RISK FACTORS OF DIABETES MELLITUS GESTATIONAL EVENTS IN MANGASA PUBLIC HEALTH CENTRE MAKASSAR

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ABSTRACT

Gestational Diabetes Mellitus (GDM) is a carbohydrate tolerance disorder that occur or is known first during pregnancy is in progress, This condition is common at 24 weeks of gestation and some will return to normal after delivery. Gestational diabetes mellitus become a global problem seen from the incidence and the resulting impact. This study aimed to determine the risk factors of gestational diabetes occurrence in Mangasa Public Health Centre Makassar 2017.
The research design used is descriptive analytic study design with *crosssectional study*. Held in July until October 2017, with a sample of 68 respondents.
In this study showed that there was no correlation between maternal age and gestationa diabetes with p value (1.00) > 0.05. and there was a significabt correlation between family history of DM and gestational diabetes incidence with p value (0.00) < 0.05 and there is a significant relationship between history of hypertension with incidence of gestasional diabetes value p (0.00) < 0.05. It is recommended to screen early pregnant women with blood glucose examination to improve maternal health especially In pregnancy to prevent complications that may occur at the time of delivery.

Keywords : Gestational Diabetes Mellitus, Hypertension, Risk

INTRODUCTION

Gestational diabetes mellitus (GDM) is defined as any degree of glucose intolerance with onset or first recognition during pregnancy. (WHO-World Health Organization, 2011). This applies whether insulin or only diet modification is used for treatment and whether or not the condition persists after pregnancy. This does not exclude the possibility that unrecognized glucose intolerance may have started with the pregnancy.

This situation usually occurs during the 24 weeks of gestation and most patients will return to normal at birth (MOH, 2010). At nearly half the number of events, diabetes will reappear (Nurrahmani, 2012). Gestational diabetes mellitus become a global problem viewed from the incidence and the impact (Osgood, 2011).

According to the *American Diabetes Association* (ADA) in 2000, gestational diabetes mellitus occurs 7% of pregnancies annually. The prevalence of gestational diabetes varies the 1%-14%. This figure depends on the population studied and the filtering criteria used (ADA, 2006). Gestational diabetes mellitus occurs approximately 4% of all pregnancies in the United States, and 3-5% in Britain (ADA, 2004). The prevalence of gestational diabetes mellitus in Europe by 2-6% (Buckley *et*al,2001).

The prevalence of prediabetes in Indonesia in 2007 was 10% while the

prevalence of gestational diabetes mellitus in Indonesia of 1.9% -3.6% of pregnancies in general, and about 40- 60% of women had experienced DMG on further observation for 5-10 years after childbirth will develop into DM (Soewardono and Pramono, 2011). In pregnant women with a family history of diabetes mellitus, gestational diabetes prevalence of 5.1% (Maryunani, 2008). This figure is lower than the prevalence in the State of Britain and the United States. Nevertheless, the problem of gestational diabetes in Indonesia still needs serious handling saw a considerable number of patients as well as the impact on pregnant women and fetuses.

Data obtained from the South Sulawesi Provincial Health Office in 2009 about the routine surveillance of non-communicable disease hospitalizations were reported from the hospital obtained the number of cases of gestational diabetes mellitus as many as 283 cases in which the prevalence of 0.1% (South Sulawesi Health Office, 2009).

Gestational diabetes mellitus a public health problem because this disease has a direct impact on the health of the mother and fetus (Osgood *et*al,2011). The impact of the mothers with gestational diabetes mellitus is a high risk of maternal weight gain excess, the preklamsia, eclampsia, caesarean section, and maternal cardiovascular complications and death. After delivery occurs, then the patient is at risk of developing type 2 diabetes continues or recurrent gestational diabetes occurs in 3 future.

While babies born to mothers who had gestational diabetes at high risk for developing macrosomia, birth trauma. In addition, babies at high risk of developing hypoglycemia, hypocalcemia, hyperbilirubinemia, respiratory distress syndrome, polistemia, obesity and diabetes mellitus type 2 (Perkins *et*al,2007).

