

Comparison of Factors Associated With Preterm and Term Birth at University College Hospital Ibadan Oyo State

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Research Article

Keywords: Preterm birth, Predictor, Pregnancy, Multiple gestation

Posted Date: July 24th, 2026

DOI: <https://doi.org/10.21203/rs.3.rs-10080784/v1>

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Additional Declarations: No competing interests reported.

Abstract

Background

About 15 million babies are delivered prematurely (before 37 complete weeks of pregnancy) worldwide. Nearly 60% of preterm deliveries occur in Africa and Asia. A high proportion of preterm babies die during their first five years of life, and the majority of these deaths are unreported, especially in Africa.

Objectives

This study compared women with term and preterm births at the University College Hospital (UCH), Ibadan, to identify factors associated with preterm birth.

Materials and methods

This was a retrospective case-control study involving women who gave birth at UCH Ibadan, a tertiary health institution in Nigeria, from January 2018 to December 2022. The cases were women who delivered before 37 weeks of gestation, whereas the controls were women who delivered at 37 weeks or beyond. The medical records of 380 eligible women during the study were systematically selected, with 190 cases and 190 controls. The selection was matched by age, parity, and booking status. A proforma was used to extract data from the case notes. The data collection was done by a trained nurse. Descriptive and test of association analysis were performed using the IBM SPSS statistical software.

Results

The mean age of the women was 31.2 ± 5.588 years. Individuals who had a history of preterm birth were 51 times more likely to have preterm birth (OR 51.27, 95% CI 26.03, 101.0). Previous Cesarean Section (OR 2.27, 95% CI 1.31, 3.94) and inadequate antenatal care (OR 2.42, 95% CI 1.54, 3.81). Preterm birth will more likely occur among Individuals with a low level of education (OR 1.90, 95% CI 1.21, 2.97); low family income, (OR 2.79, 95% CI 1.76, 4.41); preeclampsia, multiple gestations, and premature rupture of membranes were about five times more, bleeding during pregnancy and sepsis were 2 or 3 times more likely to result in preterm birth, multiple gestations (8.8 times), pregnancy-induced hypertension 6.7 times more likely to result in preterm babies. Women who had a previous history of preterm birth were 7.1 times more likely to have preterm birth. Likewise, those who had inadequate antenatal care were 2.9 times more likely, and those with Low family income were 2.9 times more likely.

Conclusion

The study showed some dissimilarities in the social and obstetric characteristics of women who had preterm and term births. Medical disorders and poor antenatal care were risk factors for preterm birth.

Introduction

Worldwide, nearly 15 million babies are delivered preterm (earlier than 37 full weeks of pregnancy).^{1,2} The average preterm birth rate in Europe and many other high-income countries ranges between 5–11%.³ Many preterm babies suffer early neonatal death, and a significant number of deaths in children under 5 years are due to prematurity.¹ Sub-Saharan Africa and Asia have the highest rate of preterm births in the world, and both account for nearly 60% of the global burden.¹ Data from Africa showed increasing reports of preterm deliveries ranging from 7.4 to 68.2%, and most were associated with fatality.^{2,4}

In Nigeria, the prevalence of preterm birth is 12%, accounting for 871,000 deliveries per annum, and 98,300 of them reportedly died before the age of five years.⁶ Some of the identified risk factors of preterm birth include maternal overweight, multiple pregnancies, pregnancy-induced hypertension, previous preterm delivery, preterm rupture of fetal membranes, inadequate antenatal visits (less than four visits), history of abortion, bleeding during pregnancy, previous cesarean section, polyhydramnios, and living in a rural area.⁵ Black women are more likely to have preterm birth compared to women from other races.⁶

Apart from the relatively high case fatality associated with prematurity, preterm birth is also associated with high financial burden and psychosocial consequences.⁶ Studies have shown that preterm newborns are more likely to die or experience health and developmental issues, including cerebral palsy, developmental delays, and hearing and visual loss.⁵ Reducing preterm birth rates is important to the reduction of the perinatal mortality rate, infant mortality rates and early childhood deaths especially in low and middle income countries like Nigeria.

In Nigeria however, recent data on preterm birth and associated factors are scarce. This study compares the general profile and obstetric factors among mothers who gave birth to preterm newborns (cases) with mothers (controls) who delivered at term. In addition, the study also identified the difference between factors associated with preterm birth and term deliveries at the University College Hospital (UCH), Ibadan. In addition, it is important to conduct this study to add to the body of evidence in understanding factors responsible for/associated with preterm birth.

