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The role of prophylactic aspirin intake in reducing the risk of development of preeclampsia among nonhigh-risk primigravidas in two tertiary hospitals in Dasmariñas and Imus, Cavite: A retrospective cohort study

Liezly Gayle F. Limos[1], May M. Nueva-Hipolito[1]

Abstract:

BACKGROUND: Pre-eclampsia is a multi-organ progressive disorder that is estimated to complicate 2 to 8% of pregnancies. Numerous studies on prophylactic aspirin intake among high-risk pregnant women has been established but studies involving low-risk primigravida women are limited.

OBJECTIVES: To determine if prophylactic intake of aspirin will reduce the occurrence of pre-eclampsia among primigravida women with no identified comorbidities and to determine the incidence and association of identified secondary outcomes.

METHODOLOGY: This retrospective cohort study was conducted from January 2018 to December 2020 in two (2) tertiary hospitals in the province of Cavite. Two hundred four (204) primigravida women with no identified co-morbidities and delivered to a singleton fetus, vaginally or operatively, were identified and included. In-patient and out-patient charts of primigravida women, with aspirin intake versus no aspirin intake, were reviewed. Primary outcome (pregnancy induced hypertension) and secondary outcomes (preterm delivery, small-for-gestational age infants, IUFD, HELLP syndrome and abruption placenta) were identified.

RESULTS: The mean age of patients was 27.1 years and 25.9 years in the aspirin and non-aspirin group, respectively. In aspirin group, 4.9% of the patients developed pre-eclampsia versus 9.8% in non-aspirin group showing statistical significance. The effect of aspirin across other hypertensive disorders of pregnancy were noted to be the same. However, influence of aspirin with the average blood pressure on admission and secondary outcomes were not statistically significant.

CONCLUSION: Prophylactic aspirin intake has a significant effect in preventing pre-eclampsia among non-high risk primigravida women but did not influence the average blood pressure on admission, development of preterm PIH, and development of the secondary outcomes.

Keywords:

Aspirin, preeclampsia, prevention, primigravida, prophylactic

[1]Department of Obstetrics and Gynecology, De La Salle University Medical Center, Dasmarinas City, Cavite, Philippines

Address for correspondence:
Dr. Liezly Gayle F. Limos, Department of Obstetrics and Gynecology, De La Salle University Medical Center, Governor D. Mangubat Avenue, Dasmarinas City 4114 Cavite, Philippines.
E-mail: lgf.limos@gmail.com

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Introduction

Preeclampsia is a multi-organ progressive disorder that is estimated to complicate 2%–8% of pregnancy and may cause a significant impact on maternal and neonatal morbidity.[1] Moreover, it is one of the leading causes of maternal and fetal deaths in the Philippines. Based on the special report of the Philippine Statistics Authority last 2015, CALABARZON region has the highest maternal deaths (15.3%) in the Philippines

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with eclampsia and preeclampsia as the two top most causes of maternal deaths, respectively.[2] Multiple risk factors have been documented and associated with preeclampsia which includes family history, nulliparity, egg donation, diabetes, and obesity. The United States Preventive Services Task Force (USPSTF) has set the risk criteria of the development of preeclampsia. Nulliparity is categorized to be a moderate risk factor in developing preeclampsia.

The pathophysiology of preeclampsia remains controversial. The most studied pathophysiology is the theory of abnormal placentation. Physiologic changes within the maternal vasculature are one of the most important features of human placental development. Its extensive modification by trophoblasts defines the uteroplacental blood flow and thus influences the development of pathologic conditions such as preeclampsia, fetal growth restriction, and preterm birth.[3] Other theories being associated with the development of preeclampsia are nonmodifiable. One of these is the theory of the presence of immunological factors. There is maternal immune tolerance to paternally derived antigens thus there is the development of acute graft rejection. Another non-modifiable theory of preeclampsia is the presence of genetic factors due to interactions of inherited genes that has a higher predisposition to the development of preeclampsia.

