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Prevalence of cesarean section and associated factor among women who give birth in the last one year at Butajira General Hospital, Gurage Zone, SNNPR, Ethiopia, 2019

Abstract

Background: Caesarean section is an operational procedure whereby the fetus, placenta, and membrane after the end of the 28th week is delivered through an incision on the abdominal and uterine walls. This does not include delivery through an abdominal incision of a fetus lying free in the abdominal cavity following uterine rupture or in secondary abdominal pregnancy.

Objective: To assess the prevalence of cesarean section delivery and associated factors among women who give birth one last year in Butajira General Hospital on April 1-15, 2019.

Methods: Institution based retrospective cross-section study was employed among 250 patient charts in Butajira General Hospital from April 1-15, 2019. A systematic random sampling technique was used. A record review was used to collect the data. The data were entered into Epi data version 3.1 and exported to SPSS version 24 for analysis. All variables with P<0.25 in the bivariate analysis were included in the final model and statistical significance was declared at P< 0.05.

Conclusion: Therefore, the overall magnitude of the cesarean section is above the world health organization's; appropriate indication must be assessed before proceeding to the procedure. Rural residence, fetal weight greater than 2500gm and previous history of stillbirth were independent predictors of cesarean section.. And minimizing stillbirth by helping the women to attend maternal and child health clinics during her course of pregnancy and the postpartum period that decreases her fear and stress due to bad history.

Keywords: cesarean section, postpartum mother, Butajira

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Abbreviations: ANC, antenatal care; APH, ant partum hemorrhage; CPD, cephalic pelvic disproportion; CS, cesarean section; EDHS, Ethiopia demographic health; MMR, maternal mortality rate; NMR, neonatal mortality rate; OL, obstruct labor; PROM, pre rupture of membrane; SDG, sustainable development goal; SNNP, South Nation nationality people; USA, United State of America; WHO, world health organization

Background

Cesarean section is an operational procedure whereby the fetus after the end of the 28th week is delivered through an incision on the abdominal and uterine walls. The increase in the CS rate was appreciated to be an American problem is becoming now an international crisis. Cesarean section is rising from 29% to 30.5% in 2004 to 2008 United States.[1–4] Cesarean section was performed for many varieties of indications and associated factors.[5] In pregnancies complicated by fetal malpresentation, excessive fetal growth, multiple gestation, cord prolapsed, placenta abruption, age of the mother, educational level and different of maternal infection.[6]

World Health Organization (WHO) the cesarean section delivery recommended rate was 10% to 15% according to 2015.[7–10] A systematic review and ecological analysis were performed and concluded that at the population level, CS rates higher than 10% were not associated with the reductions in maternal and newborn mortality rates.[11] Worldwide,[12] approximately 830 women died every single day due to complications during pregnancy or childbirth in 2015.[13] Reducing the global maternal mortality ratio (MMR) from 216 per 100 000 live births in 2015 to less than 70 per 100 000 live births by 2030 (SDG).[14] According to Mini EHDS 2019 in Ethiopia MMR are 353 deaths per 100,000 live births.[15]

The CS is the most common surgical operation estimated prevalence of 33%, but varies from country to country in china is 46% and 25% in the Asian, European and USA 30.5%.[16] The prevalence ranges from 7.3% in Africa and 40.5% in Latin America and the Caribbean.[17–19] An increase in the primary CS delivery with no specified indication was faster than in the overall population and appears to be the result of changes in obstetrics practice rather than changes in the medical risk profile or increases in maternal request.[20] The CS was performed without the medical indication has increased the risk of maternal and neonatal mortality when we compare with the spontaneously vaginal delivery.[21,22] Also, elective CS had a 2.84 fold greater chance maternal death as compared with vaginal delivery. In the United Kingdom two-fold increased maternal mortality with CS was detected.[23] Those are recurrent CS, hysterectomy, maternal and fetal death.[24] Previous CS increases the risk of the multiple placenta abnormalities like placental abruption, placenta previa, and adherent placenta in subsequent pregnancies.[24] First birth with a single CS

scar 30% increases the risk of placental abruption in the subsequent pregnancies.[25] In addition to this, women who have less than four spontaneously vaginal delivery with single previous CS scar has 1.7 fold increase the risk of placental previa whereas women who have four or more than four spontaneously vaginal delivered with single previous CS scar delivery nine-fold increased the risk of placental previa.[25–27]

Babies are also vulnerable to unnecessary risk from rising off the CS prevalence. The first danger to the baby is 1% to 9% enhance the surgeon to accidentally lacerate 6% of non-vertex presentation among non-vertex presentation fetus.[28–34] A previously done systematic review found that the cost of cesarean delivery is about twice the cost of a vaginal delivery.[35] Also, there is an increased risk of adverse effects with cesarean section, particularly if the medical complication does not sever.[36] Therefore, this study was aimed to assess the prevalence and associated factors with CS delivery in Butajira General Hospital Gurage Zone.

