MEDDOCS Open Access Publisher

Journal of Gynecology Case Reports

Open Access | Research Article

Prevalence and Risk Factors to Preterm Labor Through a Study in Jiblah University Hospital, IBB, Governorate, Yemen

Afaf Alsharif*

Department of Gynaecology, School of Medicine, Jeblah University for Medical and Health Sciences, Ibb Yemen.

***Corresponding Author(s): Afaf Alsharif**

Department of Gynaecology, School of Medicine, Jeblah University for Medical and Health Sciences, Ibb Yemen.

Email: afafmussa2018@gmail.com

Received: Jan 07, 2025

Accepted: Feb 25, 2025

Published Online: Feb 28, 2025

Journal: Journal of Gynecology Case Reports

Publisher: MedDocs Publishers LLC

Online edition: http://meddocsonline.org/

Keywords: Preterm birth; Risk factors.

Abstract

Background: Preterm Birth (PTB), defined as birth occurring at less than 37 weeks of gestation, is a leading cause of perinatal mortality and morbidity in the world.

Objectives: As no studies have previously been conducted about preterm labour in Jiblah University Hospital in Ibb governorate, Yemen, we hereby aimed to present first report on prevalence and risks factors causes of preterm labour in Ibb governorate.

Methods: This retrospective observational study was conducted in the Department of Obstetrics & Gynecology, Jiblah University Hospital in Ibb Governorate, from 1 December 2023 to 29 February 2024. Data were retrieved from the antenatal ward admission register, case files, theatre records, and neonatal care unit records and reviewed. Descriptive statistics were used to describe data. Chi-square test with a significance level set at $p<0.05$.

Results: A total of 1350 pregnancies, 252(18.67%) were preterm deliveries and 1089(80.66%) were full-term deliveries at Jiblah University Hospital, Ibb. Our study shows the distribution of participants based on socio-demographic factors. The data that out of the total 252 female participants, with ages mean±std=27.43±6.34 roughly 18.67% experienced preterm deliveries. The largest segment (20%) of the respondents fell within the age range of 26 to 36, approximately 22.90% in family number greater than 6. Our study demonstrates that several factors are significantly linked to preterm birth, including; family number, blood pressure, gravida and abortion number, where the Chi square p-value was <0.05. On the other hand, the results from the logistic regression analysis indicated the predictive potential of certain socio-demographic factors in relation to preterm birth. Specifically, the analysis indicated that family number played a role in predicting preterm birth. Accordingly, mothers who have number of family less than 4 reduced odds of giving birth to a pre-term baby when compared to those who have more than 6 (OR=0.632, p=0.036, 95% CI: 0.401–0.969).

Conclusion: In this study, a family number, blood pressure, gravity and abortion number are the risk factors for premature delivery. Recognizing the most common risk factors for PTB will help to increase the awareness about high-risk pregnancy, improve the preventive measures of preterm risk factors and modify preterm care protocol in nurseries.

Cite this article: Alsharif A. Prevalence and Risk Factors to Preterm Labor Through a Study in Jiblah University Hospital, IBB, Governorate, Yemen. J Gynecol Case Rep. 2025; 4(1): 1016.

Materials and methods

Design of the study

This study was conducted retrospective observational study was conducted in the department of Obstetrics & Gynecology, Jiblah University Hospital in Ibb city, from 1 December 2023 to February 2024. The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki and received approval from the Jiblah University Ethics Research Committee (approval number: 167). Consent from the patients was waived off by the ethical committee of the institute because of the retrospective design of the study.

Study population

The study involved all women pregnancy who were admitted at gynecological wards. One thousand three hundred and fifty participants, among the 1350 participants, 252(18.66%); participants were preterm birth and 1098(81.33%); participants were term birth, during the period of the study and were selected as study population.

Data collection

For data collection, the maternity records available in the hospital archive were used. The sampling method in this study was based on complete enumeration and all the records in the hospital archive were evaluated.

