

ISSN (P): 2522-6614
ISSN (E): 2522-6622
© Gynaecology Journal
www.gynaecologyjournal.com
2022; 6(2): 08-13
Received: 07-01-2022
Accepted: 09-02-2022

Bambara Moussa
Bambara Moussa, Head
Department of Obstetrics and
Gynaecology, Teaching Hospital
Sanou Sourô of Bobo-Dioulasso
Burkina Faso

Ouedraogo Issa
Gynaecologist Obstetrician UHO,
Ouahigouya, Burkina Faso

Komboïgo Evelyne
Gynaecologist Obstetrician,
Department of Obstetrics and
Gynaecology, Teaching Hospital
Souro Sanou Bobo-Dioulasso,
Burkina Faso

Keita Lassina
Gynaecologist Obstetrician,
Department of Obstetrics and
Gynaecology Teaching Hospital
Souro Sanou of Bobo-Dioulasso,
Burkina Faso

Corresponding Author:
Bambara Moussa
Head Department of Obstetrics
and Gynaecology, Teaching
Hospital Sanou Sourô of Bobo-
Dioulasso Burkina Faso

Maternal and neonatal prognosis of twin deliveries at the department of obstetrics and gynecology of the teaching hospital Sanou Sourô of Bobo-Dioulasso 173 cases studied and literature review

Bambara Moussa, Ouedraogo Issa, Komboïgo Evelyne and Keita Lassina

DOI: <https://doi.org/10.33545/gynae.2022.v6.i2a.1154>

Abstract

Objective: Conduct a study on the maternal and neonatal prognosis of twin deliveries within the Gynecology and Obstetrics Department of Sourô Sanou Teaching Hospital of Bobo-Dioulasso. **Methodology:** This was a descriptive and cross-sectional study on 173 twin deliveries within the Gynecology and Obstetrics Department of Sourô Sanou Teaching Hospital of Bobo-Dioulasso (CHUSS) from January 1st to December 31st, 2019 i.e., a 12-month period.

Any parturient with a twin pregnancy having ≥ 28 weeks of amenorrhea, admitted and treated within the department for delivery was included in this study; female patients received for second the twin retention were also taken into account. The parameters studied were the following: Osociodemographic characteristics, clinical examination and twin delivery data, maternal and neonatal prognosis. Information was collected from a survey form in addition to clinical records, prenatal consultation booklet, registers (delivery room, operating room, postoperative, and postpartum planning register).

Data were entered and analyzed through Word and Epi-Info version 7.2.4.0 software.

Results: During the period of study, 4086 deliveries were recorded among which 1,325 cesarean section deliveries. 173 twin deliveries were recorded corresponding to a frequency of 4.23%. The average age was estimated at 29 years [16-42 years] with the average parity reaching 2 [0-9]. Married women represented 54.91% of the total number of patients. Family twinning notion was found in 94.22% of cases and the use of ovulation inducer sin 5.78% of cases. The twin pregnancy average term was 38 weeks of amenorrhea. Excessive uterine height was the most common reason for hospital admission. The first twin was in a cephalic position in 71.68% of cases. Vaginal delivery was performed in 63% of cases of twin pregnancy against 26.01% of cesarean section delivery. As for the type of twinning, the twin pregnancy was dichorionic-diamniotic in 68.22% of cases, monochorionic-monoamniotic in 4.62% of cases and monochorionic-diamniotic in 27.16% of cases. Neonatal complications were related to prematurity and neonatal distress. We observed 12 neonatal deaths (3.70%). Maternal complications were observed in 12.13% of cases with a predominance of anemia, severe preeclampsia and endometritis. Maternal death was observed in 3 cases (1.72%).

Conclusion: Twin deliveries are relatively frequent in our department because of medical evacuations. The presence of well-trained practitioners is necessary for the evaluation of the maternal and fetal situations in order to make the relevant decisions. A good knowledge of obstetrical maneuvers is essential for the delivery of the second twin which requires an active attitude to increase the chances of successful rescue of the latter. In case of pathologies associated with twin pregnancy, prematurity, dystocia presentation of one or both twins, the onus lies on the obstetrician to make the most life-saving decisions to reduce the morbidity and mortality of the mother and the newborns.

