**Research Article**

# Pregnancy Outcomes in Women Aged 20–34 vs. ≥35 Years: A Cross-Sectional Study in a Tertiary Referral Center

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## Abstract

**Objective:** To compare pregnancy outcomes between women aged 20–34 years and those aged ≥35 years.

**Methods:** A cross-sectional study was conducted among 150 patients at Dr. Hasan Sadikin General Hospital in 2022. Participants were divided into two age groups: 20–34 years and ≥35 years. Data were analyzed using the chi-square test and the Cochran–Mantel–Haenszel test with SPSS version 27.0

**Results:** Advanced maternal age was significantly associated with higher rates of operative delivery (OR 2.16, 95% CI 1.08–4.28, p = 0.048), hypertensive disorders (OR 3.95, 95% CI 1.86–8.38, p < 0.001), and postpartum hemorrhage (OR 2.93, 95% CI 0.99–8.70, p = 0.044). No significant differences were observed in neonatal outcomes between the two age groups.

**Conclusion:** Advanced maternal age is significantly associated with adverse maternal outcomes, particularly increased rates of operative delivery, hypertensive disorders, and postpartum hemorrhage, while neonatal outcomes appear to be comparable between age groups.

**Keywords:** advanced maternal age; maternal outcomes; neonatal outcomes; pregnancy complications; reproductive age.

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## INTRODUCTION

Maternal mortality remains disproportionately high in developing countries, accounting for nearly 99% of global maternal deaths. Approximately 830 women die each day from preventable causes related to pregnancy and childbirth.[1,2] High-risk pregnancies are a major contributor to maternal and neonatal mortality.[3] In Indonesia, 22.4% of pregnancies are classified as high-risk, with advanced maternal age being a major contributing factor.[4] This proportion is concerning, particularly as the number of pregnancies among women of advanced maternal age continues to increase.[3,5]

Advanced maternal age, defined as pregnancy at ≥35 years, has consistently been associated with adverse maternal and neonatal outcomes.[3,4,6] Among women aged ≥35 years, 10.82% experience adverse pregnancy outcomes, with the risk of morbidity increasing from 1.2-fold at ≥39 years to 5.4-fold at ≥50 years.[7]

Despite the increased risk of adverse pregnancy outcomes, global trends over the past few decades indicate that women are increasingly delaying childbirth into their late reproductive years.[5,8-10] The Centers for Disease Control and Prevention (CDC) reported an increase in birth rates among women aged 35–39 years, from 45.9 per 1,000 women in 2010 to 52.7 per 1,000 women in 2019. Similarly, birth rates among women aged 40–44 years increased from 10.2 to 12 per 1,000 women during the same period.[6]

Given the rising trend of delayed pregnancies and the associated risks, this study aims to compare pregnancy outcomes between women

aged 20–34 years and those aged ≥35 years at Dr. Hasan Sadikin General Hospital. The findings are expected to highlight the need for targeted interventions to improve maternal outcomes in pregnancies among women of advanced maternal age.

## METHODS

This was an observational analytic study with a cross-sectional design, conducted at Dr. Hasan Sadikin General Hospital using medical records from 2022. Consecutive sampling was used to reduce selection bias by including all eligible childbirth cases during the study period. A total of 150 patients were categorized into two age groups: 20–34 years and ≥35 years. Inclusion: Women aged ≥20 years with complete medical records of childbirth in 2022. Exclusion: Women aged <20 years and childbirth medical records that were inaccessible or lacked complete data.

Standardized outcome definitions were applied. Hypertensive disorders were classified according to ISSHP guidelines (chronic hypertension, gestational hypertension, preeclampsia, superimposed preeclampsia, and eclampsia). Postpartum hemorrhage followed ACOG criteria (≥500 mL after vaginal delivery or ≥1000 mL after cesarean section). PROM and PPROM were defined based on gestational age at membrane rupture. Neonatal outcomes used standard classifications, including preterm birth (<37 weeks), fetal growth restriction (<10th percentile), APGAR score categories (7–10 normal, 4–6 moderate asphyxia, 0–3 severe asphyxia), and weight-for-gestational-age categories (SGA <10th percentile, AGA 10–90th, LGA >90th).

Missing data were handled by listwise deletion, and only complete records were included. Multivariable regression analysis was considered but not performed due to incomplete documentation of key confounding variables in the medical records.

