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Original Research Article

Comparison of the Efficacy of 75mg Aspirin Versus 150mg Aspirin in Prevention of Pre Eclampsia And its Complications in High Risk Pregnancy- A Study in a Tertiary Care Centre

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Conflict of interest: Nil

Abstract:

Introduction: Preeclampsia, a hypertensive disorder of pregnancy, is a leading cause of maternal and perinatal morbidity and mortality worldwide. Low-dose aspirin has been shown to reduce the risk of preeclampsia, preterm birth, and fetal complications, particularly when started before 16 weeks of gestation in high-risk women

Aims: To evaluate the efficacy of 75mg aspirin versus 150mgaspirin in prevention of pre eclampsia and its complications in high risk pregnant population.

Materials and Methods: This observational study was conducted over 1.5 years at Nilratan Sircar Medical College, Kolkata, including 150 patients (75 in each group). Participants were followed at 24, 28, 32, 36 weeks, and weekly thereafter until delivery. The efficacy of two aspirin doses was evaluated in preventing preeclampsia and its complications.

Result: In our study of 150 high-risk pregnant women, most were aged 21–25 years (39.3%) with primary education (42%). Baseline risk factors, including BMI ≤25, previous preeclampsia, and multifetal pregnancies, were similarly distributed between the two aspirin groups. Pregnancy complications occurred in 34% of participants, with gestational hypertension (21.3%) and preeclampsia (33–36%) being most common, while 68% showed a positive response to aspirin prophylaxis.

Conclusion: We concluded that younger women with lower educational attainment made up a sizable share of the cohort in our study comparing 75 mg and 150 mg aspirin for the prevention of preeclampsia in high-risk pregnancies.

Keywords: Preeclampsia, High-risk pregnancy, Aspirin prophylaxis, Maternal outcomes, Dose comparison.

Introduction

Pre-eclampsia remains one of the leading causes of maternal and perinatal morbidity and mortality globally, particularly in low- and middle-income countries. Characterized by new-onset hypertension and proteinuria after 20 weeks of gestation, it can progress to severe complications including eclampsia, HELLP syndrome (hemolysis, elevated liver enzymes, and low platelet count), placental abruption, and intrauterine growth restriction (IUGR) if not adequately managed or prevented. Women considered high-risk—such as those with a history of pre-eclampsia, chronic hypertension, diabetes, renal disease, or multiple gestation—are especially vulnerable to the recurrence and complications of the condition [1,2]. Low-dose aspirin (LDA) has been a cornerstone in the preventive strategy against pre-eclampsia for high-risk women. Aspirin acts primarily by irreversibly inhibiting cyclooxygenase (COX) enzymes, thereby reducing thromboxane A2 synthesis, a potent vasoconstrictor and promoter of platelet aggregation. This antiplatelet effect is thought to improve uteroplacental perfusion by correcting the imbalance between thromboxane and prostacyclin in pre-eclamptic pregnancies [3,4]. Current guidelines from several international bodies,

including the World Health Organization (WHO), the American College of Obstetricians and Gynecologists (ACOG), and the National Institute for Health and Care Excellence (NICE), support the use of aspirin in high-risk pregnancies. However, there is variation in recommended dosages, with some advocating for 75–81 mg daily, while others recommend 150 mg, initiated ideally before 16 weeks of gestation [5–7]. The optimal aspirin dose for preventing pre-eclampsia remains a subject of ongoing research and clinical debate. Earlier trials using 60–81 mg of aspirin showed modest reductions in the incidence of pre-eclampsia, but recent high-quality evidence suggests that a higher dose of 150 mg may confer superior protective benefits [8]. The ASPRE (Aspirin for Evidence-Based Pre-eclampsia Prevention) trial was a landmark randomized controlled trial that demonstrated a significant reduction in the incidence of preterm pre-eclampsia when 150 mg of aspirin was initiated before 16 weeks gestation in high-risk women [9]. These findings have prompted some guidelines, particularly in Europe, to recommend the higher dosage in specific populations.

