

One Year Retrospective Analysis of Prevalence of Caesarean Section in Jimma University Specialized Hospital, South Western Ethiopia

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Abstract

Background: In Ethiopia, maternal mortality rate is 676/100,000 live births which making it one of the six countries contributing 50% of maternal death in the global. Among the cause of death, obstructed labour and its complication has significant figure. Despite this, Ethiopia has low institutional delivery and C/S rate with the recent figures of being 10% and < 2%, respectively,

Objective: The objective of this study aims to assess the prevalence of Caesarean section in JUSH.

Methods: Hospital based retrospective cross sectional study was carried out at Jimma University specialized hospital from March 1st - April 1st, 2014. Data was collected from records of deliveries from January 1st up to December 31st, 2013 using structured check lists from records of the operation room, labour ward registration and patient charts. The descriptive statistics and chi square were used to analyse/compute some variables by using computer.

Result: The overall prevalence of C/S in the study area was 28.1%. The common indication of Caesarean section in the study area was CPD (14.1%) which was followed by Previous C/S (3.8%). Fever (6.21%) and fistula (2) were among complications raised after C/S. Based on statistical test, 1000172 there was significant association between prevalence of C/S and age-group of the mother's ($\chi^2 = 24.4$, $p = 0.00$), address of mother's ($\chi^2 = 15$, $p = 0.00$), ANC follow up ($\chi^2 = 22.9$, $p = 0.00$), number of the foetus ($\chi^2 = 7.01$, $p = 0.03$) and history of previous c/s ($\chi^2 = 8.7$, $p = 0.003$). 1000172

Conclusions and recommendations: Based on this finding it was concluded that the prevalence of C/S in JUSH was higher than the WHO recommendation. The most common indication of C/S was CPD. Caesarean section was statistically significant association with age of the mothers, address of mothers, ANC follow up, number of foetus and history of previous C/S. Based on the above findings, JUSH department of Obstetrics and Gynaecology should restrict the indication of C/S and improve trial of VBAC and instrumental vaginal deliveries.

Keywords: Retrospective analysis; Prevalence; Caesarean section

Introduction

Background

Caesarean section means delivery of a viable foetus through an abdominal incision and uterine incision. It has been one of the most important operations in obstetrics and Gynaecology because of its life saving value to both mother and foetus. It is a surgical procedure in which one or more incisions are made through mother's abdomen (laparotomy) and uterus (hystrotomy) to deliver one or more babies, or, rarely, to remove a dead foetus. It is an important lifesaving operation under circumstances when vaginal delivery might pose a risk to the mother or baby [1].

The abdominal incision could be in the midline vertical below the umbilicus, infra umbilical midline incision. It may be low transverse, slightly curve linear incision at the level of pubic hair line and extended somewhat beyond the lateral boarder of the rectus muscle (pfanenstial). The uterine incision may be made vertically to the body of uterus above the lower uterine segment and reaching uterine fundus (classical 1000172C/S) or it may be 1000172 in the lower uterine segment transversally or vertically (LUSC/S) [1,2].

Abdominal delivery is advantageous to a foetus that is definite risk from labour or vaginal delivery. Comparing 1000172 survival rate and neurologic follow up in infants delivered by elective C/S and infants delivered vaginally shows an approximately two fold increase in death rate and neurologic 1000172 abnormality among those delivered by 1000172 elective C/S given ideal circumstance full vaginal delivery and c/s. vaginal delivery is more advantageous for 1000172 both mother

and infants than C/S [1].

Caesarean section (C/S) is done to reduce maternal and neonatal death in case of complicated pregnancy and delivery, although it is not always safe operation, especially in developing countries. Ignorance, lack of education, lack of understanding of the operation and its subsequent management both on the part of the patient and her family leads to poor acceptance of both first and repeat CS. So they prefer to delivery vaginally as their first choice [3].

Despite this, Ethiopia has low c/s rate with the recent figures of being < 2% which varies from region to region and from rural to urban settings. The majority of caesarean section are performed for foetal indication, a few are solely for maternal reason and some benefit of both [4-8].

The aim of this study is to assess prevalence of C/S at Jimma University Specialized Hospital, which provides delivery services for all communities from south western of Ethiopia.