Cases were excluded from analysis for women lost to follow-up or with missing data. The hospital database including hospital information system (archive medical records), registries were used to collect the following data: The dependent variable in this study was preterm birth, dichotomized as birth occurring before 37 weeks (preterm birth) and at 37 weeks or later (term birth). Accordingly, a mother who gave birth before 37 weeks was classified as having experienced preterm birth and assigned a code of 1, while a mother who delivered at 37 weeks or beyond was categorized as having undergone term birth and assigned a code of 0. On the other hand, the independent variables included various aspects of family socio-demographics. Age was measured in completed years and subsequently grouped into four categories during the analysis: 15-25 years, 26-36, 37-47 years, and 47 years or older, worker. Education level was divided into two categories: literate, illiterate. Employment status was dichotomized as employed or not employed. Location was classified as rural or urban. Parity was stratified as having fewer than 2 children or having 2 or more children. Gravity was stratified as having fewer than 4 children or having 4 or more children. Other independent variables included: Detailed obstetric profile of the women such as, gestational age, abortions, parity, six of baby, trauma, cervix incomitance, uterine anomaly, chronic steroids, uterine over distension, present of baby, the prevalence of preeclampsia, eclampsia, congenital anomalies for baby, Premature Rupture of Membranes (PROM), and medical history, urinary tract infection, blood pressure, smoking, chewing the khat, in the study population was noted.

Data analysis

The data analysis was conducted using SSPSS version 26.0 software. In the initial univariate analysis, means, standard deviation, frequencies and percentages were computed to describe the variables considered in the study. At bivariate analysis, associations were examined using the Pearson Chi-square test with a significance level set at $p<0.05$. Factors that demonstrated significance in this analysis were selected for inclusion in the subsequent multivariate analysis. The purpose of the multivariate analysis was to estimate the individual net effects of each independent factor on the dependent variable.

Study setting

Jiblah University Hospital is the main referral governmental hospital located in Jiblah, Ibb region, Yemen. It was built in 1965 and serves Ibb region with a population of 772,000 according to the Central Statistics Agency [bb, Yemen Metro Area Population 1950-2024. 2023)]. Recently, this hospital has become an academic hospital for Jiblah University for Medical & Health Sciences. The maternity ward had sex beds in the delivery room and was staffed by a midwife or a nurse who attended deliveries and provided newborn resuscitation as needed. Additionally, a specific staff assigned to newborn care was also available. The Obstetrics & Gynecology unit was also located next to the maternity ward and received newborns who needed critical care.

Importance of the study

Since the studies in our country on preterm labour in general are very minor and almost negligible, especially with regard to the high incidence of preterm labour among women Yemenis and at the same time the reasons behind this high prevalence at the level of the republic in general and the level of Ibb governorate in particular.

So, in the absence of previous studies here in Ibb City, Yemen, on factors contributing to preterm labor, we were interested in doing such an important area of research.

Objective

1. This study aims Identify the Prevalence of preterm labor in Jiblah University Hospital, Ibb, Yemen.
2. Identify and understand the factors contributing to PTL in Yemen.
3. To do the prevention for PTL

Result and desiccation

Result

Table 1 shows the distribution of participants based on socio-demographic. The tabulated data indicates that out of the total 252 female participants, with ages Mean±SD=27±6.34, Mean±SD=4.03±2.18 for family number, Mean±SD=3.18±2.38 for gravity number, Mean±SD=0.39±0.82 for abortion number, Mean±SD=1.8±2 for parity number to return percentage 18.67% experienced preterm deliveries. The largest segment (20%) of the respondents fell within the age range of 26 to 36, approximately 22.90% in family the number greater than 6. Among the sample, (18.90%) women were preterm birth to residence area (rural) and while (17.70%) women were preterm birth to residence area (urban), in education level; the literate percentage were (19.30%) while illiterate percentage were (14%), as well as, worker female participants were (18.90%) and unworked 15.10%. Among the women who were smokers and non-smokers were recorded (21.1%) and (18%), respectively.