Keywords: delivery room, operating room, postoperative, and postpartum planning

Introduction

Most authors unanimously agree that twin pregnancies are high-risk pregnancies for the mother and the fetuses ^[1]. The risks include maternal and fetal complications as well as the high rate of medical and surgical interventions (cesarean sections, instrumental extractions, maneuvers, resuscitation of the newborn and prematurity). In the world, the frequency of twin deliveries varies from one region to another. It has significantly increased in recent years with the advent of assisted reproductive technology (ART) in developed countries ^[2]. Twin delivery is a high-risk delivery associated with a high rate of maternal, fetal and neonatal complications.

Since ancient times, it is acknowledged that the second twin has a high risk of going through dystocic delivery and excess mortality [1]. We undertook this cross-sectional study to investigate the maternal and perinatal prognosis of twin pregnancy and delivery to better manage them.

Patients and Method

This was a descriptive and cross-sectional study on 173 twin deliveries in the maternity ward of Sanou Sourô Teaching Hospital in Bobo-Dioulasso from January 1st to December 31st, 2019, corresponding to a 12-month period.

Any parturient with a twin pregnancy having ≥ 28 weeks of amenorrhea and admitted in the maternity of Sanou Sourô Teaching Hospital for delivery was included in this study; female patients received for the second twin retention were also taken into account.

The parameters studied were the following: socio-demographic characteristics, clinical examination and twin delivery data, maternal and neonatal prognosis.

Information was collected from a survey form in addition to clinical records, prenatal consultation booklet, registers (delivery room, operating room, postoperative, and postpartum planning register)

Data were entered and analyzed through Word and Epi-Info version 7.2.4.0 software.

Results

Epidemiology

Frequency

From January 1st to December 31st, 2019, we recorded 4086 deliveries among which 1,325 caesarean section deliveries. 173 twin deliveries were recorded corresponding to a frequency of 4.23%. -Sociodemographic characteristics. These characteristics are summarized in the table 1 below:

Table 1: Socio-demographic characteristics

Parameters	Number	%
Age (years)		
15-19 years	32	42.19
20-29 years	36	49.10
30-39 years	68	13.87
≥ 40 years	28	4.05
Parity		
Multiparous	9	18.5
Primiparous	3	21.81
Pauciparous	133	39.31
Multiparous	29	16.18
Grand Multiparity	11	5.20
Education		
None	86	2.31
Primary school	47	77.32
Secondary school	16	17.34
High school	22	6.54
Occupation		
Housewife	88	50.87
Trader	47	27.17
Civil servant	16	9.25
Pupil/Student	22	12.72

2. Clinical and Para clinical aspects

2.1. Clinical aspects

1. Medical history
2. Family twinning notion
3. This family twinning notion was found in 94.22% of cases. This heredity feature came from the mother side.

4. Ovulation induction notion
5. Ovulation induction notion was observed in 5.78% of cases with Clomiphene Citrate.
6. Medical history of twin births
7. Fourteen female patients had twin deliveries history while 13 had a history of 2 twin deliveries.
8. Hospital admission causes

The table 2 below indicates the distribution of patients according to admission causes.

Table 2: Distribution of female patients according to admission causes

Reason for admission	Number	%
Preterm delivery	33	19.08
Excessive UH	71	41.04
Pre-eclampsia	14	8.11
Placenta Previa hemorrhage	5	2.89
Twin 1 breech presentation	10	5.78
Premature rupture of membranes	9	5.20
Retention of Twin 2	4	2.31
Acute fetal suffering	6	3.47
Cord proclintia	8	4.62
Scarred uterus	6	3.46
Total	173	100

- Clinical data upon admission
- General condition
- 169 cases (97.69%) had their general condition good while 4 cases (2.31%) had theirs bad.
- Pregnancy term

The distribution of patients according to the term was as follows:

- 28-33 Weeks of Amenorrhea: 27 cases (15.61%)
- 34-36 Weeks of Amenorrhea: 34 cases (19.65%)
- 37-41 Weeks of Amenorrhea: 112 cases (64.74%)

The average pregnancy term was estimated at 38 weeks of Amenorrhea with extremes of 28 and 41 weeks of amenorrhea.

