J. Pharm. Tech. Res. Management Vol. 9, No. 2 (2021), pp.99–107

CHITKARA

Journal of Pharmaceutical Technology Research and Management
Journal homepage: https://jptrm.chitkara.edu.in/

Low Dose Aspirin as Prophylaxis Reduces the Incidence of Preeclampsia in Women at High Risk - A Review

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ARTICLE INFORMATION

Received: July 14, 2021
Revised: September 20, 2021
Accepted: October 27, 2021
Published Online: November 08, 2021

Keywords:
Preeclampsia, Hypertension, Pregnancy, Aspirin

DOI: 10.15415/jptrm.2021.92010

ABSTRACT

Only pregnant women are susceptible to preeclampsia, a disorder that raises blood pressure and results in proteinuria, edema, or both. Although aspirin is not widely used due to safety and efficacy concerns, it is thought that high-risk pregnant women who take low doses of aspirin can avoid preeclampsia. Several clinical studies are been out on high-risk female patients to prevent preeclampsia with low dose aspirin (60-150 mg). Using a combination of keywords, the literature database that is available on multiple peer-reviewed national and international journals was searched electronically. Between 8 and 28 weeks of gestation, aspirin 100 mg or 150 mg was given together with a placebo to high-risk pregnant women in 11 RCTs. According to the existing research, preeclampsia and its associated foetal and maternal problems can be prevented or when high-risk pregnant women are given low-dose aspirin between 12 and 28 weeks of gestation, especially at night, the risk is decreased.

1. Introduction

High blood pressure is a medical disorder where the blood pushes against the vessel wall for a prolonged period of time, eventually resulting in conditions like heart disease. Uncontrolled high blood pressure raises the risk of significant health problems like heart attack and stroke. Pregnancy-related arterial hypertension is the most prevalent illness. Several of the most typical pregnancy issues include Pre-eclampsia, infections, gestational diabetes, miscarriage, or iron deficiency anemia. The classification of pregnancy-related hypertension is suggested by the working group for the National Program for Education on Hypertension in Pregnancy. There are four primary categories of hypertension disorders that affect pregnant women: Chronic venous hypertension, combined preeclampsia and eclampsia, and preeclampsia on top of preeclampsia superimposed and chronic arterial hypertension (Hladunewich, 2017).

Pre-eclampsia is the most common symptom of hypertension (140/90 mmHg) with proteinuria, and it affects 6 to 8% of all pregnancies globally (300 mg per 24 hours in the urine) (Bello NA, 2013). The common endothelial dysfunction, clinical signs of multiple organ systems like hypertension, proteinuria, cerebral (edema, occipital headache or seizure), liver function, elevated liver enzyme levels, and low platelet count are thought to be the actions of abnormalities in the blood vessels that supply the placenta, which lead to poor placental perfusion (Bello, 2013). In addition to pre-eclampsia, there is a significant, immediate rise in blood pressure, with or without proteinuria. Preeclampsia can cause eclampsia, a potentially fatal condition that can develop antepartum (53%), intrapartum, or after delivery (Hitti, 2018). Pre-eclampsia increases maternal and fetal/neonatal risk, and because the correct diagnosis is frequently missed, a high level of clinical suspicion is advised. Pre-eclampsia complicates 20–25 percent of pregnancies among women with chronic hypertension, where it is much more common than in the general population (Singh, 2022). The unfavorable effects of complex pregnancies that are increased by hypertension include preterm birth, intrauterine growth restriction (IUGR), baby death, acute renal or hepatic failure, antepartum haemorrhage, postpartum haemorrhage, and maternal death (Aronow WS, 2017). Preeclampsia comes in two varieties: moderate and severe.[6] Hypertension (blood pressure >140/90) on two instances separated by at least six hours is what is referred to as mild PE. Severe PE is a situation where both the systolic and diastolic blood pressure are raised on two distinct occasions, at least six

ISSN No.: 2321-2217(Print) ISSN No.: 2321-2225(Online); Registration No. : CHAENG/2013/50088

hours apart. In two random urine samples obtained at least 4 hours apart, there must be at least 3+ proteinuria (at least 5 g/24-hour collections) or proteinuria (Siddiqui, 2019). Treating the hypertension does not modify the development of illness. However, it has been demonstrated that receiving therapy quickly reduces both the frequency of hypertensive crises and the incidence of newborn problems.

