

**SURVEY ON MATERNAL SATISFACTION IN RECEIVING SPINAL
ANAESTHESIA FOR CAESAREAN SECTION**

by

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DECLARATION

I declare that the research study “**SURVEY ON MATERNAL SATISFACTION IN RECEIVING SPINAL ANAESTHESIA FOR CAESAREAN SECTION**” is my original work and that all the sources used or quoted have been indicated and acknowledged by means of complete references and that this work has never been submitted for any other degree at any other institution.



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14 November 2014
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SURVEY ON MATERNAL SATISFACTION IN RECEIVING SPINAL ANAESTHESIA FOR CAESAREAN SECTION

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ABSTRACT

A quantitative descriptive and cross-sectional study was conducted. The purpose of the study was to evaluate the maternal satisfaction after the experience of spinal anaesthesia for Caesarean section in one public hospital of Gauteng Province in South Africa. Data were collected by administering a questionnaire which included the demographic profile and satisfaction score in terms of perioperative elements to 82 women in their postoperative period.

Analysis of data was performed by The Statistical Package for the Social Sciences (SPSS) version 13 and Excel 2010 was used for tabular and graphical illustrations. The findings revealed that the majority of women studied were black (95,1%), not married (73,2%) and unemployed (64,6%). The levels of maternal satisfaction in terms of intraoperative, postoperative and other perioperative elements were high, at 94,4%, 90,3% and 85,4% respectively. The lowest percentage (76,8%) was found for the maternal satisfaction about the preoperative explanation. The overall level of maternal satisfaction in this study was 86,7%. The majority of women (82,9%) would opt for spinal anaesthesia in future, while 6,1% would not accept it and 11,0% were not sure if they would opt for it or not.

KEY CONCEPTS

Survey; satisfaction; maternal; spinal anaesthesia; Caesarean section; perioperative period; elective and emergency surgical operation.

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Dedication

*I would like to dedicate this dissertation
to my mother and my late father,
Mrs Charlotte Epeliwe BOLOKIZE and
Mr David Ekang'Otem MAKOKO.*

*Their hard-working tendency has inspired and
supported me in this study.*

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LIST OF ABBREVIATIONS AND ACRONYMS

AD or A.D.	Anno Domini which means, “in the year of the Lord Jesus Christ”
BC or B.C.	Before Christ
CIA	Central intelligence agency
C/S or C/s	Caesarean section
Elect	Elective
Emerg	Emergency
GA	General Anaesthesia
MDGs	Millennium development goals
MPH	Master of public health
NVD	Normal vaginal delivery
PONV	Postoperative nausea and vomiting
Preop	Preoperative
SA	Spinal anaesthesia
SD	Standard deviation
Sv or sv	“Sub verbo” which means under the word
TV	Television
UN	United Nations
UNISA	University of South Africa
Vs or vs.	Versus
WHO	World Health Organization

CHAPTER 1

ORIENTATION OF THE STUDY

1.1 INTRODUCTION

Spinal anaesthesia was used for the first time for surgery in August 1898 by August Bier. It is a regional anaesthetic technique which can be used for any surgical operation below the umbilicus. It is also called subarachnoid block or intra-theal injection. It is quick and easy to perform (Kleinman & Mikhail 2006:304; Larson 2005:26). Nowadays, spinal anaesthesia is the preferred anaesthetic method for most of Caesarean sections (Blitz-Lindeque 2006:275; Elton, May & Buggy 2007:638; Hofmeyr 2011:350).

The date of the first Caesarean section is not known as it has been performed long time ago by ancients. On 25 July 1826, Dr James Barry realised the first modern Caesarean section in Cape Town, South Africa (Hofmeyr 2011:345). A Caesarean section, also called Cesarean section or C-section, is a surgical procedure in which one or more incisions are made through a mother's abdomen and uterus to deliver one or more babies, or rarely, to remove a dead foetus (Stegman 2005:262). A Caesarean section can be emergent or elective. This survey is on maternal satisfaction in receiving spinal anaesthesia for Caesarean section.

This chapter covers the background to the research problem, the statement of the research problem, the definition of key concepts, the research purpose and objectives, the research questions, the research design and methods, the design quality, the ethical considerations, the significance of the study, and the scope and limitations.

1.2 BACKGROUND TO THE RESEARCH PROBLEM

From the eight MDGs launched by the United Nations Millennium Declaration in 2000, the 5th is to improve maternal health. This goal has two targets: to reduce by three quarters the maternal mortality ratio and to achieve universal access to reproductive health. For the year 2013, the statistics showed that the maternal mortality ratio in

developing regions was still fifteen times higher than in the developed countries and only half of women in developing regions could receive the recommended level of health care that they needed (United Nations 2013). Only few years closer to the target of 2015, more still have to be done to improve maternal health, and research can play an important role.

The World Health Report of the year 2013, which was on research for universal health coverage, stated that more research were invested in new technologies rather than in making better use of existing knowledge and that additional research was needed to turn existing knowledge into practical applications. The recommendations of that World Health Report included increased investment and support in research aimed at improving coverage of health services within and between countries and closer collaboration between researchers and policy makers (WHO 2013).

In 2010, WHO decided to withdraw its earlier recommendation of 1985 about limitation of Caesarean section rate to 15% for any region of the world. This rate was calculated by experts, but without giving enough supportive data and without taking into consideration some local and specific factors, related for example to the race, the culture, the education's level, and etcetera. With this withdrawal, it was stated that: "there is no empirical evidence for an optimum percentage of Caesarean section and the important thing is that all women who need Caesarean section must receive it" (A to Z of opting for C-section 2012).

Many countries have a high rate of Caesarean section and South Africa is one of them. According to Health Trust System (2011:2), the Caesarean section rate in public sector of South Africa is about 22,7%. In private sector, it is even higher. Dumbrill (2008) states that in South Africa, one in three mothers delivers via Caesarean section in public sector, and two in three in private sector. Hofmeyr (2011:345) also emphasises the same opinion by stating that the incidence of Caesarean section for South Africa is 20-30% in teaching hospitals or public sector, but as higher as 60% in private hospitals.

Furthermore, the researcher notices high rates of Caesarean section in one public hospital of Gauteng Province in South Africa. From January to August 2013 (Public hospital 2013a) (see Table 1.1), the Caesarean section rate of this hospital per month range between 26, 30% and 31, 87%, with an average rate of 28, 84%. The researcher

notices also that most of Caesarean sections are done under spinal anaesthesia. He found 93, 12% as the rate of spinal anaesthesia over all anaesthetic techniques done for Caesarean section in this hospital for the same period (Public hospital 2013b) (see Table 1.2). With high rate of Caesarean sections in this public hospital and most of them done under spinal anaesthesia, the researcher is interested to know the extension to which mothers are satisfied with their experiences of spinal anaesthesia for Caesarean sections.

As regional anaesthetic technique for Caesarean section, spinal anaesthesia has the following advantages: an awake mother, less depression of the new-born, the avoidance of general anaesthesia risks, better post-operative analgesia and earlier mobilisation. The mother may be awake during Caesarean section and see or feel her baby while she is still on the operating table, or she may be sedated (Afhami, Salmasi & Panahea 2004:426; Eldridge 2006:712; Siddiqi & Jafri 2009:77).

Patients are the first beneficiaries of health services. While providing care to patients, health care workers in general and health facility managers in particular, need to have regular feedback from the patients about the quality of care and services which are offered. The feedback can be obtained directly by health care workers from patients during and after care or with help of a box of feedback, complaints and suggestions. Another good way to know about patients' impression like satisfaction or not is by a study, with anonymity and by persons not directly involved in the patients' care.

1.3 STATEMENT OF THE RESEARCH PROBLEM

The preceding subsection shows that there is a high rate of Caesarean sections in South Africa and most of them are done under spinal anaesthesia. The researcher has experienced this high rate by working in the Department of Anaesthesiology. The statistics of Caesarean section and spinal anaesthesia in one public hospital of Gauteng in South Africa have also confirmed the same. The problem now is that the researcher and the scientific community in general do not know the level of the satisfaction of patients after spinal anaesthesia for Caesarean section. Also, from the best knowledge of the researcher, no such study has been conducted in South Africa for the last two decades.

Table 1.1 Statistics of births or deliveries in one Public hospital of Gauteng Province, from January to August 2013

Type deliveries month 2013	NVD		C/S		Total
	Number	%	Number	%	
January	967	73,70	345	26,30	1312
February	885	71,95	345	28,05	1230
March	870	68,13	407	31,87	1277
April	935	71,43	374	28,58	1309
May	1014	72,07	393	27,93	1407
June	953	72,20	367	27,80	1320
July	972	69,88	419	30,12	1391
August	925	69,92	398	30,08	1323
Total	7521	71,16	3048	28,84	10569

Table 1.2 Statistics of anaesthetic techniques for C/S in one Public hospital of Gauteng Province, from January to August 2013

Anaesthetic techniques month 2013	Spinal		GA		Total
	Number	%	Number	%	
January	328	95,07	17	4,93	345
February	324	93,91	21	6,09	345
March	337	82,80	70	17,20	407
April	351	93,85	23	6,15	374
May	368	93,64	25	6,36	393
June	346	94,28	21	5,72	367
July	399	95,23	20	4,77	419
August	386	96,98	12	3,02	398
Total	2829	93,12	209	6,88	3038

1.4 DEFINITION OF KEY CONCEPTS

Survey: it is an investigation of the opinions, behaviour, and etcetera of a particular group of people, which is usually done by asking them questions (Hornby 2006, sv “survey”).

Satisfaction: it is the good feeling that you have when you have achieved something or when something you wanted to happen does happen; something that gives you this feeling (Hornby 2006, sv “satisfaction”).

In the case of this study, satisfaction is taken as its synonym happiness which is the good feeling that you have when things give you pleasure (Hornby 2006, sv “happiness”).

Maternal: it is an adjective:

- Connected with being a mother (Hornby 2006, sv, “maternal”).
- Relating to or derived from the mother (Stegman 2005, sv “maternal”).

In this study, it is about mothers’ satisfaction after spinal anaesthesia for Caesarean section.

Spinal anaesthesia: it is the loss of sensation produced by injection of local anaesthetic solution(s) into the (spinal) lumbar subarachnoid space (Stegman 2005, sv “spinal anaesthesia”).

It is a type of anaesthetic technique where local anaesthetic is injected in the lumbar subarachnoid or spinal space to block lower limbs and the lower part of the abdomen (Afhami *et al* 2004, citing Brown 2000 and Stoelting & Miller 2000).

Caesarean section: it is surgical operation in which an opening is cut in a woman’s abdomen in order to take out a baby (Hornby 2006, sv “Caesarean section”).

Perioperative period: it is the period of time surrounding a surgical procedure. It comprises:

- The preoperative period: the time before the surgical operation. It means the period from the decision of operation up to the start of operation.
- The intraoperative period: period from the starting time of anaesthesia and surgery up to the end of surgery and anaesthesia.
- The postoperative period: the period following the end of surgical operation (Mosby 2009, sv “perioperative period”).

Emergency operation: it is an operation which is urgent, which must be done immediately or the same day.

Elective operation: it is an operation which is not urgent, which can be planned for another day or time.

1.5 PURPOSE AND OBJECTIVES OF THE STUDY

The purpose of this study is to evaluate the maternal satisfaction after the experience of spinal anaesthesia for Caesarean section, in one public hospital of Gauteng Province in South Africa. In order to achieve the above overall purpose, the researcher will determine the level of maternal satisfaction after spinal anaesthesia for Caesarean section in terms of the following:

- Preoperative explanation
- Intraoperative elements
- Postoperative components
- Other perioperative factors
- The possibility of accepting spinal anaesthesia in the future

1.6 RESEARCH QUESTIONS

The study sought to answer following questions:

- What is the level of maternal satisfaction after spinal anaesthesia for Caesarean section in this public hospital of Gauteng Province in South Africa?
- What is the percentage for mothers who would accept spinal anaesthesia again for future and possible Caesarean section?

1.7 ASPECTS RELATING TO RESEARCH DESIGN

1.7.1 Research design

The research design is defined differently by different authors. It is a plan or a blueprint of how one intends conducting the research (Burns & Grove 2005:40; Fouché & De Vos 2005:132, citing Mouton 2001). According to Morromi and Myer (2007:77) and Polit and Beck (2012:58), the research design is the structured approach or the overall plan followed by researcher to answer a particular research question. Bowling (2009:159) simply refers the research design as the overall structure or plan of the research. In the case of this study, the research paradigm is quantitative and the research design is observational, cross-sectional descriptive.

Quantitative research is formal, objective, and systematic process in which numerical data are used to obtain information about the world (Burns & Grove 2005:23). According to Polit and Beck (2012:14), quantitative researchers gather empirical evidence, meaning evidence that is rooted in objective reality and gathered directly or indirectly through the senses (sight, hearing, taste, touch or smell).

Observational study, also called non-experimental study, allows “nature to take its course”. In other words, the researcher or investigator observes or measures the variable(s), but without any intervention or treatment (Brink 2006:102; Morromi & Myer 2007:77). According to LoBiondo-Wood and Haber (2010:196), non-experimental designs are used in studies in which the researcher wishes to construct a picture of a phenomenon; to explore events, people, or situations as they naturally occur; and to test relationships and differences among variables. Observational design is appropriate for this study because the research is carried out in a natural setting and the phenomena are observed as they occur. The researcher assessed maternal satisfaction, without making any effort or intervention to change or improve its levels.

Descriptive study design is a design which intends to provide more information about characteristics of a particular individual, event, or group in real-life situations or in a particular field of study. It is limited to the description of phenomena in a particular field, without any intention of establishing a cause-effect relationship (Brink 2006:102; Burns & Grove 2005:232; Morromi & Myer 2007:78). It is the appropriate design here, as the

study is limited to the description and exploration of satisfaction of mothers after their experience of spinal anaesthesia for Caesarean section.

A cross-sectional study examines data at one point in time, meaning that data are collected on one occasion only for different subjects (Babbie 2010:106; Brink 2006:105; LoBiondo-Wood & Haber 2010:202). In this study, data were collected at only one time for every different study participant.

1.7.2 Research methods

This point describes elements which are related to the study population and sample selection, data collection and data analysis.

1.7.2.1 Population and sample selection

The population, sometimes referred to as the target population, is the entire group of elements (persons, objects, or substances) that is of interest to the researcher; in other words, that meet the criteria which the researcher is interested in studying (Brink 2006:123; Burns & Grove 2005:341-342; Polit & Beck 2012:744). It can also be defined as a group about which the researcher wants to gather information and draw conclusions (Joubert & Katzenellenbogen 2007:94). In this study, the population is composed of women in post-operative period, after all Caesarean sections done under spinal anaesthesia, aged 18 and above, in one public hospital of Gauteng Province in South Africa. The exclusion criteria are women who are not in post-natal period, women who had NVD, women who had Caesarean section under general anaesthesia or epidural anaesthesia, women who have been sedated after spinal anaesthesia, women aged 17 or below and women who cannot speak or read any South African language.

An accessible population is the portion of the target population to which the researcher has reasonable access (Burns & Grove 2005:342; Brink 2006:123). According to Polit and Beck (2012:274), the accessible population or source population is the aggregate of cases that conform to designated criteria and that are accessible as subjects for a study. In the case of this study, the accessible population contains women with eligible criteria or inclusion criteria who are in the post-natal ward of a determined public hospital of Gauteng Province in South Africa during the period of the conduct of this

study. Women who had Caesarean section under spinal anaesthesia in this public hospital and who had been transferred to another hospital or who had been discharged before the study will not be part of the study (because not accessible), same as women in other public hospitals.

A sample is a subset or a subgroup of population elements that is selected for a particular study. Sampling refers to the process of selecting a group or a portion of the population to represent the entire population so that inferences can be made about the population (Brink 2006:124; Burns & Grove 2005:40; Joubert & Katzenellenbogen 2007:94-95; Polit & Beck 2008:339). A sampling frame is the list of every member of the population acquired by using sampling criteria to define membership. Then, subjects or members of the population are selected from the sampling frame by using the sampling plan to obtain the sample of the study (Burns & Grove 2005:346). In the case of this study, the sampling frame is the register of women in the postnatal ward for Caesarean section or post-caesarean section ward which fulfilled inclusion criteria.

The sample plan used in this study is random or probability method. In probability sampling technique, every member of a population has a probability greater than zero or a known chance of being selected (Brink 2006:126; Burns & Grove 2005:346; Joubert & Katzenellenbogen 2007:95). The reasons of using a probability sampling technique in this study are: the study is quantitative; the researcher would like the sample to be as representative as possible of the study population; the possibility of estimation of sampling error; the reduction of bias in the sample and sampling; and the increase of study validity.

The type of probability sampling used in this study is the systematic random sampling. It involves selecting elements at equal intervals or selecting every K^{th} case from a list, such as every third or every 10th patient (Brink 2006:129; Burns & Grove 2005:349; Polit & Beck 2012:282). The advantage of systematic random sampling is that the complete population may not be known before the start of a sample selection (Joubert & Katzenellenbogen 2007:100). However, Burns and Grove (2005:349) and Polit and Beck (2012:283) state that the size of the population must be known or estimated. In the case of this study, the population size is estimated to 350 women having Caesarean section under spinal anaesthesia in this public hospital of Gauteng Province for a month. This estimation is obtained from this public hospital statistics (see Table 1.2).

The sample size is the number of elements that are included in the sample (Burns & Grove 2005:354). In addition, Brink (2006:135), asserts that selecting the appropriate sample size and obtaining the required size are big problems that every researcher can face. Many elements or facts have to be taken into considerations when calculating sample size, such as the type of study design, the study population, the number of variables, but also logistical aspects like time, staff and cost constraints (Burns & Grove 2005:354-358; Joubert & Katzenellenbogen 2007:102-103; Polit & Beck 2012:283-286). Taking into account these above factors, and with the study population estimated to 350 women, the researcher used the guidelines for sampling (Strydom 2005, citing Stoker 1985) to calculate the sample size which is about 82 women in this case..

1.7.2.2 Data collection

Brink (2006:141) argues that “the process of data collection is of critical importance to the success of a study. Without high quality data collection techniques, the accuracy of the research conclusions is easily challenged”. This subsection describes the data collection approach, the data collection method, and the instrument to use in this study for data collection.

The data collection approach in this study is a structured one. Structured plan indicates what information must be gathered and how to gather it. In other words, it specifies in advance precisely what is to be obtained and how to do so (Brink 2006:143; Katzenellenbogen & Joubert 2007:107; Polit & Beck 2008:371). The advantages of this approach are: the increase reliability of the information obtained and the easy to analyse data. Conversely, the disadvantages are: considerable effort or difficulty to develop the approach and limited opportunities for the participant to detail their answers. In this study, there is no need of deep details in answers and the researcher used an existing questionnaire.

The data collection method in this study is a self-report. It requires the respondents to answer the questions by themselves (Katzenellenbogen & Joubert 2007:107; Polit & Beck 2012:297). According to Brink (2006:146), self-report instruments include: questionnaires, scales and interviews; and these instruments have differing strengths and weaknesses. In this study, the data collection instrument is a questionnaire.

A questionnaire is a list or a set of questions which are answered by the respondent, in view to obtain information needed for the study (Burns & Grove 2005:198; Delport 2005:166, citing the *New Dictionary of Social Work* 1995; Katzenellenbogen & Joubert 2007:107). Questionnaires can be applied in various ways, and different types of questionnaires can be identified, namely, mailed, telephonic, self-administered, and delivered by hand, group-administered (Delport 2005:166-170). In the case of this study, the researcher used a self-administered questionnaire. The advantages are: quick and easy way to obtain information, less expensive, great sense of anonymity with more likeliness to obtain honest answers, standard format for all subjects with easy analysis to follow. The disadvantages can be: failing to answer some questions and subject illiteracy (Brink 2006:147). These disadvantages were counteracted during the research by the availability of a research team member or a field-worker, to assist in explaining or translating into the corresponding language.

There were two or three fieldworkers at every data collection time. They received training from the researcher in preparation to participate in the process of data collection. They were chosen from nursing staff, not directly involved in patient's care and not on duty during data collection time, and with good communication skills and ability to communicate in many South African languages. There were in total four data collection times. Because women spend three days in this public hospital after Caesarean section, data collection was done after every three days. In this way, data were collected from mothers who are on day 0, day 1 and day 2 after Caesarean section, at every data collection time.

1.7.2.3 Data analysis

After data collection, the next step in the research process is data analysis but data need to be prepared, before the real analysis can begin (Bowling 2009:364). Data analysis entails categorising, ordering, manipulating and summarising the data and describing them in meaningful terms to obtain answers to research questions (Brink 2006:170; Kruger, De Vos, Fouché & Venter 2005:218).

As a descriptive study, the researcher used both narrative and statistical strategies of analysis in conjunction with graphic or pictorial strategies (Brink 2006:170-171). For statistical analysis, the researcher used descriptive statistics to describe and summarise

data, such as frequency distributions, measures of central tendency and measures of dispersion.