One of the theories in the development of preeclampsia is associated with endothelial cell activation that causes modifiable inflammatory changes. In this theory, there is an imbalance in the cyclooxygenase (COX) pathway between the vasodilators and vasoconstrictors by-products. Aspirin primarily works by inhibiting the two COX isoenzymes, COX-1, and COX-2, which both are important in the biosynthesis of prostaglandins (prostacyclin and thromboxane A2). At a dose-dependent administration, aspirin irreversibly acetylates COX-1 which decreases platelet synthesis of thromboxane A2 without influencing the production of prostacyclin at the vascular wall level. Thus, the effect would be a tilt of balance toward vasodilation of the vascular bed. The emergence of this theory instigated several propositions that aspirin given during the occurrence of placental development would have a significant positive impact on both maternal and fetal outcomes.

The use of aspirin in pregnancy has been subjected to different trials for several decades. However, these studies showed conflicting results of whether there is a true positive effect of the use of aspirin in relation with pregnancy-induced hypertension, especially preeclampsia. Current recommendations of the American College of Obstetricians and Gynecologists (ACOG) and the Society for Maternal and Fetal medicine recommend prophylactic low-dose aspirin of 81 mg/day in women at high risk of preeclampsia that should be initiated between 12 and 28 weeks of gestation. They also recommended to consider the administration of prophylactic aspirin in women with more than one of several moderate risk factors for preeclampsia.[4] However, studies regarding the effect of the administration of prophylactic aspirin and development of preeclampsia among women with the absence of any comorbidities that could complicate pregnancy is limited.

One of the first randomized trials by Beaufils *et al*., assessing the effect of aspirin on preeclampsia, they randomized 102 patients showing that antiplatelet therapy given in early pregnancy to high-risk patients may provide protection in placental-mediated complications.[5] In 1994, the Collaborative Low-dose Aspirin Study in Pregnancy (CLASP) trial was released which randomized 9364 pregnant women on the use of 60 mg aspirin. The trial showed a reduction in the incidence of preeclampsia but failed to establish a significant effect. However, the study demonstrated a significant trend in the reduction of preterm delivery among preeclamptic patients. Thus, the findings of the CLASP trial do not support routine prophylactic aspirin administration to all women at risk to reduce the development of preeclampsia but may be justified to be given to reduce the risk of preterm delivery. The study recommended to start prophylactic low-dose aspirin in the early second trimester.[6]

In a meta-analysis done by Askie *et al*. in 2007, several studies showed that antiplatelet agent administration as prophylactic primary prevention of preeclampsia showed a significant 10% reduction in the relative risk (RR) of both preeclampsia ($P = 0.004$) and preterm birth before 34 weeks' gestation ($P = 0.0011$). Included in the meta-analysis are 32,317 women in which 90% of the population had at least one risk factor (which could include primiparity).[7] A follow-up meta-analysis of this study compared the efficacy of antiplatelet therapy in preventing preeclampsia before or after 16 weeks of gestation. The study yielded no significant difference in the effects of antiplatelet therapy whether initiated before or after 16 weeks of gestation.[8]

The Combined Multimarker Screening and Randomized Patient Treatment with Aspirin for evidence-based preeclampsia prevention Trial done in 2017 is a prospective first-trimester multicenter study that showed a reduction in the incidence of preterm preeclampsia by 62% in women, between 11 + 0 and 13 + 6 weeks' gestation, given 150 mg aspirin daily until 36 weeks of gestation.[9]

In a recent randomized control study of Amin, *et al* (2020), administration of low dose aspirin showed a

statistical difference in the development of pre-eclampsia among primigravida women. However, significant overall risk reduction in the development of gestational hypertension and eclampsia was reduced but was not found to be statistically-significant.[10]

Objectives

General objectives

To determine if the prophylactic intake of aspirin reduced the occurrence of preeclampsia among primigravidas with no identified comorbidities.

Specific objectives

1. To determine the incidence of pregnancy-induced hypertension (gestational hypertension, preeclampsia, and eclampsia) among primigravidas with no identified comorbidities who are taking prophylactic aspirin versus those who are not taking prophylactic aspirin
2. To determine the association of prophylactic aspirin intake and the development of pregnancy-induced hypertension among primigravidas with no identified comorbidities
3. To determine the incidence of secondary outcomes (preterm delivery, small-for-gestational age, intrauterine fetal demise, HELLP syndrome, and abruption placenta) among primigravida who developed pregnancy-induced hypertension
4. To determine the association between prophylactic aspirin intake and the development of secondary outcomes among primigravidas who developed pregnancy-induced hypertension.

