child. We believe that there is witchcraft in there” (Interview 15)

“When they make you sleep in there (theatre) you are ‘half dead’, you can’t just wake up when you want to, it’s easier for others to bewitch you then”

(Interview 2)

Caregivers (n=12) described how having a home language different from the attending anaesthetist limited communication in theatre. “If we speak the same language it would be better” (Interview 14). They voiced their opinions about people in their community, and how these people influenced their perception of anesthesia and surgery (n=7). “People say it’s so scary in there” (Interview 12). Caregivers (n=6) also elaborated on the role television played in developing preconceived ideas, and explained how previous theatre experiences changed the way they anticipated future theatre experiences (n=5). “We see people die in theatre in the movies” (Interview 20). For some caregivers (n=8) their religion played a big part in the way they experienced the perioperative period. “My strength comes from God. I must trust him” (Interview 18).

Your world is a place different to mine

Caregivers described the theatre environment and the induction process as a place and process very different from what they are comfortable and familiar with (n=9). They described the event as similar to visiting a foreign country, and although surrounded by many people, still a very ‘alone’ experience. They spoke of theatre as a cold, uncomfortable, almost surreal place, very different from their world. “Seeing that green bed and big lights made me scared” (Interview 18). “I felt alone in there” (Interview 20). Many caregivers stressed the fact that this ‘different world’ is a place where their child might die (n=14).

“Some go there and sleep forever” (Interview 2)

“I’m scared he never leaves your theatre” (Interview 8)

Table 3.5 My world is my reality and Your world is a place different to mine

Theme: My world is my reality	
Code (n)	Quotation
My religion (8)	"I was praying that everything would go well" (Interview 2). "Everything is possible with God" (Interview 9). "I believe in God, that is my strongest weapon" (Interview 10).
My cultural beliefs (11)	"If you are telling someone, maybe they will bewitch him not to wake up. Witchcraft is not like using 'muti' all the time, you can be a witch by only your heart" (Interview 4). "My baby's father doesn't know that we came to theatre today, he won't wish him well. I will tell him after the operation that he went there" (Interview 6) "They think they are going to be witched" (Interview 8). "There are people who believe you should not cut (referring to surgery) yourself, if you die, your ancestors want you like that, full, not cut. All black people think they are not going to wake up. We are scared for that part...the sleeping part" (Interview 9). "I come from a rural area, and people there think that most hospitals are terrible places" (Interview 12).
My language (12)	"If the doctor can speak my language, maybe I can understand her better" (Interview 2). "I didn't really understand what happened, but I was there" (Interview 7). "When you get somebody, who speaks the same language, I think it would be better. Some people are typical Zulus, they don't even understand an inch of English" (Interview 10). "To be honest, it would be better for my child if the doctor spoke Tswana" (Interview 15).
My people, my support (7)	"My parents support me, they support me a lot" (Interview 3). "My cousin says it's a good thing for me to come with to theatre" (Interview 15). "My husband also wanted to come with to theatre" (Interview 11).
My previous theatre experiences (5)	"For my caesar, they gave me something like an injection. I had a bad experience because I felt the pain" (Interview 2).
Media (6)	"I've seen it on TV, you know, nurses running 'no doctor, we losing blood'. I was imagining all those things" (Interview 17).
Theme: Your world is a place different to mine	
Code (n)	Quotation
An uncomfortable and unfamiliar environment (9)	"Seeing the machines, that made me scared" (Interview 2). "There are bright lights, scissors everywhere" (Interview 3). "You see nurses wearing plastic. It's like a mortuary" (Interview 10). "That place is so cold. The big doors..." (Interview 14). "Hearing the machine 'boop boop boop'" (Interview 15).
A place where my child might die (14)	"Maybe my child won't wake up in there" (Interviews 1). "What if my baby dies?" (Interviews 4). "I can't leave him in there forever" (Interview 14).

Discussion

The themes: Fulfilment of caregiver role, A positive experience, A traumatic experience, and Not prepared for the experience, are consistent with results from research done abroad (9). As evident from international studies, an array of emotions can be experienced during a significant event such as CPIA.

The caregivers' experience of CPIA can fundamentally be described as either negative or positive. Results from our research showed that cultural beliefs play a role in the way caregivers perceive anesthesia and the induction process, and to a large extent contribute to the negative emotions caregivers experience during CPIA. Due to the complexity of emotions and limitations of our population, further research is needed in this sphere.

The themes, A traumatic experience and Not prepared for the experience, relate to negative viewpoints caregivers have towards CPIA. Numerous studies have been done between 1990 and 2020, evaluating the caregivers' negative viewpoints associated with CPIA. These negative viewpoints include: caregiver discontent (4), upset (4, 8, 9, 18), displeasure (8), anxiety, and the physiological stress response associated with CPIA (5, 11). In 1990, caregiver discontent associated with participation in the induction of anesthesia of their children was examined by Vessey et al (4), where the most upsetting factors to caregivers were identified. These were found to be: separation from the child after induction, seeing and feeling the child go limp during induction, witnessing the child's distress prior to induction, and being reminded of past negative experiences. A recent qualitative analysis done by Waseem et al (9) in 2018, evaluating caregiver satisfaction with regards to CPIA, described the induction of anesthesia as "distressing to witness". These findings were similar to what caregivers described in our setting at CHBAH.