1.2. Risk Factors Associated with Preeclampsia

- Women are more likely to acquire the illness if they have a history of preeclampsia, multiple pregnancies, chronic hypertension, or renal failure (Al-Duqhaishi, 2022). Additionally, a woman was more likely to experience those problems in her subsequent pregnancies, especially if her first single pregnancy resulted in a severe spontaneous premature birth or foetal development deviation. An adaptation of 10 Factors increasing the risk of preeclampsia (Lin L, 2021). First pregnancy, preeclampsia in a previous pregnancy, less than 10 years since the previous pregnancy, age 40, body mass index of 35 or higher at the time of booking, a family history of preclampsia (especially involving the mother or sister), a diastolic blood pressure of less than 80 mm Hg, multiple pregnancies, having preexisting illness like diabetes, chronic kidney disease, diabetes, chronic hypertension, or the existence of antiphospholipid antibodies (Wallace, 2016).
- Gestational Age**:** If preeclampsia manifested in a first pregnancy with birth between 32 and 36 weeks of gestation, the risk of preeclampsia in a subsequent pregnancy rose from 14.1 percent to 25.3 percent. When foetal growth in the first pregnancy was 2-3 standard deviations below the mean, preeclampsia risk increased from 1.1 to 1.8 percent in the second pregnancy. Preeclampsia seems to be particularly dangerous for primigravid patients (Fox R, 2019).
- Maternal Age: Preeclampsia risk increases for women 35 years of age and older (Fox R , 2005).
- Additional risk factors: While certain risk factors increase placental bulk and poor placental perfusion as a result of vascular anomalies, others lead to poor placentation and poor placental perfusion (Khalil, 2017).
- Obesity, thrombophilia, donor insemination, urinary tract infection, and diabetes mellitus are additional preeclampsia risk factors. Even if gestational diabetes was diagnosed and treated early, women with pre-existing diabetes, collagen vascular disease, or periodontal disease, as well as preeclampsia or other pregnancy-related hypertension diseases appear to still be at elevated risk for adverse pregnancy outcomes (Purswani, 2017). According to one literature analysis, preeclampsia and foetal growth restriction are two conditions that may be made more likely by maternal vitamin D deficiency.
- Another study found that a group of women with a significant risk of preeclampsia frequently had vitamin D deficiency or insufficiency. However, it wasn't linked to a higher risk of having a poor pregnancy result later on (Jarvie JL, , 2018). Body mass index (BMI) has a strong inverse relationship with preeclampsia risk, increasing with BMI from 4.3 percent for women with a BMI under 20 kg/m^2 to 13.3 percent for those with a BMI above 35 kg/m^2 (Bond, 2022). As the pregnancy progressed, preeclampsia became more prevalent; its early-onset rate was 0.38 percent, but its late-onset rate was 2.72 percent (Tolcher, 2021).

1.3. Treatment of Pregnancy Induced Hypertension

All antihypertensive medications have either been demonstrated to pass the placenta and enter the foetal circulation or are thought to do so. Pregnancy hypertension treatment aims to prevent the mother from having dangerously high blood pressure while also enabling the continuation of the pregnancy and normal development of the foetus (Rolnik, 2017).

1.4. Drug Treatment of Severe Hypertension

Women with severe hypertension (> 170/110 mm Hg), which is typically caused by severe pre-eclampsia, continue to have a high mortality and morbidity rate. Due to the constriction of the circulating plasma volume, women may be more susceptible to relatively low dosages of antihypertensive medications (including diuretics), placing them at risk for sharp decreases in blood pressure. Admission is necessary for preeclampsia that is critical care-worthy, generally as a result of respiratory failure or the start of a severe systemic inflammatory response syndrome (SIRS). Seizure prophylaxis with intravenous magnesium sulphate may be required in this case. Hydralazine should be provided following a colloid challenge to decrease reflex tachycardia and unexpected hypotension brought on by vasodilatation of a volume-contracted circulation. Given their high risk, these women should get treatment in a high dependency facility (Rolnik, 2017).

- Magnesium sulphate and other anticonvulsants for preeclampsia: Magnesium sulphate significantly reduces the risk of eclampsia and probably reduces maternal mortality (Villa, 2015). Magnesium sulphates reduce the risk ratio of maternal death and seizure recurrence in eclamptic women when compared to diazepam.

