

# Effect of Egg Whites on Decreasing Blood Pressure in Pregnant Women with Hypertension

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**Abstract:** Hypertension in pregnancy is the most common complication in pregnancy, ie 7-13% of all pregnancies. Hypertension in pregnancy if not managed properly, will lead to preeclampsia, the specific syndrome of pregnancy in the form of reduced organ perfusion due to vasospasm and endothelial activation, and will develop into an eclampsia that causes maternal and fetal death. According to health profile of East Java Health Office, the causes of maternal deaths are caused by preeclampsia by 27%, whereas according to RSU Dr Sutomo, the incidence of preeclampsia was recorded 30-50 cases annually. Based on data from Health Department of Jember, the cause of maternal mortality due to eclampsia is 27%, from data of RSD dr Soebandi Jember recorded 24 mothers experiencing pre eclampsia, at Summersari 5-10 health center mother with hypertension in pregnancy. The purpose of this study was to determine the effect of egg white on the decrease in blood pressure in pregnant women with hypertension. The type of research is post-design, with population of 15 pregnant women, and sampling technique using purposive sampling. Data collection by interview, questionnaire, and direct measurement. Result of research showed pregnant mother with hypertension after consuming egg white, systole average decreased 6.33 mmHg, and Diastole 5.66 mmHg. T-test results obtained p value = 0.00 (<0.05), which means giving egg whites are consumed as much as two grains every day can lower blood pressure. Egg giving can be considered to be a high protein diet especially pregnant women with hypertension, besides intensive antenatal care, and further examination for preeclampsia sessions need to be done, because at any time will turn into preeclampsia / eclampsia that can threaten death of mother and fetus.

**Keywords:** Pregnant mother, hypertension, egg whites

## 1. Introduction

Hypertension in pregnancy is the most common complication in pregnancy, ie 7-13% of all pregnancies. Hypertension in pregnancy if not managed properly, will lead to preeclampsia, the specific syndrome of pregnancy in the form of reduced organ perfusion due to vasospasm and endothelial activation, and will develop into an eclampsy that causes maternal and fetal death (Cuninngham, 2006). Incidence of preeclampsia according to The National Center for Health Statistics in 1998 was 3.7% of all pregnancies (Cunningham, 2006), according to the health profile of Dinkes Jatim (2011), the cause of maternal deaths caused by preeclampsia by 27%, according to RSU Dr Sutomo, pre-eclampsia events recorded 30-50 cases per year. From data of Health Office of Jember (2011) cause of death of mother by eclampsia equal to 27%, from data of RSD dr Soebandi Jember in December (2012) recorded 24 mother having preeclampsia. Treatment of preeclampsia patients is generally strict blood pressure monitoring, high protein diet and MgSO<sub>4</sub> administration. According to research Zhipeng Yu (2010), has found that the egg white content is very useful, in egg whites contain substances called RVPLS. The RVPLS proves to have a strong ability to inhibit and block the action of ACE, a substance that the body produces to increase blood pressure. Judging from the benefits of egg white that can lower blood pressure, the researchers are interested to conduct research on the effect of egg white on the decrease in blood pressure in pregnant women with preeclampsia. The impact is that if preeclampsia is not treated properly, hypoxia will occur until the death of the fetus, whereas in the mother may occur kidney failure, vasoconstriction of blood vessels up to the rupture of the blood vessels of the brain until the death of the mother. Prevention and handling efforts that is done by monitoring blood pressure to strive for stable blood pressure, among others; by providing high-protein diets, adequate rest,

adequate fluid administration, and administration of anti-HIV drugs. and intensive fetal welfare monitoring, The purpose of this study is to analyze the effect of egg white on decreasing blood pressure in pregnant women with hypertension at Puskesmas Summersari Jember.

## 2. Methods

The type of research used is post only design. The population in this study are pregnant women with hypertension the antenatal care at the Summersari Jember public health center (estimation of patients who visit per month 15 people). Sampling technique was purposive sampling. The data collection is performed by measuring the client's blood pressure with the tension meter and recorded on the observation sheet. After collected data is checked or correction of data completeness, given the codes on each data in the same category then tabulated. To find the effect of egg white on the decrease in blood pressure, tested by t-test.

## 3. Result

Respondents in this study were pregnant women between 28 and 37 weeks of pregnancy in December of 2014 in the working area of Puskesmas Summersari. The following is presented general data about the respondents covering the characteristics of respondents, namely age, parity, BMI.