On the other hand, risk factors among the study participants was as follows: (29.80%) of patients have high blood pressure and (17.70%) have normal blood pressure. However, the women who had gravity ≥3 were (23%) while women who had gravity ≤3 were (16.40%). Moreover, the percentage Patients 26.40% have abortion number ≥2 and the percentage Patients 17.90%

have Abortion number ≤1. as well as In the Parity percentage Patients 20.90% have parity ≥2 and the percentage Patients 16.90% have parity ≤1 (Table 1).

Table 1: Relationship between preterm births by socio-demographic, of the mothers (N=1350).

Table 1 also provides an overview of variations in preterm birth across different socio-demographic, maternal, and characteristics. The table demonstrates that several factors are significantly linked to preterm birth, including; family number, blood pressure, gravity and abortion number, where the Chi square p-value were <0.05.

Preterm labor						
Variables		Total	Yes (252)	No (1098)	Statistically	
			N (%)	N (%)	chi square	p-value
Age	15-25	636	112(17.60%)	524(82.40%)	7.556	0.056
	26-36	586	122(20.80%)	464(79.20%)		
	37-47	124	16(12.90%)	108(87.10%)		
	>47	4	2(50.00%)	2(50.00%)		
	mean±SD=27.43±6.34					
Family number	1to 3	707	112(15.80%)	595(84.20%)	7.988	0.018*
	4to 6	477	102(21.40%)	375(78.60%)		
	>6	166	38(22.90%)	128(77.10%)		
Residence	Rural	1062	201(18.90%)	861(81.10%)	0.221	0.638
	Urban	288	51(17.70%)	237(82.30%)		
Education	literate	1193	230 (19.30%)	963(80.70%)	2.535	0.111
	literate	157	22 (14.00%)	135(86.00%)		
Work	Yes	1264	239 (18.90%)	1025(81.10%)	0.763	0.383
	No	86	13 (15.10%)	73(84.90%)		
Smoking	Yes	303	64 (21.10%)	239(78.90%)	1.552	0.213
	No	1047	188(18.00%)	859(82.00%)		
Chewing Khat	Yes	911	170 (18.70%)	741(81.30%)	0.000063	0.994
	No	439	82 (18.70%)	357(81.30%)		
PET	Normal	1232	218(17.70%)	1014(82.30%)	11.033	0.004*
	Increase	114	34(29.80%)	80(70.20%)		
	decrease	4	0(0.00%)	4(100.00%)		
Gravity	≤3	884	145(16.40%)	739(83.60%)	8.646	0.003*
	>3	466	107(23.00%)	359(77.00%)		
Abortion number	≤1	1225	219(17.90%)	1006(82.10%)	5.426	0.02*
	≥2	125	33(26.40%)	92(73.60%)		
Parity	≤1	767	130(16.90%)	637(83.10%)	3.451	0.063
	≥2	583	122(20.90%)	461(79.10%)		
Cervix incompetent	Emergency	4	0(0.00%)	4(100.00%)	0.921	0.337
	Elective	1346	252 (18.70%)	1094(81.30%)		
Urinary Tract Infection	Yes	1029	193(18.80%)	836(81.20%)	0.023	0.88
	No	321	59(18.40%)	262(81.60%)		
Uterine anomaly	Yes	31	9(29.00%)	22(71.00%)	2.245	0.134
	No	1319	243(18.40%)	1076(81.60%)		
Trauma	Yes	241	39(16.20%)	202(83.80%)	1.192	0.275
	No	1109	213(19.20%)	896(80.80%)		
Medical history	Yes	79	13(16.50%)	66(83.50%)	0.27	0.603
	No	1271	239(18.80%)	1032(81.20%)		
Sex of baby	Female	646	118(18.30%)	528(81.70%)	0.061	0.804
	Male	704	134(19.03%)	570(81.10%)		
Congenital anomlis for baby	Yes	11	4(36.40%)	7(63.60%)	2.288	0.13
	No	1339	248(18.50%)	1091(81.50%)		
Uterine over distention	Yes	50	11(22.00%)	39(78.00%)	0.38	0.538
	No	1300	241(18.50%)	1059(81.50%)		
There are watery leaking	Yes	115	21(18.30%)	94(81.70%)	0.014	0.907
	No	1235	231(18.70%)	1004(81.30%)		
Presentation of baby	cephalic	1176	234(19.00%)	1000(81.00%)	1.9	0.387
	Transe	39	4(10.30%)	35(89.70%)		
	breech	73	14(18.20%)	63(81.80%)		

*Significance at 5%; X^2= Chi-square.