- Low dose aspirin, between 75 and 150 mg, is advised for the prevention of preeclampsia during the prenatal period (Bij de Weg, 2020). There is evidence to suggest that 150 mg may be more effective (Roberge, 2013). High-risk pregnant women are advised to begin low-dose aspirin prophylaxis between weeks 12 and 28 of their pregnancy (preferably before week 16), and to continue taking it daily until birth. Aspirin was utilised in a variety of low dose forms. Pre-eclampsia has been linked to an imbalance between vasodilators and vaso-constricting prostaglandins.
- Since thromboxane generation is inhibited by aspirin at low doses more than prostacyclin production, the placenta should be protected from vasoconstriction and pathologic blood coagulation with no harmful side effects at all. When weighing advantages and hazards, keeping in mind the medical adage "primum non nocere," low dose aspirin use for the prevention of pre-eclampsia shouldn't be discouraged because it may have a moderate benefit while posing less concerns (Hermida, 1997).

2. Objective

In light of the aforementioned situation, this review article evaluates many research publications focuses on the administration of aspirin at varying doses (75 mg daily to 150 mg daily) to treat mild to severe preeclampsia. The major objective of this study is to assess the effectiveness and safety of low-dose aspirin (150 mg/day) as an intervention to prevent preeclampsia in high-risk women.

3. Material and Methods

Data Sources: Articles were exhaustively searched for using PubMed, Medline, the Database of Abstracts of Reviews of effects, and other electronic databases. Aspirin, acetylsalicylic acid, preeclampsia, maternal morbidity and mortality, and low-dose aspirin were utilized as medical subject headings (MeSH) terms and keywords in the search.

Study Selection: Two meta-analyses and women at high risk of preeclampsia who took either 100 mg or 150 mg of aspirin with a placebo were both eligible. Studies in the English language of a good to fair quality were included.

Data Extraction: For a more thorough analysis, all papers were sorted by citations and abstracts. Then, for a thorough assessment of the research, selected pertinent abstracts and citations were chosen. Authors independently reviewed all possibly qualifying trials. Discussion was used to settle disagreements.

Data Synthesis: There were 11 RCTs with high-risk women who received aspirin 100 or 150 mg between 8 and 28 weeks of pregnancy. One of the eleven RCTs uses chronotherapy and low-dose aspirin to avoid pregnancy complications.

4. Observations and Results

The following were the descriptive details of the trials:

- Rolnik et al 2017's (ASPRE trial) study involved randomly assigning 1776 singleton pregnant women who were at high risk of preterm preeclampsia to either take 150 mg of aspirin daily or a placebo. Till 36 weeks of gestation, they were supposed to take between 11 and 14 weeks. A placebo-controlled, double-blind experiment was run. The main outcome was preeclampsia-related deliveries before 37 weeks of gestation. A total of 152 women abandoned their participation in the experiment, and 4 were unable to complete it. There were 798 individuals in the aspirin group and 822 individuals in the placebo group as a consequence. Compared to 35 patients (4.3 percent) in the placebo group, 13 patients (1.6 percent) in the aspirin group experienced preterm preeclampsia (odds ratio in the aspirin group, 0.38; 95 percent confidence range, 0.20 to 0.74; P=0.004). Results from a sensitivity analysis were not significantly impacted, therefore participants who withdrew or couldn't continue the study were considered in the interpretation. 85 percent or more of the recommended number of pills were consumed in the 79.9 percent of participants with good adherence. The incidence of other adverse events or neonatal bad outcomes showed no discernible between-group differences. Treatment of high-risk women with low-dose aspirin led to a reduced prevalence of this diagnosis than placebo for preterm preeclampsia (Rolnik, 2017).
- Villa 2015 - They used colour and pulsed Doppler to evaluate the flow in the uterine arteries in 19,950 singleton foetuses between 22 and 24 weeks of gestation. Women who took part in a randomised study and displayed higher impedance either got a daily dose of 150 mg of aspirin or a placebo. Between the two groups, the prevalence of pre-eclampsia and the extra consequences of impaired placentation were compared. 844 women (4.2%) were found to be at high risk of uteroplacental insufficiency through screening research. 560 women were then randomly randomised to receive either a daily dose of 150 mg of aspirin or a placebo. Pre-eclampsia incidence did not differ significantly between the aspirin and placebo groups (18% vs. 19%, P = 0.6), nor did pre-eclampsia

necessitating delivery before 34 weeks (6% vs. 8%, P = 0.36). Aspirin administration also had no appreciable impact on the frequency of preterm birth (24 percent vs. 27 percent, P = 0.46), perinatal death (3 percent vs. 1 percent, P = 0.33), placental abruption (4 percent vs. 2 percent, P = 0.12), or birth weight below the fifth centile (22 percent vs. 24 percent, P = 0.4). After 23 weeks of pregnancy, using 150 mg of aspirin daily did not prevent pre-eclampsia from developing, as seen by increased resistance to flow in the uterine arteries in pregnancies with poor placentation (Villa, 2015).

