

A RETROSTPECTIVE STUDY ON THE FACTORS INFLUENCING THE CHOICE
OF ANESTHESIA TYPE FOR MOTHERS WHO UNDER WENT CESAREAN
SECTION IN GHANDI MEMORIAL HOSPITAL FROM YEAR 2010-2012.

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JIMMA UNIVERSITY
COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCE
DEPARTEMENT OF ANETHESIOLOGY.

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ABSTRACT

BACK GROUND : there are many factor influencing the choice of anesthesia type for cesarean section .some of these are urgency of c/s ,maternal and fetal condition.willingess of mother, experience of the anesthetists and availability of all anesthesia equipment.

OBJECTIVE: To assess the factors influencing the choice of anesthesia type for mothers who underwent c/s.

METHOD:A cross sectional study was conducted using a systematic sampling technique from April 5 to 15 ,2013 on factors influencing the choice of anesthesia type for mothers who underwent c/s in ghandi memorial hospital in specified study period. data was collected retrospectively from patient card and anesthetic chart and data was analyzed by using scientific calculator.

RESULT: The finding of study shows that, out of total pregnant mother underwent c/s 58% delivered under spinal anesthesia. half of them 50% were in age range 26-30 years. Emergency c/s account 78% out of this 70.6% delivered under spinal anesthesia. Almost all of them had no complication.pre operatively 74% of mother stable ,out of this 98% of c/s done under spinal anesthesia and 2.4% had APH all of delivered under general anesthesia.

CONCULSION AND RECOMMENDATION: according the study, high percent of spinal anesthesia administered for c/s .therefore alternative regional anesthesia administered like epidural anesthesia should be given to reduce maternal complication.

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LIST OF ACRONYMS AND ABBREVIATIONS

ANC: anti natal care

APH: anti parietal hemorrhage

C/S: cesarean section

GA: general anesthesia

IUFD: intra uterine fetal death

JUSH: Jimma University specialized hospital

PIH: pregnancy induced hypertension

RA: regional anesthesia

SRP: Student research program

CHAPTER ONE

INTRODUCTION

1.1 Back ground

During most of 19th century physician perform very few c/s because the mortality rate was high due to infection and hemorrhage. In 1910 J. Whitridge of John Hopkins still called cesarean section is a dangerous procedure despite the fact that maternal mortality rate had fallen to 10%. he performed it only for most severe cases of contracted pelvis (1).

The philosophy of obstetric management changed in early decades of the 20th century and this had a profound effect on the use of obstetric anesthesia. Until 1900 obstetricians considered that child birth as a physiologic process and best left to proceed without the interference of physician or midwives. However, a new generation of obstetrician concerned about high rate of complication associated with routine deliveries, began to advocate more active management of child birth. They envisioned the practice of obstetrics as a form of preventive medicine and it becomes strong advocates for the routine use of episiotomy, forceps delivery and manual removal of the placenta. These measures also necessitated greater use of anesthesia (2,3)

The anesthetic technique for c/s also involved slowly regional anesthesia was not available before 1900. Only in the past few decades have been incentive to develop better anesthetic technique for c/s. The reason for these were obstetrician began to perform c/s more often to deal with fetal and maternal problems. Physician develop better understanding of physiology of pregnancy, especially the nature of risk associated with anesthesia and anesthesiologists and obstetricians began to place a great care on the well being of the neonate and mothers (4,5).

CHAPTER TWO

2. Statement of problem

Cesarean birth has become the most common hospital based operative procedures in USA and account for more than 25% of all live births. Increased use of the procedures has been attributed to liberalization of indication for fetal distress as well as elective repeated c/s . the most common indication for c/s includes failure to progress of labour ,non reassuring fetal and previous uterine surgery .the choice of the anesthesia also other common problem faced during c/s which depend on the degree of urgency , maternal and fetal status ,the experience of anesthetist and desires of the patient(6).