Methods

Study design, area and period

The institution-based retrospective cross-section study design was conducted from April 15 to May 10, 2019, in Butajira General Hospital secondary data from a one-year chart review. It is found in the Butajira town of the Gurage zone, SNNPR. The town is located at 143km from Addis Ababa the capital city of Ethiopia and 163km from Hawassa capital of SNNPR. Based on the 2007 Central Statistics Agency of Ethiopia the total estimation of Butajira 33,406, of whom 16,923 are male and 16,483 a town population were female. There are one Hospital and one health center. The Hospital is composed of 5 specialists, 17 general practitioners, 4 public officers, 3 emergence surgeons, 83 nurses, 17 Midwives, 19 pharmacists, 14 laboratory technicians, 2 radiologists, 5 anesthesia professionals, 8 healthy information technology and 3 psychiatric nurses. Hospital's maternal and child health unit monthly report indicates there are 250-300 deliveries, 250 ANC follow up, 200 postnatal care, 200 immunization (Butajira Hospital annual report, 2017).

Source population: All charts of the mother who gave birth in the last one year at Butajira General Hospital.

Study population: All randomly selected charts of the women who give birth in the last one year at Butajira General Hospital.

Eligibility criteria

Inclusion criteria: All charts of the women who gave birth after the fetus are viable.

Exclusion criteria: Incomplete charts.

Sampling size determination

The separate sample size was calculated for each specific objective by using both single and double population proportion and total calculated. The sample size of the first objective was greater than that of the second objective. If so the final sample size was come up by adding a non-response rate of 10% to the larger sample size from the first objective which is 227. So, the calculated sample size for this study was 250.

Sampling procedure

A systematic random sampling method was used.

The total number of women delivered in the last one year in Butajira General Hospital was 3054 so calculates the K value was 12.216. So, we took every 12 intervals from the registration card until the total sample size.

Variable

Dependent variable: Cesarean section delivery.

Independent variable

I. Socio-demographic factor

II. Obstetrics factor

III. Maternal and fetal factor

IV. Medical complication

Operational definition

a. Incompletes chart is the patient card that has not contained all components filled according to the chart needed.[37]

b. Cesarean section is the expulsion of the fetus, membrane, and placental by incision both abdomen and uterus.

Data collection method

Mothers' socio-demographic characteristics, economic status was adapted from the Ethiopian Demographic and Health Survey (EDHS) 2016 (EDHS, 2016). The questionnaire's other factors were developed by reviewing different kinds of literature. The data collectors have collected the data by reviewing patient charts after checking its completeness.

Data quality control

To ensure quality, the questionnaire was prepared in the English language. The questionnaire was checked for completeness before data entry into the software. Proper coding and categorization of data were maintained for the quality of the data to be analyzed. Double data entry was done for its validity and compare to the original data. Two days of training were given for data collectors about the purpose, the benefits and the risks of the study and how to collect the data by investigators.

Data processing and analysis procedure

The data was cleaned, coded, entered and entered into Epi data version 3.1 to minimize logical errors, then the data was exported to SPSS window version 24 for analysis. The analysis was done by computing proportions and summary statistics. Then, the result was presented by table frequency, percentage and pie chart. Bivariate analysis and multivariate analysis were computed to see the association between each independent variable and the outcome variable by using binary logistic regression. The assumptions for binary logistic regression were checked and values below 0.25 in the Bivariate analysis were considered as candidate variables for multivariate logistic regression to control all possible confounders. Adjusted odds ratios with their 95% confidence intervals and p-value of less than 0.05 were considered to have significant associated factors with CS.

