



Statistical Study About The Causes Of Caesarian Section Deliveries In Al-Hindia City

Najat Hamza Hassan¹

¹ Department of Community Health, Karbala Technical Institute, Al-Furat Al-Awsat Technical University, Iraq.

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Corresponding author:

Najat Hamza Hassan
Email: noorhuda4@yahoo.com
Department of Community Health
Karbala Technical Institute
AL-Furat AL-Awsat Technical University
Iraq

ABSTRACT

Objectives: To identify the causes contributing to the cesarean section in Al-Hindia city by collecting statistical data and finding the relationship between the causes of caesarean section and some variables.

Methods: A statistical study was undertaken of the clinical records of (1156) mother who delivered in Al-Hindia Teaching Hospital in Al-Hindia City, Karbala, between January 2016 and December 2017. Some variables related to mother and newborn body weight were studied to determine their relationship with the causes of cesarean delivery to understand the possible causes to increase the cesarean delivery rate, Data analysis was performed using the spss software to extract duplicates, percentage, mean, standard deviation and correlation coefficient.

Results: 84.5 % of mothers were (20-34) years old, 44.5% had a secondary school, the majority 61.6% of the mothers were housewives. 34.4 % had 41 weeks of gestational age and 32.2% had no previous deliveries. the highest percentage of cesarean section during the months of the year was in October (126) 11%. The mean for the total of the cesarean section frequencies was 96.33. One of the main causes of cesarean section is dilation problems (194) 16.8% followed by fetal distress (185) 16% and cephalopelvic disproportion. Maternal age, gestational age, parity and newborn body weight have a high significance, while there is no significant indication at $p < 0.05$ of the level of education and occupation with the causes of the cesarean section.

Conclusion: The study concluded that some women may require caesarean section to avoid the risk normal birth. caesarean deliveries are increased due to increased causes. Pregnant women should be encouraged to obtain health care before and during pregnancy to reduce the risk of pregnancy and childbirth.

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INTRODUCTION

The cesarean section rate has been increasing worldwide¹. Most women prefer vaginal delivery during

labor despite pain and discomfort that can lead to it. But normal childbirth may not always be the result of a

healthy pregnancy. In some cases, it is possible to prevent birth or cesarean delivery from maintaining maternal and child safety from complications of pregnancy and childbirth².

A cesarean section is often performed when the vaginal delivery that puts the child or mother at risk³. This may include obstructive delivery, twin pregnancy, maternal hypertension, breech birth, problems in the placenta or umbilical cord⁴.

A caesarean section is a surgical procedure performed when vaginal delivery is not possible or safe, or when the health of the mother or fetus is at risk. During this procedure, the baby is generated through surgical incisions in the abdomen and uterus. This surgery is also called a c-section⁵.

Caesarean sections have been categorized in different ways from different points of view. One way to discuss all classification systems is to collect them by focusing either on the urgency of the procedure, the characteristics of the mother or as a group on the other, less commonly discussed factors⁶.

One of the important indicators of emergency obstetric care and it is most common to classify caesarean sections consider by the urgency of performing them Proportion of CS to the total births⁷.

The main causes of cesarean section are emergency situations when the mother is has a life-threatening injury or illness with interruption of the normal heart or lung function or severely ill, she may be a candidate for an emergency cesarean section. When performed within 6-10 minutes of the onset of cardiac arrest, the procedure may save the newborn and improve the resuscitation rate for the mother. This procedure is performed only in the most dire of circumstances. Lack of labor, If the woman suffers from sufficient contractions but there is no change in the cervix (opening to the uterus) exceeds 3 centimeters or the woman is unable to deliver the fetus despite the full cervical extension and the "adequate" payment for For 2 to 3 hours or more), cesarean section can be performed.

Cord prolapse: Though a rare occurrence, at times the umbilical cord can slip through the cervix and protrude through the vagina before the baby, making a vaginal birth difficult. This again calls for an emergency cesarean section⁸.

