
Caesarean section and associated factors at Mizan Aman General Hospital Southwest Ethiopia

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Abstract: Background: It is estimated that about 20 million cesarean section (CS) deliveries occur each year in the world. But, in least developed countries the rate of deliveries by CS is very few. Objectives: The objective of this study is to assess Factors associated with Caesarean section at Mizan Aman General Hospital Southwest Ethiopia. Method: A cross sectional study was conducted by reviewing medical record of mothers. The sample size was determined using single population proportion and total sample size was 354. The checklist was used for data collection by adopting from other articles. The data was entered into EPI info 7.1.0 and exported to SPSS version 17 then analyzed. Binary logistic regression was done. Odd ratio was used for interpretation of strength of prediction of the independent variable to the outcome cesarean section. For all statistical significance tests, the cut- off value set was $p < 0.05$ with CI of 95%. Result: A total of 342 mother medical record was reviewed. Majority (39.2%) of them found between 20-24 with mean age of 23.1(+4.38). Majority (78.9%) of mother delivered through vagina while the remaining (21.1%) of them delivered by CS. Less number (32.3%) of them had ANC follow up for their current pregnancy, Maternal age, gestational age and the outcome of the new born have significant association with cesarean section. Conclusion and Recommendation: The rate of the cesarean section is high. Maternal age, gestational age and the outcome of the new born have significant association with cesarean section at the hospital. The rate of cesarean section at the hospital should be reduced.

Keywords: Cesarean Section, Associated Factors, Cross Sectional Study, Ethiopia

1. Introduction

Currently it is estimated about 20 million cesarean section (CS) deliveries occur each year in the world. This makes it the most frequent abdominal surgery performed in adults. The number of women having babies born by cesarean section is rapidly growing in a continuous way in both the developed and developing countries. This is happening in developed countries and in Latin America especially in Brazil [1, 3, and 4]. In United States approximately 1.2 million women had a cesarean birth representing 29.1% of all births and in the United Kingdom it was about 20%, Brazil has one of the highest rates of cesarean sections in the world, which reached a high peak of 36.4%. This is higher than the rate that expected by World Health Organization. The World Health Organization states that the rate of cesarean section should be at maximum of 15% and no region in the world is justified with having a cesarean rate greater than 10% to 15%

and not be less than 5% [5-7].

The Increment associated with this surgical procedure is that rapid decrease in both mortality and morbidity of fetus and mothers who undergone Cesarean sections. For example, in the early 1990s maternal mortality after Cesarean section was estimated to be below 1 per 1000 and this increase in safety encouraged obstetricians to find more and more reasons for carrying out this operation. However, there are still complications associated with this procedure. Maternal morbidity associated with C-section is five to ten times greater than that associated with vaginal delivery [8]. So, if the rate of C-section which is higher the recommended of WHO it will have negative effect on both maternal and fetus health worldwide.

In addition maternal & neonatal morbidity and mortality in developing countries especially in Sub-Saharan country are very high. In most of sub-Saharan Africa, rates of caesarean sections are low. In West Africa where they account for less than 1% of expected births this means that

doctors might not be as proficient in medical procedures, resulting in substandard care and sometimes death of the mother. In most of countries in sub Saharan Africa there are surgical services available in referral facilities, but the resources are limited, quality of care is heterogeneous, and distance to the facility is frequently a real barrier for people living in rural regions and maternal morbidity and mortality remain very high [9].

In Ethiopia, the national population based cesarean delivery rate of is 0.6% with variation between the regions from 0.2% to 9% and the overall institutional rate was 18%, which varied between 46% in the private for-profit sector and 15% in the public sector [10]. In general maternal & neonatal morbidity and mortality in developing countries especially in Sub-Saharan country are very high. Ethiopia as a member of sub Saharan African country contributes a huge number in maternal & neonatal morbidity and mortality; to reduce this and to achieve the millennium development goal the country works hard in a multi directional ways. This includes the accessibility of compressive obstetric care in health institutions, in doing so cesarean section should be performed in those health institutions for scientific reason based on the WHO recommendation. Additionally cesarean section should improve and contribute in the reduction maternal & neonatal morbidity and mortality of the hospital as well as the country. Mizan Aman General Hospital provides gynecological and obstetric services including Cesarean section to the community of bench maji zone and neighboring zones and there is no any research done on caesarean section at the hospital yet. So the objective of this study is assess Caesarean section and associated factors at Mizan Aman General Hospital Southwest Ethiopia.

2. Materials and Method

2.1. Study Design and Population

Institution based cross sectional study was conducted on mothers delivering at Mizan Aman General Hospital during the period of September 11, 2012 to March 9, 2013 and Mothers whose medical records incomplete were excluded from the study. The sample size for study was computed by using the formula for single population proportion assuming level of confidence to be 95%, 4% margin of error, and P to be 0.18 which is prevalence of CS obtained from nationwide review of caesarean section [10]. Based on these assumptions the total sample size for the study was 354. The study subjects were selected using simple random sampling techniques by taking the list of all mothers delivered at hospital from the ward registration book as sampling frame. The data was collected by reviewing the medical record after developing and adapting the checklist. To maintain the quality of data, training was given for data collectors. Regular and continues follow up was made by the principal investigator to monitor quality of the data collection process and every filled checklist was checked on daily basis and feedbacks were given to data collectors.