1.7.3 Validity and reliability

Reliability refers to the capacity of an instrument to produce consistent results. It measures objectivity, precision, consistency, stability, or dependability of data (Polit & Beck 2012:331; Sarantakos 2005:432). In the case of this study, the researcher used a questionnaire which is from an approved and published study (Siddiqi & Jafri 2009:77-80). Still, he did estimate the reliability of data gathering instrument and used the test-retest method. Furthermore, he administered the same questionnaire twice to a group of six patients at an interval of two days. He calculated the reliability coefficient which was 0, 94. According to Polit and Beck (2012:333), reliability coefficients above 0, 80 are usually considered good.

Validity is the degree to which an instrument measures what it is supposed to measure (Katzenellenbogen & Joubert 2007:117; Polit & Beck 2012:336). According to Burns and Grove (2005:41) and Babbie (2010:153), the validity of an instrument is the extent to which the instrument actually reflects or presents the abstract concept on consideration. The internal validity is the extent to which the effects detected in the study are a true reflection of reality, but not the result of the effects of extraneous variables; while the external validity is the degree to which study results can be generalised beyond the sample used in the study (Burns & Grove 2005:215-219; Polit & Beck 2012:236-237). In the case of this study, the researcher identified extraneous factors like social background, previous spinal anaesthesia, and previous delivery and addressed these issues in the analysis. Also, although a study of limited scope, the researcher used a sample of patients as representative as possible of the study population.

1.7.4 Ethical considerations

As for any study, the researcher took some legal and ethical issues into considerations. Ethics are defined variously as “a theory or a system of moral values”, “the study of the general nature of morals and the specific moral choices that a person must make”, “the rules or standards that govern the conduct of a person or the members of a profession”

(Singh 2007:30, citing the *American Heritage Dictionary* 2000). The following measures were ensured for this study to comply with the principles of research ethics.

1.7.4.1 *Protecting the research respondents*

The researcher respected the human rights of respondents, as well as the rights of all other persons directly or indirectly involved in the study. Human rights are defined as claims and demands that have been justified in the eyes of an individual or by the consensus of a group of individuals (Burns & Grove 2005:181, citing Sasson & Nelson 1971).

The researcher respected the three basic principles of ethical conduct in research according to the Belmont Report, namely, beneficence, respect for persons and justice (Polit & Beck 2012:152; Singh 2007:31-32). Regarding beneficence, the researcher maximised the benefits of the study and minimised any kind of risk related to the research. Regarding respect for persons, Polit and Beck (2012:154) say that this principle involves the right to self-determination and the right to full disclosure. The researcher treated respondents as autonomous agents by informing them about the study and allowing them to voluntarily choose to participate or not. A consent form was signed for those who accepted to participate in the study. Refusing to participate in the study did not affect the patient's care. Also, respondents could withdraw from the study at any time without a penalty. In connection with justice, all respondents were treated in the same way and the right to privacy was respected. Anonymity and confidentiality were maintained as well at all the times.

There was no risk of physical harm by participating in this study. The risk of psychological stress or problem was very minimal and did not happen. But in case it could arise such as a mother distressing during the study data collection due to loss of her baby or stillborn, counselling could have been offered and referral to social worker could have been arranged for further management.

1.7.4.2 *Protecting the rights of the institution*

The researcher requested permission to conduct the study in the hospital, from the management of this public hospital of Gauteng Province, and permission was granted to

him (see Annexure D). The research proposal was submitted to the Departmental Higher Degree Committee of UNISA in view to obtain ethical clearance, before the start of the study (see Annexure C). The researcher did not mention the name of the hospital during the progress or the conduct of the study. He did also make sure that the study, especially data collection process, does not interfere with any medical or nursing process or the hospital data collection and statistics.

1.7.4.3 *Scientific integrity (honesty) of the research*

The goal of research is to generate sound scientific knowledge, which is possible only through scientific honesty. This scientific honesty involves the honest conduct, reporting, and publication of quality research (Brink 2006:40; Burns & Grove 2005:203). The researcher achieved this by carefully addressing the following points. All information presented in the study is carefully referenced and a clear bibliography is written (see references). All documents: paper questionnaires and data sheets used in the study are kept as back up, same as electronic data, for verification in case of any subsequent audit. No fabrication or falsification of data or results is given chance in this study. There is no financial cost paid by respondents, neither any incentive given to them for their participation in this study.

1.7.4.4 *Domain specific ethical issues*

Because medical research can cause harm and distress (Alderson 2007:292), the researcher took all the precautions for respondents not to be harmed. Pregnant women are one of the vulnerable groups in research (Polit & Beck 2012:165). Conducting this study on women in their post-operative or post-Caesarean section period, could impact on the neonatal baby, who could cry or could have been neglected anyhow by the mother because of the research during data collection. The researcher addressed these issues, by for example collecting data from a mother when the baby is sleeping. During the process of the research, any complaint or problem raised by the mother in connection with the baby or herself was not be ignored, but the researcher did orientate the complaint or problem to the concerned area for help.

1.8 SIGNIFICANCE OF THE STUDY

Significance refers to the potential of the research to meaningfully contribute to the knowledge and to the evidence-based practice of a profession or a domain (Brink 2006:61; Polit & Beck 2012:77). This study is of importance for the anaesthetist, the hospital management and the patients. As health care provider responsible for spinal anaesthesia for Caesarean section, the anaesthetist may use this tool to evaluate his or her own performance and the quality of care received by the patients. Buso (2006:390) states that the measurement of patients' satisfaction has become an integral point of management strategies across the globe. While providing health service care, hospital management needs to have feedback from the patients about the quality of care which is provided. Patients will be all the ways beneficiaries of any improvement in health service. Further studies also in medical and nursing research which may arise may be enriched by this work.

1.9 LAYOUT OF THE STUDY

The complete dissertation or research report is structured as the following:

Chapter 1: Orientation of the study

Chapter 2: Literature review

Chapter 3: Research design and methodology

Chapter 4: Analysis of data and discussion of findings

Chapter 5: Summary of findings, recommendations and conclusion.

1.10 CONCLUSION

The rate of Caesarean section has increased in many countries, including South Africa, where most of them are done under regional anaesthesia, particularly spinal anaesthesia. This study describes the level of mothers' satisfaction after their experience of spinal anaesthesia for Caesarean section.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter presents the literature review conducted for the study. According to Polit and Beck (2012:732), a literature review is a critical summary of research on a topic of interest, often prepared to put a research problem in context. Burns and Grove (2005:93) state that a literature review is an organised written presentation of what has been published on a topic by scholars, and the purpose of the review is to convey to the reader what is currently known regarding the topic of interest. Moreover, the review of the literature should lay the foundation or the groundwork for the study, and can also inspire new research ideas. It provides useful information by increasing one's understanding of a topic or issue, showing why the research may have value in the larger scheme of things (Babbie 2010:523; Parahoo 2006:126-128).

Firstly, this literature review will highlight spinal anaesthesia and its side-effects and complications. Secondly, the review of scholarship will focus on Caesarean section. Thirdly, the discussion will focus on patients' satisfaction towards spinal anaesthesia for Caesarean sections. There are many scholars who conducted relevant studies, but the researcher only will present those within the ten last years, or more or less.

2.2 SPINAL ANAESTHESIA (SA)

2.2.1 Different types of anaesthesia

According to Lifeline to modern medicine (2013), there are three main categories or types of anaesthesia, each having many forms and uses, namely, general, regional and local. In general anaesthesia, the patient is unconscious and has neither awareness, nor sensation. There are many general anaesthetic drugs such as intravenous medications or gaseous substances, sometimes requiring control of breathing by mechanical ventilation. In local anaesthesia, the anaesthetic drug is usually injected into

the tissue to numb just the specific location of the body requiring minor surgery. In other words, the anaesthetic drug is applied to the site, usually topically or subcutaneously. In regional anaesthesia, the anaesthetic drug is injected near a nerve or a cluster of nerves to numb or block the area or region of the body requiring surgery. Regional anaesthesia can be central: spinal and epidural anaesthesia. It can also be peripheral: plexus block, nerve block and intravenous regional block for example, Bier block. Only spinal anaesthesia will be part of this literature review and study.

2.2.2 Definition and short history of spinal anaesthesia

Spinal anaesthesia, also called spinal block or subarachnoid block or intrathecal injection, is a type of regional anaesthesia which is achieved by injection of a local anaesthetic solution into the lumbar subarachnoid space, through a fine spinal needle (Afhami *et al* 2004:424; Kleinman & Mikhail 2006:304; Macintyre, Schung, Scott, Visser & Walker 2013:1; Moppet 2008:1).

Anaesthetic practices date from ancient times, but the evolution of the speciality began in the mid-nineteenth century and only became firmly established around 1950. Regional anaesthesia in ancient times consisted of compression nerve trunks called nerve ischemia or the application of cold which is cryo-analgesia. With the evolution, local anaesthetic solutions were discovered and improved with times in terms of lower toxicities and longer duration of action. Heinrich I. Quincke observed in 1891 that the dural sac could be punctured by inserting a needle between the lumbar spinous processes. On 15 August 1898, August Bier used the Quincke method of entering the intra-theal or subarachnoid space and administered the first spinal anaesthesia for surgery (Afhami *et al* 2004:424; Larson 2005:22-27; Morgan, Mikhail & Murray 2006:2-3).

The present study on maternal satisfaction in receiving spinal anaesthesia for Caesarean section finds its importance today, as there is still poor public knowledge of anaesthesia as a medical discipline (Ahmad & Afshan 2011:359; To 2009:214). In a cross-sectional study about patients' perception and knowledge of anaesthesia and anaesthetists, Ayelade, Akinyemi and Adewole (2010:28-31) argue that anaesthetists are poorly recognised in Nigeria, as it is the case in many parts of the world, particularly in developing countries. From the researcher's knowledge, no such study has been

conducted in South Africa, neither a study to determine the level of maternal satisfaction when patients come in contact to anaesthesia.

2.2.3 Incidence of spinal anaesthesia

It is difficult to talk about the incidence of spinal anaesthesia itself; rather most articles in the literature are written about the incidence of its failure, its side-effects and complications and the incidence of death associated with spinal anaesthesia. It is clear that this regional anaesthesia technique is of big use currently for any below the umbilicus surgical operation. Sometimes surgeons tend to minimise it or just tend to ignore its complications and risks. Farina and Rout (2013:81-82) comment about this tendency: “but it is just a spinal” and about the advocacy of regional anaesthesia as being totally safer option during Caesarean section. They advised that the basic minimum standards of obstetric anaesthesia practice must be met before administering spinal anaesthesia for Caesarean section.

2.2.4 Preoperative visit, preoperative explanation and informed consent

According to Casey (2013:3) and Senekal (2012:208), the preoperative assessment of the patient for spinal anaesthesia, should be done just like in the case of general anaesthesia. During the preoperative visit, it is important to explain the procedure, its side-effects and possible complications to the patient and obtain informed consent. It should be explained also that although spinal anaesthesia abolishes pain, the patient may be aware of some sensations in the relevant area, and that the legs will become weak or feel as if they are lost. Most importantly, the patient should be reassured that these sensations are perfectly normal and that if, by any chance, he or she feels pain, general anaesthesia will be administered. Information should be given also about the possibility of sedation.

In their descriptive study on “predictors of attitude of parturient selected for Caesarean section toward spinal anaesthesia”, Afhami *et al* (2004:426) suggest that paying more attention to preoperative preparation of patients chosen for spinal anaesthesia is very important. They recommend that anaesthesia team members, especially the responsible anaesthesiologist, should always visit the patients in the preoperative period and discuss their concerns with them. Keogh, Hugues, Ellery, Daniel and

Holdcroft (2005:167-174), show in their article titled “psychosocial influences on women’s experience of planned elective Caesarean section”, that women’s postoperative pain is related to preoperative and negative expectations. The researcher of this current study is of the opinion that patients’ negative ideas, fear and anxiety should be allayed by a proper and clear preoperative explanation.

Awareness of patient’s needs and desires for pain relief is important when planning anaesthetic care. Patient satisfaction and potentially the quality of medical care may be improved by addressing patient’s preferences for pain relief and anaesthesia (Carvalho, Cohen, Lipman, Fuller, Mathusamy & Macario 2005:1182-1183). Moreover, according to Kwiatosz-Muc and Lesiuk (2011:117), the ability to communicate well with the patient is a priority in medical practice; good communication is an essential element influencing the patient’s satisfaction. Thus, the preoperative assessment and preoperative explanation have quite a big importance before spinal anaesthesia for Caesarean section.

In connection with the informed consent, Moppet (2008:1) states that when spinal anaesthesia is recommended, it is the patient’s decision to give a “go ahead” with it or not. The *American Heritage Dictionaries* (2007) define informed consent as the consent by the patient to a surgical or medical procedure or participation in a clinical study after achieving an understanding of the relevant medical fact and the risks involved. The *Stedman Medical Dictionary for Health Professions and Nursing* (Stegman 2005:743) defines the informed consent as a voluntary agreement given by a person or a responsible proxy for participation in a study, immunisation programme, or treatment regimen, after being informed of the purpose, methods, procedures, benefits, and risks. Spinal anaesthesia for Caesarean section requires patient’s collaboration, for which clear preoperative explanation and informed consent are prerequisites.

2.2.5 Anaesthetic skills requirements for spinal anaesthesia

Although relatively easy for experienced hands, spinal anaesthesia may be difficult to perform for junior doctors. It can also give rise to serious side-effects and complications which could be dangerous for the patient, especially if handled by not fully trained or not competent doctor. For a safe administration of anaesthesia, a doctor who wants or who is requested to perform spinal anaesthesia must also be able to perform general

anaesthesia. It is the responsibility of hospital managers to ensure that doctors possess adequate training, skills and facilities for both spinal anaesthesia and general anaesthesia (Farina & Rout 2013:82; Senekal 2012:208).

If spinal anaesthesia and the ensuing surgery are performed skilfully, the majority of patients will be very happy with the procedure (Casey 2013:1; Usas, Benevicius, Bilskiene, Paplauskaite & Silinskyte 2012:11). The increasing number of attempts or pricks on the patient's back is cited as a factor of patient's dissatisfaction for spinal anaesthesia (Charuluxananan, Sripajittichai, Sirichotvithyakorn, Rodanant & Kyakong 2003:338-343; Siddiqi & Jafri 2009:79).

The abandonment of the patient by the anaesthetist or the doctor providing anaesthesia should not be allowed or considered for any reason. As emphasised in Farina and Rout (2013:82), when spinal anaesthesia is to be administered, there must be a doctor who has the exclusive responsibility, not only to administer it, but also to monitor and stabilise the patient during anaesthesia. This doctor must not be given the additional tasks of operating, or assisting the surgery, or resuscitating the baby. From the researcher's opinion and experience, close monitoring by the anaesthetist and verbal contact with the patient will allow earlier detection and management of side-effects and complications.

2.2.6 Side-effects and complications of spinal anaesthesia

In their study on "patient preferences for anaesthesia outcomes associated with Caesarean delivery", Carvalho *et al* (2005:1182-1187) enumerate intraoperative and postoperative pain, nausea, vomiting, cramping, pruritus and shivering as common side-effects of spinal anaesthesia and great concerns for patients. Same side-effects are also mentioned in Sindhvananda, Leelanukron, Rodanant and Sripajittichai (2004:628-635). Senekal (2012:209-210) listed the side-effects of spinal anaesthesia together with its complications, and headache, nausea and vomiting are among many others. Discomfort and backache are named as side-effects in Karlström, Engstrom-olofsson, Nystedt, Sjöling and Hildingsson (2010:1327) and in Afhami *et al* (2004:424-426). In a prospective cohort study, Sng, Sia, Quek, Woo and Lim (2009:748-752) describe the incidence of chronic pain after Caesarean section under spinal anaesthesia.

In a study similar to the current research, Siddiqi and Jafri (2009:77-80) conducted a cross-sectional survey and study the maternal satisfaction after spinal anaesthesia for Caesarean section in terms of pain during surgery, the postoperative nausea and vomiting (PONV) and postoperative backache. From their findings, 83, 02% of the cases were indicated as level of maternal satisfaction at a military hospital in Pakistan. These results stimulated an interest in the researcher of this current study to investigate the same in the context of South Africa, but in terms of more side-effects and complications than just pain and PONV.

Dharmalingam and Zainuddin (2013:51-54) conducted a survey on maternal satisfaction in receiving spinal anaesthesia for Caesarean section. It is also a cross-sectional study undertaken in Malaysia. In their study, they include the preoperative explanation and other side-effects and complications like hypotension, bradycardia, inadequate anaesthesia/analgesia, headache, backache, pain at the surgical site and nausea and vomiting in the intraoperative and postoperative periods. They found that 97% of patients were satisfied while 3% were dissatisfied. Furthermore, they report that 88,5% of patients would opt for spinal anaesthesia in future if required, 8% would not and 3,5% were not sure.

2.2.7 General post-operative care

According to Casey (2013:6), after spinal anaesthesia patient should be admitted to the recovery room as with any other anaesthetic technique. In the event of hypotension and subsequent nausea and vomiting, the nurses should elevate the patient's legs, increase the rate at which intravenous fluids are being administered, give oxygen and summon the anaesthetist. Further doses of vasoconstrictors, antiemetic and/or fluids may be required by the anaesthetist. Patients should be advised as to how long their spinal block will last and should be told to remain in bed until full sensation and muscle power have returned. Afhami *et al* (2004:425) state that discomfort during return of sensory and motor function of lower extremities is the worse aspect that patients experience in postoperative period, while backache is only rarely reported.

In the case of spinal anaesthesia for Caesarean section, the post-operative period is important, as the mother has to care for her newborn. Karlström *et al* (2010:1326-1327)

assert that post-caesarean pain management is of great importance as post-operative pain slows down recovery and may cause complications because of the pain itself. The complications might include such as impaired respiration, immobility and subsequent venous thrombosis. Optimal pain relief improves mobility and enhances the mother's ability to breastfeed and care for her baby.

2.2.8 Spinal anaesthesia for Caesarean section

Farina (2010:81) highlights that Caesarean section, particularly under spinal anaesthesia, has become routine for many anaesthesiologists. Spinal anaesthesia is considered by many as the method of choice for Caesarean section (Karlström *et al* 2010:1327; Oyebamiji, Adeyemi, Adekanle & Afolabi 2010:108; Sng *et al* 2009:748). Regional anaesthesia of which spinal anaesthesia is part, increases the patient's trust and satisfaction when compared to general anaesthesia (Kwiatosz-Muc & Lesiuk 2011:117-118). However, from the review of Afolabi and Lesi (2012:10), there is no evidence that regional anaesthesia is superior to general anaesthesia in terms of major maternal and neonatal outcomes. Also, Diedericks (2012:192) declares that spinal anaesthesia is the safest option for Caesarean section in the developed world, but not in South Africa.

2.3 CAESAREAN SECTION (C/S)

"In deciding whether or not to perform a Caesarean section, you must consider the indications for operative delivery as well as the risks involved for both the mother and the baby. If you decide to go ahead, you need to obtain the mother's fully informed consent before beginning the procedure" (Blitz-Lindeque 2006:275). This point focuses on incidence and types of Caesarean section.

2.3.1 Short history of Caesarean section

Hofmeyr (2011:345) states that the date of the first Caesarean section is not known. In Egypt, as early as 3000 BC, post-mortem Caesarean sections were performed when pregnant women died during labour. According to Greek mythology, Asclepius, the Greek god of healing, was cut from his mother's body. Caesarean sections are also mentioned in Hebrew Scriptures dating back to 100-500 AD, as well as in Persian

literature of the 10th and 11th centuries. A Roman law of 715 AD, the *lex Caesare* meaning “to cut” made post-mortem Caesarean section obligatory, even if the baby was dead. The first modern Caesarean section was performed by Dr James Barry in Cape Town, on 25 July 1826.

2.3.2 Incidence of Caesarean section

World Health Organization (WHO) has stated in 1985 that no region in the world is justified to have a Caesarean section rate exceeding 15% of all births. But in 2010, WHO withdrew this recommendation, stating that “there is no empirical evidence for an optimum percentage. What matters most is that all women who need Caesarean sections receive them” (Mail & Guardian 2012). The rate of Caesarean sections varies considerably among countries (Hofmeyr 2011:254).

In South Africa, the rate of Caesarean section has increased, from 18,1% in 2000/01 to 24,4% in 2008/09, with an average annual compounded growth rate of 3,8% (Monticelli 2013:02). According to the Health Trust System (2011:02), the national rate of Caesarean section in South Africa is about 22, 7% in 2011, with four provinces having a percentage above this average: KwaZulu-Natal (28,6%), Eastern Cape (25,0%), Western Cape (24,5%) and Gauteng (24,3%). In private healthcare sector, the Caesarean section rate is even higher, around 60 to 70% (A to Z of opting for C-section 2012; Naidoo & Moodly 2009:254-258).