Conversely, the 75 mg dosage remains widely used in many countries, including resource-limited settings, due to its lower cost, broader availability, and historical acceptance. Nevertheless, the comparative efficacy of 75 mg versus 150 mg in preventing pre-eclampsia and its complications in high-risk pregnancies has not been fully established in diverse populations. While higher doses may be more effective, they may also pose concerns regarding maternal bleeding risks, especially in populations with lower body weight or coexisting comorbidities [10]. To evaluate the efficacy of 75mg aspirin versus 150mg aspirin in prevention of pre eclampsia and its complications in high risk pregnant population.

Materials and Methods

Type of study: An observational Study

Period of study: One and a half years

Place of Study: Nilratan Sircar Medical College and hospital, Kolkata.

Study Parameters: The selected population would be followed up at 24weeks, 28weeks, 32weeks, 36weeks and weekly after that till delivery and efficacy of aspirin in both doses will be evaluated in terms of preventing pre eclampsia and its complications.

Sample Size: A total of 150 patients with 75 patients in each group.

Inclusion Criteria

- Pregnant women having risk of pre eclampsia and are getting 75mg aspirin.
- Pregnant women having risk for pre eclampsia and are getting 150mg.
- Pregnant women between 12 to 16weeks of gestation.

Exclusion Criteria

- Multiple Gestation
- Foetal Aneuploidy
- Major Foetal Structural Anomaly
- Bleeding Disorder
- Allergy to aspirin
- Women already on aspirin or heparin

Study Parameter: Age, Sex, Education, BMI >25, Previous H/O PE, Multifetal pregnancy current, Autoimmune disease (APLA), Preexisting DM, Preexisting hypertension, Previous H/O IUFD, Preexisting renal disease, IVF pregnancy, Family H/O PE, >10 years gap between two pregnancies, Gestational hypertension, Preeclampsia, Eclampsia, HELLP syndrome, Abruption, Oligohydramnios, Preterm delivery, Acute renal failure, PPH, Complicating, Low birth weight, IUD, Stillbirth

Statistical Analysis: For statistical analysis, data were initially entered into a Microsoft Excel spreadsheet and then analyzed using SPSS (version 27.0; SPSS Inc., Chicago, IL, USA) and GraphPad Prism (version 5). Numerical variables were summarized using means and standard deviations, while Data were entered into Excel and analyzed using SPSS and GraphPad Prism.

Numerical variables were summarized using means and standard deviations, while categorical variables were described with counts and percentages. Two-sample t-tests were used to compare independent groups, while paired t-tests accounted for correlations in paired data. Chi-square tests (including Fisher's exact test for small sample sizes) were used for categorical data comparisons. P-values ≤ 0.05 were considered statistically significant.

Result

Table 1: Association of Demographic Profile and Educational Status of Participants in Both Aspirin Groups

		Group-1	Group-2	Total
Age in group	≤20	29(38.7%)	15(20.0%)	44(29.3%)
	21-25	26(34.7%)	33(44.0%)	59(39.3%)
	26-30	14(18.7%)	19(25.3%)	33(22.0%)
	31-35	5(6.7%)	3(4.0%)	8(5.3%)
	<35	1(1.3%)	5(6.7%)	6(4.0%)
	Total	75(100%)	75(100%)	150(100%)
Education	Graduation	0(00.0%)	5(6.7%)	5(3.3%)
	High Secondary	22(29.3%)	17(22.0%)	39(26.0%)
	Primary	34(45.3%)	29(38.7%)	63(42.0%)
	Secondary	19(25.3%)	24(32.0%)	43(28.7%)
	Total	75(100%)	75(100%)	150(100%)

Table 2: Association of Baseline Risk Factors and Clinical Characteristics of Participants in Both Aspirin Groups