Regional anesthesia for c/s has dramatically increased and data since 1997 suggest that the use of general anesthesia for c/s has been steadily decreased in the USA.A recent found that anesthesia related maternal mortality associated with RA has declined but the number of death involving general anesthesia has remain constant. Thus the relative of fatality during GA has higher than RA.The study done on the anesthesia related death in USA between 1979 and 1990 revealed that case fatality rate with GA was 16.7 times greater than with RA.The most anesthesia related to hypoxemia secondary to difficulty of securing air way. The experience of the anesthetist is also a also key factor in anesthetic related maternal mortality .a recent study reviewing a 17 year experience in teaching hospital reported that most cases of failed intubation occurred when patient were cared by less experience anesthetists(7,8).

Although the use of general anesthesia for cesarean delivery has dramatically decreased during recent decade ,it is still necessary for the management of several situations, including maternal hemorrhage ,overt coagulopathy ,life treating fetal compromisation and case in which patients refused regional anesthesia(9).Therefore the purpose of this study was to investigate the factors influencing the choice of anesthesia type for mothers who underwent C/S in Ghandi Memorial Hospital

CHAPTER THREE

3.1 LITERATURES REVIEW

The retrospective study conducted at maternity hospital Thapathali, Kathmandu from April 2005 to 2006 shows that out of total 2044 cases who underwent c/s, most of patients fell on age group in 21-25 years which account (41.48%) age group between 26-30 year account (25.08%) and group between 14-20 account (15.65%). Out of the total case 2044 (97.01%) underwent emergency cesarean section while (2.98%) under elective cesarean section. The type of anesthesia given during this period were, spinal anesthesia (79.84%), general anesthesia account (19.66%) and epidural anesthesia accounts (0.48%)(10).

A retrospective analysis of c/s in Orettea maternity hospital in Eritrea in 2007 showed that out of the total 8293 deliveries, cesarean section account (11.2%) out of these elective c/s account (7.8%) and (92.2%) were emergency c/s. The type of anesthesia given were general anesthesia (63.6%) and spinal anesthesia (36.4%)(11).

The survey done on 621 obstetric unit in France in 2005 showed that the type of anesthesia technique used for c/s during this period were spinal anesthesia (92.5%), epidural anesthesia (4.5%), combined epidural and spinal (2%) and general anesthesia (1%)(12).

The study done in Japan shows that that complication of general anesthesia for cesarean section remain the leading causes of anesthetic related death and hence spinal anesthesia was first choice for c/s (13).

The study done at Tikur Anbessa teaching hospital in 1991 to 1992 out of the total deliveries of 3237, (10%) were c/s. Among these c/s (82%) were emergency C/s and (18%) were elective c/s. The ages group of these mother were, <20 years of account (58%), between 20-30 years account (57%). During this study period there were five maternal death among women who underwent c/s.

The major cause of maternal death were failure to control bleeding and the major complication of cesarean section were APH (11%) and PIH account (10%)(14).

The second national survey of French in 1999 indicate aspiration of gastric contents were one of the major complication in relation with the practice of anesthesia. This study shows that there were 83 cases death related to aspiration, which means 1/5th of death related completely or partially to anesthesia .the aspiration almost always occurred during indication of anesthesia.(15)

The study done at the university of Benin teaching hospital for a 10 years period on c/s,out of 2686 women who delivered by c/s ,78.3%had emergency c/s while 21.7%had elective c/s of those 96.7% had taken GA and 3.3% had taken RA.anesthtetic related death during this period were account for 27.3% while none anesthetic factor accounts 72.2% of deaths .(16)

Study done in Norway in April 2003 shows that out of 27 78 deliveries ,c/s accounts 69.7% out of this emergency c/s accounts 64 .3% while elective c/s accounts 5.4%, the common indication for c/s during this period were fetal distress(21.9%), Pre eclampsia (6.2%) and maternal request (7.6%).(17)