Previous cesarean deliveries: Women with a prior history of more than one low transverse cesarean section are at slightly increased risk for uterine rupture. This risk increases significantly when the woman has had three cesarean deliveries. If an abdominal delivery is planned and a trial of labor is not an option, the best time for delivery is determined when the lungs of the fetus are mature. Repeat cesarean delivery: There are two types of uterine incisions - a low transverse incision and a vertical uterine incision. The direction of the incision on the skin (up and down or side to side) does not necessarily match the direction of the incision made in the uterus. Uterine rupture can be dangerous to the fetus even if delivery is accomplished immediately after a uterine rupture. Diagnosing a uterine rupture can be

difficult, and signs of a rupture can include increased bleeding, increased pain, or an abnormal fetal heart rate tracing. The uterus may rupture even before labor begins in half of these women⁹.

Placenta Previa: In this condition, the placenta lies low in the uterus and almost practically covers the cervix. Sometimes with the progression of the pregnancy, the placenta might move up with proper rest, care and close monitoring. But if it doesn't a cesarean section is the best option for both the mother and the baby.

Placental abruption: This is a condition where the placenta separates from the wall of the uterine lining. This may happen sometime during the last three months of pregnancy, and can also lead to spotting that may indicate an imminent labor as well. "This interruption causes lack of oxygen access to the fetus and can lead to an emergency cesarean section.

Cephalopelvic Disproportion is a condition in which the child's head or body does not fit into the mother's pelvis. This can happen when the baby is too big, the pelvis is too small, or the baby is in the wrong position, or the relationship between the baby and the tub is unhealthy although the baby is not too big and that the tub is not too small. Cephalopelvic Disproportion is often diagnosed when women's work fails to progress to delivery, and the cervix may stop or the child will not descend through the pelvis, a cesarean section is usually indicated¹⁰.

Gestational Diabetes leading to poorly controlled diabetes leads to high blood sugar levels. The child is "excessive" and grows larger. In addition to causing discomfort during the last few months of pregnancy, a very large child may cause problems during childbirth for both mother and child. The mother may need a Cesarean section to connect the baby¹¹.

Preeclampsia is a problem that arises during pregnancy and is characterized by high blood pressure and damage to other organs, such as the kidneys. Preeclampsia is considered a serious condition that can lead to dangerous complications for the mother and her baby. The exact cause, however, isn't known. Researchers suspect that the dysfunctional reaction in the mother's blood vessels caused by problems with the blood vessel development in the fetus¹².

The position of the fetus if the abnormal fetal presentation such as breech presentation, shoulder presentation, brow presentation and face presentation, the only way to successfully deliver the mother is by C-section delivery¹³.

Elective cesarean sections performed when the indication of medical or an obstetrical, or depend on the request of mothers without any medical reason. The National Institute for Health and Care Excellence recommends that if after a woman has been provided information on the risk of a planned cesarean section and she still insists on the procedure it should be provided. If provided this should be done at 39 weeks of gestation or later¹⁴.

MATERIALS AND METHODS

In this study, the researcher was collect the data from a statistical department in AL-Hindia city/Karbala Governorate for the year of 2017 to determine the causes of cesarean section by computing the frequencies of cases and find the percentages, descriptive characteristics of women delivered .

The present study employs a statistical design for the causes of cesarean section deliveries. Data were analyzed through the application of two statistical approaches, descriptive and inferential statistical data analysis was performed using SPSS software, continuous variables normally distributed were expressed as the mean \pm standard deviation (SD), the correlation coefficient, and p- value at $p < 0.05$.

RESULTS

Result in Table 1 reveals that 84.5 % of mothers were (20-34) years old and 44.5% of them had secondary school, the majority 61.6% of the mothers were housewives. The highest percent 34.4 % had 41 weeks of gestational age and 32.2% had no previous deliveries. 75.6% of newborn body weight was normal.

Table 1: Demographic and reproductive characteristics of mothers who had cesarean birth at Al-Hindia , Karbala in the year 2017. (n=1156).

Characteristic	n	%
Age (years)		
<20	63	5.4
20-34	977	84.5
≥ 35	116	10.1
Education		
\leq Middle school	166	14.4
Secondary school	515	44.5
\geq Bachelor's degree	475	41.1
Occupation		
Housewife	712	61.6
Employee	444	38.4
Gestational Age (weeks)		
38	86	7.5
39	344	29.8
40	282	24.3
41	398	34.4
42	46	4
Parity		
None	372	32.2
1-2	178	15.4
3-4	308	26.6
≥ 5	298	25.8
Newborn body weight		
Normal: 2.5 – 4 kg	874	75.6
More than 4 kg	129	11.2
Less than 2.5 kg	153	13.2

Figure 1 shows that the highest percentage of cesarean section during the months of the year was in October (126) 11%, while the lowest percentage was recorded in April (67) 5.44% and May (69) 5.82%. The mean for the total of the cesarean section frequencies was 96.33 and the standard deviation was 17.47 as shown in Table 2.

