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Audit of obstructed labour cases managed in a rural specialist hospital in Enugu, south-east, Nigeria

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Abstract

Background: Labour is a physiological process through which the fetus and placenta are expelled from the vagina at term. It is a challenging and painful process that ends with the joy of a newborn. On many occasions, the process is complicated by obstruction arising from disproportion between the baby and the maternal pelvis. Such conditions if not detected on time, will lead to significant feto-maternal morbidities and mortality. This experience in the developing nations of the world is a recurrent one even though it is almost eliminated in the developed world due to their advancement in antenatal and intrapartum care. The condition is even more prevalent in the rural areas of the developing countries where scarcity of skilled birth attendants is the order of the day, hence, this 5-year review in a rural hospital.

Aim: The aim of this study was to determine the prevalence, outcome and socio-demographic determinants of obstructed labour in a private rural hospital

Methodology: This was a 5-year retrospective review of all cases of all cases of obstructed labour managed in a rural specialist hospital. The data was collected from delivery registers, theatre registers and patients' case files using a specialized proforma. The data was analyzed using the Statistical Product and Service Solutions (SPSS) version 25.0 for windows. Results were presented using tables, frequencies, means, and percentages. Test of significance between class differences was by Pearson's Chi-square test for categorical variables and student's t-test for continuous variables. All P

Result: From the data collected, records of 1,487 births in the centre over the 5-year period were reviewed. Out of these 123 were cases of obstructed labour giving a prevalence of 8.27%. The age distribution of the cases showed that majority of them (30.9%) were aged 30-35 years and the least were over 40 years (6.5%). In all, 75.6% were married and 22.8% were single; majority of them were in a monogamous relationship (65.9%). Those with primary education topped the list (42.3%) followed by those with secondary education (37.4%) while the least had tertiary education (1.6%). Forty eight percent of them were unemployed, followed by 46.3% who were petty traders and only 5.7% were civil servants. Almost all of them were Christians (83.7%) and 45.5% of their partners were artisans.

Majority of them (60.2%) were para 3 or above and 64.2% were delivered at gestational ages of between 37 to 40 weeks whereas 32.8% were above 40 weeks. Fifty two percent were verbally referred to the centre and 1.6% had a written referral. Most of them 73.2% were referred from a Traditional Birth Attendant (TBA). They were all labouring outside of the facility and 69.9% were referred from a TBA homes.

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One hundred and seventeen (95.1%) had severe pain, 95.1% were dehydrated, 81% had edematous vulva, 24.4% presented in shock and 18.7% had vaginal bleeding. It also showed that 98.4% had significant moulding and caput, 84.6% fetal distress and 13.8% intrauterine fetal death. Many presented with a combination of these features. Almost all the parturients (98.4%) were rehydrated with intravenous fluids, 94.3% had analgesia, 92.7% had emergency caesarean delivery, 86.2% were transfused, 4.9% had destructive procedures, 5.7% were delivered vaginally, and 6.5% had hysterectomy. Majority of them (61.8%) had surgical site infections, 33.3% had PPH and 72.4% of the babies had birth asphyxia. In all, marital status, conjugal relationship and educational level had a significant relationship with obstructed labour with p-values less than 0.05.

Conclusion: Obstructed labour was an important occurrence in the centre and all of them were referred cases. Marital status, type of conjugal relationship and educational qualification had significant influence on the condition and majority of the babies were asphyxiated at birth. Therefore, we recommend registration, training and retraining of TBAs in rural areas to recognize early signs of obstruction and make timely referrals. Secondly, policies to enhance girl child education and women empowerment should be encouraged. Finally, provision of health facilities to make Essential Obstetric Care available and affordable to the rural populace should be a priority of all regional governments

Keywords: Audit; Obstructed labour; Rural hospital; Enugu; Nigeria

1. Introduction

Labour can be defined as the act of expulsion of the fetus and placenta to the outside world per vaginam with minimal risk to the mother and the fetus [1]. Usually, the process of pregnancy ends with the birth of a live baby which brings joy to the family and the entire community. However, on rare occasions, the process is complicated by some problems, one of which is obstructed labour and its attendant sequelae. Obstructed labour is said to occur when there is a total halt in the progress of labour in spite of adequate uterine contractions due to mechanical reasons [2,3]. Obstructed labour is a sign of failure of antenatal and intrapartum care. It is almost non-existent currently, in the developed countries of the world; but still prominent in low-income countries of sub-Saharan Africa and Asia. It is responsible for 22% of obstetric complications; 9% of all maternal deaths in low- and middle-income countries and rising to 24% in sub-Saharan Africa [4]. It is believed to affect about 3 to 6% of all labouring women in the developing countries [5]. So, despite all efforts at effective, available and affordable antenatal and intrapartum care by various governmental and non-governmental agencies, the poor countries of the world are still battling with the burden of obstructed labour.

