

Characteristics of Outpatient Pre Diabetes Dr. Dody Sarjoto Hospital, Maros Regency, South Sulawesi, Indonesia

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Abstract

Introduction: Prediabetes is a condition that increases blood glucose levels but does not meet the criteria for Diabetes Mellitus. The International Diabetes Federation (IDF) is estimated that 6.7% of the adult population with prediabetes in the world and in 2040 reached 7.8% of the population. The purpose of this study was to determine the characteristics of outpatient prediabetes patients in the Internal Medicine polyclinic Dr.Dody Sarjoto Hospital 2018-2019.

Material and Method: Analytical research design with a cross sectional approach, the study population of outpatients in the polyclinic in Dr. Dody Sarjoto Hospital, 143 sample numbers according to the specified variables, using secondary data, were analyzed using Chi Square and Fisher's Exact.

Findings and Discussion: The highest proportion of prediabetes to age 40-50 years (58.7%), female sex (73.4%), general high school education (58.7%), with a family history of DM (81.1%), the highest prediabetes is prediabetes combination (41.3%).

Conclusion: Characteristics of outpatient prediabetes in the clinic Dr.Dody Sarjoto Hospital The highest frequency of prediabetes based on age is 40-50 years as many as 84 (3.5%), the highest occupation in respondents who do not work is 81 people (56.6%), the highest level of education at school Intermediate General is 84 (58.7%) and based on family history of DM the highest frequency is 116 people (81.1%).

Keywords: *Fasting glucose, Prediabetes, Tolerance*

Introduction

Pre diabetes is a world health problem that must be a concern for all of us. Basically pre diabetes has a higher prevalence than the incidence of diabetes itself, according

to the International Diabetes Federation it is estimated that 6.7% of the adult population with prediabetes or equivalent to 318 million population under 50 years, one third between the ages of 20 and 39 years. It is estimated that up to 2040, 7.8% of the adult population will suffer from pre diabetes, equivalent to 480 million adult populations of the world population¹. while in Indonesia it is predicted that 10% of the population in Indonesia (33 provinces) will experience pre diabetes².

The term prediabetes describes the condition of an increase in elevated blood sugar levels but does not

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yet meet the diagnostic criteria for Diabetes Mellitus. Prediabetes is if found fasting blood glucose levels between 100-125 mg / dl this is also called interference of fasting glucose and or an increase in blood sugar levels after 2 hours of loading (75 mg glucose) between 140-199 mg/dl or also called impaired glucose tolerance (IGT) or a combination of both, namely an increase in fasting blood glucose levels and blood sugar levels 2 hours after loading³. According to several studies that prediabetes can develop type 2 diabetes mellitus between 3-10 years⁴.

Prediabetes in the course of the disease has three possibilities namely 1/3 cases will become type 2 DM, the next 1/3 will remain prediabetes, and the remaining 1/3 will be able to return to normoglycemia. Prediabetes has a 2-10-fold risk factor for Diabetes Mellitus (DM) so early identification is needed in the prevention of the incidence of type 2 DM and its complications⁵. There are 2 risk factors in outline in prediabetes namely risk factors that can be changed and cannot be changed. Risk factors that can be changed for example obesity, physical activity, nutrition and irreversible risk factors such as genetic, age, gestational diabetes, these risk factors will increase complications such as atherosclerosis, heart disease and other macrovascular diseases⁶. Prediabetes with high blood fat and insulin resistance can increase metabolic syndrome. thereby increasing the risk of heart disease and premature mortality⁷.

The purpose of this study was to determine the characteristics of Prediabetes sufferers who are outpatient in the Polyclinic of the disease in the hospital Dr. Dody Sarjoto, Maros Regency.

Material and Method

The research design was cross sectional approach, the type of research was descriptive analytic to know the description of prediabetes characteristics from age, sex, education, occupation, family history of diabetes, in Dr. Dody Sarjoto, Maros, South Sulawesi hospital patients.

Sampling with Purposive Population Sampling method, the study sample is all outpatients who seek treatment at the disease clinic in the hospital Dr. Dody Sarjoto starting in April 2018-April 2019 as many as 2,150 patients, after the inclusion and exclusion criteria, the total sample of 143 people data collected from secondary data obtained from the medical record book of Dr. Dody Sarjoto hospital which is then selected based on inclusion and exclusion criteria.

The inclusion criteria are: male and female aged between 18-70 years, fasting blood glucose levels 100-125 mg/dl and blood glucose levels 2 hours after loading (postprandial) values 140-199 mg/dl. Exclusion criteria are: DM sufferers, Severely ill, currently pregnant. Data collected were processed using a computer using the SPSS program, presented in the form of narratives and tables, analyzed using the chi-square test and Fisher’s test.