METHOD

Study Design

This was a retrospective case-control study that compared factors associated with preterm and term birth among mothers who delivered in University College Hospital, Ibadan, between 2018 and 2022

Sample size

The sample size for this retrospective, unmatched case-control study was calculated using the formula for comparison of two proportions at a 95% confidence level and 80% study power. In the absence of a consistent local estimate for the primary exposure variable, a prevalence of 50% was used to provide the maximum sample size estimate. Assuming a detectable difference of 15% between cases and controls, the calculated minimum sample size was 167 participants per group. After adjusting for possible incomplete or missing records commonly associated with retrospective studies using a 10% attrition rate, the minimum sample size increased to approximately 184 participants per group. This was rounded up to 190 cases and 190 controls, giving a total sample size of 380 participants.

Sampling

The total sample frame of preterm births were retrieved from the labor records over the study period (1,954 sample population). Nearly one in 10 cases were recruited until the desired sample size were achieved. The sample frame were arranged according to delivery date and every 10th case was selected. Where the record of such case selected was not available, the 9th case in the frame of 10 was selected. Thereafter, controls were selected within the same month of the case using the next available age, parity and booking status matched control of term delivery.

Study outcomes

The primary outcome was to assess how socio-demographic and obstetric characteristics impact gestational age at delivery to reduce the burdens of preterm birth globally and locally, particularly in the study setting

Data Analysis

The data were analyzed using the IBM/ Statistic Package for Social Science (SPSS) (Version 25) statistical package. The descriptive statistical tools used are mean, standard deviation, and the inferential statistics of Chi-square (X^2), and a logistic regression test was used for the analysis.

Ethical consideration:

Ethical approval was obtained from the Ethical Review Committee of University College Hospital (UCH)/ University of Ibadan, Oyo State, with the number NHREC/05/01/2008a. The principles of ethical practices in research were maintained according to the declaration of Helsinki

RESULTS

Delivered mothers were recruited into two groups: 190 deliveries at gestational age < 37 weeks (Preterm) and 190 deliveries at gestational age ≥ 37 weeks (term). The mean age of the women was 31.2 + 5.588 years. Their sociodemographic distribution is seen in Table 1.0. The sociodemographic characteristics of each of the 2 groups were compared using chi-square as outlined in Table 2.0, with no statistically significant difference between the groups. The health profiles of the women in both groups were also compared, as shown in Table 3.0, with statistically significant differences in the parity and maternal blood groups across both groups.

Table 1.0
Socio-demographic characteristics of the recruited
women (combined)

Variables	Frequency	Percent
Maternal Age (in years)		
≤ 30	182	47.9
31–40	178	46.8
≥ 41	20	5.2
Marital status		
<i>Single</i>	10	2.6
<i>Married</i>	355	93.4
<i>Divorced</i>	1	0.3
<i>No response</i>	14	3.7
Ethnicity		
<i>Yoruba</i>	336	88.4
<i>Igbo</i>	14	3.7
<i>Hausa</i>	1	0.3
<i>Others</i>	6	1.6
<i>No response</i>	23	6.1
Religion		
<i>Christianity</i>	258	67.9
<i>Islam</i>	105	27.6
<i>Others</i>	17	4.5
Highest level of qualification		
<i>No formal education</i>	1	0.3
<i>Primary</i>	5	1.3
<i>Secondary</i>	107	28.2
<i>Tertiary</i>	245	64.5
<i>No response</i>	22	5.8
Occupation		

Variables	Frequency	Percent
<i>Unemployed</i>	21	5.5
<i>Full housewife</i>	14	3.7
<i>Private sector employer</i>	53	13.9
<i>Civil servant</i>	124	32.6
<i>Self-employed</i>	133	35.0
<i>Others</i>	10	2.6
<i>No response</i>	25	6.6

Table 2.0
Difference between socio-demographic characteristics of the respondents and gestational age at delivery. Both cases and control

