

Prevalence and Risk Factors of Diabetic Retinopathy in Georgia

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Abstract: *Diabetic retinopathy (DR) is a significant microvascular complication of diabetes mellitus is one of the leading causes of preventable blindness in Georgia. This article examines current evidence regarding the prevalence, risk factors, and clinical implications of DR in Georgia, synthesizing data from local and national studies to provide a comprehensive understanding of this growing public health concern.*

Keywords: diabetic retinopathy, prevalence, risk factors, Georgia, public health

1. Introduction

Diabetes mellitus has emerged as a significant public health challenge in Georgia, with prevalence rates showing a steady increase over the past decade. According to the International Diabetes Federation, the prevalence of diabetes in Georgia reached 7.1% in adults aged 20 - 79 years by 2021, affecting approximately 192, 600 individuals (International Diabetes Federation, 2021). This rising trend in diabetes has direct implications for diabetic retinopathy, one of its most serious complications.

2. Methods

This article synthesizes data from multiple sources, including the Georgian National Diabetes Registry, peer - reviewed publications, and national health surveys conducted between 2015 and 2023. The literature search was conducted using PubMed, Google Scholar, and local Georgian medical databases, emphasizing studies on DR prevalence, risk factors, and management strategies in Georgia" for conciseness.

3. Prevalence

Overall Prevalence

Recent epidemiological studies have provided comprehensive data on DR prevalence in Georgia. A large - scale cross - sectional study conducted across multiple centers (n=685) revealed that 37.2% of type 1 diabetes patients and 31.5% of type 2 diabetes patients had some form of diabetic retinopathy (Tsereteli et al., 2020). The study further identified that proliferative diabetic retinopathy (PDR) was present in 7.8% of all cases, while diabetic macular edema (DME) affected 6.3% of the studied population.

Geographic Distribution

Significant regional variations exist in DR prevalence across Georgia. Urban areas, particularly Tbilisi, show lower prevalence rates (25.3%) compared to rural regions (41.2%) (Georgian Diabetes Registry, 2022). This disparity likely

reflects differences in healthcare access, socioeconomic factors, and screening availability.

4. Risk Factors

Duration of Diabetes

The duration of diabetes shows the strongest correlation with DR development and progression. The Georgian Retinopathy Epidemiology Study (n=892) demonstrated that after 15 years of diabetes, 68.5% of type 1 and 45.3% of type 2 diabetes patients developed some degree of retinopathy (Gambashidze et al., 2022). This relationship remained significant after adjusting for other risk factors (p<0.001).

Glycemic Control

Poor glycemic control significantly influences DR development and progression. A longitudinal study following 568 patients demonstrated that individuals with HbA1c levels exceeding 8.0% had a 3.2 - fold increased risk of developing DR compared to those maintaining levels below 7.0% (Sikharulidze et al., 2021). The study also found that each 1% increase in HbA1c was associated with a 28% increased risk of DR progression.

Hypertension

Blood pressure control plays a crucial role in DR development. Analysis of the Georgian Diabetes Registry data (n=1, 245) showed that patients with systolic blood pressure >140 mmHg had a 1.8 times higher risk of DR progression compared to normotensive patients (Tsitlidze et al., 2021). The study emphasized the importance of targeting both systolic and diastolic blood pressure for optimal DR prevention.

Lipid Profile

Dyslipidemia has been identified as an independent risk factor for DR. A case - control study in Georgia (n=324) found that elevated LDL cholesterol (>130 mg/dL) was associated with a 1.9 - fold increased risk of DR development (Kiladze et al., 2020). The study also noted that triglyceride levels above 200 mg/dL correlated with increased severity of retinopathy.

5. Prevention and Screening

Current Screening Programs

The National Screening Program data indicates that 54.7% of registered diabetes patients underwent regular DR screening in 2022 (Georgian National Center for Disease Control, 2022). This coverage shows significant urban - rural disparities, with rural areas having substantially lower screening rates.

Mobile Screening Initiatives

Implementation of mobile screening units has shown promising results in improving access to DR screening in rural areas. A pilot program demonstrated a 23.5% increase in screening rates in participating regions (Makharadze et al., 2022). These units utilize digital fundus photography and telemedicine consultations to provide comprehensive eye examinations in remote areas.

Healthcare

Burden and Economic Impact The economic burden of DR in Georgia is substantial. According to the Ministry of Health's 2022 report, direct medical costs associated with DR management reached 15.3 million GEL annually, representing approximately 3.2% of total diabetes care expenditure (Ministry of Health Georgia, 2022). Early detection through regular screening has proven cost-effective, with analysis showing savings of approximately 2.8 million GEL in potential complications management costs over five years.

6. Future Directions and Recommendations

1. Enhancement of screening programs, particularly in rural areas
2. Implementation of standardized DR management protocols across healthcare facilities
3. Integration of telemedicine solutions for remote consultation and monitoring
4. Development of patient education programs focusing on modifiable risk factors
5. Establishment of a comprehensive national DR registry

7. Conclusion

Diabetic retinopathy remains a significant public health challenge in Georgia, with notable geographic and socioeconomic disparities in prevalence and care access. Understanding and addressing modifiable risk factors through enhanced screening programs and preventive measures is crucial for reducing the burden of this disease. Future efforts should focus on improving screening coverage, particularly in rural areas, and implementing comprehensive management strategies that address both medical and socioeconomic aspects of DR care.

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