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Statement of the problem

Caesarean section rates are rising. The rise in prevalence could be partly attribute to increased use of electronic foetal monitoring, increased use of epidural analgesia, decreased use of forceps, safety of C/S delivery, artificial reproductive technology in older women, and large percentage of women who have had previous C/S [4].

The World Health Organization (WHO) puts the acceptable rate of C/S to be between 10% and 15% of all births in developed countries. However, access to safe Caesarean section in resource-limited settings is much lower, estimated at 1–2% reported in sub-Saharan Africa [3].

According to American College of Obstetricians and gynaecologists opinion, Vaginal Birth after Caesarean Section (VBAC) is safer than repeated C/S delivery. Women with previous lower segment uterine Caesarean Section (LSCS) are strongly encouraged to try to deliver vaginally and trial of scar has to be given for those who don't have clear medical or obstetrical complication on previous C/S. Up to 80% of women with one C/S will be able to have VBAC. They strongly encourage women with a lower uterine incision to deliver vaginally, which is called "Trial of Scar" [4].

Retrospective study to be obtained an estimate of C/S rates indications and consequences at teaching hospital in India in 1993-1994 and 1998-1999 indicates the overall rate C/S increased from 21.8% in 1993-1994 to 25.4% in 1998-1999 among the 7,017 C/S cases 42.4% were primigravida. Major indications for C/S include dystocia (37.5%), foetal distress with or without meconium aspiration (20.4%), repeated C/S (29%), and mal-presentation (14.5%). Maternal prenatal mortality was 299/10,000 and 493/1000 deliveries respectively and is high in spite of the increasing in C/S rate [9-12].

Medecins sans Frontieres (MSF), a humanitarian medical organization, supports emergency obstetrical programs in the Democratic Republic of Congo (DRC), Burundi, and Sierra Leone where maternal mortality ratios are extremely high, exceeding 500 deaths per 100,000 live births, compared to 9 per 100,000 live births in resource-rich countries [5].

A retrospective analysis of 3231 cases of C/S between 1994 and 1997 in morocco to assess the maternal mortality and morbidity associated with this intervention indicated the frequency to be 12.4%. The post-operative complication were primarily major haemorrhage (39 cases; 1.2%), fever (30 cases, 0.9%) and visceral lesion such as bladder rupture (3 cases; 0.1%). However, maternal mortality and morbidity rates are higher with C/S than with vaginal delivery [11].

The complication on the maternal side of C/S are un explained fever, endometritis, wounded infection, haemorrhage, aspiration, atelectasis, UTI, Thrombophlebitis, pulmonary embolism, intestinal obstruction and dehiscence of uterine incision in subsequent pregnancy are late complication. Threats to the foetus are birth trauma, respiratory distress, foetal hypoxia and acidosis [1,2].

The common indications for C/S are foetal distress, ante partum haemorrhage, Cephalo-pelvic disproportion, mal-presentation, malposition and cord prolapse [2].

One of the most dramatic features of modern obstetrics is the persistent increase in the caesarean section rate. The rise in its rate is a major health problem as it increases the risk for mothers and babies as well as of health care compared with normal deliveries [7].

The risk and safety of caesarean section differ from place to place in respect to structural and developmental levels of health system. Although caesarean section is now safer than it has never been, it can never be entirely safe and therefore it is not an alternate to vaginal delivery [8].1000172

In some private canters, the C/S rate kept increasing due to the differences in payment for vaginal delivery and C/S [9].

The study conducted in Jimma Hospital from 23rd June 1992 to 24th September 1993 were suggested that out of 1236 deliveries, 100 mothers were delivered by caesarean section; giving a caesarean birth rate of 8%. The leading indications for caesarean section were Cephalo-pelvic disproportion (44%), mal-presentation and mal-positions (21%), repeat caesarean section (16%), antepartum haemorrhage (8%) and foetal distress (6%), accounting for 95% of the indications for caesarean section [6].

In Ethiopia, maternal mortality rate is 676/100000 live births which making it one of the six countries contributing 50% of maternal death in the global. Among the cause of death, obstructed labour and its complication has significant figure one of the leading causes of maternal mortality and morbidity is haemorrhage which is contributed by most of the indication for C/S like placenta previa and placenta abruption [10].