The study done in Thailand in 2010 On anesthetic related compilation of cesarean delivery on 6697 cases identified the commonest anesthetic related adverse effect (complication).this complication were desaturation which account 13.8 %,cardiac arrest accounts 10.2%,awereness accounts 6.6% and death accounts 4.8% out of the 6697 cases 17.5%had pre eclampsia/eclampsia and 76.6% presented for emergency c/s GA was used in 68.4% and SA was used in 30%. There were 8 maternal death during this period including 5 with GA.(18)

Although the rates for cesarean sections have been constant, the use of general anesthesia has decreased progressively. Maternal mortality associated to general anesthesia during cesarean section has dropped to practically the same level as regional anesthesia: 1.7 (95% CI, 0.6–4.6). Mortality is lower with regional anesthesia: less bleeding, lower risk of surgical site infection, less post-operative pain(19).

3.2 Significance of the study

In Ethiopia there were many research done on c/s however the study would not include the choice of anesthesia for c/s. The aim of this study is to evaluate this problem and to fill this gap, to inform the anesthesia professionals to choose appropriate type of anesthesia for mother who underwent c/s, to decrease maternal morbidity and mortality due to inappropriate choice of anesthesia. The study was give recent information to Ghandi memorial hospital on the choice of anesthesia type for c/s which serves us as base line information for further similar study.

CHAPTER FOUR

4. OBJECTIVE

4.1 General Objective

To assess the factors influencing the choice of anesthesia type for mothers who underwent C/S in Gandhi Memorial Hospital

3.2 Specific Objectives

1. To determine the types of anesthesia given for C/S.
2. To identify the factors influencing the choice of anesthesia type for mothers who underwent C/S.
3. To assess anesthetic related complications

CHAPTER FIVE: METHODOLOGY

5.1 Study area and Period

The study was conducted in Ghandi Memorial Hospital which is found in ADDIS ABEBA, central ETHIOPIA. The hospital has only department obstetrics and gynecology. The study was conducted on the clinical record of obstetric client who underwent c/s in Ghandi memorial hospital from January 1, 2010 to December 31, 2012.

5.2 Study design

A cross sectional study was conducted on the factors influencing the choice of anesthesia type administered for C/S.

5.3 Population

5.3.1 Source Population

All obstetric deliveries conducted in Ghandi Hospital within two years from January 1, 2010 to December 31, 2012.

5.3.2 Study Population

All obstetric deliveries done under c/s in ghandi hospital within two years from January 1, 2010 to December 31, 2012.

5.3.3 Study unit

Each patient who deliver by c/s in ghandi hospital within two years from January 1, 2010 to December 31, 2012.

5.4 Sample Size

The sample size was determined by using the following formula

$N = Z^2 \frac{P(1-P)}{D^2}$ where n=sample size, z-score value at confidence interval(1.96)

P=prevalence of c/s(0.5)

D=Margin error (5%) or 0.05

$N = (1.96)^2 \frac{(0.5)(0.5)}{(0.05)^2}$

N=384

5.5 sampling technique

Systematic sampling was used to be the study population.

5.6 study variable

5.6.1 Independent variable

- age
- urgency of condition
- fetal condition
- complication

5.6.2 Dependent variables

- anesthesia type
- maternal complication

5.6.3 INCLUSION CRITERIA

All deliveries done by c/s during study period

5.6.4 Exclusion criteria

- ❖ Incomplete Anesthesia note (date and year, duration of anesthesia, type of anesthesia)
- ❖ The operation for c/s +other excluded(like c/s+hysterectomy)

5.7 data collection

A structured questionnaire was used to collect data from the documents. the questionnaire had a variable like age mother ,maternal and fetal condition ,urgency these of c/s,type of anesthesia administered and anesthetic related complication of c/s .the questionnaire was filled by by 4th year anesthesia student after giving orientation how to extract the necessary information from the cards and anesthetics chart depending on each variable .

5.8 Data quality control

A data collector was trained on each items including the questionnaire, its meanings and filling the questionnaire. During data collection consistent supervision of data collectors was carried out by significant investigator.

