DETERMINANTS OF CAESAREAN SECTION AS A MODE OF DELIVERY AT THE MATER HOSPITAL, NAIROBI

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DECLARATION AND APPROVAL

Declaration by the Student

This thesis is my original work and has not been presented for a degree examination in any other University or for any other award.

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DEDICATION

To my husband George, my children, Lorna, Jacqueline, and Antony, I treasure your love.

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I wish to thank the Almighty God for teaching me the secret of prayers especially during this period. Glory and honor be Unto You Oh Lord. My sincere thanks to my supervisors Dr. Jane Karonjo and Dr. Bernard Mbithi, for your guidance and patience even when my research was not making sense, you encouraged me to go on. My sister Flora Nderitu, thank you for urging me to take this course which you had faith in and kept me motivated. Dr. Rosemary Okova, I will never forget your encouragement and reassurance. I would like to acknowledge my dear husband George Thagichu for your support and being there for me all the time. To my daughter Jacqueline, the many computer lessons were not in vain. To, Lorna the many calls you made gave me a reason to continue. My son Antony you ran many errands for me without complaining. To my colleagues and many other people who stood by me, May God, bless you all.

ABSTRACT

Caesarean Section (C/S) rate continues to rise in many countries with good access to medical services, yet this increase is not associated with improvement in peri-natal mortality or morbidity. The United States of America (USA), Mexico, Brazil, and Italy have the highest rate of C/S (over 35 %). In Kenya the rate of hospital-based C/S was below 6.3% while the population-based C/S was 0.95%. However, at The Mater Hospital rates of C/S deliveries have shown a steady increase in the last three years despite the availability of almost all the necessary facilities required for monitoring a mother in labor, hence the current study to investigate the determinants of C/S as a mode of delivery at The Mater Hospital, Nairobi. The general objective of the study was to investigate the determinants of Caesarean Section as a mode of delivery. The study adopted a facility based cross-sectional study design. The study population included all women aged 18-49 years who had delivered through C/S, doctors and midwives involved in maternal and child health care at The Mater Hospital as well as mothers who had undergone C/S mode of delivery and were seeking Child Welfare Clinic (CWC) services formed the sampling frame for the study. The study used an interview schedule, a self-administered questionnaire and a Key Informant Interview Guide (KII) to collect both qualitative and quantitative data. The desired sample size for the study was 114 (79 mothers, 23 midwives and 12 doctors) respondents. The different groups of the respondents were stratified after which simple random sampling method was used to identify the respondents. Data was analyzed using Statistical Package for Social Sciences version 20. Chi square was used to determine the relationship between variables, with a $p \geq 0.05$ being significant (95% CI). From the study, the identified determinants of C/S included university level of education ($p=0.042$, $x^2=1.3$), being single parent ($p=0.038$, $x^2=.400$), having a formal employment ($p=0.034$, $x^2=5.8$) and a salary scale range of 40,000 to 60,000 ($p=0.037$, $x^2=2.56$). Other determinants included mal-presentation ($p=0.006$, $x^2=27.681$), fetal distress, (0.0001, $x^2=6.34$), previous C/S scar ($p=0.001$, $x^2=30.024$), and Cephalo-Pelvic Disproportion ($p=0.0001$, $x^2=2.56$). Hypertension (0.0001, $x^2=9.34$), failed induction ($p=0001$, $x^2=35.690$), prolonged labor ($p=0.0001$, $x^2=8.39$), previous bad outcome ($p=0.0001$, $x^2=7.632$) and gestational diabetes ($p=0.0001$, $x^2=5.98$). The study findings, demonstrated that there was a significant relationship between the mothers' socio-demographic characteristics and the preference of caesarian section as a mode of delivery. Therefore, the null hypothesis was rejected. The hospital needs to initiate a programme to mitigate against the C/S deliveries that can be prevented. Pregnant mothers need to be well informed about what they can do to minimize C/S deliveries. The healthcare providers and the hospital management team also need to educate and encourage mother for trial of labour after previous C/S.

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LIST OF ABBREVIATIONS AND ACRONYMS

ACOG	American College of Obstetricians and Gynecologists
ANC	Ante natal care
BMI	Body Mass Index
CDC	Centre for Disease Control and Prevention
C.P.D	Cephalo Pelvic Disproportion
C/S	Caesarean Section
CWC	Child Welfare Clinic
IOL	Induction of Labor
KII	Key Informant Interview
MCH	Maternal Child Health
MMR	Maternal Mortality Rate
MDG-5	Millennium Development Goal 5
RECS	Repeat Elective Caesarean Section
RDS	Respiratory Distress Syndrome
UK	United Kingdom
USA	United States of America
P.E.T	Pre-Eclamptic Toxaemia
P.M.T.C.T	Preventing Mother to Child Transmission
SPSS	Statistical Package for Social Sciences
ToL	Trail of Labor
T.T.N	Transient Tachypnea of the Newborn
W.H.O	World Health Organization

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

When vaginal birth is no longer an option, a Caesarean section (C/S) is a surgical operation used to deliver a baby or infants (Karakus and Sahin 2011). Caesarean Section was also brought into clinical practice as a life-saving operation for both the mother and the infant, according to the research. Its usage follows the world's health-care inequality trend, much like other procedures of comparable complexity. Ronsmans and Graham argue that it is underutilized in low-income areas and overutilized in middle- and high-income areas (2006).

One of the Millennium Summit's main objectives in 2000 was to improve maternal health. Since the launch of the Safe Motherhood Program in 2001, when 189 nations signed the Millennium Declaration, which called for a 75 percent reduction in maternal mortality and universal access to reproductive health by 2015, progress toward the MMR goal has been unequal across the globe. According to the WHO statistics report from 2010, Sub-Saharan Africa has the highest MMR among developing areas, followed by South Asia, South East Asia, North Africa, Latin America and the Caribbean, Western Asia, and Eastern Asia.

In their study Nacharaju, Micog, Sapna, Lavanya and Sushma (2013) noted that there is a constant increase in C/S rate for varied indications and although the safety of C/S has improved, the morbidity rates are still high in comparison to the vaginal delivery. The study further showed that associated morbidities like abnormal placentation, post-operative pain, infection, depression as a result of long hospital stay was still rampant even after advancements in operative techniques and broad-spectrum antibiotics. According to a survey conducted by Moran (2010), a myriad of factors for the observed

increase in caesarean section mode of delivery have been proposed, including advanced maternal age, particularly with first birth, multiple pregnancy and breech presentation, suspected low infant birth weight, cord prolapse, placenta previa, and increasing maternal BMI (BMI). According to Grivell and Dodd, other variables contributing to the higher C/S rate include organizational issues, women's choices about delivery and desire for care, as well as physician qualities, care, and practice (2011). The research went on to say that each of these variables has a complicated impact, and that many of them are interconnected. Among all the other factors, the research found that a previous caesarean section is the single greatest contribution to the increase in C/S delivery rates.

Several studies have found an inverse relationship between C/S rates and maternal and infant mortality at the population level in low-income countries where large segments of the population lack access to basic obstetric care, according to Gibbons, Belizan, Lauer, Betran, Merialdi, and Althabe (2010). C/S ratios over a particular threshold, on the other hand, have not been proven to provide extra benefits to the mother or the infant. Instead, the research found that high C/S rates are related to detrimental effects on maternal and child health.

Absil, Parys, Bednarek, Lacart, and Vandoome (2010) found that postpartum morbidity and decreased fertility are two short-term risks for mothers. Infection, bleeding, damage to pelvic organs, and thrombo-embolic diseases are among the main non-anesthetic problems associated with caesarean section birth, according to the research. Long-term concerns include a higher chance of improper placentation in subsequent pregnancies. Due to the inherent risks of this disorder and the increased frequency of placenta ascerta, women with at least one prior caesarean section have a two to three times higher risk of developing placenta previa in a subsequent pregnancy than at baseline, and the risk increased with the number of prior caesarean births. Women should be

concerned about the increased likelihood of placenta previa. Even in the absence of placenta previa births, there was an increased chance of placenta percreta with increasing numbers of prior caesarean delivery, according to the same research. Caesarean delivery was linked to post-partum respiratory morbidity, less breast-feeding, and potentially more atopic disorders for the baby, according to the same research.

Iatrogenic preterm and birth trauma were mentioned as fetal hazards in the same research. The latter is seen in 0.4 to 3% of caesarean sections and is characterized by minor lacerations on the infant (related to emergency delivery). After a scheduled or planned caesarean delivery, transient tachypnoea of the newborn (TTN) is more frequent. TTN was shown to be three times more common after a scheduled Caesarean section than after a vaginal birth in a study of 29,669 deliveries. The method of delivery via Caesarean section has also been linked to a small risk of respiratory distress syndrome (RDS), especially if the caesarean section was done on a non-laboring patient.

1.2 Statement of the Problem

According to the Centers for Disease Control and Prevention (CDC), the incidence of Caesarean Sections continues to grow in many countries with excellent access to medical care, but this rise is not linked with improvements in perinatal mortality or morbidity. The greatest rates of C/S are in the United States of America (USA), Mexico, Brazil, and Italy (over 35 percent). The average caesarean section delivery rate in industrialized nations is 21.1 percent, according to Zhang, Liu, and Meikle (2008). According to Kombo, Bedi, Dhillon, and Saxena, the Caesarean Section birth rate in China varies from 20 to 60 percent, depending on whether the hospital is rural or urban, and was 25 percent in teaching hospitals in India (2009). C/S was 18.5

percent in Belgium, according to Absil, Parys, Bednarek, Bekaert, Lecart, and Vandoorne (2004).

In Kenya the rate of hospital based caesarean section was below 6.3% while the population based was 0.95% according to study done by Gichangi, Apers and Temmerman (2001). However, at The Mater Hospital rates of C/S deliveries have shown a steady increase in the last three years as follows. In 2011, out of the total 1,873 deliveries, 720 (39%) were through C/S. In 2012 out of the total 1,994 deliveries 861 (43%) were through C/S, while in 2013 out of the total 2,182 deliveries 1,005 (45.9%) were through C/S. These statistics are high compared to the World Health Organization (WHO) guidelines which state that no region in the world is justified in having a caesarean section rate greater than 15% which is the median percentage observed worldwide Betran, Merialdi and Laucer (2009), Although the Mater Hospital has almost all the necessary facilities required for monitoring a mother in labor the determinants of caesarean section as a mode of delivery were not clear. It was from this perspective that the study was conceived, to shed more light on determinants of caesarean section mode of delivery at the Mater Hospital-Nairobi.

1.3 Broad Objective

To investigate the determinants of Caesarean Section as a mode of delivery amongst mothers at The Mater Hospital- Nairobi.

1.4 Specific Objectives

1. To determine the socio-demographic characteristics of the mothers delivering through C/S at The Mater Hospital
2. To identify the indications of C/S as a mode of delivery among mothers at The Mater Hospital

3. To establish the decision making process on C/S as a mode of delivery among mothers at The Mater Hospital

1.5 Research Question

1. What are the socio-demographic characteristics of mothers delivering through C/S at The Mater Hospital?
2. What are the indications of Caesarean Section mode of delivery among mothers at The Mater Hospital?
3. How is the decision making process undertaken on C/S as a mode of delivery among mothers at The Mater Hospital?

1.6 Research Hypothesis

It is hypothesized that: -

H_0 –There is no significant relationship between the respondents' socio-demographic characteristics and the choice of caesarean section as a mode of delivery at The Mater Hospital.

1.7 Study Variables

1.7.1 Independent Variable

1) Socio-demographic characteristics of mothers delivering through C/S
2) Indications of C/S mode of delivery
3) Decision making process on C/S mode of delivery

1.7.2 Dependent Variables

1) Choice of C/S as a mode of delivery

1.8 Justification of the study

There was a clear evidence provided indicating that C/S mode of delivery at The Mater Hospital was on the rise. However, there was no documented studies that had been done prior to the current study. The study aimed at establishing the determinants of C/S mode of delivery amongst mothers at the hospital. The information that has been generated by the study will assist the management to come up with strategies of maintaining the C/S deliveries at the WHO recommended standard. The results of this study will also be useful to the Institution's Health Policy makers and many other actors in management as it has clearly shown the determinants of C/S mode of delivery in The Mater Hospital. The study will also form a body of knowledge for further studies by scholars and practitioners into the issues surrounding C/S mode of delivery.

1.9 Assumptions of the study

The researcher had assumed that The Mater Health Management Team would be supportive. The researcher also assumed that the sampled respondents would agree to participate in the study and they would give genuine opinion/answers to all questions asked. The researcher also assumed that the respondents would be literate to effectively respond in either English or Kiswahili languages.

1.10 Scope of the study

The study was limited to The Mater Hospital- Nairobi and it focused on women who were between 18-49 years who had delivered through CS in the last one year at the time of the study. This included mothers in the maternity ward and mothers seeking services in the Child Welfare Clinic at The Mater Hospital Nairobi after giving birth through C/S. The study also included the doctors and midwives who were involved in the management of these mothers.

1.11 Operational Definition of Key Terms

Caesarean Section - Is a surgical incision on the abdomen and uterus used to deliver one or more babies

Fetus - The unborn offspring of a mammal

Workers - The midwives who are involved in the management of pregnant women in the maternal child health department

Maternal - Pertaining to the mother

Morbidity - State of being liable to die

Mortality - Loss of life in a big scale

Neonatal - Pertaining to the newborn

Private Sector - Health providers outside the public health sector

Respondent – Refers to any person who is eligible for the study (in this study they were mothers of child bearing age between 18-49 years who had undergone Caesarean Section, Doctors/consultants and Midwives taking care of these mothers)

Vaginal delivery - The birth of offspring in mammals through the vagina

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

In this chapter, the researcher had reviewed various studies related to the current research work. Information searched from various studies included, socio-demographic characteristics of mothers who deliver by caesarean section and the indications of Caesarean Section mode of delivery among the women. Information searched also included decision making process on Caesarean Section as a mode of delivery among the mothers.