Multivariate analysis

The factors that were found to be statistically and significantly associated with preterm birth during the bivariate analysis were further examined in multivariate logistic regression. These factors were family number, blood pressure, gravity and abortion number.

In Table 2, it is evident that the factors indicating a significant association with preterm birth were: Family number. The results from the logistic regression analysis indicated the predictive potential of certain socio-demographic factors in relation to preterm birth. Specifically, the analysis indicated that family number played a role in predicting preterm birth. Accordingly, mothers who have number of family less than 4 reduced odds of giving birth to a pre-term baby when compared to those who have more than 6(OR=0.632, p=0.036, 95% CI: 0.401–0.969). the results revealed significant associations between preterm birth).

Discussion

In preterm labor through a study in Jiblah University Hospital, Ibb, Yemen. The findings, based on a cohort of 252 preterm deliveries and 1089 full-term deliveries, shed light on several key aspects of preterm delivery, offering insights for both clinical practice and future research.

In our study, a total of 1350 study participants were included, and the prevalence of preterm delivery (28-37 weeks) was found to be 18.67% (252 out of 1350). A study by Hassen et al. (2021), in a tertiary hospital in Ethiopia showed a higher prevalence of preterm delivery (28-37 weeks) (25.0%) compared to our study, whereas a study by Pusdekar et al. [40] in tertiary hospitals of six countries (low and low middle income) including India, showed a near similar prevalence rate of preterm delivery (28-37 weeks) (12.6%). Also, rate is similar to the study of Sehati-Shaghaie et al. (2010) in Ardabil (13.4%), but higher than estimates of 7%, 7.2% and 5.6% in Zanjan (Sohrabi and Ghanbari-Gorkani 2011), Tehran (Afrakhteh et al. 2002) and Qom (Jandaghi et al. 2011) cities of Iran, however, the range of reported prevalence of premature births in Iran is vast between 5.6% and 34.9% [16]. Also, the identified rate of premature births in this study is in reported global range of premature births prevalence between 5 and 25% (Tabatabaei-Bafghi et al. 2015). The preterm birth rate in the United States was reported to be 11.39% in 2013 (Martin et al. 2015), which is nearly close to the finding in this study. Other study showed that 52.6% of preterm neonates were admitted to NICU, this result is similar to the finding of another study in Iran on perinatal complications associated with preterm deliveries, which reported 52.6% admission of premature neonates to NICU (Khoshnood-Shariati et al. 2015).

This study looked at some of the potential risk factors for preterm births. The risk of preterm births was among mother's age. Several other studies have also reported according to [3,28] linking both younger and older maternal age with preterm births. However, a study conducted in Bangladesh found women aged <20 years to be protective for preterm, contrary to our findings [45]. Our study did not find any significant association with mother's age.

The risk of preterm births was also higher among mothers with family number, blood pressure, gravidity, and abortion number where the Chi square p-value were <0.05.

The risk of preterm births was also higher among mothers with greater than six family members. This study was in line with the study in Ethiopia [19], which shows family members had a significant positive effect on preterm birth.

This study revealed a significant association between pregnancy-induced hypertension and preterm birth, This finding is in line with the study [19,30,52] conducted in East Africa, Ethiopia, Nigeria, Iran, Ghana, and Kenya, which shows PIH had significant effect on preterm birth. This might be due to the vascular damage of the placenta caused by PIH, which results in preterm labor and delivery.

