



## DIFFERENCES IN VITAMIN C LEVELS IN NORMAL PREGNANCY WITH THE INCIDENCE OF ABORTION

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### ABSTRACT

The incidence of abortion is still high in the world and in Indonesia. In obstetric care, abortion is still a problem and is a cause of increased mortality, maternal and neonatal morbidity. One of the causes of abortion is the imbalance of antioxidants that occurs during placentation. This study aims to determine the differences in vitamin C levels in normal pregnancy and the incidence of abortion. The research design was cross sectional. This research was conducted at RS Bayangkara Padang, RS dr. Reksodiwiryono Padang, Ibu Sina Padang Hospital, dr. Rasidin Padang, Puskesmas Andalas, Biomedical Labor and Biochemistry Labor, Faculty of Medicine, University of Andalas, in December 2016-February 2018. The sample of this study was 14 pregnant women diagnosed with abortion and 14 normal pregnant women  $\leq 20$  weeks using the consecutive technique. sampling. Vitamin C levels were checked by the ELISA method. This study showed that the mean vitamin C levels were  $30.78 \pm 5.26 \mu\text{mol} / \text{L}$  in abortion with  $p$  value  $> 0.05$ . In this study, there was a tendency for the role of vitamin C levels in the incidence of abortion and normal pregnancy, but it was not statistically significant. It is recommended that before checking vitamin C levels, an assessment of the consumption of food sources of vitamin C and vitamin C supplements should be carried out. Perform routine ANC examinations from Trimester I to Trimester III to be able to prevent early abortion that threatens

**Keywords:** *Vitamin C, Abortion, Normal Pregnancy.*

### INTRODUCTION

Abortion is a major complication in pregnancy and a major cause of maternal and fetal morbidity and mortality. Maternal mortality rate due to abortion is still high.<sup>1</sup> causes of abortion can be divided into fetal factors and maternal factors: maternal age, anatomical abnormalities, immunological factors, infections, chronic diseases, endocrine disorders, nutrition, drug use and environmental influences. The estimated incidence of abortion is recorded by WHO as 40-50 million, as well as 125,000 abortions per day.<sup>3</sup> in Indonesia Around 2 - 2.5% .4 In

2015, the number of abortions was obtained based on West Sumatra health profile data of 3,359 people, this number a sharp increase from 2009, which was 2,123 people. It was recorded that in the city of Padang, 339 cases of abortion in 2015 experienced a miscarriage every year.<sup>5</sup> Analysis of risk factors for abortion is needed to reduce the adverse effects of abortion. As for the risk factors for oxidative stress, an increase in free radicals produced in the body can reduce vitamin C levels.

Vitamin C directly stimulates collagen synthesis. Vitamin C also functions as a



reducing agent by sending a hydrogen atom with its single electron to reactive oxygen species (ROS). The increase in oxidative stress is appropriate. Oxidative stress will cause damage and damage to trophoblast cells which will continue to become abortion.<sup>6</sup>

This study is a comparative two-group unpaired study with a cross-sectional approach to analyze the average vitamin C levels in abortion mothers and normal pregnancies. The population in this study were pregnant women with a diagnosis of abortion and all women with normal pregnancies with gestational age  $\leq 20$  weeks who were treated in the delivery room at Bayangkara Hospital Padang, RS. dr. Reksodiwiryono Padang, Ibnu Sina Padang Hospital, RS. Rasidin Padang and Puskesmas Andalas Padang with a sample size of 24 samples. Sampling was done using consecutive sampling technique.

This study aims to determine the difference between the difference in vitamin C levels in the abortion and normal pregnancy

## MATERIAL AND METHODS

This research is a descriptive analytic research with a cross sectional study method. The dependent variable is psychological well-being and the independent variable is

religiosity, and social support. The data collection of this research was carried out from April to July 2020 in Junior High Schools which are very close to the beach in three disaster-prone districts in Padang City, namely SMP N 40 in North Padang, SMP N 35 in South Padang and SMP N 34 in Koto Tengah.

The population in this research is all adolescents in Junior High Schools which are very close to the beach in three disaster-prone districts in Padang City. The numbers of samples in this study were 156 respondents who were selected by accidental sampling technique. The data were obtained by using a questionnaire of psychological well-being, religiosity, personality, coping strategies, self-concept and social support.

This study pays attention to the basic principles of research ethics which include autonomy, beneficence, non-maleficence, anonymity and justice. The data analyses used in this study were univariate, bivariate, and multivariate. Univariate analysis was used to see the frequency distribution of each of the studied variables. Bivariate analysis with Chi-square test was used to examine the relationship between psychological well-being and religiosity, and social support.

## RESULT

**This study showed that the mean vitamin C levels were  $30.78 \pm 5.26 \mu\text{mol} / \text{L}$  in abortion with a p value  $> 0.05$ .(Table 1).**

variabel	Kelompok		P Value
	Abortus (Mean $\pm$ SD)	Kehamilan Normal (Mean $\pm$ SD)	
Kadar Vitamin C (mg/dl)	30,78 $\pm$ 5,26	34,09 $\pm$ 13,14	0,389



## DISCUSSION

The mean vitamin C level in the abortion group was  $30.78 \pm 5.26 \mu\text{mol} / \text{L}$ , while in normal pregnancy it was  $34.09 \pm 13.14 \mu\text{mol} / \text{L}$ . The statistical test results obtained p value 0.05. The results of this study indicate that abortion tends to have lower serum vitamin C levels than normal pregnancies (Table 1).

From the same results, the mean level of vitamin C is lower in abortion compared to normal pregnancy. This is related to oral vitamin C intake related to the concentration of vitamin C in the blood.<sup>8</sup>

In this study, a cross-sectional study was conducted on 50 pregnant women (25 people in each group, namely mothers with abortions and no abortion). The result is that serum vitamin C levels are lower in women with abortion  $0.53 \pm 0.05$  compared to normal pregnant women  $0.58 \pm 0.05$   $p = 0.001$ .<sup>8</sup>

This is in line with a study conducted which stated that there was no significant difference between vitamin C levels in abortion and normal pregnancy ( $p = 0.68$ ).<sup>9</sup>

Vitamin C levels and reactive oxygen species are two conditions associated with abortion. These two factors are related to the role of micronutrients as effective antioxidants through collagen so that the study of the relationship between vitamin C and abortion, C acts as an enzymatic cofactor against the enzymes lysyl hydroxylase and prolyl hydroxylase, which are needed for the synthesis of hydroxyproline and hydroxyl. Collagen requires a hydroxypropyl bridge in the triple helix to provide stability to collagen by both of which are maternal factors that influence abortion. Vitamin C levels are more related to Vitamin C intake because it is a maternal factor, so it is estimated that vitamin C levels will increase in abortion.

## CONCLUSION

The average level of vitamin C in the incidence of abortion was lower than in normal pregnancy. Suggestion Before checking vitamin C levels, an assessment of the consumption of food sources of vitamin C and vitamin C supplements should be carried out. Perform routine ANC checks from trimester I to trimester III to prevent early abortion that threatens.

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