		Group-1	Group-2	Total
BMI >25	No	67(89.3%)	65(86.7%)	132(100%)
	Yes	8(10.7%)	10(13.3%)	18(100%)
	Total	75(100%)	75(100%)	150(100%)
Previous H/O PE	No	66(88%)	62(82.7%)	128(85.3%)
	Yes	9(12.0%)	13(17.3%)	22(14.7%)
	Total	75(100%)	75(100%)	150(100%)
Multifetal pregnancy current	No	63(84.0%)	60(80.0%)	123(82.0%)
	Yes	12(16%)	15(20%)	27(18%)
	Total	75(100%)	75(100%)	150(100%)
Autoimmune disease (APLA)	No	72(96.0%)	71(94.7%)	143(95.3%)
	Yes	3(4.0%)	4(5.3%)	7(4.7%)
	Total	75(100%)	75(100%)	150(100%)
Preexisting DM	No	67(89.3%)	68(90.7%)	135(90%)
	Yes	8(10.7%)	7(9.3%)	15(10%)
	Total	75(100%)	75(100%)	150(100%)
Preexisting hyperten-sion	No	67(89.3%)	66(88%)	133(88.7%)
	Yes	8(10.7%)	9(12%)	17(11.3%)
	Total	75(100%)	75(100%)	150(100%)
Previous H/O IUFD	No	68(90.7%)	70(93.3%)	138(92%)
	Yes	7(9.3%)	5(6.7%)	12(8%)
	Total	75(100%)	75(100%)	150(100%)
Preexisting renal disease	No	71(94.7%)	72(96%)	143(95.3%)
	Yes	4(5.3%)	3(4%)	7(4.7%)
	Total	75(100%)	75(100%)	150(100%)
IVF PREG	No	69(92%)	67(89.3%)	136(90.7%)
	Yes	6(8%)	8(10.7%)	14(9.3%)
	Total	75(100%)	75(100%)	150(100%)
Family H/O PE	No	66(88%)	62(82.7%)	128(85.3%)
	Yes	9(12%)	13(17.3%)	22(14.7%)
	Total	75(100%)	75(100%)	150(100%)
> 10 years gap between two pregnancies	No	69(92%)	70(93.3%)	139992.7%)
	Yes	6(8%)	5(6.7%)	11(7.3%)
	Total	75(100%)	75(100%)	150(100%)

Table 3: Association of Comparison of Maternal and Perinatal Outcomes between 75 mg and 150 mg Aspirin in High-Risk Pregnancies

		Group-1	Group-2	Total
GEST HTN	No	59(78.7%)	59(78.7%)	118(78.7%)
	Yes	16(21.3%)	16(21.3%)	32(21.3%)
	Total	75(100%)	75(100%)	150(100%)
Preeclampsia	No	50(66.7%)	48(64%)	98(65.3%)
	Yes	25(33.3%)	27(36%)	52(34.7%)
	Total	75(100%)	75(100%)	150(100%)
Eclampsia	No	68(90.7%)	70(93.3%)	138(92%)
	Yes	5(6.7%)	4(5.3%)	9(6%)
	Total	75(100%)	75(100%)	150(100%)
HELLP SYN	No	73(97.3%)	74(98.7%)	147(98%)
	Yes	2(2.7%)	1(1.3%)	3(2%)
	Total	75(100%)	75(100%)	150(100%)
Abruption	No	72(96%)	73(97.3%)	145(96.7%)
	Yes	3(4%)	2(2.7%)	5(3.3)
	Total	75(100%)	75(100%)	150(100%)
OLIGO AMNIOS	No	71(94.7%)	69(92%)	140(93.3%)
	Yes	4(5.3%)	6(8%)	10(6.7%)
	Total	75(100%)	75(100%)	150(100%)
Preterm delivery	No	65(86.7%)	64(85.3%)	129(86%)
	Yes	10(13.3%)	11(14.7%)	21(14%)
	Total	75(100%)	75(100%)	150(100%)
ARF	No	72(96%)	72(96%)	144(96%)
	Yes	3(4%)	3(4%)	6(4)
	Total	75(100%)	75(100%)	150(100%)
PPH	No	69(92%)	67(89.3%)	136(90.7%)
	Yes	6(8%)	8(10.7%)	14(9.3%)
	Total	75(100%)	75(100%)	150(100%)
Complicating	No	51(68%)	48(64%)	99(66%)
	Yes	24(32%)	27(36%)	51(34%)
	Total	75(100%)	75(100%)	150(100%)
LBW	No	61(81.3%)	52(69.3%)	113(75.3%)
	Yes	14(18.7%)	23(30.7%)	37(24.7%)
	Total	75(100%)	75(100%)	150(100%)
IUD	No	71(94.7%)	73(97.3%)	144(96%)
	Yes	4(5.3%)	2(2.7%)	6(4%)
	Total	75(100%)	75(100%)	150(100%)
Still birth	No	71(94.7%)	73(97.3%)	144(96%)
	Yes	4(5.3%)	2(2.7%)	6(4%)
	Total	75(100%)	75(100%)	150(100%)
No effect	No	22(29.3%)	26(34.7%)	48(32%)
	Yes	53(70.7%)	49(65.3%)	102(68%)
	Total	75(100%)	75(100%)	150(100%)