Results of the current study were also in agreement with previous studies that found that abortion number according to recent systematic review published by Gabrielle Saccone and colleagues joins the long list of over 150 studies over the past four decades which extensively document that having an induced abortion increases a woman's risk of preterm birth in subsequent pregnancies. Saccone et al. clearly document again what other authors have repeatedly published; a fact also acknowledged by the Institute of Medicine (IOM) in their report on preterm birth in 2005. However, unlike the IOM, who hid the association on page 625 in Appendix B, Saccone places the facts in the open: "Prior surgical uterine evacuation for either I-TOP [induced termination of pregnancy] or SAB [spontaneous abortion] is an independent risk factor for PTB [preterm birth]." Translated, that means any time the womb of a pregnant woman is forced open, there is a risk of damaging the opening of the womb.

Another finding of this study was a significant correlation between the number of pregnancies and incidence of premature labor. Although the etiology in many cases is unknown and idiopathic, the findings of the present study are contrary to the results of studies performed by Shah [44] and Babinszki et al, [4] as those studies did not recognize multiparity and grand parity as a cause of increased risk of premature labor, but are consistent with the results of Guo et al, [22], who also mentioned this point and stated that number of pregnancies is a risk factor for premature labor and found that prevalence of premature labor in women is 6% regarding the first pregnancy, 4.3% with the second pregnancy, 4% with the third, and 5.7% with fourth pregnancies. Also, Reime et al. [41], concluded that the risk of premature labor is increased by second pregnancy in comparison to the first.

Eclampsia and pregnancy hypertension is a status that is present in 5%–7% of all deliveries, and is correlated with main fetal disease and premature labor according to Lazdam M, [31]. Based on the findings of present study, a significant correlation was observed between the incidence of premature labor and history of diabetes mellitus/thyroid dysfunction/cardiac disease of mothers. This finding was consistent with the findings of a study conducted by Shingairai et al, [46], in which a significant correlation was found between eclampsia during pregnancy and premature labor. Also in conformity with the findings of the present study, Covarrubias et al. [15], recognized the correlation between mothers' diseases such as eclampsia and pre-eclampsia and diabetes during pregnancy with premature labor.

Although maternal smoking is a well-accepted risk factor and use of alcohol can cause preterm birth, in this study there was no evidence for these effects on preterm labor, because smoking and alcohol drinking are very rare in the study population due to culture and religion.

Conditions such as polyhydramnios, PROM, and UTI no demonstrated significant associations with preterm delivery. Understanding these risk factors offers opportunities for early identification and intervention to reduce the risk of preterm birth. In our study, the incidence of polyhydramnios, PROM, and UTI was no relatively higher among preterm deliveries. In contrast to this, it is worth noting that studies, by Sureshbabu et al. [49] reported a much higher prevalence of PROM at 31.8%, and Chauhan et al. [12] found a prevalence of 22.0%.

Interestingly, nulliparity was in contrast to the study by Prakash et al. [39], where 72.92% of preterm deliveries occurring in multiparous women, while only 27.08% were in primigravida women. This variable, while not negligible, may have a less pronounced impact, possibly influenced by other factors not considered in this study.

Conclusion and recommendations

Conclusion

In this study, a family number, blood pressure, gravitdy and abortion number, are the risk factors for premature delivery. Recognizing the most common risk factors for PTB will help to increase the awareness about high-risk pregnancy, improve the preventive measures of preterm risk factors and modify preterm care protocol in nurseries.

Recommendations

1. In the light of the results reached to our study represented in the factors contributing to preterm labor through a study at Jiblah University Hospital, we were able to make a set of the following recommendatWe recommend that the hospital record patient's date should be in an integrated manner.
2. We recommend that the hospital should perform laboratory tests and diagnosis of histological features and outcomes in women with preterm labor.
3. We recommend that the hospital should perform laboratory tests and diagnosis of histological features and outcomes in women with Preterm labor
4. We recommend that women should undergo health care before pregnancy.
5. Continued research is needed to better understand the causes of preterm labor and develop more effective prevention and treatment strategies. By implementing these recommendations, we can work towards reducing the incidence of preterm labor and improving the health outcomes for mothers and babies alike.

