

## ABSTRACT

**Background:** Diabetic retinopathy (DR) is a chronic progressive, potentially sight-threatening disease of retinal microvasculature associated with prolonged hyperglycemia linked to diabetes mellitus (International Diabetes Federation, 2019). A global meta-analysis study reported that approximately one-third of people with diabetes mellitus (34.6%) in United States, Australia, Europe, and Asia are developing diabetic retinopathy which is one of the leading cause of blindness among working adults aged 20–74. It is also stated that 1 in 10 (10.2%) had a vision threatening diabetes retinopathy (Cheloni et al., 2019). In 2015, International Agency for the Prevention of Blindness release an estimation that 145 million people had some form of diabetic retinopathy and 45 million people suffered from vision threatening diabetic retinopathy (Kourgialis, 2019).

International Expert Committee published a report in 2009 on the role of HbA1c in the diagnosis of diabetes. It stated that diagnosis of diabetes can be made if HbA1c level is >6.5% and level of HbA1c <6.5% may indicates the presence of intermediate hyperglycemia (WHO, 2011). Several studies has found that the HbA1c level reduction efficacy are related to the appearance and progression of diabetic retinopathy. One studies by Corcóstegui propose that the risk of developing diabetes complication, including diabetic retinopathy, in patients with type II DM is strongly associated with the degree of metabolic control.

**Objective:** The study aims to know the distribution of diabetic retinopathy severity based on the HbA1c level of diabetic retinopathy patients with type II diabetes mellitus in RSUP Dr. Sardjito Yogyakarta in 2020.

**Method:** A descriptive study using cross-sectional method utilizing patient's medical record as a tool. The data taken from the medical record are focused on patient's HbA1c level and severity of diabetic retinopathy. Data collected were analysed using the descriptive statistics and processed using statistical software (Microsoft® Excel 2013 and IBM® SPSS 25.0).

**Result:** Out of 142 diabetic retinopathy cases, 41.5% are highrisk diabetic retinopathy, and 49.3% are having HbA1c level above 8.5%. Most of the subjects are male (62%) with the age range of 45-55 years old (57.7%).

**Conclusion:** Statistically, patient with a high HbA1c level are tend to have a more severe level of diabetic retinopathy.

**Keyword:** Diabetic retinopathy, diabetes mellitus, glycosylated hemoglobin.

## INTISARI

Latar belakang: Retinopati diabetika adalah penyakit mikrovaskular retina progresif kronis dan mengancam pengelihatannya yang terkait dengan hiperglikemia berkepanjangan dan merupakan salah satu komplikasi dari diabetes melitus (International Diabetes Federation, 2019). Sebuah studi meta analisis global melaporkan bahwa satu per tiga orang dengan diabetes melitus (DM) (34.6%) di Amerika Serikat, Australia, Eropa, dan Asia memiliki retinopati diabetika, yang mana merupakan penyebab kebutaan nomor satu pada usia 20-74 tahun. Dinyatakan pula bahwa 1 dari 10 (10.2%) memiliki *sight threatening diabetic retinopathy* (STDR) (Cheloni *et al.*, 2019). *International Agency for the Prevention of Blindness* pada tahun 2015 merilis estimasi peningkatan retinopati diabetika hingga 145 juta jiwa dan STDR sebanyak 45 juta jiwa (Kourgialis, 2019).

*International Expert Committee* pada tahun 2009 melaporkan peran HbA1c untuk diagnosis diabetes. Dinyatakan bahwa diagnosis diabetes dapat ditegakkan apabila level HbA1c >6.5% dan HbA1c <6.5% dapat mengindikasikan hiperglikemia intermediet (WHO, 2011). Beberapa studi menemukan bahwa efikasi pengurangan level HbA1c berhubungan erat dengan progresi retinopati diabetika. Corcóstegui dalam penelitiannya mengusulkan bahwa resiko munculnya komplikasi diabetes, termasuk retinopati diabetika, pada pasien dengan diabetes mellitus tipe II (DMT2) erat hubungannya dengan derajat kontrol metabolik.

Tujuan: Untuk mengetahui distribusi keparahan retinopathy diabetika pada pasien DMT2 dengan retinopati diabetika di RSUP DR. Sardjito Yogyakarta tahun 2020.

Metode: Penelitian ini merupakan penelitian deskriptif menggunakan metode potong lintang dengan menggunakan data rekam medis pasien. Data rekam medis difokuskan pada tingkat HbA1c pasien dan keparahan retinopati diabetika. Data terkumpul kemudian di analisis menggunakan statistik deskriptif dan diproses dengan *software* statistik (Microsoft® Excel 2013 and IBM® SPSS 25.0).

Hasil: Dari 142 kasus retinopati diabetika, 41.5% terdiagnosis *highrisk* retinopati diabetika dan 49.3% memiliki level HbA1c diatas 8.5%. Mayoritas subjek adalah laki-laki (62%) dengan rentang usia 45-55 tahun (57.7%).

Kesimpulan: Secara statistik, pasien dengan level HbA1c yang tinggi cenderung terdiagnosis retinopati diabetika pada stase yang lebih parah.

Kata kunci: Retinopati diabetika, diabetes melitus, hemoglobin terglikosilasi.