

Prevalence of diabetic retinopathy among diabetes mellitus type 2 patients at Diabetes Center of Sanglah General Hospital, Bali-Indonesia 2014

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ABSTRACT

Background: Diabetic retinopathy is one of the most common microvascular complications of diabetes mellitus. A prevalence study could contribute in explaining the pattern and giving the perspective of how a community deals with diabetes and its complications.

Methods: This study was conducted to determine the prevalence of diabetic retinopathy in patients with type 2 diabetes mellitus at the Diabetic Center of Sanglah General Hospital. This study used a descriptive cross-sectional study using secondary data from medical records of patients with diabetes mellitus type 2.

Results: 1070 patients with type 2 diabetes mellitus obtained from January – December 2014. 6.92% patients have suffered from retinopathy, and 93.08% have not suffered from retinopathy. Distributions of patients who suffered from retinopathy were mostly from the age group of 50-59 years old.

Conclusion: Only 6.92 % of type 2 diabetes mellitus patients in Sanglah Hospital had suffered from the complication of diabetic retinopathy in the year 2014.

Keywords: Diabetes mellitus type 2, diabetic retinopathy

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ABSTRAK

Latar Belakang: Diabetik retinopati merupakan salah satu komplikasi mikrovaskular diabetes mellitus yang paling umum. Studi prevalensi dapat menjelaskan pola dan memberikan perspektif mengenai bagaimana suatu komunitas menghadapi penyakit diabetes dan komplikasinya.

Metode: Studi ini dilakukan untuk menentukan prevalensi diabetik retinopati pada pasien diabetes mellitus tipe 2 di *Diabetic Center*, Rumah Sakit Umum Pusat Sanglah. Studi ini merupakan studi

deskriptif *cross-sectional* dengan menggunakan data sekunder yaitu rekam medis pasien diabetes mellitus tipe 2.

Hasil: Total pasien dari kurun waktu Januari – Desember 2014 adalah 1070 pasien dengan 6,92% menderita retinopati dan 93,08% diantaranya tidak menderita retinopati. Distribusi pasien retinopati lebih banyak pada kelompok usia 50-59 tahun, diikuti dengan kelompok usia 60-69 tahun.

Simpulan: Hanya 6,92% pasien diabetes mellitus tipe 2 di RSUP Sanglah yang menderita diabetik retinopati pada tahun 2014.

Kata kunci: Diabetes Mellitus tipe 2, diabetik retinopati, Rumah Sakit Sanglah

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INTRODUCTION

Diabetes mellitus is one of the most common non-communicable diseases worldwide. It is a chronic disease involving hyperglycemia due to relative insulin deficiency, resistance or both and is estimated to affect 440 million people worldwide by the year 2030.¹ Diabetes mellitus will eventually result in macrovascular and microvascular complications. Macrovascular complications include stroke and myocardial infarction. Microvascular complications are diabetic retinopathy, diabetic nephropathy, diabetic neuropathy, diabetic foot and diabetic amyotrophy.² Diabetic retinopathy is

one of the most common microvascular complications of diabetes. Diabetic retinopathy remains the leading cause of blindness and visual impairment in the working age population. Diabetic retinopathy is a complication of diabetes that will eventually affect all type 1 diabetes patients and 80% of type 2 patients.

The most important thing in any medical condition is prevention. Primary prevention of type 2 diabetes (the majority of the patients) is fundamental for halting all the complications of diabetes. Once the disease is established, it is known that the

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time since diagnosis is a major factor for developing the retinal disease. However, it has been proven that good metabolic control confirmed by low levels of Hb1AC, delays the initial manifestations and progression of the disease.³ Also, the tight control of blood pressure is a very important factor in slowing the progression. Screening for diabetic retinopathy is important for reducing blindness associated with the disease. The early and moderate stages are asymptomatic, meaning that patients require monitoring so that treatment can be performed timely and prevent visual loss. Diagnosis at late stages may result in ineffectiveness of treatment attempts with consequent blindness.⁴

This research aims to determine the prevalence of diabetic retinopathy among diabetes mellitus type 2 patients in Diabetic Center, Sanglah General Hospital from January 2014 to December 2014 to give a general view of how many diabetic retinopathy cases are handled in Sanglah hospital and future consideration of the disease management.

METHOD

This study is a descriptive cross-sectional study. Non-probability sampling (convenience sample technique) was done, where the data was taken from medical records based on patients registry at the Diabetic Center of Sanglah General Hospital from January 2014 to December 2014. The samples were type 2 diabetes mellitus patients with the inclusion criteria were those type 2 diabetic outpatients with active follow-up at the diabetic clinic and complete medical records data. Exclusion criteria were those who were suffering from juvenile diabetes, gestational diabetes, thyroid problems, obstructive liver disease, advanced renal failure, and tuberculosis. All the data collected was then tabulated and analyzed descriptively.

RESULT

About 1070 medical records were retrieved based on the patients' registry in Diabetic Center. Characteristics of samples include age and gender. From 1070 patients, only 74 (6.92%) were diagnosed with diabetic retinopathy, while 996 patients (93.08%) were not diagnosed with diabetic retinopathy. **Table 1** shows the prevalence of diabetic retinopathy patients in General Sanglah Hospital from January – December 2014.