- Uterine Height
- The uterine height was estimated as follows:
 - 30-33 cm: 20 cases (11.56%)
 - 34-36 cm: 33 cases (19.08%)
 - 37-40 cm; 80 cases (46.24%)
 - ≥ 41 cm: 35 cases (20.23%)
- Fetal heart sounds

Fetal heart sounds were perceived at two auscultation points in 152 cases (87.86%), at one auscultation point in 11 cases (6.36%) and not perceived in 10 cases (5.78%).

- **Cervical dilatation**

Eighty-one patients were in the latent phase while 66 were in the active phase and 26 patients in the expulsive phase.

- **Waters**

87 cases had their waters intact (59.29%) while 86 cases had theirs broken (49.61%).

- **Presentation**

In 123 cases, twin 1 was presented in a cephalic position against 44 cases of breech presentation and 6 cases of transverse presentation. As for Twin 2, the presentation was cephalic in 123 cases.

• Pelvis

The pelvis was normal in 169 cases (97.69), borderline in 3 cases (1.73) and narrowed in 1 case (0.58).

Para clinical aspects

Biology

Blood count was performed in 158 female patients (91.33% of the general number).

We observed anemia in 89 patients distributed as follows

- Severe Anemia (3 Å 6, 9g/Dl): 7 Cases (4.04%)
- Moderate Anemia (7 Å 9g/Dl): 24 Cases (13.87%)
- Mild Anemia (9 Å 10g/Dl): 58 Cases (33.53%)
- Obstetrical Ultrasound

Obstetrical ultrasound was performed in 101 female patients (58.38%) distributed as follows

- 28-33 Weeks of Amenorrhea: 22 cases (21.78%)
- 34-36 Weeks of Amenorrhea: 18 cases (17.82%)
- 37-40 Weeks of Amenorrhea: 61 cases (60.39%)

Twin delivery

Vaginal route delivery

One hundred and nine patients (63%) had both twins delivered through vaginal route within the department.

- The average duration of twin delivery per vaginal route was estimated at 3h19mn with extremes of 20 mn and 10 hours.
- 5 cases had their second twin delivered through vaginal route after internal maneuvers followed by large breech extraction (VMI +GES). Only one was found alive. These

concern patients who came for the second twin retention.

- The average interval between Twin 1 and Twin 2 during vaginal route delivery within the Gynecology Obstetrics Department was 15 mn with extremes of 10 mn and 60 mn.
- 10 mn: 1 case (0.91%)
- 15 mn in 100 cases
- 16-29 mn: 7 cases
- Cesarean section

Forty-five female patients (26.01%) went through cesarean section to have both twins extracted. 10 cases had their second twin extracted by cesarean section. These were cases of retention of the second twin, referred to the Teaching Hospital Sourô Sanou. There were 5 fresh stillbirths.

-The interval between Twin 1 and Twin 2 during caesarian sections within the Gynecology and Obstetrics Department was 1mn 47 seconds.

Types of twinning

Twin pregnancies were dichorionic-diamniotic in 118 cases (68.22%), monochorionic-monoamniotic in 8 cases (4.62%) and monochromic-diamniotic in 47 cases (27.16%).

We had recorded one case of evacuation for uterine rupture in a twin pregnancy with both fetuses abdominalized.

Caesarian section indications

The indications for cesarean section were diverse. Table 3 below provides the distribution of patients according to cesarean section indications.