2.1 Socio-demographic characteristics of the mothers who deliver through Caesarean Section

Various studies have shown that different socio-demographic characteristics of mothers demonstrated significant relationships with the uptake of caesarian section. For example, in a study by Cecilie, Ostibye, Daltveit, Mmbaga and Sandoy (2014) to describe the trends in socio-demographic factors associated with caesarean section at a Tanzanian referral hospital between 2000 and 2013 showed that urban mothers and being married woman was associated with higher odds of CS compared to being single. The study also revealed that mothers whose highest level of education was secondary school showed a higher preference to having caesarian section compared to the mothers with primary level of education. Mothers aged 25 years and above, were significantly predictive for C/S. This was according to a study carried out by Rahman, Shariff, Shafie, Saaid, and Tahir (2015) on Caesarean delivery and its correlates in Northern Region of Bangladesh. A study by Kambale (2011) on the social predictors of caesarian section births in Italy revealed that the place of residence was one of the social factors which was significant in predicting caesarian section. Gebremedhin

(2014) carried out a study on the trends and socio-demographic differentials of Caesarean section rate in Addis Ababa, Ethiopia. Results of this study showed that caesarian section rates were high among women with secondary school level of education (32.3%) and higher (33.3%) in women with higher education. The rates among the illiterate women was (14.8%) and those with primary level of education (15.8%) (P<0.001).These findings were supported by results of a study on determinants of caesarean section in Egypt by Khawaja, Kabakian and Jurdi, (2004) which showed that the mother's education and area of residence were important determinants of caesarean section. Essex, Green, Baston and Pickett (2013) conducted a study to determine the women who are at an increased risk of a caesarean section or an instrumental vaginal birth in the UK. Results of the study showed that women from lower occupational status and households were at an increased risk of elective caesarean section. The study also showed that women with lower academic qualifications were at an increased risk of elective caesarean section compared to women with university level of education.

2.2 Indications of Caesarean Section mode of delivery among the women

As cited by Walker McCarthy and Ugoni (2007), Caesarean section is beneficial to pregnant women and newborns when the indication is well-founded. The study also indicates that, aside from medical indications, fear of vaginal delivery, multiple pregnancies, and the increased use of electronic foetal monitoring are the reasons for the increase in the rates of caesarean delivery. Furthermore, the idea that caesarean delivery is safer for both the mother and the baby leads to women preferring C/S delivery for childbirth. Crowther, Pearce, and Dodd (2008)

The four most frequent medical reasons for caesarean birth, according to Penn, Ghaem, and Maghami (2010), are failure to progress during labor (30%), prior caesarean

section (30%), non-reassuring fetal state (10%), and fetal mal-presentation (10%). (11 percent). Abnormal placentation (for example, placenta previa, vasa previa, and placenta accrete) and maternal infection were less frequent reasons for caesarean birth (for example herpes simplex or human immune deficiency virus). Multiple gestation, fetal bleeding diathesis, mechanical obstacle to vaginal delivery, such as big leiomyoma or condyloma acuminate, significantly displaced pelvic fractures, macrosomia, and fetal abnormalities such as severe hydrocephalus were all mentioned in the same research.

Multiple factors, according to Murphy, Grobman, Lee, and Holl (2009), have contributed to the rise in the prevalence of caesarean deliveries in developed countries, including changes in physician/patient expectations and attitudes about risk, changes in clinical practice (e.g., fewer trials of labor after previous caesarean delivery, vaginal breech births, and instrumental deliveries), and changes in physician/patient expectations and attitudes about risk. The study also identified maternal request, medico legal concern, financial issues, increased maternal age at delivery, multiple gestation and maternal obesity as indicators of caesarian section.

2.3 Decision making process on Caesarean Section as a mode of delivery

Women and their caregivers have difficulties when deciding on the method of delivery, which necessitates a careful balancing of risks and benefits based on their unique circumstances. Different factors influence the mothers' ability to decide on the mode of delivery. For example, a study carried out by Munro, Kornelsen and Hutton (2009) in Canada on the decision making process in patient initiated elective caesarian delivery it was established that social and cultural knowledge influenced decision making for elective caesarean section. Another study carried out by Cury and Menezes (2006) on the factors associated with decision making for cesarean delivery in Sao Paulo, Brazil

established that there was a significant relationship between husbands' income and caesarian section delivery (p=0.006; OR=3.44; 95% CI: 1.38-8.33). In another study by Emmett, Montgomery and Murphy (2006), most women were able to make their own decision about mode of delivery, while health care workers supported them on which ever mode of delivery they preferred, although most of the women felt that they needed more guidance.

The results of a study to determine the preference of Iranian women to have normal vaginal or cesarean deliveries demonstrated that mothers' and husbands' positive attitude toward C/S were determinant factors in choosing caesarian section as the mode of delivery Maharlouei, Rezainzandeh, Hesami, Moradi, Mazloomi, Joulaie, Khodayari and Lankarani (2013).

In a qualitative study to determine the preferences for mode of delivery in nulliparous Argentinean women, Liu, Mazzoni, Zamberlin, Colomar, Chang, Arnaud, Althabe and Belizian (2013) established that women viewed caesarian section as a medical decision, hence allowed medical staff to decide on the mode, especially when there was a medical indication.

2.4 Theoretical Framework

The Health Belief Model by Godfrey Hochbaun and Irvine Rosenstock first developed in 1950 had been chosen as a guide for the study. The model was developed to provide a frame work for understanding why some individuals take take specific actions to avoid illness while others do not take any action.

The model addresses the relationship between a belief and the person's behavior towards illness in four critical areas that is the person's perception of potential illness, the person's susceptibility to that illness, the benefits of taking preventive action and

the barriers of taking that action Burke, (2013). The human behavior mainly depends on the value that the individual places on the individuals health, this would relate well by steps taken by the pregnant women who attend the Child and Welfare Clinic so that they can benefit from early detection, prevention and treatment for both mother and baby that can arise during pregnancy or child birth, can be identified with the four critical areas of the model.

2.5 Conceptual Frame Work

This is a collection of interrelated ideas and concepts based on theories Kombo and Tromp (2006).

The conceptual framework shown in the figure below indicates the relationship between the independent and dependent variables which determine C/S as mode of deliveries amongst the mothers.

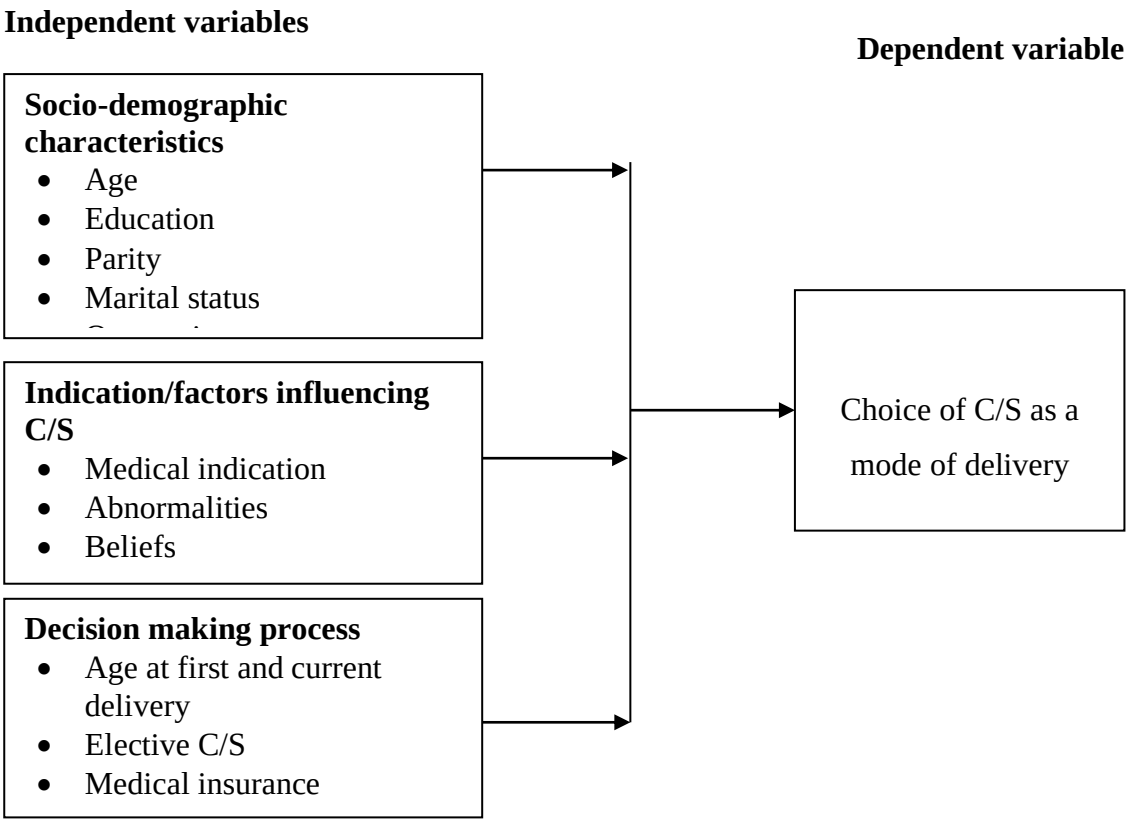

Figure 1: Conceptual Framework

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

The aim of the chapter was to describe the research methods used in the study. It was divided into research design, location of the study, target population, sampling procedures and techniques, sample population, research instruments, testing for validity and reliability, data collection methods and procedures, proposed data analysis technique and procedures, and ethical considerations.

3.1 Research Methodology

This was referring to the systematic analysis of the procedures applied to the field of study that encompasses the concepts (Kothari, 2004).

3.2 Research Design

According to Mugenda and Mugenda (2003), study design is a process that involves collecting data in order to test hypotheses and to answer questions concerning the current status of the subjects in the study. It determines and reports things as they are during a point in time. The researcher adopted a facility based descriptive cross-section study design to assess the determinants of Caesarean Section as a mode of delivery at The Mater Hospital.

3.3 Location of the study

The study was conducted at The Mater Hospital located in Nairobi County, Makadara Constituency. The Hospital is a private Health Care Institution located along Dunga Road in Nairobi South B. The hospital is under the Trusteeship of The Sisters of Mercy a Catholic Christian faith. The hospital borders industrial area of the County where both large scale and small scale factories are located. On one side of the hospital is a large slum area that houses the casual labourers, while the other side has middle class estates.

Both county and private schools are found in the area. The maternity wing is made up of the Child and Maternal Welfare Clinics, Ante-Natal and Post Natal wards. A well-equipped baby nursery ward is a part of the wing.

3.4 Target Population

Study population refers to the total group of persons or objects that meets the designated set of criteria established by the researcher. This total population can also be called the universe or target population (Seaman and Verhonick 1982).The target population for the study was mothers aged between 18-49 years who had delivered through caesarean section in the last one year at The Mater Hospital. Midwives and doctors who were involved in maternal child health care at the hospital were also targeted.

The study included all mothers aged between 18 to 49 years who had delivered through Caesarean section mode of delivery in the last one year of the study. The study also included all midwives and doctors who were involved in the care of these mothers.

The study excluded all mothers who were not in that age bracket and all mothers who had had a normal delivery in the year of the study. Student midwives working in the department were also not included in the study.

3.5 Sampling Procedures and Techniques

A sample size is a sub-set of the total population which is used to give the general views of the target population Kothari (2004). This study adopted a stratified sampling method where the different categories of the respondents formed the strata. Simple random sampling method was used to identify the study respondents from all mother who had delivered through caesarean section.

The sample size was calculated using the Fisher *et al.,* (1998) formula as indicated here below; -

$$n = \frac{Z^2 pq}{d^2}$$

Where;

n = minimum desired sample size

p = the proportion of the target population estimated to have a particular characteristic (due to lack of documented proportion in this study 50% was used).

q = 1- p (0.5)

d = minimum error (0.05)

Z = is the standard normal deviate (set at 1.96, which corresponds to 95%)

Confidence Interval

Therefore; $n = \frac{1.96^2 x 0.05 x 0.05}{0.05^2} = 384.16$

n = 384.16

Since the study population was less than 10,000, the desired sample size was further calculated using the formula indicated below; -

$$nf = \frac{n}{1 + \frac{n}{N}}$$

Where; nf = desired sample size

n = 384.16

Sample size calculation for mothers who delivered by caesarean section:

$$nf = \frac{n}{1 + \frac{n}{N}}$$

$$nf = \frac{384}{1+\frac{384}{100}} = 79$$

Sample calculation for the Health workers:

$$nf = \frac{n}{1+\frac{n}{N}}$$

$$nf = \frac{384}{1+\frac{384}{38}} = 35$$

The hospital had 25 midwives and 13 consultants/doctors working in the maternity department.

Proportionate sample size calculation for midwives:

25/38x 35=23 Midwives

Proportionate sample size calculation for consultants/doctors

13/38 x 35=11.9 =12

Table 1: Respondents' Sample Size

	Category of respondent	**Number available**	**Proportionate sample**	**Desired sample**
1	Consultants/doctors	13	13 x 35 38	12
2	Midwives	25	25 x 35 38	23
3	Mothers seeking CWC services after C/S	100	384 x 1+384/100	79

Source: Researcher (2017)

3.6 Sampling Population

In order to ensure even distribution of the respondents, from the proportionate sample that was calculated, census sampling method was used whereby all mothers in the post-natal ward and those who had visited the Child Welfare Clinic (CWC) following C/S delivery participated in the study until the desired sample was achieved. The same procedure was applied to the doctors and midwives until the sample size was achieved.

3.7 Research Instruments

Quantitative data was collected using an interview schedule for the mothers who had delivered through caesarean section in the last one year at the Mater Hospital. A Key Informant Interview (KII) guide was used to collect qualitative data from the consultants/doctors and midwives working in the Maternal Child Health department of the hospital. The researcher also reviewed the deliveries in the births Register and focused on recorded deliveries of the last six months of 2013 which were 598(598/6=99.9) this was an equivalent to an average of about 99.9 rounded 100 caesarean section deliveries per month.

