

## RELATIONSHIP BETWEEN DIABETES MELLITUS RISK FACTORS THAT CAN BE CHANGED WITH THE INCIDENCE OF TYPE 2 DM AT THE PORIAHA HEALTH CENTER 2021

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### ABSTRACT

Diabetes mellitus (DM) is a chronic metabolic disorder caused by the pancreas not producing enough insulin or the body not being able to use the insulin it produces effectively. Diabetes will usually appear when you have entered the vulnerable age of 45 years who are overweight, so that the insulin in the body does not respond. The purpose of this study was to determine the relationship between modifiable risk factors for DM and the incidence of type 2 diabetes at the Janti Public Health Center, Malang. The research design used is a correlational method with a cross sectional approach. Collecting data in this study using questionnaires and medical records with the target respondents, namely patients in the working area of the Janti Health Center aged 45 years. There is a significant relationship between BMI, physical activity, hypertension, dyslipidemia, unhealthy diet and prediabetes with the incidence of type 2 DM at the Janti Health Center. The P values yield the order (0.000; 0.000; 0.000; 0.020; 0.002; 0.000 < 0.05). while the variables of central obesity and smoking with the incidence of type 2 DM did not find a significant relationship.

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## 1. Introduction

Diabetes mellitus (DM) is a chronic metabolic disorder caused by the pancreas not producing enough insulin or the body cannot use the insulin it produces effectively (Kemenkes RI, 2014). Insulin is a hormone that regulates the balance of sugar levels (Kemenkes RI, 2014). As a result, there is an increase in the concentration of glucose in the blood (hyperglycemia). There are two main categories of DM, namely type 1 diabetes (Insulin Dependent), characterized by a lack of insulin production and type 2 diabetes (Non Insulin Dependent, due to ineffective use of insulin). Type 2 diabetes constitutes 90% of all diabetes. While gestational diabetes is diabetes that is acquired during pregnancy (Kemenkes RI, 2014). According to WHO (2016), diabetes is one of the four priority Non-Communicable Diseases (NCDs) and the leading cause of blindness, heart attacks, strokes, heart failure and leg amputations. The estimated number of diabetes patients in the world in 2015 was 415 million people, in 2040 to 642 million people (WHO, 2016).

Diabetes will usually appear when you have entered a vulnerable age, namely 45 years who are overweight, so that the insulin in the body does not respond. Degenerative factors are body functions that

decreased in someone aged 45 years can have an increased risk of diabetes mellitus and glucose intolerance. In particular, the ability of cells in glucose metabolism to produce insulin (Pangemanan in Lathifah, 2017).

Indonesia is ranked seventh in the world for the highest prevalence of diabetes in the world. The percentage of deaths from diabetes in Indonesia is second only to Sri Lanka. The prevalence of people with diabetes in Indonesia increased from 5.7% in 2007 to 6.9 in 2013 (WHO, 2010).

2016). Type 2 DM is also included in the top 10 diseases in Malang City. In 2016 and 2017 DM was still ranked fourth in the top 10 diseases of Malang City (Malang City Health Office, 2017). In 2016 diabetes was ranked fourth in the Most Number of Disease Cases in Malang City, which was 13,815 cases (BPS Malang City, 2017). According to the Janti Health Center (2017) Type 2: Non Insulin Dependent DM is ranked fifth in the data for the 10 most diseases at the Janti Health Center in 2016 with a total of 2,834 cases.

## **2. Research Methods**

### **2.1 Research Type and Design**

The research design used is a correlational method with a cross sectional approach.

### **2.2 Population And Sampel**

The number of samples was calculated using the Lemeshow formula (in Murti, 2013) the results obtained were 73 samples and then rounded up to 80 samples.

### **2.3 Analysis Techniques**

The data used in this study are primary and secondary data. Primary data obtained from the results of questionnaires filled out by the patient and secondary data obtained from the patient's medical record.

## **3. Result And Discussion**

The results of the analysis from table 1.1 show that the age of the respondents is divided into four strata with an average number of 20 respondents. The stratum division was done to make it easier to get the sample. Samples are patients aged 45 years. Diabetes will usually appear when you have entered a vulnerable age, which is 45 years. While the characteristics based on gender, the majority of respondents are female by 76.3% or as many as 61 respondents.

Type 2 diabetes mellitus in this study was divided into two categories, namely suffering from type 2 diabetes and not suffering from type 2 diabetes. The distribution of respondents based on diabetes mellitus can be seen in table 4.1. It is known that from 80 respondents, as many as 65% suffer from type 2 diabetes. Type 2 diabetes mellitus is one of the 10 most common diseases at the Janti Public Health Center, Malang City.

Activities in this study were divided into three categories, namely light, medium and heavy. Physical activity is calculated using PAL (Physical Activity Level). PAL is obtained by multiplying the time of physical activity with PAR (Physical Activity Ratio). Table 1.1 shows that respondents with light activities dominate with a percentage of 62.5% or 50 respondents. Respondents with activityweight of 12 respondents. The older you get, the less physical activity you get. The hypertension variable in this study was divided into two categories, namely hypertension and not hypertension. From table 1.1 it can be seen that 58.8% of 80 respondents suffer from hypertension. While the remaining 33 people or 41.3% did not suffer from hypertension. People who suffer from hypertension will also be more easily affected by type 2 diabetes. Of the 47 people who have hypertension, 43 of them also suffer from type 2 diabetes.