Table 3: Distribution of female patients according to caesarian indications

Indications	Number	%
Breech presentation of twin 1 on a scarred uterus	12	21.42
Severe preeclampsia in a non-laboring twin pregnancy	11	19.54
Acute fetal distress	8	14.29
Hemorrhagic PP in twin pregnancy	5	8.93
Transverse presentation of the first twin	2	3.57
Presentation of the first twin's shoulder	4	7.14
Procidencia of the fluttering cord	4	7.14
Second twin retention	10	17.86
Total	56	100

Maternal and neonatal prognosis

Maternal prognosis

The maternal follow-ups were simple in 149 cases (86.15% of the total number). Complications were observed in 21 cases (12.13% of the total number). Anemia (5 cases), severe preeclampsia (12 cases) and endometritis (5 cases) were the predominant complications.

Maternal death was reported in 3 cases (1.72%).

Neonatal prognosis

Out of a total of 173 twin pregnancies, we recorded 346 births among which 22 stillbirths (6.36%) and 324 live births (93.64%). Among these live births, 161 newborns were transferred to neonatology (46.53%) because of prematurity (100 cases) and neonatal distress (61 cases). The evolution of 149 cases was favorable. However, we deplored 12 neonatal deaths (3.70%)

Birth weight

The average birth weight of the 1st twin was 2,318 grams with extremes of 1,050 and 3,400 grams. Table 4 shows the birth weight distribution of the first twin.

Table 4: Birth weight distribution of first twins

Weight	Number	%
1050-2000	38	21.96
2001-2500	48	27.75
2501-3000	75	43.35
3001-3400	12	6.94
Total	173	100

-The average birth weight of the 2nd twins was 2,296 grams with extremes of 1,200 and 3,500 grams. Table V below gives the distribution of the 2nd twins according to birth weight.

Table 5: Birth weight distribution of second twins

Weight	Number	%
1200-2000	47	27.17
2001-2500	50	28.90
2501-3000	54	31.21
3001-3500	22	12.72
Total	173	100

Apgar score at birth

The table below shows the distribution of first twins (Twin1) according to Apgar score.

Table 6: Distribution of first twins (Twin1) according to Apgar score

Apgar score	1 minute %	5 minutes %	10 minutes %
0	8 (4.62)	9 (5.20)	10 (5.78)
1-3	1 (0.58)	0 (0.00)	0 (0.00)
4-6	18 (10.40)	10 (5.78)	0 (0.00)
≥ 7	146 (84.34)	154 (89.02)	163 (94.22)
Total	173	173	173

The table below indicates the distribution of second twins (J2) according to Apgar score.

Table 7: Distribution of second twins according to Apgar score

Apgar score	1 minute %	5 minutes %	10 minutes %
0	16 (9.25)	18 (10.40)	19 (10.98)
1-3	5 (2.89)	1 (0.58)	0 (0.00)
4-6	18 (10.40)	10 (5.78)	5 (2.89)
≥ 7	138 (79.77)	144 (83.24)	149 (86.13)
Total	173	173	173

Contraception coverage following twin deliveries

All the female patients have received counseling on the various contraceptive methods available within the maternity either during ANC, or before cesarean section, or during the labor latency phase, or in the postpartum period. Most of the health staff members are trained on postpartum family planning. Out of the 170 patients who received counseling, 147 patients got a contraceptive method before leaving. These methods were distributed as follows:

- IDUPP: 66 cases (38.82 %)
- Implants: 55 cases (31.79%)
- Injectable: 17 cases (9.83%)
- Tubal ligation: 9 cases (5.29%)

Twenty-three women who gave birth have decided to go for LAM for the first six months before choosing a long-term method.

Stay duration

The stay average duration was 3 days with extremes of 1 and 14 days.

Discussion

In our study, the frequency of twin deliveries was estimated at 4.23%, a percentage above those reported by Zedini [3] in Tunisia, Théra [4] in Mali and Akaba [5] in Nigeria, respectively reaching 1.76%, 2.54% and 3.34%. This high frequency is due to the fact that our department is the last one to resort to in any pregnancy and delivery related complications.