In the article on “what proportion of births should be vaginal?”, Buchmann (2012:78) states that the Caesarean section rate in South Africa is around 20% and that there is no doubt that Caesarean sections save lives. It has been shown that when the Caesarean section rate for a population rises, maternal and perinatal mortality falls. According to Kula, Naidoo, Ruff and Richards (2012:78), factors which contribute to increasing Caesarean section rates are: patient choice, doctor preference, fear of malpractice, improved surgical and anaesthetic techniques, and structural issues within health systems and sometimes the need for sterilisation by tubal ligation.

2.3.3 Types of Caesarean section

There are several types of caesarean section. An important distinction lies on (1) the time of operation comparatively to the starting time of labour, on (2) the type of incision made on the uterus, apart from the incision on the skin.

2.3.3.1 Time of operation

Hofmeyr (2011:350) and A to Z of opting for C-section (2012) describe two types of Caesarean section: an elective or planned or scheduled procedure, which is arranged before the start of labour, ideally as close as possible to the due date, commonly for medical reasons; and an emergency or emergent or unplanned procedure, which is performed during labour or before, if a potentially hazardous complication for the mother or the baby exists or develops.

2.3.3.2 Incisions on uterus and abdominal wall

Hofmeyr (2011:350-354) describes two kinds of uterine incisions which are lower segment or transverse incision and upper segment or vertical or classical incision. He also describes two types of abdominal wall incisions: vertical incision which can be median or paramedian and transverse supra-public, traditionally the “Pfannenstiel incision”.

2.4 PATIENT SATISFACTION

The need to improve quality in healthcare is increasing. A major component of quality of healthcare is patient satisfaction and research has identified a clear link between patient outcomes and patient satisfaction scores (Morris, Jahangir & Sethi 2013:29). Measuring patient satisfaction has become an integral part of management strategies across the globe (Buso 2006:390). During the last decade, patient satisfaction ratings have been highlighted as an important objective of healthcare: it ensures the quality of anaesthesia care, improves and intensifies the anaesthesiologist-to- patient relationship, and can also be seen as a marketing tool in terms of customer orientation (Usas *et al* 2012:11).

2.4.1 Definition of satisfaction and dissatisfaction

According to Morris *et al* (2013:29), patient satisfaction is multifaceted and a very challenging outcome to define. It depends on many factors, and the definition can depend on factors in consideration. These factors are discussed in the next point. In the *Oxford Advanced Learner's Dictionary of Current English*, Hornby (2006, sv "satisfaction") explains satisfaction as the good feeling that one has when one has achieved something or when something that one wanted to happen does happen; something that gives one this feeling; or the act of fulfilling a need or desire.

Dissatisfaction is the antonym of satisfaction. It is defined as the condition or the feeling of being displeased or unsatisfied, of being discontent and the cause or reason of this discontentment (Hornby 2006; *American Heritage Dictionaries* 2011, sv "dissatisfaction").

2.4.2 Factors of satisfaction and dissatisfaction

During the time that a patient spends in a hospital, many factors can contribute to the overall satisfaction score or dissatisfaction of the patient. The researcher describes these factors in the following lines.

2.4.2.1 Patient's image of the medical personnel

According to Kwiatosz-Muc and Lesiuk (2011:117), the patient's image of medical personnel may influence his or her opinion about the quality of the service and the medical centre, hence the level of satisfaction.

2.4.2.2 Time spent with medical personnel

Many patients often complain that doctors and nurses do not spend enough time with them. Kwiatosz-Muc and Lesiuk (2011:117-118) conclude that patients' satisfaction depends mainly on the time spent with their doctors before anaesthesia and during the procedure. This makes regional anaesthesia to increase the patient's trust and satisfaction when compared to general anaesthesia.

2.4.2.3 Patient-physician relationship and communication

Morris *et al* (2013:29) assert that patient-physician communication is a key in improving patient satisfaction. It is only through a proper communication or discussion that medical personnel can be able to address the patient's concerns and priorities, as differences exist between patients.

2.4.2.4 Balance between expectation and perception

In a prospective survey on "etiquette during spinal anaesthesia for Caesarean section: the mother's expectations", Anwari and Anwari (2010:7974) contend that patient's perception is an important component of the evaluation of quality, especially the non-technical aspects of anaesthesia care. The patient's satisfaction with perioperative care depends upon a balance between patient's expectation and perception. For most of patients, the peri-operative period is tense and unfamiliar. What the patient hears, sees and feels in this period can allow the patient to relax by creating an environment of safety, respect and care, hence enhancing patient's satisfaction.

2.4.2.5 Management of pain, depression and other patient's concerns

Morris *et al* (2013:29) state that psychosocial factors like pain and depression may negatively impact on patient satisfaction. Managing these factors well and other patients' concerns will help to achieve good outcomes and improve satisfaction level. According to Carvalho *et al* (2005:2), patient satisfaction and potentially the quality of medical care, may be improved by addressing patient's preferences for pain relief and anaesthesia.

2.4.2.6 Specific factors for spinal anaesthesia

Beside all factors that contribute to patient's satisfaction for health-care service in general, spinal anaesthesia has some specific factors which are related to its technique and advantages. Afhami *et al* (2004:424) assert that being awake during surgery, witnessing the birth of the baby and hearing neonatal cry, are the most pleasant stages of anaesthesia for many women. In their study on "factors related to patient satisfaction regarding spinal anaesthesia", Charuluxananan *et al* (2003:338-343) conclude that

patients receiving spinal anaesthesia had a high rate of satisfaction, and factors associated with dissatisfaction were less (3,8%): the increasing number of attempts of spinal injection, inadequate analgesia and post-operative urinary retention.

2.4.2.7 Other factors

Other factors are also known to contribute to patient satisfaction score and dissatisfaction even if they are not clearly found in the literature. The researcher can, for example, name the language barrier, the theatre's ambiance, the medical personnel panic or ignoring patient's request and concerns.

2.5 CONCLUSION

This chapter on literature review has discussed studies and articles which are related to the topic of this research. All these publications, namely studies, articles and books were grouped in three big points: first those in connection with spinal anaesthesia, then those related to Caesarean section, and finally those talking about patient's satisfaction. The researcher used both primary and secondary sources in view to convey to the reader what is known regarding the topic of interest.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter discusses the design and methodology used in the study. Hence, the researcher presents the research setting, the target population, the sample selection, the data collection instrument, the instrument's validity and reliability, the data collection method, the data analysis and the ethical considerations.

The researcher conducted a quantitative and non-experimental study, using structured questionnaire to collect the data (Brink 2008:102). The study's purpose was to evaluate maternal satisfaction after the experience of spinal anaesthesia was administered for Caesarean section. The study was conducted in one public hospital of Gauteng Province in South Africa. Permissions were obtained from the University of South Africa (see ethical clearance certificate or Annexure C) and from the hospital management (see letter of approval from site or Annexure D).

3.2 RESEARCH DESIGN

The research design is the structured approach or the overall plan of how the researcher intends to conduct the research (Fouché & De Vos 2005:132 citing Mouton 2001; Polit & Beck 2012:58). According to Bowling (2009:159), it is simply the overall structure or plan of the research. The design used in this study is quantitative, descriptive and cross-sectional.

3.2.1 Quantitative approach

Quantitative research entails a formal, objective and systematic process in which numerical data are used to obtain information about the world (Burns & Grove 2005:23). It originates from the positivist tradition where objective reality is valued (Polit & Beck 2008:14-16). Quantitative paradigm was appropriate in this case to evaluate the levels of maternal satisfaction objectively without any influence of the researcher's personal opinion.

3.2.2 Descriptive design

The purpose of descriptive studies is to observe, describe and document aspects of a situation as it naturally occurs (Grove, Burns & Gray 2013:49; Polit & Beck 2012:226). Through this descriptive study, the researcher was able to describe the maternal satisfaction, evaluate and categorise the information.

3.2.3 Cross-sectional design

A cross-sectional design is a design in which data are collected from different groups of people who are at different stages in their experience of the phenomenon (Parahoo 2006:191). According to Babbie (2010:106) and Brink (2006:105), a cross-sectional study involves observations of a sample at one point in time, meaning on one occasion only for different subjects. In this study, the researcher collected data only once for every study participant, although there were many data collection times to allow having a representative sample as it will be described later (see sampling and data collection).

3.3 RESEARCH SETTING

As stated in the preamble, the study was conducted at one public hospital of Gauteng Province in South Africa. This public hospital is a tertiary institution or a level three hospital which is located in a suburban area of Gauteng. The hospital has a Caesarean section rate of close to 30% (28,84%). An average of 380 Caesarean sections are performed every month with more than 90% (93,12%) done under spinal anaesthesia, as mentioned earlier (see chapter 1, point 1.2).

The study data collection has been conducted in the post-caesarean section ward or the post-operative ward for Caesarean section. This ward has an average of 40 beds divided in four cubicles. Authorisation for research was obtained from the hospital management as stated earlier.

3.4 RESEARCH METHODOLOGY

According to Brink (2008:191), the research methodology involves informing the reader on how the actual investigation was carried out, meaning what the researcher has done

to solve the research problem and to answer the research questions. The research methodology and the type of design used thus constitute the basic foundation for a good research.

3.4.1 Target population

A population, referred sometimes as the target population, is the entire group of elements (persons, objects or substances) that is of interest to the researcher (Burns & Grove 2005:341-342; Polit & Beck 2012:744). Joubert and Katzenellenbogen (2007:94) define it as a group about which the researcher wants to gather information and draw conclusions. The researcher in this study was interested in women who had spinal anaesthesia for Caesarean section, ranging from the age of 18 or above, in one public hospital of Gauteng Province in South Africa.

3.4.2 Sample

A sample is a subset or a subgroup of population elements that is selected for a particular study (Brink 2006:124; Burns & Grove 2005:40; Joubert & Katzenellenbogen 2007:94-95; Polit & Beck 2012:275). The sample size is the number of elements that are included in the sample (Burns & Grove 2005:354). In addition, Brink (2006:135) asserts that selecting the appropriate sample size and obtaining the required size are big problems that every researcher can face. Many elements or factors have to be taken into consideration when calculating sample size. These include the type of study design, the study population, the number of study variables, but also logistical aspects like time, staff and cost constraints (Burns & Grove 2005:354-358; Joubert & Katzenellenbogen 2007:102-103; Polit & Beck 2008:348-352). In this study, there were plus or minus 350 women who were done Caesarean sections under spinal anaesthesia for a month. The researcher used 24% of this study population, giving a sample size of 84 women, but only 82 women accepted to participate in the study. This approach was discussed before data collection with the statistician who gave his approval.

3.4.3 Sampling frame and eligibility sampling criteria

The sampling frame is the list of every member of the population acquired by using sampling criteria to define membership. Subjects or members of the population are

selected from the sampling frame by using the sampling plan, to obtain the sample of the study (Burns & Grove 2005:346). In the case of this study, the sampling frame was the register of patients or women in the post-caesarean section ward. As women spend generally three days in post-natal ward after Caesarean section or post-caesarean section ward, the researcher collected data every third day of data collection period.

The eligibility or sampling criteria were:

- Women in postnatal ward after Caesarean section done under spinal anaesthesia only (no general anaesthesia, no sedation).
- Women aged 18 or above.
- Women, who can speak, read or understand at least one of the eleven South African languages.

However, the exclusion criteria are the following:

- Women who had Caesarean section under general anaesthesia or under epidural anaesthesia;
- Women who received sedation on top of spinal anaesthesia.

3.4.4 Sampling procedure

Sampling refers to the process of selecting a group or a portion of the population with which to conduct a study (Grove *et al* 2013:351; Polit & Beck 2012:275). Given the nature of this study, the researcher chose to use a probability or random sampling technique, which is the systematic random sampling in this case. In probability sampling technique, every member of a population has a greater than zero probability or a known chance of being selected (Brink 2006:126; Joubert & Katzenellenbogen 2007:95; Polit & Beck 2014:180).

Systematic random sampling can be conducted when an ordered list of all members of the population (a sample frame) is available (Grove *et al* 2013:361; Parahoo 2006:263). According to Brink (2006:129), Burns and Grove (2005:349) and Polit and Beck (2012:282), the systematic random sampling involves selecting elements at equal intervals or selecting every Kth case from: a list, such as every third or every 10th

patient. In the case of this study, the researcher has selected every second woman in the post-caesarean section ward's register to participate in the study, provided that the woman met the eligibility criteria. Calculations were done with the assistance of the statistician.

3.4.5 Data collection instrument

The data collection instrument used in this study was a questionnaire. According to LoBiondo-Wood and Haber (2010:275), questionnaires are paper-and-pencil instruments designed to gather data from individuals about knowledge, attitudes, beliefs and feelings. Parahoo (2006:282-284) asserts that questionnaire is by far the most common method of data collection in social and health research. He defines it as a method that seeks written or verbal responses from people to a written set of questions or statements. It is predetermined, standardised and structured.

3.4.5.1 Construct of the questionnaire

The questionnaire used in this study comprised two sections: A and B (see Annexure B). Section A contained questions related to the patient's demographic profile, such as age, race, profession, marital status, the number of pregnancies and deliveries, and the surgical and anaesthetic history. In contrast, Section B consisted of questions related to peri-operative elements including pre-operative, intra-operative and post-operative findings and question about the possibility of accepting spinal anaesthesia in the future. All the questions in Section B were constructed in a way to have four possibilities or propositions of answer.

3.4.5.2 Pre-testing the questionnaire

According to Polit and Beck (2012:738), a pretesting or a pilot test is a trial administration of a newly developed instrument to identify flaws or assess time requirements. The researcher in this study did not use a newly developed instrument. The questionnaire has been adapted from the study titled: "Maternal satisfaction after spinal anaesthesia for Caesarean deliveries" (Siddiqi & Jafri 2009:77-80) and modified with granted permission (see Annexure E and Annexure F). Still, a pre-test was done because of great modifications to the questionnaire and to assess time requirements.

Six women who met the sampling criteria and who were not part of the actual sample respondents agreed to participate in the pretesting. No change has been made to the questionnaire after pretesting. Time for every participant to fill in the questionnaire has been assessed and it ranged from 3 to 7 minutes. The questionnaire's content was found appropriate according to the data collection planning.

3.4.5.3 Administration of the questionnaire

The administration of the questionnaire to the respondent was done by either the principal investigator, or by either a fieldworker. In total, there were three fieldworkers for the first three data collection times, and two fieldworkers in the fourth data collection time. The principal investigator has been present in all data collection times or days.

The fieldworkers have been chosen from the nursing staff who were not directly involved in patient's care and not on duty during data collection time, with good communication skills and demonstrate multilingualism through their ability to communicate in many South African languages. They received training from the principal investigator so that they will be equipped to assist in the process of data collection.

3.5 DESIGN VALIDITY

The study validity represents the accuracy with which the findings reflect the phenomenon being studied (Parahoo 2006:80). Polit and Beck (2012: 236-237, citing Shadish *et al* 2002) describe four types of validity: statistical conclusion validity, internal validity, construct validity and external validity. The internal and external validity are discussed in the following lines.

3.5.1 Internal validity

The internal validity is defined as the degree to which the outcomes of an experiment can be attributed to the manipulated, independent variable rather than to uncontrolled extraneous factors (Brink 2008:99). According to Burns and Grove (2005:215), it is the extent to which the effects detected in the study are a true reflection of reality rather than the result of extraneous variables.

As a cross-sectional study, most of threats to internal validity such as temporal ambiguity, maturation, selection and mortality, are less susceptible to this study. There was less threat of instrumentation also, as same questionnaire was used for all respondents. Anonymity of the study was explained to respondents to ensure objectivity and honesty in answering the questions. There were no particular events or problem during data collection period or during the time of the conduct of the study (Polit & Beck 2012:244-248).

3.5.2 External validity

According to Brink (2004:106), and Burns and Grove (2005:218-219), the external validity is the degree or the extent to which study findings or results can be generalised beyond the sample used in the study. For this study, the results can only be generalised to the concerned public hospital of Gauteng Province. From the 84 women approached, two refused to participate in the study, making a response rate of 97,6% (see Chapter 4, point 4.1). Although only a sample of 82 women has been used, the level of maternal satisfaction is determined for all women who have had spinal anaesthesia for Caesarean section in this public hospital.

3.6 INSTRUMENT VALIDITY AND RELIABILITY

These two terms are closely related. Brink (2008:165) asserts that reliability is a part of validity, in that if an instrument is not reliable, it is not valid.

3.6.1 Reliability

As described earlier in Chapter 1, reliability refers to the capacity of an instrument to produce consistent results (Polit & Beck 2012:331; Sarantakos 2005:432). In the same way, Burns and Grove (2005:374) define reliability as the consistency of measures obtained in the use of a particular instrument. For the case of this study, the instrument was a questionnaire which was from an approved and published study (Siddiqi & Jafri 2009:77-80). The questionnaire was modified and re-evaluated with a reliability coefficient of more than 0,90 (0,94). Reliability was further enhanced because the

researcher tried to keep the same circumstances when respondents answered the questionnaire.

3.6.2 Validity

The validity of an instrument is the degree to which the instrument measures what it is supposed to measure (Burns & Grove 2005:376-377; Katzenellenbogen & Joubert 2007:117; Polit & Beck 2014:205). The type of validity appropriate for this study is the content validity, which concerns the degree to which an instrument has an appropriate sample of items for the construct being measured (Polit & Beck 2014:205). The validity was further enhanced by the submission of the questionnaire to experts who ascertained that the information in the questionnaire was relevant and adequate to the construct being studied. The experts consulted in this study were two specialists in anaesthesiology and the researcher's supervisor.

3.7 DATA COLLECTION PROCEDURE

The time period for data collection in this study was March 2014. There were in total four times or four days for data collection. As stated earlier (see point 3.4.3), data have been collected every third day of data collection period, because women spend generally three days after Caesarean section in this hospital. Data collection has been done in the afternoon, between 16h00 and 18h00. Data collection was assured by the principal investigator and by the fieldworkers, constituting the research team.

Permission for data collection for the study was obtained and documented by the ethical clearance from the University of South Africa and by the letter of approval from the hospital managers. These consisted of Head of Department of Gynaecology and Obstetrics, Head of Department of Anaesthetics, Senior Clinical Executive – mother and child, and the Chief Executive Officer (see Annexures C and D). Matrons for gynaecology and obstetrics and for the concerned ward have also been approached, and they did not have any objection for the conducting the study.

Every time the research team arrived in the ward for data collection, the nurse in charge was approached and the supporting documentation and permissions were shown to her, before proceeding to data collection. The researcher and fieldworkers had to first

introduce themselves. Then, a systematic random sampling has been applied by selecting every second woman in the ward. Women were informed in detail about the study and the consent, giving them an option to choose to participate or not. Only two women refused to participate in this study for the total period of data collection. Those who accepted to participate and to sign the consent were given to questionnaire to fill in, in front of either the researcher, or either a fieldworker. No incident was reported during the data collection period.

3.8 DATA ANALYSIS

Data analysis will be discussed in details in Chapter 4. The assistance of a statistician was needed for data analysis. As a descriptive study, both narrative and statistical strategies of analysis were used in conjunction with graphic or pictorial strategies (Brink 2006:170-171). Descriptive statistics were employed to synthesise and describe data, such as frequency distributions, measures of central tendency and measures of dispersion. Inferential statistics were also used to infer the findings from the sample to the entire population under study.

3.9 ETHICAL CONSIDERATIONS

According to the Belmont Report, there are three basic principles of ethical conduct in biomedical research namely beneficence, respect for persons and justice (Polit & Beck 2012:152; Singh 2007:31-32). Parahoo (2006:111-112) asserts that there are six ethical principles that health professionals can use in the research to protect research respondents from harm. These principles are beneficence, non-maleficence, fidelity, justice, veracity and confidentiality. Besides protecting the respondents, the researcher also has the obligation to protect the rights of the institution and to ensure the scientific integrity of the research (Burns & Grove 2005:181-206).

In this study, the researcher adhered to the following ethical principles:

3.9.1 Informed consent

According to Polit and Beck (2014:87), informed consent means that respondents have adequate information about the study, comprehend the information, and have the power

of free choice enabling them to consent to or decline participation voluntarily. Singh (2007:35) describes four elements which characterise the informed consent: the capacity, the disclosure, the understanding and the voluntary nature.

In this study, respondents were aged 18 or above, all in mental and physical status allowing them to decide. The researcher and fieldworkers explained all relevant aspects of the study, including its purpose, potential risks, benefits, and social implications (see Annexure A). The explanation was given to each study participant in the language that she felt comfortable to speak. From the 84 women approached, 82 consented freely to participate in this study without any incentive.

3.9.2 Beneficence

Polit and Beck (2014:83) assert that beneficence is a fundamental ethical principle which means the duty to minimise harm and to maximise benefits. This principle covers the right to freedom from harm and discomfort and the right to protection from exploitation. The principle was practiced in this study. There was no danger, risk or harm by participating in this study. No personal details like cell-phone number, address, date of birth were required. It was explained to the respondents that information that they provided was not going to be used against them. In addition, the questions asked in the study were not intrusive. The study could benefit to respondents directly when they come back next time or indirectly through their relatives or friends with implementation of recommendations and measures to improve maternal satisfaction in this public hospital.