The themes, Fulfilment of caregiver role and A positive experience, relate to positive viewpoints caregivers have towards CPIA. In contrast to the studies evaluating the caregivers' negative perceptions, many international studies have shown that CPIA has been associated with positive outcomes and increased caregiver satisfaction (6, 11, 12). According to Waseem et al (9), caregivers believe they contributed to the whole experience in a positive and constructive way. Reasons identified for caregivers to be present at induction include caregiver anxiety (7, 10, 12, 13), child anxiety (10, 12), caregiver curiosity (12), caregiver fear (10, 12), the caregiver's sense of duty (7, 12), caregiver's own anaesthetic experience (12), to comfort their children (12), and the feeling of expectation by medical staff (7, 12). These international findings are similar to the results obtained in this study.

Few studies have been done in developing countries investigating CPIA, especially on the African continent. In 2002 Amanor-Boadu (14) conducted a study in Nigeria and concluded that caregivers would welcome the opportunity to be present at induction should their children require anesthesia. No local SA study could be identified describing how caregivers in SA feel about CPIA.

Themes, My world is my reality and Your world is a place different to mine, demonstrate that the caregiver's perception of CPIA, and the way they perceive the anesthetist and theatre environment, can be seen as two very different conceptual worlds.

Reasons identified for the different perspectives include: diverse and complex cultural beliefs, language differences leading to communication barriers in theatre, past unpleasant theatre experiences, and a negative connotation to the theatre environment as portrayed and depicted by the media. The anaesthetist's world is perceived as a cold and uncomfortable environment, a place where the caregiver's child might die.

The theme, My world is my reality, revealed how a specific cultural belief can lead to a limited support structure for the caregiver. This is driven by local beliefs and the fear of what might happen should caregivers disclose that their children will be receiving anesthesia. The majority of the time caregivers keep to themselves and experience the perioperative period alone and unsupported. By not being able to openly talk about going to theatre and any concerns regarding the experience that lies ahead, the caregivers support structure is effectively limited to only a handful of people that they trust. Commonly, the only people with whom they can talk and discuss their concerns are the other caregivers at the hospital, as evident from interview 10: "I only have the other mother in my cubicle to talk to, no-one else".

Changing a caregiver's perception is difficult because their beliefs and views are cemented and are almost permanently a part of their thoughts (19). To change a negative perception of CPIA into a positive perception, the gap between the two conceptual worlds needs to be narrowed.

This can be achieved by bridging the barriers created by the differences identified, starting with awareness through communication, then shifting focus to education on both the caregivers' and anaesthetists' part.

The first consultation with the caregiver prior to induction of anesthesia is an important time that should be regarded as a meeting between systems of beliefs (20). The anaesthetic team should familiarize themselves with different cultural beliefs regarding anesthesia and the theatre environment. During the first consultation with the caregiver, they should actively explore concerns and fears with regards to the caregiver's beliefs. The anaesthetic team must take the caregiver's opinions and viewpoints seriously, not for their "medical" validity, but as an expression of the caregiver's perception of reality. The caregiver's framework for understanding the induction process might be different from the anaesthetist's, but not of less importance. All therapeutic decisions, whether trivial or significant, should be made within the framework of the caregiver's perception (20).

Modifications to our current practice of CPIA should include: allowing caregivers the opportunity to familiarise themselves with the theatre environment prior to surgery, providing a detailed explanation on the process of induction of anesthesia and how the child will behave and appear during induction, what medication is used to induce anesthesia, how we wake the patient up from anesthesia, creating the opportunity for the caregiver to discuss the practice of CPIA with another caregiver who has experienced CPIA, ideally speaking to the caregiver in their native language, and allowing the caregiver to express cultural beliefs and viewpoints.

Limitations of this study included that only English-speaking caregivers were interviewed, no translator was used, and the results obtained were from the community of Johannesburg in SA. The local community that formed part of the study is not representative of all the ethnic groups in SA. It can therefore not be assumed that the same cultural beliefs apply to SA as a whole.

Conclusion

Perception is a lens through which we view people and events. This influences our experience of our own reality.

In the SA context, the lens through which the caregiver views anesthesia and the anesthetist's world is strongly influenced by complex and multifaceted cultural beliefs. These viewpoints are shared by many different ethnic groups in SA and are not limited to a specific cultural group or ethnic minority. To the outsider, it might seem like superstitious beliefs or taboo but to the caregiver, it is their reality.

Before embarking on changing the perception of a caregiver, we need to understand the deeper meaning and reason behind their viewpoints. Only then can barriers created by differences be addressed. Further research is needed to explore how cultural beliefs influence a caregiver's viewpoint with regards to CPIA, not only locally but globally.

Authors contributions

JLR: conceptualised the study design, wrote the study protocol, collected data, analysed the data, and wrote the first draft of the article.

CR: provided research support and assisted with study design, data analysis, data presentation and article drafting.

Conflict of interest

The authors declare no conflict of interest.

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Section 4: Proposal

Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia

Johannes Jacobus le Roux

2417369

Supervisor

Cara Redelinghuys
Department of Anaesthesiology

4.1 Introduction and problem statement

Parental presence at induction of anaesthesia (PPIA) is defined as the interaction of the child, parent, anaesthetist, and peri-operative nurses in the induction room for the duration of anaesthesia induction (1).