Variables	Gestational Age at delivery		Total	χ^2	p-value
	< 37weeks	≥ 37weeks			
	(Cases)	(Control)			
Maternal Age (in years)					
≤ 30	91(24.3)	91(24.3)	182	1.754	0.416
31–40	87(23.2)	91(24.3)	178		
≥ 41	10(2.7)	5(1.3)	15		
Marital status					
Single	7(1.9)	3(0.8)	10	2.528	0.283
Married	179(48.9)	176(48.1)	355		
Divorced	0(0.0)	1(0.3)	1		
Ethnicity					
Yoruba	173(48.5)	163(45.7)	336	4.400	0.221
Igbo	4(1.1)	10(2.8)	14		
Hausa	1(0.3)	0(0.0)	1		
Others	4(1.1)	2(0.6)	6		
Religion					
Christian	122(33.2)	136(37.1)	258	4.445	0.108
Islam	61(16.6)	44(12.0)	105		
Others	3(0.8)	1(0.3)	4		
Highest level of qualification					
No formal education	1(0.3)	0(0.0)	1	6.402	0.094
Primary	3(0.8)	2(0.6)	5		
Secondary	64(17.9)	43(12.0)	107		
Tertiary	114(31.8)	131(36.6)	245		
Occupation					
Unemployed	10(2.8)	11(3.1)	21	6.971	0.223

Variables	Gestational Age at delivery		Total	χ^2	p-value
	< 37weeks (Cases)	≥ 37weeks (Control)			
<i>Full housewife</i>	10(2.8)	4(1.1)	14		
<i>Private sector employer</i>	32(9.0)	21(5.9)	53		
<i>Civil servant</i>	54(15.2)	70(19.7)	124		
<i>Self-employed</i>	67(18.9)	66(18.6)	133		
<i>Others</i>	5(1.4)	5(1.4)	10		

Table 3.0
Difference between health profile characteristics of the respondents and gestational age at delivery. Both cases and control

Variables	Gestational Age at delivery		Total	χ ²	p-value
	< 37weeks (Cases)	≥ 37weeks (Control)			
Parity					
0	78(21.4)	60(16.5)	138	34.066	< 0.001*
1	49(13.5)	50(13.7)	99		
2–3	45(12.4)	58(15.9)	103		
4–5	11(3.0)	8(2.2)	19		
> 5	2(0.5)	3(0.8)	5		
Sex of neonates					
Male	84(24.3)	75(21.7)	159	1.619	0.445
Female	90(26.1)	96(27.8)	186		
Maternal blood group					
A	26(6.9)	28(7.4)	54	18.857	0.002*
B	32(8.5)	32(8.5)	64		
AB	3(0.8)	4(1.3)	7		
O	59(15.7)	90(23.9)	149		
Not recorded	68(18.1)	34(9.0)	102		
Body Mass Index					
Underweight	1(0.5)	4(1.8)	5	5.119	0.163
Normal	27(12.3)	56(25.5)	83		
Overweight	23(10.5)	52(23.6)	75		
Obese	27(12.3)	30(13.6)	57		
Parenthesis-% *-significant at p-value < 0.05					

A logistic regression was performed to ascertain the effects of social factors, health profile, and obstetric complications of participants on the likelihood of having gestational age less than 37 weeks (< 37 weeks) OR greater or equal to 37 weeks (≥ 37 weeks). The factors in each category were used as

independent predictors of gestational age. All parameters tested except parity were statistically significant. The odds ratios at 95% confidence intervals are reported in Table 4.0 below. Individuals who had a history of preterm birth were 51 times more likely to have preterm birth (gestational age < 37 weeks) than those who had no history of preterm birth (OR 51.27, 95% CI 26.03, 101.0). Individuals who had a history of CS (OR 2.27, 95% CI 1.31, 3.94) and inadequate antenatal care (OR 2.42, 95% CI 1.54, 3.81) were about two times more likely to have preterm birth (gestational age < 37 weeks) than those without these conditions. Individuals with a low level of education were about two times more likely to have preterm birth (gestational age < 37 weeks) than individuals without a low level of education (OR 1.90, 95% CI 1.21, 2.97). Also, Individuals with a low family income were about three times more likely to have preterm birth (gestational age < 37 weeks) than individuals without a low family income (OR 2.79, 95% CI 1.76, 4.41).