Rissanen [6] reported a frequency of 1.4% in a study about the complications related to twin deliveries from 1987 to 2014 in Finland. In developed countries, assisted reproduction

techniques have increased the incidence of twinning [7, 8, 9]. Bateni [10] in the United States reported a frequency of 3.2% in 2006 and 3.4% in 2013.

The average age in our series was 29 years which is close to those found by Oger A [11] and Akaba G [5] respectively estimated at 28 and 28.4 years. The incidence of multiple pregnancies increases with maternal age above 35 to 39 years [5, 8, 9]. As for obstetric history, the family notion of twinning was found in 94.22% of cases in our study. Indeed, family heredity is recognized as an important factor in twinning [1, 3]. The notion of induced twinning was found in 5.78% cases in our study. Oger A [11] reported a 6.4% induced twinning rate in his series.

Excessive uterine height, premature delivery, premature rupture of membranes, preeclampsia and the breech presentation of Twin 1 were the predominant reasons for evacuation.

During the clinical examination in the delivery room, the twinning was diagnosed before 2 auscultation points of fetal heart sounds in 152 cases (87, 86% of cases), a previous ultrasound in 101 cases and an ultrasound room in all cases. In Théra's series [4], 34.57% of the female patients had a previous ultrasound and 40.18% of twin pregnancies were recognized after delivery of the first twin. In our study, the average term of twin pregnancies upon admission in the delivery room was 38 weeks of Amenorrhea. This is above those reported by Oger A S [11] in Madagascar and Attah R A [12] in Nigeria, which were respectively 34.5 and 36.9 weeks of Amenorrhea.

71.68% of cases had their first twin presented in cephalic position. Our rate is close to that reported by Zedini [4] in Tunisia estimated at 71%. It is above those reported by Attah R A [12] in Nigeria, Boubkraoui [13] in Morocco which were respectively 51.9%, 58.46% and below the one reported by Barbier [1] in France which was 80.4%. Twin deliveries usually result in babies of birth weight below 2500 grams. Several explanations were given to try to find an etiology for this hypotrophy [14].

-Uterine congestion hinders placenta development to ensure a satisfactory growth to both fetuses;

-Uterine over distention brings about inadequate uteroplacental perfusion responsible for hypotrophy through relative hypoxia.

63% of cases in our study had their both twins delivered through vaginal route. Our rate is above those reported by Mekki [15] in Tunisia and Attah R A [12] in Nigeria respectively estimated at 55.74% and 57.1%. Nwankwo [16] in Nigeria and Théra [4] in Mali have reported higher rates respectively estimated at 78.1% and 82.6%. Twin 2 was vaginal delivered in 2.89% of cases, after version by Internal Maneuvers followed by Large Breech Extraction.

The average latency interval between 2 twins was 15 mn with extremes of 10 and 60 mn. Evidence has shown that the second twin over-mortality is directly linked to the latency interval exceeding 30 mn [1]. Caesarian section was performed in 26.01% of cases. Our rate is close to that of Barbier [1] estimated at 26, 3%. Atta R A [12] in Tunisia and Bodart DS [17] in Scandinavia and Nwankwo T [16] have reported respectively 39.8%; 42% and 49.57%. According to Barbier [1] the risk to resort to caesarian section is three times higher in twin pregnancies than in monofetal pregnancies.

Caesarian section was performed for the 2nd twin in 5.78% of cases of our study. Barbier [1] has reported a rate of 4.2% for the caesarian section practiced on the second twin. Since ancient times, it is acknowledged that the second twin has an increased risk of dystocic delivery and over mortality. Traditionally, this was dealt with by extensive use of the breech version and extraction maneuvers. However, over the last thirty years, obstetrical practices have evolved towards a continuous increase

in the rate of caesarean sections. In France, Boukerrou ^[18] reported in his study a caesarean rate of 53.5% for both twins while Zhang JW ^[19] reported a rate of 66.8% for twin pregnancies.