5.9 Data processing and analysis

The data was collected and properly filled on the prepared format, summarized and analyzed by using scientific calculator from determination of frequency, percentage and cross tabulation with different variable. also analyzed by computer to look for association chi-square test also employed was employed.

Finally, the result has been presented using table and based on findings discussion, conclusion and recommendation will be given.

5.10 Plan for dissemination of findings

The final findings result had been disseminated by sending of the copies research paper to the SRP, College of Public Health and Medical Science and department of anesthesia and ghandi memorial hospital.

5.11 Ethical considerations

- Formal letter had been written by Jimma University to Ghandi Memorial hospital
- Information obtained was used only for study purposes.
- After completion of the research, a record was returned back to original place.

5.12 Limitation of the study

While conducting this research the following Limitation were encountered:

- a) lack of completeness of anesthesia note some were excluded.
- b) Non-readable hand writing on some chart .

5.13 Operational definition

Cesarean section:-is surgical procedures in which incision are made through mother's abdomen and uterus to delivery baby or placenta.

Elective C/S:-the type of C/s which performed before the course of labor or before the appearance of any complication that might constitute urgent condition.

Emergency c/s:-is the c/s done in certain indications which need immediate intervention.

Epidural Anesthesia: is administration of local anesthetic drug in the Epidural space.

General Anesthesia:- medically induced loss of consciousness and loss protective reflexes resulting from administration of one or more general anesthetic agents. it may include amnesia, analgesia and muscle relaxation

Regional anesthesia: is type of anesthesia administered to block certain nerves

Spinal anesthesia: is administration of anesthetic drug in the sub arachnoids space.

Urgency of C/S: whether emergency or elective c/s.

CHAPTER SIX: RESULT

A total of 4520 pregnant mother who underwent c/s were available from January 1, 2010 to December 31, 2012 in ghandi memorial hospital. The "OR "Anesthesia registration book revised sampled and the following result were obtained.

The majority of mother who underwent c/s 125(50%) were in age range between 26-30 years and 4(1.6%) of them were above 41 years.

TABLE -1:Age distribution of mother who underwent c/s in Ghandi memorial hospital from January 01-01-2010 to December 31-12-2012.

Age	Frequency	Percentage (%)
<20 years	22	10
21- 25 years	48	19.2
26-30 years	125	50
31-35years	30	12
36-40 years	21	8.4
>41 years	4	1.6

Majority of mother were stable pre-operative 185(74%) and 143(98.6%) delivered under spinal anesthesia.pre operatively 14(5.6%) mother had hypotension and 12(11.4%) delivered under general anesthesia while,6(2.4%) mother presented with APH for operation and all of them deliver under general anesthesia.

The majority of the fetus pre operatively stable 210(84%) and the delivered under spinal anesthesia .those fetus with distress all delivered under general anesthesia.