The term PPIA represents a challenge when applying parental constructs to the diverse family forms currently existing in South Africa. The concept of the nuclear family with a spouse or partner couple residing with their own biological children seems to be perpetuated in the Western culture. In the South African context, caregiver presence at induction of anaesthesia is a more appropriate term (CPIA), as 62% of children are cared for by a person other than the biological parent of the child, such as a grandparent or other family relative (2).

Caregiver presence at induction of paediatric patients is not a new concept and has been practiced for decades (3, 4). A systematic review done by Erhaze et al (1) in 2016 revealed that a significant debate still surrounds this practice.

Kain et al (5) found that CPIA was associated with an increase in the heart rate and skin conductance level of the caregiver present, which reflects the physiological and behavioural stress response of the caregivers during induction of their children. In a survey done by Henderson et al (6) in 1993 in Australia, 12% of caregivers did not wish to be present at all during the induction of their child, the major reason was to avoid displeasure. A similar result was obtained in Kuwait in 2001 by Purva et al (7), which showed that even though 89% of caregivers wished to be present for the induction process, the remaining 11% did not want to be present at all. McEwen et al (8) noted that despite the fact that a large proportion of caregivers, when given the choice, would choose to accompany their child to the operating room for induction, 64% of these caregivers were still dissatisfied by the experience.

Caregiver discontent associated with participation in induction of anaesthesia of their children was examined in 1994 by Vessey et al (9), where the most upsetting factors to caregivers were identified.

These were found to be: separation from the child after induction, seeing and feeling the child go limp during induction, witnessing the child's distress prior to induction, and being reminded of past negative experiences. In one extreme example the father stated that he re-experienced watching his own mother die.

Content analysis of responses to the open-ended questions identified three common themes: a sense of helplessness, lack of psychological support, and loss of control (i.e., leaving after induction, not permitted to watch the procedure) (9).

There was no correlation between the magnitude of caregiver discontent and caregiver education level, the child's age, or previous experience of participation in anaesthetic induction (8, 9).

CPIA has however been associated with positive outcomes and increased caregiver satisfaction regarding the separation process from the child. This extends also to increased satisfaction with the overall functioning of the hospital (10-12). Caregiver motivation to be present during induction includes caregiver anxiety, child anxiety, caregiver curiosity, caregiver fear, the caregivers sense of duty, caregivers own anaesthetic experience, and the feeling of expectation by medical staff (12).

Caregiver ethnicity and language may impact motivation to be present at induction, as evident in a study done by Fortier et al (13) in 2012 in the United States of America (USA). They found that Hispanic caregivers (English- and Spanish-speaking) reported significantly greater levels of desire to be present for their child's induction compared to English-speaking Caucasian caregivers.

CPIA remains a controversial topic among anaesthetists, and is not universally practiced worldwide (14). In a survey in the United Kingdom (UK) and the USA, Kain et al (15) noted that caregivers were present in 75% of anaesthetic inductions in the UK, but in less than 5% in the USA. While anaesthetists in the USA agreed that there are benefits to CPIA, only a minority perform this practice routinely (16).

Specific reasons why anaesthetists may refuse CPIA include the need for rapid-sequence induction, patient fragility, the complexity of the situation, inexperience by the anaesthetist, local hospital policy, and unsuitable theatre design for caregivers to be present (6, 16-19).

A survey done in 1996 among 222 South African anaesthetists, including anaesthetists from both the public and private sector, showed that the majority (55%) would be happy to allow caregivers to accompany children at induction of anaesthesia (18). Opinions expressed in this survey were not dissimilar to those expressed on this subject by British and Australian anaesthetists (6).

Extensive research has been done regarding CPIA and perioperative child anxiety levels, focussing on the effect the caregivers presence has on the child during the induction process and its postoperative implications on the child (1, 14).

Contrary to popular belief, in most cases, caregiver presence does not appear to alleviate the child's anxiety (1, 14). Premedication was found to be more effective than CPIA in reducing the level of anxiety in children at induction (1). A survey done by Kruger (17) in 2016 in Canada revealed that the majority of caregivers would prefer a premedication for their child prior to surgery. A study conducted by Sadeghi et al (10) in 2017, found that CPIA in combination with oral midazolam was superior in reducing perioperatively anxiety, compared to either modality alone.

Numerous papers have been published on the subject of CPIA, focussing predominantly on perioperative caregiver anxiety and child anxiety.

CPIA is welcomed at Chris Hani Baragwanath Academic Hospital (CHBAH), and practiced daily by most anaesthetists performing paediatric anaesthesia. It is utilised as a way to improve patient co-operation in theatre prior to induction, and potentially decreasing perioperative anxiety levels in the patient. It is not, however, clear whether these benefits are at the emotional expense of the caregiver.

Few articles address the subject of the caregiver's perceptions and attitudes regarding their presence at induction.

By considering the caregivers' attitudes, feelings and perceptions regarding their presence at induction, the way in which CPIA is conducted can be tailored to ensure a positive experience for the patient, as well as the caregiver.

4.2 Aim and objectives

4.2.1 Aim

The aim of this study is to describe the caregivers' attitudes and perceptions to their presence at induction of anaesthesia at CHBAH.

4.2.2 Objectives

The objectives of this study will be:

- to describe the caregivers' experience of being present at induction of anaesthesia.
- to describe the personal and emotional effect of the experience.

4.3 Research assumptions

The following definitions will be used in the study.