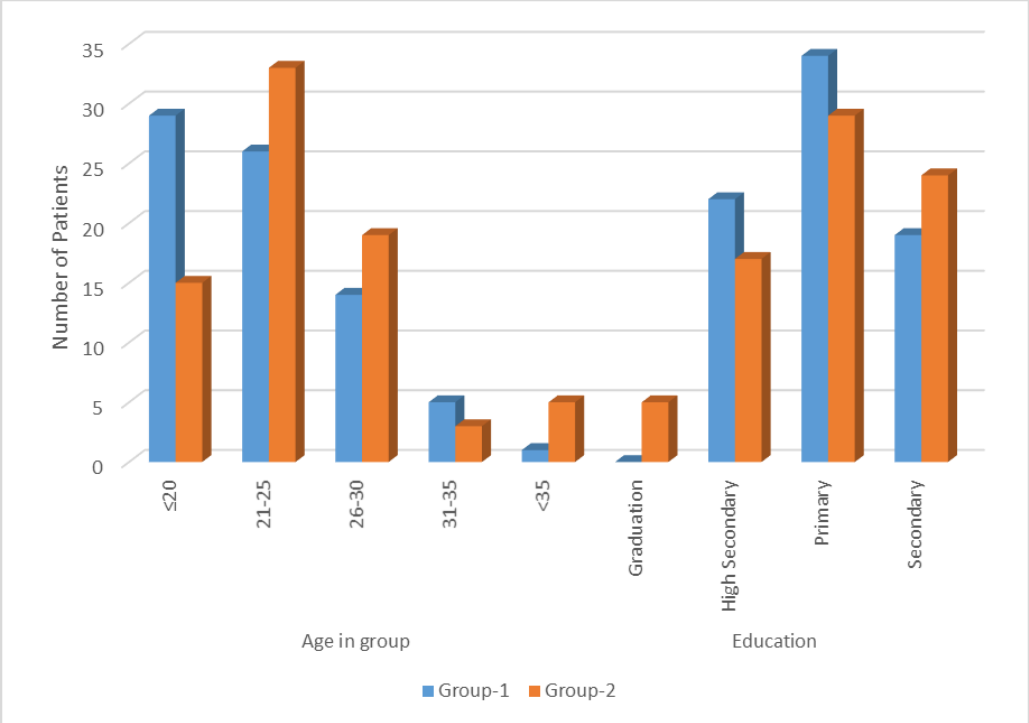

Figure 1: Association of Demographic Profile and Educational Status of Participants in Both Aspirin Groups