Methodology

This retrospective cohort study was conducted from January 2018 to December 2020 in two tertiary hospitals, both located in the province of Cavite. Primigravida women with no identified comorbidities and delivered to a singleton fetus, vaginally or operatively, between the two institutions were identified and included in the study. In-patient and out-patient charts were reviewed to identify subjects who were given prophylactic aspirin during their pregnancy.

Approvals from the technical board committee and independent ethics committee were secured before the initiation of the data collection. There were 102 subjects included in the aspirin arm and 102 subjects in the nonaspirin arm with a total of 204 subjects. The data collected from the chart review of the subjects included the following: prepregnancy weight (kg), weight on admission (kg), family history of hypertension, intake of aspirin – age of gestation (AOG) started and dose of aspirin, completed AOG on admission (weeks), blood pressure (BP) on admission (mmHg), neonatal outcome – weight of baby (g), gender, and maturity index. Subjects who were identified to have elevated BP on admission, additional data were collected: AOG (weeks) diagnosed to have BP elevation and highest BP recorded. Secondary outcomes were also recorded: the presence of HELLP syndrome, abruption placenta, small-for-gestational-age (SGA), prematurity, and intrauterine fetal death (IUFD).

Statistical analysis was conducted using StataCorp. 2019. Stata Statistical Software: Release 16. College Station, TX: StataCorp LLC 16.1 for Mac. Data are presented as means, standard deviation, frequencies, and percentages. Continuous variables were expressed as means ± standard deviation Categorical variables were expressed as frequencies with proportions. Logistic regression was used to assess the risk of pregnancy-induced hypertension and the effect of aspirin treatment on secondary (adverse) pregnancy outcomes by estimating the odds ratio (OR) and 95% confidence intervals (CIs) while controlling for age. A $P < 0.05$ was considered statistically significant. Multinomial logistic regression was used to assess the risk of pregnancy-induced hypertension across all categories (no hypertension, gestational hypertension, preeclampsia nonsevere, and preeclampsia severe) by estimating the RR ratio and 95% CIs while controlling for age. A $P < 0.05$ was considered statistically significant.

Results

A total of 204 primigravida women with no identified comorbidities were included in the study which comprises 102 women who were prescribed aspirin and 102 women who did not use aspirin during their pregnancy. The mean age of patients was 27.1 years in the aspirin group and 25.9 years in the nonaspirin group. Majority of the women who took aspirin belonged to the age range of 26–30 years old, while 21–25 years to the nonaspirin group. The average weight gain during pregnancy between two groups were 12.1 ± 4.1 kg and 11.8 ± 4.2 kg, for the aspirin and nonaspirin group, respectively. Family history of hypertension was taken into account and 52.9% of patients in the aspirin group has a family history of hypertension, while 46.1% from the nonaspirin group. Mean AOG at delivery were both identified to be term deliveries, 38.3 ± 1.6 weeks for the aspirin group and 37.9 ± 1.9 weeks for the nonaspirin group [Table 1].

The average BP was compared between the aspirin and nonaspirin groups. The average systolic BP was 119.0 mmHg in the aspirin group and 118.9 mmHg in the nonaspirin group in which both groups are within normal range. Similarly, the average diastolic BP was noted to be 77.7 mmHg for the aspirin group and

77.4 mmHg for the nonaspirin group. Both the mean systolic and diastolic BP are within the acceptable range, the distinction between the different means were statistically not significant [Table 2]. Comparing the severity of preeclampsia between the two groups, the aspirin group had a systolic BP and diastolic BP ranging 120–200/80–100 mmHg, while in the nonaspirin group had a range of 120–180/80–100 mmHg. Details of individual cases with pregnancy-induced hypertension in both study groups are shown in Table 3.

In the aspirin group, there was a total of 6 (5.9%) who developed pregnancy-induced hypertension. Out of the 6, two subjects developed pregnancy-induced hypertension preterm PIH (before 37 weeks) and 4 subjects developed term PIH (>37 weeks). For the nonaspirin group, there was a total of 21 (20.6%) who developed pregnancy-induced hypertension. Out of the 21, five subjects developed preterm PIH (<37 weeks) and 16 subjects developed term PIH (>37 weeks) [Figure 1]. The incidence of pregnancy-induced hypertension was significantly higher among the nonaspirin group than in the aspirin group. Focusing on preeclampsia *per se*, the incidence of preeclampsia is also higher among the nonaspirin group (10, 9.8%) versus aspirin group (5, 4.9%).