Anaesthetist: any qualified doctor working in the department of anaesthesiology including interns, medical officers, registrars, and consultants. The term specialist anaesthetist and anaesthesiologist are used interchangeably in the literature.

Parental presence at induction of anaesthesia (PPIA): the interaction of the child, the anaesthetist, the peri-operative nurses and the parents present at the induction of anaesthesia (1).

Caregiver presence at induction of anaesthesia (CPIA): the interaction of the child, the anaesthetist, the peri-operative nurses and the caregiver present at the induction of anaesthesia.

Child: a person younger than 18 years of age (20).

Caregiver: the person, including the parent or guardian, who voluntarily cares for the child with or without legal parental responsibilities (20).

Parent: the child's biological or adoptive mother or father.

Guardian: the person other than the biological or adopted parent, who has full parental rights and responsibilities of the child (20).

4.4 Demarcation of study field

The study will be conducted in the theatre complex of CHBAH affiliated to the University of the Witwatersrand (WITS). CHBAH is a central hospital, with approximately 3200 beds. On average 65 000 cases are done annually of which a minimum of 2 500 relate to paediatric surgery.

The interviews for this study will be conducted in a well-lit, private room, with minimal background noise, located within the theatre complex.

4.5 Ethical considerations

Approval to conduct the study will be obtained from the Postgraduate Committee of the University of the Witwatersrand and the Human Research Ethics Committee (Medical).

Approval will also be obtained from the Medical Advisory Committee at Chris Hani Baragwanath Academic Hospital (CHBAH) (Appendix 1). Approval from the Head of the Department of Anaesthesiology at CHBAH (Appendix 2), as well as the Head of the Department of Paediatric Surgery at CHBAH (Appendix 3) has been obtained. The theatre matron will also be informed.

Caregiver consent will be obtained by approaching the caregiver of the paediatric patients on the morning of the scheduled elective surgery. The study will be explained to them, not only verbally, but also with the aid of an information letter (Appendix 4). The caregiver will then be invited to take part in the study, and should they agree, they will be asked to sign a consent form (Appendix 5).

By signing the consent form, they will confirm that their participation in the study is voluntary and anonymous, and that it will not influence their child's treatment in any way. Additional consent will also be obtained for audio recording of the interview (Appendix 5).

Anonymity will be ensured by collecting data (audio recordings) without identifying information.

A study number will be assigned to each participant, and a separate list will be used containing the participants' name, the patients' name, hospital number, surgical procedure, and corresponding study number. The assigned study number will be used on the audio recording, not the participants' name.

Confidentiality will be ensured. Only the researcher and the researchers' supervisor will have access to the raw data.

The audio recordings will be transcribed by the researcher. This data will be stored securely for a minimum of six years after completion of the study in a locked cupboard. Digital data (audio recordings of the interviews) will also be stored on a password protected hard drive for a minimum of six years, and stored with the transcribed interviews in a locked cupboard.

The study will be conducted according to the principles of the Declaration of Helsinki (21) and the South African Guidelines for Good Clinical Practice (22).

To reduce the risk of unanticipated harm, the researcher will be prepared to provide psychological support to the participant who is being interviewed, should the interview create undue stress to the participant. The researcher will liaise with the clinical psychologist at CHBAH, Ms Karen Kilian (telephone number 0119339828, email: karen.kilian@wits.ac.za). She will evaluate the urgency of the case, and decide if immediate counselling, or counselling on an out-patient basis is appropriate. The researcher will assist with the referral process. The researcher will provide the participant with his contact details on the caregiver information letter, should the participant wish to enquire about counselling after some time has passed.

4.6 Data collection

4.6.1 Research design

A qualitative, explorative research design will be followed in this study. The researcher will conduct face-to-face, in-depth, semi-structured individual interviews with the caregivers after induction of anaesthesia of their children.

By asking participants about their experiences and perceptions, the researcher obtains insights into what it feels like to be another person and to understand the world as another experiences it (23).

4.6.2 Study population

The study population will consist of caregivers accompanying all children younger than 18 years of age presenting for elective surgery at Chris Hani Baragwanath Academic Hospital.

4.6.3 Study sample

Sample size

The sample size will be determined by the number of interviews that will result in data saturation. Interviews will continue until saturation has occurred, which is when no new themes can be identified. Qualitative methods provide “a source of well-grounded, rich descriptions and explanations of processes in identifiable local contexts”, meaning the descriptions arise from the data but provide insight that goes beyond only numbers (24).

Sampling method

A purposive sampling method will be used for this study. This is a non-random technique that does not need underlying theories or a set number of participants. The researcher decides what needs to be known, and sets out to find people who can and are willing to provide the information by virtue of knowledge and experience (25).

Inclusion and exclusion criteria

The inclusion criteria for this study is:

- Caregivers of children younger than 18 years undergoing elective surgical procedures

The exclusion criteria in this study are:

- Caregivers who did not consent to take part in the study
- Caregivers younger than 18 years
- Caregivers who are not able to communicate in English (to reduce translation errors, the researcher will not be making use of a translator)

4.6.4 Data collection

Data collection will be done by the researcher in English, in the form of individual face-to-face semi-structured in-depth interviews with the caregivers of children undergoing surgery.

These interviews will take place in a private, well-lit room, with minimal background noise, within the theatre complex at CHBAH. The time frame during which data will be collected will span over three months.