3.8 Testing for validity and reliability

A pilot test is critical in the research process, according to Mugenda and Mugenda (1999). This is because it serves as a trial run for the methods and instruments that are to be used, as well as a practice run for the researcher. The researcher was able to save money by using piloting to prevent making expensive errors. To resolve any ambiguity, detect incorrectly worded items, and instances of inadequate space to write answers, as well as to identify clustering of questions, it was necessary to conduct piloting sessions. Two sets of each data collection tools were pre-tested by administering ten questionnaires (10%) at the Meridian Hospital Nairobi West Hospital which was also offering similar services to the one the researcher carried out the study. Any gaps that

were identified, ambiguity, inconsistencies or any other issues noted during the pre-test were corrected appropriately before conducting the actual study.

The kind of data collected by data collection devices must be such that it may be used to answer the questions posed by the researcher. Mugenda and Mugenda (2003) highlight the importance of obtaining data that is relevant to the study hypothesis while also maximizing reliability and validity of the data. According to Cooper and Schindler, a valid instrument is one that properly assesses the subject under consideration (2005). When the questionnaire was validated using the features of self-evident measures, the validity of the questionnaire was confirmed. These measurements demonstrate the degree to which instruments measure what they are intended to assess, which is categorized as validity of face and validity of content, respectively. In order to guarantee face validity, the questionnaire was subjected to subjective evaluation for presentation and relevance of the items before being distributed. Because it affects whether or not a researcher can derive relevant and helpful inferences from the results of a specific instrument, validity is critical in research. Validity is a quality process that allows it to measure what it is intended to measure in a reliable manner. It covers the question of whether or not one is measuring appropriate indicators of the idea, whether or not the findings are accurate to the degree of what is intended to be assessed, and whether or not one is measuring appropriate indications of the concept (Gay and Airasian) (2000).

It is likely that if this study is repeated or by other researchers, comparable responses to a highly reliable questionnaire will be provided (Cooper & Schindler, 2005). It was suggested by Wallen (2006) that a reliability test that produced Cronbach alpha () values greater than 0.70 should be adequate to ensure that questionnaires were trustworthy. Obtaining Cronbach alpha values of 0.70 or above for each of the five

research variables was adequate to determine whether or not the data instrument was trustworthy. The correlation coefficient was found to be 0.73, indicating that the instruments' dependability is very high.

Credibility is utilized to establish trustworthiness via data inspection, analysis, and conclusions to determine whether or not the research is right and accurate. Credibility is measured in terms of correctness and accuracy. The use of suitable, well-established research techniques, as well as random selection of people who served as informants, were all implemented. However, objective measures such as proven dependability were used to assess trustworthiness, which was mostly determined by subjective criteria.

3.9 Data Collection Methods and Procedures

The researcher and the research assistants collected data for the purpose of reaching conclusion and recommendations. The researcher first approached the respondent, explained the procedure to the respondent. Once the respondent agreed to participate in the study, the researcher/ research assistant identified a private room and carried out the interview. For the respondents who opted to fill the questionnaires on their own they were provided with a pen and a private area to fill in the questionnaires which were later collected and locked in a drawer that had been set aside for the study. The doctors and midwives were also approached in the same way they were given the KII forms to fill after which they were later collected at the agreed time.

All those who participated in the study were thanked and once again reassured that the information they had provided would be treated with confidentiality and only used for the purpose it was intended.

3.10 Data Analysis Techniques and Procedures

Both qualitative and quantitative data was validated coded and keyed into the data analysis tool. SPSS version 20 was used to generate summarized descriptive statistics in form of frequency table and percentage. Thematic and content analyses were used to analyze the qualitative data collected in accordance with the themes identified. The analysis was conducted in accordance with the major topics (i.e., research questions) of the study, with particular attention paid to problems and patterns that emerged from the answers. The prominent patterns that were developing were addressed. The qualitative data was presented in descriptive narrative. Key quotations from the data, using respondents 'own words' was incorporated to illustrate the main ideas. The study adopted a descriptive analysis method whereby analyzed data was presented in form of frequencies and percentages. The study findings were presented in tables and charts.

3.11 Ethical Considerations

Copyright infringement encompasses both the theft or misuse of a protected invention as well as the uncredited literary replication of another's work. The unauthorized use of ideas or one-of-a-kind methods obtained via a specific correspondence, such as an award or original copy audit, is considered theft or misuse of protected invention. All of the authors mentioned in the study have been identified and cited within the text.

To allow for fair and free transactions, the researcher put the participants in situations that were both free and fair. The researcher encouraged people to openly share information and acknowledged their emotions if they did not disclose some private information. By making the participants provide information freely and joyfully, the researcher provided specifics to the subjects about the methods to be utilized throughout the information collecting. Before taking part in the study, the participants read, understood, and signed a permission form. All of the participants were assured to

be at least 18 years old based on their national identity cards. After they signed a permission form, their data was gathered.

The responders were assured by the researcher that the information they provided would be kept private. The researcher promised them that the information would be used for no other reason than that stated in the study, and that no unwanted individuals would have access to it in any way. The names of the participants and their institutions were not to appear anywhere on the data collecting instrument except a coded system devised and understood only by the researcher for this reason.

Respondents were urged to read and comprehend the permission form before freely signing it to indicate their willingness to participate. All of these procedures have the combined effect of ensuring that no one gets insulted as a result of volunteering to participate in the research.

The respondents were asked to provide information without revealing their names on the data collection devices. The contributions were classified using secret codes in this research. In black and white or any other form of communication regarding the events between the researcher and the responders, no information about the participants was left unprotected. This greatly helped the researcher in avoiding respondents' biased answers.

Respondents were told that they had the option to opt out of the research at any time. They were asked to provide information at their leisure.

To avoid seepage to unauthorized persons, the data gathered from the respondents was handled and stored in strict confidence. Both hard and soft copies were preserved. The researcher did not provide anybody any prepared data for any reason.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.0 Introduction

This chapter presented the findings and results of the application of the variables using techniques mentioned in chapter three. Specifically, the data analysis was in line with specific objectives where patterns were investigated, interpreted and implications drawn from them.

4.1 Response Rate

The study targeted 79 mothers 12 doctors and 23 midwives respondents, but managed to obtain responses as follows 6(50%) doctors, 23(100%) midwives and 68 (86%) mothers. The interviewed respondents totaled to 97 thus representing a response rate of 95%. This was as a result of non-cooperation from some of respondents who were not comfortable in responding to the study. This response rate was deemed sufficient for drawing conclusions for the research by Mugenda & Mugenda (2003), who said that a 50% response rate is adequate, 60% is excellent, and 70% is rated very highly. This supported Bailey's (2008) claim that a response rate of 50% is acceptable, while a response rate of more than 77 percent is excellent. The response rate of 95.0 percent was therefore extremely excellent based on this claim.

4.2 Respondents' Social Demographic Characteristics

4.2.1 Respondents' Place of Residence

Over half 35 (51.5%) of the respondents were from Nairobi while over a third 26 (38.2%) were from the sub urban town/estates near Nairobi. The rest 7 (10.3%) came from areas outside Nairobi (table 2).

Table 2: Respondents Place of Residence

Respondents' Residence	Frequency	Percent
Estates within Nairobi area	35	51.5
Sub urban town/estate near Nairobi	26	38.2
Other areas outside Nairobi	7	10.3
Total	**68**	**100.0**

Source: Field Data (2017)

4.2.2 Religion of the Respondents

Over a half 44 (64.7%) of the respondents were Protestants while 22 (32.4%) were Catholics. A small proportion 2 (2.9%) of the respondents were from the Islamic faith (table 3).

Table 3: Religion of Respondents

Respondents Religion	Frequency	Percentage
Protestant Faith	44	64.7%
Catholic Faith	22	32.4%
Islam Faith	2	2.9%
Total	**68**	**100%**

Source: Field Data (2017)

4.2.3 Level of Education of the respondents

Over third 46 (67.6%) of the respondents had college level education p=0.042, x2=1.3). While 14 (20.6%) had secondary school level education and 8 (11.8%) had other form of education. This corresponded with the response by Key Interview Informant (K11) who said "high numbers of C/S are noted among the educated and young mothers". However, there was no relationship found between the level of education and the number of children born through C/S [p <0.05[0.015 and 0.022] respectively.

Table 4: Level of Education

Level of Education	Frequency	Percent
Secondary level education	8	11.8
College level education(university)	46	67.6
Other	14	20.6
Total	**68**	**100.0**

Source: Field Data (2017)

4.2.4 Marital Status of the respondents

Majority of the respondents 61 (89.7%) were married while 6(8.8%) were single and 1(1.5%) was divorced /separated (table 5).

Table 5: Marital Status

Marital Status	Frequency	Percent
Married	61	89.7
Single	6	8.8
Divorced/ Separated	1	1.5
Total	**68**	**100.0**

Source: Field Data (2017)

4.2.5 Main Occupation of the Respondents

Most of the respondents 42 (61.8%) were in formal employment while 22(32.4%) were self-employed and 3 (4.4%) were housewives.

4.2.6 Average Income of the Respondents

The respondents who earned a salary between ksh.0 to 20,000/- were 10 (14.7%) and those who earned Kshs. 20,001/- to 40,000/- were 9 (13.2%) While those who earned Kshs 40,001 to 60,000/- were 21 (30.9%). While 10 (14.7%) earned salaries of 60,001/- to 80,000/- and those with salaries of Kshs. above 80,000/ were 14(20.6%). Four (4) 7.3% of the respondents declined to respond to this question. This clearly indicated

that, over 60% of the respondents had an income of more than Kshs 40,000/- per month. However, there was no significance on indication and the C/S mode of delivery $p<0.05$[0.373] (Figure 2).

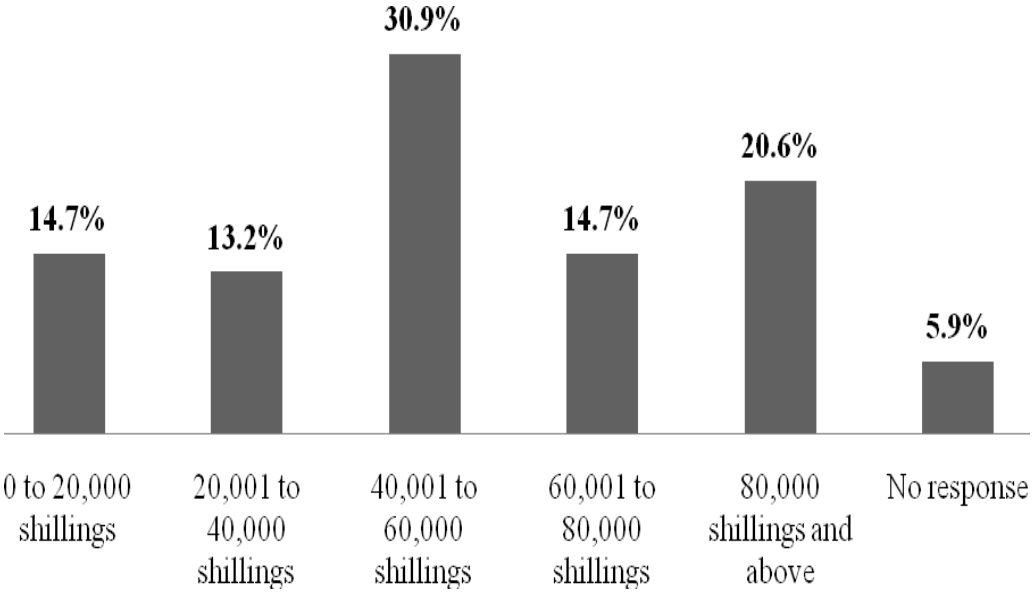

Figure 2: Average Income among the respondents

The earnings of the respondents were as indicated above (Figure 2)

4.3 Indications of Caesarean Section Mode of Delivery

4.3.1 Previous Deliveries by the respondents

Figure 3 below revealed that 25 (38.2%) of the respondents had given birth to one child prior to the study, while 28 (41.2%) had given birth to two children prior to the study and 10(14.7%) had given birth three children, the highest number of children to be reported were 4 (5.9%). (Figure 3).

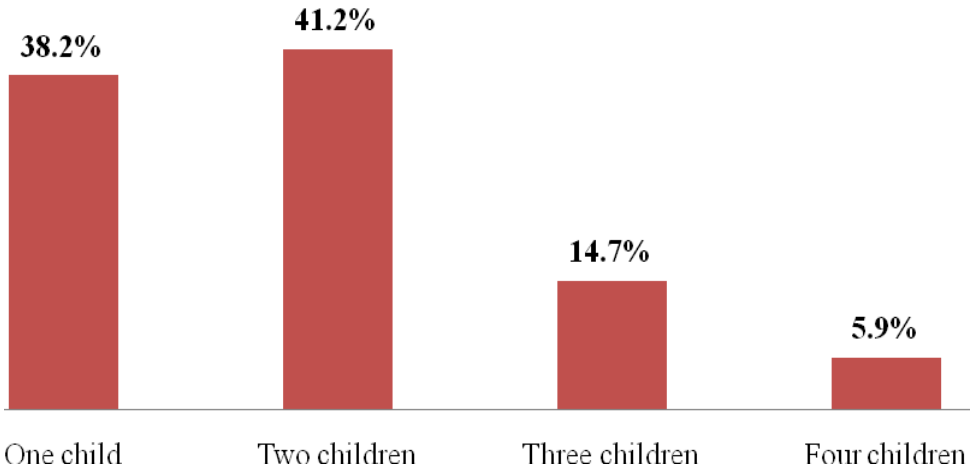

Figure 3: Previous Deliveries by the Respondents

4.3.2 Frequency of Caesarean Section among the mothers

Table 6 below shows that over half 41 (60.3%) of the respondents had one C/S delivery while over a quarter 20 (29.4%) had two children delivered through C/S. (Table 6)

The Key Informant Interview (KII) one doctor (17%) *pointed out that C/S deliveries are very high while 2(30%) reported they are on the increase.*

From The Key Interview Informants,

> *"six midwives (26%) indicated that C/S mode of delivery was high while 2 (33%) of the Key Informants reported that C/S are moderately high. The KII further revealed that this increase was usually predisposed by medical conditions such as Pre-Eclamtic Toxaemia (PET), big babies, Preventing Mother to Child Transmission (PMTCT) and previous C/S scar. However, there was also a proportion that indicated that elective C/S was also on the rise, while modern facilities have improved labor monitoring which has assisted in early detection of fetal distress hence need for C/S delivery. The KII further revealed that the C/S is mostly noted among the educated and young mothers."*

Table 6: Children Born Through Caesarean Section

Children Born Through C/S	Frequency	Percent
One C/S delivery	41	60.3
Two C/S deliveries	20	29.4
Three C/S deliveries	6	8.8
Four C/S deliveries	1	1.5
Total	**68**	**100.0**

Source: Field Data (2017)

4.3.3 Birth Order and Gender of the Child versus Mode of Delivery

Half 34 (50.0%) of all the first born were boys 51 (75.0%) of whom were delivered through C/S. Most 40 (58.5%) of the second child were also boy's majority (80.5%) were also delivered through C/S. All the fourth children were girls and were all delivered through CS. Only one (1.5%) delivery was a multiple delivery which occurred at the first delivery (Table 7).