Majority of the subjects under the aspirin group, 85 (83.3%), were given aspirin before 16 weeks of gestation while 17 (16.7%) where started with aspirin after 16 weeks of gestation. Of the 85 subjects who were given aspirin before 16 weeks of gestation, 3 (3.5%) developed pregnancy-induced hypertension, while out of the 17 subjects who were given aspirin after 16 weeks of gestation, 3 (17.6%) also developed pregnancy-induced hypertension.

The association of aspirin intake and development of pregnancy-induced hypertension showed that for aspirin users, the odds of having pregnancy-induced hypertension are 0.241 times less than the odds for nonaspirin users. This finding is statistically significant (OR = 0.241 95% CI 0.093–0.626, P = 0.003). This shows that a primigravida woman who uses aspirin experiences a reduction of 76% in the odds of having pregnancy-induced hypertension.

Comparing the incidence across the different spectrum of pregnancy-induced hypertension, among aspirin users, 3.9% had preeclampsia severe, 0.98% had preeclampsia nonsevere, 0.98% had gestational hypertension, and 94% had no occurrence of pregnancy-induced hypertension [Table 4]. The risk of having no hypertension relative to preeclampsia severe increases by 2.2 times among aspirin users. Aspirin users are 120% more likely to have no hypertension than preeclampsia severe but 86% less likely to have gestational hypertension and 73% less likely to have preeclampsia nonsevere. However, the effect of aspirin on gestational hypertension versus no hypertension is the same as the effect of aspirin on preeclampsia severe versus no hypertension.

The incidence of secondary outcomes relative to the development of pregnancy-induced hypertension showed that 3 (2.9%) patients delivered preterm and 2 (2.0%) delivered small-for-gestational-age babies among aspirin users. In comparison to nonaspirin users, there were 6 (5.9%) preterm deliveries and 3 (2.9%) with small-for-gestational-age babies. There were no

Table 1: Sociodemographic and anthropometric details in the two study groups

Clinical characteristics	Aspirin group (*n*=102)	Nonaspirin group (*n*=102)
Age (years)		
18-20	5 (4.9)	9 (8.8)
21-25	31 (30.4)	43 (42.2)
26-30	40 (39.2)	37 (36.3)
31-34	26 (25.5)	13 (12.7)
Mean±SD	27.1±4.2	25.9±4.1
Prepregnancy weight (kg)	55.8±10.8	55.1±10.4
Weight on admission (kg)	67.9±11.1	66.9±11.5
Weight gain during pregnancy (kg)	12.1±4.1	11.8±4.2
Family history		
With family history	54 (52.9)	47 (46.1)
No family history	48 (47.1)	55 (53.9)
AOG at delivery (weeks)	38.3±1.6	37.9±1.9

SD: Standard deviation, AOG: Age of gestation

Table 2: Comparison of average blood pressure between the two study groups

	Mean±SD		*P*
	Aspirin group (*n*=102)	Nonaspirin group (*n*=102)	
SBP (mmHg)	119.0±14.3	118.9±19.3	0.485
DBP (mmHg)	77.7±8.4	77.4±10.1	0.382

BP: Blood pressure, SBP: Systolic BP, DBP: Diastolic BP, SD: Standard deviation

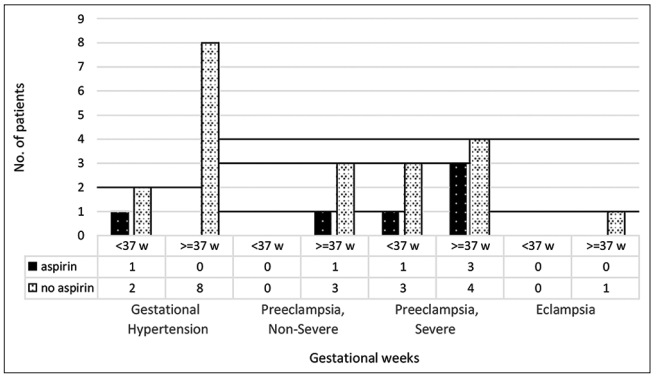

Figure 1: Graphical presentation of number of primigravida women developing hypertensive complication of pregnancy over gestational weeks