2.2. Variables

The history of Caesarean section was dependent variable. The maternal variables are Age, Residence, Gravidity, Parity, and Duration of labor, Gestational age, Pre-operation HCT and maternal outcome. The new born variables are Weight of new born, Apgar score and fetus outcome.

2.3. Data Processing and Analysis

The data was entered into EPI info 7.1.0 and exported to SPSS version 17 then analyzed. Binary logistic regression was done to determine whether the independent variables can predict the outcome variable cesarean section. The result of the odd ratio was used for interpretation of strength of prediction of the independent variable to the outcome cesarean section. The finding from all analysis was summarized and presented by graphs, tables and other summery measures. For all statistical significance tests, the cut-off value set will be $p < 0.05$ with CI of 95%.

2.4. Ethical Consideration

For this study to proceed, letter of permission was obtained from Bench Maji Zone Health Department and Mizan Aman General Hospital prior to study conduction. Though it is not possible to obtain participants informed consent, Names and other personal information which can violate the confidentiality of the study participants will not be exposed to third party for any other reason. Any information will be kept confidential and only used for research purpose.

3. Result

3.1. Socio Demographic Characteristics

The Socio demographic characteristics of mothers delivering were presented in table 1. From all the reviewed medical records majority (39.2%) of mothers age found in 20-24 age group followed by mothers whose age group is between 25-34 (37.1%). Of all reviewed records large number (55.6%) of the mothers were from rural area.

Table 1. Socio demographic characteristics of mothers having baby at Mizan Aman General Hospital bench maji zone southwest Ethiopia. April 2013, n=342.

Variables	frequency	Percent
Age		
15-19	73	21.3
20-24	134	39.2
25-34	127	37.1
35 and above	8	2.3
Residence		
Urban	152	44.4
Rural	190	55.6

3.2. Obstetric Characteristic

The Obstetric characteristic the mothers are presented in Table 2. Out of mothers delivering at the hospital one hundred eighty three (54.3%) of them had less than two pregnancy, majority (81%) of them are less than two parity. One hundred ten (32.3%) of them had ANC follow up for their current pregnancy, while the remaining (67.7%) of them do not had ANC follow up. Of those who have ANC follow up majority (75.5%) of them had less than four times. For majority of mothers (72.3%) the gestational age at labor was less than 38 weeks. Large number (95.2%) of the baby were singleton, fifteen (4.4%) of them were twin and one (0.3%) is triple. Majority (78.9%) of mother delivered through vagina while the remaining 72 (21.1%) of them delivered by Cesarean Section.

Table 2. Obstetric history of mothers having baby at Mizan Aman General Hospital bench maji zone southwest Ethiopia. April 2013, n=342.

Variables	Frequency	Percent
Gravidity		
<2	183	54.3
>2	154	45.7
Parity		
<2	273	81
>2	64	19
Have ANC follow up		
Yes	110	32.3
No	231	67.7
Number of ANC(n=110)		
<4	83	75.4
>4	27	24.6
GA at labor		
<38	191	72.3
38-40	71	26.9
>40	2	0.8
Fetal Heart Beat		
120-130	30	9.6
131-140	211	67.7
141-150	53	16.9
>151	18	5.3
Number of baby		
Single	320	95.2
Twin	15	4.4
Triple	1	0.3
Fetal lie		
Longitudinal	310	90.6
Oblique	3	0.9
Transverse	1	0.3
Not stated	28	8.2
Delivery type		
Vaginal	270	78.9
CS	72	21.1

3.3. Maternal and New Born Outcome

Maternal and new born outcome are presented in Table 3. Majority (91.1%) of the new born were alive. Out of those alive new born large number (88.5%) of them have APGAR score of greater than seven, For those new baby who were alive and weighed less number (8.1%) of them weigh less than 2500 gram. Of all mothers two (0.6%) of them were dead.

Table 3. Outcome of Mother and new born among mothers having baby at Mizan Aman General Hospital bench maji zone southwest Ethiopia. April 2013, n=342.

Variables	frequency	Percent
Fetal outcome		
Alive	308	91.1
Dead	34	9.9
APGAR Score		
<3	3	1
4-6	32	10.5
>7	271	88.5
Weight of the baby		
<2500 g	25	8.1
>2500 g	284	91.9
Maternal outcome		
Alive	340	99.4
Dead	2	0.6