In a hospital-based study in Enugu, 120(2.7%) cases of obstructed labour were recorded [6]. It was a retrospective study of all deliveries in a teaching hospital from 2004 to 1999. Meanwhile, an earlier study by Ozumba BC et al, in the same hospital found a prevalence of 4.7% [7]. A similar study in Abakalikki, south-east, Nigeria, over a 5-year period, found a prevalence of 3.4% [8] and women in their second and third decades of life were prominent, constituting 91.6% of all the cases. In another retrospective study in Nnewi, south-east Nigeria, a prevalence of 1.5% [9] of obstructed labour was found and in another retrospective study in Bayelsa, south-south, Nigeria, the incidence of obstructed labour was 1.1% and unbooked, nulliparous women featured prominently in the demographics of the women [10]. In Obafemi Awolowo University Teaching Hospital, Ile-Ife, south-west, Nigeria, the incidence of obstructed labour was 1.99% [11], in Usman Danfodio University Teaching Hospital Sokoto, north-west, Nigeria, it was 1.79% [12], in Gombe, north-east, Nigeria, it was 4.0% [13]. In a systematic review of obstructed labour in Ethiopia, the incidence of obstructed labour was 12.93% [14], in India it was 1.9% [15], Pakistan, 2.1% [16], Uganda, 10.5% [17].

Form the foregoing, obstructed labour is still a topical issue in low- and middle-income countries like ours hence this study.

Aims and objectives

The aim of this study was to determine the prevalence, outcome and socio-demographic determinants of obstructed labour in a private, rural hospital.

The specific objectives were to determine the:

- Prevalence of obstructed labour
- Maternal outcomes
- Fetal outcomes
- Socio-demographic determinants of obstructed labour in a private, rural hospital.

1.1. Study area

The was conducted in Odugu Memorial Hospital, Nkpamute, Igbo-Eze North LGA, of Enugu State. It is bounded by Kogi State to the north and Nsukka LGA of Enugu State to the south. It sits close to the local government secretariat of Igbo-Eze North. The facility boasts of 2 consultant obstetrician/gynaecologists and a principal medical officer with an array of nurses/midwifes and senior community health extension workers. A laboratory technician mans the hospital laboratory which offers a wide range of laboratory services including haematological, biochemical and microbiological. A point of care ultrasound is also available. It offers specialist obstetrics and gynaecological care.

The facility serves as referring centre for numerous private hospitals and traditional birth centres in matters relating to obstetrics and gynaecology. It runs a twice weekly antenatal and gynaecological clinics on Saturdays and Sundays and attends to an average of 45 clients per clinic. The annual delivery rate in the hospital is estimated at 290 deliveries as the total deliveries over the 5-year period was 1487. However, many of the cases are referred in complicated stages from the neighbouring villages leading to a significant rate of obstructed labour and uterine rupture.

2. Methodology

This was a 5-year retrospective study of all cases of obstructed labour treated in the hospital. Data was collected using a specialized proforma from delivery registers, operation registers and patients' case files. Patients whose case files contained adequate information were included in the study. Relevant data collected included biodata, details of referral, clinical presentation, treatment given and outcome of treatment. Fetal distress in this study was defined as any fetal heart rate of 120 ≥x ≥ 160 beats per minute measured on 2 occasions at least15 minutes apart and fetal asphyxia, as diagnosed by the paediatrician. The data was analyzed using Statistical Products and Service Solution (SPSS) version 25.0 for Windows. Results were presented using tables, frequencies, means, and percentages. Test of significance between class differences was by Pearson's Chi-square test for categorical variables and student's t-test for continuous variables. All P

3. Results

From the data collected, records of 1,487 births in the centre over the 5-year period were reviewed. Out of these 123 were cases of obstructed labour giving a prevalence of 8.27%. The age distribution of the cases showed that majority of them (30.9%) were aged 30-35 years, followed closely by those 24-29 years (28.5%) and the least were over 40 years (6.5%). In all, 75.6% were married and 22.8% were single; majority of them were in a monogamous relationship (65.9%), 20.3%, in polygamous and 13.8% were concubines. Those with primary education top the list (42.3%) followed by those with secondary education (37.4%) while the least had tertiary education (1.6%). Forty eight percent of them were unemployed, followed by 46.3% who were petty traders and only 5.7% were civil servants. Almost all of them were Christians (83.7%) and a meagre 13.8% traditional worshippers whereas only 2.4% were Muslims. About 45.5% of their partners were artisans, 39% subsistent farmers, 8.1% unemployed and 7.3% civil servants.

