INCIDENCE AND OUTCOME OF TWIN DELIVERIES IN JIMMA UNIVERSITY SPECIALIZED HOSPITAL, SOUTH WEST ETHIOPIA, 2013

By:

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PROPOSAL FOR THE PREPARATION OF THESIS TO BE SUBMITTED TO DEPARTMENT OF OBSTETRICS AND GYNECOLOGY, COLLEGE OF MEDICAL AND PUBLIC HEALTH, JIMMA UNIVERSITY WITH PARTIAL FULFILLMENT OF CERTIFICATE IN OBSTETRICS AND GYNECOLOGY SPECIALITY

JANUARY, 2013

JIMMA, ETHIOPIA

Incidence and outcome of twin deliveries in Jimma University Specialized Hospital, south west Ethiopia, 2013

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January, 2013

Jimma, Ethiopia

Acknowledgment

I would like to thank my advisors Dr. Fitsum Araya and Professor Tefera Belachew for their assistance and valuable comment in developing this research proposal. In addition, I would like to pass my appreciation to mothers who will participate in the study.

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Acronyms

AGA-average gestational age

APH- antepartum haemorrhage

ARM- artificial rupture of membrane

DCDA-dichorionicdiamnoitic

DCMA-dichorionicmonoamniotic

DNA- deoxyribonucleic acid

EFW-estimated fetal weight

HLA-Human leukocyte antigen

IUFD-intrauterine fetal death

IUGR- intrauterine growth restriction

IVF-invitro fertilization

JU- Jimma University

JUSH – Jimma University Specialized Hospital

LNMP-last normal menstrual period

MAMC-monoamnioticmonochorionic

MDGs-millennium development goals

PROM- premature rupture of membrane

TRAP- Twin reversed arterial perfusion

TTTS -twin- to-twin transfusion syndrome

U/S-ultrasound

Summary

Introduction

Twin pregnancy is one of the common obstetrical complications.

It is associated with much-increased risk of maternal and fetal complications during a pregnancy, and worse perinatal outcomes compared with the outcome for singletons. Its incidence also varies with different factors

Objectives

The objective of the study is to determine the incidence, and obstetrical and neonatal outcomes among twin pregnancies who will deliver in obstetrics ward of Jimma University Specialized Hospital (JUSH) from January 1, 2012 to January 31, 2013.

Methodology

A prospective study will be carried-out in obstetrics ward of JUSH. All cases of twin deliveries in the hospital will be included in the study. Data will be collected at the time of delivery including maternal age, parity, and gestational age at the time of delivery, fetal Apgar scores at birth, fetal sex, fetal weights, & type of placentation. Data on maternal and neonatal complications will be collected through follow up. The data will be collected using structured questionnaire which include validated and standardized verbal autopsy tool. Statistical Package of Social Sciences (SPSS version 16 for windows) will be used for data analysis. Descriptive statistics will be used to describe the main features of the data. Bivariate analysis will be done to determine association between independent variables and outcome variable. Multivariate Logistic regression will be used to control the effect of confounding variables. Significant variables at $P<0.25$ from bivariate analysis will be included in multivariable logistic regression analysis. Finally, statistical significance will be declared at $P<0.05$. A total of 9,880.00 Birr will be needed to conduct this study.

CHAPTER ONE: Introduction

1.1. Background Information

In the human species, twin is a type of multiple birth in which the mother gives birth to two offspring from the same pregnancy(1).

The occurrence and frequency of twinning varies across human populations. It is associated with a number of adverse maternal conditions during pregnancy, intrapartum, delivery and postpartum(2).

It is fact that the female is programmed to nurture one fetus and to take care of one neonate at a time; hence, twin pregnancy is associated with an increased risk of preterm deliveries, perinatal morbidity, and mortality(3).

Regardless of the inherent changes in maternal physiology due to the twin pregnancy, there are some maternal disease conditions that are more frequent in these gestations(4)

Because of difference in anatomic and physiologic changes, many aspects of the obstetric management of the twin pregnancy cannot be extrapolated from that of a singleton pregnancy(2).