Data were analyzed using SPSS version 27. Univariate analysis was used to describe maternal characteristics. Bivariate analysis (chi-square test) assessed associations between age groups and pregnancy outcomes. Odd ratios with 95% confidence intervals were calculated using the Cochran-Mantel-Haenszel test. Results are presented as frequencies (n) and percentages (%) in tabular form.

## RESULTS

A total of 150 medical record data sets from 2022 were included, consisting of 75 women with advanced maternal age (≥35 years) and 75 in the younger maternal age group (20–34 years). As shown in Table 1, most women aged ≥35 years were between 35 and 39 years, and the majority were multiparous.

**Table 1.** Maternal Characteristics

| Characteristics | n (150) | % |
|---|---|---|
| **Age (year old)** | | |
| 20-34 | 75 | 50 |
| 35-39 | 56 | 37.3 |
| ≥ 40 | 19 | 12.6 |
| **Parity** | | |
| Nulliparous | 38 | 25.3 |
| Multiparous | 107 | 71.3 |
| Grande multiparous | 5 | 3.3 |

**Table 2.** Maternal Outcomes

| Variables | Maternal outcomes | | | | *P-value* | OR (95% CI) |
|---|---|---|---|---|---|---|
| | Maternal age 20-34 | | Maternal age ≥ 35 | | | |
| | n (75) | % | n (75) | % | | |
| **Mortality** | | | | | | |
| Mode of delivery | 0 | 0 | 0 | 0 | 0 | |
| Spontaneous or induced delivery | 33 | 44 | 20 | 26.7 | | |
| Cesarean section | 39 | 52 | 48 | 64 | 0.048 | 2.16 (1.08-4.28) |
| Forceps extraction | 2 | 2.7 | 7 | 9.3 | | |
| Vacuum extraction | 1 | 1.3 | 0 | 0 | | |
| **Premature rupture of membranes** | | | | | | |
| Normal | 63 | 84 | 57 | 76 | 0.451 | |
| PPROM | 4 | 5.3 | 7 | 9.3 | | |
| PROM | 8 | 10.7 | 11 | 14.7 | | |
| **Hypertensive disorders** | | | | | | |

| | | | | | | |
|---|---|---|---|---|---|---|
| Normal | 62 | 82.7 | 41 | 54.7 | | |
| Chronic hypertension | 1 | 1.3 | 4 | 5.3 | | |
| Gestational hypertension | 0 | 0 | 4 | 5.3 | <0.001 | 3.95 (1.86-8.38) |
| Preeclampsia | 9 | 12 | 9 | 12 | | |
| Superimposed preeclampsia | 2 | 2.7 | 16 | 21.3 | | |
| Eclampsia | 1 | 1.3 | 1 | 1.3 | | |
| **Antepartum hemorrhage** | | | | | | |
| Normal | 67 | 89.3 | 57 | 76 | 0.075 | |
| Placenta previa | 8 | 10.6 | 16 | 21.3 | 0.155 | |
| Placental abruption | 0 | 0 | 2 | 2.7 | | |
| Postpartum hemorrhage | 5 | 6.7 | 13 | 17.3 | 0.044 | 2.93 (0.99-8.70) |

Chi-Square Test

Advanced maternal age was significantly associated with higher rates of operative delivery, hypertensive disorders, and postpartum hemorrhage. Women aged ≥35 years had higher odds of operative delivery, driven primarily by increased rates of cesarean section and forceps-assisted delivery, despite vacuum extraction being more frequent in the younger maternal age group (OR 2.16, 95% CI 1.08–4.28, p=0.048). Advanced maternal age was also associated with hypertensive disorders (OR 3.95, 95% CI 1.86–8.38, p<0.001) and postpartum hemorrhage (OR 2.93, 95% CI 0.99–8.70, p=0.044). Several outcomes, including placenta previa and PPROM showed higher frequencies in the advanced maternal age group and approached statistical significance, although they did not cross the significance threshold. Maternal outcomes are summarized in Table 2.