Table 1 Socio-demographics distribution

Variable	Frequency	Percentage
Age group		
18-23 years	19	15.4
24-29 years	35	28.5
30-35 years	38	30.9
35-40 years	23	18.7
>41 years	8	6.5
Marital Status		
Single	28	22.8
Married	93	75.6

Widow	2	1.6
Conjugal Relationship		
Monogamy	81	65.9
Polygamy	25	20.3
Concubine	17	13.8
Educational qualification		
None	23	18.7
Primary	52	42.3
Secondary	46	37.4
Tertiary	2	1.6
Occupation		
Civil Servant	7	5.7
Petty Trader	57	46.3
Unemployed	59	48
Religion		
Christianity	103	83.7
Islam	3	2.4
Traditional	123	13.8
Partners Occupation		
Artisan	56	45.5
Civil Servant	9	7.3
Subsistent Farmers	48	39
Unemployed	10	8.1

Table 2 showed the distribution of the patients based on other patients' demographics. Majority of them (60.2%) were para 3 or above and 39.8% were para 2 or less; 64.2% were delivered at gestational ages of between 37 to 40 weeks whereas 32.8% were above 40 weeks. Fifty two percent were verbally referred to the centre, 46.3% were referred by themselves and only 1.6% had a written referral. Most of them 73.2% were referred from a Traditional Birth Attendant (TBA) whereas only 1.6% were referred from a doctor. They were all labouring outside of the facility and 69.9% were referred from a TBA homes, the others were from their homes (14.6%), maternity home (13%) and primary health centre (2.4%).

Table 2 Other patients' demographics

Variable	Frequency	Percentage
Parity		
0-2	49	39.8
3 and above	74	60.2
Gestational Age		
37-40	79	64.2
41 and above	44	32.8

Method of referral		
Self-referral	57	46.3
Verbal	64	52
Written	2	1.6
Care-giver		
CHEW	13	10.6
Doctors	2	1.6
Nurses/Doctors	8	6.5
Self	10	8.1
TBA	90	73.2
Referring Source		
Home	18	14.6
Maternity Home	16	13
Primary Health Centre	3	2.4
TBA homes	86	69.9

Table 3 showed the different clinical presentations of the patients. One hundred and seventeen (95.1%) had severe pain, 95.1% were dehydrated, 81% had edematous vulva, 24.4% presented in shock and 18.7% had vaginal bleeding. It also showed that 98.4% had significant moulding and caput, 84.6% fetal distress and 13.8% intrauterine fetal death. Many presented with a combination of these features.

Table 3 Condition at Presentation

Variable	**Frequency**	**Percentage**
Dehydrated		
Yes	113	91.9
No	10	8.1
Severe pain		
Yes	117	95.1
No	6	4.9
Vaginal bleeding		
Yes	23	18.7
No	100	81.3
Edematous Vulva		
Yes	100	81.3
No	23	18.7
Significant Molding/Caput		
Yes	121	98.4
No	2	1.6
Fetal distress		

Yes	104	84.6
No	19	15.4
IUFD		
Yes	17	13.8
No	106	86.2
Shock		
Yes	30	24.4
No	93	75.6

Table 4 Treatment/Intervention

Variable	Frequency	Percentage
Rehydration		
Yes	121	98.4
No	2	1.6
Analgesia		
Yes	116	94.3
No	7	5.7
Blood transfusion		
Yes	106	86.2
No	17	13.8
Destructive procedures		
Yes	6	4.9
No	117	95.1
Vaginal delivery		
Yes	7	5.7
No	116	94.3
Emergency Caesarean Section (CS)		
Yes	114	92.7
No	9	7.3
Uterine repair with Bilateral Tubal Ligation (BTL)		
Yes	5	4.1
No	118	95.9
Uterine repair without BTL		
Yes	12	9.8
No	111	90.2
Hysterectomy		
Yes	8	6.5
No	115	93.5

Table 4 showed the various treatments given to the women. Almost all the parturients (98.4%) were rehydrated with intravenous fluids, 94.3% had analgesia, 92.7% had emergency caesarean delivery, 86.2% were transfused, 4.9% had destructive procedures, 5.7% were delivered vaginally, and 6.5% had hysterectomy.