1.2. Statement of the problem

Twin pregnancy is associated with increased risk of maternal and neonatal complications both in developed and developing countries(5). It continues to be a focus of interest the world over due to its increasing incidence and also the high maternal and perinatal mortality and morbidity associated with it. This is probably worse in sub-Saharan Africa where there may be lack of facilities to manage twin pregnancy and delivery and where poverty, ignorance, and harmful cultural beliefs and practices are still rife. Available evidence also indicates that twin pregnancies are also associated with a number of financial, emotional, personal and social costs for their families and twins themselves(6)

It accounts for at least 10% of perinatal mortality. Low birth weight and prematurity are the main causes of high prenatal morbidity and mortality in twins,whereasmalpresentation and the hazards of delivery are next in order of concern. For these reasons, twin pregnancy is considered a high-risk pregnancy; different aspects of the risk include the mode of delivery, which remains a subject of a controversy and discussion among obstetricians(2).

Little is reported from Ethiopia and there is lack of nationally representative data. In JUSH there is also no baseline study on twin pregnancy. This study is aimed to determine the twinning rate, and maternal and fetal outcomes of all twin pregnancies managed at obstetrics ward of JUSH(5).

CHAPTER TWO: Literature Review

2.1. Overall situation

Twins in animal biology is a form of multiple births in which the mother gives birth to two offspring from the same pregnancy. Giving birth to twins is a relatively rare event in humans, where occurrences vary considerably across populations. The human female usually has a single baby in each pregnancy; but one in 80 pregnancies is a twin pregnancy(1,7).

The prevalence of spontaneous twin pregnancies ranges from approximately 0.6 % of pregnancies in Asia and 1 to 2 % in Australia, Europe and the USA to about 4 % in Africa(8).

For Africa, the myth is broken that twinning rates in Nigeria are the highest in the world. High national twinning rates are found throughout Central Africa and in several countries twinning incidence is higher than in Nigeria. With 27.9 twins per 1000 births, Benin has the highest national average. In Egypt it is 17.7 twins per 1000 births (9)

Information in Ethiopia about twin pregnancy is limited. The rates in St. Paul's Hospital, Addis Ababa (1971 to 1985), Mekele referral hospital in Tigray (1993- 2003), and Gondar teaching and referral hospital (1977 and 1985) were 2.43%, 1.37% and 1.44% respectively(5,10,11)

The rate of twining has increased by 76% between 1980 and 2009, predominantly to increasing maternal age at conception and use of assisted reproduction. For instance, in 2006, it was estimated that ART accounted for 1% of all births in the United States and 18% of all twins ,and it has been estimated that advanced maternal age accounts for 25%-30% of the rise in multiple birth rates since 1970 (8,9).

Twin fetuses are either dizygotic or monozygotic. The former resulted from fertilization of two separate ova, while the former from single ovum. Slightly more than 30% of twins are monozygotic; nearly 70% are dizygotic(7,12). Retrospective study in University of

Maiduguri Teaching Hospital, Maiduguri, Nigeria showed Dizygotic twinning rate 68.3% of the cases, while monozygotic twins occurred in 31.7%. Out of the twin deliveries, 70.4% and 29.6%) were unhooked(13)

The difference in twinning rates seems to be due to differences in the incidence of dizygotic births, while the monozygotic rate varies very little between races and occurs with a constant incidence of 3.9 per 1000 births. the incidence of dizygotic twinning is influenced remarkably by race, heredity, maternal age, parity, and, especially, fertility treatment(3,7)

A study on maternal and foetal outcome of twin deliveries in Jos, Nigeria, between August 2003 and November 2004 showed the mean age and parity of mothers were 28.96 and 3.20 respectively(25)

Twin pregnancies, in comparison with singletons, are at increased risk for fetal anomalies, [and] preterm births, aberrant fetal growth, cerebral palsy, and perinatal and infant mortality. Maternal complications associated with twin pregnancies include hypertensive disorders, gestational diabetes, cesarean delivery, postpartum hemorrhage, and maternal mortality(8). For instance, hypertensive disorders are 2 to 3 times more frequent and their most dangerous complication—eclampsia—is 6 times more frequent among mothers of multiple gestations(4)

The incidence of gestational diabetes is higher in twin (3-6%) than singleton

Twin pregnancies are also at increased risk of cesarean section, operative delivery, PROMs (7% to 10% of twin Pregnancies), postpartum endometrities and placental abruption when compared with singleton pregnancies (2,4).

Threatened abortion, hyperemesis, anemia, urinary tract infections, musculoskeletal disorders, abnormal placentation , Polyhydramnios ,respiratory discomfort in late pregnancy ,and Malpresentations,Cord accident (presentation and prolapse)are also increased in twin pregnancy (14).