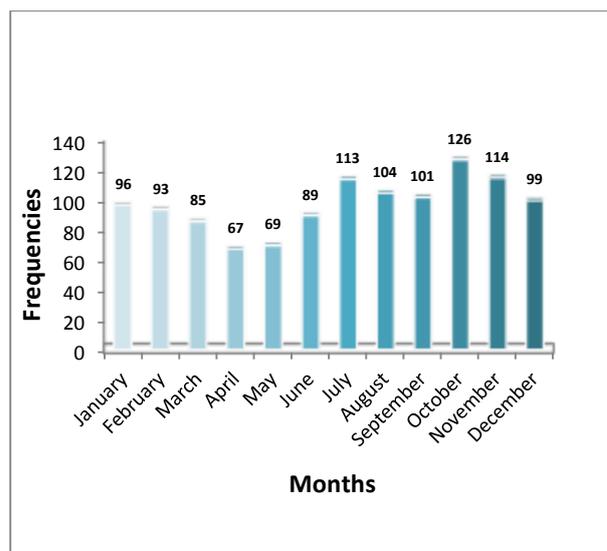


Figure 1: Distribution of Cesarean Section Deliveries depend on months of year 2017(Total No. 1156).

Table 2: Descriptive Statistics of Caesarean Deliveries in months.

No. of Months	Cases of Caesarean Deliveries			Mean	Std. Deviation
	Minimum	Maximum	Sum		
12	67.00	126.00	1156.0	96.33	17.47

Figure 2 shows that one of the main causes of cesarean section is dilation problems, where frequency (194) 16.8% followed by fetal distress (185) 16% and cephalopelvic disproportion while the lowest caesarean section causes were the birth of multiple pregnancies (11) 0.1% and cord prolapse (13) 1.1%.

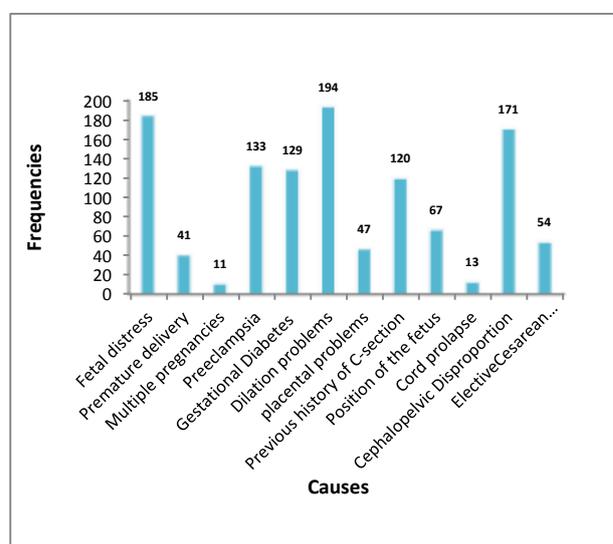


Figure 3: The causes of Cesarean Section Deliveries in AL-Hindia Hospital for the year 2017 (n=1156).

Table 3 reveals that maternal age, gestational age, parity and newborn body weight have a high significance, while there is no significant indication at $p < 0.05$ of the level of education and occupation with the causes of the cesarean section.

Table 3: Relationship between the causes of cesarean section and characteristics of mothers.

Characteristics	Mean	Std. Deviation ±	r	P.value
Age (years)	28.03	7.34	0.50	0.009
Education	2.57	0.21	-0.03	2.0
Occupation	1.86	0.70	-0.05	3
Gestational Age (weeks)	39.6	1.64	0.78	0.0009
Parity	3.55	0.63	0.53	0.006
Newborn body weight (g)	3227	24.36	0.69	0.0008

Discussion

A cesarean section occurs through the incision in the abdominal wall and uterus and not through the vagina. There has been a gradual increase in caesarean deliveries over the last 30 years. In November 2005, the Centers for Disease Control and Prevention (CDC) reported that the national caesarean delivery rate was the highest at 29.1%, more than a quarter of all births. This means that more than 1 in 4 women are likely to have caesarean section ¹⁵.