Table 5 revealed the post-treatment morbidities identified in the mothers and/or the babies. Seventy-six of them (61.8%) had surgical site infections, 33.3% had PPH, 19.5% had foot drop, 15.4% had uterine rupture, 13% had fistulas and 1.6% had maternal death. Similarly, 72.4% of the babies had birth asphyxia, 6.5% had birth traumas/injuries and 19.5% were stillbirths.

Table 5 Morbidity recorded

Variable	Frequency	Percentage
Birth Asphyxia		
Yes	89	72.4
No	34	27.6
Birth Injuries/Trauma		
Yes	8	6.5
No	115	93.5
Uterine rupture		
Yes	19	15.4
No	104	84.6
Still birth		
Yes	24	19.5
No	99	80.5
Wound infections/Sepsis		
Yes	76	61.8
No	47	38.2
Fistula		
Yes	16	13
No	107	87
Foot drop		
Yes	24	19.5
No	99	80.5
Maternal death		
Yes	2	1.6
No	121	98.4
PPH		
Yes	41	33.3
No	82	66.7

Table 6 Relationship between the different socio-demographic distributions of the women and the conditions studied. In all, marital status, conjugal relationship and educational level had a significant relationship with obstructed labour from the study. On the other hand, age distribution, occupation, religion and partners occupation were not statistically significant

Table 6 Statistical relationship between different socio-demographic groups with obstructed labour

Variable	Home	Maternity H	PHC	TBA home	Total	X^2 (p value)
Age group						
18-23 years	2(11.1)	3(18.8)	0(0)	14(16.3)	19(15.4)	13.66(0.32)
24-29 years	8(44.4)	5(31.3)	2(66.7)	20(23.3)	35(28.5)	
30-35 years	2(11.1)	7(43.8)	0(0)	29(33.7)	38(30.9)	
35-40 years	4(22.2)	0(0)	1(33.3)	18(20.9)	23(18.7)	
>41 years	2(11.1)	1(6.3)	0(0)	5(5.8)	8(6.5)	
Marital Status						
Single	6(33.3)	5(31.3)	3(100)	14(16.3)	28(22.8)	14.63(0.001)*
Married	12(66.7)	11(68.8)	0(0)	70(81.4)	93(75.6)	
Widow	0(0)	0(0)	0(0)	2(2.3)	2(1.6)	
Conjugal Relationship						
Monogamy	13(72.2)	119(68.8)	0(0)	57(66.30	81(65.9)	25.25(0.001)*
Polygamy	5(27.8)	1(6.3)	0(0)	19(22.10	25(20.3)	
Concubine	0(0)	4(25)	0(0)	10(11.6)	17(13.8)	
Education						
None	7(38.9)	2(12.5)	0(0)	14(16.3)	23(18.7)	26.75(0.002)*
Primary	4(22.2)	5(31.3)	0(0)	43(50)	52(42.3)	
Secondary	7(38.9)	7(43.8)	3(100)	29(33.7)	46(37.4)	
Tertiary	0(0)	2(12.5)	0(0)	0(0)	2(1.6)	
Occupation						
Civil servant	1(5.6)	1(6.3)	1(33.3)	4(4.7)	7(5.7)	9.25(0.16)
Petty trader	5(27.8)	8(50)	0(0)	44(51.2)	57(46.3)	
Unemployed	12(66.7)	7(43.8)	2(66.7)	38(44.2)	59(48)	
Religion						
Christianity	14(77.8)	14(87.4)	2(66.7)	73(84.9)	103(83.7)	4.14(0.66)
Islam	1(5.6)	1(6.3)	0(0)	1(1.2)	3(2.4)	
Traditional	3(16.7)	1(6.3)	1(33.3)	12(14)	17(13.8)	
Partners occupation						
Artisan	10(55.6)	8(50)	3(100)	35(40.7)	56(45.5)	8.16(0.52)
Civil servant	0(0)	2(12.5)	0(0)	7(8.1)	9(7.3)	
Subsistent farmer	7(38.9)	4(25)	0(0)	37(43)	48(39)	
Unemployment	1(5.6)	2(12.5)	0(0)	7(8.1)	10(8.1)	