Antepartum complications noted in the study at University of Maiduguri Teaching Hospital, Ngeria, 2011, were preterm labor in 29.6%, pregnancy-induced hypertension in 5.4%, and antepartum hemorrhage in 3.8% (13).

According to study conducted on 99 twin deliveries in Mekele referral hospital in Tigray (April 1, 1993-March 30, 2003) , the rates and major complications in twin pregnancies were: preterm labour in 39.4% , PROM in 31.3% , APH in 11.1% , PPH in 9.1% , pre-eclampsia in 9.1% , malpresentation in 14.1% and maternal death in 3% (5).

A study done In Lebanon, 2012, on Effect of parity on maternal and neonatal outcomes in twin gestations showed that nulliparous women with twin gestations are at significantly higher risk for preterm delivery and cesarean delivery compared with multiparous women. Except for a higher intensive care nursery admission rate and longer nursery stay for twins of nulliparas, all neonatal morbidities were comparable (15).
A number of unique complications develop in twin pregnancies. Approximately 1 % of monozygotic twins are monoamnionic. Their associated high fetal death rate may result from cord entanglement, congenital anomaly, preterm birth, or twin-twin transfusion syndrome(7)

Conjoined twinning refers to incomplete splitting of monozygotic twins after 12 days of embryogenesis. Conjoined twins account for0.5- 1% of monozygotic twins. In the United States, the incidence is 1 per 33,000-165,000 overall births and 1 per 200,000 live births(16,17).

Twin reversed arterial perfusion (TRAP) sequence occurs in 1% of monochorionic pregnancies, with an incidence of 1 in 35,000 births. It occurs when an acardiac/acephalic twin receives all of the blood supply from the normal twin. If left untreated can cause death in 50-75% of cases(18).

Twin-to- twin transfusion syndrome (TTTS) is a rare complication that develops in up to 15% of identical twin pregnancies when the babies share a common placenta. It is characterized by an imbalance in the blood flow through communicating vessels across a shared placenta leading to underperfusion of the donor twin and overperfusion of the

recipient. The donor twin often develops IUGR and oligohydramnios, whereas the recipient experiences volume overload and polyhydramnios that may lead to heart failure and hydrops. Diagnosis can be made by these four: the presence of a single placenta, same-gender fetuses, significant weight discordance, and significant amniotic fluid discordance often with a "stuck twin.")

It accounts 20% of stillbirths in twin pregnancies. If untreated, the prognosis is poor with reported mortality rates for both twins ranging from 60 to 100 percent.(19)

Growth discordance in utero is the difference in sonographic estimated fetal weights expressed as a percentage of the larger twin's estimated fetal weight. The American College of Obstetricians and Gynecologists defines abnormal growth in two ways: an estimated fetal weight below the 10th percentile using singleton growth curves or a 20 percent discordance in estimated fetal weight between the lighter and heavier twin. Approximately 15 percent of twins are diagnosed with this condition. Risk factors include monochorionicity, uteroplacental insufficiency, gestational hypertension,velamentous cord insertion, and antenatal bleeding. The neonatal mortality rate of the smaller twin increased with increasing discordance:

Large twins of discordant pairs were also at increased risk of neonatal mortality (14,20–22).

IUFD of one twin can occur in any trimester. It is also termed as vanishing twin. It occurs approximately in 0.5 to 6.8% of twin pregnancies. It is estimated that there is a three- to fourfold increase in intrauterine death with monochromic twins as compared with dichorionic.it is risky to the other twin the mother herself (23). Death of Both Twin Fetuses can occur in about i0.5 % of twin pregnancies. monochromic placentation and discordant fetal growth are the causes (7).

A study in Scandinavia, 2012, the incidence of IUFD (death of one or both fetuses) in MCDA twin pregnancies was three times that in DCDA pregnancies [3.9 vs. 1.3%) (24)

Additional risks to the babies include intrauterine growth restriction and congenital abnormalities. Major malformations develop in 2 percent and minor malformations in 4 percent of twins than in singleton pregnancies(25,26).

With twins, all possible combinations of fetal positions may be encountered. The most common presentations at admission for delivery are cephalic-cephalic(42%), cephalic-breech(27%), cephalic- transverse(18%), breech-breech(5%), and others(8%). Importantly, these presentations, especially those other than cephalic–cephalic, are unstable before and during labor and delivery. Compound, face, brow, and footling breech presentations are relatively common, especially if fetuses are small, amnionic fluid is excessive, or maternal parity is high(7).