Selection of participants

Based on the inclusion and exclusion criteria, the researcher will identify appropriate caregivers. The researcher will approach the caregiver on the morning of the scheduled elective surgery. The study will be explained to them, and they will be invited to participate. The necessary consent will be obtained.

Individual face-to-face, semi-structured, in-depth interview

Individual face-to-face, semi-structured, in-depth interviews were selected as the method of data collection. A semi-structured interview guide (Appendix 6) will be used that contain predominantly open-ended questions. The interviews will be conducted by the researcher in English.

After induction of anaesthesia, the caregiver will be escorted out of theatre. The researcher will meet the caregiver outside theatre, and escort the caregiver to the interview room, where the interview will take place.

Preparing the caregiver for the interview

It is important to make the participant feel at ease and to establish rapport with them. This will be done by discussing the details of the study with them, emphasising patient and caregiver confidentiality.

Flow of the interview

The initial questions that will be asked in the interview will be directed to make the participant more comfortable. These will include demographic information and general questions.

The initial questions will be followed by more specific, yet open-ended questions. Prompting questions will be asked with the aim of encouraging the participant to elaborate on statements made.

The interview will be ended with an opportunity for the participant to ask any questions.

Field notes

Field notes will be kept by the researcher, and will be recorded after the interview.

Audio recording

The interviews will be recorded on an iPhone 11 smartphone device, and will be transcribed verbatim by the researcher at a later stage.

The transcription will be done by the researcher as recommended by some experts (26). Although this will take more time compared to contracting an external party to do the transcriptions, the benefit is the researcher achieves a closeness to the data that will stand him in good stead. By reading and rereading the data many times, the researcher will become intimately familiar with it.

4.6.5 Data management

Data collection and analysis will have to occur concurrently, in order to determine when data saturation occurs.

Participants names will not be used for identification purposes on the audio recordings, instead the interviews will receive case numbers in the order that they occur. The researcher will transcribe the audio recordings of the interview. The corresponding transcribed field notes will be attached to the interview and analysed together.

The accuracy of the transcription will be confirmed by listening to the original audio recording, and comparing it to the transcription.

4.6.6 Data analysis

This study will utilise inductive reflexive thematic analysis to analyse the data and will follow Braun and Clarke's (27) steps to accomplish this.

In thematic analysis, qualitative data is analysed to identify themes. It is a more objective way of demonstrating results from data sets that are highly subjective. Reflexive thematic analysis requires the researcher to move back and forth between the steps involved in thematic analysis. It is well-suited to data sets that relate to people's personal experiences or perceptions, hence underpinned by phenomenology. The process of thematic analysis will be conducted within this framework provided by the following phases, which encompass familiarisation with the data, coding, generating initial themes, defining and naming themes, and writing up.

Familiarisation with the data: This phase involves reading and re-reading the data, to become immersed and intimately familiar with its content.

Coding: This phase involves generating codes that identify important features of the data that might be relevant to answering the research question. It involves coding the entire dataset, and after that, collating all the codes and all relevant data extracts, together for later stages of analysis.

Generating initial themes: This phase involves examining the codes and collated data to identify significant broader patterns of meaning (potential themes). It then involves collating data relevant to each candidate theme, so that you can work with the data and review the viability of each candidate theme.

Reviewing themes: This phase involves checking the candidate themes against the dataset, to determine that they tell a convincing story of the data, and one that answers the research question. In this phase, themes are typically refined, which sometimes involves them being split, combined, or discarded. In reflexive thematic analysis, themes are defined as pattern of shared meaning underpinned by a central concept or idea.

Defining and naming themes: This phase involves developing a detailed analysis of each theme, working out the scope and focus of each theme, determining the 'story' of each. It also involves deciding on an informative name for each theme.

Producing the report: This final phase involves weaving together the analytic narrative and data extracts, and contextualizing the analysis in relation to existing literature.

4.7 Trustworthiness

Trustworthiness of a study refers to the degree of confidence in data, interpretation, and methods used to ensure the quality of a study (26). Criteria outlined by Lincoln and Guba (28, 29), including credibility, dependability, confirmability, and transferability will be adhered to in this study.

Credibility

Credibility of the study, or the confidence in the truth of the study, is the most important criterion (26). To ensure credibility in this study, a wide range of participants will be asked to participate in the study, so that the experiences and views expressed can be verified against each other.

Dependability

Dependability refers to the stability of the data over time and over the conditions of the study (26).

Dependability will be ensured in this study by describing any problems that might arise with regards to the research design, methodology and data collection. By ensuring dependability, the same type of research can be repeated in the future even if the same results are not achieved.

Confirmability

Confirmability is a degree of finding that is consistent and can be repeated. This is analogous to objectivity in quantitative research (26). Confirmability will be addressed in this study by debriefing sessions between the researcher and the supervisor. These discussions will prevent biases from only the researchers perspective on the research.

Transferability

The nature of transferability is different from other aspects of research in that readers actually determine how applicable the findings are to their situations. Researchers support the study's transferability with a detailed description of the context, location, and people studied, and by being transparent about analysis and trustworthiness (26).

In this study, information regarding CHBAH and its location, the number of researchers involved in the study, the data collection methods used, the number and length of data collection sessions, and the time period over which data was collection will be provided.