Most of the respondents in this study had a BMI 25 (obese). Based on the research results, namely p-value 0.000 with OR = 43.240, there is a significant relationship between type 2 DM and BMI. This is in line with research by Rabrusun (2015) that there is a significant relationship between type 2 DM and BMI. The results of the chi square test obtained a probability value of 0.009 and a Prevalence Ratio (RP) of 1.496. BMI in the obese category had 1.496 times greater risk of type 2 diabetes than the BMI in the non-fat category.

Research according to Fatmawati (2010) regarding the Risk Factors for the Incidence of Type 2 Diabetes Mellitus in Outpatients shows that there is a significant relationship between obesity and the incidence of type 2 DM in SunanKalijaga Hospital, Demak. The p value = 0.003 ( $\leq 0.05$ ) so that  $H_a$  is accepted. Calculation of the estimated risk obtained OR 0.356. According to Trisnawati&Setyorogo (2013), BMI together with other variables has a significant relationship with DM. The results of the OR calculation show that someone who is obese has a risk of suffering from diabetes. The group with the greatest risk of diabetes was the obese group, with an odds ratio of

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7.14 times greater than the normal BMI group. The study is in line with this study that people with light activities are more at risk of developing DM.

After presenting the results, the author can evaluate and interpret the implications, especially those relating to your original hypothesis. The author will examine, interpret, and qualify the results and draw conclusions and conclusions from them. Emphasize the theoretical or practical consequences of the results. (When the discussion is relatively short and direct, some authors prefer to combine it with the Results section, creating a section called Results and Discussion.)

## 4. Conclusion

It is recommended to further researchers to examine other risk factors for type 2 DM that have not been included in this study. It is also hoped that further researchers will take measurements (tests) not only from medical records to get more accurate results.

## References

- Akmal, H.F. and Puruhita, N., (2012). Perbedaan Asupan Energi, Protein, Aktivitas Fisik dan Status Gizi antara Lansia yang Mengikuti dan Tidak Mengikuti Senam Bugar Lansia: Studi Kasus di Instalasi Geriatri Paviliun Lanjut Usia Prof.Dr.Boedhi Darmojo RSUP Dr.Kariadi Semarang. *Jurnal Media Medika Muda*
- DiMatteo, M.R. (2004). Variations in Patient's Adherence to Medical Recommendation: A Quantitative Review of 50 Years of Research. *Medical Care*, 43(3):200-209
- Dinas Kesehatan Jawa Tengah. (2015). Profil Kesehatan Jawa Tengah Tahun 2015. Semarang: Dinas Kesehatan Jawa Tengah
- Febriani, D. and Sulistyarini, T. (2016). Pentingnya Sikap Pasien yang Positif dalam Pengelolaan Diabetes Mellitus. *Jurnal Stikes RS Baptis Kediri*, 7(1)
- Heryati, G.S., 2014. Faktor-Faktor yang Berhubungan dengan Kepatuhan Diet Diabetes Mellitus pada Pasien DM. *Jurnal Keperawatan*, 1(3):97-107.
- Kemendes RI. (2014). Profil Kesehatan Indonesia 2014. Jakarta: Kemendes RI
- Liu, L. L., & Park, D. C. (2004). Aging and Medication Adherence: The Use of Automatic Processes to Achieve Effortful Things. *Psychology and Aging*, 19, 318-325
- Macgilchrist, C., Paul, L., Ellis, B.M., Howe, T.E., Kennon, B. and Godwin, J. (2010). Lower-Limb Risk Factors For Falls In People With Diabetes Mellitus. *Diabetic medicine*, 27(2):162-168.
- Misnadiarly. (2006). *Diabetes Mellitus, Mengenali Gejala, Menanggulangi, Mencegah Komplikasi*. Jakarta: Pustaka Populer Obor
- Nugroho, Y.W. and Handono, N.P., (2017). Hubungan Tingkat Kepatuhan Diet terhadap Kadar Glukosa Darah pada Penderita Diabetes Mellitus di Kelurahan Bulusulur. *Jurnal KEPERAWATANGSH*, 6(1).
- Palandeng, H.M., (2015). Prevalensi Hipertensi dan Diabetes Mellitus Tipe-2 di Puskesmas Kota Manado Tahun 2015. *Jurnal Kedokteran Komunitas dan Tropik*, 3(4).
- PERKENI. (2011). *Konsensus Pengelolaan dan Pencegahan Diabetes Mellitus Tipe 2 di Indonesia*. Jakarta: Perkeni.
- S. Lee, "Infrastructure Service Assessment Model Based on a Service Quality Gap Model—Focused on South Korea," *Sustain.*, vol. 14, no. 1, 2022, doi: 10.3390/su14010577.