In our series, depending on the type of twinning, twin pregnancy was bi-chorionic bi-amniotic in 68.22% of cases. Our rate is higher than those reported by Robson ^[20] in Australia, Théra ^[4] in Mali and Zedini ^[3] in Tunisia which were respectively 58.5%, 60.9% and 66.9%. Based on literature data, bi-chorionic and bi-amniotic twinning is the most frequent one ^[12, 13, 16, 17, 19].

Maternal and neonatal prognosis

Maternal prognosis

In our study, the maternal follow-ups were simple in 86.15% of cases. Maternal complications were observed in 12.13% of cases with severe pre-eclampsia, anemia and endometritis. Based on literature data, the main complications are the following: pre-eclampsia, dynamic dystocia related to the uterus over distension, the cord proclivita, and the twinning dystocia which has become more and more rare with the advent and generalization of obstetrical ultrasound, the second twin dystocic presentation, hemorrhage, particularly during delivery and postpartum, and soft tissue tears ^[1, 2, 5, 6, 11, 12, 20].

In our series, the fatality rate was estimated at 1.72%. A European study showed that the maternal mortality rate during pregnancy, at the time of delivery and within the following 24 days, was three times higher in case of multiple pregnancies than in single pregnancies ^[21].

Neonatal prognosis

In our series, we recorded 324 live births (93.64%) out of 173 twin deliveries; our rate is below those reported by Zedini ^[3] in Tunisia and Oger in Reunion ^[11], which were 96.19% and 96.88% respectively.

We observed complications in 46.53% of cases. Transfers to neonatology department were due to prematurity and neonatal distress. Oger ^[11] in Reunion Island has reported a transfer in neonatology for extreme prematurity in 14.6% of cases. Zedini ^[3] in Tunisia has reported a transfer in neonatology for neonatal distress in 5.01% of cases. Authors are unanimous in recognizing that twin pregnancies are high-risk pregnancies because of prematurity, intrauterine growth retardation, preeclampsia and perinatal mortality ^[11]. In fact, the main criterion for perinatal morbidity and mortality is mainly related to term and birth weight ^[18].

Neonatal mortality in our study was estimated at 3.70%. Our rate is below those reported by Boubkraoui ^[13] in Morocco and Kullima A ^[22] in Nigeria with respectively 30.8% and 46%.

Conclusion

Twin deliveries are relatively frequent in our department because of medical evacuations. The presence of well-trained practitioners is necessary for the evaluation of the maternal and fetal situations in order to make the relevant decisions. A good knowledge of obstetrical maneuvers is essential for the delivery of the second twin which requires an active attitude to increase the chances of successful rescue of the latter. In case of pathologies associated with twin pregnancy, prematurity, dystocia presentation of one or both twins, the onus lies on the obstetrician to make the most life-saving decisions to reduce the morbidity and mortality of the mother and the newborns.