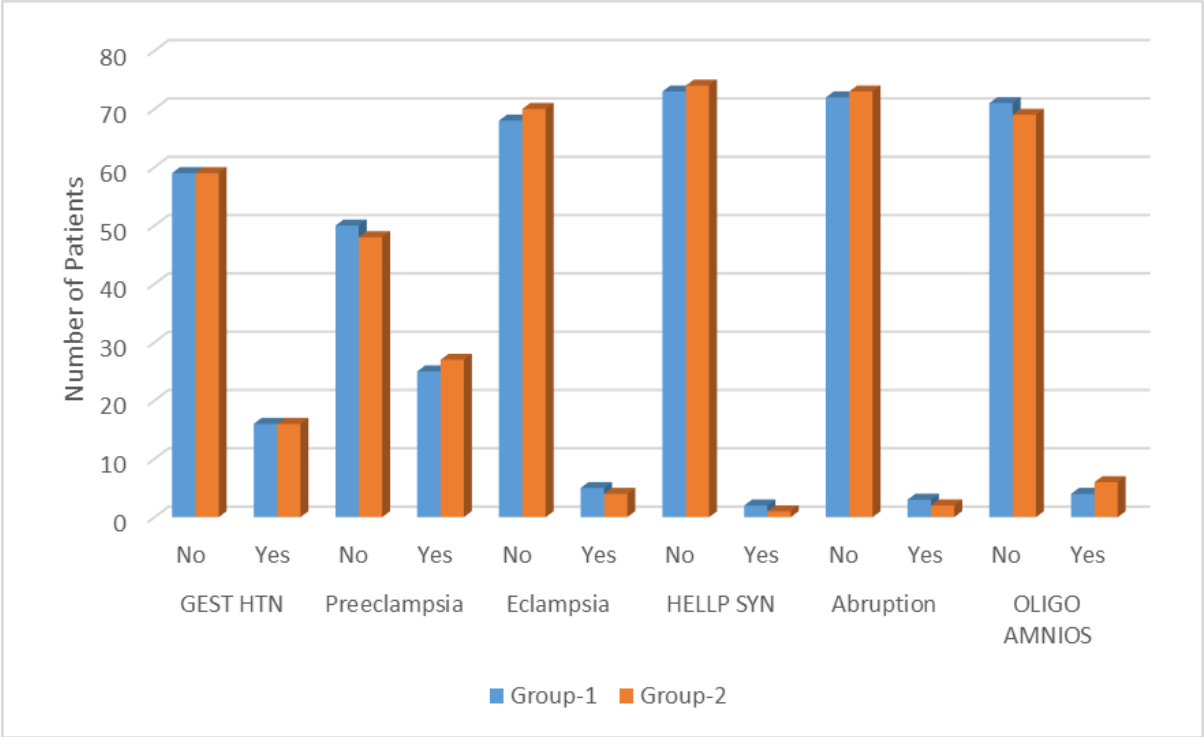

Figure 2a: Association of Comparison of Maternal and Perinatal Outcomes between 75 mg and 150 mg Aspirin in High-Risk Pregnancies