Table 7: Birth Order and Gender of the Child versus Mode of delivery

Birth Order		Frequency	Percent	Mode of delivery	Frequency	Percent
First child;	**Boys**	34	50.0	**Normal**	17	25.0
	Girls	34	50.0	**CS**	51	75.0
Total		**68**	**100.0**	**Total**	**68**	**100.0**
Second child;	**Boys**	24	58.5	**Normal**	8	19.8
	Girls	17	41.5	**CS**	33	80.5
Total		**41**	**100.0**	**Total**	**41**	**100.0**
Third child;	**Boys**	9	64.3	**Normal**	2	14.3
	Girls	5	35.7	**CS**	12	85.7
Total		**14**	**100.0**	**Total**	**14**	**100.0**
Fourth child;	**Boys**	1	25.0	**Normal**	0	0
	Girls	3	75.0	**CS**	4	100
Total		**4**	**100.0**	**Total**	**4**	**100.0**

Source: Field Data (2017)

4.3.4 Nature of Caesarean section of the Respondents

Over half 39 (57.4%) of the C/S deliveries were reported to be emergency which were unbooked. However, 29 (42.6%) of the C/S deliveries were elective and booked by the respondents. This is an indication of a relatively high number of elective C/S deliveries by the mothers accessing maternal health services at hospital. The study further reveals that all the elective C/S were booked (Figure 4).

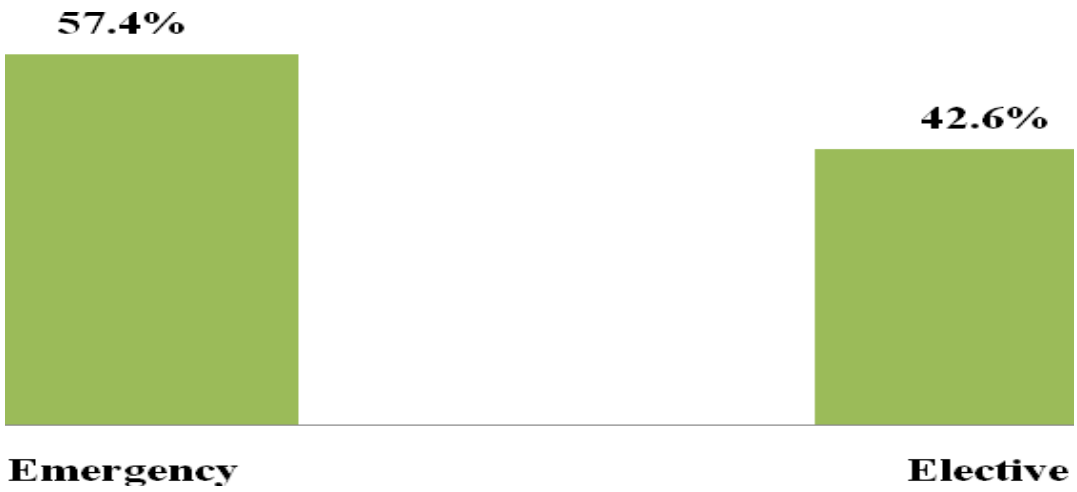

Figure 4: Nature of Caesarean Section Delivery

4.3.5 Caesarean Section Recommended due to Mother or Baby factor

Less than half 32 (47.1%) of the respondents who had C/S delivery indicated the reason for the C/S was due to mother related factors, while 29 (42.6%) reported they were child related factors. A small proportion 7 (10.3%) indicated the C/S deliveries were due to both the mother and baby related factors (Figure 5).

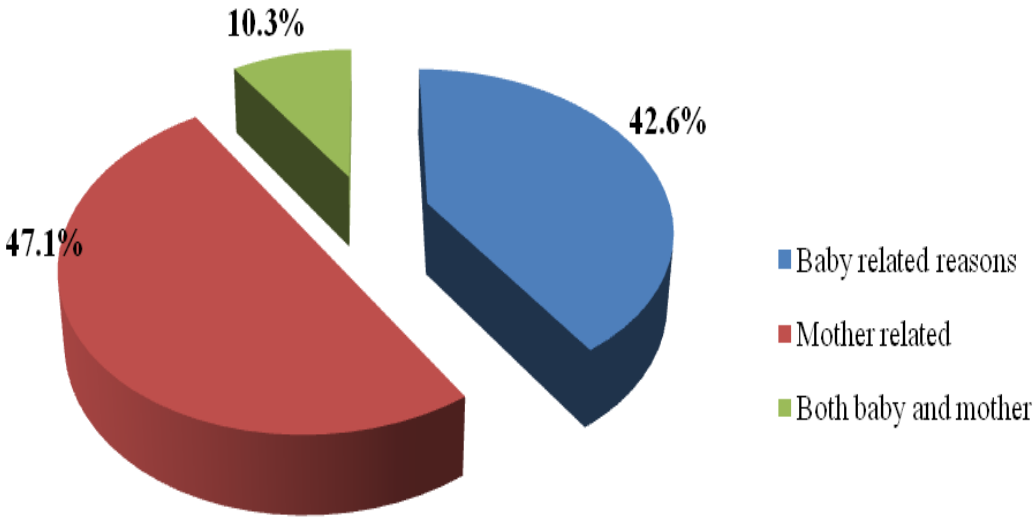

Figure 5: Reasons for Caesarean Section Mode of Delivery

4.3.6 Reason that warranted Caesarean Section mode of delivery

Twenty two percent point one 15 (22.1%), of the respondents indicated that malpresentation was the main indication for C/S delivery while 13 (19.1%) of the respondents indicated foetal distress. 12(17.6%) indicated previous C/S scar presentation. Cephalo-pelvic disproportion (CPD) and prolonged labor was reported by 7 (10.3%) of the respondents. Other indications for C/S delivery were hypertension as reported by 4 (5.9%) respondents. Failed induction was reported by 2(2.9%), mother's request, previous bad outcome and gestational diabetes was reported by 2 (2.9%) respondents respectively. However, 2(2.9%) of the respondents declined to give the reason for C/S delivery (Table 8). The KII revealed *that due to improved and better technology in labor and fetal monitoring, failed labor and fetal distress are usually noticed early necessitating C/S mode of delivery among mothers in the hospital. Factors such as previous scar, lifestyle labor pain phobia and ability to afford were*

noted by one KII. Medical rationale is applied in monitoring the progress of labor before C/S is performed.

Table 8: Indication for Caesarean section mode of delivery

Indication for C/S delivery	Frequency	Percent
Mal presentation	15	22.1
Fetal distress	13	19.1
Previous CS scar	12	17.6
CPD	7	10.3
Prolonged labour	7	10.3
Hypertension	4	5.9
Failed induction	2	2.9
Mother's request	2	2.9
Previous bad outcome	2	2.9
Gestational diabetes	2	2.9
No response	2	2.9
Total	**68**	**100**

Source: Field Data (2017)

4.3.7 Presence of deformity in the Last Born Child

Nearly all (94.1%) of the children had no deformity only 2 (2.9%) of the respondents reported that their last child had deformity a similar number 2 (2.9%) refused to respond to the question.

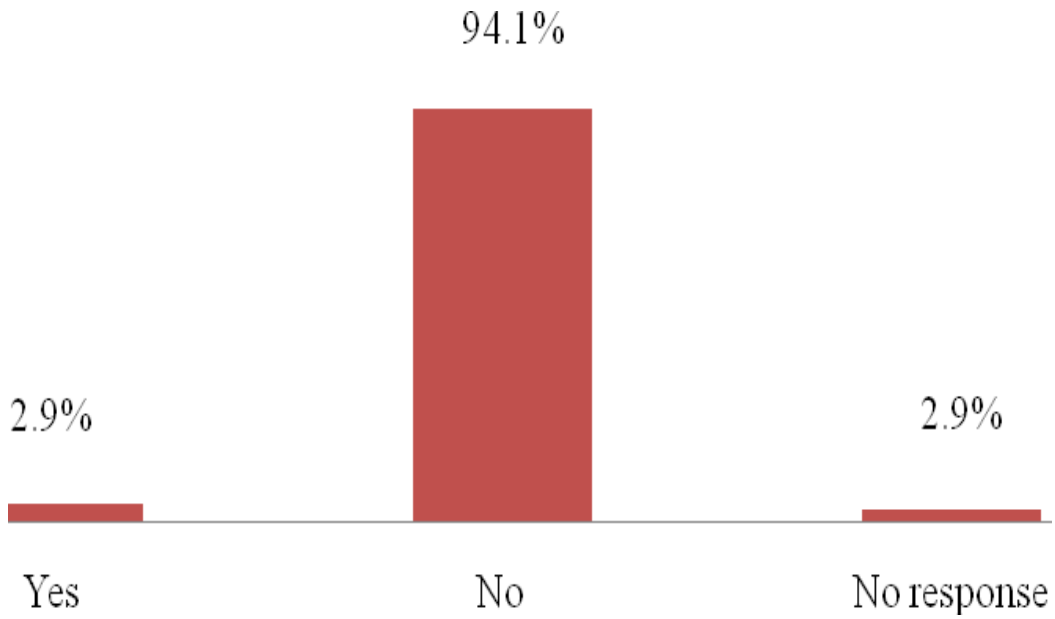

Figure 6: Presence of Deformity during Last Delivery

4.3.8 Age of the Respondents at first Delivery

Half 34 (50.0%) of the respondent had their first child at the age of between 26 and 30 years while over a quarter 18(26.5%) had their first child at the age of between 21 and 25 years. Five percent 5 (5.9%) of the respondents were below 20 years at the time of their first delivery while 3(4.2%) were between 36 and 40 years.

Table 9: Age of the Respondents at first Delivery

Age	Frequency	Percent
20 years and below	4	5.9
21 to 25 years	18	26.5
26 to 30 years	34	50.0
31 to 35 years	9	13.2
36 to 40 years	3	4.2
Total	**68**	**100.0**

Source: Field Data (2017)

4.3.9 Mode of First Delivery

Three quarters 50 (75.0%) of the respondents delivered through C/S in their first delivery while 18(25.0%) had normal delivery during their first delivery.

Table 10: Mode of First Delivery

Age	Frequency	Percent
Normal delivery	18	25.0
CS delivery	50	75.0
Total	**68**	**100.0**

Source: Field Data (2017)

4.3.10 Age of the Respondent at Last Delivery

Forty two percent 29 (42.6%) of the respondents had their last birth at the age between 26 and 30 years while 20 (29.4%) had their last delivery aged between 31 and 35 years. One respondent 1 (1.5%) had only delivered one child at the age below 20 years.

Table 11: Age of the Respondent at Last Delivery

Age	Frequency	Percent
20 years and below	1	1.5
21 to 25 years	8	11.8
26 to 30 years	29	42.6
31 to 35 years	20	29.4
36 to 40 years	10	14.7
Total	**68**	**100.0**

Source: Field Data (2017)

4.3.11 Gestation in weeks at Delivery

Many 41 (60.3%) of the deliveries occurred between 37 and 39 weeks gestation while less than third 21 (30.9%) of the deliveries occurred at the 40 gestational weeks and above. For a few 3 (4.4%) deliveries occurred between 31to 33 weeks and a similar number occurred between 34 to 36 weeks.

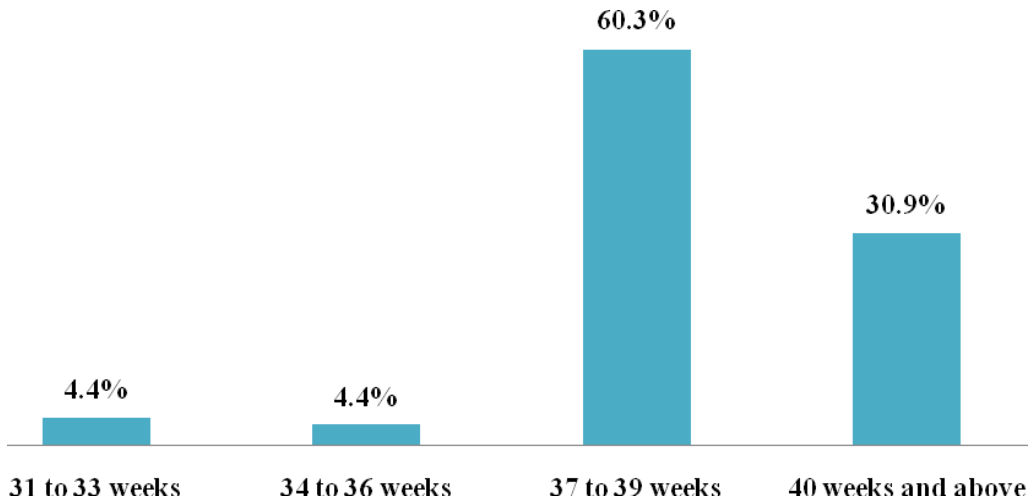

Figure 7: Gestation in weeks at Delivery

4.3.12 Weight of the Child at Birth

The study revealed that at birth over third 29 (39.7%) of the babies weighed between 3.1 and 3.5 kilograms while 14 (20.6%) weighed between 3.6 and 4.0 kilograms. A small proportion 4 (5.9%) of the babies weighed over 4.1 kilograms while 3(4.4%) weighed less than 2 kilograms. This indicates that, most of the children born were within the range of the normal weight. Which was 2.9 to 3.5 kilograms.