3.4. Factors Associated With Cesarean Section

The association between cesarean section and independent variables was presented in Table 4. Of all variables which are associated with Cesarean section in Bivariate analysis age of the mothers, gestational age at labor and the outcome of the new born were significantly associated with Cesarean section after adjusting for other variables in the final model. Mothers whose age is between 20-24 are 3.2 times more likely to undergo Cesarean section as compared with those age is between 15-19 years with (COR: 3.4, 95% CI: 1.03, 8.4, and (AOR: 3.2, 95% CI: 1.03, 10). Those whose age is between 25-34 years are 3.6 times more likely to undergo Cesarean section as compared with those who age is between 15-19 with, (COR: 3.8, 95% CI: 1.45, 9.5 and (AOR: 3.6, 95% CI: 1.15, 11.6). Mothers those age is 35 and above are 10 times more likely to undergo CS as compared with those age is between 15-19 with (COR: 6.7, 95% CI: 1.3, 35.1, and (AOR: 10, 95% CI: 1.06, 93.01). CS is 63% less likely among mothers whose gestational age at labor is greater than thirty eight weeks as compared with those who gestational age at labor is less than thirty eight (COR: 0.32, 95% CI: 0.14, 0.7, and (AOR: 0.37, 95% CI: 0.15, 0.9). The likelihood of being undergone CS is 5 times higher among mothers whose new born dead as compared to those whom their new born is alive (COR: 2.3, 95% CI: 2.52, 11, and (AOR: 5, 95% CI: 2.06, 11.8).

Table 4. Factors associated with CS among mothers having baby at Mizan Aman General Hospital Bench Maji zone southwest Ethiopia. April 2013, n=342.

Variable	Caesarean section		OR(95% CI)	
	Yes n (%)	No n (%)	Crude	Adjusted
Age				
15-19	6(8.3)	67(24.8)	1	1
20-24	31(43.1)	103(38.1)	3.4(1.3, 8.4)*	3.2(1.03, 10)*
25-34	32(44.4)	95(35.2)	3.8(1.45, 9.5)*	3.6(1.15,11)*
>35	3(4.2)	5(1.9)	6.7(1.3, 35.1)*	10(1.06, 93.)*
GA at labor				
<38	53(86.9)	139(68.1)	1	1
>38	31(65)	8(13.1)	0.32(0.14, 0.7)	0.37(0.15,0.9)*
No of baby				
Single	64(88.9)	256(95.9)	1	1
Twin	8(11.1)	11(4.1)	2.66(1.06, 6.78)*	0.73(0.12, 4.2)
Outcome				
Alive	54(75)	253(94.1)	1	1
Dead	18(25)	16(5.9)	5.27(2.52, 11)	5(2.06, 11.8)

*= significant at p<0.05

4. Discussion

This study gives important information regarding the cesarean section and the factors associated with it. In this study, 21.1% of mothers delivered by CS. As it is compared with different developed countries figure it is lower. If we see the study done in Italy the rate is 36% [18]. In different Latin American countries especially in Brazil the rate is very higher. In two different studies done in Brazil the rate of cesarean section is 36.5% and 43%. In cross sectional study done on factors associated with unjustified Caesarean section in four hospital in Colombia it indicated that the rate of CS was between 42% and 72% [11-13]. But this figure is higher as compared with the rate that WHO recommended which is 15% and as it is compared with the study done in different African country and our country the figure is higher.

In study that conducted in one Tanzania hospital, Tikur Ambessa hospital and Yekatit 12 hospital the rate of CS is 11%, 5.5% and 10% respectively [2, 10 and 15]. This discrepancy may be due to improved referral system and the attention given to maternal health in the zone. Most of the mothers (39.2%) found between age group of 20-24 followed by age group 25-35 which is (37.1%). So it is almost the same figure with that of Tikur ambessa hospital. But in that of Italy 57.7% of them were between age of 24-35 years. For their current pregnancy (32.3%) of the mother who delivered in hospital had ANC follow up, it is almost the same with the current ANC coverage of the country. But it is lower as compared with the study done in Brazil which is 94.7% [6]. Majority (72.3%) of mothers gestational age at labor was less than 38 weeks, but in

study done in Oman the majority of the mothers gestational age is above 38 weeks [14]. In this study, maternal age is significantly associated with cesarean section in line with other different studies [14, 15]. Being undergone cesarean section more likely increase as age of mothers increase. CS is 3.2, 3.6 and 10 times higher among mother whose age is in age group of 20-24, 25-35 and above 35 respectively as compared with those whose age is 15-19. This may be that older women are more likely to experience pregnancy complication such as diabetes, hypertension and pre-eclampsia [17]. CS is 63% less likely among mothers whose gestational age at labor is greater than thirty eight weeks as compared with those who gestational age at labor is less than thirty eight. This is the same with study done in Oman where mothers with gestational age less than 38 weeks are more likely experience cesarean section as compared those above thirty eight weeks [14]. Mother those whom their new born dead were more likely experience cesarean section as compared with those mothers who their new born are alive.

5. Conclusion

The rate of the cesarean section at Mizan Aman General Hospital is high as compared with the WHO recommendation which would have harm on new born and mother. The utilization of ANC is low among mothers delivered at the hospital. Maternal age, gestational age and the outcome of the new born have significant association with cesarean section at the hospital. It is recommended the rate of cesarean section at the hospital should be reduced as per the WHO recommendation, older women should be counseled during antenatal care that they are at high risk of cesarean delivery and should follow ANC fully.

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Conflict of Interest

The authors declare that there is no conflict of interests regarding the publication of this paper.

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