**Table 3.** Neonatal Outcomes

| Variables | Neonatal outcomes | | | | *P-value* |
|---|---|---|---|---|---|
| | Maternal age 20-34 | | Maternal age ≥ 35 | | |
| | n (75) | % | n (75) | % | |
| Abortus | 0 | 0 | 1 | 1.3 | 0.316 |
| Stillbirth | 3 | 4 | 5 | 6.7 | 0.467 |
| Early neonatal death | 0 | 0 | 1 | 1.3 | 0.316 |
| **Gestational age at labor** | | | | | 0.870 |
| Preterm | 40 | 53.3 | 39 | 52 | |
| Aterm | 35 | 46.7 | 36 | 48 | |
| Fetal growth restriction | 3 | 4 | 7 | 9.3 | 0.190 |
| Congenital anomalies | 6 | 8 | 5 | 6.7 | 0.754 |
| **Asphyxia** | | | | | 0.609 |
| APGAR 7-10 | 36 | 48 | 30 | 40 | |
| APGAR 4-6 | 30 | 30 | 35 | 46.7 | |
| APGAR 0-3 | 6 | 6 | 5 | 6.7 | |
| **Birth weight** | | | | | 0.602 |
| AGA | 38 | 50.7 | 38 | 50.7 | |
| SGA | 37 | 49.3 | 36 | 48 | |
| LGA | 0 | 0 | 1 | 1.6 | |

Chi-Square Test

Regarding neonatal outcomes, no significant differences were found between the two age groups. While trends toward higher rates of perinatal mortality, fetal growth restriction, and moderate asphyxia were seen among women aged ≥35 years, these did not reach statistical significance. Neonatal outcomes are summarized in Table 3.

**Table 4.** Asphyxia Incidents by Maternal Age and Mode of Delivery

| Variables | Mode of Delivery | | | | | | | | *P-value* | OR (95% CI) |
|---|---|---|---|---|---|---|---|---|---|---|
| | Maternal age 20-34 | | | | Maternal age ≥ 35 | | | | | |
| | S/I | CS | FE | VE | S/I | CS | FE | VE | | |
| **Asphyxia** | | | | | | | | | | |
| APGAR 7-10 | 18 | 15 | 2 | 1 | 10 | 16 | 4 | 0 | 0.026 | 2.303 |
| APGAR 4-6 | 12 | 18 | 0 | 0 | 5 | 27 | 3 | 0 | | |
| APGAR 0-3 | 0 | 6 | 0 | 0 | 1 | 4 | 0 | 0 | | |

S/I: spontaneous/induced delivery, CS: C-section, FE: forceps extraction, VE: vacuum extraction

APGAR score distributions were comparable between the two maternal age groups. Most neonates in both groups achieved normal APGAR scores (7–10) across all delivery modes. Moderate and severe asphyxia occurred in various delivery categories, but no statistically significant differences were found between the groups. Detailed distributions by mode of delivery are presented in Table 4.

## DISCUSSION

### Maternal outcomes

A key finding of this study was the association between advanced maternal age and mode of delivery. Women aged ≥35 years had 2.16-fold higher odds of undergoing operative delivery. This finding is consistent with a study conducted in Denmark, which reported that women aged 35–39 years had twice the risk of cesarean delivery, while those aged 40 years or older had three times the risk compared with younger women.[5] The increased risk may be attributed to a higher prevalence of unfavorable obstetric histories. Women with a history of previous cesarean section or obstetric complications often opt for elective cesarean delivery. Furthermore, complications such as labor dystocia, fetal distress, hypertensive disorders of pregnancy, and antepartum hemorrhage are more common among women of advanced maternal age, frequently necessitating cesarean section for maternal and perinatal indications.[3,5,11,12]

Another significant finding was that women aged ≥35 years had a 3.95-fold increased risk of developing hypertensive disorders during pregnancy. This result is consistent with an Ethiopian study that reported an odds ratio of 4.3. Previous studies have shown that the risk of hypertensive disorders during pregnancy is 1.22 times higher in women aged 35–40 years, 1.63 times higher in those aged 40–45 years, and 1.89 times higher in women aged 45 years or older compared with women aged 25–30 years. This trend may primarily result from age-related physiological changes, including reduced endothelial responsiveness to vasodilators and decreased vascular elasticity due to diminished nitric oxide levels and increased oxidative stress, leading to impaired blood pressure regulation.[3,13] Moreover, placental aging may reduce the efficiency of nutrient and oxygen exchange, thereby increasing maternal cardiovascular stress and the risk of preeclampsia and superimposed preeclampsia.[14]