Methods and Materials

Study area and period

Jimma University Specialized Hospital (JUSH) is one of the oldest public hospitals in the country. It was established in 1930 E.C by Italian invaders for the service of their soldiers. Geographically, it is located in Jimma city 352 km southwest of Addis Ababa. Especially, after transfer of its ownership to Jimma University, the university has made relentless efforts in extensive renovation and expansion work to make the hospital conducive for service, teaching and research.

Currently, it became the only teaching and referral hospital in the south-western part of the country. It runs an annual governmental budget of 25.06 million Birr with bed capacity of 450 and a total of more than 750 staffs of both supportive and professional. It provides services for approximately 9000 inpatient and 80000 outpatient attendances a year coming to our hospital from the catchments population of about 15,000 million people.

JUSH is one of referral hospital in Jimma zone which located in Jimma University. It consists of dental clinic, surgical, medical ward, paediatric ward, gynaecology ward and emergency OPD.

In the last year the total number of vaginal delivery is 3578. From this 3345 are live births, 233 are still births and number of caesarean section is 1007. The data was collected from March to April, 2014 G.C.

Study design

Hospital based retrospective cross sectional study design was used.

Population

Source population: All women who gave birth in Jimma University Specialized Hospital from January, 1st. 2013 up to December 31, 2013.1000172

Study population: All sampled women who gave birth in Jimma University Specialized Hospital from January 1st, 2013 up to December 31, 2013

Inclusion criteria: All sampled women whose medical records have full information and if records of deliveries is from January 1st up to December 31st, 2013 were included in the study.

Exclusion criteria: Any patient cards which did not have full information was excluded and replaced by selecting card number from delivery register randomly.

Sample size and sampling technique

Sample size: In order to determine the sample size for the quantitative method, single population proportion formula was used based on the following assumptions.

$$n = \frac{z_{1-\alpha/2}^2 p(1-p)}{d^2} = \frac{(1.96)^2 \times 0.50 \times 0.50}{(0.05)^2} = \frac{0.9508}{0.0025} = 384$$

Where, n = the minimum sample size required

P: Expected prevalence of C/S = 50%.

D: the desired precision (marginal error) between sample size and population parameter is 5%.

$Z_{\alpha/2}$: 1000172 standard normal score at 95% confidence interval.

Since the source population is less than 10,000 the sample size is adjusted with the following correction formula.

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

$$n_f = 384 / (1 + 384/2825) = 338$$

Sampling technique (procedure): The sampled women were selected from total deliveries using simple random sampling using their serial numbers from the delivery registration book as a sampling frame from January 1st, 2013 up to December 31st, 2013.1000172

Variables

Dependent variables

- Rate of caesarean section

Independent variables

- Characteristic of pregnant women
 - Age
 - Address
 - Gravidity
 - Parity
 - Gestational age at deliveries
 - ANC follow up
 - Previous c/s
 - Number of the foetus
 - Birth out come
 - Complications after Cs

Data collection tools and procedures

Data was collected using structured check lists that fulfil the objective of the study were adopted through reviewing of different literatures and previous similar studies. The instrument was adapted from different literatures developed for similar purpose by different authors. Data was recorded on the prepared checklists retrospectively

from review a medical record of women's who delivered in the hospital during the specified period. Three data collectors were recruited among graduating class of midwifery students.

Data processing and analysis

Data was compiled, summarized and analyzed manually on prepared tall sheet and using scientific calculator. Frequencies and percentage were used to describe some variables and finally the obtained results were presented using graphs, tables and narratives. The chi-square test was used to assess the association between the variables and the p-value less than 0.05 was considered as statistically significant.

Data quality control

To assure quality of data one day training was given for the data collectors' by the principal investigator on how to fill and refill data on the prepared check lists. The prepared checklists were tested on 5% of sample size records those excluded from final study and possible corrections were made. All collected data was checked for completeness, accuracy, and consistency by the principal investigator every day. Onsite close supervision and technical supports was given by principal investigator.