Table 11: Weight of the Child at birth

Weight	Frequency	Percent
Less than 2kilograms	3	4.4
2.1 to 2.5 kilograms	1	1.5
2.6 to 3.0 kilograms	17	25.0
3.1 to 3.5 kilograms	27	39.7
3.6 to 4.0 kilograms	14	20.6
4.1 kilograms and above	4	5.9
No response	2	2.9
Total	**68**	**100.0**

Source: Field Data (2017)

4.3.13 Multiple Births

Almost all 67 (98.5%) the babies were single birth and only 1(1.5%) was multiple births.

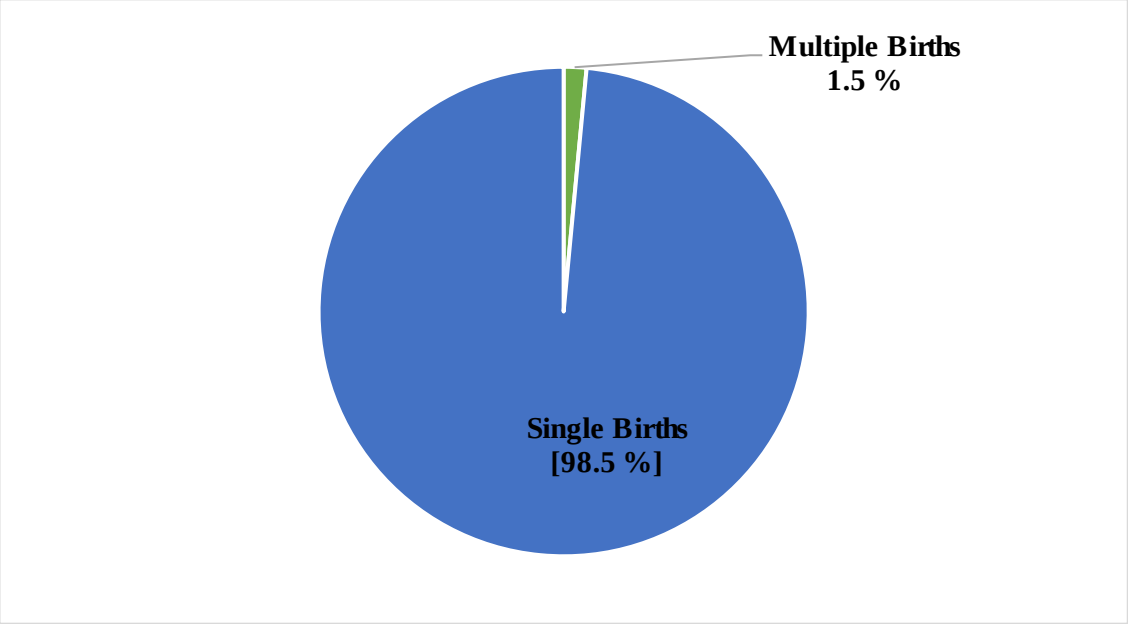

Figure 8: Nature Births

4.3.14 Medical Cover

Most 47 (69.1%) of the respondents had a medical cover while 20 (29.4%) did not have medical cover. One percent 1 (1.5%) of the respondents declined to respond to the question. This is an indication that, most of the respondents who accessed delivery services had a medical insurance cover to cater for expenses incurred during delivery.

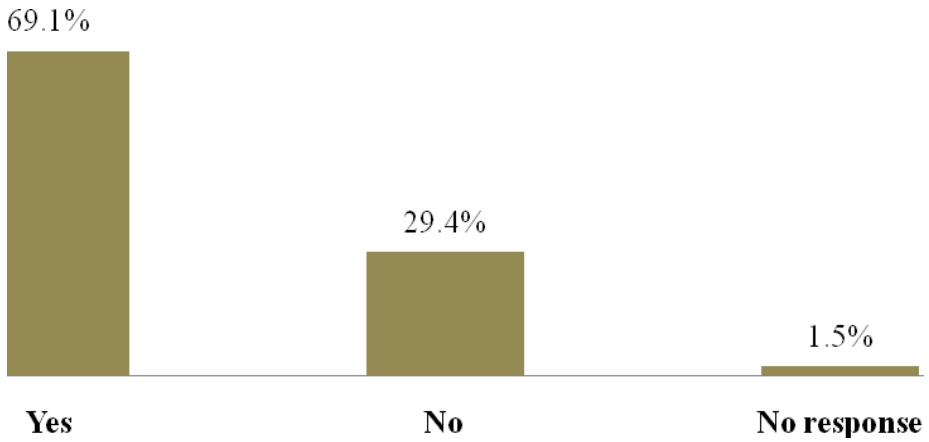

Figure 9: Medical Cover

4.3.15 Mode of Payment

Over half 38 (55.9%) of the respondents paid for their delivery services through the medical cover while 23(33.8%) paid by cash and 7(10.3%) partly paid through the medical cover and partly cash.

Table 12: Mode of Payment

Mode of Payment	Frequency	Percent
Cash	23	33.8
Medical insurance cover	38	55.9
Partly cash and partly insurance	7	10.3
Total	**68**	**100.0**

Source: Field Data (2017)

4.4 Decision Making On Mode of Delivery

4.4.1 Discussion on Mode of Delivery

Three quarters 52 (76.5%) of the respondents had discussed the mode of delivery with their partners prior to delivery while a quarter 16 (23.5%) had not.

Table 13: Choice on Mode of Delivery

Mode of Delivery Ever Discussed	Frequency	Percent
Yes	52	76.5
No	16	23.5
Total	**68**	**100.0**

Source: Field Data (2017)

4.5.2 Preferred Mode of Delivery

Normal delivery was preferred by 55 (81.0%) respondents of the partners who discussed the delivery mode while 13(19.0%) preferred C/S mode of delivery. This indicates that, though majority of the respondent delivered through C/S, most would have preferred to have a normal delivery.

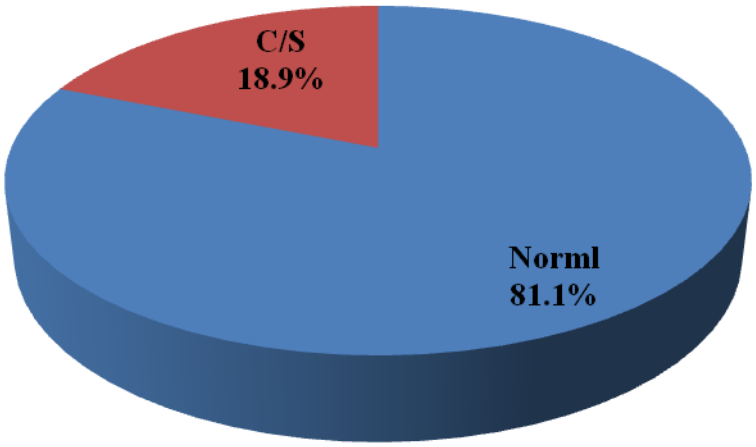

Figure 10: Preferred Mode of Delivery

4.4.3 Recommendation of the C/S Mode of delivery

Most 59 (86.8%) of the respondents reported the last mode of delivery was recommended by the doctor/health care provider while 5(7.4%) was self-recommended and 4(5.9%) was recommended by both partners.

Table 14: Recommendation of the Caesarean Section Mode of delivery

Mode of Delivery Recommendation	Frequency	Percent
Doctor/Health care provider	59	86.8
Self	5	7.4
Both me and my partner	4	5.9
Total	**68**	**100.0**

Source: Field Data (2017)

4.4.4 Authorization of the Caesarean Section Mode of Delivery

Over half 36 (52.9%) of the C/S deliveries were authorized by the doctors while 22(32.4%) were authorized by the respondent. Partners/husbands authorized 10(14.7%) of the C/S deliveries.

Table 15: Authorization for mode of delivery

Authorization of the C/S Delivery	Frequency	Percent
Doctor	36	52.9
Self	22	32.4
Husband/partner	10	14.7
Total	**68**	**100.0**

Source: Field Data (2017)

Over one third 47(69.1%) of the respondents reported they would prefer a normal delivery if they ever get pregnant in future while 20(29.15) would prefer C/S mode of delivery if they ever get

Pregnant in future. One (1.5%) respondent would have any mode of delivery. KII reviewed many of the C/S are decided upon by the health care givers as a result of obstetric indication. This further reviewed that mothers who have declined the health care providers' advice end up with poor delivery outcome

Table 16: Preferred Future Mode of Delivery

Mode of Delivery Recommendation	Frequency	Percent
Normal	47	69.1
C/S	20	29.4
any mode	1	1.5
Total	**68**	**100.0**

Source: Field Data (2017)

4.4.5 Reasons for Future Normal Delivery Preference

More than half 46(63.7%) of the respondents preferred normal delivery due to quick recovery while a quarter17 (25.8%) preferred normal delivery because it is safe, cheaper and less painful. While 7(10.6%) preferred normal delivery because of fewer complications

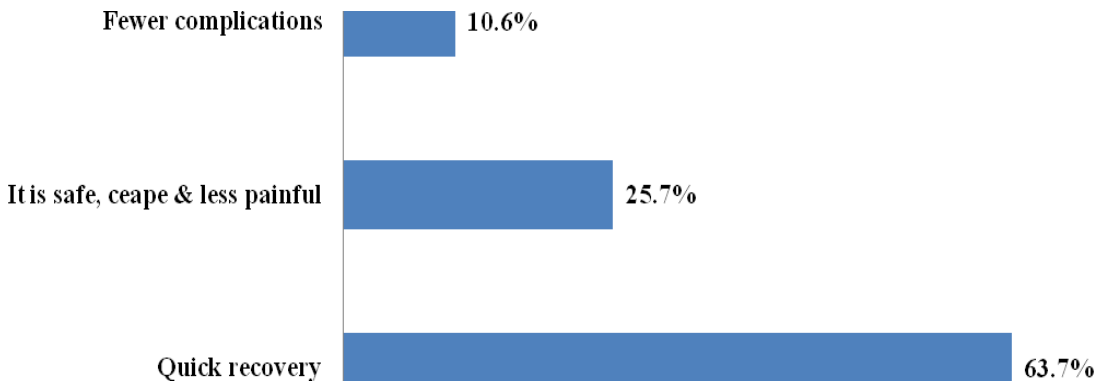

Figure 11: Reasons for Future Normal Delivery

4.4.6 Reasons for Future C/S Delivery Preference

Most 43 (63.0%) of the respondents who preferred C/S delivery in future reported previous C/S scar as the reason for the preference while 11(17%) indicated fear of labor pains as the reason for the C/S preference and 14(20%) exceeded time for trial of labor (ToL).

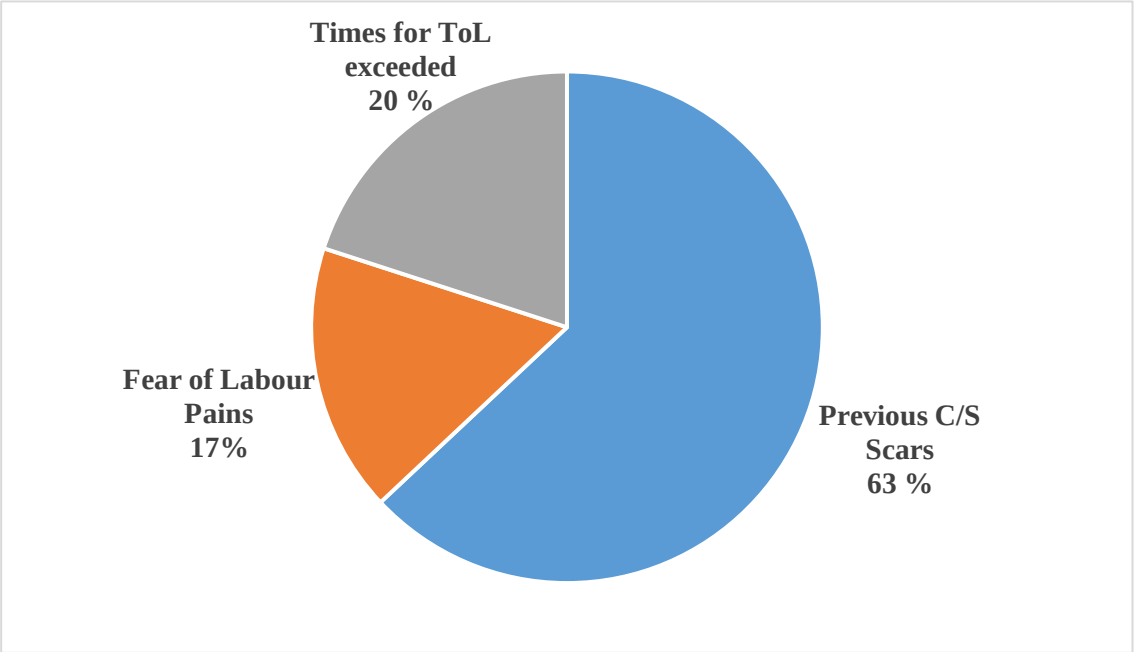

Figure 12: Reasons for Future C/S Delivery

4.5 Associations between Mothers' socio-demographic characteristics and uptake of caesarean section

Table 17 which starts from the previous page showed that there was a significant relationship between university level of education and preference of caesarian section as a mode of delivery (p=0.042, x2=1.3). However, there was no significant relationship between the other levels of education. The study also indicated that there was no significant relationship between the mothers' religion and choice of caesarian section as a mode of delivery (p=0.069, x20.069for protestants, p=9.86, x2=10.22 for Catholics, p=0.480, x2=3.07 for Muslims).