Vertex-vertex twins presentation accounts for approximately 42 percent of twins . The general consensus is that a trial of labor with the goal of a vaginal delivery of vertex-vertex twins is appropriate at any gestational age(27).

A study on maternal and foetal outcome of twin deliveries in Jos, Nigeria, between August 2003 and November 2004 showed cephalic-cephalic presentation for the first and second twins were the most common, (48.0%). Male-male twin pair occurred in 33.3%, male-female twins in 22.7%, female-female in 24%, while female-male twins occurred in 20.0%. Males were first twin in 56.0% and second twin in 53.4%; while females were first twin in 44.0% and second twin in 46.6% of the cases(28).

A unique, potential complication of breech-vertex twin delivery, as opposed to breech singleton delivery, is the possibility of interlocking chins (ie, locked twins), but this is rare. It occurs only once in 817 twin gestations(7,27).

Almost 80% to 90% of twins initiate spontaneous labor at less than 38 weeks' gestation.As the number of fetuses increases, the duration of gestation decreases, the median gestational age being 35 weeks. According to randomized trial done in Australia,2012,on women with an uncomplicated twin pregnancy, elective birth at 37 weeks of gestation was associated with a significant reduction in risk of serious adverse outcome for the infant (7,29)

Delivery before term is the major reason for increased neonatal morbidity and mortality rates in twins. Preterm delivery (<37 weeks) occurs in well over half of all twin pregnancies. In 2009, of the137,217 twins that were delivered in the United States, approximately 59% were preterm and 10% were delivered at <32 weeks(8)

The four year study of twin deliveries managed at the Niger Delta University Teaching Hospital Okolobiri, from January 1, 2007 to December 31, 2010 showed, the mean gestational age was 33.3 ± 2.6 weeks, and the mean fetal weight was 2.34 ± 0.54 kg.(3)

The average birth weights for twins, according to a National Vital Statistics report from the United States in 2004 were 2,333g. Among twins, the proportion of low (<2500 g) and very low birth weight (<1500 g) infants was 57 and 10 percent, respectively(27).

More than 40 years ago, Bennett and Dunn (1969) suggested that a twin pregnancy of 40 weeks or more should be considered postterm(7).

All patients with twin pregnancy should be delivered in a well-equipped hospital by an experienced physician who has adequate assistance. It is desirable to have a pediatrician (or neonatologist) in attendance. The study done in France, 2007, showed The need for hospitalisation was 50% (30% of whom for preterm delivery threats)(12,30)

Vaginal birth is permitted in twins whenever the first twin is in vertex presentation. According to the study conducted in china from 1 April 2006 to 31 March 2009, on 197 sets of twins, 35 (18%) were delivered vaginally and 162 (82%) by caesarean section (47% were emergencies and 53% elective). In all, 32 (37%) of the elective and 21 (28%) of the emergency caesarean sections were in response to maternal requests. Vaginal delivery was more common in mothers with a history of vaginal delivery and monochorionicdiamniotictwins.

Study done in Paris, 2007, indicated that Caesarean and instrumental delivery rates were 50% and 12%.respectively (4,30,31)

Although some second twins may require rapid delivery, others can be safely followed with fetal heart rate surveillance and remain undelivered for substantial periods of time. (14)

Examination of the placenta(s) and a detailed description of its dividing membrane are critical for determining zygosity of the neonates .Determination of zygosity is clinically significant in case intertwin organ transplantation is needed later in life, as well as for assessing obstetric risks. Diamniotic, dichorionic twins are necessarily DZ if the twins are of opposite sex, and may be either DZ or MZ if the neonates are the same sex. Despite these limitations, the obstetrician can still accurately determine zygosity in the delivery room in over 50% of cases by simply observing the fetal sex and grossly inspecting the placenta. In those cases that remain uncertain, a more specific diagnosis can be made by blood or HLA antigen typing or more sophisticated DNA analyses(7).

The overall stillbirth rate in twin pregnancies is higher than in singleton pregnancies: in 2009 the stillbirth rate was 12.3 per 1,000 twin births, compared with 5 per 1,000 singleton births. According to the study conducted in England, 2012, the overall stillbirth and neonatal mortality rates in twins were 18.0 per 1,000 births and 23.0 per 1,000 live births respectively. Stillbirth and neonatal mortality rates were significantly higher in monochorionic than dichorionic twins(4,32). Two studies on twin deliveries in Nigeria between August 2003 and November 2004, and 2007 and 2010 showed perinatal mortality was 91 and 158.5/per 1000 deliveries. Prematurity was the chief cause of perinatal death (65.4%) as of the second study (3, 25)

Comprehensive perinatal cares, greatly decrease morbidity and mortality rates . First twins have an approximately 3% greater chance of survival than do second twins(12).