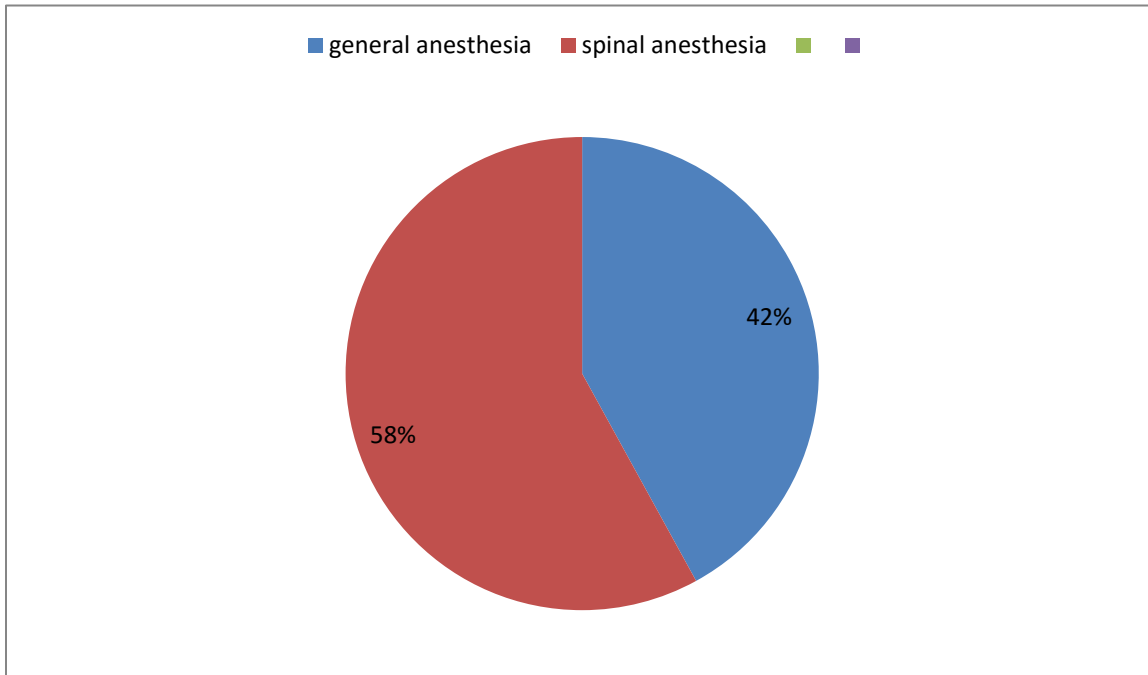
Table 2: distribution of maternal and fetal pre operative condition and type of anesthesia give for them in Ghandi memorial hospital from January 01-01-2010 to December 31-12-2012.

Condition		Type anesthesia					
				GA		SPINAL	
		No	%	NUMBER	%	NUMBER	%
MATERNAL	STABLE	185	74	42	40	143	98.6
	Hypotension	14	5.6	12	11.4	2	1.4
	Pre elampsia	45	18	45	42.8	-	-
	APH	6	2.4	6	5.7	-	-
	OTHERS	-	-	-	-	-	-
	TOTAL	250	100	105	100		100
Fetal	Stable	210	84	65	61.9	145	100
	Fetal distress	40	16	40	38.08	-	-
	Others	-	-	-	-	-	-
	Total	250	100	105	100	145	100

Elective c/s were done for 55(22%) and the rest 195(78%) were emergency c/s. The type of anesthesia administered for elective c/s 12(21%) general anesthesia and 43(79%) under spinal anesthesia. For 102(52%) emergency case delivered under spinal anesthesia.