The study findings indicated that 84.5 % of mothers were (20-34) years old (Table 1) and the mean age was (28.03) years. There was a significant correlation at $p < 0.05$ with the causes of cesarean section (Table 3). Martel and others studied the effect of maternal age on primary cesarean section rates, 3458 consecutive deliveries were analyzed. The cesarean section rates in primiparous women less than 25, 25 to 34, and over 34 years of age were 13.1%, 18.5%, and 28.2%, respectively. A similarly dramatic rise with advancing maternal age was seen in multiparous women with rates of 3.4%, 4.7%, and 10.1%, respectively, in the three age groups. The strong association between cesarean section and maternal age persisted after multivariate adjustment for induction of labor, epidural anesthesia, meconium-stained amniotic fluid, and fetal distress, and thus these factors do not explain the relationship ¹⁶.

In regard to the educational level of the mothers, the present findings indicated that 44.5% were secondary school graduates, this percentage is slightly higher than that of women with \geq Bachelor's degree (41.1%) .

Furthermore, (Table 3) shows that there is no significant correlation between the educational level of the causes of cesarean section. It was suggested that the health education of the mothers depend on many sources such as antenatal visit, previous experiences, acquired experiences from her family members e.g. her mother, her sister etc. about the importance of the continues prenatal care.

Most of the study group (61.6%) were housewives and the present finding indicated that occupation was not significantly associated with causes of cesarean section. While An earlier study published in 2005 by Simoes et al. sought to determine the influence of education attainment and maternal occupations on surgical deliveries by cesarean. Of note, all the women in the study had universal health coverage, and Simoes *et al.* used data from a post-natal survey collected in Baden-

Württemberg Germany. In this study, they defined six occupational categories as housewives trainees/students, skilled workers and officers, unskilled workers, high salaried positions, and unknown. By defining high salary as women working as physicians attorneys, managers, or other leading positions as well as defining unskilled maternal occupations as women working as janitorial or housekeeping types of occupations Simoes et al. showed a significant association between cesarean delivery and women working in both high salary and unskilled occupations ¹⁷.

The majority 34.4 % of the mothers had 41 weeks of gestational age. Furthermore, there was a significant relationship at $p < 0.05$ between the gestational age and the causes of cesarean section. Vani and others said that the increasing tendency for delivery at early gestational age has raised concerns about the impact on maternal and infant health. The delicate balance of risks and benefits associated with the continued delivery of early delivery remains a challenge. Among the only live births in the United States, preterm delivery rose from 9.7% to 10.7% between 1996 and 2004. The increase in premature deliveries due to cesarean section was the highest percentage of delayed deliveries. For all racial/ethnic groups, individual caesarean delivery rates for each age group increased. Cesare Singleton's rates for non-Hispanic black women rose more rapidly among all age groups of women than Hispanics and non-Latins. Further research is needed to understand the underlying causes of the increase in caesarean sections resulting in premature birth ¹⁸.

Despite the high rate of newborn body weight 75.6%, but there are cases that lead to increase or decrease the weight of the newborn like gestational diabetes and preeclampsia and newborn body weight has highly significant with the causes of cesarean section.

Among women with gestational diabetes, researchers found that high blood sugar at the first diagnosis of gestational diabetes, is likely to be a large child in the age of pregnancy (Metzger *et al.*). However, women who manage gestational diabetes through dieting, exercise, or medication reduce their chances of having a large child to normal levels 7% ¹⁹.

The medical term for big baby is macrosomia, which literally means "big body." Some researchers consider a baby to be big when it weighs 4,000 grams or more at birth, and others say a baby is big if it weighs 4,500 grams or more (Rouse *et al.* 1996). Babies are called "extremely large" if they are born weighing more than 5,000 grams.

Among women with gestational diabetes, researchers have found that the higher blood sugar when the first diagnosed with gestational diabetes, the more likely is to have a baby who is large for gestational age ²⁰. However, women who manage their gestational diabetes through diet, exercise, or medication, bring down their chances of having a big baby to normal levels 7% ¹⁹.

Hypertension complicates almost 10 percent of all pregnancies, and the incidence is higher if the women are nulliparous or carrying multiple fetuses.

Preeclampsia is a major cause of maternal mortality in developed and developing countries. It is also a major cause of perinatal morbidity and mortality, and it is very strongly associated with fetal growth retardation ²¹.