Table 4.0
Relationship between Participants' Health Profile and obstetric
complication with Pre-term (Gestational Age < 37 Weeks)

Parameter	OR	CI	p-value
Booking status			< 0.001*
Yes	0.28		
No	1	[1.62, 0.47]	
Antenatal care usage			< 0.001*
Yes	0.28		
No	1	[0.17, 0.45]	
Less than 4 (present)			< 0.001*
Yes	3.69		
No	1	[2.39, 5.70]	
4 and above			< 0.001*
Yes	0.33		
No	1	[0.22, 0.52]	
Inadequate antenatal care			< 0.001*
Yes	2.42		
No	1	[1.54, 3.81]	
History of preterm birth			< 0.001*
Yes	51.27		
No	1	[26.03, 101.0]	
History of CS			0.003*
Yes	2.27		
No	1	[1.31, 3.94]	
Inadequate antenatal care			< 0.001*
Yes	2.42		
No	1	[1.54, 3.81]	
Antenatal visits in pregnancy	0.49	[0.37, 0.64]	< 0.001*
*Significant values at 95% CI			

Parameter	OR	CI	p-value
Birth weight	0.03	[0.02, 0.07]	< 0.001*
Pre-eclampsia			< 0.001*
Yes	5.43		
No	1	[3.19, 9.24]	
Sepsis			0.003*
Yes	3.09		
No	1	[1.40, 6.82]	
Eclampsia			0.004*
Yes	3.90		
No	1	[1.42, 10.73]	
Multiple gestation			< 0.001*
Yes	5.47		
No	1	[1.83, 16.55]	
Pregnancy-induced hypertension			< 0.001*
Yes	4.49		
No	1	[2.61, 7.71]	
Premature rupture of membrane			< 0.001*
Yes	4.63		
No	1	[2.30, 9.29]	
Bleeding during pregnancy			0.021*
Yes	2.50		
No	1	[1.11, 5.61]	
*Significant values at 95% CI			

On a test of association for obstetric complications, all factors tested were statistically significant and the odds ratios and 95% confidence intervals are reported in Table 4.0 below. Individuals who had any of the obstetric complications tested were more likely to have preterm birth (gestational age < 37 weeks) than those who did not have these conditions. Women who had preeclampsia, multiple gestations, and premature rupture of membranes were about five times more likely to have preterm birth than those without these conditions. Similarly, women with eclampsia and pregnancy-induced hypertension were

about four times more likely to have a preterm birth than those without these conditions. Individuals with bleeding during pregnancy and sepsis were 2 or 3 times more likely to have a preterm birth than those who do not have these conditions.

According to logistic regression in Table 5.0, women who had multiple gestations were 8.8 times significantly more likely to have a preterm birth. Also, women who had pregnancy-induced hypertension were 6.7 times more likely to deliver preterm babies. Women who had a previous history of preterm birth were 7.1 times more likely to be predisposed to preterm birth. Likewise, those who had inadequate antenatal care were 2.9 times more likely to be prone to premature delivery. Those with Low family income were 2.9 times more likely, while respondents with premature rupture of membrane were 4.8 times more likely to have preterm birth. Therefore, Multiple gestation and pregnancy-induced hypertension, previous history of preterm birth, Inadequate antenatal care, Low family income, and premature rupture of the membrane are potent predisposing factors (predictors) of preterm delivery.

Table 5.0
Predictors of preterm birth using Gestational Age at delivery as the outcome (dependent variables with the use of Logistic Regression Analysis)

Independent variables(Predictors)	p-value	Odd ratio	95% C.I .for Odd ratio	
			Lower	Upper
Multiple gestation	< 0.001*	8.850	2.657	29.475
Pregnancy induces hypertension	< 0.001*	6.723	3.656	12.362
Previous history of preterm birth	< 0.001*	7.075	2.348	21.320
Inadequate antenatal care	< 0.001*	2.889	1.637	5.099
Low level of education	0.113	.544	.256	1.155
Low family income	0.008*	2.900	1.315	6.394
Multi parity with less antenatal care	0.936	.965	.407	2.287
Premature rupture of membrane	< 0.001*	4.870	2.217	10.695
Bleeding during pregnancy	.222	1.847	.689	4.950
*-significant at p-value < 0.05				

DISCUSSION

There is a shortage of recent data on preterm birth in Nigeria, as well as the characteristics that predict preterm birth, which would help evaluate intervention programs and show trends.⁶ The lack of recent research on the predicting factors of preterm birth among mothers in the study setting also made this study necessary. As a result, identifying the predicting factors of preterm birth among mothers in Ibadan

is crucial to determining the causes of preterm and how to mitigate them.^{6,7} This study found the prevalence of preterm delivery was 26.1% for female newborns and 24.3% for male neonates, much higher than previously documented prevalence across Africa.^{8,9} The higher prevalence may be because this is a referral hospital and a higher proportion of women were referred due to need for neonatal support with imminent preterm delivery. The prevalence of preterm birth was higher for female neonate male neonates as other studies have shown.^{10,11}