Visit pregnant women at health centers Mangasa Makassar in 2016 as much as 864 pregnant women. Of these, the data of pregnant women at risk of DMG has not been identified. In the Millennium Development Goals (MDGs), one point therein aims to improve maternal health. With the screening of pregnant mothers early on can be one way to improve maternal health, especially in pregnancy, sometimes just focused to several specific diseases such as hypertension and anemia, while DM received little attention except pregnant women were already suffering from diabetes away before pregnancy. It is also one of the work program of the American Diabetes Association (ADA), which appealed to every point of health services, especially for antenatal care can be screened as early as possible for pregnant women to prevent complications-complications mugkin happen during the delivery process will be. This makes researchers interested in studying Risk Factors Genesis Diabetes Mellitus Gestational at PHC Mangasa of Makassar. Purpose of this study was to determine the risk factors of gestational diabetes in Puskesmas Mangasa Makassar City

MATERIAL AND METHODS

This type of research is descriptive analyticstudy, *cross sectional* to determine the relationship between the age of pregnant women, family history of diabetes mellitus and a history of hypertension with the occurrence of

gestational diabetes mellitus. Population in this study were all pregnant women who visited the health center Mangasa Makassar City from July to October 2017, sample in this study is total population and The sampling technique was accidental sampling. The total sample of 68 respondents. The research was conducted at the health center Mangasa of Makassar in May - October 2017 is a state-owned health center.

RESULT

The study took place between July and October 2017 is housed in Puskesmas Mangasa Makassar with a sample of 68 people. Once the data is collected, then the data is processed and analyzed by Univariate and Bivariate, from research conducted presented the following results:

1. General Characteristics of Respondents

According to the table above shows that out of 68 respondents, most respondents were in the age range 25-29 years as many as 22 respondents (32.4%), and a small portion in the age range 15-19 years as many as 5 respondents (7.4%). Most respondents were monosyllabic Makassar is 64 respondents (94.1%) and a small proportion of respondents other tribes (in addition to Makassar and Bugis) ie 1 respondent (1.5%). Then on the education level of the majority of respondents are in the high-school dropout rate of as much as 27 respondents (39.7%) and a small percentage of completion S2 as much as one respondent (1.2%). Furthermore, respondents were housewives as many as 57 respondents (83.8%) and respondents who PNS much as 2 respondents (3%).

2. Univariate analysis

Univariate analysis in this study aims to look at the frequency distribution of independent variables, factors maternal age, family history of Diabetes mellitus and family history of hypertension and the dependent variable is random blood sugar levels in pregnant women in Puskesmas Mangasa Makassar.

Age of respondents

Based on Table 2. The above shows that among 68 respondents most respondents in the age range <35 years as many as 59 respondents (86.8%), a small portion of respondents in the range of ≥ 35 years of age as much as 9 respondents (13.2%).

A family history of Diabetes mellitus

Based on table 3 above shows that among 68 respondents, there were 64 respondents (94.1%) that there is no family history of diabetes mellitus and the balance of respondents who have a family history of DM as much as 4 respondents (5.9 %).

Hypertension history

Based on Table 4. above shows that among 68 respondents, there were 64 respondents (94.1%) that there is no history of hypertension and the rest is a history of hypertension respondents as many as 4 respondents (5.9%)

Gestational diabetes mellitus (GDM)

Based on the table 5. the table above shows that among 68 respondents, there were 66 respondents (94.1%) are not at risk of DMG has a GDP ≤ 125 mg / dl and the balance of respondents who are at risk DMG has GDP ≥ 126 mg / dl as much as 4 respondents (5.9%).

3. Bivariate Analysis

Based on table 6. the above shows

that among 68 respondents, age range <35 years with GDP ≤ 125 mg / dl by 55 respondents and 4 respondents who have a GDP of ≥ 126 mg / dl , And ≥ 35 year age range who have a GDP ≤ 125 mg / dl as much as 9 respondents and no respondents had a GDP of ≥ 126 mg / dl.

To assess the relation of age of pregnant women with gestational diabetes incidence in Puskesmas Mangasa Makassar, then performed bivariate analysis using statistical test *Chi-square,*with a significance level of 5% (α: 0.05). The results showed that the value of p (1.00)> 0.05, which means that there is no correlation between age of pregnant women with gestational diabetes incidence.

Based on the table above shows that among 68 respondents, that there is no family history of diabetes who have GDP ≤ 125 mg / dl as many as 64 respondents and no respondents who have a GDP ≥ 126 mg / dl. And no respondents who have a family history of DM which has a GDP of ≤ 125 mg / dl and there are 4 respondents who have a GDP of ≥ 126 mg / dl.