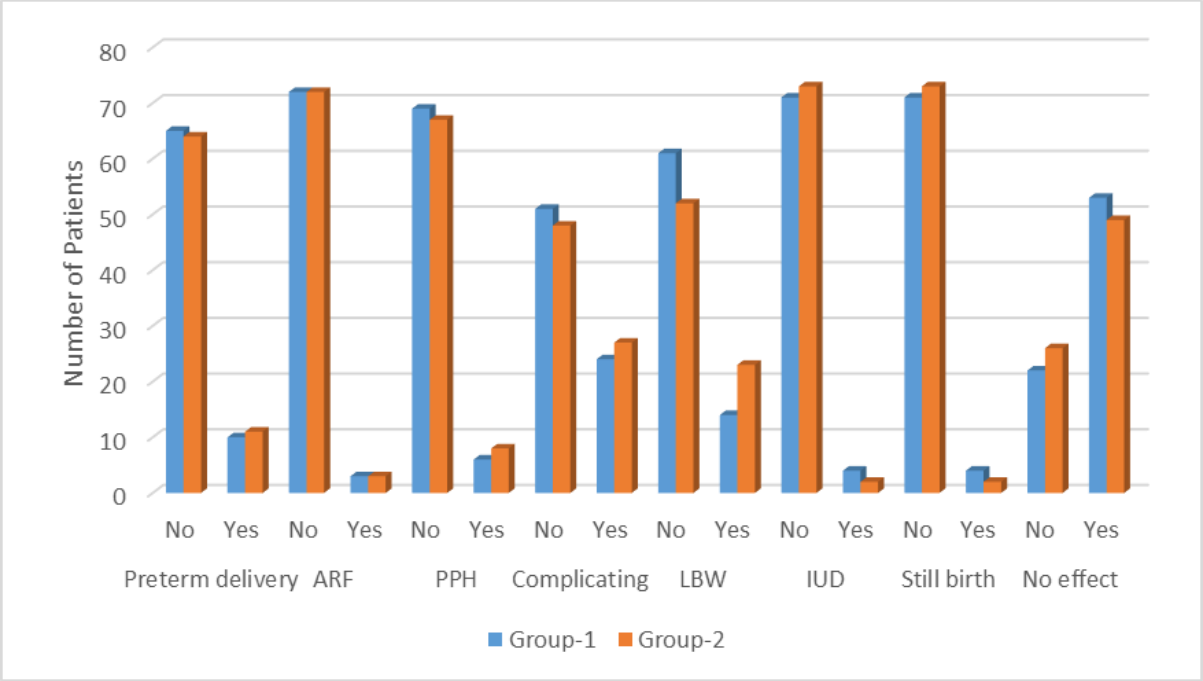

Figure 2b: Association of Comparison of Maternal and Perinatal Outcomes between 75 mg and 150 mg Aspirin in High-Risk Pregnancies

In our study of 150 high-risk pregnant women, the majority of participants were aged 21–25 years (39.3%), followed by ≤20 years (29.3%), 26–30 years (22%), 31–35 years (5.3%), and <35 years (4%). Regarding educational status, most women had primary education (42%), followed by secondary education (28.7%), high secondary (26%), and graduation (3.3%). In our study, most participants in both groups had a BMI ≤25 (Group-1: 89.3%, Group-2: 86.7%) and no previous history of preeclampsia (Group-1: 88%, Group-2: 82.7%). Multifetal pregnancies were present in 16% of Group-1 and 20% of Group-2, while autoimmune disorders (APLA), preexisting diabetes, and preexisting hypertension were relatively low across both groups. History of IUFD, renal disease, and IVF pregnancies were also uncommon. Family history of preeclampsia was noted in 12% of Group-1 and 17.3% of Group-2, and a pregnancy gap >10 years occurred in 7.3% of participants overall. Overall, the baseline risk factors were similarly distributed between the two aspirin groups.

In our study, gestational hypertension occurred in 21.3% of participants in both groups. Preeclampsia developed in 33.3% of Group-1 and 36% of Group-2, while eclampsia was noted in 6% overall. HELLP syndrome and placental abruption were rare (2% and 3.3%, respectively), and oligohydramnios occurred in 6.7% of cases. Preterm delivery affected 14% of participants, acute renal failure 4%, and postpartum hemorrhage 9.3%. Overall complications were observed in 34% of patients. Low birth weight occurred in 24.7%, while intrauterine death and stillbirth were each 4%. No effect of aspirin was noted in 32% of cases, with 68% showing a positive response.

Discussion

Your study observed that the majority of participants were aged 21–25 years (39.3%), followed by ≤20 years (29.3%), 26–30 years (22%), 31–35 years (5.3%), and <35 years (4%). Most women had primary education (42%), followed by secondary education (28.7%), high secondary (26%), and graduation (3.3%). In similar study by Zhang Y et al [11] (2025) found that this systematic review discusses the increasing prevalence of high-risk pregnancies, particularly among younger women with lower educational levels, aligning with your findings.