From 74 diabetic retinopathy patients, 44 of them were males (59.46%), and 30 of them were females (40.54%) (see **Table 2** and **Graph 1**).

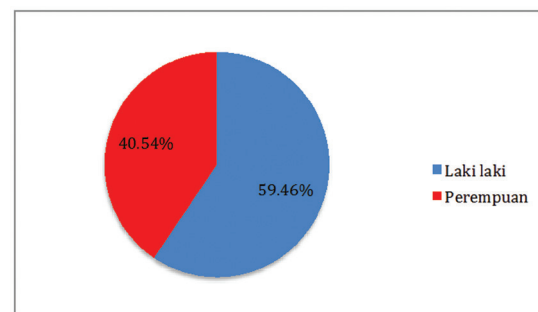
Diabetic retinopathy patients were then classified into five age categories: age 30 – 39 (1.35%), 40 – 49 (17.57%), 50 – 59 (41.89%), 60 – 69 (33.78%),

Table 1 Prevalence of Diabetic Retinopathy in Type 2 Diabetes Mellitus Patients in General Sanglah Hospital from January-December 2014

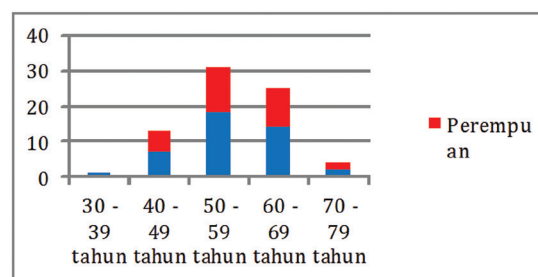
Retinopathy	Frequency (N)	Percentage (%)
Yes	74	6.92
No	996	93.08
Total	1070	100.00

Table 2 Distributions of Diabetic Retinopathy Patients in General Sanglah Hospital from January – December 2014 based on Gender

Gender	Frequency (N)	Percentage (%)
Male	44	59.46
Female	30	40.54
Total	74	100.00



Graph 1 Pie Diagram of Distribution of Diabetic Retinopathy Patients based on Gender in General Sanglah Hospital from January – December 2014



Graph 2 Distribution of Diabetic Retinopathy Patients based on Age and Gender in in General Sanglah Hospital from January – December 2014

and 70 – 79 years old (5.41%). Based on distribution according to age and gender, there was 1 male patient in 30 – 39 years old group, 8 male patients and 5 female patients in 40 – 49 years old, 17 males and 14 female patients in 50 – 59 years old, 15 male and 10 female patients in 60 – 69 years old group, and 2 males and 2 female patients in age group 70 – 80 (**Graph 2**).

DISCUSSION

Until today, the awareness of diabetic retinopathy is still low among the community. Diabetic retinopathy is one of the complications that occur in patients with type 2 diabetes mellitus with blockage of blood vessels, microaneurysms, bleeding, exudates, thickening of the retinal veins, the growth of new blood vessels, lack of oxygen-causing blood vessels to be fragile are the criteria of retinopathy.⁵ Patients will have a complaint of blurred vision, if not treated immediately, will cause breakage of blood vessels and destruct retina, which will then result in blindness.⁶ Prevalence study needs to be conducted to give a perspective of how a community deals with diabetes and its complications and to assess their awareness regarding the prevention and management of the disease.

Characteristics included in this study were considered based on a previous theory regarding risk factors of diabetic retinopathy. Some risk factors for diabetic retinopathy are age, gender, dyslipidemia, duration of diabetes mellitus, and >8% HbA1c levels.^{6,7} Age is an important risk factor for diabetic retinopathy; indeed in this study, it was proven that distributions of diabetic retinopathy were higher in the age group of >50 years old. This result is supported by a study conducted in India that found people with age of >50 years are at high risk of diabetic retinopathy with 60 samples were found to be suffering from diabetic retinopathy.⁸ As for gender, no definite data that could support the findings in this study, however, this raises a suggestion for future study to be more focused to explain the larger number of male patients than female for diabetic retinopathy.

Lastly, the limitation of this study was that the characteristics included were only age and gender, thus in the future study more characteristics of samples are needed to be analyzed for a complete set of data regarding the prevalence of diabetic retinopathy in Sanglah general hospital. Furthermore,

a study that assesses the correlation between gender and diabetic retinopathy may also be conducted to prove and explain the findings of this study.

CONCLUSION

The prevalence of diabetic retinopathy in Sanglah general hospital from January – December 2014 was 6.92%. The majority was male patients with 60 patients were from age group >50 years. The majority of age group came from 50 – 59 years old. Many factors could influence diabetic retinopathy including hypertension, duration of diabetes mellitus and dyslipidemia. Thus, in a future study, these risk factors need to be considered for the data to be more presentable. More prevalence study may also need to be conducted in the future to see the pattern of the prevalence of diabetic retinopathy in Sanglah general hospital.

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