This study also found that women aged ≥35 years had a 2.93-fold higher risk of postpartum hemorrhage. This finding is consistent with studies conducted in Tibet and Hong Kong, which reported odds ratios of 1.96 and 1.23, respectively. The increased risk may be attributed to reduced uterine tissue elasticity and impaired uterine contractility associated with aging, leading to uterine atony. Advanced maternal age is also associated with a higher risk of placental abnormalities, including placenta previa and placental abruption, which can result in substantial bleeding during and after delivery. Additionally, the higher rate of cesarean sections among women of advanced maternal age may further contribute to the increased incidence of postpartum hemorrhage, possibly due to uterine atony, surgical trauma, placental site bleeding, and placental adhesions.[15-17]

In this study, the incidences of Preterm Premature Rupture of Membranes (PPROM), Premature Rupture of Membranes (PROM), placenta previa, and placental abruption did not differ significantly between the two age groups. Although PPROM and PROM occurred slightly more frequently among women aged ≥35 years, the differences were not statistically significant ($p = 0.451$). This finding is consistent with studies from India and Ethiopia but contrasts with findings from Saudi Arabia. Placenta previa and

placental abruption were also more common in the advanced maternal age group; however, these differences were not statistically significant (p = 0.075 and p = 0.155, respectively). This result aligns with studies from India but contrasts with reports from Saudi Arabia and Ethiopia.[3,18,19] The lack of statistical significance may be explained by advances in prenatal care that enable early detection and close monitoring, as well as the relatively low incidence of these conditions, which may require larger sample sizes to demonstrate significant differences.[20]

**Neonatal outcomes**

This study found no significant differences in the incidence of abortion, stillbirth, or early neonatal death between the two maternal age groups (p = 0.316, p = 0.467, and p = 0.316, respectively). This finding is consistent with a study from India that reported no neonatal deaths in either maternal age group but contrasts with an Ethiopian study that found a 2.54-fold higher risk of perinatal death among women of advanced maternal age. These differences may reflect improvements in prenatal and perinatal care that help mitigate age-related risks across maternal age groups. Enhanced screening for genetic conditions and improved management of maternal comorbidities may have contributed to reducing adverse neonatal outcomes among women of advanced maternal age.[3,19]

The rates of preterm and term births did not differ significantly between the two age groups (p = 0.870). This finding is consistent with a study conducted in Malaysia but contrasts with studies from the United States and South Korea, which reported higher odds of preterm delivery among women older than 35 years, as well as a study from Ethiopia that reported a 3.62-fold higher risk of preterm birth among infants born to women of advanced maternal age.[3,11,21] The absence of a significant association in this study may be attributed to proactive antenatal monitoring and interventions aimed at preventing preterm labor, which are applied uniformly across maternal age groups. In addition, the relatively small sample size may limit the ability to detect subtle differences.[3]

The incidences of fetal growth restriction (FGR; p = 0.190) and congenital anomalies (p = 0.754) were comparable between the two age groups. This finding is consistent with studies from India but contrasts with reports from Saudi Arabia and South Korea regarding congenital anomalies.[18,19,23] Although the exact mechanisms remain unclear, increased placental dysfunction in pregnancies at advanced maternal age may contribute to these risks.[22] Comprehensive prenatal diagnostic techniques that allow early detection and timely intervention may help mitigate adverse outcomes. Moreover, congenital anomalies are influenced by multiple factors, including genetic predisposition and environmental exposures, and are not solely determined by maternal age.[3,19,23]

Birth weight categories did not differ significantly between the two age groups (p = 0.602). This result is consistent with a study from Malaysia but contrasts with studies from Ethiopia and Saudi Arabia, which reported a 3.14-fold and 1.73-fold higher risk, respectively, of lower mean birth weight among neonates born to women of advanced maternal age.[3,18,21] Effective maternal nutrition, routine antenatal monitoring, and targeted management of gestational diabetes and hypertensive disorders may contribute to maintaining optimal birth weight across all maternal age groups.[21]

APGAR scores did not differ significantly between the two maternal age groups. This finding is consistent with studies from Malaysia but contrasts with an Ethiopian study reporting that neonates born to mothers of advanced maternal age were 7.5 times more likely to have low fifth-minute APGAR scores.[3,21] The lack of association observed in this study may reflect standardized neonatal resuscitation practices and high-quality immediate postnatal care applied uniformly to all newborns. Enhanced obstetric and neonatal care protocols ensure prompt and effective management of neonatal asphyxia regardless of maternal age.[18,21]