Conceptual framework

2.2. Significance of the study

Twin pregnancies is classified as high risk because of the increased incidence of maternal anemia, urinary tract infection, preeclampsia–eclampsia, hemorrhage (before, during, and after delivery), malprasentation, increased risk of cesarean deliveries, and complications after delivery including puerperal sepsis, surgical site infections and postpartum depression .It is also associated with increased neonatal morbidity and mortality mainly due to preterm labor and preterm delivery with their complications, and complications unique to twin pregnancy. Compressive obstetric care and intensive neonatal care play a crucial role to decrease complications related to this pregnancy.

Findings of this study will be used to plan and implement standard obstetrics and neonatal care so as to decrease maternal and neonatal complications from twin pregnancies; which inturn helps the country to achieve MDGs.

CHAPTER THREE: Objective

3.1. General objective

- To determine the incidence, and obstetrical and neonatal outcome among twin Pregnancies who will deliver in Jimma University Specialized Hospital

3.2. Specific objectives

- To determine the incidence of twin deliveries in JUSH.
- To identify maternal complications of twin deliveries
- To identify neonatal outcomes of twin deliveries
- To come up with certain recommendations on twin deliveries in JUSH

CHAPTER FOUR: Methods and Materials

1.1. Study area and period

The study will be conducted in Jimma University Specialized Hospital (JUSH) which is located 357kms Southwest of Addis Ababa. Jimma university specialized hospital is found in Oromyia region of Jimma zone. It is one of the oldest teaching hospitals in the country giving services to people living in Jimma zone and serving as a referral hospital in the South-West Ethiopia. It is also serving as a clinical post graduate specialty teaching hospital for Obstetrics and Gynecology, Internal Medicine, Pediatrics & Child Health since 2005 and for Ophthalmology, and in Surgery since 2007. Department of Obstetrics and Gynecology has two wards (Gynecology and obstetrics), one MCH clinic, one Gynecologic OPD, one family planning clinic and referral clinics (Gynecology Oncology, Benign Gynecologic Diseases, and High risk Pregnancy). It has eight consultant Obstetricians & Gynecologists and 33 residents from year I – III.

The study will be conducted from January 1, 2012 – January 31, 2013.

1.2. Study design

A prospective study will be used to follow the twin pregnancy cases. All twin pregnancy cases will be followed from time of admission to maternity or labor ward to the time of discharge after vaginal or cesarean delivery.

1.3. Source population

All pregnant mothers who will deliver in obstetrics ward of Jimma University Specialized Hospital from January 1, 2012 – January 30, 2013.

1.4. Study population

All twin pregnant mothers who will give birth in obstetrics ward of JUSH from January 1, 2012 – January 30, 2013.

1.5. Sample size determination

All cases of twin deliveries during the study period will be included.

1.6. Sampling procedure

Consecutive sampling technique will be used to include all cases of twin deliveries during the study period.

1.7. Inclusion and exclusion criteria

Exclusion criteria - all mothers who delivered both twins at home/ health institutions and came for other reasons

1.8. Study Variables

1.8.1. Independent variables

- Maternal

-ethnicity

- Occupation

- Educational status

- Marital status

–Volume of blood loss (mL)

- Income

- Parity

- Antenatal care follows up

- Duration of pregnancy

- Duration of hospital stay before delivery

- Duration of labor

-duration of rupture of membrane delivery

-pregnancy induced hypertension

-antepartum haemorrhage

- post operative Hematocrit

1.8.2. Dependent variables

-Mode of deliveries

-Neonatal outcome

-Maternal outcome

1.9. Operational definition and definition of terms

Parity – number of delivery experiences. A woman whose first delivery or viable pregnancy was multiples was considered primiparous

Perinatal mortality- the statistical rate of fetal and infant death, including stillbirth, from 28 weeks of gestation to the end of the neonatal period of 4 weeks after birth.

Prolonged pregnancy – after 40 weeks of GA

1.10. Data collection instruments

A structured questionnaire and stationary (pen, pencils, paper, and marker) will be used for the data collection.