3.9.3 Non-maleficence

Non-maleficence means preventing or minimising harm in research. Harm and discomfort in research with humans can be physical, emotional, social, or financial, as declared by Polit and Beck (2014:83) and Burns and Grove (2005:190). Furthermore, Parahoo (2006:112) asserts that while the potential physical harm may be obvious, the psychological effects may not be as transparent. As stated earlier, there was no danger, risk or harm associated with participation in this study and questions were not sensitive or embarrassing. Most importantly, no kind of stress has been noticed during the process of data collection.

3.9.4 Justice

According to Parahoo (2006:112), this principle involves being fair to respondents by not giving preferential treatment to some and depriving others of the care and attention they deserve. It includes the right to fair treatment and the right of respondents to privacy. In this study, the same questionnaire was used for all the respondents. Privacy was respected, as respondent filled themselves the questionnaire quietly, and in case of need of assistance, explanation was only given to the concerned respondent in her bed.

3.9.5 Veracity

This ethical principle is incorporated in the informed consent where the respondents are told the truth, even if this may cause respondents not to take part or withdraw during the study (Parahoo 2006:112). A clearly informed and written consent was established and explained to respondents, which they signed before filling in the questionnaire (see Annexures A and B).

3.9.6 Confidentiality

Confidentiality refers to the researcher's responsibility to protect all data collected during the study from being divulged to any other person except the people involved, unless the researcher has been given explicit permission from the respondent to make it known (Brink 2004:41). A breach of confidentiality can occur when a researcher, by accident or direct action, allows an unauthorised person to gain access to the raw data of a study, or when in the reporting or publication of the study, a subject's identity is accidentally revealed, violating the subject's right to anonymity (Burns & Grove 2005:188, citing Ramos 1989).

Polit and Beck (2014:89) affirm that confidentiality is especially salient in qualitative studies because of their in-depth nature, yet anonymity is rarely possible. This study is a quantitative one, and the possibility of breach of confidentiality in reporting or publication of findings was null as results were not given individually. The questionnaires were kept under lock and key with no access to anybody else except the researcher.

3.9.7 Anonymity

Polit and Beck (2008:747) define it as the protection of respondents' identification such that even the researcher cannot link individuals with the information provided. It is the most secure means of assuring confidentiality (Polit & Beck 2014:89). Moreover, the researcher ensured that the questionnaire did not allow the respondents to put their names so that anonymity was secured. Also, the questionnaires were collected and put separately from the informed consent form which had the respondent's name. In this way, even the researcher could not relate the questionnaire to respondent anymore at the end of data collection.

3.9.8 Autonomy

Brink (2008:32) defines autonomy as having the right to whether or not to participate in a study and to withdraw from the study at any time without the risk of penalty and prejudicial treatment. An autonomous person is an individual capable of deliberation about personal goals, and of acting under direction of such deliberation (Singh 2007:32). Autonomy is referred by other authors as the right of self-determination (Burns & Grove 2005:181-188; Polit & Beck 2014:84). This principle has been respected in this study. It was outlined in the informed consent form which the respondents signed prior to answering the questionnaire.

3.9.9 Protecting the rights of the institution

After elaboration and submission of the research proposal to the Departmental Higher Degrees Committee of UNISA, the researcher obtained an ethical clearance for this study (see Annexure C). A permission to conduct the study in the hospital had been requested and granted to the researcher by the hospital managers (see Annexure D). Anonymity of this public hospital of Gauteng has been guaranteed at all the times.

3.9.10 Scientific integrity (honesty) of the research

The scientific integrity or honesty involves the honest conduct, reporting and publication of quality research (Brink 2006:40; Burns & Grove 2005:203). Research misconduct is due to fabrication, falsification, or plagiarism in proposing, conducting or reviewing

research, or in reporting results (Pera & Van Tonder 2011:340; Polit & Beck 2014:92). For this study, the researcher made sure that the design and methodology were appropriate for the study, as confirmed also by the approval by the supervisor and the ethical clearance certificate. All documents used in the study, such as questionnaires, papers, data sheets, same as electronic data were kept and are still going to be kept for at least five years, as back up, in case of any audit. No fabrication or falsification of data has been given a chance. Statistical findings have been reported honestly. All information presented in the study has been carefully referenced and all sources have been acknowledged in the bibliography (see references).

3.10 CONCLUSION

The design used in this study was quantitative, descriptive and cross-sectional. The data collection instrument was a questionnaire with two sections. This questionnaire was administered in the post-operative period to women who have had spinal anaesthesia for Caesarean section in one public hospital of Gauteng in South Africa. The researcher ensured that all ethical principles were adhered to in this study. This chapter included also the target population and sampling method, the questionnaire design, the constructs of validity and reliability and the data collection procedure. The following chapter will be on the analysis of data and discussion of the findings.

CHAPTER 4

ANALYSIS OF DATA AND DISCUSSION OF FINDINGS

4.1 INTRODUCTION

In Chapter 3, research methodological processes that were used in the current study were discussed. These included the research design, study site, target population, sampling methods, data collection techniques, validity and reliability of the research instrument, pretesting of the research instrument and data analysis procedure. In addition, the ethical concepts of research were explained.

This chapter presents the data analysis, interpretation of results and discussion of findings of the study. The chapter contains two big sections: the analysis of demographic data and the analysis and discussion of the perioperative results. The researcher used descriptive statistics to describe and to synthesize the obtained data. Averages and percentages were used. Conclusions are drawn and presented in the form of percentages, graphs and tables.

As presented in the preceding chapters, there is increasing rate of Caesarean sections worldwide, including South Africa where spinal anaesthesia is the preferred technique of choice. The purpose of this study was to evaluate the maternal satisfaction after the experience of spinal anaesthesia for Caesarean section in one public hospital of Gauteng Province in South Africa. The objectives of this study were to determine the levels of maternal satisfaction after spinal anaesthesia for Caesarean section in terms of the preoperative explanation, the intraoperative elements, the postoperative components, the other perioperative factors and the possibility of accepting spinal anaesthesia in the future.

A total of 84 questionnaires were distributed, from which 82 women consented to participate in the study and filled in the questionnaires. Thus, an excellent response rate of 97,6% were obtained as highlighted in Table 4.1.

Table 4.1 Response rate of distributed questionnaires (n=82)

Types of C/S	Questionnaires distributed	Questionnaires filled in	Response rate percentage (%)
Elective C/S	20	19	95,0
Emergency C/S	64	63	98,4
All C/S	84	82	97,6

Most of Caesarean sections were done as emergency (76,8%) and were performed during days and nights, while elective Caesarean sections (23,2%) were performed only during normal working hours which are from 08:00 to 16:00, from Monday to Friday. Figure 4.1 shows the distribution of different types of Caesarean sections.

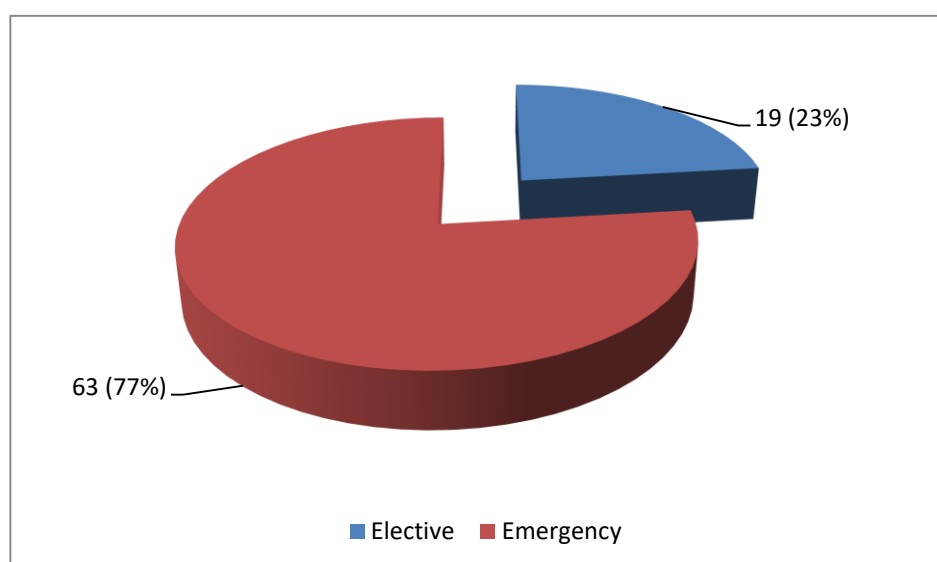


Figure 4.1 Distribution of types of caesarean sections (n=82)

4.2 DESCRIPTION OF DEMOGRAPHIC ASPECTS OF RESPONDENTS

Bourne and Joubert (2007:24) assert that demography is the scientific description of the characteristics of populations, and embraces all aspects of population structure and changes which can be measured numerically. This involves primarily the measurement of the size of a population, the composition, the distribution, and changes in numbers of people. Demography is simply defined in *Stedman's Medical Dictionary for the Health Professions and Nursing* (Stegman 2005, sv "demography"), as the study of populations, especially with reference to size, density, fertility, mortality, growth rate, age distribution, migration, and vital statistics.

According to Burns and Grove (2005:170), demographic variables are attributes of the subjects that are measured during the study and used to describe the sample. Although demographic data are not the focus of this study, they have been used for analysis purposes and/or where cross tabulations could be conducted to interpret findings.

4.2.1 Age distribution

The population in this study were women in their post-operative period after spinal anaesthesia for Caesarean section. This means that respondents were in their fecundity period which can be estimated from 14 to 45 years. For ethical reasons, women aged less than 18 were not included in the study. For the simplicity purpose of this study, age was determined by completed number of years, and no rational or decimal numbers were obtained.

Five (5) age groups have been classified as following:

- Age group A: 18 to 20 years
- Age group B: 21 to 25 years
- Age group C: 26 to 30 years
- Age group D: 31 to 35 years
- Age group E: 36 to 40 years

Table 4.2 illustrates the age distribution of respondents. The majority of women were in the age group C (34,1%), followed by the age groups B (22,0%) and D (19,5%). The groups A and E had each 12,2% of respondents. The average age for the study was 28 years (27,9 years), with a standard deviation of 6 (5,74).

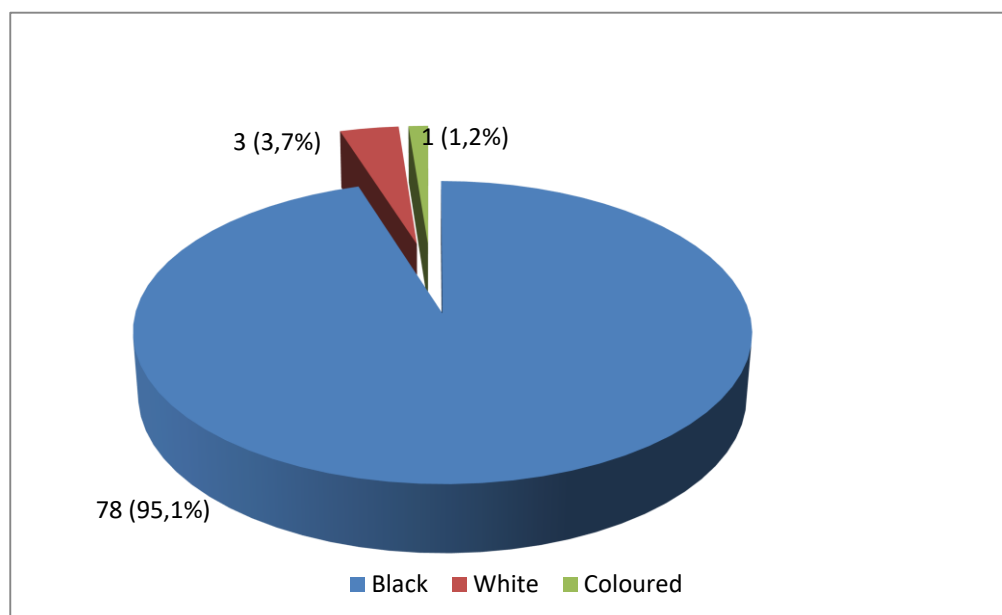
Table 4.2 Age distribution of respondents (n=82)

Age groups	Respondents	
	Frequency	Percentage (%)
A (18-20)	10	12,2
B (21-25)	18	22,0
C (26-30)	28	34,1
D (31-35)	16	19,5
E (36-40)	10	12,2
Total	82	100,0
Mean \pm SD	27.9 \pm 5.74	

4.2.2 Race

In South Africa, there are four different types of race: Black, White, Coloured and Indians. The blacks constitute the majority of South African population with 79,0%. The rest is divided between white 9,6%, coloured 8,9% and Indians/Asians 2,5% (CIA World Fact book 2013). According to the Statistics South Africa (2013), the African/ blacks represented 79,8%, followed by coloured, white and Indians/Asians for respectively 9,0%, 8,7% and 2,5%.

This study has been conducted in one public hospital of Gauteng, which is situated in a township. The big majority of respondents were then black, as illustrated in figure 4.2. White respondents represented 3,7% and coloured 1,2% of the study population.

**Figure 4.2 Race distribution of respondents (n=82)**

4.2.3 Marital status

Only two categories of marital status were considered in this study: married and not married. In the context of this study, married women are those who have at least one of the following: civil marriage, religious marriage or traditional marriage. Conversely, women who are not married are those with boyfriend or life partner, or single, divorced or widower. As shown in Figure 4.3, the majority of respondents were not married.

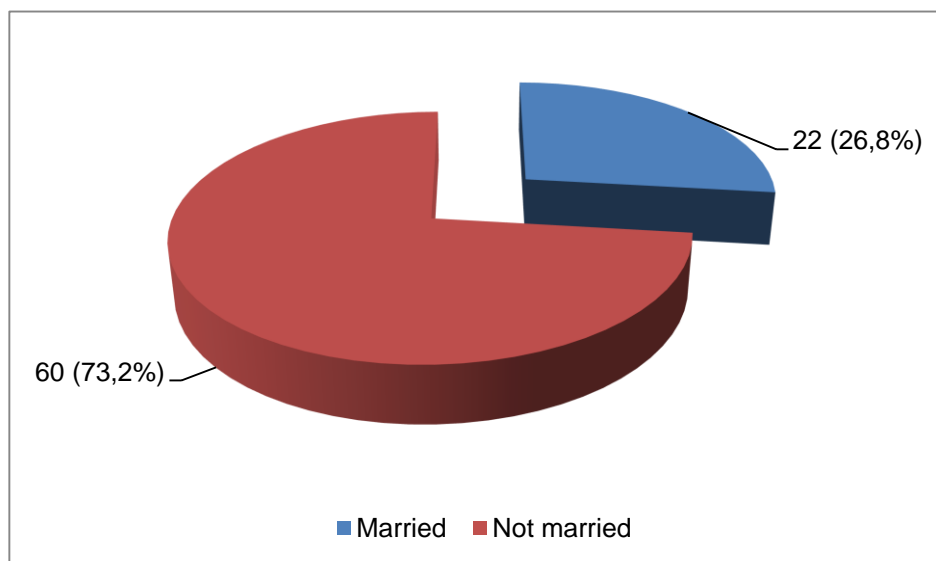


Figure 4.3 Distribution of marital status of respondents (n=82)

4.2.4 Employment

Figure 4.4 shows that almost two thirds of respondents were unemployed, with a percentage of 64,6. The remaining 35,4% were employed and were divided as following: five sellers (6,1%), four domestic workers (4,9%), three cleaners (3,7%), three students (3, 7%), two data capturers (2,4%), two administrative clerks (2,4%) and others (12,2%). In the group of others, there were hair stylists, accountant, miner, mechanic, and etcetera.

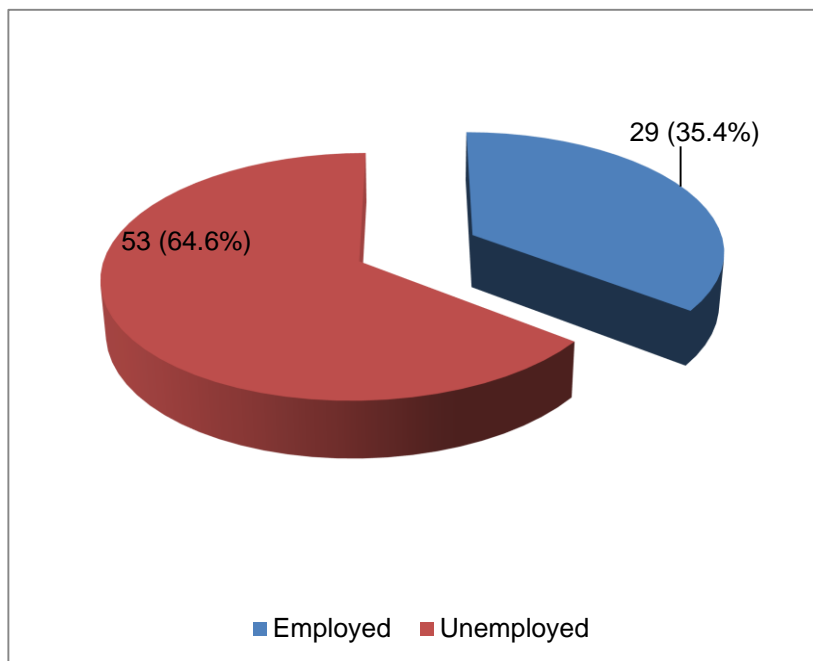


Figure 4.4 Employment distribution of respondents (n=82)

4.2.5 Number of pregnancies and deliveries

4.2.5.1 Number of pregnancies (gravida or gravidity)

Gravida means the number of pregnancies that a woman has had. It is defined as a women's status regarding pregnancy, usually followed by a numeral designating the number of times the woman has been pregnant (*K. Dictionaries 2010*, sv "gravida").

In this study, the majority of women have been pregnant one time (primigravida, 30, 5%), followed by women who have been pregnant two times (26,8%) and three times (25,6%). Table 4.3 illustrates the gravida distribution.

Table 4.3 Gravida distribution (n=82)

Gravida	Respondents	
	Frequency	Percentage (%)
1	25	30,5
2	22	26,8
3	21	25,6
4	8	9,8
5	4	4,9
≥6	2	2,4
Total	82	100,0
Mean ± SD	2.5 ± 1.46	

4.2.5.2 Number of deliveries (parity or para)

Para means a woman who has given birth to an infant, regardless of whether the child was alive or stillborn. The term is used with numerals to indicate the number of such deliveries (Mosby 2009, sv “parity”; Stegman 2005, sv “para”). In this study, the majority of women were para 1 (primipara, 34,1%), followed by para 2 (30,5%). This is illustrated in Table 4.4.

Table 4.4 Para distribution (n=82)

Para	Respondents	
	Frequency	Percentage (%)
1	28	34,1
2	25	30,5
3	19	23,2
4	5	6,1
5	4	4,9
≥6	1	1,2
Total	82	100,0
Mean ± SD	2.2 ± 1.24	

4.2.5.3 Number of abortion/miscarriage

The *Stedman's Medical Dictionary* for the health professions and nursing (Stegman 2005, sv “abortion” and “miscarriage”) defines miscarriage and abortion as following. Miscarriage is a spontaneous expulsion of the products of pregnancy before the middle of the second trimester. On the contrary, abortion is the expulsion from the uterus of an embryo or foetus before the stage of viability which is twenty weeks of gestation or foetal weight less than 500 grams.

From the 82 of this study, 13 had abortion/miscarriage (15,9%): ten women had abortion or miscarriage one time (12,2%) and three women had abortion or miscarriage two times (3,7%). The researcher presents these data in a clear way in Table 4.5 and Figure 4.5.

Table 4.5 Number of abortion/miscarriage (n=82)

Number of abortion or miscarriage	Respondents	
	Frequency	Percentage (%)
0	69	84,1
1	10	12,2
2	3	3,7
Total	82	100,0

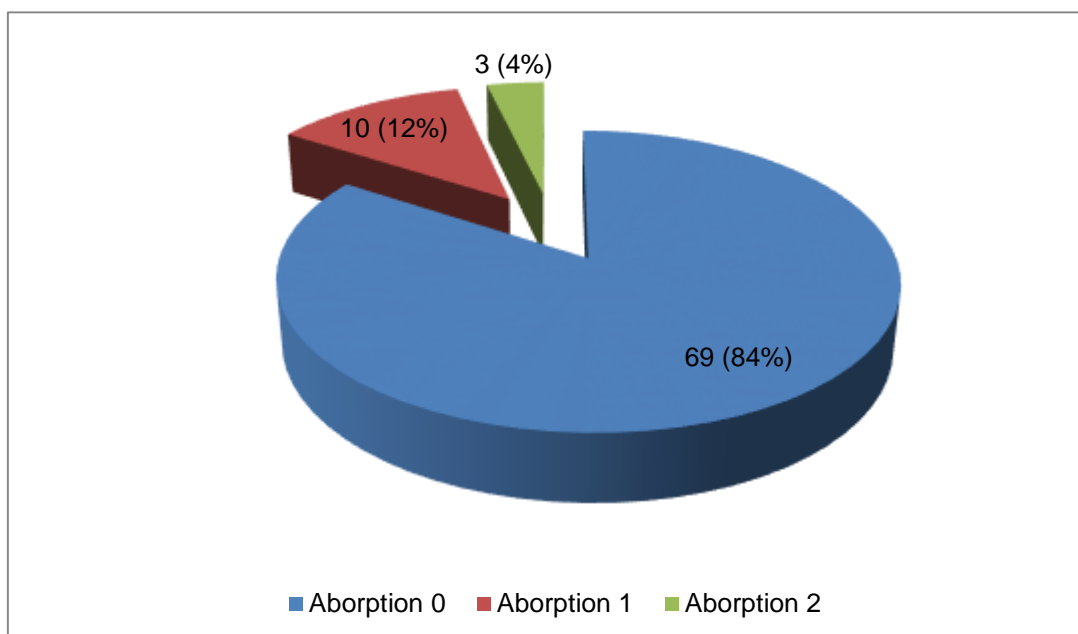


Figure 4.5 Number of abortion/miscarriage (n=82)

4.2.5.4 Number of ectopic pregnancy

An ectopic pregnancy is the development of an impregnated ovum outside the cavity of the uterus. In other words, it is a pregnancy which is occurring elsewhere than in the cavity of the uterus (Stegman 2005, sv “ectopic” and “ectopic pregnancy”). Only one woman in this study had history of one time ectopic pregnancy (1,2%). Table 4.6 shows the number of ectopic pregnancy.