- Bij de Weg JM, 2020- 350 high-risk expectant women took part in a prospective, randomised, double-blind, placebo-controlled chronotherapy study, 183 of whom were nulliparous. At the time of recruitment, the subjects were 30.7 5.3 (mean SD) years old, with gestations of 13.5 1.4 weeks. The women were randomly assigned to one of six groups and given a therapy (placebo or ASA, 100 mg/d) and timing (upon awakening, 8 hours after awakening, or at bedtime). Between weeks 12 and 16 of pregnancy, the intervention started, and it continued all the way until delivery (Bij de Weg, 2020). Ambulatory monitoring (ABPM) was used to measure blood pressure (BP) for 48 hours at baseline, every 2 weeks till delivery, and every 4 weeks throughout puerperium until the seventh month of pregnancy. The timing of the ASA administration clearly affected the effects on ambulatory blood pressure. For instance, ASA did not alter BP when administered immediately after waking up, but low-dose ASA dramatically lowered it when administered eight hours later, and even more so at bedtime ($p<0.001$). There was no statistically significant change in 24-hour blood pressure between the groups of women who drank ASA at different circadian periods at puerperium, 6–8 weeks after the medication's termination. Women using low doses of ASA saw considerably lower risks of serious adverse events such intrauterine growth retardation (IUGR), a condition characterised by preeclampsia, premature delivery, and stillbirth (95 percent confidence interval [CI]:.22-.56; p .001). IUGR, gestational hypertension, preterm birth, and preeclampsia all exhibited HRs that was suggestively lower with ASA than with placebo (p always .041). Here, there were negligible and minute differences between the low-dose ASA administered as soon as you woke up and the placebo in terms of the results In terms of the likelihood of serious adverse outcomes, women who took ASA in the evening or just before bed performed much worse than those who took it in the morning. This included preterm birth, preeclampsia, IUGR, and gestational hypertension (Scazzocchio, 1989).
- Roberge S 2017- The goal is to investigate how aspirin affects high-risk women's ability to prevent pre-eclampsia. a placebo-controlled, double-blinded, randomised experiment. Pre-eclampsia risk factors and abnormal uterine artery Doppler velocimetry were present in 152 women in total. Participants were randomly allocated to start taking either 100 mg of aspirin daily or a placebo at 12 + 0 to 13 + 6 weeks + days of gestation. Due to the limited power of this experiment, they also directed a meta-analysis of randomised controlled trials that contained information on 346 women with anomalous uterine artery Doppler flow velocimetry and aspirin 50-150 mg/day starting at or before 16 weeks of pregnancy (Roberge, 2017).
- The major outcomes are birth weight standard deviation (SD) score, gestational hypertension, and pre-eclampsia. The outcome measures for the meta-analysis were pre-eclampsia, severe pre-eclampsia, preterm (verified 37 + 0 weeks of gestation), and term pre-eclampsia. Randomly chosen from among 152 women, 121 were used in the analysis's final results. Low-dose aspirin did not reduce the risk of developing pre-eclampsia, gestational hypertension, early-onset pre-eclampsia (diagnosed at 34 + 0 weeks of gestation), severe pre-eclampsia, or early-onset pre-eclampsia (relative risk [RR] 0.7, 95 percent confidence interval [CI] 0.3-1.7), and the findings were not statistically significant in a way-to- The risk of pre-eclampsia and severe pre-eclampsia was observed to be reduced by taking low-dose aspirin before 16 weeks of pregnancy (RR = 0.6, 95% CI = 0.4-0.8). (RR 0.3, 95 percent CI 0.1-0.7). According to the trial's findings, aspirin had no statistically meaningful impact on high-risk women's risk of pre-eclampsia (Scazzocchio E).
- Hermida RC 1997- Pregnant women who were at risk of developing prenatal hypertension or preeclampsia were administered low-dose acetylsalicylic acid (aspirin) at various times during the day in accordance with their rest-activity cycle. A double-blind, random, controlled experiment was performed on 100 pregnant women. For each subject, blood pressure was continually taken every two days every four weeks from the day of registration until delivery. Depending on the medication they took (placebo, 50 participants; aspirin, 100 mg/d; starting from 12 to 16 weeks of pregnancy) and when they took it (upon awakening, 8 hours later, or right before sleep), women were randomly assigned to one of six groups (time 3). Results: (1) No effect of placebo on blood pressure at any time (P>.212) and (2) a time-dependent, highly statistically significant effect of aspirin on blood pressure (P.001). When compared to placebo, aspirin had no effect on blood