Reference

1. Barbier ML, Bois E. Gabriel Redelivery of multiple pregnancy. *EMC Obstet.* 2012, 5-049-L-491-12.

2. Blondel B, Kaminski M. The increase in multiple births and its consequences in perinatal health. *Revue Sage-femme.* 2003;2:135-150.
3. Zedini C, Bannour R, Bannour I, Bannour B, Jlassi M, Goul L. Delivery of twin pregnancy and materno-fetal prognosis in a level 3 Tunisian University Center: a retrospective study about 399 cases. *PAMJ.* 2020;36(237);03:1-11.
4. Théra T, Mounkoro N, Traore SO, Hamidou A, Traore M, Doumbia S. Twin deliveries in Africa: 10 years analysis in Bamako's District in Mali. *Pan African Medical Journal.* 2018;29:21:1-7.<http://www.panafrican-med-journal.com/content/article/29/21/full/>
5. Akaba GO, Agida TE, Onafowwokan O, Offiong RA, Achonwa CJ. Review of twin pregnancies in a Tertiary Hospital in Abuja, Nigeria. *J Health Popul Nutr.* 2013;2:272-277.
6. Rissanen ARS, Jernman RM, Gissler M, Nupponen I, Nuutila ME. Maternal complications in twin pregnancies in Finland during 1987–2014: a retrospective study. *BMC Pregnancy and Childbirth.* 2019;19(337):1-7. <https://doi.org/10.1186/s12884-019-2498-x>
7. FIVNA T, Belaisch-Allart J, de Mouzon J, Pouly JL, Ayel JP, Twins after ART. *Gynécol Obstet & Fertil.* 2005;33:602-604. <http://france.elsevier.com/direct/GYOBFE/>
8. Pison G, D Addato AV. Frequency of Twin pregnancy in developed countries. *Twin Research and Human Genetics.* 2006;9(2):250-259. <https://www.cambridge.org/core/terms>. <https://doi.org/10.1375/twin.9.2.250>
9. Ananth CV, Chauhan SP. Epidemiology of Twinning in Developed Countries. *Semin Perinatol.* 2012;36:156-161.
10. Batenia ZH, Clark SL, Sangi-Hagheykara H. col Trends in the delivery route of twin pregnancies in the United States, 2006–2013. *E J Obstet & Gynecol and Reprod Biol.* 2016, 205, 120-126. www.elsevier.com/locate/ejogrb
11. Oger AS, Robillard PY, Baraua G, Randrianaivoa H, Bonsanteb F, Iacobellib S. Twins perinatal morbidity and mortality and the influence of chorionicity: A 10-year experience in South Reunion. Study of 775 pregnancies. *J Gynecol Obstet Biol Reprod.* 2013;42:655-61.
12. Attah RA, Mohammed Z, Gobir M. A review of twin deliveries in Aminu Kano Teaching Hospital, North-West Nigeria. *N J of Basic and Clinical Sciences.* 2014;11(1):3-7.
13. Boubkraoui MEI-M, Aguentaou H, Mrabet M, Barkat A. Perinatal morbidity and mortality in twin pregnancies in a Moroccan level-3 maternity ward. *Pan African Medical Journal.* 2016;23(80):1-11.
14. Blanc B, Mercier Ch, Ruf H. Delivery of twin pregnancies. Update in obstetrics gynecology. *CNGOF, (Paris), Vigot.*1981.
15. Mekki D, Mourali M, Mekaouer L, Hemila F, Fekih CE. what are the factors influencing the second twin prognosis twin during twin pregnancy delivery? *Tunisia Med.* 2016;94(5):349-355.
16. Nwankwo T, Aniebue U, Ezenkwele EE, Nwafor M. Pregnancy outcome and factors affecting vaginal delivery of twins at University of Nigeria Teaching Hospital, Enugu. *N J Clin Pract.* 2013;4:490-95.
17. Bodart SDT, Deruelle P, Drumez E, Cordiez S, C-Jonard S, Garabedian C. Obstetrical and perinatal complications of twin pregnancies: is there a link with the type of infertility treatment? *AOGS.* 2017;96:844–851.
18. Boukerrou M, Robillard PY, Gérardin P, Heisert M, Kauffmann E, Laffitte A, Presentations and modes of

- delivery of 371 twin pregnancies, *Gynécol Obstet et Fertil* 2011;39;76-80.
19. Zhang JW, Branch W, Hoffman M, Jonge AD, Li SH, Troendle J. In which groups of pregnant women can the caesarean delivery rate likely be reduced safely in the USA? A multicenter cross-sectional study. *B M J Open*. 2018;8:1-8.
 20. Robson D, Daniels S, Flatley C, Kumar S. Obstetric and perinatal outcomes for twin pregnancies in adolescent girls. *Sci Rep*.2018;8(1):180-72.
 21. Senat MV, Ancel PY, Bouvier-Colle MH, Beart G. How does multiple pregnancy affect maternal mortality and morbidity. *Clin Obstet Gynecol*. 1998;41(1):78-83.
 22. Kullima AA, Audu BM, Geidam AD. Outcome of twin deliveries at the University of Maiduguri Teaching Hospital: A 5-year review. *Niger J Clin Pract* 2011;14:345-8.