Preeclampsia is a condition in which a woman experiences the abnormal development of the placenta, high blood pressure (hypertension) and high levels of protein in the urine (proteinuria) around the last trimester or after the 20-week mark of her pregnancy. Preeclampsia, which was previously known as "toxemia," can cause organ malfunction, water retention, abdominal pain and certain serious pregnancy complications which is why pregnant woman are advised to learn the warning signs of Preeclampsia in order to monitor themselves closely. Preeclampsia can be a very serious and dangerous disorder during pregnancy. Along with raising a pregnant woman's blood pressure, prior to delivery, it can cause damage to vital organs, including the liver, brain, kidneys and placenta, and serious malformations in the unborn baby²². While most women with PE go on to deliver healthy babies near full term, this isn't always the case. Preeclampsia is currently the cause of about 15 percent of premature births in the U.S. (meaning births prior to 37 weeks of pregnancy). An underweight or very small baby (the baby weighs less than five pounds, eight ounces), Once the pregnancy reaches about 37 weeks, it's more common and safe to induce labor and perform a C-section to prevent PE from worsening. But overall doctors like to wait until as late as possible in the pregnancy to deliver, since the closer the birth is to the intended due date, the better chance the baby has of developing fully ²³.

With the advancement of modern technologies and the low number of cesarean deliveries, doctors worldwide prefer either safe vaginal delivery to either the mother or the fetus or the cesarean section. This trend is based on the fact that severe vaginal delivery is accompanied by many risks to the mother and the fetus. As cesarean delivery has improved its results and its complications have been affected by the improvement of modern methods of anesthesia and the presence of modern medical pressures that resist corrosion, inflammation and the possibility of proper blood transfusion after passing the complications and the tremendous progress in antibiotics and wide-acting and highly lethal various microbes and good follow-up of pregnancy. Some women may require caesarean section to avoid the risk normal birth, but doctors still recommend natural vaginal delivery, as long as it holds in safety and leave the resort to cesarean delivery.

Conclusions

Cesarean Section is a save alternative and a healthy procedure with difficulty in removing the newborn in a natural and safe way. The most important consideration is the safety of the mother and fetus. There are cases where the doctor hastens to perform cesarean section, some may be unusual, and may be some of the emergency and unexpected, and the most important of

those cases the size of the fetus is greater than that of the uterus, which mean that the fetus cannot pass through the uterus or the mother pelvis, placental problems, gestational diabetes, etc. therefore the mother should be encouraged to continually review health institutions before and after pregnancy and childbirth to reduce the risks of cesarean delivery.