pressure at time 1, but after that, and especially at time 2, the blood pressure was significantly lower (mean reduction of 12 and 8mm Hg in 24 hours for systolic and diastolic blood pressure, respectively, at the time of delivery compared with placebo given at the same time). These aspirin-related effects on blood pressure that vary over time should be taken into consideration for the optimal long-term aspirin treatment at low doses for the prevention of preeclampsia (Hermida, 1997).

- Scazzocchio. et al. 1989- Aspirin dosage was evaluated in a prospective, randomised, double-blind, placebo-controlled experiment to alter prostaglandin metabolism and prevent pregnancy-induced hypertension. A total of 791 pregnant women with various risk factors underwent the rollover test at weeks 28 or 29 to determine whether they had pre-eclamptic toxaemia. Out of 69 women who had abnormal results, aspirin (100 mg; 34 women) or a placebo (31 women) were given daily doses to 65 trial participants throughout the third trimester of pregnancy (an increase in blood pressure during the rollover test). Preeclamptic toxaemia and pregnancy-related hypertension were both suggestively less common in aspirin-treated women than in placebo-treated women (4 [11.8 percent] vs. 11 [35.5 percent] vs. P = 0.024 and P = 0.019, respectively). The mean ratio of serum levels of thromboxane A2 to those of prostacyclin metabolites in the aspirin-treated group declined by 34.7 percent after three weeks of treatment, whereas it increased by 51.2 percent in the placebo-treated group. Neither the mother nor the infant in either group experienced any severe side effects from the treatment. The frequency of pregnancy-induced hypertension and pre-eclamptic toxaemia was significantly reduced in the third trimester of pregnancy by high-risk pregnant women using low daily doses of aspirin (Scazzocchio, 1989).
- Scazzocchio E 1996- This study aims to assess the efficacy of colour Doppler imaging of the uterine arteries as a screening test in nulliparous women and low-dose aspirin therapy in pregnancies with abnormal uteroplacental resistance. 955 nulliparous women had colour Doppler imaging of the uterine arteries during the standard 18-week foetal morphology ultrasound examination. If their uterine artery waveforms were abnormal, they were encouraged to participate in an aspirin therapy randomised controlled trial. Women with normal or aberrant flow velocity waveforms, as well as the two intervention trial arms, were compared for pregnancy outcomes. 102 of the 186 women with abnormal uteroplacental resistance consented to have low-dose aspirin (100 mg/day) or a placebo, according to a random assignment. When aberrant uterine artery flow velocity waveforms were detected, there were statistically significant increases in preeclampsia (11 versus 4%), birth weight below the tenth percentile (28 versus 11%), and poor pregnancy outcomes (45 versus 28 percent). Results: Preventive aspirin use had little to no effect on pregnancy complications. Abnormal uteroplacental resistance was found to be linked to a considerable rise in unfavourable pregnancy outcomes at 18 weeks' gestation. The risks of pregnancy issues in women with uteroplacental insufficiency were not reduced by low-dose aspirin (Scazzocchio, 1996).
- According to a recent meta-analysis, if low dose aspirin is given early enough in pregnancy and at an adequate dose throughout pregnancy, pre-eclampsia in nulliparous women may be reduced by more than half. (more than 75 mg). Several centres were involved in a randomised, double-blind, placebo-controlled experiment. The recruitment process involved 3,294 nulliparous females between the ages of 14 and 20 weeks by enrolling participants and randomly assigning them to either 100 mg of aspirin or a placebo each day for 34 weeks. Pre-eclampsia affected 28 out of 1632 women (1.7%) compared to 26 out of 1637 mothers (1.6%); relative risk, RR, 1.08, 95% The rate of perinatal deaths among children, HELLP syndrome, placental abruption, or birth weight below the 10th centile did not differ significantly between the aspirin (n = 1644) and placebo (n = 1650) groups. Without apparent explanation, the aspirin group had a suggestively greater rate of infants with birth weights below the third centile. Due primarily to a considerably higher prevalence of haemorrhage, the aspirin group suffered more maternal adverse effects than the control group. Consequently, the incidence of pre-eclampsia did not reduce when 100 mg of aspirin was given to nulliparous women. Aspirin (100mg) is linked to an increase in bleeding (Subtil, et al. 2003).
- Ali MK 2017- This study seeks to ascertain whether low-dose, slow-release aspirin will minimise pregnancy complications in women who are at high risk of getting pre-eclampsia, having a baby that is small for gestational age (SGA), or experiencing other uteroplacental insufficiency-related issues. a prospective, randomised management study. 1,022 mixed-parity women had colour flow/pulsed Doppler (CFPD) imaging of the uterine arteries during the 17-23 week (mean 19.9) anomaly scan. Women who were randomly allocated to a control or treatment group had positive screening results. Daily 100-mg slow-release aspirin (Disprin CV) was given to the therapy group, and they were also periodically monitored. The regular group of women received typical prenatal care. Pre-eclampsia was the