4.8 Significance of the study

When a caregiver experiences the anaesthetic induction of their child in a negative way, it may influence and alter their ability to cope with future anaesthetic and surgical encounters. On the other hand, a positive experience might be beneficial in the future.

By examining the attitudes and feelings of caregivers regarding their presence at induction of anaesthesia of their child, the researcher aims to gain a better understanding of the caregivers' experience with regards to this practice, and to what extent it affects them.

By identifying possible modifiable factors, further research can be conducted to determine if changes in the practice of CPIA is warranted and justified in our setting

4.9 Potential limitations

The interviews in the study will be conducted in English, no translator will be used, and the results obtained will be specific to CHBAH.

4.10 Project outline

Activity	Mar 2020	Apr 2020	May 2020	Jun 2020	Jul 2020	Aug 2020	Sep 2020	Oct 2020	Nov 2020	Dec 2020	Jan 2021	Feb 2021
Proposal preparation												
Literature review												
Proposal submission												
Ethics approval												
Postgraduate approval												
Data collection												
Data analysis												
Draft article												
Submission												

4.11 Financial plan

The Department of Anaesthesiology will bear the cost of printing and paper for the postgraduate approval.

Item	Price per page (Rand)	Number of pages	Copies	Total (Rand)
Proposal	R1	20	10	R200
Post graduate form	R1	2	6	R12
Complete report	R1	100	2	R200
Information letters	R1	1	40	R40
Consent forms	R1	1	40	R40
Recording device (iPhone 11)				No additional cost
Grand total				R 492

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4.13 Appendices

4.13.1 Appendix 1 Permission letter from the Medical Advisory Committee

	GAUTENG PROVINCE REPUBLIC OF SOUTH AFRICA	MEDICAL ADVISORY COMMITTEE CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL
PERMISSION TO CONDUCT RESEARCH		
Date: 21 st May 2020		
TITLE OF PROJECT: Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia.		
UNIVERSITY: Witwaterstrand		
Principal Investigator: Dr J Jacobus le Roux		
Department: Anaesthesiology		
Supervisor : C Redelinghuys		
Permission Head Department (where research conducted): Yes		
The Medical Advisory Committee recommends that the said research be conducted at Chris Hani Baragwanath Academic Hospital. The CEO / management of Chris Hani Baragwanath Academic Hospital is accordingly informed and the study is subject to:-		
• Permission having been granted by the Committee for Research on Human Subjects of the University of the Witwatersrand. • The Hospital will not incur extra costs as a result of the research being conducted on its patients within the hospital • The MAC will be informed of any serious adverse events as soon as they occur • Permission is granted for the duration of the Ethics Committee Approval.		
 Recommended (On behalf of the MAC) Date: 21/05/2020	 Approved/Not Approved Hospital Management Date: 22/05/2020	

4.13.2 Appendix 2: Letter from the Head of the Department of Anaesthesiology



GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL
DIRECTORATE - ANAESTHESIA
Enquiries: Dr P. Mogane
Tel. number: (011) 933-9334
Email: Palesa.Mogane@wits.ac.za



Department of Anaesthesiology
Chris Hani Baragwanath Academic Hospital
PO Bertsham
2013
21st April 2020

To whom it may concern

RE: PERMISSION TO CONDUCT RESEARCH

This serves to confirm that I grant permission for Dr Kobus Le Roux to conduct research involving the Department of Anaesthesia at the Chris Hani Baragwanath Academic Hospital. The research topic is titled: Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia.

I'd like to wish him luck in this endeavor and I am happy to support him wherever possible.

Kind regards.

Dr Palesa Mogane
Chief specialist and Head of Department
Department of Anaesthesiology
Chris Hani Baragwanath Academic Hospital
University of Witwatersrand
Email: Palesa.Mogane@wits.ac.za

4.13.3 Appendix 3: Letter from the Head of Department of Paediatric Surgery

128 Lonehill Village Estate

The Straight

Lonehill

2916

8 April 2020

Dear Dr Loveland

I am one of the new registrars who started in January this year at Chris Hani Baragwanath Academic Hospital (CHBAH) in Anaesthesia. I would like to complete a research project. The study's title is: "Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia".

I want to describe caregivers' attitudes and perceptions regarding their presence at induction of anaesthesia of their children, by conducting an interview with them after the induction of anaesthesia. I hereby ask permission to conduct this study on caregivers of paediatrics patients undergoing elective surgery at CHBAH.

Consent to participate in this study will be obtained from the caregivers involved. There will be no financial implication for the hospital concerned and no funding is needed.

This study will be conducted pending consent from you, the Post Graduate Committee of the University of the Witwatersrand, the Human Ethics Committee of the University of the Witwatersrand, the Medical Advisory Committee at CHBAH, as well as the Head of Department of Anaesthesia.

Thank you

Regards

Dr Johannes Jacobus le Roux

Jerome Loveland 

09 April 2020 at 09:56

JL

Re: Permission to do study for MMED

To: Kobus Le Roux

Hi Kobus

That is perfect.
No issues from my side!

Cheers
Jerome

Professor Jerome Loveland

**Personal Professor and Academic Head
Division of Paediatric Surgery
School of Clinical Medicine
University of the Witwatersrand**

**Chairman
Surgeons for Little Lives**

**+2783 676 0004
jeromeloveland@icloud.com**

4.13.4 Appendix 4: Caregiver information letter

Information letter

Dear Sir/Madam

My name is Johannes le Roux. I am a doctor, training to become a specialist in anaesthesia. The job of an anaesthetist is to make people sleep for the operation, and to look after them while the surgeon does the operation.