4. Discussion

The aim of this study was to determine the prevalence, outcome and socio-demographic determinants of obstructed labour in a private rural hospital. In our study the prevalence of obstructed labour was 8.27% of deliveries in the centre. In a hospital-based study in Enugu, Ozumba et al found a prevalence of 4.7% [7]. This was lower than our result and could be due to the locations of the centres. While our study was in a rural, private hospital with paucity of health facilities, the other study was in a teaching hospital located in the urban area with numerous hospitals. Our centre receives referrals mainly from TBAs mostly after labour had been complicated unlike the teaching hospital. They conducted their study in the 90s whereas ours was a recent study which may be interpreted to mean poor health development in the rural areas. A more recent study in the same teaching hospital done in 2004 revealed that in a 5-year period, the prevalence of obstructed labour was 2.7% [6]. This was much lower than our finding but a lot of improvement in the earlier study. A similar study in Abakalikki, within the same south-eastern zone of Nigeria found a prevalence of 3.4% [8]. This was also lower than 8.27% found in our study. These differences could be due to the location of the hospitals and their cadres. The quoted study, though a 5-year retrospective study like ours was done in a tertiary centre against our rural hospital setting. Similar trends were also found at Nnewi, Anambra State, south-east, Nigeria, where a finding of 1.5% was made [9]. This study like the ones preceding it ~~here~~ was a tertiary hospital-based study in an urban area which could explain the lower value found. In south-southern Nigeria, the prevalence in a retrospective study was 1.1% [10]. This was another tertiary hospital-based study. Other tertiary hospital studies in Nigeria found values lower than our result irrespective of the geographical location; suggesting that a smaller number of women in urban settings are likely to obstruct. In an Indian population a prevalence of 1.9% [15] was found which was still lower than our finding. The dissimilarity could be due to differences in regions and populations studied. This was done in a rural tertiary centre in central India and 71% of the total were referrals from the rural area supporting the fact that obstructed labour is commoner among poor, rural dwellers as seen in our study. In Uganda, the prevalence was 10.5% [17]. This value was similar to our finding of 8.27% however, the study was a community survey reflecting health disadvantages facing the rural dweller as also found by us. A systematic review in Ethiopia found the prevalence of obstructed labour to be 12.93% which was much higher than our finding [14]. This could be due to the differences in methodology. Theirs was a systematic review of 16 primary studies while our study was a single, rural study. From our study 61.8% had wound sepsis,13% had fistulas, 33.3% had PPH, 19.5% had foot drop, 15.4% had uterine rupture and 1.6% died. This was similar to the findings in Ethiopia where sepsis constituted 25,3%, PPH 11%, fistula 5.5% and anaemia 16.5% [14]. The variations in the actual values could be accounted for, by the differences in methodology and sample size. Another systematic study from Ethiopia also found numerous maternal complication similar to ours. These included maternal death 14.4%, uterine rupture 41.18% along with other conditions such as fistulas, sepsis, bladder injury etc [18]. This suggests similar outcomes from obstructed labour irrespective of the region or study types. In Abakalikki, 60.3% of the babies from obstructed labour had good Apgar score [19] but this differed from our study where 72.4% were asphyxiated. The reason for the difference could be due to the cadre of the hospitals where the studies were done. Our study was in a rural private hospital as against a teaching hospital with full complement of neonatal care. From our study, marital status, type conjugal relationships and educational qualifications had significant associations with obstructed labour with p-values less than 0.05. A study in Uganda identified nulliparity, primiparity and teenage status as having significant association with obstructed labour [20]. This was a multi-centre study as against our study which was a one centre study

5. Conclusion

Obstructed labour was an important occurrence in the centre and all of them were referred cases. Marital status, type of conjugal relationship and educational qualification had significant influence on the condition and majority of the babies were asphyxiated at birth.

Recommendation

We recommend registration, training and retraining of TBAs in rural areas to recognize early signs of obstruction and make timely referrals. Secondly, policies to enhance girl child education and women empowerment should be encouraged. Finally, provision of health facilities to make Essential Obstetric Care available and affordable to the rural populace should be a priority of all regional governments

Compliance with ethical standards

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Disclosure of conflict of interest

There was no conflict of interest in the course of this work.

References

[1] AAE Orhue, JAM Otubu (2021). Normal Labour. In Agbola's Textbook of Obstetrics and Gynaecology for Medical Students. 3rd Ed. HEBN Publishers Plc, Ibadan, Nigeria.