Ethical consideration

Official letter of approval was obtained from Jimma University, department of nursing and brought to hospital administrative bodies, the purpose of the study had explained and permission was obtained from Jimma University Specialized Hospital.

Dissemination plan

The results of the study will be presented to Jimma University, Department of Nursing and Midwifery. Soft copy and hard copy will be submitted to the department. The copy of the results will be given to the hospital and interested individuals.

Limitations

The study was based on secondary data which have been incomplete and may not represent the general community

Results

Table 1 shown that among mothers who gave birth by C/S 15.3% of them were in age-group between 18-35 years, 21.6% were came from rural, 16.3% had ANC follow up, 24.9% of mothers were delivered between 38-42 weeks of gestational age and majority of mothers who undergone C/S were multi gravida (23.4%) and multi Para (21%). 26.9% of mothers were delivered single foetus and 3.8% had history of previous c/s.

But from those who gave birth vaginally 47.3% of them were in age-group between 18-35 years which was followed by the age-group <18 years (15.7%). Among those gave birth vaginally 44.7% were came from rural, 59.5% had ANC follow up, 67.2% of mothers delivered between 38-42 weeks of gestational age and majority of mothers were multi gravida (55.3%) and multi Para (50%). 71.6% were delivered single foetus and 3.3% had history of previous C/S.

Table 2 indicated that the overall prevalence of caesarean section in the study area was 28.14%. But Majority of mothers (71.9%) were delivered their child vaginally.

Regarding the indications of C/S in the study area (14.1%) was due to CPD 2° to mal-presentation and malposition which was followed by

Variables		Mothers undergo c/s					
		Yes		No		Total	
		No	%	No	%	No	%
Age in years	<18	10	3	53	15.7	63	18.6
	18-35	52	15.3	160	47.3	212	62.8
	>35	33	9.8	30	8.9	63	18.6
	Total	95	28.1	243	71.9	338	100
Address	Rural	73	21.6	131	38.8	204	60.4
	Urban	22	6.5	112	33.1	134	39.6
	Total	95	28.1	243	71.9	338	100
ANC follow up	Yes	55	16.3	201	59.5	256	75.7
	No	40	11.8	42	12.4	82	24.3
	Total	95	28.1	243	71.9	338	100
Gestational age	<37weeks	4	1.1	11	3.3	15	4.4
	38-42weeks	84	24.9	227	67.2	311	92
	>42weeks	7	2.1	5	1.5	12	3.6
	Total	95	28.1	243	71.9	338	100
Gravidity	I	13	3.8	41	12.2	54	16
	II-IV	79	23.3	187	55.3	266	78.7
	≥ V	3	0.9	15	4.4	18	5.3
	Total	95	28.1	243	71.9	338	100
Parity	I	22	6.5	67	19.8	89	26.3
	II-IV	71	21	169	50	240	71
	≥ V	2	0.6	7	2.1	9	2.7
	Total	95	28.1	243	71.9	338	100
Number of fetus	Single	91	26.9	242	71.6	333	98.5
	Twins	3	0.9	1	0.3	4	1.2
	Multiple	1	0.3	0	0	1	0.7
	Total	95	28.1	243	71.9	338	100
Previous c/s	Yes	13	3.8	11	3.3	24	7.1
	No	82	24.3	232	68.6	314	92.9
	Total	95	28.1	243	71.9	338	100

Table 1: Distribution of maternal characteristics who gave births at JUSH March, 2014 G.C.

Mothers undergo C/s	Number	Percent (%)
Yes	95	28.1
No	243	71.9
Total	338	100

Table 2: Prevalence of caesarean section in the study area.

Previous C/S (3.8%) and Antepartum haemorrhage (Placenta previa and placenta abruption) which accounts 2%.

The study revealed that among the foetus delivered by C/S 17.5% of them had birth weight between 2500 and 3999 gms which was followed by birth weight >4000 gms (5%) and birth weight between 1500 and 2499 gms (4.7%).1000172But, among those who delivered vaginally 51.48% had birth weight between 2500 and 3999 gms which was followed by birth weight between 1500 and 2499 gms (14.2%) (Table 3-5).

