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## SUPPLEMENTARY

### 1. Ethical Clearance



MEDICAL AND HEALTH RESEARCH ETHICS COMMITTEE (MHREC)  
FACULTY OF MEDICINE, PUBLIC HEALTH AND NURSING  
UNIVERSITAS GADJAH MADA – DR. SARDJITO GENERAL HOSPITAL



#### ETHICS COMMITTEE APPROVAL

Ref. No. : KE/FK/1121/EC/2025

Title of the Research Protocol : Association Between Preeclampsia and Lower 5-Min-Apgar Scores

Document(s) Approved and version : Study Protocol version 01 2025

Principle Investigator : Callista Imelda Nafis

Participating Investigator(s) : 1. dr. Elysa Nur Safrida, Sp.A(K).  
2. Prof. dr. Retno Sutomo, Ph.D., Sp.A(K).

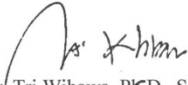
Date of Approval : **09 JUL 2025**  
(Valid for one year beginning from the date of approval)

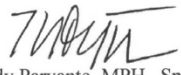
Institution(s)/place(s) of research : RSUP Dr Sardjito Yogyakarta

The Medical and Health Research Ethics Committee (MHREC) states that the document above meets the ethical principle outlined in the International and National Guidelines on ethical standards and procedures for researches with human beings.

The Medical and Health Research Ethics Committee (MHREC) has the right to monitor the research activities at any time.

The investigator(s) is/are obliged to submit:  
 Progress report as a continuing review (state its due time)  
 Report of any serious adverse events (SAE)  
 Final report upon the completion of the study

  
Prof. dr. Tri Wibawa, Ph.D., Sp.MK(K).  
Panel's chairperson

  
dr. Endy Paryanto, MPH., Sp.A(K).  
Panel's secretary

P.S: This letter uses signature scan of the panel's chairperson and Secretary of the Ethics Committee. The hardcopy official letter with authority's signature will be issued when it is possible and are kept as an archive of the Ethics Committee

Validation number :  
686df1ff9984a  
(<http://komisietik.fk.ugm.ac.id/validasi>)



## 2. Data Analysis from SPSS Software

### a. Univariate Analysis of the Neonates' Baseline Characteristics

#### Frequency Table

##### Preeclampsia

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	161	50.0	50.0	50.0
	Yes	161	50.0	50.0	100.0
	Total	322	100.0	100.0	

##### 5 Min APGAR Score

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	>=7	298	92.5	92.5	92.5
	<7	24	7.5	7.5	100.0
	Total	322	100.0	100.0	

##### jenis kelamin

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	P	161	50.0	50.0	50.0
	L	161	50.0	50.0	100.0
	Total	322	100.0	100.0	

##### Birth Weight Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<1000g	16	5.0	5.0	5.0
	1000-1499g	41	12.7	12.8	17.8
	1500-2499g	120	37.3	37.4	55.1
	2500-4000g	141	43.8	43.9	99.1
	>4000g	3	.9	.9	100.0
	Total	321	99.7	100.0	
Missing	System	1	.3		
Total		322	100.0		

##### Gestational Age Category

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<37w (Preterm)	179	55.6	55.6	55.6
	37-41w (Term)	143	44.4	44.4	100.0
	Total	322	100.0	100.0	

##### Parity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	76	23.6	23.6	23.6
	2-4	220	68.3	68.3	91.9
	>=5	26	8.1	8.1	100.0
	Total	322	100.0	100.0	

**Mother's Age Category**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	<20y	3	.9	.9	.9
	20-34y	196	60.9	60.9	61.8
	>=35y	123	38.2	38.2	100.0
Total		322	100.0	100.0	

**Cara Persalinan**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SPONTAN	58	18.0	18.0	18.0
	EKSTRAKSI VAKUM	6	1.9	1.9	19.9
	SC EMERGENSI	221	68.6	68.6	88.5
	SC ELEKTIF	37	11.5	11.5	100.0
Total		322	100.0	100.0	