Table 4.6 Number of ectopic pregnancy (n=82)

Number of ectopic pregnancy	Respondents	
	Frequency	Percentage (%)
0	81	98,8
1	1	1,2
Total	82	100,0

4.2.6 Surgical and anaesthetic history

In this study, 33 respondents (40,3%) had previous spinal anaesthesia; and all these spinal anaesthesias were for Caesarean sections: twenty-five women had it once (30,5%) and eight had it twice (9,8%). For 49 women, it was the first time to have spinal anaesthesia for Caesarean section (59,7%), meaning they never had previous spinal anaesthesia for Caesarean section before this current time. This is illustrated in Table 4.7.

Table 4.7 Distribution of anaesthetic history (n=82)

Number of previous spinal anaesthesia for C/S	Frequency	Percentage (%)
0	49	59.7
1	25	30.5
2	8	9.8
Total	82	100.0
Mean ± SD	0.5 ± 0.67	
Number of anaesthesia other than spinal anaesthesia	Frequency	Percentage (%)
0	73	89.0
1	9	11.0
2	0	0.0
Total	82	100.0
Mean ± SD	0.1 ± 0.30	

Beside previous spinal anaesthesia, respondents also had previous other anaesthetic techniques. In terms of general anaesthesia, nine respondents (11%) previously had general anaesthesia only once for every respondent and 73 women did not have a general anaesthesia (see Table 4.7). From the nine women who had previous general anaesthesia, five were for Caesarean section (55,6%), two were for evacuation of the

uterus (22,2%), one was for ectopic pregnancy (11,1%) and one also for appendicectomy (11,1%). Figure 4.6 illustrates surgical procedures for which the previous general anaesthesia (GA) was done.

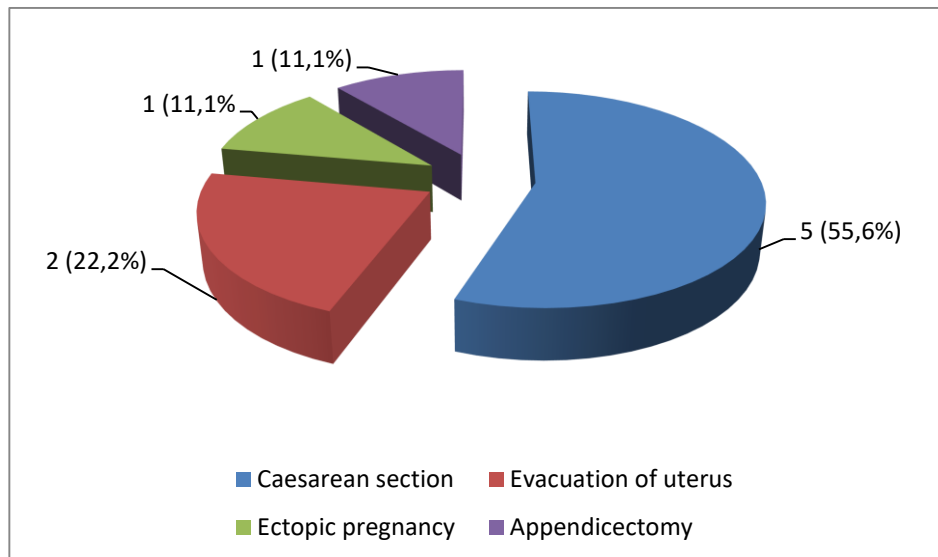


Figure 4.6 Surgical procedure for which GA was performed (n=9)

4.3 ANALYSIS OF PERI-OPERATIVE RESULTS

This part of analysis and discussion included the preoperative explanation, the intra-operative elements, the post-operative results, the other perioperative findings, and the possibility of accepting spinal anaesthesia in the future.

4.3.1 Pre-operative explanation of spinal anaesthesia

4.3.1.1 Elective Caesarean sections

From nineteen respondents who had spinal anaesthesia for elective Caesarean sections, fourteen women found the explanation very clear (with a score of 3), three found it clear (score 2) and two women stated that the explanation of spinal anaesthesia was not provided to them before the procedure (score 0). None of respondents found the preoperative explanation unclear (score 1). This is illustrated in Table 4.8 and Figure 4.7.

Table 4.8 Distribution of scores obtained for preoperative explanation for elective C/S (n=19)

Scores	Frequency	Percentage of frequency (%)
3	14	73,68
2	3	15,79
1	0	0,00
0	2	10,53
Total	19	100,00

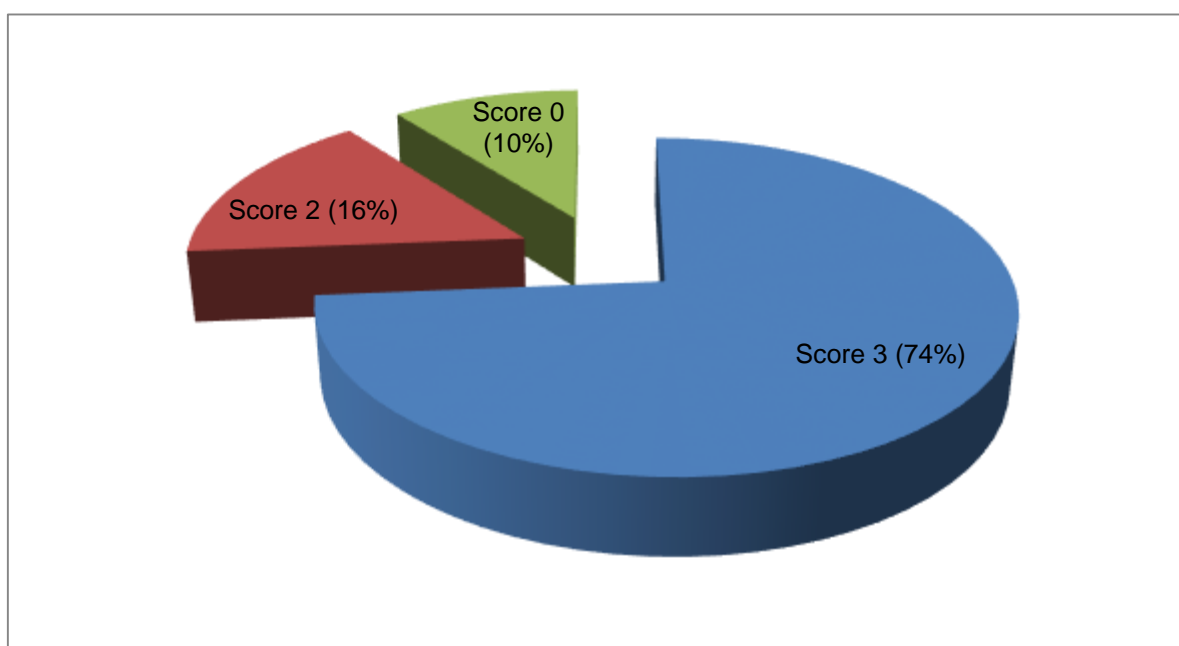


Figure 4.7 Scores obtained for preoperative explanation (elective C/S) (n=19)

The total level of satisfaction to preoperative explanation of spinal anaesthesia for elective Caesarean sections was found as follows: Fourteen patients replied with score 3, giving a total of 42 for score 3. Three patients replied with two, giving a total of six for the score 2. Two patients chose the score 0 and none of the patients chose the score 1. The grand total of these is 48, over a maximum of 57, giving a percentage of 84,21 (see Table 4.11).

4.3.1.2 Emergency Caesarean sections

Sixty-three respondents had spinal anaesthesia for emergency Caesarean sections. From these sixty-three, the score 3 was found forty-one times, followed by the score 0 and the score 1 which were represented nine and eight times respectively. The score 2

was represented five times. Table 4.9 and Figure 4.8 illustrate the above. The grand total for all the scores was 141, over a total of 189, giving 74,60 % of maternal satisfaction for preoperative explanation to spinal anaesthesia for emergency Caesarean section (see Table 4.11).

Table 4.9 Distribution of scores obtained for preoperative explanation for emergency C/S (n=63)

Scores	Frequency	Percentage of frequency (%)
3	41	65,08
2	5	7,94
1	8	12,70
0	9	14,28
Total	63	100,00

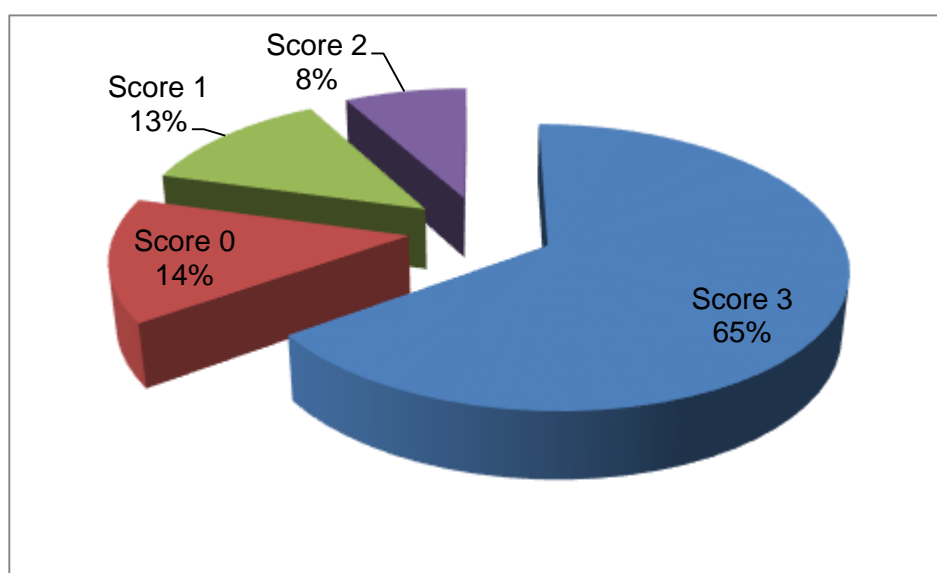


Figure 4.8 Scores obtained for preoperative explanation (emergency C/S) (n=63)

4.3.1.3 Discussion for both elective and emergency Caesarean sections

The total number of respondents in this study is eight-two. The maximum possible total of scores is 246, obtained from eighty-two times three. The Score 3 was represented fifty-five times, followed by score 0 for eleven times. The Scores 1 and 2 were represented eight times for each of them (see Table 4.10).

Table 4.10 Distribution of scores obtained for preoperative explanation (n=82)

	None Score 0	Unclear Score 1	Clear Score 2	Very clear Score 3	Total
Pre-operative explanation of spinal anaesthesia	11 (13.4%)	8 (9.8%)	8 (9.8%)	55 (67.0%)	82 (100.0%)

The total for all the scores is 189 over a maximum of 246, giving a percentage of 76,83. This is the level of maternal satisfaction to preoperative explanation of spinal anaesthesia for all Caesarean sections, as illustrated in Table 4.11.

These findings show that the percentage of maternal satisfaction for preoperative explanation was higher in elective caesarean sections (84,21%), as compared to emergency Caesarean sections (74,60%). This can be explained by the fact that women do not have labour pain in elective setting and they can understand the explanation which is provided to them very well. In emergency cases, the understanding could be disturbed by the labour pain if present or any other factor of stress such as maternal bleeding or foetal distress. The total satisfaction level for preoperative explanation was 77%, by rounding 76, 83% (see Table 4.11).

Table 4.11 Maternal satisfaction to preoperative explanation (n=82)

Types of C/S	Frequency	Level of satisfaction (%)
Elective C/S	19	84,21
Emergency C/S	63	74,60
All C/S	82	76,83

4.3.2 Intra-operative elements

The level of maternal satisfaction towards spinal anaesthesia for Caesarean section has been assessed in terms of effects and side-effects occurring during the operation, such as pain, headache, dizziness and nausea and vomiting. These elements have been studied and discussed firstly for elective Caesarean sections, secondly for emergency Caesarean sections, and finally for both.

Different scores were chosen for these four intra-operative elements. Just to have an impression about the satisfaction level, the score 3 which is highest score was found more than other scores for all these four intraoperative elements. For example, the score 3 has a percentage of 93,9 for intra-operative headache, followed by 89, 0 for intra-operative nausea and vomiting. Table 4.12 illustrates the distribution of these scores.

Table 4.12 Distribution of scores obtained for intraoperative elements

	Worse Score 0	Strong Score 1	Slightly Score 2	None Score 3	Total
Intra-operative pain	0 (0%)	4 (4.9%)	10 (12.2%)	68 (82.9%)	82 (100%)
Intra-operative headache	0 (0%)	0 (0%)	5 (6.1%)	77 (93.9%)	82 (100%)
Intra-operative dizziness	0 (0%)	3 (3.7%)	15 (18.3%)	64 (78.0%)	82 (100%)
	Two times or more vomiting Score 0	Vomiting once Score 1	Nausea only Score 2	No nausea and vomiting Score 3	Total
Intra-operative nausea and vomiting	1 (1.2%)	0 (0%)	8 (9.8%)	73 (89.0%)	82 (100%)

4.3.2.1 Elective Caesarean sections

As stated earlier, nineteen women have undergone spinal anaesthesia for elective Caesarean sections. Four intra-operative elements have been assessed for them: pain, headache, dizziness, and nausea and vomiting. For the intra-operative pain, a score of

fifty-three over fifty-seven has been found, giving a level of maternal satisfaction of 93%. The highest score of fifty-seven over fifty-seven was for the intra-operative headache, with 100% of level of maternal satisfaction. The levels of maternal satisfaction in terms of intra-operative dizziness, and nausea and vomiting have been respectively 91,2% and 89,5%. The overall satisfaction level for elective Caesarean sections in terms of intra-operative elements was found to be 93,4% (see Table 4.13 and Figure 4.9).

Table 4.13 Maternal satisfaction to intra-operative elements

Intra-operative elements	Elective C/S		Emergency C/S	
	Score	Percentage (%)	Score	Percentage (%)
Pain	53	93,0	175	92,6
Headache	57	100,0	184	97,4
Dizziness	52	91,2	173	91,5
Nausea and vomiting	51	89,5	184	97,4
TOTAL	213 (over 228)	93,4	716 (over 756)	94,7

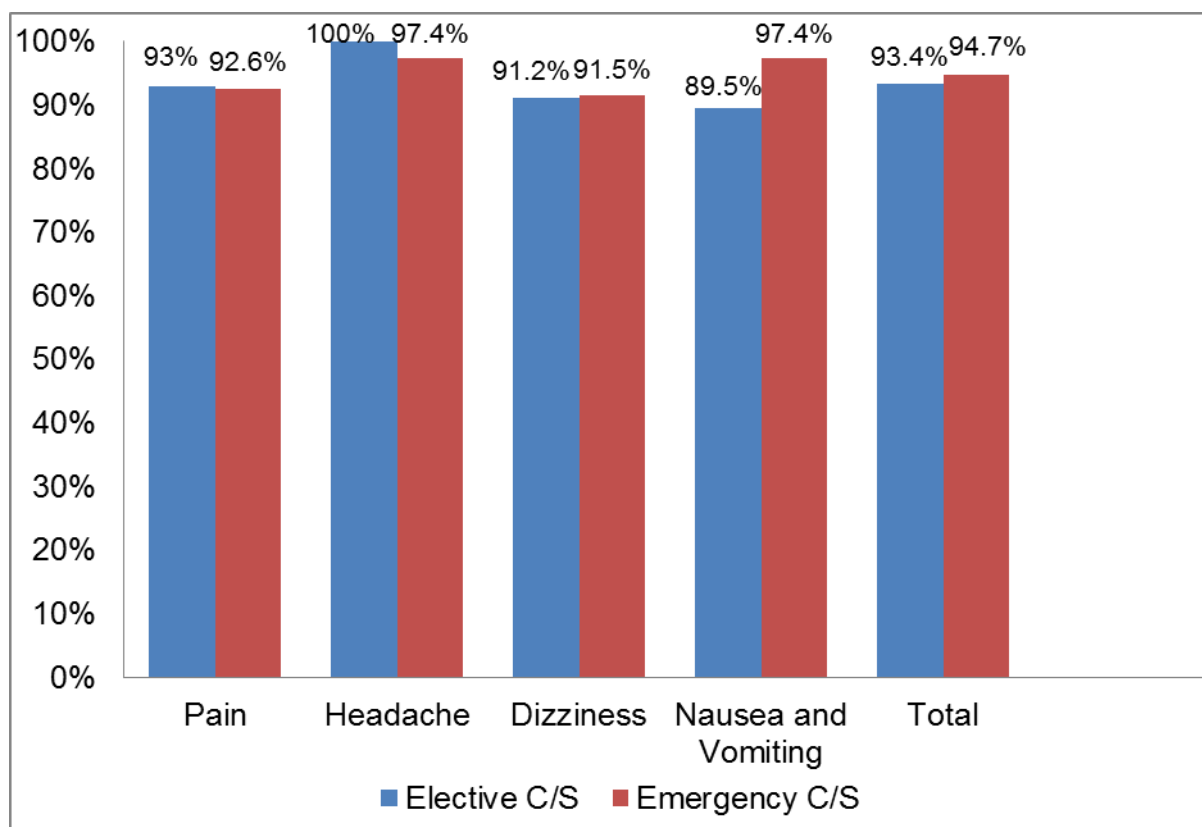


Figure 4.9 Maternal satisfaction to intraoperative elements

4.3.2.2 *Emergency Caesarean sections*

From the sixty-three women who had spinal anaesthesia for emergency Caesarean sections, the level of maternal satisfaction was 97,4% for the intra-operative headache and the intra-operative nausea and vomiting. For the intra-operative pain and intra-operative dizziness, the satisfaction levels were 92,6% and 91,5% respectively. The total satisfaction level for emergency caesarean sections in terms of intra-operative elements was 94,7% (see Table 4.13 and Figure 4.9).

4.3.2.3 *Discussion for both elective and emergency Caesarean sections*

Minimal differences have been found between elective and emergency Caesarean sections in terms of three intra-operative elements: for pain 93,0% vs. 92,6%; for headache 100% vs. 97,4% and for dizziness 91,2% vs. 91,5%. However, a big difference has been found in terms of intra-operative nausea and vomiting: 97,4% for emergency Caesarean sections, while 89,5% for elective Caesarean sections. This result seems to be paradoxical as elective patients are starved and should have less nausea and vomiting than patients for emergency cases. For the total, there was no big difference between elective and emergency caesarean sections in terms of satisfaction level to all intra-operative elements: 93,4% and 94,7% (see Table 4.13 and Figure 4.9). The total level of maternal satisfaction for intra-operative elements was 94,4% (see Table 4.18 and Figure 4.12).

4.3.3 *Post-operative components*

The following post-operative components have been assessed for elective and emergency caesarean sections: the nausea and vomiting, the backache, the headache, the wound pain within two hours after the operation and the discomfort. Different scores were obtained as highlighted in Table 4.14.

Table 4.14 Distribution of scores obtained for post-operative components

	Two times or more vomiting Score 0	Vomiting once Score 1	Nausea only Score 2	No PONV Score 3	Total
PONV (Post-operative nausea and Vomiting)	0 (0%)	0 (0%)	2 (2.4%)	80 (97.6%)	82 (100%)
	Worse Score 0	Strong Score 1	Slightly Score 2	None Score 3	Total
Post-operative backache	0 (0%)	3 (3.7%)	13 (15.9%)	66 (80.4%)	82 (100%)
Post-operative headache	0 (0%)	2 (2.4%)	6 (7.3%)	74 (90.3%)	82 (100%)
Post-operative wound pain (within 2 hours after the operation)	1 (1.2%)	12 (14.6%)	32 (39.0%)	37 (45.2%)	82 (100%)
Post-operative discomfort	1 (1.2%)	2 (2.4%)	23 (28.1%)	56 (68.3%)	82 (100%)

4.3.3.1 Elective caesarean section

The highest score of fifty-seven over fifty-seven, meaning 100% of maternal satisfaction, has been found PONV, followed by the post-operative backache (98,2%) and the post-operative headache (96,5%). For the postoperative discomfort and wound pain within two hours after the operation, the levels of maternal satisfaction to spinal anaesthesia for elective Caesarean sections were low, respectively 80,7% and 70,2%. The total level of maternal satisfaction to postoperative components of spinal anaesthesia for elective Caesarean sections was found to be 89,1% (see Table 4.15 and Figure 4.10).