I am doing a study as part of my MMed qualification from the University of the Witwatersrand (WITS). The name of my study is "Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia". I want to find out how you as the caregiver feel about being with your child in the operating theatre when we start anaesthesia. If we as the doctors know how caregivers feel about this, we will be able to deal with your worries better.

I have permission to do this study from the Human Research Ethics Committee (Medical) (No: M200662), and the Postgraduate Committee of the University of the Witwatersrand.

Taking part in this study is completely voluntary, and you do not have to take part if you don't want to. If you decide to not take part in this project, neither you nor your child will be treated any differently in the ward or in theatre. There are no benefits to you taking part in this study, other than contributing to our knowledge. Participation is anonymous, meaning that we will not use your name or personal details in the report. You can also change your mind about being in the study at any time, without giving a reason.

If you do decide to take part in the study, we will talk in a private space in theatre while your child is having the operation. I will ask you a few questions, but there are no right or wrong answers. The interviews will be audio recorded, so that I can make notes later.

If you agree to take part in the study, I will ask you to sign two consent forms. By signing these you will give me permission to include you in the study, and to make an audio recording of what we discuss.

If you have any concern over the way the study is being conducted, please contact the Chairperson of this Committee who is Professor Clement Penny, who may be contacted on telephone number 011 717 2301, or by e-mail on Clement.Penny@wits.ac.za. The telephone numbers for the Committee secretariat are 011 717 2700/1234 and the e-mail addresses are Zanele.Ndlovu@wits.ac.za and Rhulani.Mukansi@wits.ac.za

If you have any further questions, you can contact me on 011 933 1843

Thank you very much

July 2020

Dr Johannes le Roux

4.13.5 Appendix 5: Caregiver consent

Consent for participating in the study

I, consent to participate in the study on attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia.

Dr Johannes le Roux has fully explained the interview process and its purpose, and I understand and agree that:

- My participation in this study will help anaesthetic doctors better understand how caregivers feel about being present for the induction of anaesthesia of children
- There is no financial benefit to participation in this study, and participation is completely voluntary

I am also aware that I can withdraw my participation from this study at any time.

.....(Signature of participant)

Consent for audio-recording during the interview

I....., consent to my interview done for the study titled "Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia" being audio recorded.

I understand that the interview will be transcribed at a later stage, so that the information from all the interviews can be analysed. I also understand that I will remain anonymous, and only the researcher will be able to identify me. I have also been informed that the recording must be stored securely for a period of six years, after which they will be destroyed.

.....(Signature of participant)

4.13.6 Appendix 6: Interview guide

Interview Guide

Icebreaker questions

- Is this your first time at Chris Hani Baragwanath Academic Hospital?
- When did you arrive at the hospital?

General questions

- Age of child
- Gender
- Nature of operation
- Caregivers relationship to child
- Age of caregiver
- Level of education
- Home language

Questions regarding induction of anaesthesia

- Were you present when your child underwent anaesthesia?
 - If yes:
 - Was it your first time escorting someone to theatre?
 - Did you want to be present watching your child undergo anaesthesia today?
 - Can you tell me more about the experience?
 - Why did you choose to be present?
 - How did you feel the moment when you saw your child fall asleep?
 - Did you have any fears/concerns?
 - Were you happy being present? If so, why?
 - Did you know what was going to happen today in theatre or how it was going to be?
 - How did being there when your child went to sleep affect you?
 - Would you do it again or recommend it to someone?
 - Is there anything else you would like to tell me about your experience of being there when your child went to sleep for the operation?
 - Do you think your child benefited from you being present for induction?
 - Do you have anything else you would like to tell me about your experience in theatre?
 - Do you have any questions?
 - If no:
 - Would you have liked to be present for the anaesthesia induction?
 - Why did you not go to theatre?
 - Were you happy not being present?
 - If your child had another operation, would you reconsider being present for induction?
 - Do you have any questions?

Section 5: Annexures

5.1 Ethics approval

UNIVERSITY OF THE
WITWATERSRAND
JOHANNESBURG



R14/49 Dr JJ Le Roux

HUMAN RESEARCH ETHICS COMMITTEE (MEDICAL)
CLEARANCE CERTIFICATE NO. M200662

NAME: Dr JJ Le Roux
(Principal Investigator)

DEPARTMENT: School of Clinical Medicine
Department of Anaesthesia
Medical School
University

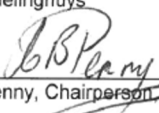
PROJECT TITLE: Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia

DATE CONSIDERED: 2020/06/26

DECISION: Approved unconditionally

CONDITIONS:

SUPERVISOR: Dr C Redelinghuys

APPROVED BY: 
Dr CB Penny, Chairperson, HREC (Medical)

DATE OF APPROVAL: 2020/08/04

This clearance certificate is valid for 5 years from the date of approval. Extension may be applied for.

DECLARATION OF INVESTIGATORS

To be completed in duplicate and **ONE COPY** returned to the Research Office Secretary on the 3rd Floor, Phillip Tobias Building, Parktown, University of the Witwatersrand, Johannesburg.