References

1. Ahern J, Pickett KE, Selvin S, Abrams B. Preterm birth among African American and white women: a multilevel analysis of socioeconomic characteristics and cigarette smoking. Journal of epidemiology and community health. 2003; 57: 606–611.
2. American College of Obstetricians and Gynecologists, & Committee on Practice Bulletins—Obstetrics. ACOG practice bulletin no. 127: Management of preterm labor. Obstetrics and gynecology. 2012; 119: 1308–1317.
3. Anderson C, Smitherman AB, Engel SM, Nichols HB. Modifiable and nonmodifiable risk factors for preterm delivery among adolescent and young adult cancer survivors. Cancer Causes Control. 2018; 29: 289–95.
4. Babinszki A, Kerenyi T, Torok O, Grazi V, Lapinski RH, Berkowitz RL. Perinatal outcome in grand and great-grand multiparity: effects of parity on obstetric risk factors. Am J Obstet Gynecol. 1999; 181: 669–674.
5. Bafghi AS, Bahrami E, Sekhavat L. Comparative Study of Vaginal versus Intramuscular Progesterone in the Prevention of Preterm Delivery: A Randomized Clinical Trial. Electronic physician. 2015; 7: 1301–1309.
6. Barden TP, Peter JB, Merkatz IR. Ritodrine hydrochloride: a beta-mimetic agent for use in preterm labor. I. pharmacology, clinical history, administration, side effects, and safety. Obstetrics and gynecology. 1980; 56: 1–6.
7. Bayat MM, Tabrizian F, Dolatabady E, Khalesian B. Analysis of some maternal risk factors in preterm delivery. Journal of Medicali Science of Islamic Azad University of Mashhad, Iran. 2009; 5: 141–146
8. Ben-Ami M, Giladi Y, Shalev E. The combination of magnesium sulphate and nifedipine: a cause of neuromuscular blockade. British journal of obstetrics and gynaecology. 1994; 101: 262–263.
9. Berkowitz GS. An epidemiologic study of preterm delivery. American journal of epidemiology, 1981; 113: 81–92.
10. Blencowe H, Cousens S, Oestergaard MZ, Chou D, Moller AB, Narwal R, et al. National, regional, and worldwide estimates of preterm birth rates inthe year 2010 with time trends since 1990 for selected countries: a systematicanalysis and implications. Lancet (London, England). 2012; 379: 2162–2172.
11. Chan BC, Lao TT. Maternal height and length of gestation: does this impact on preterm labour in Asian women?. The Australian & New Zealand journal of obstetrics & gynaecology. 2009; 49: 388–392.
12. Chauhan N, Purohit RC, Rawat U. Analysis of etiology and outcome of preterm labour in tertiary health centre of Uttarakhand. Sch J App Med Sci. 2016; 4: 740-3.
13. Chyi LJ, Lee HC, Hintz SR, Gould JB, Sutcliffe TL. School outcomes of late preterm infants: special needs and challenges for infants born at 32 to 36 weeks gestation. The Journal of pediatrics. 2008; 153: 25–31.
14. Committee on Practice Bulletins—Obstetrics and the American Institute of Ultrasound in Medicine. Practice Bulletin No. 175: Ultrasound in Pregnancy. Obstetrics and gynecology. 2016; 128: e241–e256.
15. Covarrubias LO, Aguirre GE, Chapuz JR, May AI, Velázquez JD, Eguiluz ME. Maternal factors associated to prematurity [Spanish]. Ginecol Obstet Mex. 2008; 76: 526–536.
16. Dolatian M, Mirabzadeh A, Forouzan AS, Sajjadi H, Alavimajd H, Mahmoodi Z, et al. Relationship between Structural and Intermediary Determinants of Health and Preterm Delivery. Journal of reproduction & infertility. 2014; 15: 78–86.
17. Eichenwald EC, Stark AR. Management and outcomes of very low birth weight. The New England journal of medicine. 2008; 358: 1700–1711.
18. Foxman B. Urinary tract infections in pregnancy. N Engl J Med. 2002; 347: 198-208.
19. Gebreslasie K. Preterm birth and associated factors among mothers who gave birth in Gondar town health institutions Advances in Nursing. 2016: 2016
20. Gill SV, May-Benson TA, Teasdale A, Munsell EG. Birth and developmental correlates of birth weight in a sample of children with po-

tential sensory processing disorder. BMC pediatrics. 2013; 13: 29.