1.11. Data collection procedures and personnel

Three Obstetrics& Gynecology residents and two pediatrics residents will be oriented on how to fill the information. Mothers and neonates will be followed until they will be discharged from the hospital. In addition, each day the responsible duty residents will be interviewed whether there is any case of twin deliveries.

The questionnaire will have three parts; the first part includes sociodemographic factors. The second part consist a structured questionnaire, with sections and subsections including distal and proximal determinants of infant mortality. The questionnaire will be formally prepared in English

1.12. Data Quality

The questionnaire will be pre-tested on few cases before the actual data collection. Cranach's alpha will be calculated to check the reliability of the tool and modification will be made on the instrument in needed.

During data collection

Intensive training will be given for the data collectors on the questionnaires and methods of data collection. The principal investigator will check the completeness and consistency of the questionnaire after each interview. The data collection process will be closely monitored by the principal investigator. The principal investigator will check every questionnaire meticulously so that all incomplete forms will be identified while before the mother and the newborns are discharged

After data collection

The data will be edited and cleaned to ensure accuracy, consistency completeness of data

1.13. Data processing and analysis

The collected data will be cleaned, fed to computer and analyzed using SPSS for windows 16.0. Results will be presented by using tables and statistically tested. Final interpretation, discussion and recommendation will be made based on the findings of this research.

1.14. Ethical considerations

The ethical clearance will be taken from the College of public health and medical science of JU. Written informed consent will be obtained from every study subject before the interview by explaining the objective of the research. All the information collected from the study subjects will be handled confidentially through omitting their personal identification, conducting the interview in private place and the data will be used for the research purpose only.

1.15. Plan of dissemination

The result will be presented and submitted to the Jimma University. Further effort will bemade for publication on local and international journals.

1.16. Limitations of the study

The study will be conducted in a tertiary and teaching hospital so it may not be a representative of the general population

CHAPTER FIVE: Work plan

Table 1: Work plan of the thesis work

Activities	Sep	Oct	Nov	Dec	Jan	Mar	Apr	May	June	Aug	Sep	Oct	Nov	Dec	Jan	Mar
Title selection																
Proposal writing																
Submit the first draft of the proposal																
Submit the final draft of final proposal																
Confirmation of the proposal by the advisors																
Ethical review																
Secure fund																
Pretest																
Data collection																
Data entry and analysis																
Write Final paper																
Submission of first draft of report																
Submission of final report																
Final defense of thesis																

CHAPTER SIX: Budget breakdown

Table 2: Budget breakdown

Description		Unit	Quantity	Unit price (in Birr)	Total price (in Birr)
1. Stationary costs (1,480.00)					
1.1.	Kenya Bick Pen for data collectors	Number	5(1 for each)	4.00	20
1.2.	Pencil for data collectors	Number	5(1 for each)	2	10
1.3.	Note book for data collectors	Number	5	15	75
1.4.	Print service for the proposal	No. of Pages	50*6	1	300
1.5.	Print for the final thesis	No. of Pages	80*6	1	480
1.6.	Questionnaire duplication	No. of Pages	8*150	0.50	600
2. Personnel costs (8395.00)					
2.1.	Training of Data collectors (5 data collectors)	Number of days for training of data collectors	1	179	1*5*179=895
2.2.	Fee for data collectors (5data collectors)	Number of cases	150	50	7500
				Total	**9,880.00**

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JIMMA UNIVERSITY FACULTY OF MEDICAL SCIENCES, DEPARTMENT OF OBSTETRICS AND GYNECOLOGY, QUESTIONNAIRE FORMAT ON INCIDENCE , AND OBSTETRICAL AND NEONATAL OUTCOMES OF TWIN DELIVERIES IN OBSTETRICS WARD OF JUSH, JIMMA, SOUTH WEST ETHIOPIA, December,2012

INSTRUCTIONS

You are kindly requested to answer all questions genuinely.