Table 3: Clinical and pathological details of pregnancy-induced hypertensive patients in the study

	Number	Pregnancy-induced hypertension	SBP (mmHg)	DBP (mmHg)	Urine albumin	ALT (U/L)	Platelet
Aspirin	1	Gestational hypertension	120	80	0	-	199
	2	Preeclampsia, severe	200	100	Trace	11	246
	3	Preeclampsia, nonsevere	150	90	0	15	176
	4	Preeclampsia, severe	120	80	0	17	274
	5	Preeclampsia, severe	170	100	3	23	228
	6	Preeclampsia, severe	160	90	3	7	358
Nonaspirin	1	Preeclampsia, nonsevere	140	90	-	-	-
	2	Preeclampsia, severe	140	100	0	-	270
	3	Preeclampsia, nonsevere	160	100	0	34	254
	4	Gestational hypertension	120	90	0	14	200
	5	Gestational hypertension	130	90	Trace	7	234
	6	Gestational hypertension	140	90	Trace	6	220
	7	Gestational hypertension	110	70	0	10	292
	8	Preeclampsia, severe	120	80	0	8	218
	9	Preeclampsia, severe	170	100	0	9	390
	10	Gestational hypertension	140	90	1	-	181
	11	Gestational hypertension	120	80	0	-	338
	12	Preeclampsia, severe	160	90	3	42	123
	13	Preeclampsia, severe	180	100	2	-	232
	14	Gestational hypertension	150	90	0	22	230
	15	Gestational hypertension	150	90	0	-	302
	16	Preeclampsia, severe	160	100	0	19	198
	17	Gestational hypertension	140	100	0	8	252
	18	Preeclampsia, nonsevere	160	100	0	25	220
	19	Eclampsia	90	60	0	20	479
	20	Preeclampsia, severe	140	90	3	14	226
	21	Gestational hypertension	130	80	0	-	206

BP: Blood pressure, SBP: Systolic BP, DBP: Diastolic BP, ALT: Alanine aminotransferase

Table 4: Comparison of pregnancy-induced hypertension between the two study groups

	Aspirin group (*n*=102), *n* (%)	Nonaspirin group (*n*=102), *n* (%)	RRR (95% CI)	*P*
Normal	96 (94.1)	81 (79.4)		
Gestational hypertension	1 (0.98)	10 (9.8)	0.063	0.010
Preeclampsia	5 (4.9)	10 (9.8)		
Nonsevere	1 (0.98)	3 (2.9)	0.122	0.091
Severe	4 (3.9)	7 (6.9)	0.441	0.214
Eclampsia	0	1 (0.98)	-	-

CI: Confidence interval, RRR: Relative risk ratio

Table 5: Incidence of secondary outcomes versus aspirin intake

	Aspirin group (*n*=102), *n* (%)	Nonaspirin group (*n*=102), *n* (%)	OR	*P*	AOR	*P*
Preterm delivery	3 (2.9)	6 (5.9)	0.485 (0.118-1.993)	0.316	0.568 (0.136-2.380)	0.440
SGA	2 (2.0)	3 (2.9)	0.66 (0.108-4.035)	0.653	0.580 (0.092-3.642)	0.561
IUFD	0	1 (1.0)	1 (omitted)		1 (omitted)	
HELLP syndrome	0	2 (2.0)	1 (omitted)		1 (omitted)	
Abruption placenta	0	2 (2.0)	1 (omitted)		1 (omitted)	

OR: Odds ratio, AOR: Adjusted OR, SGA: Small-for-gestational age, IUFD: Intrauterine fetal death, HELLP: Hemolysis, Elevated Liver enzyme levels, Low Platelet levels

noted cases of IUFD, HELLP syndrome, and abruption placenta occurring in the aspirin group. Despite the variance of the incidence of these secondary outcomes between the two groups, the adjusted OR for age did not reach statistical significance: preterm delivery OR (95% CI) 0.568 (0.136–2.380) *P* 0.440 and SGA OR (95% CI) 0.580 (0.092–3.642) *P* = 0.561. The calculated OR for IUFD, HELLP syndrome, and abruption placenta showed that aspirin use does not affect the outcome [Table 5].