21. Goldenberg RL, Cliver SP, Bronstein J, Cutter GR, Andrews WW, Mennemeyer ST. Bed rest in pregnancy. Obstetrics and gynecology. 1994; 84: 131–136.

22. Guo LJ, Ye RW, Wang GX, Wang J, Li ZW, Ren AG. Birth weight distribution among premature infants and related social factors. Zhonghua Liu Xing Bing Xue Za Zhi. 2009; 30: 1243–1247.

23. Hassen JA, Handiso MN, Admassu BW. Predictors of preterm birth among mothers who gave birth in Silte zone public hospitals, southern Ethiopia. J Pregnancy. 2021; 2021: 1706713.

24. Helfgott AW, Willis D, Blanco J. Is sedation beneficial in the treatment of threatened preterm labor? A preliminary report. J Matern Fetal Med. 1994; 3: 37–42.

25. Hui D, Liu G, Kavuma E, Hewson SA, McKay D, Hannah ME. Preterm labour and birth: a survey of clinical practice regarding use of tocolytics, antenatal corticosteroids, and progesterone. Journal of obstetrics and gynaecology Canada: JOGC = Journal d'obstetrique et gynecologie du Canada: JOGC. 2007; 29: 117–124.

26. Iams JD, Cebrik D, Lynch C, Behrendt N, Das A. The rate of cervical change and the phenotype of spontaneous preterm birth. American journal of obstetrics and gynecology. 2011; 205: 130. e1–130.e1306.

27. Ibb, Yemen Metro Area Population 1950-2024. 2023. Accessed: 2023-10-05: https://www.macrotrends.net/cities/23745/ibb/population.

28. Kildea SV, Gao Y, Rolfe M, Boyle J, Tracy S, Barclay LM. Risk factors for preterm, low birthweight and small for gestational age births among Aboriginal women from remote communities in northern Australia. Women Birth. 2017; 30: 398–405.

29. Klein LL, Gibbs RS. Infection and preterm birth. Obstetrics and gynecology clinics of North America. 2005; 32: 397–410.

30. Laelago T, Yohannes T, Tsige G. Determinants of preterm birth among mothers who gave birth in East Africa: systematic review and meta-analysis. Ital J Pediatr. 2020; 46: 1–14.

31. Lazdam M, De la Horra A, Pitcher A, et al. Elevated blood pressure in offspring born premature to hypertensive pregnancy: is endothelial dysfunction the underlying vascular mechanism? Hypertension. 2010; 56: 159–165.

32. Liu L, Johnson HL, Cousens S, Perin J, Scott S, Lawn JE, et al. Child Health Epidemiology Reference Group of WHO and UNICEF. Global, regional, and national causes of child mortality: an updated systematic analysis for 2010 with time trends since 2000. Lancet (London, England). 2012; 379: 2151–2161.

33. March of Dimes. Premature Birth Complications. 2023. Retrieved from https://americanpregnancy.org/healthy-pregnancy/labor-and-birth/premature-birth-complicatio ns/

34. Mayo Clinic Preterm labor - Symptoms and causes. 2024.

35. Merkatz IR, Peter JB, Barden TP. Ritodrine hydrochloride: a beta-mimetic agent for use in preterm labor. II. Evidence of efficacy. Obstetrics and gynecology. 1980; 56: 7–12.

36. Morrison JJ, Rennie JM. Clinical, scientific and ethical aspects of fetal and neonatal care at extremely preterm periods of gestation. British journal of obstetrics and gynaecology. 1997; 104: 1341–1350.

37. National Institutes of Health (NIH). Bronchopulmonary Dysplasia (BPD). 2023. Retrieved from https://www.nhlbi.nih.gov/health-topics/bronchopulmonary-dysplasia

38. National Institutes of Health (NIH). Premature Birth. 2023. Retrieved from https://www.nichd.nih.gov/health/topics/preterm

39. Prakash SA, Rasquinha S, Rajaratnam A. Analysis of risk factors and outcome of preterm labour. Int J Eng Sci. 6: 2602-4.