To assess the association of DM with a family history of gestational diabetes incidence in Puskesmas Mangasa Makassar, then performed bivariate analysis using statistical test *Chi-square,*with a significance level of 5% (α: 0.05). The results showed that the value of p (0.00) <0.05, which means that there is a significant relationship between family history of DM with the incidence of gestational diabetes.

Based on the table above shows that among 68 respondents, which is no history of hypertension had a GDP ≤ 125 mg / dl as many as 64 respondents and no respondents had a GDP of ≥ 126 mg / dl. And no respondents no history of hypertension had a GDP ≤ 125 mg / dl and 4 respondents who have a GDP of ≥ 126 mg / dl.

To assess the association with incident hypertension history of gestational diabetes in Puskesmas Mangasa Makassar, then performed bivariate analysis using statistical test *Chi-square,*with a significance level of 5% (α: 0.05). The results showed that the value of p (0.00) <0.05, which means that there is a significant correlation between a history of gestational hypertension with diabetes incidence.

DISCUSSION

Relationships age pregnant women with gestational diabetes incidence

is no different with diabetes in general, gestational diabetes occurs when insulin production is insufficient to control glucose levels in the body during pregnancy. During pregnancy, the placenta will produce additional hormones such as estrogen, HPL*(humanplacental lactogen)*, and hormones that increase insulin resistance. Often the passage of time, these hormones will increase and affect the performance of insulin.

The higher the influence of the hormone insulin, blood sugar levels will increase and this increases the risk of disease if it enters the age of 25 years or older when pregnant, have high blood pressure (hypertension), have a family history of diabetes, are overweight before pregnancy (BMI over 25), had delivered a baby over 4.5 kg, had a miscarriage, gestational diabetes never experienced before.

From the results of statistical test *Chi-square,*with a significance level of 5% (α: 0.05). The results showed that the

value of p> 0.05, which means that there is no correlation between age of pregnant women with gestational diabetes incidence. This is consistent with the claim that gestational diabetes can occur in pregnant women over 30 years (Sudoyo A, et.al, 2006). In this study, the age of pregnant women in the age range <35 years more and the lifespan of a group that is less at risk of developing diabetes type 2, because of the increased risk of diabetes with age, especially at the age of 40 years, due at that age start to happen increase in glucose intolerance. Their aging process cause a reduction in the ability of β cells in the pancreas produce insulin (Sujaya, 2009).

The relationship between a family history of DM with the incidence of gestational diabetes

Results showed that the value of p (0.00) <0.05, which means that there is a significant relationship between family history of DM with the incidence of gestational diabetes.

This is in line with research Shara (2012), that there is a significant relationship with the occurrence of DM family history of diabetes. There were 22 (75.9%) of respondents with a family history of diabetes, the majority of respondents relationship with parents. Respondents who have a family with DM should be vigilant. The risk of suffering from diabetes when one parent suffering from diabetes is 15%. If both parents have diabetes, the risk of developing diabetes was 75% (Diabetes UK, 2010). The risk of mother to get a larger DM 10-30% rather than the father with DM. This is due to a decrease in the womb of genes greater than the mother. If the sibling has diabetes, the risk of developing diabetes was 10% and 90% if suffering is the identical twin brother (Diabetes UK, 2010).

For people who have a family that is suffering from diabetes, should immediately check their blood sugar levels due to the risk of suffering major DM. Especially in pregnant women to prevent complications in case of gestational diabetes in the mother will happen: spontaneous abortion, premature delivery, polyhydramnios and infection. In addition to the fetus can occur hypoglycemia, hyperglycemia and macrosomia. And how to keep it is to keep blood glucose levels within normal limits, low fat content, exercise regularly, eat a balanced meal.

The relationship between the history of gestational hypertension with diabetes incidence

Results showed that the value of p (0.00) <0.05, which means that there is a significant correlation between a history of gestational hypertension with diabetes incidence.

Consistent research Shara (2012), there was a significant association between blood pressure with diabetes mellitus. The results showed that people who develop hypertension at greater risk for diabetes, with odds of 6.85 times greater than people who are not hypertensive. Research by Sunjaya (2009) found that individuals with hypertension had a 1.5 times greater risk of developing diabetes than individuals who are not hypertensive. Other studies have also suggested, people who have a history of hypertension is more at risk of developing type 2 diabetes compared with those with no history of hypertension, although it was

not statistically significant (Radio, 2011).