Although preterm birth has been linked to several sociodemographic factors, including mother age (> 35), low educational attainment, low socioeconomic status, low education, single marital status, nutritional status, infection, or prior history of preterm birth, and behavioral factors like stress, smoking, and alcohol consumption,^{6,7,12,13} This study showed strong similarity between the sociodemographic parameters of mothers with preterm and term births and this may be because of the design of this study requiring sociodemographic matching.

Previous preterm births, early fetal membrane rupture, inadequate prenatal care (less than four visits), bleeding during pregnancy, prior caesarean section, polyhydramnios, being overweight, multiple pregnancies, pregnancy-induced hypertension, and living in a rural area are among the risk factors that have been identified.¹⁴ Similar factors were found to be associated with preterm birth in this study. Several maternal illnesses, including anemia, maternal malaria, pre-eclampsia, eclampsia, essential hypertension, multiparity, renal infection, diabetes mellitus, tuberculosis, cancer, asthma, thyroid disease, epilepsy, and heart disease, as well as premature membrane rupture, maternal urinary tract infection, and human immune virus infection have all been linked to preterm deliveries.^{6,13,15} There was limitation to the range of maternal morbidities that could be evaluated in this retrospective study but all maternal morbidities identified in this study was associated with increased risk of preterm birth. Iatrogenic preterm deliveries may be more common among women with morbidities.¹⁶

Other factors such as primiparity, multiple gestation, antepartum hemorrhage, low level of education, poor access to antenatal care services were found to be contributory to the risk of preterm birth in this study. This is in agreement with the findings of previous studies in developing nations.^{5,15,17–19}

Conclusion

Preterm deliveries are prevalent in developing nations like Nigeria and many treatable conditions significantly contribute to the risk of preterm deliveries. Addressing the issues related to female education and economic empowerment, and improving access to healthcare, especially antenatal booking and access to antenatal care services. Further studies are still required to elucidate the causes and proffer a solution to the challenge of preterm deliveries.

Abbreviations

CI – Confidence Interval, CS – Caesarean Section, PROM – Premature Rupture of Membrane, OR – Odds Ratio, UCH – University College Hospital, UI – University of Ibadan,

Declarations

Ethics approval and consent to participate: Ethical approval was obtained from the University of Ibadan/University College Hospital Ethical Review Board with a registration number NHREC/05/01/2008a. This was a retrospective study, and a waiver of consent was obtained from the University of Ibadan/University College Hospital Ethical Review Board. The principles of ethical practices in research were maintained according to the declaration of Helsinki

Consent for publication: Not applicable

Competing interests: The Authors have no competing interests to declare

Funding: The study received no outside funding; it was funded by the authors.

Availability of data and materials: Data is available on request. Request may be sent to the corresponding author; Dr Oluwasegun Caleb Idowu, of the Department of Obstetrics and Gynaecology, University College Hospital, Ibadan, Nigeria, idoscale@gmail.com.

Authors' contribution: MAP and CMN conceptualized the study, data collection was by MAP, data input and analysis by MAP and OEO, the manuscript draft was written by MAP and IOC, all authors reviewed the manuscript and made inputs

Acknowledgements: We acknowledge the efforts of all the healthcare workers involved in the care of these women. We acknowledge the efforts of the health record officers who provided access to the hospital records of these women.

References

1. Alamneh TS, Teshale AB, Worku MG, Tessema ZT, Yeshaw Y, Tesema GA, et al. Preterm birth and its associated factors among reproductive aged women in sub-Saharan Africa: evidence from the recent demographic and health surveys of sub-Saharan African countries. *BMC Pregnancy Childbirth*. 2021;21(1):770.
2. Ayele TB, Moyehodie YA. Prevalence of preterm birth and associated factors among mothers who gave birth in public hospitals of east Gojjam zone, Ethiopia. *BMC Pregnancy Childbirth*. 2023;23(1):204.
3. Delnord M, Blondel B, Prunet C, Zeitlin J. Are risk factors for preterm and early-term live singleton birth the same? A population-based study in France. *BMJ Open*. 2018;8(1):e018745.
4. Liu L, Oza S, Hogan D, Chu Y, Perin J, Zhu J, et al. Global, regional, and national causes of under-5 mortality in 2000–15: an updated systematic analysis with implications for the Sustainable Development Goals. *Lancet Lond Engl*. 2016;388(10063):3027–35.