PART I – SOCIODEMOGRAPHIC INFORMATIONS

1. Age in years …….. Card number……..

2. Address …… date of admission …… time of admission……..

3. Ethnicity a) Oromo b) Amhara c) Tigrie d) Guragie e) Dawro f) others (specify)……

4. Religion a) Orthodox Christian b) Protestant c) Muslim d) others (specify)……

5. Occupation a) House wife b) Civil servant (employee) c) Farmer d) Merchant e) Others (specify)…….

6. Educational status

a) Illiterate (can't read & write) b) Read &write only c) Grade 1-8 d) Grade 9-12 e) Grade >12 (specify)……

7. Marital status a) Married b) Separated c) Divorced d) Widowed

8. Income of the family per month _____Birr

PART II –Risk Factors Assessment

1. Were you using OCP prior to pregnancy? A) yes B) no
2. If the answer for number 2 is yes, when was it discontinued prior to pregnancy? (Mention it in weeks or months)-----
3. Did you have problem of conceiving? A) yes B)no
4. If the answer for number 3 is yes, were you given treatment for it? A) yes B)no
5. If the answer for number 4 is yes, mention what was done or given----------
6. Do you have family history of multiple pregnancies? A) yes B) no
7. If the answer for number 6 is yes, what was it? A) twin B) triplet C) other(mention it)----------
8. If the answer for number 6 is yes, on which line was it? A) Mother B) father

Part III- obstetric conditions during pregnancy

1. Parity----------
2. Was LNMP known? A) yes B) no
3. GA by A) LNMP if known---------- B) Amenorrhea ----------C) early U/S----------D) Urine hCG----------
4. ANC follow-up A) Yes B) no
5. If the answer for number 4 is yes, where was it? A) Hospital B) health center C) health post. D) FGA E) private clinic
6. Was U/S done for you during ANC? A) Yes B) no
7. If the answer for number6 is yes, what was your pregnancy? A) Singleton B) twin C) triplet D) other (mention) ---------- E) not told
8. Do you have any problem identified during pregnancy? A) Yes B) no
9. If the answer for number 8 is yes, what was it? a) Excessive nausea and vomiting b) hypertensive disorders of pregnancy c) UTI d) Diabetes mellitus e) Others (specify) -------
10. Are you referred? A)yes B) no
11. If the answer for number 10 is yes, from where was the referral? A) health center B) hospital C) private clinic D) FGA E) others(specify)----------
12. If the answer for number 10 is yes, Mention reason for referral? A) the mother was in labor B) twin pregnancy was suspected or diagnosed C)others (mention)----------
13. Where was the mother admitted? A) labor ward B) maternity
14. Mention reason for admission if it was to maternity----------
15. Mention GA when mother was **admitted to maternity** A) LNMP if known----------B) Amenorrhea ---------- ----C) early U/S----------D) Urine hCG----------
16. For cases admitted to maternity with unknown LNMP, was lung maturity test done? A) Yes B) no
17. If the answer for number16 is no, what was the reason? ----------
18. For cases admitted to maternity , Mention the interval between admission to maternity and delivery in hours/days----------
19. Is/are there other obstetric condition(S) identified on admission to labor ward or maternity? A)yes B) no

20. If the answer for number19 is yes, what was/were identified?

a. A) Hypertensive disorder of pregnancy (mention the type if any) ----------

b. B) previous scar ✓C) polyhydramnos ✓D)preterm labor ✓E) others (specify)-----

Part IV: Labor and delivery conditions

1. Complaint of the mother when she came to labor ward A) pushing down pain B) failure to deliver the second twin C) Passage of liquor D) other(specify)
2. Duration of labor in hours----------
3. Is membrane ruptured on admission? A) yes B) no
4. If the answer for number 3 is yes, what was the duration in hours?----------
5. Grade of liquor if it was ruptured on admission (clear, I, II, III)
6. was U/S done at admission A) yes B) no
7. If the answer for number 6 yes, what was estimated fetal weight (EFW) in grams by U/S at admission?) twin A (----------) B) twin B(----------)
8. What was Average Gestation age in weeks by U/S?) A) twin A (----------)
   B) twin B(----------)
9. What were the fetal presentations by U/S or physical examination? A) Twin (cephalic, breech, transverse, other (specify) ----------) B) Twin B (cephalic, breech, transverse, other (specify) ----------)
10. If presentation of twin A is cephalic ,mention the type(vertex, face, brow, others(specify))----------
11. FHB on admission A) twin A (positive, negative) B) twin B(positive, negative)
12. Cervical dilatation at admission in(cms)----------
13. What was pre-delivery Hct if it was done?----------
14. Was IV Access established on admission? A) yes B) no
15. If the answer for number 14 is yes, what the indication? A) for medication B) for rehydration C) for fear of complications D) others (specify)----------
16. Was there any intrapartum interventions made? A) yes B) no
17. If the answer for no 16 is yes, what was done? A) Rehydration B) Artificial rupture of membrane (ARM)
    C) Augmentation D) Others (mention) ----------
18. If there was augmentation, what was the indication? ----------
19. When was the augmentation? A) before delivery of 1st twin B) after delivery of 1st twin