**Jumlah bayi yang dilahirkan**

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	tunggal	281	87.3	87.3	87.3
	gemeli	38	11.8	11.8	99.1
	triplet	3	.9	.9	100.0
Total		322	100.0	100.0	

b. Characteristics by Preeclampsia Status

**jenis kelamin \* Preeclampsia Crosstabulation**

		Preeclampsia		Total	
		No	Yes		
jenis kelamin	P	Count	79	82	161
		% within Preeclampsia	49.1%	50.9%	50.0%
	L	Count	82	79	161
		% within Preeclampsia	50.9%	49.1%	50.0%
Total		Count	161	161	322
		% within Preeclampsia	100.0%	100.0%	100.0%

**Birth Weight Category \* Preeclampsia Crosstabulation**

		Preeclampsia		Total	
		No	Yes		
Birth Weight Category	<1000g	Count	5	11	16
		% within Preeclampsia	3.1%	6.9%	5.0%
	1000-1499g	Count	15	26	41
		% within Preeclampsia	9.3%	16.3%	12.8%
	1500-2499g	Count	54	66	120
		% within Preeclampsia	33.5%	41.3%	37.4%
	2500-4000g	Count	85	56	141
		% within Preeclampsia	52.8%	35.0%	43.9%
	>4000g	Count	2	1	3
		% within Preeclampsia	1.2%	0.6%	0.9%
Total		Count	161	160	321
		% within Preeclampsia	100.0%	100.0%	100.0%

**Gestational Age Classification \* Preeclampsia Crosstabulation**

			Preeclampsia		Total
			No	Yes	
Gestational Age Classification	<28w	Count	2	2	4
		% within Preeclampsia	1.2%	1.2%	1.2%
	28w-31w	Count	18	20	38
		% within Preeclampsia	11.2%	12.4%	11.8%
	32w-33w	Count	11	24	35
		% within Preeclampsia	6.8%	14.9%	10.9%
	34w-36w	Count	42	60	102
		% within Preeclampsia	26.1%	37.3%	31.7%
	37w-41w	Count	88	55	143
		% within Preeclampsia	54.7%	34.2%	44.4%
Total		Count	161	161	322
		% within Preeclampsia	100.0%	100.0%	100.0%

**Parity \* Preeclampsia Crosstabulation**

			Preeclampsia		Total
			No	Yes	
Parity	2-4	Count	107	113	220
		% within Preeclampsia	66.5%	70.2%	68.3%
	1 and >4	Count	54	48	102
		% within Preeclampsia	33.5%	29.8%	31.7%
Total		Count	161	161	322
		% within Preeclampsia	100.0%	100.0%	100.0%

**Mother's Age Classification \* Preeclampsia Crosstabulation**

			Preeclampsia		Total
			No	Yes	
Mother's Age Classification	<20y	Count	3	0	3
		% within Preeclampsia	1.9%	0.0%	0.9%
	20y-34y	Count	108	88	196
		% within Preeclampsia	67.1%	54.7%	60.9%
	35y-40y	Count	46	54	100
		% within Preeclampsia	28.6%	33.5%	31.1%
	>40y	Count	4	19	23
		% within Preeclampsia	2.5%	11.8%	7.1%
Total		Count	161	161	322
		% within Preeclampsia	100.0%	100.0%	100.0%

**Mode of Delivery \* Preeclampsia Crosstabulation**

			Preeclampsia		Total
			No	Yes	
Mode of Delivery	Spontaneous and Vacuum Extraction	Count	31	33	64
		% within Preeclampsia	19.3%	20.5%	19.9%
	SC Emergency and Elective	Count	130	128	258
		% within Preeclampsia	80.7%	79.5%	80.1%
Total		Count	161	161	322
		% within Preeclampsia	100.0%	100.0%	100.0%

**APGAR Score Classification \* Preeclampsia Crosstabulation**

			Preeclampsia		Total
			No	Yes	
APGAR Score Classification	<=3	Count	4	3	7
		% within Preeclampsia	2.5%	1.9%	2.2%
	4-6	Count	12	5	17
		% within Preeclampsia	7.5%	3.1%	5.3%
	>=7	Count	145	153	298
		% within Preeclampsia	90.1%	95.0%	92.5%
Total		Count	161	161	322
		% within Preeclampsia	100.0%	100.0%	100.0%

c. Bivariate Analysis  
i. Preeclampsia

**Preeclampsia \* 5 Min APGAR Score Crosstabulation**

		5 Min APGAR Score		Total	
		>=7	<7		
Preeclampsia	No	Count	145	16	161
		% within 5 Min APGAR Score	48.7%	66.7%	50.0%
	Yes	Count	153	8	161
		% within 5 Min APGAR Score	51.3%	33.3%	50.0%
Total		Count	298	24	322
		% within 5 Min APGAR Score	100.0%	100.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.881 <sup>a</sup>	1	.090		
Continuity Correction <sup>b</sup>	2.206	1	.137		
Likelihood Ratio	2.933	1	.087		
Fisher's Exact Test				.136	.068
Linear-by-Linear Association	2.872	1	.090		
N of Valid Cases	322				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.00.