main cause of actions and the third centile of SGA. Secondary outcome actions were placental abruption, pre-eclampsia requiring delivery prior to 34 weeks, an Apgar score of under seven at five minutes, an SGA below the 10th centile, admission to a newborn critical care unit, and pregnancies that resulted in stillbirth or neonatal fatality. For both severe and any problems, probability ratios (OR) with 95% confidence intervals (CI) were computed. There were 216 women who were selected after meeting the screening's various requirements. There were 113 women with in control group and 103 women randomized to the therapy group. The difference between the control and treatment groups in pre-eclampsia prevalence and SGA 3rd centile did not approach statistical significance. The therapy group had a statistically significant decreased risk of any (OR 0.41 (CI 0.35-0.45), P 0.01) and serious pregnancy issues (OR 0.43 (CI 0.21-0.84), P 0.05) than the controls. Results: By the time the women were 20 weeks along in their pregnancy, pre-eclampsia or the delivery of SGA babies had not changed significantly when slow-release aspirin was administered to high-risk pregnant women. It did, however, improve the outcome by lowering the overall incidence of issues brought on by uteroplacental insufficiency (Ali, 2017).

- Dutta S,2019 - Early low doses of aspirin (100 mg daily) were administered to a homogeneous sample of women (8-10 weeks). The first pregnancy's improved prognosis for gestational hypertension disorders. In addition, a total of 164 women received treatment (82) or served as controls (82). The relative risk of developing gestational hypertensive disorders had a confidence interval of 0.01-0.51, with a condensed value of 0.07. Negative effects on the mothers as well as teratogenicity and fetotoxicity were not discovered. Conclusion: Only one instance of GHT occurred in the treatment group, compared to 13 out of 82 patients (4 cases of PE and 9 occurrences of GHT) in the non-treated group who had hypertensive gravidae disease ((Bakhti, 2011).
- Asefa F et al. 2020 - Finding out whether aspirin (ASA) therapy reduces the occurrence of pre-eclampsia in women who are at high risk for contracting this condition is the aim of the study. A clinical experiment was conducted in a random manner. The pregnant women who were selected for recruitment had to meet the following requirements: chronic hypertension, intrauterine growth retardation (IUGR), history of severe pre-eclampsia or eclampsia, or intrauterine foetal death. 16 women in the ASA group and 19 women in the control group were successfully surveyed up. The ASA group had a higher mean birthweight than the control group (2790 g (S.D. 340 g) compared to 2616 g (S.D. 779 g)), but the difference was not statistically significant. No statistically significant percentage differences were between the groups. The percentage of infants delivered with birthweights under 2500 g (13.3 percent versus 29.4 percent) and the number of pregnancies with pregnancy-induced hypertension (PIH)/pre-eclampsia cases were not statistically different across the groups (31.3 percent versus 36.8 percent). Therefore, based on the few information available, early ASA treatment in pregnant women at risk for PIH and IUGR is likely to be successful (Asefa, 2004).
- 2018 (Meta-Analysis) Guizani M - Preeclampsia is usually treated with low-dose aspirin. Nevertheless, inconsistent results from several studies have been found. The goal of the trial was to assess whether low-dose aspirin may prevent preeclampsia in pregnant women at high and low risk. Using the PUBMED search engine and the Cochrane Clinical Trial registry, a total of 19 randomised control trials were located. Groups of study participants at high and low risk were separated. The relative risks (RR) and 95 percent confidence intervals (CI) for preeclampsia in women using low dosage aspirin or a placebo were estimated. 16550 of the 28237 participants fell into the low-risk category, and 11687 fell into the high-risk category. It was 7.8% for the placebo group and 6.9% for the aspirin group. In the high-risk group, aspirin use was associated with a 21 percent reduction in the incidence of preeclampsia (RR 0.79, 95 percent CI 0.65-0.97). Low-dose aspirin is therefore ineffective at reducing risk in populations with low risk (RR 0.86, 95 percent CI 0.64-1.17). Preeclampsia prevention in women who are considered to be at high risk for the condition is minimally affected by it. For the low-risk group, it does little to lessen risk. 7.4 percent of cases had preeclampsia overall (Guizani, 2018).