5. Abdo RA, Halil HM, Muhammed MA, Karebo MS. Magnitude of Preterm Birth and Its Associated Factors: A Cross-Sectional Study at Butajira Hospital, Southern Nations, Nationalities, and People's Region, Ethiopia. *Int J Pediatr*. 2020;2020:e6303062.
6. Umeigbo BC, Modebe IA, Iloghalu IC, Eleje GU, Okoro CC, Umeononihu OS, et al. Outcomes of Preterm Labor and Preterm Births: A Retrospective Cross-Sectional Analytical Study in a Nigerian Single Center Population. *Obstet Gynecol Res*. 2020;3(1):17–28.
7. Fetene G, Tesfaye T, Negesse Y, Dulla D. Factors associated with preterm birth among mothers who gave birth at public Hospitals in Sidama regional state, Southeast Ethiopia: Unmatched case-control study. *PLoS ONE*. 2022;17(4):e0265594.
8. Zini ME, Omo-Aghoja LO. Clinical and sociodemographic correlates of preterm deliveries in two tertiary hospitals in southern Nigeria. *Ghana Med J*. 2019;53(1):20–8.
9. Wagura P, Wasunna A, Laving A, Wamalwa D, Ng'ang'a P. Prevalence and factors associated with preterm birth at kenyatta national hospital. *BMC Pregnancy Childbirth*. 2018;18(1):107.
10. Peelen MJCS, Kazemier BM, Ravelli ACJ, De Groot CJM, Van Der Post JAM, Mol BWJ, et al. Impact of fetal gender on the risk of preterm birth, a national cohort study. *Acta Obstet Gynecol Scand*. 2016;95(9):1034–41.
11. Teoh PJ, Ridout A, Seed P, Tribe RM, Shennan AH. Gender and preterm birth: Is male fetal gender a clinically important risk factor for preterm birth in high-risk women? *Eur J Obstet Gynecol Reprod Biol*. 2018;225:155–9.
12. Jeena PM, Asharam K, Mitku AA, Naidoo P, Naidoo RN. Maternal demographic and antenatal factors, low birth weight and preterm birth: findings from the mother and child in the environment (MACE) birth cohort, Durban, South Africa. *BMC Pregnancy Childbirth*. 2020;20(1):628.
13. Suleiman BM, Mokuolu OA, Adesiyun OO, Adeniyi A. Determinants of mortality of preterm babies in the university of Ilorin Teaching Hospital, Ilorin Nigeria. *Niger Postgrad Med J*. 2010;17(4):291–6.
14. Regasa MT, Hinkosa L, Besho M, Bekele T, Bekuma TT, Tsegaye R, et al. Predictors of preterm birth in Western Ethiopia: A case control study. *PLoS ONE*. 2021;16(4):e0247927.
15. Butali A, Ezeaka C, Ekhaguere O, Weathers N, Ladd J, Fajolu I et al. Characteristics and risk factors of preterm births in a tertiary center in Lagos, Nigeria. *Pan Afr Med J [Internet]*. 2016 [cited 2024 Jan 13];24. Available from: <http://www.panafrican-med-journal.com/content/article/24/1/full/>
16. Fuchs F, Monet B, Ducruet T, Chaillet N, Audibert F. Effect of maternal age on the risk of preterm birth: A large cohort study. *PLoS ONE*. 2018;13(1):e0191002.
17. Acharya R, Khanal P, Bhattarai HK, Amatya A. Risk Factors of Preterm Birth in Nepal: A Hospital-Based Matched Case-Control Study. *Front Reprod Health [Internet]*. 2021 [cited 2024 Jan 13];3. Available from: <https://www.frontiersin.org/articles/10.3389/frph.2021.697419>
18. Fuchs F, Senat MV. Multiple gestations and preterm birth. *Semin Fetal Neonatal Med*. 2016;21(2):113–20.
19. Vogel JP, Chawanpaiboon S, Moller AB, Watananirun K, Bonet M, Lumbiganon P. The global epidemiology of preterm birth. *Best Pract Res Clin Obstet Gynaecol*. 2018;52:3–12.