b. Computed only for a 2x2 table

**Risk Estimate**

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Preeclampsia (No / Yes)	.474	.197	1.141
For cohort 5 Min APGAR Score = >=7	.948	.890	1.009
For cohort 5 Min APGAR Score = <7	2.000	.881	4.541
N of Valid Cases	322		

ii. Sex

**jenis kelamin \* 5 Min APGAR Score Crosstabulation**

		5 Min APGAR Score		Total	
		>=7	<7		
jenis kelamin	P	Count	151	10	161
		% within 5 Min APGAR Score	50.7%	41.7%	50.0%
	L	Count	147	14	161
		% within 5 Min APGAR Score	49.3%	58.3%	50.0%
Total		Count	298	24	322
		% within 5 Min APGAR Score	100.0%	100.0%	100.0%

#### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.720 <sup>a</sup>	1	.396		
Continuity Correction <sup>b</sup>	.405	1	.524		
Likelihood Ratio	.723	1	.395		
Fisher's Exact Test				.525	.263
Linear-by-Linear Association	.718	1	.397		
N of Valid Cases	322				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 12.00.

b. Computed only for a 2x2 table

#### Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for jenis kelamin (P / L)	1.438	.619	3.340
For cohort 5 Min APGAR Score = >=7	1.027	.965	1.093
For cohort 5 Min APGAR Score = <7	.714	.327	1.561
N of Valid Cases	322		

### iii. Birth Weight

#### Birth Weight \* 5 Min APGAR Score Crosstabulation

Birth Weight		5 Min APGAR Score		Total
		>=7	<7	
2500g-4000g	Count	136	5	141
	% within 5 Min APGAR Score	45.9%	21.7%	44.2%
<2500g	Count	160	18	178
	% within 5 Min APGAR Score	54.1%	78.3%	55.8%
Total	Count	296	23	319
	% within 5 Min APGAR Score	100.0%	100.0%	100.0%

#### Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.070 <sup>a</sup>	1	.024		
Continuity Correction <sup>b</sup>	4.136	1	.042		
Likelihood Ratio	5.447	1	.020		
Fisher's Exact Test				.029	.019
Linear-by-Linear Association	5.055	1	.025		
N of Valid Cases	319				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.17.

b. Computed only for a 2x2 table

#### Risk Estimate

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Birth Weight (2500g-4000g / <2500g)	3.060	1.107	8.459
For cohort 5 Min APGAR Score = >=7	1.073	1.012	1.138
For cohort 5 Min APGAR Score = <7	.351	.133	.921
N of Valid Cases	319		

#### iv. Gestational Age

**Gestational Age \* 5 Min APGAR Score Crosstabulation**

		5 Min APGAR Score		Total	
		>=7	<7		
Gestational Age	37w-41w	Count	139	4	143
		% within 5 Min APGAR Score	46.6%	16.7%	44.4%
	<37w	Count	159	20	179
		% within 5 Min APGAR Score	53.4%	83.3%	55.6%
Total		Count	298	24	322
		% within 5 Min APGAR Score	100.0%	100.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	8.085 <sup>a</sup>	1	.004		
Continuity Correction <sup>b</sup>	6.916	1	.009		
Likelihood Ratio	8.954	1	.003		
Fisher's Exact Test				.005	.003
Linear-by-Linear Association	8.060	1	.005		
N of Valid Cases	322				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 10.66.

b. Computed only for a 2x2 table

**Risk Estimate**

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Gestational Age (37w-41w / <37w)	4.371	1.459	13.097
For cohort 5 Min APGAR Score = >=7	1.094	1.032	1.161
For cohort 5 Min APGAR Score = <7	.250	.088	.716
N of Valid Cases	322		