The Respondents' area of residence did not affect the choice of mode of delivery (p=0.459, x2=1.56 for urban estates within Nairobi, p=0.462, x2=1.544 for sub urban estates within Nairobi, p=0.375, x2=2.56 for the mothers living outside Nairobi. The study results demonstrated a significant relationship between being single and the choice of caesarian section as a mode of delivery (p=0.038, x2=.400). The other status of marriages did not demonstrate any significant relationship (p=0.459, x2=4.942 for married, p=0.695, x2=2.835 for divorced/separated). A significant relationship was observed between the respondents on formal employment and the uptake of caesarian section as a mode of delivery (p=0.034, x2=5.8). There was no relationship between the other forms of occupation and uptake of caesarian section as a mode of delivery (p=0.714, x2=6.3 for informal employment, p=0.635, x2=1.3 for self-employment and p=0.123, x2=1.6 for house wives).

The respondents earning between 40,000 and 60,000 demonstrated a significant relationship between occupation and the uptake of caesarian section as a mode of delivery (p=0.037, x2=2.56). The other levels of earning did not show any significant relationship between occupation and choice of caesarian section as a mode of delivery (p=0.459, x2=2.89 for those earning between 0 and 20,000, p=0.462, x2=2.93 for those earning between 20,000 and 40,000, p=0.716, x2=4.29 for the respondents earning between 60,000 and 80,000, p=0.513, x2=3.42 for the ones earning more than 80,000 per month). Results of the study showed a significant relation between the number of children born through caesarian section and the choice of CS as a mode of delivery (p=0.0001). The significant relationship was displayed for all the mothers irrespective of the number of children the mothers had delivered through CS.

Table 17: Relationship between the respondents' socio-demographic characteristics and choice of Caesarian section as a mode of delivery

Variables		No (%)	x^2 (df)	*P* – value
Education level	Secondary	8(11.8)	5.8 (2)	0.848
	College education	46 (67.6)	6.3(2)	0.055
	Other	14 (20.6)	1.3 (3)	0.042
	Total	**68 (100)**		
Residence	Urban estates within Nairobi	35 (51.5)	1.56(2)	0.459
	Sub urban estates within Nairobi	27 (39.7)	1.544(2)	0.462
	Outside Nairobi	6 (8.8)	2.56(1)	0.375
	Total	**n=68 (100)**		
Religion	Protestant	44 (64.7)	9.46 (4)	0.069
	Catholic	22 (32.4)	10.22(3)	0.986
	Muslim	2 (2.9)	3.07 (2)	0.480
	Total	**68 (100)**		
Marital status	Married	61 (89.7)	4.942(4)	0.459
	Single	6 (8.8)	5.400(4)	0.038
	Divorce/separated	1 (1.5)	2.835(2)	0.695
	Total	**68 (100)**		
Occupation	Formal employment	42(61.8)	5.8 (2)	0.034
	Informal employment	1 (1.5)	6.3(2)	0.714
	Self employed	22(32.3)	1.3 (3)	0.634
	House wife	3 (4.4)	1.6(3)	0.123
	Total	**68 (100)**		
Average income	0-20,000	10 (14.7)	2.89(2)	0.459
	20,001-40,000	9 (13.2)	2.93(2)	0.462
	40,001-60,000	25 (36.8)	2.56(1)	0.037
	60,001-80,000	10 (14.7)	4.29(3)	0.716
	Above 80,000	14 (20.6)	3.42 (4)	0.513
	Total	n=68 (100)		
Number of children borne through caesarian section	One	41(60.3)	28.936(4)	0.0001
	Two	20 (29.4)	32.821(3)	0.0001
	Three	6 (8.8)	23.274 (2)	0.0001
	Four	1 (1.5)	26.162(2)	0.0001
	Total	**68(100)**		

Source: Field Data (2017)

4.6 Adjusted associations between various Indications and uptake of CS as a mode of delivery

The study showed a significant relationship between previous scar (p=0.001, x2=30.024), failed induction (p=0001, x2=35.690), malpresentation (p=0.006, x2=27.681), previous bad outcome (p=0.0001, x2=7.632) and prolonged labour (p=0.0001, x2=8.39), and the uptake of caesarian section as a mode of delivery. The results also demonstrated a significant relationship between being hypertensive (0.0001, x2=9.34), gestational diabetes (p=0.0001, x2=5.98), cephalopelvic disproportion (p=0.0001, x2=2.56), and foetal distress (0.0001, x2=6.34) and the uptake of caesarian section as a mode of delivery. However, there was no relationship between mother's request (p=0.76, x2=3.103) and the uptake of caesarian section as a mode of delivery.

Table 18: Various Indications versus CS as a mode of delivery

Variables	**No (%)**	**x^2 (df)**	***P* - value**
Previous scar	12(17.6)	30.024 (10)	0.001
Failed induction	2(2.9)	35.690(10)	0.0001
Mal-presentation	17 (25.0)	27.681(3)	0.006
Previous bad outcome	2(2.9)	7.632(2)	0.0001
Fetal distress	13 (19.2)	6.34(2)	0.0001
Hypertension	4(5.9)	9.34(5)	0.0001
Cephalo-pelvic disproportion	6 (8.8)	2.56(1)	0.0001
Gestational diabetes	3(4.4)	5.98(4)	0.0001
Prolonged labour	8 (11.8)	8.39(6)	0.0001
Mother's request	1(1.5)	3.103(16)	0.76
Total	**68(100)**		

Source: Field Data (2017)

4.7 Adjusted associations between decision making process and uptake of CS as a mode of delivery

From the study results, there was no relationship between decision by the husband/ partner (p=0.654, x2=2.160), health care providers (p=0.709, x2=2.514), Self-decision (p=0.619, x2=2.252) and the couple together (p=0.243, x2=1.802) and the uptake of caesarian section as a mode of delivery.

Table 19: Decision making process and uptake of CS as a mode of delivery

Who made decision on the mode of delivery	**No (%)**	**x^2 (df)**	***P* - value**
Husband/partner	3(4.4)	2.160 (3)	0.654
Doctor/health care provider	59(86.8)	2.514(3)	0.709
Self-decision	5 (7.3)	2.252(2)	0.619
Both the mother and husband	1(1.5)	1.802(1)	0.243
Total	**68 (100)**		

Source: Field Data (2017)

4.8 Discussion of Findings

4.8.1 Socio-Demographic Characteristics

The study revealed that 51.5% of the respondents lived within Nairobi. However, the area of residence had no significant relationship to the choice of C/S as a mode of delivery (p=0.459, x for urban estates within Nairobi, p=0.462, x2=1.544 for sub urban estates within Nairobi, p=0.375, x2=2.56 for the mothers living outside Nairobi). This was contrary to a study carried out to describe the trends in and socio-demographic factors associated with caesarean section at a Tanzanian referral hospital between years 2000 to 2013 by Cecilie et al (2014) which established that urban mothers had a higher odds of CS. The study findings were different from the findings of another study by Kambale (2011) on the social predictors of caesarian section births in Italy which

revealed that place of residence as one of the social factors which was significant in predicting caesarian. The study results also contradict the findings of another study carried out to establish the determinants of caesarean section in Egypt, by Khawaja et al (2004) which established that mother's residence was an important determinant of caesarean section. The contradiction from the findings at The Mater Hospital could be explained by the fact that this is a private institution where most of its clients are sponsored by their employers who are distributed in various parts of the country. Others have insurance covers (either self or from the spouse), a situation which is not tied to the area of residence.

Majority of the respondents (67.6%) had attained College level of education and (20.2%) had university level education, although this level of education had no significant relationship ($p=0.055$, $x2=6.3$) to the choice of C/S as a mode of delivery. However, there was a significant relationship between university level of education and preference of caesarian section as a mode of delivery ($p=0.042$, $x2=1.3$). These findings corresponded to a study carried out by Gebremedhin (2014) on the trend and socio-demographic differentials of Caesarean section rate in Addis Ababa, Ethiopia, which established that caesarian section rates among women with secondary level of education or higher were nearly two times more than the rates among the illiterate women and those with primary level of education ($P<0.001$). Also, the findings were similar to those of a study on Caesarean delivery and its correlates in Northern Region of Bangladesh by Rahman et al (2015) which established that mothers with higher level of education were significantly predictors for delivery by C/S. The findings of this study were also supported by the information from the KII which also revealed that, C/S was highly noted in educated young mothers. However, these findings were in contradiction to the results of a study that had been carried out earlier out to describe

the trends in and socio-demographic factors associated with caesarean section at a Tanzanian referral hospital between 2000 to 2013 by Cecilie et al (2014), whereby mothers whose highest level of education was primary school showed a higher preference to having caesarian section compared to the mothers with the other levels of education. Most of the mothers in this study had a formal employment. This means that for them to qualify, they must have undergone some form of professional training in their area of employment. Most of these trainings are offered in colleges depending on individuals' carrier.

Despite the fact that majority (87.5%) of the respondents were married, there was no significant relationship between being married and the uptake of C/S as a mode of delivery (p=0.459, x2=4.942 for married, or divorced/separated). However, the study revealed that there was a significant relationship between being single and preference of C/S as a mode of delivery, contrary to the findings by of a study by Cecilie et al (2014) which was carried out to describe the trends in and socio-demographic factors associated with caesarean section at a Tanzanian referral hospital between 2000 to 2013 which showed that being married was associated with a higher odd of C/S compared to being single. The situation in this study may be explained by the fact that being in formal employment offers an individual a degree of self-determination, hence the husbands may have played the supportive role after the mothers had made a decision. This may be supported by the fact that most of the mothers still opted for normal delivery in their subsequent pregnancies.

Majority of the respondents (61.8%) were in formal employment, which also demonstrated a significant relationship to the uptake of caesarian section as a mode of delivery (p=0.034, x2=5.8). Contrary to these findings, a study carried out by Essex et al (2013) to determine the women who are at an increased risk of a caesarean section in

the UK showed that women from lower occupational status were at an increased risk of elective caesarean section. This could also explain the reason why there was a significant relationship of (30.9%) respondents who were in the salary scale between 40,000 and 60,000 and the uptake of caesarian section as a mode of delivery. Since (61.8%) of the respondents were in formal employment and earning more than 40,000/- they were also enrolled in a medical cover which catered for their medical expenses, hence less than half of the respondents paid for their delivery services through the medical insurance cover.

4.8.2 Indication of Caesarean Section

Less than half (47.1%) of the respondents indicated that, caesarean section mode of delivery was due to mother related indication while (42.6%) indicated baby related reasons. About (22.1%) indicated mal-presentation as the reason for the CS delivery. This indication had a significant relationship to the uptake of C/S as a mode of delivery.

Foetal distress had a significant relationship to delivery by C/S and this was reported in (19.1%) of the respondents. Having a previous C/S was demonstrated as significant influence to delivery by C/S ($p=0.001$, $x2=30.024$), and this was reported by (17.6%) of the respondents. This may also be the reason why the study showed a significant relation between the number of children born through caesarian section and the choice of CS as a mode of delivery ($p=0.0001$). These findings concur with Main et al (2011) study which argues that, with more women experiencing CS at the time of their first birth, there is a large proportion of women with a second or subsequent pregnancy occurring after previous CS. The researcher also stated that previous CS is the single largest contributor to the rise in caesarean deliveries amongst all other indicators. Similar findings were realized in a study by Penn and Ghaem (2010) who gave failure

to progress during labor (30%), previous caesarean section (30%), non-reassuring fetal status (10%) and fetal mal-presentation (11%) as the main indications of C/S.

Other reasons for caesarian section as indicated by the mothers showed a significant relationship to delivery by C/S. These included cephalo-pelvic disproportion (p=0.0001, x2=2.56) which was reported was by 7 (10.3%) of the respondents, hypertension (0.0001, x2=9.34) and reported by 4 (5.9%) of the respondents, failed induction (p=0001, x2=35.690) which was reported by 1(2.9%) of the respondents. Some of the mothers also gave such reasons like prolonged labour , previous bad outcome (p=0.0001, x2=7.632) and gestational diabetes as the indicators for caesarian section. However, there was no relationship between mother's request (p=0.76, x2=3.103) and the uptake of caesarian section as a mode of delivery.

4.8.3 Decision making on Caesarean Section Mode of Delivery

Three quarters (76.5%) of the respondents had discussed the delivery mode with their partners where majority (81.0%) preferred normal delivery. The fact that majority of the mothers opted for normal delivery, could be the reason why discussion with husband/partner on the mode of delivery had no relationship (p=0.654, x2=2.160) to the uptake of caesarian section as a mode of delivery. This is contrary to a study by Cury and Menezes (2006) on the factors associated with preference for cesarean delivery in Sao Paulo, Brazil which established that there was a significant relationship between husbands' income and uptake of caesarian section as a mode of delivery (p=0.006; OR=3.44; 95% CI: 1.38-8.33). Another contradicting study to these results was by Maharlouei et al (2013) which was carried out to determine the preference of Iranian women to have normal vaginal or cesarean deliveries which showed that mother's and husband's positive attitude toward caesarian section were determinant factors in choosing caesarian section as the mode of delivery . The study findings could also be

supported by the prior explanation that being in a formal employment confers an individual with a certain degree of autonomy whereby discussion with the partner/spouse/health care worker could just have been at the supportive level, of a decision already made.

In (86.8%) of the C/S deliveries, the respondents indicated they were recommended by the doctor/health care provider, despite the fact that this did not demonstrate any significant influence to choosing C/S as a mode of delivery. The study results showed that most of the mothers (63.7%) preferred normal delivery because it offered quick/short recovery time period. This preference explains why self-decision and decision by the couple together did not influence the uptake of caesarian section as a mode of delivery.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The findings of the study's particular goals and hypotheses are discussed in this chapter. The results of the study are discussed in this chapter, with special attention paid to the goals and research questions that were utilized as units of analysis. The data was analyzed, and the findings were compared to the empirical and theoretical literature that was accessible. The conclusion is closely related to the study hypotheses as well as the particular objectives/research questions. The conclusions and discussion of the results led to the recommendations.