- 2020's Villa (Meta-Analysis) Low-dose aspirin is expected to prevent preeclampsia in high-risk pregnancies, although it is rarely used due to uncertainties about its efficiency and safety. The authors conducted a meta-analysis of 29 randomised controlled studies to determine whether low dose aspirin is useful in reducing preeclampsia and its harmful effects (RCTs). It can reduce the risk of preeclampsia (odds ratio [OR], 0.71; 95 percent confidence interval [CI], 0.57-0.87), severe preeclampsia (odds ratio [OR], 0.37; 95 percent CI, 0.23-0.61), and early birth (OR, 0.81; 95 percent CI, 0.75-0.88). To reduce the risk of preeclampsia or IUGR, low-dose aspirin works better if taken prior to 16 weeks of pregnancy than if taken after. Taking low-dose aspirin before 16 weeks of pregnancy reduces the risk of preeclampsia or IUGR more than

taking it after. Low dose aspirin increases the likelihood of placental abruption but not the risk of major consequences (OR, 1.35; 95 percent CI, 1.05-1.73). Therefore, the evidence at hand points to its potential benefit in lowering preeclampsia, IUGR, and preterm birth in high-risk pregnancies without putting women or foetuses at undue danger (Villa, 2020).

5. Limitations

While the majority of the randomized clinical trials show a substantial difference in the prevention of preeclampsia with low-dose aspirin, other studies point to a less significant clinical effect. Both meta-analyses advise high-risk women to use low-dose aspirin. This discrepancy in the outcomes of various trials may be explained by significant heterogeneity. The breadth of the analysis was constrained or significantly hampered in the search for a relevant link due to a dearth of trustworthy data and diversity in the sample size of RCTs included.

Conclusion

According to the evidence that is now available, taking low dose aspirin has little effect on preventing preeclampsia in women who are deemed to be at a high risk for developing the illness. By taking low-dose aspirin once per day, ideally at night, you can lessen your risk of developing preeclampsia, gestational hypertension, early labour, and IUGR. Low-dose aspirin should be started between 12 and 28 weeks of pregnancy (preferably before 16 weeks), and continued daily until delivery. To determine the efficacy and safety of low dose aspirin in preeclamptic women, more research is necessary.

Future Research

This study highlights the need for large, carefully executed RCTs, preferably multi-centered, on the Indian population, assessing low dosage aspirin (50–150 mg) at various doses and initiating therapy at various weeks of gestational age in order to address the significant data dearth on the Indian population.

Acknowledgements

The authors are grateful to Dr. Madhu Chitkara, Pro Chancellor, Chitkara University, Punjab, India and Dr. Ashok K Chitkara, Chancellor, Chitkara University, Punjab, India, for their kind support and cooperation. Authors are also thankful to the management of MM (Deemed to be University), Mullana, Ambala, India for encouragement and necessary institutional facilities.

Funding

No funding was received in association with this manuscript.

Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Declaration

It is an original data and has neither been sent elsewhere nor published anywhere.

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Journal of Pharmaceutical Technology, Research and Management

Chitkara University, Saraswati Kendra, SCO 160-161, Sector 9-C, Chandigarh, 160009, India

Volume 9, Issue 2 **November 2021** **ISSN 2321-2217**