Table 4.15 Maternal satisfaction to post-operative elements

Post-operative elements	Elective C/S		Emergency C/S	
	Score	Percentage (%)	Score	Percentage (%)
Nausea and Vomiting	57	100,0	187	98,9
Backache	56	98,2	171	90,5
Headache	55	96,5	181	95,8
Wound pain	40	70,2	147	77,8
Discomfort	46	80,7	170	89,9
Total	254 (over 285)	89,1	856 (over 945)	90,6

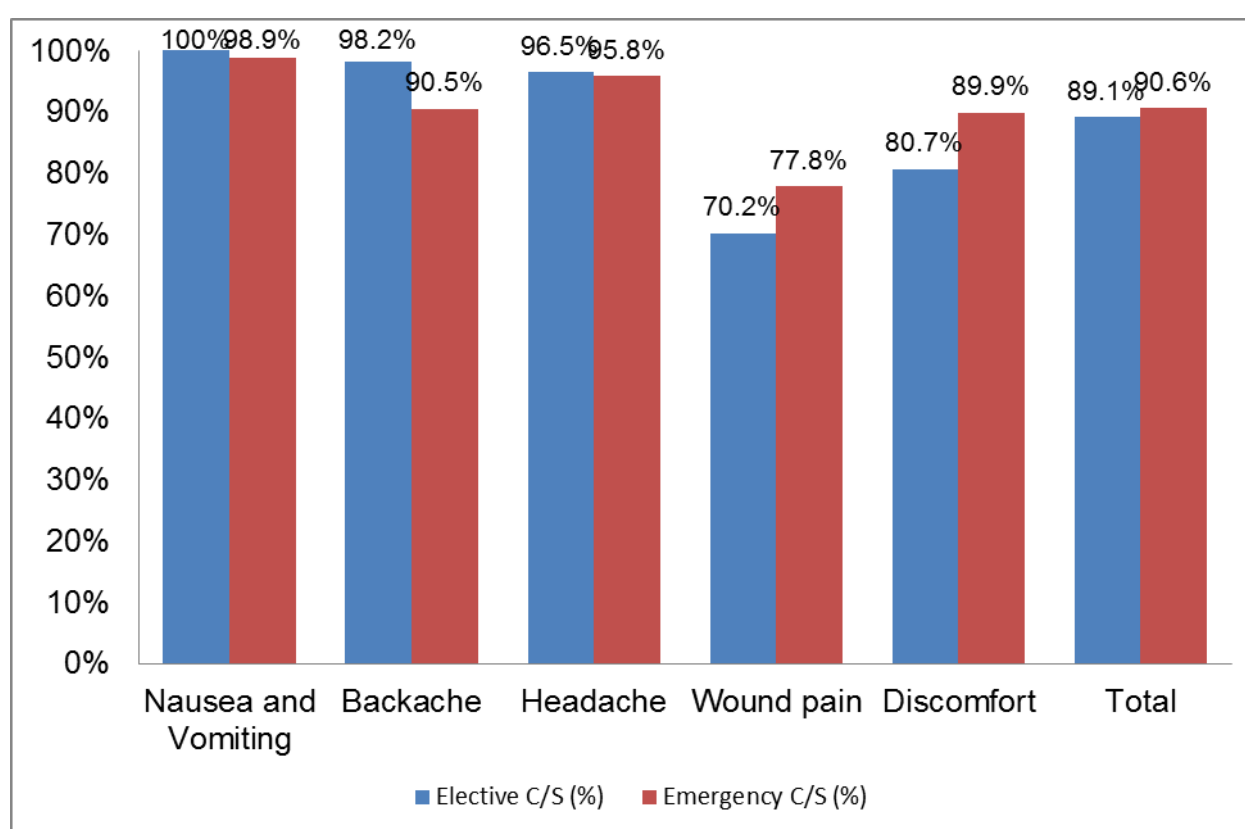


Figure 4.10 Maternal satisfaction to postoperative elements

4.3.3.2 Emergency Caesarean sections

Again, PONV has obtained a higher score (98,9%) than the other four post-operative elements. The next higher score was for post-operative headache, at 95,8%. The post-operative backache and post-operative discomfort had 90,5% and 89,9% respectively, as level of maternal satisfaction to spinal anaesthesia for emergency Caesarean sections. The lowest score was for the post-operative wound pain within two hours after

the operation, with 77,8%. The total level of maternal satisfaction to post-operative elements of spinal anaesthesia for emergency Caesarean sections was 90, 6% (see Table 4.15 and Figure 4.10).

4.3.3.3 *Discussion for both elective and emergency Caesarean sections*

In view of analysis presented above and as illustrated in Table 4.15 and Figure 4.10, similar results were found between elective and emergency Caesarean sections for PONV (100% vs. 98,9%), and for post-operative headache (96,5% vs. 95,8%). A difference of more than 7% was found for the other three post-operative elements between elective and emergency caesarean sections: 98,2% vs. 90, 5% for backache; 70,2% vs. 77, 8% for wound pain within two hours after the operation; and 80,7% vs. 89,9% for the discomfort. For all the post-operative elements taken globally, there was no big difference between elective and emergency Caesarean sections in terms of level of maternal satisfaction to spinal anaesthesia 89,1% vs. 90,6% (see Table 4.15 and Figure 4.10). The total level of maternal satisfaction for post-operative results was found to be 90, 3% (see Table 4.18 and Figure 4.12).

4.3.4 Other perioperative findings

For the simplicity of analysis, some elements or factors have been studied apart as they are not directly related to any of the perioperative periods. These factors are the following: the anaesthetic skills in giving spinal injection, the theatre atmosphere or ambiance in the perioperative period, the maintenance of patient verbal contact by the anaesthetist, and the perioperative shivering. Many scores have been chosen for these other perioperative elements, with the score 3 which is the highest score having the highest percentage every times, as shown in Table 4.16.

Table 4.16 Distribution of scores obtained for other perioperative findings

	Bad Score 0	Not so bad Score 1	Good Score 2	Very good Score 3	Total
Quality of anaesthetist in giving the spinal injection	2 (2.4%)	4 (4.9%)	14 (17.1%)	62 (75.6%)	82 (100%)
The work atmosphere in the theatre	0 (0%)	2 (2.4%)	11 (13.4%)	69 (84.2%)	82 (100%)
	Not at all Score 0	Rarely Score 1	Sometimes Score 2	Most of the times Score 3	Total
The anaesthetist maintain contact with you after spinal injection	1 (1.2%)	5 (6.1%)	10 (12.2%)	66 (80.5%)	82 (100%)
	Worse Score 0	Strong Score 1	Slightly Score 2	None Score 3	Total
You have some shivering	6 (7.3%)	17 (20.7%)	26 (31.7%)	33 (40.3%)	82 (100%)

These other perioperative elements were analysed and discussed for elective Caesarean sections, for emergency Caesarean sections, and for both elective and emergency Caesarean sections.

4.3.4.1 Elective Caesarean sections

All nineteen women who had elective Caesarean sections were very satisfied (100%) with the verbal communication that anaesthetists maintained with them. The levels of maternal satisfaction in terms of theatre atmosphere or ambiance and in terms of anaesthetic skills in providing spinal anaesthesia were respectively 98,2% and 89,5%. A low score was found for the perioperative shivering with a percentage of 68, 4. The total level of maternal satisfaction to these other perioperative elements of spinal anaesthesia for elective caesarean sections was 89,0% (see Table 4.17 and Figure 4.11).

4.3.4.2 *Emergency Caesarean sections*

The levels of maternal satisfaction were found to be 92,6%, 88,4% and 87,8% respectively for the theatre atmosphere, the anaesthetic skills and the patient verbal communication. Again, a low score of 68,3% was found in terms of perioperative shivering for emergency caesarean sections. The total score in terms of all the other perioperative factors for emergency Caesarean sections was found to be 84,3% (see Table 4.17 and Figure 4.11).

4.3.4.3 *Discussion for both elective and emergency Caesarean sections*

No big difference was found between elective and emergency scores in terms of anaesthetic skills (89,5% vs. 88,4%) and in terms of perioperative shivering (68,4% vs. 68,3%). A difference of more than 5% was detected for the theatre atmosphere (98,2% vs. 92,6%) . Surprisingly, a big difference of more than 12% was noted between elective and emergency caesarean sections in terms of patient verbal contact (100% vs. 87,8%). The researcher did not find any clear explanation to this difference.

It is important also to comment about low percentage found for both elective and emergency Caesarean sections in terms of perioperative shivering. This could be supported in big part by lack or insufficient number of convenient patients' warmers like, Bair Hugger and blankets, same as fluids' warmers and air conditioning in this public hospital.

The maternal satisfaction to spinal anaesthesia in terms of other perioperative findings was 89,0% for elective Caesarean sections and 84,3% for emergency Caesarean sections (see Table 4.17 and Figure 4.11). The total level of maternal satisfaction in terms of other perioperative findings was 85,4% (see Table 4.18 and Figure 4.12).

Table 4.17 Maternal satisfaction to other perioperative elements

Other elements	Elective C/S		Emergency C/S	
	Score	Percentage (%)	Score	Percentage (%)
Anaesthetic skills	51	89,5	167	88,4
Theatre atmosphere	56	98,2	175	92,6
Patient verbal contact	57	100,0	166	87,8
Shivering	39	68,4	129	68,3
Total	203 (over 228)	89,0	637 (over 756)	84,3

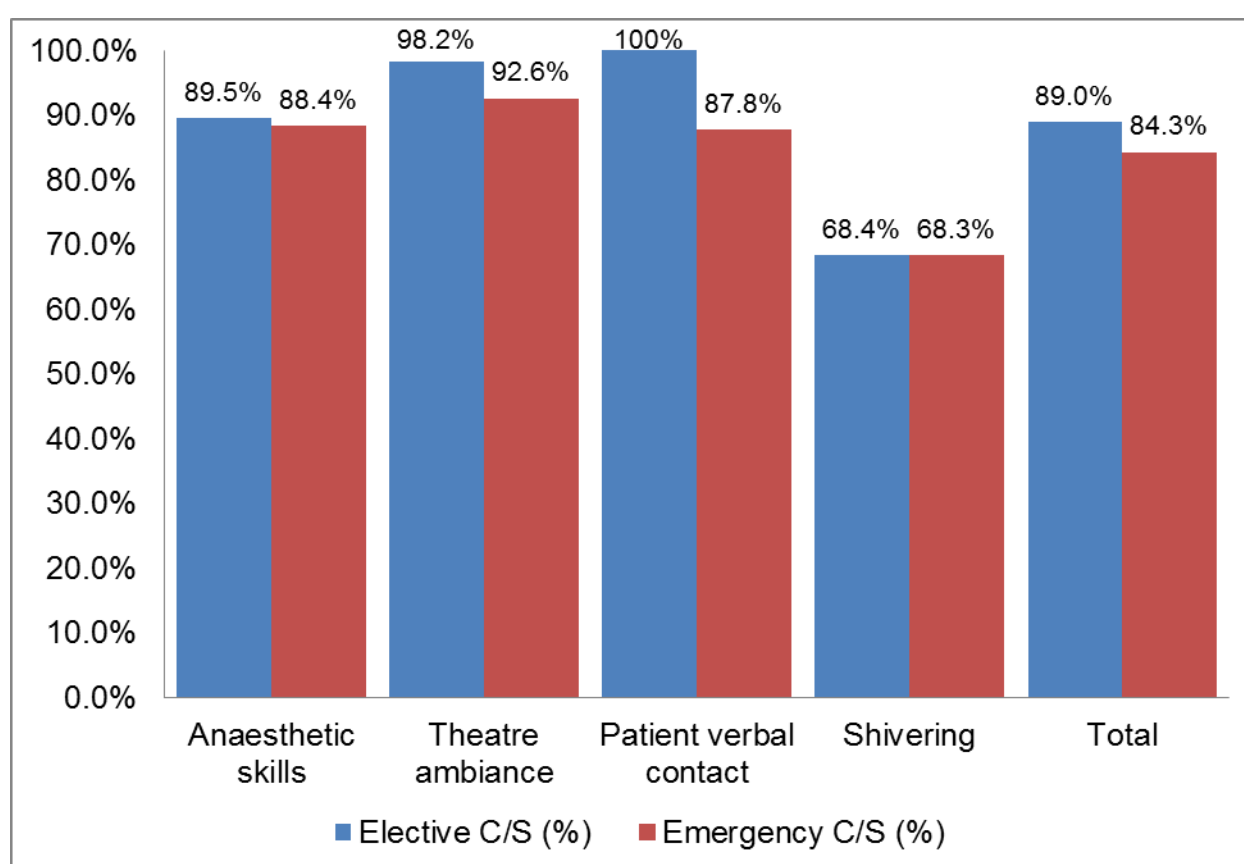


Figure 4.11 Maternal satisfaction to other perioperative elements

Table 4.18 and Figure 4.12 represent the summary of all the perioperative results for elective Caesarean sections, for emergency Caesarean sections and for both. The maternal satisfaction to perioperative elements was 89,9% for elective Caesarean sections and 86,1% for emergency Caesarean sections. The total level of maternal satisfaction to spinal anaesthesia for all Caesarean sections in this study was found to

be 86,7%, which is closer to the maternal satisfaction of 83,02 found in the study of Siddiqi and Jafri (2009:77-80).

Table 4.18 Maternal satisfaction for all perioperative elements

Perioperative findings	Level of maternal satisfaction		
	Elective C/S (%)	Emergency C/S (%)	All C/S (%)
Preoperative explanation	84,2	74,6	76,8
Intraoperative elements	93,4	94,7	94,4
Postoperative results	89,1	90,6	90,3
Other perioperative findings	89,0	84,3	85,4
Total	89,9	86,1	86,7

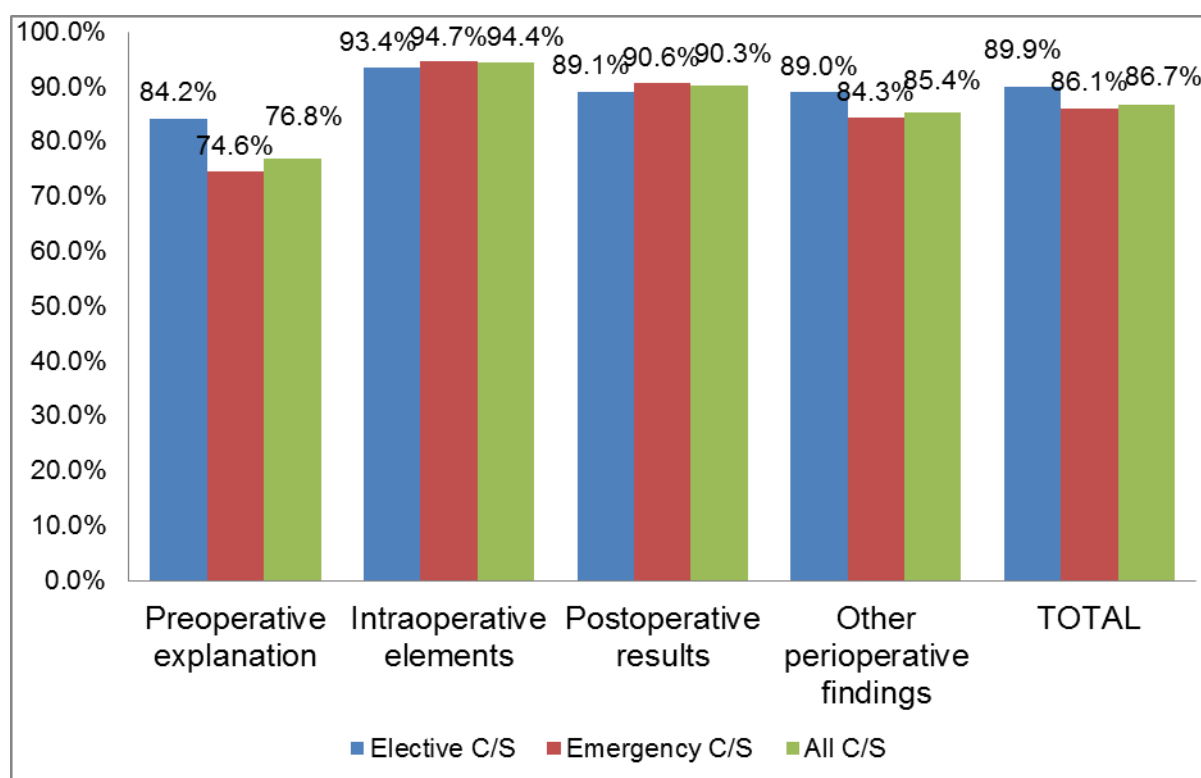


Figure 4.12 Maternal satisfaction for all perioperative elements

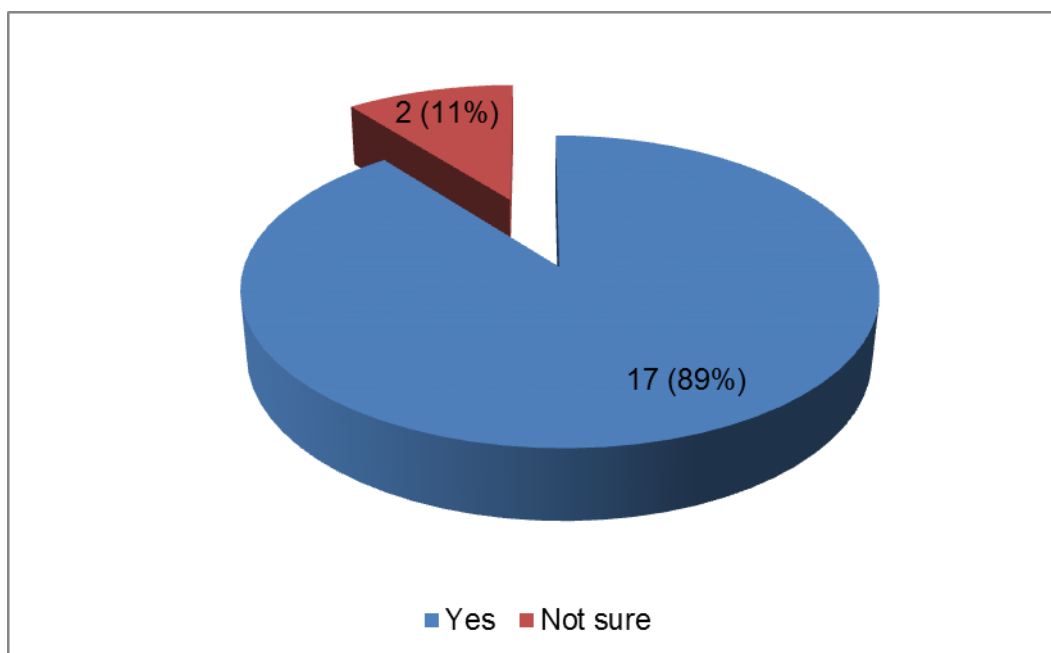
4.3.5 Analysis of possibility of accepting spinal anaesthesia in future

The last question in the questionnaire used in this study was to know if the patient would accept spinal anaesthesia in the future. More explanations were provided to patients for this question. In the case of patient not willing to have another baby or

another caesarean section, the question was meant to know if she would recommend the spinal anaesthesia to a relative or a friend who is for Caesarean section. Four possibilities of answer were attached to the question: yes, not sure, no and never. The option never was for a reply no without possibility at all to change a day.