20. Is there any problem during intrapartum follow up?) A) yes B) no

21. If the answer for number 2o is yes, what was it?

✓ A)cord prolapse ✓B) abruption ✓C) uterine rupture ✓D) non-reassuring fetal status ✓E) others(specify)---

22. What was mode of delivery?

✓ A) twin A (vaginal-SVD, vaginal-breech delivery, C/S, vacuum, forceps, destructive delivery)

✓ B)twin B (vaginal-SVD, vaginal-spontaneous breech delivery, C/S, vacuum, forceps, destructive delivery, total breech extraction)

✓ C) Laparotomy for uterine rupture

✓ D) laparotomy (destructive delivery under direct vision)

23. If there is interventional delivery ,Mention indication for interventional deliveries

✓ A) C/S (twin A, twin B, both)----------

✓ B) forceps (twin A, twin B, both)----------

✓ C) vacuum (twin A, twin B, both)----------

✓ D) total breech extraction (twin A, twin B, both)----------

✓ E) Laparotomy (twin A, twin B, both)----------

✓ D)others(specify) (twin A, twin B, both)----------

24. Is there operation (other than C/S) done for the mother?) A) yes B) no

25. If answer for number 24 is yes, what was it?

✓ A) BTL ✓ B) Hysterectomy ✓C)others(specify)----------

26. Mention the indication for the above surgery----------

27. Interval between delivery of twin A and twin B in minutes or hours (in vaginal deliveries)----------

28. Was placenta examined for zygosity? A) yes B) no

29. If the answer for number 28 is yes, what was/were number of the placenta(s) ? A) single B) two separate C) two fused D) unknown

30. If the answer for number 29 is yes, What was the placentation ? A) DCDA B) DCMA C) MCDA D) MCMA

31. Estimated blood loss at delivery in Milliliters----------

32. Is there any problem encountered during delivery? A) yes B) no

33. If the answer for number 32 is yes, what was it?

✓ A) uterine atony

✓ B) genital tract laceration

✓ C) perineal tear

✓ D) Maternal death

✓ E) uterine rupture

✓ F) others(specify)----------

34. If there was maternal death, what was the cause? Specify----------

Part V: maternal condition after delivery

1. Was Hct determined after delivery? A) yes B) no 3
2. If the answer for number 1 is yes, what was the result? ----------
3. Is there any problem encountered after delivery? A) yes B) no
4. If the answer for number3 is yes, what was it?

a. A) puerperal sepsis ✓B) surgical site infection

b. C) postpartum depression ✓D) PPH ✓E) others(specify)----------

5. Was there a need for ICU admission? A) yes B) no
6. If the answer for number 5 is yes, what was the indication? ----------
7. Duration of hospital stay in hrs or days----------
8. Condition at discharge A) improved B) died
9. If there was maternal death, what was the cause? Specify it.----------

Part VI: neonatal outcome

1. Outcome A) twin A (alive, dead) B) twin B (alive, dead)
2. Sex A) twin A (M, F) B) twin B (M, F)
3. Weight in grams A) twin A ---------- B) twin B ----------
4. 1st and 5th minute Apgar score A) twin A (-------- , ---------) B) twin B (--------,-------)
5. Was there need for resuscitation? A) twin A (yes, no) B) twin B (yes, no)
6. Was there need for referral to neonatal unit A) twin A (yes, no) B) twin B (yes, no)
7. Indication for Referral to neonatal unit A) for neonatal evaluation B) hypothermia C) low birth weight D) preterm E) others (specify)----------
8. Diagnosis made at neonatology for the referred cases (specify it)

✓A) twin A

✓ B) twin B

9. Any congenital malformation detected in either of them? A) yes B) no
10. If the answer for number 9 is yes, which twin has it? A) twin A B) twin B C) both

11. If the answer for number 9 is yes, what was it? A)hydrocephalus B) anencephaly C) conjoined twin D) spinal bifida E) other(specify)----------
12. If there is conjoined twin, mention shared structures.----------
13. Condition of neonates at discharge A) twin A (died, improved, normal, unknown) B) twin B (died, improved, normal, unknown).

14. If there was neonatal death, what was the cause? Specify it.

- ✓ A) Twin A ----------
- ✓ B) twin B----------
- ✓ C) both----------

Name of data collector……. Signature …… Date of data collection…….

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Thank u for your time!