I/we fully understand the conditions under which I am/we are authorized to carry out the above-mentioned research and I/we undertake to ensure compliance with these conditions. Should any departure be contemplated, from the research protocol as approved, I/we undertake to submit details to the Committee. I agree to submit a yearly progress report. When a funder requires annual re-certification, the application date will be one year after the date when the study was initially reviewed. In this case, the study was initially reviewed in **June** and will therefore reports and re-certification will be due early in the month of **June** each year. Unreported changes to the application may invalidate the clearance given by the HREC (Medical).

Principal Investigator Signature _____ Date _____

5.2 Graduate studies approval

UNIVERSITY OF THE
WITWATERSRAND,
JOHANNESBURG



Private Bag 3 Wits, 2050
Fax: 027117172119
Tel: 02711 7172076

Reference: Mrs Sandra Benn
E-mail: sandra.benn@wits.ac.za

22 June 2020
Person No: 2417369
PAG

Dr JJ le Roux
128 Lonehill Village Estate
Lonehill
2062
South Africa

Dear Dr Johannes le Roux

Master of Medicine in Anaesthesia: Approval of Title

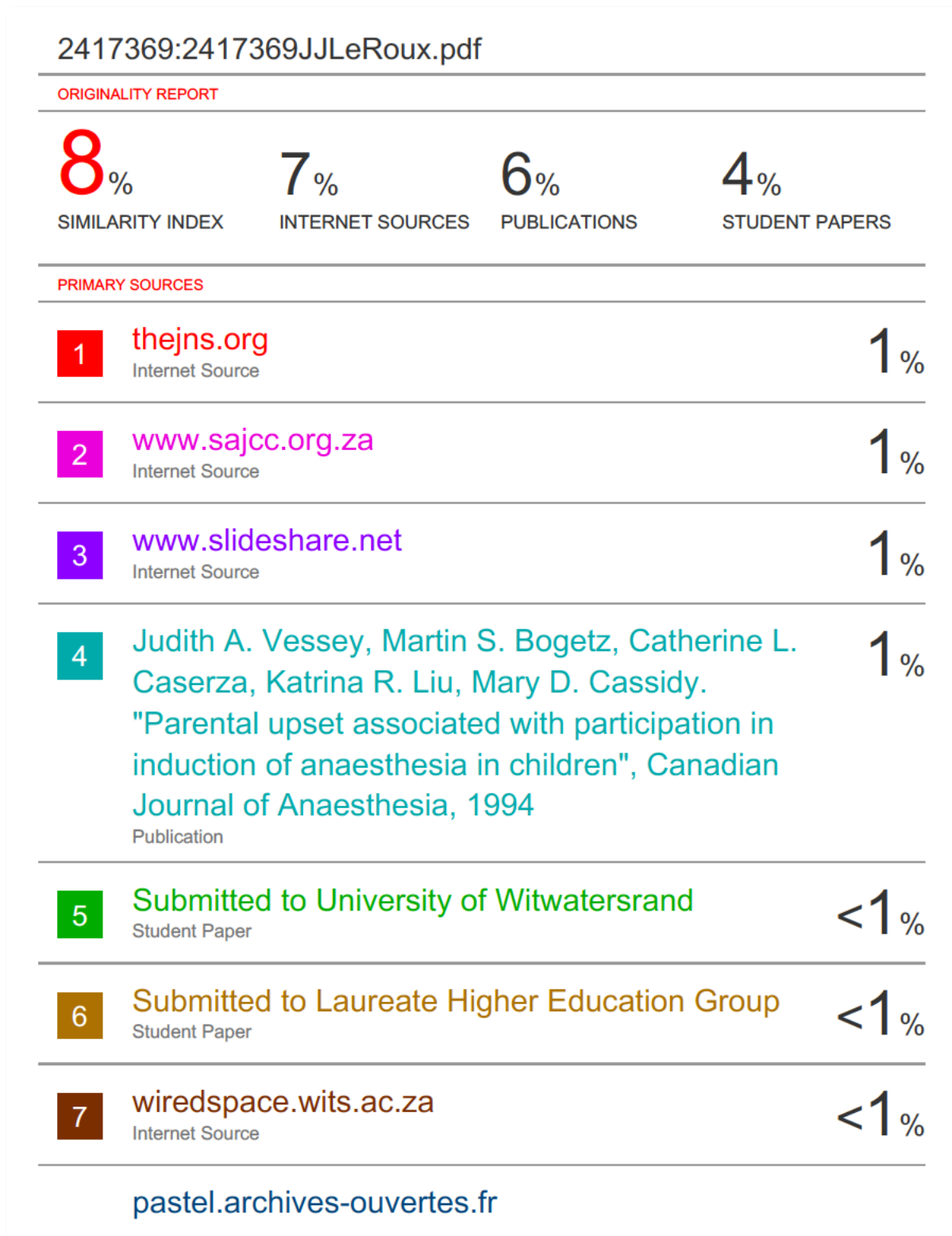
We have pleasure in advising that your proposal entitled *Attitudes and perceptions of caregivers regarding their presence at induction of anaesthesia*, has been approved. Please note that any amendments to this title have to be endorsed by the Faculty's higher degrees committee and formally approved.

Yours sincerely

A handwritten signature in cursive script, appearing to read 'S. Benn'.

Mrs Sandra Benn
Faculty Registrar
Faculty of Health Sciences

5.3 Turnitin report



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