4.3.5.1 Elective Caesarean sections

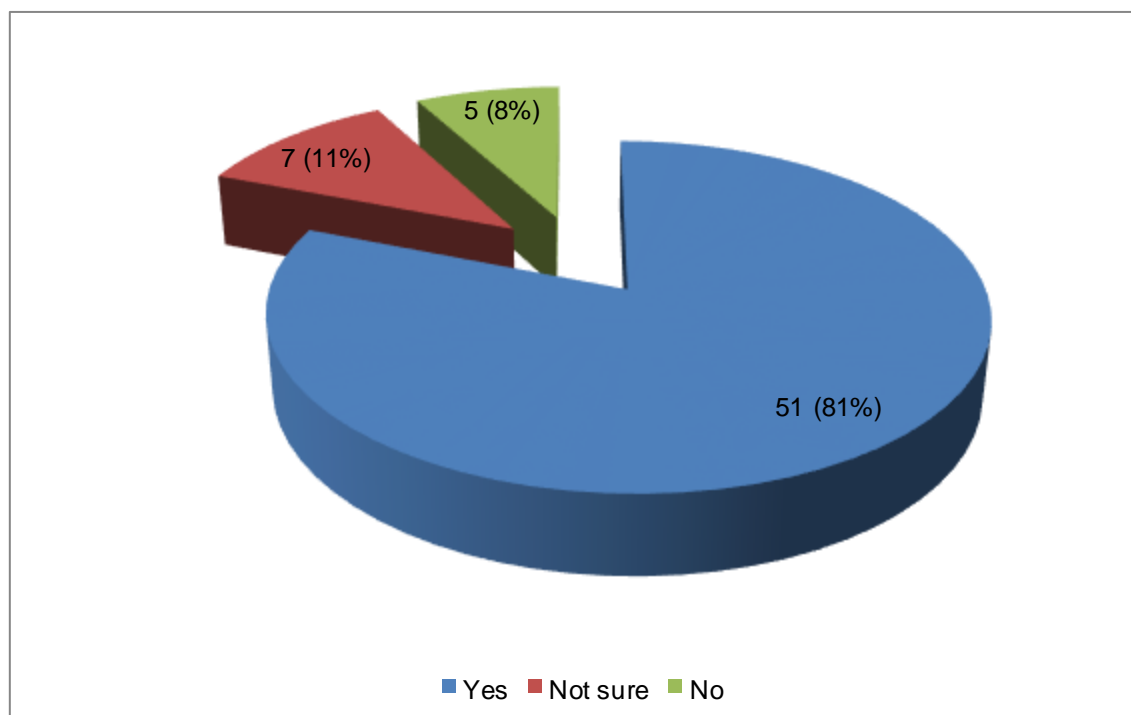
For the nineteen patients who had spinal anaesthesia for elective caesarean section, seventeen women responded yes; meaning they would accept spinal anaesthesia in the future (89, 5%). Two women were not sure if they would accept it again, with a percentage of 10, 5. Figure 4.13 illustrates the distribution of different possibilities for future spinal anaesthesia to be received for Caesarean section.



**Figure 4.13 Possibilities of accepting spinal anaesthesia in future
(for elective C/S) (n=19)**

4.3.5.2 *Emergency Caesarean section*

The majority of women who had spinal anaesthesia for emergency Caesarean sections replied yes for a future spinal anaesthesia (81%). Seven women were not sure if they would accept again spinal anaesthesia (11,1%) and five women responded no to a future spinal anaesthesia for Caesarean section (7,9%). This is illustrated in Figure 4.14.



**Figure 4.14 Possibilities of accepting spinal anaesthesia in future
(for emergency C/S) (n=63)**

4.3.5.3 *Discussion for both elective and emergency Caesarean sections*

If spinal anaesthesia is required or suggested, sixty-eight respondents would accept it (82, 9%), while five would not accept it (6,1%). The rest of respondents, were not sure if they would opt for it or not (11,0%). Figure 4.15 and Table 4.19 show the distribution of different possibilities of accepting spinal anaesthesia in the future for all respondents.

Compared to other studies, this percentage of acceptance of spinal anaesthesia in the future (82,9) is much higher than the percentage (53,66) found in the study of Siddiqi

and Jafri (2009:77-80) and closer to the one (88,5) found in Dharmalingham and Zainuddin (2013:51-54).

Table 4.19 Distribution of possibilities of accepting spinal anaesthesia in future (n=82)

	Never Score 0	No Score 1	Not sure Score 2	Yes Score 3	Total
Can you have spinal anaesthesia next time?	0 (0%)	5 (6.1%)	9 (11.0%)	68 (82.9%)	82 (100%)

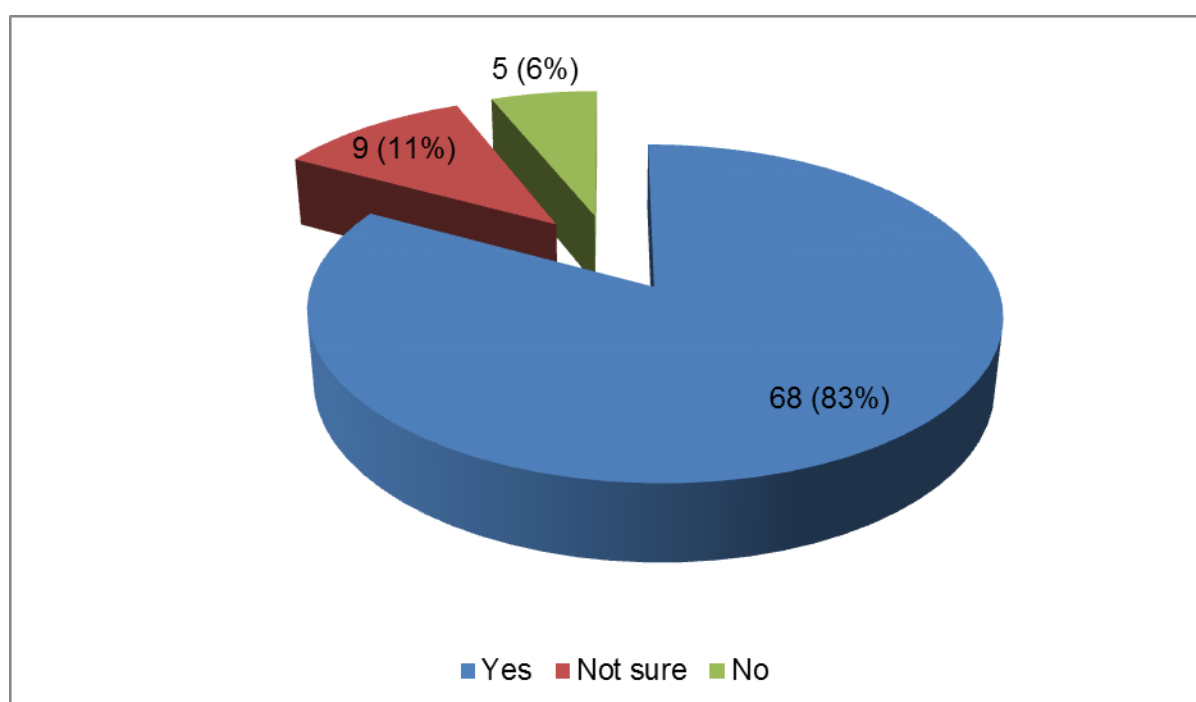


Figure 4.15 Possibilities of accepting spinal anaesthesia in future (for all respondents) (n=82)

4.4 CONCLUSION

This chapter was about analysis of data and discussion of findings. From the eighty-four questionnaires distributed, eighty-two were filled in with a response rate of 97,6%. Sixty-three women participated in the study as for emergency Caesarean sections (76,9%) and nineteen as for elective Caesarean sections (23,2%). Although not the focus of this study, demographic data have been analysed and they included the age, the race, the marital status, the employment, the gynaecological and obstetrical history, and the anaesthetic and surgical history.

The big part of this chapter was on the perioperative elements and the assessment of maternal satisfaction for these elements. The intra-operative evaluation had the best level of maternal satisfaction which is 94,4%, followed by the post-operative assessment and other perioperative elements for respectively 90,3% and 85,4%. A low maternal satisfaction score was found for the preoperative explanation (76,8%). The total level of maternal satisfaction to spinal anaesthesia for Caesarean section was 86,7%. The majority of women (82,9%) stated that they would opt for spinal anaesthesia in future, if required.

CHAPTER 5

SUMMARY OF FINDINGS, RECOMMENDATIONS AND CONCLUSION

5.1 INTRODUCTION

The purpose of this study was to evaluate the maternal satisfaction after the experience of spinal anaesthesia received for Caesarean section in one public hospital of Gauteng Province in South Africa. According to the objectives of the study, levels of maternal satisfaction after spinal anaesthesia for Caesarean section were determined in terms of the preoperative explanation, the intraoperative elements, the postoperative components, the other perioperative factors and the possibility of accepting spinal anaesthesia in the future.

In the previous chapter, the data were analysed, discussed, interpreted and presented by means of descriptive statistics, tables and graphs. In this chapter, findings are summarised, and recommendations and limitations are presented based on the results of analysis conducted in Chapter 4. The study will end by a final conclusion.

5.2 SUMMARY OF FINDINGS

5.2.1 Demographic data

This study included eighty-two respondents and the following demographic data have been analysed for them: age, race, marital status, employment, number of pregnancies, number of deliveries, number of miscarriages, number of ectopic pregnancy and surgical and anaesthetic history.

Five groups of age have been classified from A to E, with the group C (26-30 years) being the most represented (34,1%), followed by the group B (21-25 years, with 22,0%) and group D (31-35 years, with 19,5%). The groups E (36-40 years) and A (18-20 years) represent each 12,2% of respondents. In term of race, the majority of respondents were black (95,1%), three were white (3,7%) and only one woman was

coloured (1,2%). Two categories of marital status only were determined with sixty women not married (73,2%) and twenty-two married (26,8%). Fifty-three respondents were unemployed (64,6%) and the remaining were employed (35,4%).

In terms of obstetrical and gynaecological history, different gravida and para were found with the most represented being one, followed by two and three. Thirteen patients had miscarriage/absorption (15,9%): for ten women it was once (12,2%) and for three women twice (3,7%). Only one woman had a previous ectopic pregnancy (1,2%). The anaesthetic history was dominated by the fact that thirty-three women previously had spinal anaesthesia (40,3%) and nine respondents had previous general anaesthesia (11%). From those who had previous spinal anaesthesia, twenty-five women had it once (30,5%) and eight had it twice (9,8%). The general anaesthesia was mostly for Caesarean sections (55%), but also for evacuation of uterus (22,2%), ectopic pregnancy (11,1%) and appendicectomy (11,1%).

5.2.2 Perioperative results and possibilities of accepting SA in future

The second part of analysis and discussion was about perioperative findings. It included the assessment of maternal satisfaction in terms of the preoperative explanation of spinal anaesthesia, the intra-operative elements, the post-operative findings, the other perioperative results, and the possibility of accepting spinal anaesthesia in the future.

The levels of maternal satisfaction to spinal anaesthesia were found with no big difference between elective and emergency caesarean sections in terms of intra-operative elements (93,4% vs. 94,7%), post-operative results (89,1% vs. 90,6%), and other perioperative findings (89,0% vs. 84,3%). A big difference was only detected for the preoperative explanation (84,2% vs. 74,6%) as the researcher explained earlier in Chapter 4.

The highest score of maternal satisfaction to spinal anaesthesia was for the intra-operative assessment (94,4%), followed by the post-operative evaluation (90,3%) and the other perioperative findings (85,4%). The preoperative explanation was found with the lowest score or lowest level of maternal satisfaction to spinal anaesthesia (76,8%).

For the assessment of all the perioperative elements, the maternal satisfaction to spinal anaesthesia for elective Caesarean sections was 89,9%, and for emergency Caesarean section it was 86,1%. The total level of maternal satisfaction in this study was 86,7%. The findings of this study also show that the majority of women (82,9%) would opt for spinal anaesthesia in the future, that 11% were not sure and that only 6,1% would not opt for spinal anaesthesia in the future.

5.3 RECOMMENDATIONS

Although a good level of maternal satisfaction of 86,7% was found in this study, the researcher is of the opinion that this level of maternal satisfaction can still be improved and be as high as 97% found in Dharmalingham and Zainuddin (2013:51-54). Patient satisfaction is of primordial importance and cannot be neglected or declared to be enough at any stage. Based on the findings of this study, the recommendations are made to the hospital management, to the doctor providing anaesthesia or anaesthetist and to patients.

5.3.1 Hospital Management and Gauteng Department of Health

- Make sure about continuous training of anaesthetists or doctors providing spinal anaesthesia. Doctor's skills and good doctor-patient relationship are important keys of patient satisfaction.
- As a tertiary institution and Provincial Department of Health, they should favour the spirit of research and studies, auto-evaluation and audits. Many doctors and health professionals think that research is not meant for doctors or for hospitals and that hospitals are aimed only to provide health services, but not for research.
- Provide more equipment for the theatre, especially patients' warmers, fluids' warmers and temperature regulator, for example air conditioning. In South Africa with season changes according to the periods, these equipments are necessary to maintain a good ambient temperature in theatre or to maintain a good patient's temperature, both important for maternal satisfaction. In this study, it has been noticed that a low percentage of perioperative shivering for both elective and emergency Caesarean sections, with a total of 68, 3%.
- Make available to patients information about spinal anaesthesia and anaesthesia in general, such as use of pamphlets, TV/videos, pictures and posters about

spinal anaesthesia in the waiting areas of theatre, labour ward, antenatal ward and antenatal clinic. In this matter of informing the patient, sisters and nurses in these departments (theatre, labour ward, antenatal ward and antenatal clinic) should engage themselves also in patient education about spinal anaesthesia, as the understanding of the procedure improves the maternal satisfaction level and is not only the responsibility of the anaesthetist.

5.3.2 Anaesthetist or doctor providing spinal anaesthesia

- Ensure that the preoperative assessment is done properly and the preoperative explanation of spinal anaesthesia is provided to the patient before the procedure. Patient's collaboration is needed for the anaesthetist to perform spinal anaesthesia. Without this collaboration, the procedure may become difficult, long and more painful, with negative impact to the maternal satisfaction score. Even in emergency setting, if spinal anaesthesia is required and indicated, a quick and brief explanation must still be provided.
- Maintain a good doctor-patient relationship; not only during spinal injection, but during the whole perioperative period. Maintaining verbal communication with the patient after spinal anaesthesia allows early detection of side-effects and complications of spinal anaesthesia and early management, important to maternal satisfaction.
- Treat the patient with respect and dignity according to Batho Pele principles (Khoza 2009:1, citing South Africa 1997) and take as priority as possible the patient's needs and expectations. There is no way to have a good maternal satisfaction level if women's needs and expectations are not met.

5.3.3 Patients

- Express their feelings, needs and expectations to the anaesthetist and other health professionals. If patients do not raise their needs and expectations, it is difficult sometimes for health workers to guess and satisfy them.
- Feel free to evaluate services received in health care facilities, even by using the box of complaints and suggestions. Patients should know their rights and the types of services they are entitled to. If not, there is no way to talk about satisfaction or dissatisfaction.

5.4 LIMITATIONS OF THE STUDY

Only one public hospital was used to conduct this study. The study could have been conducted in two or more public hospitals and private hospitals so that generalisation could have been made to the Gauteng Province or to the other provinces of South Africa.

The study has been conducted only for a short period of time which is March 2014, and with only a sample of eighty-two respondents. The reasons are time, funds and academic constraints. A study to evaluate maternal satisfaction to spinal anaesthesia for Caesarean section could have been conducted for many months or for a 2-year period for example, and with a larger number of respondents.

5.5 FINAL CONCLUSION

This survey was on maternal satisfaction in receiving spinal anaesthesia for Caesarean section. The study findings show that the majority of respondents were black, not married and unemployed. The levels of maternal satisfaction to spinal anaesthesia for Caesarean section were 94,4%, 90,3% and 85,4% respectively for the intra-operative assessment, the post-operative evaluation and the other perioperative findings. The preoperative explanation was found with the lowest level of maternal satisfaction to spinal anaesthesia (76,8%). In total, a good level of maternal satisfaction of about 86,7% was found in this public hospital of Gauteng Province and 82,9% of respondents would opt for spinal anaesthesia in the future.

LIST OF REFERENCES

Afhami, MR, Salmasi, PH & Panahea, JR. 2004. Predictors of attitude of parturient selected for caesarean section towards spinal anaesthesia. *Acta Medica Iranica* 42(5):424-426.

Afolabi, BB & Lesi, FE. 2012. Regional versus general anaesthesia for caesarean section. *Cochrane Database of Systematic Reviews* (10):1-86.

Ahmad, I & Afshan, G. 2011. Knowledge and attitudes of Pakistan women towards anaesthesia techniques for caesarean sections. *Journal of Pakistan Medical Association* 61:359. Available from: www.jpma.org.pk (accessed 22 November 2012).

Alderson, P. 2007. Governance and ethics in health research. In *Researching health: qualitative, quantitative and mixed methods*, edited by M Saks and J Allsop. London: Sage:283-300.

American Heritage Dictionaries. 2007. The American heritage medical dictionary. Sv "informed consent". 3rd edition. Boston: Houghton Mifflin Company.

American Heritage Dictionaries. 2011. The American heritage dictionary of the English Language. Sv "Caesarean section", "dissatisfaction". 5th edition. Boston: Houghton Mifflin Company.

Anwari, JS & Anwari, KJ. 2010. Etiquette during spinal anaesthesia for caesarean section: the mother's expectations. *The Internet Journal of Anaesthesiology* 22(2):7974.

Ayelade, OR, Akinyemi, JO & Adewole, IF. 2010. Patients' perception and knowledge of anaesthesia and anaesthetists - a questionnaire survey. *South African Journal of Anesthesiology and Analgesia* 16(4):28-31.

A to Z of opting for C-section. 2012. *Mail and Guardian*.

From: <http://mg.co.za/article/2012-05-16the-a-to-z-of-opting-for-a-c-section> (accessed 01 September 2013).

Babbie, E. 2010. *The practice of social research*. 12th edition. Belmont: Wadsworth Cengage Learning.

Blitz-Lindeque, J. 2006. How to do a caesarean section. In *South African family practice manual*, edited by B Mash and J Blitz-Lindeque. 2nd edition. Pretoria: Van Schaik:275-277.

Bourne, D & Joubert, G. 2007. Demography. In *Epidemiology: a research manual for South Africa*, edited by G Joubert and R Ehrlich. 2nd edition. Cape Town: Oxford University Press:24-29.

Bowling, A. 2009. *Research methods in health: investigating health and health services*. 3rd edition. Maidenhead: Open University Press.

Brink, H. 2004. *Fundamentals of research methodology for health care professionals*. Cape Town: Juta.

Brink, H. 2006. *Fundamentals of research methodology for health care professionals*. 2nd edition. Cape Town: Juta.

Brink, H. 2008. *Fundamentals of research methodology for health care professionals*. 3rd edition. Cape Town: Juta.

Buchmann, EJ. 2012. What proportion of births should be vaginal? *South African Journal of Obstetrics and Gynaecology* 18(2):78.

Burns, N & Grove, S. 2005. *The practice of nursing research: conduct, critique, and utilization*. 5th edition. St Louis: Elsevier Saunders.

Buso, D. 2006. How to assess patient satisfaction. In *South African family practice manual*, edited by B Mash and J Blitz-Lindeque. 2nd edition. Pretoria: Van Schaik:390-392.

Carvalho, B, Cohen, SE, Lipman, SS, Fuller, A, Mathusamy, AD & Macario, A. 2005. Patient preferences for anaesthesia outcomes associated with Caesarean delivery. *Anaesthesia and Analgesia* 101(4):1182-1187.

Casey, WF. 2013. Spinal anaesthesia: A practical guide. *Practical Procedures* 12(8):1-7.

Charuluxananan, S, Sriprajittichai, P, Sirichotvithyakorn, P, Rodanant, O & Kyokong, O. 2003. Factors related to patient satisfaction regarding spinal anaesthesia. *Journal of Medical Association of Thailand* 86(2):338-343.

CIA World Fact book. 2013. *South Africa demographics profile 2013. Ethnic groups*. Index Mundi.

Available from: www.indexmundi.com/south_africa/demographics_profile.html (accessed 14 April 2014).

Delpont, CSL. 2005. Quantitative data-collection methods. In *Research at grass roots, for the social sciences and human service professions*, edited by AS de Vos, H Strydom, CB Fouché, CSL Delpont. 3rd edition. Pretoria: Van Schaik:159-191.

Dharmalingam, TK & Zainuddin, NAA. 2013. Survey on maternal satisfaction in receiving spinal anaesthesia for caesarean section. *Malaysian Journal of Medical Sciences* 20(3):51-54.

Diedericks, J. 2012. Guest Editorial: Anaesthetics. Continuing medical education. *The South African Journal of Continuous Professional Development* 30(6):192.

Dumbrill, D. 2008. *Birth options - professional midwives*. Fit Pregnancy August/September 2008. Available from: <http://www.birthoptions.co.za/dumbrill.html> (accessed 04 September 2013).

Eldridge, J. 2006. Obstetric anaesthesia and analgesia. In *Oxford handbook of anaesthesia*, edited by KG Allman and LH Wilson. 2nd edition. New York: Oxford University Press:695-756.

Elton, CD, May, A & Buggy, DJ. 2007. Obstetric anaesthesia and analgesia. In *Textbook of anaesthesia*, edited by AR Aitkenhead, G Smith and DJ Rowbotham, DJ. 5th edition. Edinburgh: Churchill Livingstone Elsevier:690-730.

Farina, Z. 2010. Drugs for caesarean section: what makes them dangerous? *South African Journal of Anaesthesiology and Analgesia* 16(1):81.

Farina, Z & Rout, C. 2013. "But it's just a spinal": combating increasing rates of maternal death related to spinal anaesthesia. *South Africa Medical Journal* 103(2):81-82.

Fouché, CB & De Vos, AS. 2005. Quantitative research designs. In *Research at grass roots, for the social sciences and human service professions*, edited by by AS de Vos, H Strydom, CB Fouché and CSL Delport. 3rd edition. Pretoria: Van Schaik:132-143.