Findings and Discussion

Based on table 1 shows that the highest age of prediabetes at the age between 40-50 years is as many as 84 people (3.5%). the lowest is age <28 years, which is as many as 5 people (3.5%). The highest percentage of prediabetes in patients who did not work was 81 people (56.6%) and at the highest level of prediabetes education in high school education and the lowest in junior high school education, a history of diabetes milletus DM showed the highest percentage of 116 people (81,1%), Prediabetes is a condition where blood sugar levels rise above normal but have not entered criteria as Diabetes Mellitus, in the table above (table 1) Prediabetes increases in old adulthood, 40-50 years, this high prevalence because at that age has occurred the aging process (aging) causes the production of enzymes that bind insulin begin to be disrupted and there is a change in cell permeability and the response of the cell nucleus to the hormone insulin this condition allows for an increase in blood glucose levels / hyperglycemia⁸. In this study the frequency of prediabetes increased in women this is because women generally have less muscle mass than men so it is easy to experience insulin resistance in the muscles both moderate and severe⁹.

Table 1: Frequency distribution of characteristics based on Age, Gender, Education Family history of DM in prediabetes patients (n = 143)

| Characteristics of respondents | Frequency | Percentage (%) |
|--------------------------------|-----------|----------------|
| Age | | |
| <28 years | 5 | 3.5 |
| 29 years to 39 years | 13 | 9.1 |
| 40 years to 50 years | 84 | 58.7 |
| > 51 years old | 41 | 28.7 |
| Gender | | |
| Male | 38 | 26.6 |
| Female | 105 | 73.4 |
| Occupation | | |

| | | |
|--------------------------|-----|------|
| Work | 62 | 43.4 |
| Not Working | 81 | 56.6 |
| Qualification | | |
| Diploma 1 - Diploma 3 | 21 | 14.7 |
| Bachelor degree - Doctor | 28 | 19.6 |
| Junior high school | 10 | 7.0 |
| Senior High School | 84 | 58.7 |
| Family History DM | | |
| Yes | 116 | 81.1 |
| No | 27 | 18.9 |

The frequency of prediabetes increases in patients who do not have a job (permanent work), this happens because they do not do routine physical activities along with work schedules, so they sit more at home and watch television (TV, Youtube, social media, etc.) this behavior increase the risk of prediabetes because it is usually accompanied by food. at the high frequency level of education in high school graduates, this is presumably because in Indonesia the largest graduates are public high schools so that many respondents are in such education. History of DM in parents has a risk of prediabetes in their children, this is in accordance with the table above, respondents who have a family history of DM, the frequency is 116 people (81.1%), this is consistent with the multicenter study by Wagner in Germany showed that family history of DM was significantly associated with the risk of developing prediabetes (OR = 1.4 with 95% CI = 1.27: 1.54, p <0.001). Family history of DM has an increased risk for suffering from prediabetes around 40%¹⁰.

| Type of prediabetes | Frequency | Percentage(%) |
|---|-----------|---------------|
| Combined fasting glucose disorders and impaired glucose tolerance | 59 | 41,3 |
| Glucose disorders Fasting | 57 | 39,9 |
| Impaired glucose tolerance | 27 | 18,9 |
| Total Responden | 143 | 100,0 |

Table 2 shows the highest frequency in mixed prediabetes namely fasting glucose disorders and glucose tolerance disorders of 59 people (41.3%) and the lowest in the frequency of glucose tolerance disorders of 27 people (18.9%). in mixed prediabetes, there is a combination of physiological disorders in both peripheral tissues and major metabolic organs such as the liver so that micro / macrovascular complications following dyslipidemia can be the result of this condition. the incidence of prediabetes both is

increasing throughout the world not least in developed countries, especially in Indonesia there has been an almost threefold increase in prediabetes from about 10% in 2007 for urban populations 20 to 29.9% in the same population in 2013¹¹, It is suspected that the occurrence of mixed prediabetes due to lifestyle changes due to the influence of urbanization, this is certainly a warning of the dangers of predibetes which are risk factors for the onset of diabetes mellitus in the future.

Conclusions

The highest frequency of prediabetes based on age is 40-50 years as many as 84 (3.5%), based on the highest occupation of respondents who are not working by 81 people (56.6%), based on the highest level of education in high schools by 84 (58.7%) and based on family history of diabetes mellitus DM the highest frequency of 116 people (81.1%).

Conflict of Interest; There is no conflict of interest to be declared.

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Ethical Clearance: This study was approved by the head of the hospital Dr. Dody Sarjoto Maros Regency, South Sulawesi.

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