Discussion

Pregnancy-induced hypertensive disorders in pregnancy have always been an unsolved mystery in the field of Obstetrics. It is one of the most researched yet still

one of the most intriguing diseases associated with pregnancy. Specifically, preeclampsia syndrome is one of the leading causes of maternal and neonatal morbidity and mortality worldwide and complicates pregnancy by 2%–8%. In the Philippines, maternal mortality secondary to hypertensive disorders has been the second leading cause of maternal deaths since 1960s.[11] One of the several theories linked with the development of pregnancy-induced hypertensive disorders is associated with endothelial cell activation that may be modified by prophylactic administration of a COX inhibitor with anti-inflammatory and antiplatelet properties, specifically aspirin. Aspirin has been standardly being used in obstetrics to address multiple conditions such as recurrent pregnancy loss, diabetes mellitus, and chronic hypertensive disorders. According to the ACOG Committee and the Committee on Obstetric Practice Society for Maternal-Fetal Medicine, majority of the published systematic review of randomized controlled trials (RCTs) revolving regarding the use of low-dose aspirin in pregnancy showed no increase in maternal outcomes such as hemorrhagic complications, as well as fetal outcomes such as the risk of congenital anomalies.[4]

Primary outcome

In this retrospective cohort study, prophylactic aspirin intake among nonhigh-risk primigravida women showed decreased incidence of pregnancy-induced hypertension with a reduction of 76% in the odds of having pregnancy-induced hypertension. This finding coincides with the multiple studies that were conducted with identified high-risk pregnancies.[8,9,12] However, the results of these studies were based on the background of high-risk pregnancies. In a study done by Amin *et al*. (2020), a randomized control trial involving primigravida women with no other preeclamptic risk factors, the study also showed risk reduction in the development of preeclampsia with RR (95% CI), 0.22 (0.05–0.99), $P = 0.05$ and development of gestational hypertension with RR (95% CI), 0.24 (0.07–0.81), $P = 0.03$. However, risk reduction in the development of eclampsia was not found to be statistically significant. Comparing these with the results of the study, the incidence across the different spectrum of pregnancy-induced hypertension showed that the effect of aspirin on gestational hypertension and preeclampsia severe versus no hypertension is the same. The prophylactic administration of aspirin showed no influence on the average BP of the subjects. However, in the study conducted by Amin *et al*., there is statistical significance in the decrease of average BP by the aspirin group versus the control group. The apparent difference in the average BP in this present study may not have been observed due to the smaller population included. The present study also showed that the occurrence of preterm PIH versus term PIH, proportion-wise, intake of aspirin may delay the development of PIH to 37 weeks or greater. This finding may have a positive impact on the possible neonatal and maternal complications related to preterm PIH. Based on the 23 trials that were systematically reviewed by Meher *et al*., initiation of antiplatelet therapy before 16 weeks of AOG has no significant effect in the development of preeclampsia.[8] However, this present study showed that proportion wise, those who were given aspirin before 16 weeks showed that 3.5% of the subjects developed PIH while those who were given aspirin after 16 weeks showed that 17.6% developed PIH. Compliance with aspirin intake was not taken into consideration with this research in which this may have influenced this difference.

Secondary outcomes

Associated complications with the development of PIH, most especially preeclampsia, have been documented thru several studies. Results of this study showed that prophylactic administration has no significant effect in reducing the secondary outcomes: preterm delivery, small-for-gestational-age infants, IUFD, HELLP syndrome, and abruption placenta. Results of this study coincided with the results of the CLASP trial showing there is no significant effect of aspirin intake in relation to IUGR and IUFD. However, in the CLASP trial, there was an observed significant effect in relation to preterm delivery. Increasing the number of population in the present study may also yield a significant effect in relation to preterm delivery. It should also be taken into consideration that the present study is on the premise that these subjects were identified to be nonhigh-risk patients which may also have influenced the effects of aspirin in relation to the secondary outcomes.