Grove, SK, Burns, N & Gray, JR. 2013. *The practice of nursing research: appraisal, synthesis and generation of evidence*. 7th edition. St. Louis: Elsevier Saunders.

Health Trust System. 2011. *Caesarean section rate: indicator data*. South Africa Health Statistics. Available from: <http://www.indicators.hst.org.za/healthstats/76/data> (accessed 29 July 2013).

Hofmeyr, GJ. 2011. Caesarean section. In *Clinical obstetrics: a South African perspective*, edited by HS Cronjé, JBF Cilliers and MS Pretorius. 3rd edition. Pretoria: Van Schaik:345-360.

Hornby, AS. 2006. *Oxford Advanced Learner's Dictionary of Current English*. Sv "caesarean section", "dissatisfaction", "happiness", "maternal", "satisfaction", "survey". 7th edition. Oxford: Oxford University Press.

Joubert, G & Katzenellenbogen, J. 2007. Population and sampling. In *Epidemiology: a research manual for South Africa*, edited by G Joubert and R Ehrlich. 2nd edition. Cape Town: Oxford University Press:94-105.

Karlström, A, Engstrom-Olofsson, R, Nysted, A, Sjöling, M & Hildingsson, I. 2010. Women's post-operative experiences before and after the introduction of spinal opioids in anaesthesia for Caesarean section. *Sweden Journal of Clinical Nursing* 19:1326-1334.

Katzenellenbogen, J & Joubert, G. 2007. Data collection and measurement. In *Epidemiology: a research manual for South Africa* edited by G Joubert and R Ehrlich. 2nd edition. Cape Town: Oxford University Press:106-124.

Keogh, E, Hugues, S, Ellery, D, Daniel, C & Holdcroft, A. 2005. Psychosocial influences on women's experience of planned elective caesarean section. *Psychosomatic Medicine* 68:167-174.

Khoza, VL. 2009. The implementation of Batho Pele principles from patients' expectations. Unpublished MPH dissertation. UNISA. Pretoria.

Kleinman, W & Mikhail, M. 2006. Spinal, epidural and caudal blocks. In *Clinical anaesthesiology*, edited by GE Morgan, MS Mikhail and MJ Murray. 4th edition. New York: McGraw-Hill:289-323.

Kruger, DJ, De Vos, AS, Fouché, CB & Venter, L. 2005. Quantitative data analysis and interpretation. In *Research at grass roots, for the social sciences and human service professions*, edited by AS De Vos, H Strydom, GB Fouché and CSL Delport. 3rd edition. Pretoria: Van Schaik:217-245.

Kula, D, Naidoo, S, Ruff, B & Richards, B. 2012. Can Medical schemes afford a caesarean section rate of over 60%? *South African Journal of Obstetrics and Gynaecology* 18(2):78-79.

Kwiatosz-Muc, M & Lesiuk, W. 2011. Effects of choice of anaesthesia on patient's image of the anaesthesiologist. *Anaesthesiology Intensive Therapy* XLIII (3):117-120.

K. Dictionaries. 2010. *Random House Kernerman Webster's College Dictionary*. Sv "gravida". Tel Aviv: Random House Information Group.

Larson, MD. 2005. History of anaesthetic practice. In *Miller's anaesthesia*, edited by RD Miller. 6th edition. San Francisco: Elsevier Churchill Livingstone:33-35.

Lifeline to modern medicine. 2013. *Types of anaesthesia*. American Society of anaesthesiologists. Available from:

www.lifelinetomodernmedicine.com/types-of-Anesthesia.aspx (accessed 22 November 2013).

LoBiondo-Wood, G & Haber, J. 2010. *Nursing research: methods and critical appraisal for evidence-based practice*. 7th edition. St Louis: Mosby Elsevier.

Macintyre, PE, Schung, SA, Scott, DA, Visser, EJ & Walker, SM. 2013. *Spinal anaesthesia for caesarean section*. Epidural and spinal Fact Sheets. Melbourne: The Royal Women's Hospital.

Mail & Guardian. 2012. The A to Z of opting for C-section. Mail & Guardian. From: <http://mg.co.za/article/2012-05-16the-a-to-z-of-opting-for-a-c-section>. (accessed 01 September 2013).

Monticelli, F. 2013. *Caesarean section deliveries in public sector hospitals in South Africa, 2001-2009*. WiRed Space. Manakin repository. 05 April 2013. Available from: <http://widespace.wits.ac.za/handle/10539/12631> (accessed 01 September 2013).

Moppett, L. 2008. *Spinal anaesthetic*. The North-West London Hospitals. London: Lippincott Williams & Wilkins.

Morgan, GE, Mikhail, MS & Murray, MJ. 2006. *Clinical anaesthesiology*. 4th edition. New York: McGraw-Hill.

Morris, BJ, Jahangir, AA & Sethi, MK. 2013. *Patient satisfaction: an emerging health policy. What the orthopaedic surgeon needs to know*. AAOS. Available from: <http://www.aaos.org/news/aoosnow/jun13/advocacy5.asp> (accessed 09 November 2013).

Morromi, C & Myer, L. 2007. Study design. In *Epidemiology: a research manual for South Africa*, edited by G Joubert and R Ehrlich. 2nd edition. Cape Town: Oxford University Press:77-93.

Mosby. 2009. *Mosby's Medical Dictionary* Sv "parity", "perioperative period". 8th edition. St Louis: Mosby Elsevier.

Naidoo, RP & Moodley, J. 2009. Rising rates of caesarean sections: an audit of caesarean sections in a specialist private practice. *South African Family Practice* 51(3):254-258.

Oyebamiji, EO, Adeyemi, AS, Adekanle, DA & Afolabi, AF. 2010. Choice of Anaesthesia for caesarean section among female health workers. *Nigerian Hospital Practice* 5(6):108.

Parahoo, K. 2006. *Nursing research: principles, process and issues*. 2nd edition. Hampshire: Palgrave McMillan.

Pera, SA & Van Tonder, S. 2011. *Ethics in health care*. 3rd edition. Cape Town: Juta.

Polit, DF & Beck, CT. 2008. *Nursing research: generating and assessing evidence for nursing practice*. 8th edition. Philadelphia: Lippincott Williams & Wilkins.

Polit, DF & Beck, CT. 2012. *Nursing research: generating and assessing evidence for nursing practice*. 9th edition. Philadelphia: Lippincott Williams & Wilkins.

Polit, DF & Beck, CT. 2014. *Nursing research: generating and assessing evidence for nursing practice*. 10th edition. Philadelphia: Lippincott Williams & Wilkins.

Public hospital. 2013a. *Statistics of all deliveries from January to August 2013*. Hospital Statistics.

Public hospital. 2013b. *Statistics of anaesthetic techniques for caesarean section from January to August 2013*. Hospital Statistics.

Sarantakos, S. 2005. *Social research*. 3rd edition. New York: Palgrave McMillan.

Senekal, MG. 2012. The safe spinal anaesthetic: spinal anaesthesia is not without its complications and should only be performed for the corrected indications. CME, *The South African Journal of Continuous Professional Development* 30(6):207-210.

Siddiqi, R & Jafri, SA. 2009. Maternal satisfaction after spinal anaesthesia for caesarean deliveries. *Journal of the College of Physicians and Surgeons Pakistan* 19(2):77-80.

Sindhvananda, W, Lealanukrom, R, Rodanant, O & Sripajittichai, P. 2004. Maternal satisfaction to epidural and spinal anaesthesia for caesarean section. *Journal of Medical Association of Thailand* 87(6):628-635.

Singh, JA. 2007. Ethics, advocacy and human rights. In *Epidemiology: a research manual for South Africa*, edited by G Joubert and R Ehrlich. 2nd edition. Cape Town: Oxford University Press:30-37.

Sng, BL, Sia, ATH, Quek, K, Woo, D & Lim, Y. 2009. Incidence and risk factors for chronic pain after caesarean section under spinal anaesthesia. *Singapore Anaesthesia and Intensive care* 37(5):748-752.

Statistics South Africa. 2013. *Mid-year population estimates 2013. Statistical release PO302*. Available from: beta2.Statssa.gov.za/publications/PO32/PO302_2013.pdf (accessed 14 April 2014).

Stegman, JK. 2005. *Stedman's Medical Dictionary for Health Professions and Nursing*. Sv "abortion", "Caesarean section", "informed consent", "maternal", "miscarriage", "spinal anaesthesia". Illustrated 5th edition. Baltimore: Lippincott Williams & Wilkins.

Strydom, H. 2005. Sampling and sampling methods. In *research at grass roots, for the social sciences and human service professions*, edited by As de Vos, H Strydom, CB Fouche', CSL Delport. 3rd Edition. Pretoria: Van Schaik: 192-204.

To, WW. 2009. A questionnaire survey on patients' attitudes towards epidural analgesia in labour. *Hong Kong Medical Journal* 13:208-215.

UN see United Nations.

United Nations. 2013. *Millennium development goals and beyond 2015*. New York: UN publications. Available from: www.un.org/millenniumgoals/maternal.shtml (accessed 12 October 2013).

Usas, E, Benevicius, G, Bilskiene, D, Paplauskaite, K & Silinskyte, L. 2012. Satisfaction with spinal anaesthesia service and pain management in early postoperative period in patients undergoing spinal lumbar hernia microdiscectomy. *European Journal of Anaesthesiology* 29:11.

WHO see World Health Organization.

World Health Organization. 2013. *World health report 2013: research for universal health coverage*. Available from: www.who.int/whr/en (accessed 12 October 2013).

Annexure A: INFORMED CONSENT FORM

- Title of the study: **"Survey on maternal satisfaction in receiving spinal anaesthesia for caesarean section"**
- Principal Investigator: DR UZIELE MARC MAKOKO
- INSTITUTE: University of South Africa (UNISA)

INTRODUCTION

Hello,

I am Dr MARC MAKOKO. I am a medical doctor and also a part-time student at UNISA, for master in public Health, student number 46324631. I am actually doing this research as part of my studies. I will be helped by the following persons as fieldworkers:

- (1).....

- (2).....

The purpose of this study is to evaluate how you as mother, you have been satisfied with your experience of spinal anaesthesia for Caesarean section. The study will be conducted by mean of a questionnaire that you will have to fill in. it will take you normally less than 10 minutes to do so. The fieldworkers are there to help you in case of anything you do not understand or if you need translation.

There is generally no danger, risk or harm by to participating in this study. Your demographic or personal details such as name, surname, date of birth or cellphone number are not required since you will be anonymous for this study. All the precautions are taken for the study not to interfere with any medical and nursing intervention. The results of the study may help to propose guidelines and strategies to improve the quality of care that we offer in this hospital. Furthermore, by participating in the study, you are helping the researcher to accomplish his dissertation. Only persons aged 18 or above can participate in this study.

You are free to accept or to refuse participating in the study and this without any impact in your position or care to receive. Should you also wish to withdraw from the study at any time, please feel free to do so, and it will be without any penalty. For further

information about the study, please feel free to contact me during office hours at 0119232087/0723547774.

Should you be interested to participate in this study, please sign the consent as following:

CONSENT

I,.....hereby consent to participate in this research study. The purpose and content of the research have been explained to me and I fully understand them. I agree to participate as an anonymous and I will not be able to provide my personal details. All the information to be given will be kept private and confidential. As such, I am willing and am volunteering to participate without being forced and I can withdraw from the study at any time should I wish to do so. I confirm that I will respond to the questions with sincerity and honesty.

PATICIPANT`S Name:.....

Signature:.....Date:.....

Investigator`s Name:.....

Signature:.....Date:.....

Annexure B: QUESTIONNAIRE

A. DEMOGRAPHIC PROFILE

1. Age:.....
2. Profession:.....
3. Marital status:.....
4. Race:.....
5. Number of pregnancies and children:
 - Gravity (number of pregnancies)
 - Parity (number of deliveries)
 - Other (if available): Miscarriage Ectopic Pregnancy
6. Surgical and anaesthetic history:
 - a) Previous spinal anaesthesia (before this time): ☐ yes ☐ No
If yes, number:.....
For caesarean section? ☐ yes,time(s). ☐ No
 - b) Previous other anaesthesia (other than spinal anaesthesia) ☐ Yes ☐ No
If yes, how many times:.....
For what:.....
.....

B. QUESTIONS

From a scale of 0 to 3, can you describe the following elements?

1. Pre-operative explanation of spinal anaesthesia
 - ☐ None ☐ unclear ☐ clear ☐ very clear
2. Intra-operative pain
 - ☐ Worse ☐ strong ☐ slight ☐ None (No pain)
3. Intra-operative headache
 - ☐ Worse ☐ strong ☐ slight ☐ None (No headache)

4. Intra-operative dizziness
☐ Worse ☐ strong ☐ slight ☐ none (No dizziness)
5. Intra-operative nausea and vomiting
☐ vomiting 2 times or more ☐ Vomiting once only
☐ Nausea only ☐ No Nausea and vomiting
6. PONV (Post-operative nausea and Vomiting)
☐ vomiting 2 times or more ☐ Vomiting once only
☐ Nausea only ☐ No Nausea and vomiting
7. Post-operative backache
☐ Worse ☐ strong ☐ slight ☐ None
8. Post-operative headache
☐ Worse ☐ strong ☐ slight ☐ None
9. Post-operative wound pain (within 2 hours after the operation)
☐ Worse ☐ strong ☐ slight ☐ None
10. Post-operative discomfort
☐ Worse ☐ strong ☐ slight ☐ None
11. How good was the anesthetist in giving the spinal injection?
☐ Bad ☐ Not so bad ☐ Good ☐ Very good
12. How was the work atmosphere in the theatre?
☐ Bad ☐ Not so bad ☐ Good ☐ Very good
13. Did the anaesthetist maintain contact with you after spinal injection?
☐ Not at all ☐ rarely ☐ sometimes ☐ most of the times
14. Did you have some shivering
☐ Worse ☐ strong ☐ slight ☐ None
15. Can you have spinal anesthesia next time?
☐ Never ☐ No ☐ perhaps (not sure) ☐ yes

Thank you!

Annexure C: ETHICAL CLEARANCE CERTIFICATE



**UNIVERSITY OF SOUTH AFRICA
Health Studies Higher Degrees Committee
College of Human Sciences
ETHICAL CLEARANCE CERTIFICATE**

HS HDC/269/2013

Date: 10 December 2013 Student No: 4632-463-1
Project Title: Survey on maternal satisfaction in receiving spinal anaesthesia for caesarean section.
Researcher: Dr Uziele Marc Makoko
Degree: Masters in Public Health Code: DLMPH95
Supervisor: Prof LM Modiba
Qualification: D Cur
Joint Supervisor: -

DECISION OF COMMITTEE

Approved



Conditionally Approved



PP *Shiny*
Prof L Roets

CHAIRPERSON: HEALTH STUDIES HIGHER DEGREES COMMITTEE

Fd *Shuman*
Prof MM Moleki

ACADEMIC CHAIRPERSON: DEPARTMENT OF HEALTH STUDIES

PLEASE QUOTE THE PROJECT NUMBER IN ALL ENQUIRES



Annexure D: REQUEST OF PERMISSION AND APPROVAL FROM RESEARCH SITE TO CONDUCT THE STUDY



GAUTENG PROVINCE

HEALTH
REPUBLIC OF SOUTH AFRICA

Tembisa Provincial Tertiary Hospital

Enq. : Dr U.M. Makoko
: 011 923 2086
: 011 920 1195

13 JANUARY 2014

TO: Dr D. Pekane
Chief Executive Officer

Dear doctor Pekane

**RE: REQUEST FOR AN APPROVAL TO UNDERTAKE A RESEARCH STUDY AT
TEMBISA PROVINCIAL TERTIARY HOSPITAL**

I am hereby writing for the subject as above.


In fact, I am a Medical Officer Grade 2 in the department of Anaesthesiology at Tembisa Provincial Tertiary Hospital since February 2011. I am also a part-time student for Master in Public Health (MPH) at the University of South Africa (UNISA), student number 46324631. I have been requested to write a Master's Thesis (in this case, a dissertation of limited scope). My research topic is "Survey on maternal satisfaction in receiving spinal anaesthesia for caesarean section".

My research proposal has been accepted by my supervisor, Dr L.M. Modiba (012 429 6337 and 082 331 9629) and approved by the ethical committee of UNISA. I am now requesting the authorization to conduct the research study at Tembisa Provincial Tertiary Hospital.

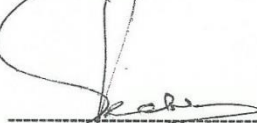
I have enclosed the research proposal/protocol, the consent form, a sample of the proposed questionnaire, and the ethical clearance certificate.

Your favourable response will be highly appreciated.


DR U.M. MAKOKO



RECOMMENDED/ ~~NOT RECOMMENDED~~ BY: DR J.N. SEGOATI
HEAD OF ANAESTHESIOLOGY DEPARTMENT



RECOMMENDED/ ~~NOT RECOMMENDED~~ BY: DR S.J. SEABE
HEAD OF OBSTETRICS AND GYNAECOLOGY DEPARTMENT

 N/A
SUPPORTED/ NOT SUPPORTED BY: MR N. RAMOLUMISI
HUMAN RESOURCES MANAGER



14/01/22

SUPPORTED/ ~~NOT SUPPORTED~~ BY: DR D.N. MSIBI
SENIOR CLINICAL EXECUTIVE: MOTHER AND CHILD



APPROVED / ~~NOT APPROVED~~ BY: DR D. PEKANE
CHIEF EXECUTIVE OFFICER

27/01/2014

Annexure E: REQUEST OF PERMISSION TO USE QUESTIONNAIRE

Marc Makoko <marcmakoko@gmail.com>

8/24/13

to

Rashad

Good day Dr Rashad Siddiqi

I am Dr Marc Makoko. I am a medical doctor and I am working in the department of Anaesthesiology at Tembisa Hospital in Johannesburg/ South Africa.

I am also a student for Master degree in Public health at UNISA (University of South Africa) and I would like for my research to replicate or repeat your study on "Maternal satisfaction after spinal anesthesia for caesarean deliveries" in the context of South Africa. This is why I am requesting permission from you. Also, I would like to have if possible the questionnaire that you have used.

Best regards!

Dr Makoko.

0027723547774.

Annexure F: PERMISSION TO USE/MODIFY THE EXISTING QUESTIONNAIRE QUESTIONNAIRE



Rashad Siddiqi <r4rashad@gmail.com>

6/2/13

to
me

Hi Marc..

Sorry for belated reply. I conducted this study during 2005-2007 and the questionnaire I used was in our local language "Urdu". Unfortunately I could not find any electronic copy of that questionnaire (must've missed while transferring my data from old to new laptop). The hard copies were submitted to the journal.

I am attaching full text of my article in which you will find the details of the questionnaire in the "materials and methods" part. You may reconstruct an english version of the questionnaire yourself :-)

I hope its helpful.

regards,

Rashad

Annexure G: LETTER FROM THE STATISTICIAN

DIAL A STATISTICIAN Private Consulting
13, 15th Street Orange Grove
Johannesburg
2192

Date	Number
11/11/2014	0115

Project name: Data Analyses
Statistician: Mr.MatondoLusembo
Wits Alumni

TO WHOM IT MAY CONCERN

This letter serves to confirm that I have analysed data of Dr U.M. Makoko's dissertation entitled: "SURVEY ON MATERNAL SATISFACTION IN RECEIVING SPINAL ANAESTHESIA FOR CAESAERAN SECTION"

The analyses have been done using Microsoft Excel 2003, for the graphs, and SPSS (Statistical Packages for Social Sciences) version 13, for the remaining of the analyses.

Thank you

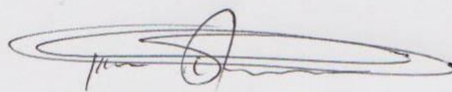
Hereunder are my particulars

MatondoLusembo (Mr)

University of Witwatersrand Alumni
School of statistics and actuarial sciences

Contact numbers: 0822201199/0789247782

Email: mlusembo2011@gmail.com



11 November 2014

Annexure H: LETTER FROM THE EDITOR

EDITING AND PROOFREADING CERTIFICATE

7542 Galangal Street

Lotus Gardens

Pretoria

0008

03 November 2014


TO WHOM IT MAY CONCERN

This letter serves to confirm that I have edited and proofread Dr U.M Makoko's dissertation entitled: **"SURVEY ON MATERNAL SATISFACTION IN RECEIVING SPINAL ANAESTHESIA FOR CAESAREAN SECTION."**

I found the work easy and enjoyable to read. Much of my editing basically dealt with obstructionist technical aspects of language which could have otherwise compromised smooth reading as well as the sense of the information being conveyed. I also formatted the dissertation. I hope that the work will be found to be of an acceptable standard. I am a member of Professional Editors Group and also a lecturer in the Department of English at the University of South Africa.

Thank you.

Hereunder are my particulars:



Jack Chokwe (Mr)

Department of English (Unisa)

Contact numbers: 072 214 5489 / 012 429 6232

jmb@executivemail.co.za

Professional
EDITORS
Group