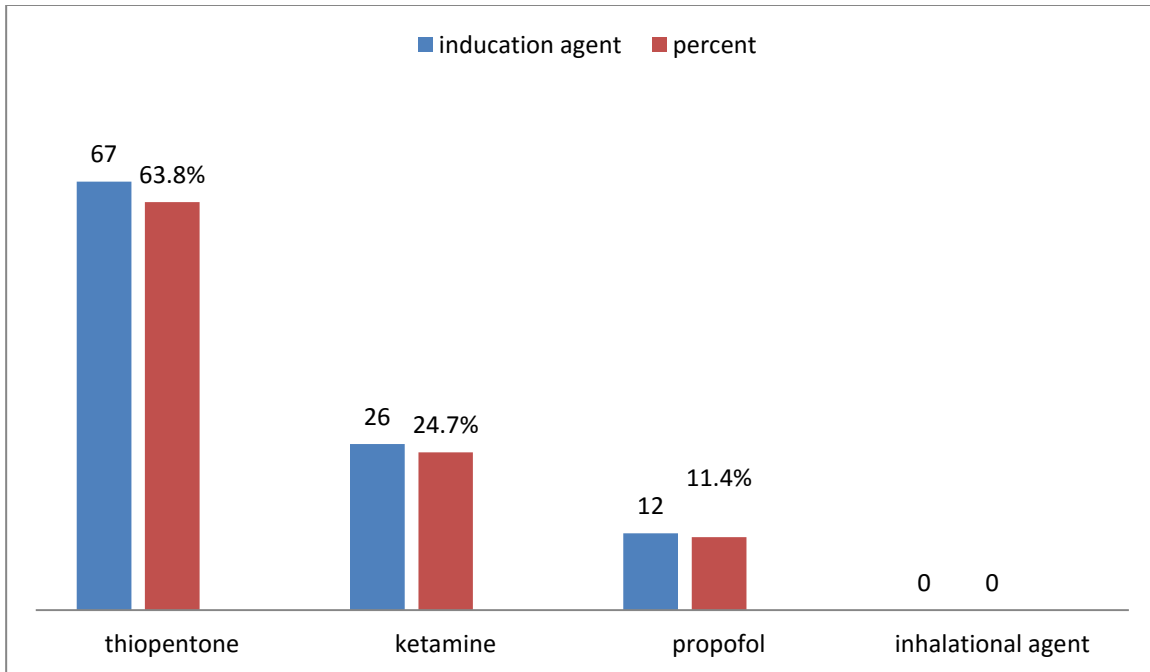
TABLE 3: Distribution of urgency of c\s and type of anesthesia is given in Ghandi memorial hospital from January 01-01-2010 to December 31-12-2012.

Urgency of C/S	Type of anesthesia					
			GA		Spinal anesthesia	
	NO	%	No	%	No	%
Elective	55	22	12	11.4	43	29.4
Emergency	195	78	93	88.4	102	70.6
Total	250	100	105	100	145	100



Majority the of cesarean section done under spinal anesthesia 145(58%) and 105(42%) by general anesthesia.

Figure1: Distribution of the type anesthesia given for c\s in in Ghandi memorial hospital from January 01-01-2010 to December 31-12-2013



According to the study those case done under general anesthesia, thiopentone the highest induction agent 67(63.8%) and propofol is 12(11.4%).

Figure 2: Distribution of type of induction agent used for GA during C\S in Ghandi memorial hospital from January 01-01-2010 to December 31-12-2012.

No complication were identified 247(98.8%).however, there was 3 cases with difficult of intubation. There is no cardiac arrest and maternal death was seen.

TABLE 4: Distribution of anesthetic related complication of C\S in Ghandi memorial hospital from January 01-01-2010 to December 31-12-2012.

Complication	Frequency	Percentage
Difficult of intubation	3	100
Aspiration	-	-
Cardiac arrest	-	-
Death	-	-
Other	-	-
Total	3	

There is a strong association between urgency of c/s and type of anesthesia administered, p value 0.001.

TABLE 5: Distribution of association b/n urgency of C\S and type of anesthesia administered in Ghandi memorial hospital from January 01-01-2010 to December 31-12-2012.

Urgency of C/s	Type of anesthesia		Total	p.value	X2
	General anesthesia	Spinal			
Elective	12	43	55	0.001	11.8
Emergency	93	102	195		

CHAPTER SEVEN

DISCUSSION

This retrospective study determines the choice of anesthesia type for mother; those underwent caesarean section and factor influencing the choice of anesthesia type.

These studies showed that the choice of anesthesia type for mother underwent c/s, 145(58%) spinal anesthesia and 105(42%) were general anesthesia. Out of this 55(22%) elective c/s and 195(78%) emergency c/s. This result high when compared with study done in Orettea maternity hospital in Eretria which is (36.4%) spinal anesthesia and (63.6%) general anesthesia. Out of this (92.2%) emergency c/s and (7.8%) elective c/s. The other, according to the study done at university of Benin teaching hospital, the choice of anesthesia type for mother underwent c/s (96.7%) general anesthesia and (3.3%) were regional anesthesia. Out this (78.3%) were emergency c/s while (21%) elective c/s. My result higher above study. Generally, in Ghandi memorial hospital best choice anesthesia type is spinal anesthesia for mother underwent c/s when compared with above two study but emergency c/s lower when compared with two studies. This may be due to the Ghandi memorial hospital is located in centre city, mother have full ANC follow up, this decrease emergency c/s. This mother admitted for c/s with few complication, so anesthetist enough time to resituate mother administer spinal anesthesia.(11,16).