Results

Socio-demographic characteristics

In this study, a total of 248 patient's cards were reviewed making a response rate of 99.2%. The age of the study participants ranged from

17 to 44 years. The mean age of the participants was 27.63 (SD±5.1) years. The majority of participants 164 (65.8%) were between 20-30 years old. Almost all 98% of participants were married. As a resident status, two-third of participant 164 (66.1%) were rural residents. Majority of women's occupation was housewife (Table 1).

Obstetric characteristic

Among the total study subjects more than half 155 (62.5%) were gravid two and three followed by primigravida 48(19.4%). About three fourth had ANC follow up at least once in their current pregnancy. Eighty-five percent (212) of study subjects were a term at the time of delivery, 22(8.9%) preterm and 14(5.6%) post-term. Only 4 (1.6%) of participants had a previous history of stillbirth and 21(8.5%) had a history of abortion. Nearly all (98.8%) had documented partograph. From those who undergo cesarean section one-third 37(71.15) of them, the procedure was done due to fetal indication. More than two-thirds (69.7%) of women undergo SC was due to maternal indication and the remaining 30.3% was due to fetal indication (Table 2).

Table 1 Sociodemographic characteristics of women who gave birth in Butajira General Hospitals, Butajira, Ethiopia 2019, (n=248)

Variable	Classification	Frequency	Percentage (%)
Age	<19	1	0.4
	20-24	72	29
	25-29	98	39.5
	30-34	49	19.75
	≥35	28	11.29
Marital status	Married	243	98
	Single	5	2
Residence	Rural	164	66.1
	Urban	84	33.9
Occupation of women	Housewife	93	37.5
	Merchant	52	21.96
	Government employer	56	22.6
	Farmer	39	17.72
	Daily laborer	8	3.22

Table 2 Obstetric characteristics of women who gave birth in Butajira general hospital, Butajira, Ethiopia 2019, n=248

		Cesarean section		
Variable	**Classification**	**Yes**	**No**	**Frequency (%)**
Gravid	One	5(9.6)	42(21.4)	47(19.4)
	Two-Three	38(73.1)	118(60.2)	156(62.5)
	Greater Three	9(17.3)	36(18.5)	45(18.1)
Parity	1	11(21.2)	75(38.3)	86(34.7)
	2	35(67.3)	95(48.5)	130(52.4)
	≥3	6(11.5)	26(13.5)	32(12.9)
Previous miscarriage	Yes	6(11.5)	15(7.7)	21(8.5)
	No	46(88.5)	181(92.3)	227(91.5)
Previous stillbirth	Yes	6(11.5)	6(3.1)	12(4.8)
	No	46(88.5)	190(96.9)	236 (95.2)
Gestational age at delivery	<37 Week	2(3.8)	20(10.2)	22(8.9)
	37-42 Week	48(92.2)	164(83.7)	212(85.5)
	>42 Week	2(3.8)	12(6.1)	14(5.6)
Antenatal care follow up	Yes	36(69.2)	149(76)	185(74.6)
	No	16(30.8)	47(24)	63(25.4)
Fetal weight	<2500	4(7.7)	53 (27)	57(23)
	2500-4000	39(75)	141(71.9)	180(72.6)
	>4000	9(17.3)	2(1)	11(4.4)

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Prevalence of cesarean section

The overall prevalence of CS in the study setting was 52(21%). Among 33 (13.3%) of the mothers had primary CS while 19 (7.7%) had repeat CS. Cesarean section was performed for emergency reasons in 34(13.7%), whereas elective CS 18 (7.3%) of cases.

Associated factors of cesarean section

Variables that fulfill the criteria in Bivariate analysis were residence, previous stillbirth, fetal weight, and gestational age. This variable was entered into a multivariate logistic regression model from that fetal weight; previous stillbirth and residence were statistically associated with CS after adjusting for other variables in the final model. Mothers, who were living in a rural area, were 2.5 times more likely to undergo CS as compared with urban mother AOR 2.504, 95% CI (1.158, 5.414). From study participants who had the previous history of stillbirth were 5.5 times more likely to undergo CS than their counterparts AOR 5.49 95%CI (1.496-20.179). Mothers whose fetal weight was (2500-4000)gm, were 5.3 times more likely to undergo CS were as compared with those whose fetal weight is less than to 2500gm AOR 5.344,95%CI(1.683,16.972) (Table 3).