5.2 Summary of Findings

The study sought to investigate the determinants of C/S mode of delivery at The Mater Hospital Nairobi among mothers aged between 18-49 years who have had a caesarean section in the last one year. Specifically, the study considered Socio-demographic characteristics which influence the C/S as a mode of delivery, the indications of C/S and the decision making process on C/S as a mode of delivery at the Hospital

The study adopted a facility based cross section-sectional descriptive study. A sample of 100 respondents was selected using random sampling approach, with three areas of focus, the social demographic characteristics, the indications of C/S and the decision making process.

The study findings showed that there is a significant relationship between the mothers' social demographic characteristics and the preference of caesarean section as a mode of delivery at The Mater Hospital.

5.3 Conclusions

The determinants of caesarian section as a mode of delivery at the Mater hospital include level of education, marital status, employment status and the level of income. Other determinants include mal-presentation, foetal distress, Previous C/S scar, cephalo-pelvic disproportion, hypertension, failed induction, prolonged labour, previous bad outcome and gestational diabetes.

From the study findings, it was evident that there was a significant relationship between the mothers' socio-demographic characteristics and the preference of caesarian section as a mode of delivery. Therefore, the researcher has rejected the null hypothesis that had indicated that there is no relationship between the respondents' social demographic characteristics and the choice of C/S as a mode of delivery at The Mater Hospital.

5.4 Recommendations

According to the first objective the study revealed significant relationship between the social demographic characteristics and preference of caesarean section as a mode of delivery at the Mater Hospital. The policy makers need to come up with effective plans and strategies to address this with the intention to reduce the high elective C/S deliveries in the facility. Health talks with topics that explain the advantages of virginal deliveries as compared to caesarean section need to be given early during the antenatal visits.

Since half of the C/S deliveries in the Hospital were mother indicated, the hospital needs to initiate programmes to mitigate against C/S deliveries that can be prevented, especially during the pregnancy. Pregnant mothers need to be well informed about what they can do to minimize C/S deliveries. With the modern and improved technology for labour monitoring, the healthcare providers and the Hospital Management Team also

need to educate and encourage mother on trial of labour (ToL) after previous C/S mode of delivery. This study is a milestone for future research in this area, particularly in ways and means of addressing the high C/S prevalence in the hospital. Since this study focused on determinants C/S delivery in The Mater Hospital in Nairobi County, generalizations cannot adequately be extended to other counties. Previous C/S scar was a high indicator of repeat caesarean section mode of delivery, a study on indications of first caesarean section would shed more light. Based on this fact, it is therefore, recommended that a broad based study covering other hospitals with relatively high C/S prevalence in Kenya be done to find out the determinants of high C/S deliveries that is above the recommended WHO proportion.

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APPENDICES

Appendix I: Consent form

Good morning/good afternoon;

My name is ……. I am currently pursuing a Post Graduate Degree in Nursing Midwifery option. I am conducting a survey on the determinants of Caesarean Section (C/S) as a mode of delivery among mothers who have had C/S and those seeking maternal and child services health at Mater Hospital as well as the health care providers in the Maternity department. The session will last about 10 to 15 minutes. Whatever information you give will be kept private, will not be shared with anyone else, and will only be used for the reason for which it was provided.

This survey is completely optional, and if you don't want to answer a question, simply let me know and I'll go on to the next one; or you may end the interview at any moment. However, I hope you will take part in the survey since your opinions are vital.

This research and its procedures have been approved by appropriate bodies Research and Ethics Committee of Mount Kenya University and the Mater Hospital Health Management Team.

RESEARCHER / ASSISTANT

I have discussed the above information with the respondents and it is my opinion that she understands the obligations involved in participating in this research study.

NAME---------- SIGNATURE---------- DATE----------

RESPONDENTS DECLARATION

I understand that my participation in this research study is voluntary and I may refuse to participate or withdraw my consent at any time without any consequences, I hereby freely give my consent to take part in this research study.

Respondent’s Signature ---------- Date----------

Appendix II: Questionnaire

Determinants of C/S at The Mater Hospital

Demographic Characteristics of the Respondents

1. Where do you reside? _____ estate
2. What is your Religion
    i. Protestants [ ]
    ii. Catholic [ ]
    iii. Muslim [ ]
    iv. None [ ]
    v. Others (specify) …….
3. From the following select your Level of formal education
    i. No formal education [ ]
    ii. Primary level [ ]
    iii. Secondary level [ ]
    iv. College level [ ]
    v. Others (specify) …….
4. Select one of the following to indicate your marital status?
    i. Married [ ]
    ii. Single [ ]
    iii. Divorced/separated [ ]
    iv. Widowed [ ]
    v. Others (specify) …….
5. Select one of the following to indicate your Main occupation
    i. Formal employment [ ]
    ii. Informal employment [ ]
    iii. Business [ ]

iv. Self-employed [ ]

v. Others (specify) …….

6. From the following list select your average income per month

i. 0 to 20,000 Kshs.

ii. 20,001 to 40,000 Kshs.

iii. 40,001 to 60,000 Kshs.

iv. 60,001 to 80,000 Kshs.

v. Above 80,001 Kshs.

C/S Indications

7. How many children have you ever given birth to? _____

8. How many children were born through C/S(frequency)?

9. What are the gender and mode of delivery of your children?

Number Of Children Ever Born	**Gender (Boy = B Girl = G)**	**Mode Of Delivery (Caesarean = C Normal = N)**	**Single or Multiple delivery (Single = S Multiple M)**
Child one (1st born)			
Child two (2nd born)			
Child three (3rd born)			
Child four (4th born)			

10. What was the nature of your last C/S delivery?

i. Emergency [ ]

ii. Elective [ ]

11. Was the C/S delivery recommended due to mother or the baby related reasons?

_____

12. What was the reason that warranted C/S mode of delivery?

_____

_____

_____

13. Did your last baby have any deformity/abnormality at birth? _____
14. At what age did you deliver your first child? _____ years
15. What was the mode of delivery of your first-born child?
    i. Normal/Vaginal delivery [ ]
    ii. C/S delivery [ ]
16. What was your age during your last C/S delivery? _____ years
17. What was the age (gestation) on your pregnancy during your last C/S delivery? _____ weeks
18. What was the weight of your last child in kilograms/pounds? _____
19. Was your last delivery more than one baby? _____ If yes how many? _____
20. Did you have a medical insurance cover during your last C/S delivery? _____
21. How did you pay the hospital bill during the last delivery?
    i. Cash…….
    ii. Medical insurance……
    iii. Other specify……

Decision Making on Mode of Delivery

22. Have you and your partner ever discussed the mode of delivery for your child? _____
23. If yes what was the preferred mode of delivery? _____
24. In your last pregnancy, who recommended for C/S? _____
25. Who authorized for C/S? _____
26. In your opinion, which mode of delivery would you prefer if you ever become pregnant again in future? _____
27. Give reasons for the above preferred choice of delivery mode .

Thank you very much for participating

Appendix III: Kiswahili Version of Questionnaire

Vigezo vya upasuaji katika hospitali ya Mater

Sifa ya idadi ya wajibiwa

1. Wewe ni mkaazi wa mtaagani? Mtaa wa _____
2. Katika orodha ifuatayo chagua dini ulifuatalo
    i. Kiprotestanti [ ]
    ii. Katoliki [ ]
    iii. Muislamu [ ]
    iv. Hamna [ ]
    v. Nyinginevyo (eleza) …….
3. Katika orodha ifuatayo chagua kiwango chako cha elimu
    i. Hakuna elimu rasmi[ ]
    ii. Shule ya msingi [ ]
    iii. Shule ya upili [ ]
    iv. Chuo Kikuu [ ]
    v. Nyinginezo (eleza) …….
4. Katika orodha ifuatalo chagua hali yako ya ndoa?
    i. Ndoa [ ]
    ii. Bado haujafunga ndoa [ ]
    iii. Talaka/Kutengwa[ ]
    iv. Mjane [ ]
    v. Nyinginezo (eleza) …….
5. Chagua moja kuonyesha kazi yako rasmi?
    i. Ajira rasmi [ ]
    ii. Kutoajiriwa rasmi [ ]
    iii. Mwana biashara [ ]

iv. Kujiajiri [ ]

v. Nyinginezo (eleza) ……..

6. Katika orodha ifuatayo chagua mapato yako ya kila mwezi

i. Kati ya shillingi 0 na 20,000/-

ii. Kati ya shillingi 20,001 na 40,000/-

ii. Kati ya shillingi 40,001 na 60,000/-

iv. Kati ya shillingi 60,001 na 80,000/-

v. Kutoka shillingi 80,001/ na Zaidi

Ueneaji wa upasuaji

7. Umezaa watoto wangapi? _____

8. Watoto wako ni wa jinsi gani na ulitumia jinsi gani ya kuwazaa

Watoto kamili kuzaliwa	**Jinsiya (kiume = B Kike= G)**	**JinsiayaKuzaa (upasuaji = C Kawaida = N)**	**Mmoja au Pacha au zaindi**
Mtoto wa kwanza			
Mtoto wa pili			
Mtoto wa tatu			
Mtoto wa nne			

9. Je, upasuaji wako wamwisho wa kujifungua ulikuwa wa ainagani?

vi. Lazima [ ]

vii. Kupenda kwako [ ]

10. Je,upasuaji wako wa mwisho ulikuwa wakupangwa au wadharura? _____

11. Je,Upasuaji ulifanywa kwa manufaa ya mama au ya mtoto? _____

12. Chanzo cha kulazimisha kutumika kwa upauasji kama jinsi yakuzalisha? Sababu ya kuchagua upasuaji kama njia ya kujifungua ni nini?_____

_____

_____

13. Je mtoto wako wa mwisho alikuwa na ulemavu wowote wakati wa kuzaliwa? _____

Sababu za upasuaji

14. Ulimzaa mtoto wako wa kwanza ukiwa na umri wa miaka mingapi? _____

15. Mtoto wako wa kwanza alizaliwa kupitia jinsi gani?

i. Kuzaliwa kawaida [ ]

ii. Kupitia upasuaji wa tumbo [ ]

16. Wakati wa upasuaji wako wamwisho ulikua na umri wa miaka mingapi? _____

17. Katika upasuaji wako wa mwisho, mimba yako ilikuwa imekaa muda gani? Wiki ngapi _____

18. Ni nini kilikuwa chanzo cha kuzaa na njia ya upasuaji? _____

19. Mzaliwa wako wa mwisho alikuwa na uzito gani? Kilo/ratiri _____

20. Kuzaa kwako mwisho,ulizaa watoto Zaidi ya mmoja? _____

Kama ndio, walikuwa wangapi? _____

21. Ulikuwa na bima ya afya ulipozalisha motto wa mwisho? _____

22. Ulitumia aje ada za hospitali ulipozalisha wamwisho?

i. Pesa Taslimu……

ii.Bima ya afya……

iii. Nyinginezo(elezea)……..

Uamuzi kuhusu njia ya kujifungua.

23. Umewahi kuwa na mazungumzo na mumewo kuhusu jinsi ya kuzalisha? _____

24. Kama umewahi kuwa na mazungumzo, ni jinsi ipi mlio ipendelea wakati wa mwisho? _____

25. Kwa mimba yako ya mwisho ni nani alionelea ni vizuri upasuriwe? _____

26. Ni nani alipeana ruhusa upasuliwe?

27. Kwa maoni yako, ni njia gani yaku zaa ungependelea kama ungepata mimba siku za usoni?

…….

28. Peana sababu za kuchagua njia ambayo umechagua kwa swali ile umenjibu hapo mbeleni ya mapendeleo ya njia ya uzazi

i. _____

ii_____

iii_____

Appendix IV: Key Informant Interview- Doctor/Consultant , Midwife (tick appropriate)

Prevalence of C/S

1. How would you describe the prevalence of C/S

Social demographic characteristics

2. How would you describe the social demographic characteristics of the women who have had caesarean section as mode of delivery?

Decision making on mode of delivery

3. What is your experience on decision making on caesarean section as mode of delivery?

Relationship between the mode of delivery and the outcomes

4. What is the relationship between the mode of delivery and delivery outcome?

Appendix V: Certificate of Ethical Clearance REF NO.MKU/ESR/0031

Mount Kenya University

NOVEMBER 13, 2017

Ref. No. MKU/ERC/0031

CERTIFICATE OF ETHICAL CLEARANCE

This is to certify that the proposal titled **"DETERMINANTS OF CAESAREAN SECTION AT THE MATER HOSPITAL"**, whose Principal Investigator is Ms Margaret Wambui Thagichu (MSCN/2013/40046) has been reviewed by Mount Kenya University Ethics Review Committee (ERC), and found to adequately address all ethical concerns.

Mr Francis W. Makokha
Secretary, Mount Kenya University ERC

Sign: _____ **Date:** 13/11/2017

Prof. Francis W. Muregi
Chairman, Mount Kenya University ERC

Sign: _____ **Date:** 13·11·2017

The Chairman
Mount Kenya University
Ethics Review Committee
P. O. Box 342 - 0100, Thika

Appendix VI: Introduction Letter from School of Postgraduate Studies

Mount Kenya University

SCHOOL OF POSTGRADUATE STUDIES

REF: MSCN/2013/40046

6th April, 2017

The Director, Research Coordination Division
National Commission for Science, Technology & Innovation
Utalii House, 8th & 9th Floor
P.O Box 30623- 00100
Nairobi

Dear Sir/Madam,

RE: MARGARET WAMBUI THAGICHU – REGISTRATION NO. MSCN/2013/40046

The purpose of this letter is to introduce the above named student who is pursuing **Master of Science in Nursing – Midwifery Option** in the Department of **School of Nursing** in the School of **Nursing.**

The title of his project is *"Determinants of Caesarean Section at the Mater Hospital."*

She has been cleared by the University's Ethics Review Committee (Certificate attached) and now has to proceed to the field to collect data for her research project in the course of this semester **(April - June 2017).**

Any assistance accorded to her will be highly appreciated.