In another way this study showed that the choice of epidural anesthesia and combined spinal and epidural anesthesia for mother underwent c/s is null. My result lower when compared to the survey done in obstetric unit in France in 2005, epidural anesthesia(4.5%) and combined spinal and epidural anesthesia(2%).(12)

This study showed that the age group of mother were 26-30 years account 125 (50%) and greater than 40 years 4(1.6%). This result is higher when compared with the study conducted at maternity hospital Thapathali, Kathmandu, which is age group between 26-30 years account 25.08%.(10).

The preoperative maternal condition admitted for c/s to Ghandi memorial hospital pre eclampsia accounts 45(18%). There was 40(16%) fetal distress case. Study done in Norway in April 2003 shows that the common indication for c/s during this period were fetal distress (21.9%), Pre eclampsia (6.2%) and. When we compare this study the pre eclampsia was higher and fetal distress lower. This difference may be due to sample size difference.(17)

According to this study anesthesia related complication almost zero or not significant.on 3 case with difficult of intubation are recorded. My result too low when compared to the study done Tikur anbessa teaching hospital, there was five maternal death. The other, the study done in French there were 83 case death related to aspiration again higher than my result. Generally my result to low due poor recording and if patient develop complication referred to other hospital.(14,15)

The choice of anesthesia type highly associated with urgency of c/s.if the case is emergency ,the anesthetists has no time to resituate the patient .the come full abdomen ,distorted vital sign (hypotension, tachycardia)or fetal distress(bradycardia ,tachycardia) ,so the plan of anesthesia depends on case not the willingness of patient or anesthetist. But if the case is elective, patient admitted with stable vital signs plan of anesthesia depends on preference of patient and anesthetist skill.

CHAPTER EIGHT

CONCLUSION AND RECOMMENDATION

8.1 CONCLUSION

- the study had shown that the choice of spinal anesthesia for mother underwent c/s was 58%.
- the prevalence rate of emergency c/s took the highest score 78%
- almost all patients had no complication 98.8%
- thiopentone took majority of induction agent 63% during general anesthesia.
- all mother with fetus in distress preoperative 16% given general anesthesia to underwent c/s.
- there is strong relationship between type anesthesia given and urgency of c/s.

8.2 RECOMMENDATION

- alternative anesthesia type like epidural should be given to reduce maternal complication.
- the hospital should prepare ICU or PACU .all mother develop complication post operatively referred to other hospital, so difficult assess complication.
- increase the completeness of anesthesia note recording.

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ANNEX II

QUESTIONNAIRES

JIMMA UNIVERSITY

COLLEGE OF PUBLIC HEALTH AND MEDICAL SCIENCE

Format prepared on factor influencing the choice of anesthesia type and anesthetic related complication for cesarean section in ghandi memorial hospital from 01-01-2010 to December 31-12-2012.

1. Identification age _

2. Maternal condition

A. Stable B.hypotension C.pre-eclampsia

D.APH E.PIH F.Others

3. Fetal condition A. Stable B.Fetal distress C.Others

4. Urgency of c/s A. Elective B.Emergency

5. Type of anesthesia given for c/s

A.GA with ETB B.Spinal C.epidural D.compined epidural and spinal

6. If GA is used what type of induction agent?

A.ketamine B.propofol C.Thiopentone

D.Inhalational E.Others.....

7. Is there any anesthetic related complication?

A. difficult intubation B .aspiration C.cardic arrest

D.death E. OTHERS.....

8. if the death occurs specify the causes.....

9.if the difficult intubation occurs what is cause.....