#### v. Parity

**Parity \* 5 Min APGAR Score Crosstabulation**

		5 Min APGAR Score		Total	
		>=7	<7		
Parity	2-4	Count	201	19	220
		% within 5 Min APGAR Score	67.4%	79.2%	68.3%
	1 and >4	Count	97	5	102
		% within 5 Min APGAR Score	32.6%	20.8%	31.7%
Total		Count	298	24	322
		% within 5 Min APGAR Score	100.0%	100.0%	100.0%



**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	1.409 <sup>a</sup>	1	.235		
Continuity Correction <sup>b</sup>	.920	1	.338		
Likelihood Ratio	1.512	1	.219		
Fisher's Exact Test				.265	.169
Linear-by-Linear Association	1.405	1	.236		
N of Valid Cases	322				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 7.60.

b. Computed only for a 2x2 table

**Risk Estimate**

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Parity (2-4 / 1 and >4)	.545	.198	1.504
For cohort 5 Min APGAR Score = >=7	.961	.905	1.020
For cohort 5 Min APGAR Score = <7	1.762	.677	4.586
N of Valid Cases	322		

vi. **Mother's Age**

**Mother's Age \* 5 Min APGAR Score Crosstabulation**

Mother's Age		5 Min APGAR Score		Total
		>=7	<7	
20y-34y	Count	178	18	196
	% within 5 Min APGAR Score	59.7%	75.0%	60.9%
<20y and >34y	Count	120	6	126
	% within 5 Min APGAR Score	40.3%	25.0%	39.1%
Total	Count	298	24	322
	% within 5 Min APGAR Score	100.0%	100.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	2.174 <sup>a</sup>	1	.140		
Continuity Correction <sup>b</sup>	1.580	1	.209		
Likelihood Ratio	2.300	1	.129		
Fisher's Exact Test				.192	.102
Linear-by-Linear Association	2.167	1	.141		
N of Valid Cases	322				

a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 9.39.

b. Computed only for a 2x2 table

**Risk Estimate**

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Mother's Age (20y-34y / <20y and >34y)	.494	.191	1.282
For cohort 5 Min APGAR Score = >=7	.954	.899	1.012
For cohort 5 Min APGAR Score = <7	1.929	.787	4.727
N of Valid Cases	322		

vii. Mode of Delivery

**Mode of Delivery \* 5 Min APGAR Score Crosstabulation**

		5 Min APGAR Score		Total	
		>=7	<7		
Mode of Delivery	Spontaneous and Vacuum Extraction	Count	58	6	64
		% within 5 Min APGAR Score	19.5%	25.0%	19.9%
	SC Emergency and Elective	Count	240	18	258
		% within 5 Min APGAR Score	80.5%	75.0%	80.1%
Total		Count	298	24	322
		% within 5 Min APGAR Score	100.0%	100.0%	100.0%

**Chi-Square Tests**

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	.428 <sup>a</sup>	1	.513		
Continuity Correction <sup>b</sup>	.151	1	.698		
Likelihood Ratio	.405	1	.524		
Fisher's Exact Test				.594	.335
Linear-by-Linear Association	.426	1	.514		
N of Valid Cases	322				

a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 4.77.

b. Computed only for a 2x2 table

**Risk Estimate**

	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Mode of Delivery (Spontaneous and Vacuum Extraction / SC Emergency and Elective)	.725	.276	1.908
For cohort 5 Min APGAR Score = >=7	.974	.894	1.061
For cohort 5 Min APGAR Score = <7	1.344	.556	3.248
N of Valid Cases	322		

d. Multivariate Analysis

**Variables in the Equation**

		B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
								Lower	Upper
Step 1 <sup>a</sup>	Preeclampsia(1)	-1.308	.495	6.983	1	.008	.270	.102	.713
	Birth Weight(1)	.539	.620	.754	1	.385	1.714	.508	5.781
	Gestational Age(1)	1.763	.731	5.810	1	.016	5.829	1.390	24.439
	Parity(1)	-1.103	.586	3.535	1	.060	.332	.105	1.048
	Mother's Age(1)	-.601	.515	1.363	1	.243	.548	.200	1.504
	Constant	-3.191	.630	25.653	1	.000	.041		

a. Variable(s) entered on step 1: Preeclampsia, Birth Weight, Gestational Age, Parity, Mother's Age.