**Table 1:** Maternal Age Distribution

No.	Mother's Age	amount	Percentage (%)
1	<20 Th	2	13
2	20 - 35 Th	10	67
3	> 35 Th	3	20
	amount	15	100

Table 1 explains maternal age at healthy reproductive age of 67%. Those who enter the high risk group is too young 13%, and too old 20% .

**Table 2:** Distribution of Parity

No.	Parity	amount	Percentage (%)
1	1	8	53
2	2-3	4	27
3	> 3	3	20
	amount	15	100

Table 2 explains that most are in the low parity group of 53%, moderate 27%, and high 20%.

In this particular data will be displayed frequency distribution of respondents based on blood pressure measurement before and after consumption of egg whites.

**Table 3:** Systole results before egg white consumption

NO	Systole	amount	Percentage
1	140	10	67
2	145	5	33
	amount	15	100

3 describes the results of systole all respondents before consuming egg white 140 -145 mmHg.

**Table 4:** Results Diastole before egg white consumption

No.	Diastole	amount	Percentage
1	90	11	73
2	95	4	27
	Amount	15	100

Table 4 describes the results of the diastolic examination of all respondents before consuming 90-95 mmHg of egg whites.

**Table 4.5:** Systole results after egg white consumption

No	Systole	amount	Percentage
1	130	2	13
2	135	7	47
3	140	6	40
	amount	15	100

Table 5 describes the results of the systole test after consuming egg whites which decreased 130-135 mmHg by 60%, and which remained 40%.

**Table 6:** Results Diastole after egg white consumption

No	Diastole	amount	Percentage
1	80	2	13
2	85	9	60
3	90	4	27
	Amount	15	100

Table 6 describes the results of the diastole examination of respondents after consuming 80-85mmHg decreased white eggs by 73%, and which remained 27%.

**Table 7:** The Influence of Egg Giving on Blood Pressure Decrease in Pregnant Women With Preeclampsia

Variables	Mean $\pm$ SD	$\square$ mean	p	n
Systole before	141.33 $\pm$ 2.29	6.33	0.00	15
Systole after	135.00 $\pm$ 3.78			

Diastole before	91.33 $\pm$ 2.29	5.66	0.00	
Diastole after	85.67 $\pm$ 3.20			

Result in table 7 bivariate analysis shows that there is a decrease in systolic blood pressure an average difference 6:33, and diastolic average difference 5.66, with a significance value of  $p = 0.00$

## 4. Discussion

The results showed that 60% of the average systole in mothers who had consumed two egg whites per day decreased 6.33 mmHg. While 73% of the average diastole of pregnant women with hypertension who had consumed egg whites for two weeks, decreased 5.66 mmHg. In line with the results of Wen Dee Chiang et al (2007), egg whites are proteolytic proteins that function inhibitory inhibitors of ACE, which are highly influential in the renin-angiotensive system, which affects blood pressure elevation. Meanwhile, according to Ze Pheng Yu (2010), inside the egg whites contains RSPL enzymes that can inhibit ACE, which can increase blood pressure. Egg whites protein can be absorbed by the body 100%, in addition to containing RSPL also can repair damaged endothelial cells. Protein content in egg white inhibits angiotensin hormone secretion that plays a role in constriction of blood vessels and causes increased blood pressure. In this case egg whites are not absolute to lower blood pressure, because 27% of respondents still have no impact on egg whites, since preeclampsia events can also be caused by obesity, where 40% of mothers with BMI 30 fall into the obesity category. Obesity can trigger levels of bad cholesterol leading to an increase in blood pressure. Besides other causes is the age factor, where 20% of respondents into high risk category that is over 35 years old can cause latent hypertension. The results also prove that the giving of egg whites are consumed as much as two grains every day can lower blood pressure. This is evident from the statistical test results obtained  $p$  value = 0.00 ( $<0.05$ ). It is important to note that especially pregnant women with 20 more pregnant women for routine ante natal care control, and to inform any change of condition to health care workers. Similarly, health workers are always sensitive to client changes and heightened vigilance as preeclampsia may occur at any time , and further plans are needed for laboratory testing as early screening for the risk of preeclampsia . Nutrition counseling, stress management for pregnant women should be done because it is also a predisposing factor of preeclampsia.

## 5. Conclusion

Maternal blood pressure with hypertension after consuming egg whites, systole on average decreased 6.33 mmHg, and Diastole 5.66 mmHg. There is a decrease in blood pressure in pregnant women with hypertension after consuming egg whites.

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