REFERENCES

1. Cunningham F.G., MacDonald P.C., Gant N.F., Leveno K.J., Glistrap L.C.I., Hankins G.D.V. and Williams O. 20th ed. "Connecticut: Appleton & Lange". 1997: 509-31.
2. Office on Women's Health, U.S. Department of Health and Human Services. "Pregnancy Labor and Birth". 1 February 2017. Archived from the original on 28 July 2017.
3. American Congress of Obstetricians and Gynecologists and the Society for Maternal-Fetal Medicine. "Safe Prevention of the Primary Cesarean Delivery". March 2014.
4. Berghella V., Baxter J.K., Chauhan S.P. "Evidence-based surgery for cesarean delivery". *Am. J. Obstet. Gynecol.* 2005; 193(5):1607-17. DOI:[10.1016/j.ajog.2005.03.063](https://doi.org/10.1016/j.ajog.2005.03.063).
5. Gregory K.D., Jackson S., Korst L. and Fridman M. "Cesarean versus vaginal delivery: whose risks? Whose benefits?". *Am. J. Perinatol.* 2012; 29(1):7-18. DOI:[10.1055/s-0031-1285829](https://doi.org/10.1055/s-0031-1285829).
6. Althabe F., Torloni M.R., Betran A.P., Souza J.P., Widmer M., Allen T., Gulmezoglu M. and Merialdi M. "Classifications for Cesarean Section: A Systematic Review". *PLoS ONE.* 2011; 6 (1): e14566. DOI:[10.1371/journal.pone.0014566](https://doi.org/10.1371/journal.pone.0014566).
7. Shearer E.I. "Cesarean section: medical benefits and costs". *Soc. Sci. Med.* 1993; 37(10): 1223-31.
8. Debjani A. "12 causes for a Caesarean section". Updated: November 2, 2015. <http://www.thehealthsite.com/pregnancy/c-section-or-caesarean-section-causes/>.
9. "ACOG Practice Bulletin #54: vaginal birth after previous cesarean". *Obstet. Gynecol.* 2004 Jul; 104(1):203-12.
10. Amos G. "Cephalopelvic Disproportion (CPD)". New York obstetrician and gynecologist, Zucker School of Medicine at Hofstra/Northwell.2014.
11. Centers for Disease Control and Prevention. "Diabetes and Pregnancy Gestational Diabetes book". U.S. Department of Health and Human Services. May 4, 2016.
12. Jacquelyn C. "Management of Preeclampsia During Delivery". University of Illinois-Chicago, College of Medicine on February 12, 2016. <https://www.healthline.com/health/pregnancy/hypertension-induction-delivery-preeclampsia>
13. Gardberg M., Leonova Y. and Laakkonen E. "Malpresentations-impact on mode of delivery". *Acta. Obstet. Gynecol. Scand.* 2011; 90(5):540-2. doi.org/10.1111/j.1600-0412.2011.01105.x.
14. Collard T.D., Diallo H., Habinsky A., Hentschell C. and Vezeau T.M. "Elective Cesarean Section: Why Women Choose It and What Nurses Need to Know". *Nurs Womens Health.* 2008; 12(6): 480-488. DOI:[10.1111/j.1751-486X.2008.00382.x](https://doi.org/10.1111/j.1751-486X.2008.00382.x).
15. Van Ham M.A., Dongen P.W. and Mulder J. "Maternal consequences of cesarean section. A retrospective study of intraoperative and postoperative maternal complications of cesarean during a 10-year period". *Eur. J. Obstet. Gynecol.*

- Reprod. Biol. 1997; 74(1):1-6. DOI:[10.1111/j.1751-486X.2008.00382.x](https://doi.org/10.1111/j.1751-486X.2008.00382.x).
16. Martel M., Wacholder S., Lippman A., Brohan J. and Hamilton E. "Maternal age and primary cesarean section rates: a multivariate analysis". *Am. J. Obstet. Gynecol.* 1987;156(2):305-8.
 17. Simoes E., Kunz S., Bosing-Schwenkglens M. and Schmahl F.W. "Occupation and Risk of Cesarean Section: Study Based on the Perinatal Survey of Baden-Württemberg, Germany". *Archives of Gynecology and Obstetrics.* 2005; 271(4): 338-342. DOI:[10.1007/s00404-004-0616-z](https://doi.org/10.1007/s00404-004-0616-z).
 18. Bettgowda V.R., Dias T., Davidoff M.J., Damus K., Callaghan W.M. and Petrini J.R. "The Relationship Between Cesarean Delivery and Gestational Age Among US Singleton Births". *Clinic in Perinatology.* 2008; 35(2):309-323. DOI:[10.1016/j.clp.2008.03.002](https://doi.org/10.1016/j.clp.2008.03.002).
 19. Mark B., Landon M.D., Catherine Y., Spong M.D., Garland B., Anderson M.D. "A multicenter, randomized trial of treatment for mild gestational diabetes". *N. Engl. J. Med.* 2009; 361(14): 1339-1348.
 20. Metzger B.E., Dyer A.R., Lowe L.P. and others. "Hyperglycemia and adverse pregnancy outcomes". *N. Engl. J. Med.* 2008; 358(19): 1991-2002. DOI:[10.1056/NEJMoa0707943](https://doi.org/10.1056/NEJMoa0707943).
 21. Visser W. and Wallenburg H.C. "Maternal and perinatal outcome of temporizing management in 254 consecutive patients with severe pre-eclampsia remote from term". *Eur. J. Obstet. Gynecol. Reprod. Biol.* 1995; 63(2):147-54.
 22. Washington D.C. "Hypertension in pregnancy". American College of Obstetricians and Gynecologists. 2013.
 23. Bokslag A., Weissenbruch M., Willem B. and Chistianne J.M. "Preeclampsia; short and long-term consequences for mother and neonate". *Early Human Development.* 2016;102:47-50. DOI:[10.1016/j.earhumdev.2016.09.007](https://doi.org/10.1016/j.earhumdev.2016.09.007).