Thank you.

Mount Kenya University
Dean, School of Postgraduate Studies
P. O. Box 342 - 01000
Thika

Dr. Samuel Karenga
Dean, School of Postgraduate Studies

Enc

Appendix VII: Research Ethical Authorization by NACOTSI

NATIONAL COMMISSION FORSCIENCE, TECHNOLOGY ANDINNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax: +254-20-318245,318249
Email: dg@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

NACOSTI, Upper Kabete
Off Waiyaki Way
P.O. Box 30623-00100
NAIROBI-KENYA

Ref. No. **NACOSTI/P/17/12757/17057** Date: **27th November, 2017**

Margaret Wambui Thagichu
Mount Kenya University
P.O. Box 342-01000
THIKA.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Determinants of ceaserean section at the mater hospital"*** I am pleased to inform you that you have been authorized to undertake research in **Nairobi County** for the period ending **24th November, 2018.**

You are advised to report to **the County Commissioner, the County Director of Education and the County Director of Health Services, Nairobi County** before embarking on the research project.

Kindly note that, as an applicant who has been licensed under the Science, Technology and Innovation Act, 2013 to conduct research in Kenya, you shall deposit **a copy** of the final research report to the Commission within **one year** of completion. The soft copy of the same should be submitted through the Online Research Information System.

GP Kalerwa

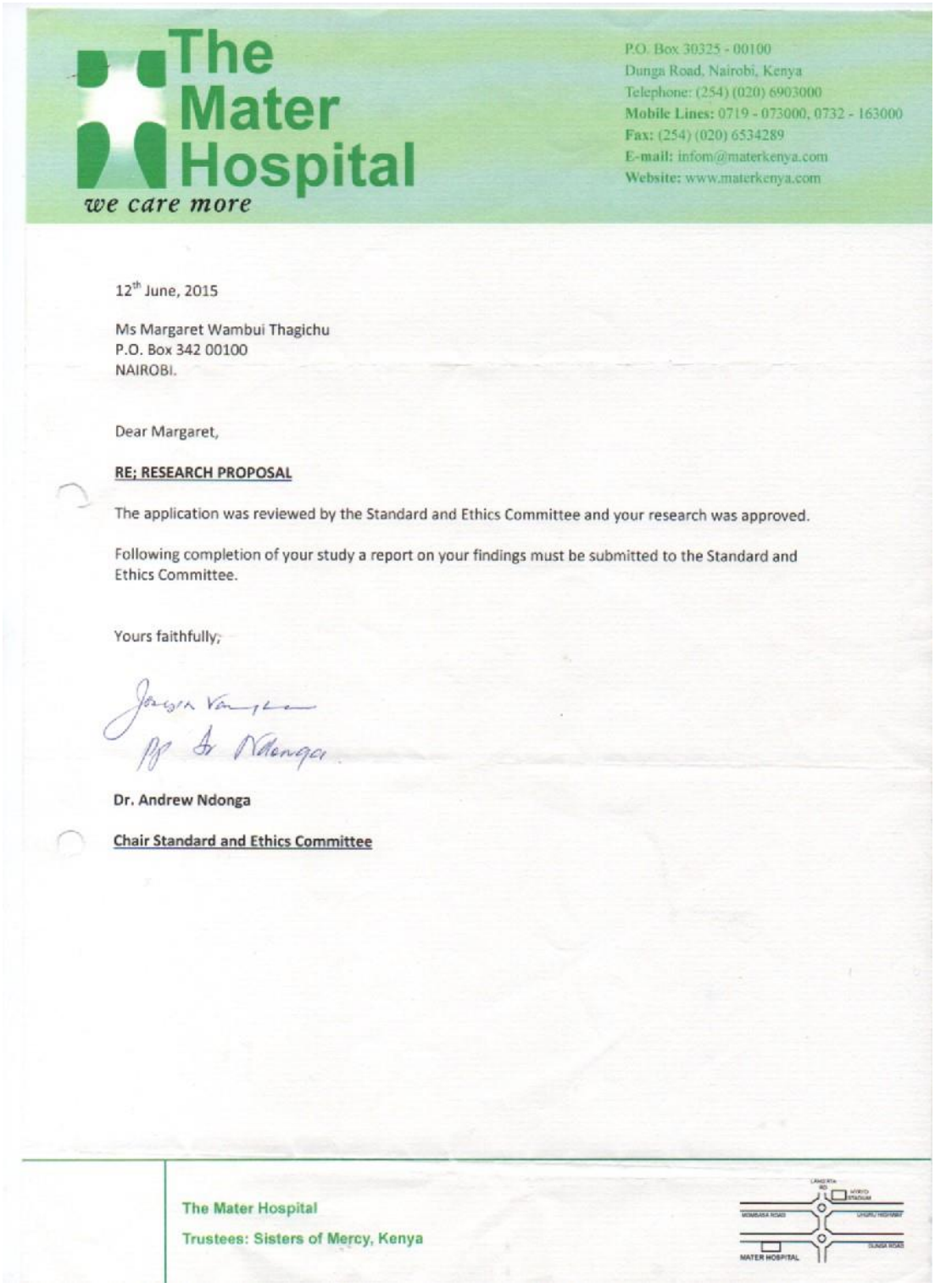
GODFREY P. KALERWA MSc., MBA, MKIM
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nairobi County.

The County Director of Education
Nairobi County.

Appendix VIII: Research Approval by The Mater Hospital Nairobi



The Mater Hospital
we care more

P.O. Box 30325 - 00100
Dunga Road, Nairobi, Kenya
Telephone: (254) (020) 6903000
Mobile Lines: 0719 - 073000, 0732 - 163000
Fax: (254) (020) 6534289
E-mail: infom@materkenya.com
Website: www.materkenya.com

12th June, 2015

Ms Margaret Wambui Thagichu
P.O. Box 342 00100
NAIROBI.

Dear Margaret,

RE; RESEARCH PROPOSAL

The application was reviewed by the Standard and Ethics Committee and your research was approved.

Following completion of your study a report on your findings must be submitted to the Standard and Ethics Committee.

Yours faithfully;

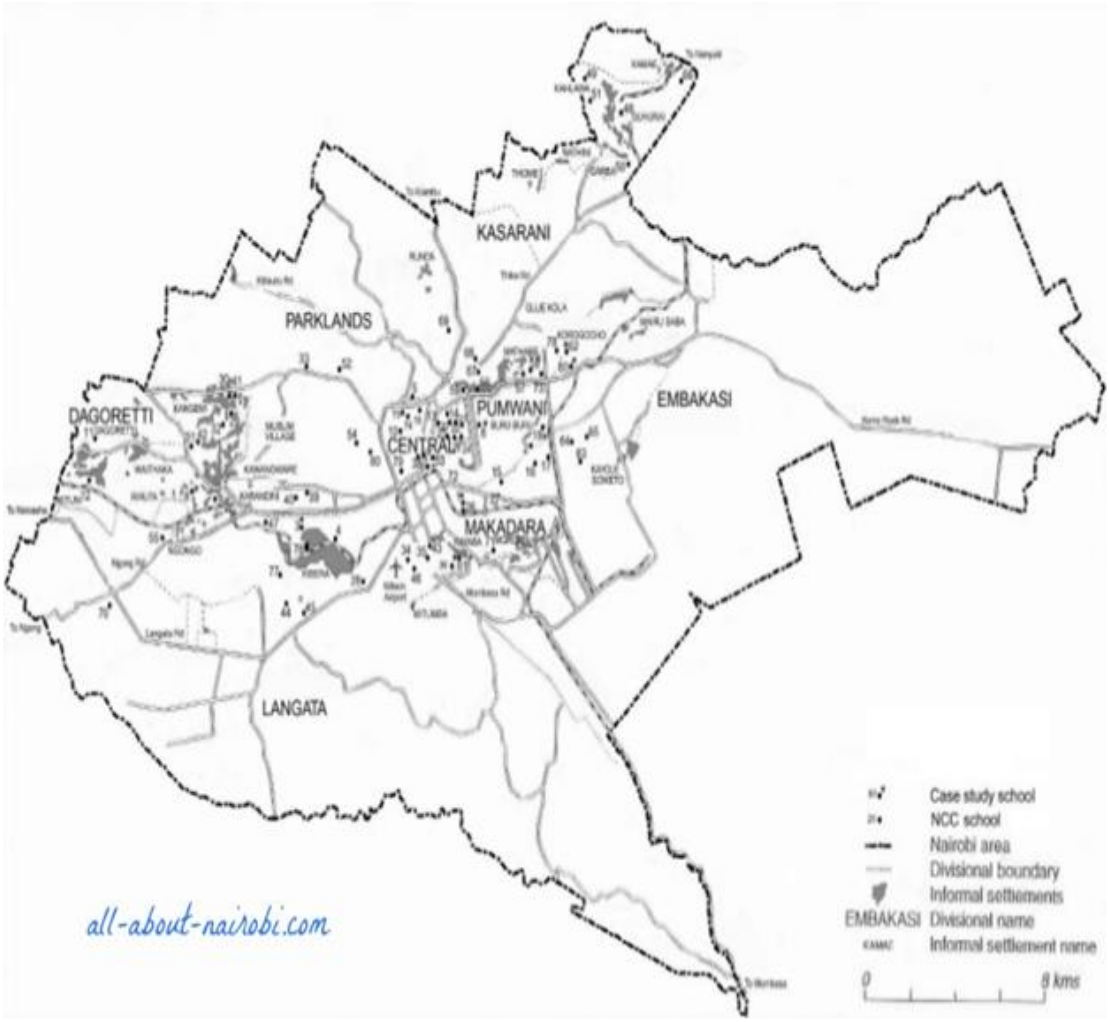
Dr. Andrew Ndonga

Chair Standard and Ethics Committee

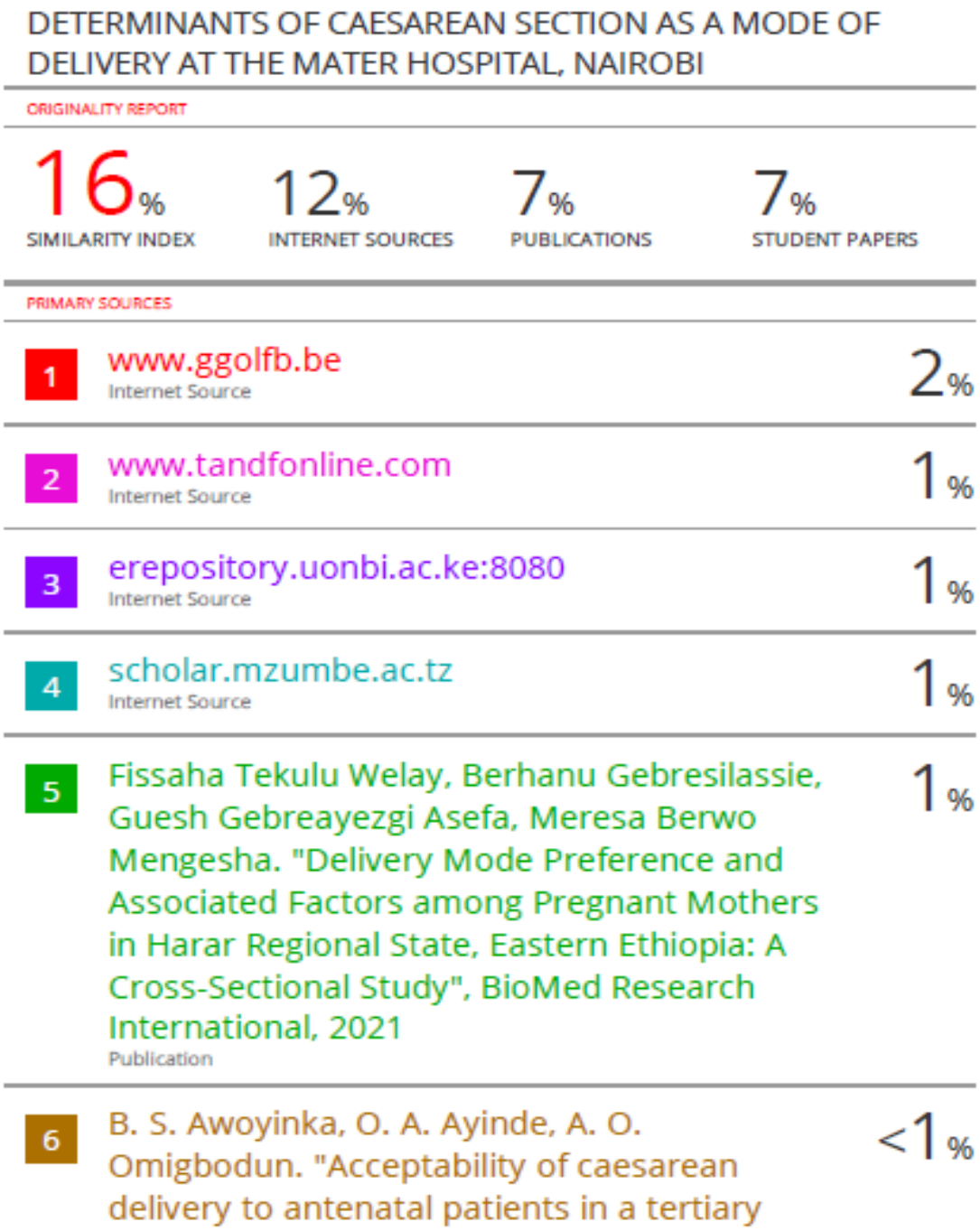
The Mater Hospital
Trustees: Sisters of Mercy, Kenya

Appendix IX: Map Nairobi County

Makadara Constituency-Location of The Mater Hospital



Appendix X: Similarity Index



DETERMINANTS OF CAESAREAN SECTION AS A MODE OF DELIVERY AT THE MATER HOSPITAL, NAIROBI

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