Birth outcome was one of the variables used during this study. Therefore, from those foetus who deliver by CS majority of them (25.4%) were alive and 1.2% were still births which was followed by ENND 3 (0.9%).1000172But, out of the foetus delivered vaginally 6.8% were still births which were followed by ENND (3.8%) and IUFD (2.1%). But, 59.2% of them were alive.

Table 6 shown that the Apgar score of the foetus delivered by C/S were (17.8%) have Apgar score between 4 and 6 at 1st minute and 1.8% have between 0 and 3. But at 5th minute most of them (16.9%) have Apgar score between 7 and 10 which were followed by 10.4% of those have between 4 and 6. But from those delivered vaginally 41.1% have Apgar score between

4 and 6 at 1st minute which was followed by 26.9% of those have between 7 and 10. But at 5th minute most of them (38.5%) have between 7 and 10 which were followed by 31.1% of those have between 4 and 6.

The statistical tests (chi-square) was performed to assess if association existed between the outcome of the foetus and mode of delivery of the mother's and it was found that there were no significant association between the outcome of the new born and mode of delivery of the mother's. This could be due to low sample size.

Based on the statistical tests there were significant association between prevalence of C/S and fever (6.2%) at $\chi^2 = 21.2$ and $p = 0.00$,

Indication	No	%
1. CPD 2 ^o to Mal presentation and malposition	48	14.1
2. Foetal Distress	3	0.9
3. APH (Placenta previa and placenta abruption)	7	2
4. Previous C/S	13	3.8
5. severe pre eclampsia and eclampsia	2	0.6
6. Failed induction/augmentation	3	0.9
7. Cord prolapsed	2	0.6
8. Failed instrument	3	0.9
9. Post term	4	1.2
10. prolonged labour 2 ^o to poor maternal efforts	6	1.8
11. Others (on request, twins/triplets, mayoma, for teaching purpose)	4	1.2
Total	95	28.1

Table 3: Distribution of indication for c/s of women who delivered by c/s at JUSH March, 2014 G.C.

Birth weight in gm	Foetus delivered by c/s					
	Yes		No		Total	
	No	%	No	%	No	%
<1500	3	0.9	14	4.1	17	5
1500-2499	16	4.7	48	14.2	64	18.9
2500-3999	59	17.5	174	51.5	233	68.9
>4000	17	5	7	2	24	7.2
Total	95	28.1	243	71.9	338	100

Table 4: Birth weight of neonate delivered at JUSH March, 2014 G.C.

Outcome of the foetus	Mothers undergo C/S					
	Yes		No		Total	
	No	%	No	%	No	%
Still birth	4	1.2	23	6.8	27	8
ENND	3	0.9	13	3.8	16	4.7
IUFD	2	0.6	7	2.1	9	2.7
Alive	86	25.4	200	59.2	286	84.6
Total	95	28.1	243	71.9	338	100

Table 5: Distribution of outcome of new born after delivery at JUSH March, 2014 G.C.

Apgar scores of the foetus after delivery	foetus delivered by c/s						
	Yes		No		Total		
	No	%	No	%	No	%	
Apgar score at 1 st minute	0-3	6	1.8	13	3.8	19	5.6
	4-6	59	17.5	139	41.1	198	58.6
	7-10	30	8.9	91	26.9	121	35.8
	Total	95	28.1	243	71.9	338	100
Apgar at 5 th minute	0-3	3	0.9	8	2.4	11	3.3
	4-6	35	10.4	105	31.1	140	41.4
	7-10	57	16.9	130	38.5	187	55.3
	Total	95	28.1	243	71.9	338	100

Table 6: Distribution of the Apgar score of foetus delivered at JUSH March, 2014 G.C.

Outcome	Mothers undergo C/S						X ²	D _f	P-value
	Yes		No		Total				
	No	%	No	%	No	%			
Dead	9	2.7	43	12.7	52	15.4	3.75	3	0.289
Alive	86	25.4	200	59.2	286	84.6			
Total	95	28.1	243	71.9	338	100			

Table 7: The association of the outcome of the new born with the mode of delivery of the sampled mothers after delivery at JUSH March, 2014 G.C.

infection (3.3%) at $x^2 = 10.2$ and $p = 0.001$, fistula (0.6%) at $x^2 = 5.15$ and $p = 0.023$, and post-partum psychosis (0.6%) at $x^2 = 5.15$ and $p = 0.023$. But there were no association between prevalence of caesarean section and bleeding (2%) at $x^2 = 0.144$ and $p = 0.905$ and wound dehiscence (0.9%) at $x^2 = 2.55$ and $p = 0.11$.