**Asphyxia incidents by maternal age and mode of delivery**

Although overall APGAR scores did not differ significantly between maternal age groups, neonates born via cesarean section or assisted delivery to women aged ≥35 years had a 2.30-fold higher risk of neonatal asphyxia. Moderate to severe asphyxia (APGAR scores of 4–6 and 0–3) occurred more frequently following cesarean delivery in both age groups, particularly among women aged ≥35 years. This finding may reflect the fact that cesarean sections are often performed in response to obstetric complications

that inherently increase the risk of neonatal asphyxia. In contrast, spontaneous or induced vaginal deliveries and forceps-assisted deliveries tended to result in more favorable APGAR scores, possibly due to less invasive procedures and better underlying maternal–fetal conditions.[24,25]

These findings highlight the importance of comprehensive preconception counseling for couples planning pregnancy at advanced maternal age, particularly regarding the increased risks of operative delivery, hypertensive disorders, and postpartum hemorrhage. During pregnancy, enhanced antenatal surveillance, including regular blood pressure monitoring and timely screening for obstetric complications, is essential. Individualized birth planning and delivery in healthcare facilities equipped to manage operative deliveries and obstetric emergencies may help optimize maternal and neonatal outcomes in this population.

### Study limitations

This study has several limitations. The relatively small sample size and single-center design may limit statistical power and reduce generalizability. As a tertiary referral hospital, Dr. Hasan Sadikin General Hospital manages a higher proportion of high-risk pregnancies, and institutional practice patterns may influence the observed outcomes. In addition, the retrospective design limits control over data completeness and does not allow adjustment for important confounders such as parity, previous cesarean section, maternal comorbidities, body mass index, and quality of antenatal care. Consequently, residual confounding cannot be excluded.

## CONCLUSIONS

This study confirms that advanced maternal age is associated with adverse maternal outcomes, particularly higher rates of operative deliveries, hypertensive disorders, and postpartum hemorrhage. Neonatal outcomes did not differ significantly, likely reflecting effective perinatal care in this setting. Future multicenter prospective studies with larger sample sizes and multivariable analyses are recommended to further strengthen these findings.

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## REFERENCES

1. Ka M, Venkatesh U, Kapoor R. Clinico-epidemiological profile of women with high-risk pregnancy utilizing antenatal services in a rural primary health center in India. J Rural Med. 2023. Jan;18(1):15-20. doi:10.2185/jrm.2022-018.
2. Holness N. High-Risk Pregnancy. Nurs Clin North Am. 2018 Jun;53(2):241-51. doi: 10.1016/j.cnur.2018.01.010.
3. Mehari MA, Maeruf H, Robles CC, Woldemariam S, Adhena T, Mulugeta M, et al. Advanced maternal age pregnancy and its adverse obstetrical and perinatal outcomes in Ayder comprehensive specialized hospital, Northern Ethiopia, 2017: a comparative cross-sectional study. BMC Pregnancy Childbirth. 2020. Jan 30;20(1):60. doi:10.1186/s12884-020-2740-6.
4. Anggita Ratnaningtyas M, Indrawati F. Karakteristik Ibu Hamil dengan Kejadian Kehamilan Risiko Tinggi. HIGEIA J Public Health Res Dev. 2023. http://journal.unnes.ac.id/sju/index.php/higeia.
5. Rydahl E, Declercq E, Juhl M, Maimburg RD. Cesarean section on a rise—Does advanced maternal age explain the increase? A population register-based study. PLoS One. 2019. doi:10.1371/journal.pone.0215955.
6. Glick I, Kadish E, Rottenstreich M. Management of pregnancy in women of advanced maternal age: Improving outcomes for mother and baby. Int J Womens Health. 2021. Aug 10:13:751-9. doi:10.2147/IJWH.S306022.
7. Lisonkova S, Potts J, Muraca GM, Razaz N, Sabr Y, Chan WS, et al. Maternal age and severe maternal morbidity: A population-based retrospective cohort study. PLoS Med. 2017. doi:10.1371/journal.pmed.1002307.
8. Pinheiro RL, Areia AL, Mota Pinto A, Donato H. Advanced Maternal Age: Adverse Outcomes of Pregnancy, A Meta-Analysis. Acta Med Port. 2019. Mar 29;32(3):219-26. doi: 10.20344/amp.11057. Epub 2019 Mar 29.
9. Lean SC, Derricott H, Jones RL, Heazell AEP. Advanced maternal age and adverse pregnancy outcomes: A systematic review and meta-analysis. PLoS One. 2017. doi:10.1371/journal.pone.0186287.
10. Šťastná A, Šídlo L, Kocourková J, Fait T. Does advanced maternal age explain the longer hospitalization of mothers after childbirth? PLoS One. 2023. doi:10.1371/journal.pone.0282016.
11. Cavazos-Rehg PA, Krauss MJ, Spitznagel EL, Bommarito K, Madden T, Olsen MA, et al. Maternal age and risk of labor and delivery complications. Matern Child Health J. 2015. doi:10.1007/s10995-014-1623-7.