Some literature linking hypertension with insulin resistance. Effect of hypertension on the incidence of diabetes mellitus is caused by a thickening of the arteries which causes the diameter of blood vessels become narrowed. This will cause the transport of glucose from the blood to be disturbed (Zieve, 2012). Hypertension in type 2 diabetes appears simultaneously with or may even precede the onset of diabetes. This is due in patients with hypertension often found in the collection of other disorders such as central obesity, dyslipidemia, hiperurisemi and hyperinsulinemia / insulin resistance or metabolic syndrome is now called. This is consistent with previous studies in America show that individuals with hypertension 2.5 times more likely to develop type 2 diabetes compared to normotensive.

So that pregnant women who have a history of hypertension to always diligently checked blood pressure and seek to prevent complications due to hypertension that hypertension can be prevented as early as possible.

CONCLUSION

The conclusion of this study as follows:

1. There is no correlation between age of pregnant women with gestational diabetes incidence in Makassar City Health Center Mangasa with p (1.00)> 0.05.
2. There was a significant association between family history of DM with the incidence of gestational diabetes in Makassar City Mangasa health center with a value of p (0.00) <0.05.
3. There was a significant association between a history of gestational hypertension with diabetes incidence in Makassar City Health Center Mangasa p-value (0.00) <0.05.

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Tables

Table 1

General Characteristics of Respondents in Public health centre Mangasa of Makassar City 2017

Characteristics of Respondents	n	%
Age (years) :		
15-19	5	7,4
20 – 24	16	23,5
25-29	22	32,4
30-34	16	23,5
35>	9	13,2
Ethnicity :		
Bugis	3	4,4
Makassar	64	94,1
Other	1	1,5
Last education :		
Graduated S2	1	1,5
Graduated S1	8	11,7
Graduated Diploma	0	0
Graduated School	27	39,7
Graduated from junior	18	26,5
Graduated SD	14	20,6
Work :		
PNS	2	3
Private Employees	9	13,2
IRT	37	83,8

source: Primary Data 2017

Table 2

Frequency Distribution of Respondents by Age Respondents In Public health centre Mangasa of Makassar City 2017

respondent's age	**Frequency**	**Percentage (%)**
<35 years	59	86.8
≥ 35 years	9	13.2
Total	**68**	**100**

Source: Primary Data 2017

Table 3
Frequency Distribution of Respondents by family history of suffering from Diabetes Mellitus in Public health centre Mangasa of Makassar City 2017

family history of diabetes mellitus	f	(%)
There is no family history of diabetes	64	94.1
There is a family history of DM	4	5.9
Total	**68**	**100**

source: Primary Data 2017

Table 4
Respondents Frequency Distribution Based on a history of hypertension at the Public health centre Mangasa of Makassar City 2017

family history of diabetes mellitus	f	(%)
No history Hypertension	64	94.1
Hypertension There is a history of	4	5.9
Total	**68**	**100**

Source: Primary Data 2017

Table 5
Frequency Distribution respondents Based on Gestational Diabetes Mellitus in Public health centre Mangasa of Makassar City 2017

Gestational Diabetes Mellitus	f	(%)
Less risky DMG ≤ 125 mg / dl	64	94.1
risk of DMG ≥ 126 mg / dl	4	5.9
Total	**68**	**100**

Source:2017 Primary Data

Table 6
Distribution Relationship between Age Pregnant with DMG Events Mangasa In Public health centre Mangasa of Makassar City 2017

MaternityAge	Fasting Blood Sugar		Total	*P*
	≤ 125 mg / dl	≥ 126 mg / dl		
<35 years	55	4	59	1.00
≥ 35 years	9	0	9	
Total	64	4	68	

Source: Primary Data 2017

Table 7
Distribution The relationship between a family history of DM with DMG Events In Public health centre Mangasa of Makassar City 2017

DM Family History	Fasting Blood Sugar		Total	*p*
	≤ 125 mg / dl	≥ 126 mg / dl		
was no family history of DM	64	0	64	0.00
There is a family history of DM	0	4	4	
Total	64	4	68	

Source: Primary Data 2017

Table 8
Distribution The relationship between hypertension history with DMG Events In Public health centre Mangasa of Makassar City 2017

HypertensionHistory	Fasting Blood Sugar		Total	*p*
	≤ 125 mg / dl	≥ 126 mg / dl		
There was no history of Hypertension	64	0	64	0.00
There is a history of hypertension	0	4	4	
Total	64	4	68	

Source: Primary Data 2017