In the following table Statistical tests (chi-square) were performed to assess if association existed between maternal characteristics and prevalence of caesarean section and it was found that there was significant association between prevalence of caesarean section and

complication on mother after delivery		Mothers gave birth by c/s						X ²	d _f	p-value
		Yes		No		Total				
		No	%	No	%	No	%			
Bleeding(PPH)	Yes	7	2	17	5	24	7.1	0.144	1	0.905
	No	88	26	226	66.9	314	92.9			
Fever	Yes	21	6.2	13	3.8	34	10.1	21.2	1	0.00
	No	74	21.9	230	68.1	304	89.9			
Infection (sepsis)	Yes	11	3.3	7	2	18	5.3	10.2	1	0.001
	No	84	24.8	236	69.9	320	94.7			
Fistula	Yes	2	0.6	0	0	2	0.6	5.15	1	0.023
	No	93	27.5	243	71.9	336	99.4			
Wound dehiscence	Yes	3	0.9	2	0.6	5	1.5	2.55	1	0.11
	No	92	27.2	241	71.3	333	98.5			
Postpartum psychosis	Yes	2	0.6	0	0	2	0.6	5.15	1	0.023
	No	93	27.5	243	71.9	336	99.4			

Table 8: Distribution of complication on mother after delivery and their association with prevalence of c/s at JUSH March, 2014 G.C.

Variables		Mothers undergo C/S						X ²	D _f	P-value
		Yes		No		Total				
		No	%	No	%	No	%			
Age	≤18	10	3	53	15.7	63	18.6	24.4	2	0.00
	18-35	52	15.3	160	47.3	212	62.8			
	>35	33	9.8	30	8.9	63	18.6			
	Total	95	28.1	243	71.9	338	100			
Address	Rural	73	21.6	131	38.8	204	60.4	15	1	0.00
	Urban	22	6.5	112	33.1	134	39.6			
	Total	95	28.1	243	71.9	338	100			
ANC follow up	Yes	55	16.3	201	59.5	256	75.7	22.9	1	0.00
	No	40	11.8	42	12.4	82	24.3			
	Total	95	28.1	243	71.9	338	100			
Gestational age	<37 weeks	4	1.1	11	3.3	15	4.4	5.63	2	0.06
	38-42 weeks	84	24.9	227	67.2	311	92			
	>42 weeks	7	2.1	5	1.5	12	3.6			
	Total	95	28.1	243	71.9	338	100			
Gravidity	I	13	3.8	41	12.2	54	16	0.451	2	0.798
	II-IV	79	23.3	187	55.3	266	78.7			
	≥ V	3	0.9	15	4.4	18	5.3			
	Total	95	28.1	243	71.9	338	100			
Parity	I	22	6.5	67	19.8	89	26.3	0.919	2	0.632
	II-IV	71	21	169	50	240	71			
	≥ V	2	0.6	7	2.1	9	2.7			
	Total	95	28.1	243	71.9	338	100			
Number of fetus	Single	91	26.9	242	71.6	333	98.5	7.01	2	0.03
	Twins	3	0.9	1	0.3	4	1.2			
	Multiple	1	0.3	0	0	1	0.7			
	Total	95	28.1	243	71.9	338	100			
Previous c/s	Yes	13	3.8	11	3.3	24	7.1	8.68	1	0.003
	No	82	24.3	232	68.6	314	92.9			
	Total	95	28.1	243	71.9	338	100			

Table 9: Association between maternal characteristics and undergoing of C/S section for mother who delivered by c/s at JUSH March, 2014 G.C.

age-group of the mother's at ($\chi^2 = 24.4$, $p = 0.00$), address of mother's at ($\chi^2 = 15$, $p = 0.00$), ANC follow up at ($\chi^2 = 22.9$, $p = 0.00$), number of the foetus at ($\chi^2 = 7.01$, $p = 0.03$) and history of previous C/S at ($\chi^2 = 8.7$, $p = 0.003$). But there were no association between prevalence of caesarean section and gestational age at ($\chi^2 = 5.63$, $p = 0.06$), gravidity at ($\chi^2 = 0.451$, $p = 0.798$) and parity at ($\chi^2 = 0.91$, $p = 0.63$) (Table 7-9).