Table 3 Factors associated with cesarean section delivery in bivariate and multivariate logistic regression among women who gave birth in, Butajira general hospital, Ethiopia 2019

Variable		Caesarean- section		95% CI	
	Classification	Yes (%)	No (%)	Crud OR	Adjusted OR
Residence	Urban	73(37.2)	11(21.2)	1	1
	Rural	123(62.8)	41(78.8)	2.21(1.02-4.57)	2.62(1.229-5.584)*
Gestational age	<37	2(3.8)	20(10.2)	1	1
	37-41	48(92.2)	164(83.7)	2.93(0.66-12.97)	1.25(0.25-6.30)
	>42	2(3.8)	12(6.1)	1.67(0.21-13.43)	0.58(0.06-5.49)
Fetal weight	<2500	4(7.7)	53(27)	1	1
	2500-4000	48(92.3)	143(73)	4.45(1.53-12.94)	5.54(1.72-17.84) **
Previous stillbirth	Yes	6(11.5)	6(3.1)	1	1
	No	46(88.5)	190(96.9)	4.13(1.27-13,39)	5.49(1.495-20.179)***

*Significant with P= 0.013, **Significant with P=0.004, ***Significant with P=0.01

Discussion

In this study, the prevalence of CS in Butajira general hospital was 21% (95%CI: 16.5-26.2). Residence, previous stillbirth, fetal weight, and gestational age were candidate variables for multivariate analysis. Residence, previous history of stillbirth and fetal weight were statistically associated with cesarean section. In this study about one-fifth of women who admitted for delivery undergo a cesarean section. This finding was in line with studies done in Eastern Ethiopia Harar (26.6%) and north Thailand (23.6%).[38–44] The result was slightly higher than studies done in Tikur Anbessa hospital (10%), Jimma University specialized Hospital (8%), Felegehiwot referral hospital 9.7 % South Africa (15.4%), Namibia (13%), and World Health Organizations recommendation that one country has to perform cesarean section.[26,36,40–42,45] This may be due to increased accessibility and patients desire to have a cesarean section. But this finding was slightly lower than the study was done in Atata Hospital (27.6%), USA (30.5%) and China (46%).[37,46–52] The possible reason for the discrepancy may be methodological differences and differences in study area and period.

Mothers, who were living in rural areas, were 2.5 times more likely to undergo CS as compared with urban mother AOR 2.504, 95%CI (1.158, 5.414). This result is in line with the study Felege hiwot referral Hospital Amhara regional state Ethiopia.[52] The reason may be due to women who live in rural areas were delay to arrive or to seek care at health institution and they arrive health institutions after a complication occurred and health professionals directly decide to have a cesarean section.

Mothers whose fetal weight was (2500-4000)gm, were 5.3 times more likely to undergo CS were as compared with those whose fetal weight is less than to 2500gm AOR 5.344, 95%CI (1.683, 16.972). This finding is in line with studies done in India, two studies in Ethiopia Harar and Felegehiwot referral hospital.[52] This may be due to when the weight of the fetus is large there is an increased chance of cephalopelvic disproportion and obstructed labor that may are absolute indications for cesarean section.

From study participants who had the previous history of stillbirth were 5.5 times more likely to undergo CS than their counterparts AOR 5.49 95%CI(1.496-20.179). This finding is similar to the study done in Iran. This may be since women who have the previous history stillbirth had fear of losing her current baby so to avoid this she needs to have a cesarean section. Also, the fact that there may be stress and that will predispose her to develop complications that lead to cesarean section. The study was done by reviewing charts so some variables cannot access.

Conclusion

The overall magnitude of the cesarean section is above the world health organization's recommendation so it is better detect appropriate indication for cesarean section before the procedure. Rural residence, fetal weight greater than 2500gm and previous history of stillbirth were independent predictors of cesarean section. And minimizing stillbirth by helping the women to attend maternal and child health clinics during her course of pregnancy and the postpartum period that decreases her fear and stress due to bad history.

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Ethics approval and consent to participate

Ethical clearance was obtained from Wolkite University, College of Health and Medical Sciences, Institutional Health Research Ethics Committee. A formal letter for permission and support was written to the zonal health department of Guraghe from University, and then from the zone health department to Butajira General Hospital. Also, the study did not involve any invasive procedures. Moreover, the confidentiality of information was guaranteed by using code numbers rather than personal identifiers and by keeping the data locked.

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The content of the study is solely the responsibility of the authors.

Conflicts of interest

The authors declare that they have no conflict of interests.

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