12. Nugraha GBA, Anggraini NWP. Mode of delivery and neonatal outcomes in preterm pregnancy. Indones J Obstet Gynecol. 2023. https://www. inajog.com/ index.php/journal/article/view/1803
13. Dietl A, Farthmann J. Gestational hypertension and advanced maternal age. The Lancet. 2015. http://www.thelancet.com/article/S0140673615005322/ fulltext
14. Lisonkova S, Joseph KS. Incidence of preeclampsia: Risk factors and outcomes associated with early- versus late-onset disease. Am J Obstet Gynecol. 2013. doi:10.1016/j.ajog.2013.07.022.
15. Pubu ZM, Bianba ZM, Yang G, CyRen LM, Pubu DJ, Lang KZS, et al. Factors affecting the risk of postpartum hemorrhage in pregnant women in Tibet health facilities. Med Sci Monit. 2021. doi:10.12659/MSM.929409.
16. Lao TT, Sahota DS, Cheng YKY, Law LW, Leung TY. Advanced maternal age and postpartum hemorrhage risk factor or red herring? J Matern Fetal Neonatal Med. 2014. doi:10.3109/14767058.2013.874596.
17. Yeni CM, Handayani H, Nasir A, Ima Indirayani, Razali R. The association between cesarean section and placenta accreta. Indones J Obstet Gynecol. 2022;10(3):127-32
18. AlJahdali EA, AlSinani NS. Pregnancy outcomes at advanced maternal age in a tertiary hospital, Jeddah, Saudi Arabia. Saudi Med J. 2022;43(5):491-9.
19. Nagarwal K, Gaur K, Manohar RK. Pregnancy outcome comparison in elderly and non-elderly primigravida attending Mahila Chikitsalay, Jaipur (Rajasthan) India. IMJ Health. 2015.
20. Merriam A, D'Alton ME. Placenta Previa. In: Obstetric Imaging: Fetal Diagnosis and Care. 2nd ed. 2023. https://www.ncbi.nlm.nih.gov/books/NBK539818/
21. Erdawati Mohd Rashed H, Maria Awaluddin S, Ani Ahmad N, Huda Supar N, Lani Z, Aziz F, et al. Advanced Maternal Age and Adverse Pregnancy Outcomes in Muar, Malaysia. Sains Malays. 2016.
22. Frick AP. Advanced maternal age and adverse pregnancy outcomes. Best Pract Res Clin Obstet Gynaecol. 2021;70:92-100. doi:10.1016/j.bpobgyn.2020.08.008.
23. Koo YJ, Ryu HM, Yang JH, Lim JH, Lee JE, Kim MY, et al. Pregnancy outcomes according to increasing maternal age. Taiwan J Obstet Gynecol. 2012;51(1):60-5. doi:10.1016/j. tjog.2011.12.005.
24. Fajar JK, Andalas M, Harapan H. Comparison of Apgar scores in breech presentations between vaginal and cesarean delivery. TCMJ. 2017;29:24-9. doi:10.4103/tcmj. tcmj_5_17.
25. Herstad L, Klungsøyr K, Skjærven R, Tanbo T, Forsén L, Åbyholm T, et al. Elective cesarean section or not? Maternal age and risk of adverse outcomes at term: a population-based registry study of low-risk primiparous women. BMC Pregnancy Childbirth. 2016;16:230. doi:10.1186/s12884-016-1073-9.