40. Pusdekar YV, Patel AB, Kurhe KG, et al. Rates and risk factors for preterm birth and low birthweight in the global network sites in six low- and low middle-income countries. Reprod Health. 2020, 17: 187.

41. Reime B, Schuecking BA, Wenzlaff P. Perinatal outcomes of teenage pregnancies according to gravidity and obstetric history. Ann Epidemiol. 2004; 14: 619.

42. Romero R, Oyarzun E, Mazor M, Sirtori M, Hobbins JC, Bracken M. Meta-analysis of the relationship between asymptomatic bacteriuria and preterm delivery/low birth weight. Obstetrics and gynecology. 1989; 73: 576–582.

43. Savitz DA, Blackmore CA, Thorp JM. Epidemiologic characteristics of preterm delivery: etiologic heterogeneity. American journal of obstetrics and gynecology. 1991; 164: 467–471.

44. Shah PS. Knowledge Synthesis Group on Determinants of LBW/PT births. Parity and low birth weight and preterm birth: a systematic review and meta-analyses. Acta Obstet Gynecol Scand. 2010; 89: 862–875.

45. Shah R, Mullany LC, Darmstadt GL, Mannan I, Rahman SM, Talukder RR, et al. Incidence and risk factors of preterm birth in a rural Bangladeshi cohort. BMC Pediatr. 2014; 14: 112.

46. Shingairai AF, Siobán DH, Godfrey BW. Risk factors for prematurity at Harare Maternity Hospital, Zimbabwe. Int J Epidemiol. 2004; 33: 1194–1201.

47. Sotiriadis A, Papatheodorou S, Kavvadias A, Makrydimas G. Transvaginal cervical length measurement for prediction of preterm birth in women with threatened preterm labor: a meta-analysis. Ultrasound in obstetrics & gynecology: the official journal of the International Society of Ultrasound in Obstetrics and Gynecology. 2010; 35: 54–64.

48. Steer CM, Petrie RH. A comparison of magnesium sulfate and alcohol for the prevention of premature labor. American journal of obstetrics and gynecology. 1977; 129: 1–4.

49. Sureshbabu RP, Aramthottil P, Anil N, Sumathy S, Varughese SA, Sreedevi A, Sukumaran SV. Risk factors associated with preterm delivery in Singleton pregnancy in a tertiary care hospital in South India: a case control study. Int J Womens Health. 2021; 13: 369-77.

50. Togioka BM, Tonismae T. Uterine Rupture. In: StatPearls. Treasure Island (FL): StatPearls Publishing. 2024. Available from: https://www.ncbi.nlm.nih.gov/books/NBK559209

51. Ulmsten U, Andersson KE, Wingerup L. Treatment of premature labor with the calcium antagonist nifedipine. Archives of gynecology. 1980; 229: 1–5.

52. Wagura P, et al. Prevalence and factors associated with preterm birth at kenyatta national hospital. BMC Pregnancy Childbirth. 2018; 18: 1–8.

53. WHO [World Health Organization]. Preterm birth. Fact sheet N363. 2015. Available from: http://www.who.int/mediacentre/factsheets/fs363/en/

54. Wondie WT, Legesse BT, Mekonnen GB, Degaga GT, Zemariam AB, Gedefaw GD, et al. Incidence and predictors of respiratory distress syndrome among low-birth-weight neonates in the first seven days in Northwest Ethiopia Comprehensive Specialized Hospitals, 2023: A retrospective follow-up study. BMJ open.

2023; 13: e079063.

55. World Health Organization (WHO). 2023. Preterm birth. Retrieved from https://www.who.int/news-room/fact-sheets/detail/preterm-birth

56. Zuckerman H, Reiss U, Rubinstein I. Inhibition of human premature labor by indomethacin. Obstetrics and gynecology. 1974; 44: 787–792.