Your study found that baseline risk factors were relatively evenly distributed between the two aspirin groups. Most participants had a BMI ≤25 (Group-1: 89.3%, Group-2: 86.7%), and the majority had no previous history of preeclampsia (Group-1: 88%, Group-2: 82.7%). In others study by McElrath TF et al [12](2025) showed that This cohort study examines the distribution of risk factors among high-risk pregnant individuals and their association with aspirin prophylaxis, supporting the comparability of baseline characteristics between groups. Your study observed that pregnancy complications occurred in a subset of participants, with gestational hypertension in 21.3% of both groups, and preeclampsia in 33.3% of Group-1 and 36% of Group-2. Aspirin prophylaxis showed a positive

effect in 68% of participants, while 32% showed no effect. In similar study by Wang W et al [13](2025) showed that this study evaluates the impact of low-dose aspirin on pregnancy outcomes, finding significant reductions in preterm preeclampsia and intrauterine growth restriction, with varying effects on other complications.

Conclusion

We concluded that younger women with lower educational attainment made up a sizable share of the cohort in our study comparing 75 mg and 150 mg aspirin for the prevention of preeclampsia in high-risk pregnancies. A credible evaluation of aspirin efficacy was supported by baseline risk variables that were similar between the two aspirin groups, with the majority of individuals having a BMI ≤25 and no prior history of preeclampsia. A subgroup of patients experienced pregnancy problems, including as preeclampsia and gestational hypertension. Low-dose aspirin prophylaxis was successful overall in 68% of instances, suggesting that difficulties for mothers and newborns can be considerably decreased with early detection and prompt action.

References

1. American College of Obstetricians and Gynecologists. Task Force on Hypertension in Pregnancy. Hypertension in Pregnancy. Obstet Gynecol. 2013;122(5):1122–31.
2. Duley L. The global impact of pre-eclampsia and eclampsia. Semin Perinatol. 2009; 33(3): 130–7.
3. Bujold E, Roberge S, Lacasse Y, et al. Prevention of preeclampsia and intrauterine growth restriction with aspirin started in early pregnancy: a meta-analysis. Obstet Gynecol. 2010; 116(2 Pt 1):402–14.
4. Roberge S, Bujold E, Nicolaides KH. Aspirin for the prevention of preterm and term preeclampsia: systematic review and meta-analysis. Am J Obstet Gynecol. 2018; 218(3): 287–93.e1.
5. World Health Organization. WHO recommendations for prevention and treatment of pre-eclampsia and eclampsia. Geneva: WHO; 2011.
6. National Institute for Health and Care Excellence (NICE). Hypertension in pregnancy: diagnosis and management. NICE guideline [NG133]; 2019.
7. ACOG Committee Opinion No. 743: Low-dose aspirin use during pregnancy. Obstet Gynecol. 2018;132(1):e44–52.
8. Askie LM, Duley L, Henderson-Smart DJ, Stewart LA; PARIS Collaborative Group. Antiplatelet agents for prevention of pre-eclampsia: a meta-analysis of individual patient data. Lancet. 2007;369(9575):1791–8.
9. Rolnik DL, Wright D, Poon LC, et al. Aspirin versus placebo in pregnancies at high risk for preterm preeclampsia. N Engl J Med. 2017;377(7):613–22.
10. Roberge S, Villa P, Nicolaides K, et al. Early administration of low-dose aspirin for the prevention of preterm and term preeclampsia: A systematic review and meta-analysis. Fetal Diagn Ther. 2012;31(3):141–6.
11. Zhang Y, et al. Pregnancy with multiple high-risk factors: a systematic review. BMC Pregnancy Childbirth. 2025; 25(1):118.
12. McElrath TF, et al. Utility of the US Preventive Services Task Force for preeclampsia risk assessment and aspirin prophylaxis. JAMA Netw Open. 2025; 8(8):m e2530317.
13. Wang W, et al. Evaluation of low-dose aspirin on pregnancy outcomes. BMC Pregnancy Childbirth. 2025; 25(1):118.