Regardless of the multitude of studies investigating the positive effects of aspirin in relation to the development of PIH, there is still no unanimity with regard to its true influence when it comes to hypertensive disorders during pregnancy and its complications. The use of prophylactic aspirin to identified high-risk patients has been established to cause a positive influence on PIH. However, the administration of prophylactic aspirin to patients with no other comorbidities still has inadequate studies.

Conclusion and Recommendations

In this study, prophylactic aspirin intake has a significant effect on nonhigh--risk primigravida women in terms of prevention of preeclampsia and other pregnancy-induced hypertension. However, aspirin intake did not influence the average BP, development of preterm PIH, and development of the secondary outcomes. In short of establishing its influence on several outcome indicators, we still recommend the use of prophylactic aspirin among primigravida women with no identified comorbidities to reduce the risk of preeclampsia and other

pregnancy-induced hypertension. Results of the study do not recommend to use of prophylactic aspirin to reduce the risk of preterm delivery, small-for-gestational-age infants, IUFD, abruption placenta, and HELLP syndrome, However, we recommend larger-scale local studies on the prophylactic administration of aspirin among nonhigh-risk primigravida women to further strengthen and widen the results of the study and to be able to create a generalized data for the Filipinos.

Limitations

The data were collected and used in the study is limited to the recorded data from the censuses and chart review of the hospitals. There was no prospective data gathering employed. Identified confounding variables such as compliance with aspirin intake, intake of other prenatal medications (e.g., calcium tablets, ferrous, and multivitamins), and maternal diet and exercise that could have influenced the outcome were not considered in the study.

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Conflicts of interest

There are no conflicts of interest.

References

1. Rolnik DL, Nicolaides KH, Poon LC. Prevention of preeclampsia with aspirin. Am J Obstet Gynecol 2022;226:S1108-19.
2. Philippine Statistics Authority. Deaths in the Philippines, 2015; 2017. Available from: https://psa.gov.ph/sites/default/files/attachments/crd/specialrelease/Final_%20S R%202015%20 Deaths.pdf. [Last accessed 2020 Nov 28].
3. Cunningham FG, Leveno KJ, Bloom SL, Dashe JS, Hoffman BL, Casey BM, *et al*. Williams Obstetrics. 25th ed. New York, NY: McGraw-Hill Education; 2018.
4. ACOG Committee Opinion No. 743: Low-Dose Aspirin Use During Pregnancy. Obstet Gynecol 2018;132:e44-e52. doi: 10.1097/AOG.0000000000002708. PMID: 29939940.
5. Beaufils M, Uzan S, Donsimoni R, Colau JC. Prevention of pre-eclampsia by early antiplatelet therapy. Lancet 1985;1:840-2.
6. Beroyz G, Casale R, Farreiros A, Palermo M, Margulies M, Voto L, *et al*. CLASP: a randomised trial of low-dose aspirin for the prevention and treatment of pre-eclampsia among 9364 pregnant women CLASP (Collaborative Low-dose Aspirin Study in Pregnancy) Collaborative Group Lancet1994343889861962910.1016/S0140-6736(94)92633-67906809. The Lancet 1994;343:619-29.
7. 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;369:1791-8.
8. Meher S, Duley L, Hunter K, Askie L. Antiplatelet therapy before or after 16 weeks' gestation for preventing preeclampsia: An individual participant data meta-analysis. Am J Obstet Gynecol 2017;216:121-8.
9. Rolnik DL, Wright D, Poon LC, Syngelaki A, O'Gorman N, de Paco Matallana C, *et al*. ASPRE trial: Performance of screening for preterm pre-eclampsia. Ultrasound Obstet Gynecol 2017;50:492-5.
10. Amin O, Tasnim N, Naeem S. Prevention of pre-eclampsia with low dose aspirin in primigravida. Womens Health 2020;9:28-32.
11. Philippine Health Statistics. Maternal Mortality by Main Cause [Internet]. Department of Health; 1960 2010. Available from: https://doh.gov.ph/Statistics/Maternal-Deaths-By-Main-Cause.
12. Rolnik DL, Wright D, Poon LC, O'Gorman N, Syngelaki A, de Paco Matallana C, et al. Aspirin versus Placebo in Pregnancies at High Risk for Preterm Preeclampsia. N Engl J Med 2017;377:613-22.