[2] SA Obed (2015). Obstructed Labour. In Comprehensive Obstetrics in the Tropics. 2nd Ed. Assemblies of God Literature Centre LTD, Accra, Ghana.

[3] Ali A, Masakwe BA. WHO midwifery education module 3: managing prolonged and obstructed labour. Training Course in Sexual and Reproductive Health Research. 2010 [Google Scholar]

[4] Bailey PE, Andualem W, Brun M, Freedman L, Gbangbade S, Kante M, et al. institutional maternal and perinatal deaths: a review of 40 low- and middle-income countries. BMC Pregnancy Childbirth. 2017; 17(1):295.

[5] Black RE, Levin C, Walker N, Chou D, Liu L, Temmerman M, et al. reproductive, maternal, newborn and child health: key messages from disease control priorities 3rd edition. The Lancet.2016; 388(10061):2811-24.

[6] Nwogu-Ikojo EE, Nweze SO, Ezegwui HU. Obstructed labour in Enugu, Nigeria. J Obstet Gynaecol. 2008;28(6):596-9

[7] Ozumba BC, Uchegbu H. Incidence and management of obstructed labour in Eastern Nigeria. Aust N Z J Obstet Gynaecol.1991;31(3):213-6

[8] Chidebe C Anikwe, Cyril C Ikeoha, Christian O Ogah, Collins A Kalu, Ifeyinwa H Anikwe. A 5-year retrospective review of the maternal and fetal outcome of obstructed labour and its determinants in a tertiary hospital in Nigeria. African Health Sciences.2022;22(2):500-510

[9] Charlotte B Oghuejiofor, Chinedu J Ezugwu, George Eleje, et al. emerging predictors of obstructed labour in a single Nigerian centre population of a low-resource setting. Trends Med Res. 2022;17(4):136-144

[10] Oriji PC, Allahoa DO, Briggs DC, Chika MN, Mariere UI, Ikoro C, Adhuze JI, Atemie G. A 5-year review of obstructed labour and its sequalae in the Federal Medical Centre, Yenagua, south-south, Nigeria. International Journal of Clinical Obstetrics and Gynaecology.2021;5(5):06-12

[11] Akaninyene EBU, Omotade AI, Ifeoluwa EO, Adebanjo BA, et al. obstructed labopur in a Nigerian tertiary health facility: a mixed-method study. International journal of reproduction, contraception, obstetrics and gynaecology. 2021;10(80:2937-2943

[12] Ahmed Yakubu, Tukur Dabo Sagir, Abubaka A Panti, et al. obstructed labour at Usman Danfodio University Teaching Hospital, Sokoto: a 5-year review. International journal of reproduction, contraception, obstetrics and gynaecology. 2020;9(4):1503-1506

[13] GS Melah, AU El-Nafaty, AA Massa, BM Audu. Obstructed labour. Journal of Obstetrics and Gynaecology,2003;23(4):369-373

[14] Asteray Assmie Ayenew. Incidence, causes and materno-fetal outcomes of obstructed labour in Ethiopia: systematic review and meta-analysis. Reproductive Health. 2021;18(6): https://doi.org/10.1186/s12978-021-10003-0

[15] Chhabra S, Gandhi D, Jaiswal M. Obstructed labour- a preventable entity. J Obstet Gynaecol. 2000;20(20;151-3

[16] Memon S, Qazi RA, Mahli P, Khushk IA. Pattern of obstructed labour at a public sector university hospital of Sindh, Pakistan. J Liaquat Univ Med Health Sci. 2009;8:60-4

[17] Kabakyenga JK, Ostergren PO, Turyakira E, Mukasa PK, Petterson KO. Individuals and health facility factors and the risk for obstructed labour and its adverse outcomes in south-western Uganda. BMC Pregnancy Childbirth. 2011;11:73

[18] Yordanos GY, Beniam D, Melaku D, Getachew MK. Obstructed labour and its effects on adverse maternal and fetal outcomes in Ethiopia: a systematic review and meta-analysis. PloS ONE,2022;17(9):e0275400

[19] Anikwe CC, Ikeoha CC, Ogah CO, Kalu CA et al. a 5-year retrospective review of maternal and fetal outcomes of obstructed labour and its determinants in a tertiary hospital in Nigeria. Afri Health Sci. 2022;22(2):500-510

[20] Jerome KK, Per-Olof Ostergren KOP. Individual and healthy facility factor and the rik for obstructed and labour its adverse outcomes in south-western Uganda. BMC Pregnancy and Childbirth.2011;11(73):11-73