Discussion

The prevalence of caesarean section in the study area was 28.14%. This is rapidly increasing because it exceeded beyond the level recommended by the WHO which is 15%. The findings revealed that caesarean section rates was increasing rapidly when we compare with the research done in Jimma university hospital [6] and Tikur Anbessa hospital [11] which indicates 8% and 10%, respectively. Singapore general hospital and Indian teaching hospital also had shown the same thing. This could be due to increase use of electronic monitoring, teaching hospital, low ANC coverage, early marriage and low trial of VBAC.

The major indication for caesarean section in the study area was CPD 2° to mal-presentation and malposition (14.1%) which was followed by Previous C/S (3.8%) and APH (2%) and least of them (0.6%) have severe pre eclampsia and eclampsia as indication for caesarean section. This study was similar with the study conducted in the same area in 1995 [6]. This similarity could be due to low quality of ANC follow up, the hospital was teaching hospital and they did c/s for those who had previous c/s before trial of VBAC and early marriage in rural area. One of the reasons for CPD is due to nutritional problem in the study area.

Concerning birth outcome of mothers who gave birth by c/s 1.2% were still births, 3(0.9%) were ENND, 2(0.6%) were IUFD and 25.4% were alive. From the women those had complication after c/s 6.2% had fever which was followed by bleeding (3.3%) and least of them (0.6%) have fistula and post partum psychosis. This was similar with the study done in Morocco and it could be due to low quality of operation technique and midwifery care.

Statistical tests (chi-square) were performed to assess if association existed between complication on mother after delivery and prevalence of caesarean section and it was found there were significant association between prevalence of c/s and fever at ($\chi^2 = 21.2$ and $p = 0.00$), infection at ($\chi^2 = 100017210.2$ and $1000172p = 0.001$), fistula at ($\chi^2 = 5.15$ and $p = 0.023$), post-partum psychosis at ($\chi^2 = 5.15$ and $p = 0.023$), address of mother's at ($\chi^2 = 15$, $p = 0.00$), ANC follow up at ($\chi^2 = 22.9$, $p = 0.00$), number of the foetus at ($\chi^2 = 7.01$, $p = 0.03$) and history of previous c/s at ($\chi^2 = 8.7$, $p = 0.003$). The study done on Western Australia hospital was shown similar things.

Conclusion and Recommendation

Conclusions

Based on this finding it was concluded that the prevalence of caesarean section in JUSH was 28.1%. The major indication for caesarean section was CPD 2° to mal-presentation and malposition followed by Previous C/S. The major complication of mothers after C/S was fever which was followed by bleeding. The majority of birth outcome of the foetus who delivered by C/S were alive. Based on the Statistical tests (chi-square) performed there was significant association between prevalence of caesarean section and age-group of the mothers, ANC follow up, number of the foetus, history of previous C/S and from complication on mothers after delivery there was significant association with fever, infection, fistula, post partum psychosis.

Recommendations

Based on this study finding the following recommendations were forwarded:

1. Information Education and communication strategy should strength health information regarding the use of ANC follow up to the community.
2. MOH should increase accessibility of health facility to improve ANC follow up at rural areas.
3. The JUSH, department of Obstetrics and Gynaecology should restrict the indication of C/S and improve trial of VBAC and instrumental vaginal deliveries.
4. Research should be conducted for further intervention.
5. Women affair and other stakeholder should work on early marriage.
6. All health care providers should reduce the high perinatal mortality and maternal morbidity through effective antenatal care and referral system to prevent prolonged and obstructed labour.

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Authors' Contributions

AT and MY designed the study, analyzed the data drafted the manuscript and critically reviewed the article.

All authors read and approved the final manuscript.

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