



DIABETIC RETINOPATHY: EPIDEMIOLOGICAL ASPECTS EXPERIENCE OF THE OPHTHALMOLOGY DEPARTMENT AT THE MOULAY ISMAIL MILITARY HOSPITAL IN MEKNES (BASED ON 100 CASES)

Abdel Aziz Hamidi Alaoui*, Jabrane Mohamed, Adel Hejaji, Youssef El Marraki, Mouhcine Elmhadi, Aziz Elouafi



*Corresponding Author: Abdel Aziz Hamidi Alaoui

DOI: <https://doi.org/10.5281/zenodo.23035842>

How to cite this Article: Abdel Aziz Hamidi Alaoui*, Jabrane Mohamed, Adel Hejaji, Youssef El Marraki, Mouhcine Elmhadi, Aziz Elouafi. (2026). Diabetic Retinopathy: Epidemiological Aspects Experience of The Ophthalmology Department At The Moulay Ismail Military Hospital In Meknes (Based On 100 Cases). European Journal of Biomedical and Pharmaceutical Sciences, 13(10), 253–256.

This work is licensed under Creative Commons Attribution 4.0 International license.



Article Received on 31/08/2026

Article Revised on 21/09/2026

Article Published on 01/10/2026

ABSTRACT

Introduction: Diabetic retinopathy (DR) is the main ophthalmological complication of diabetes and the leading cause of blindness before age 60 in industrialized countries. Epidemiological data concerning DR remain poorly developed in Morocco. **Objective:** To describe the epidemiological and clinical profiles of DR in diabetic patients followed in our department, and to identify factors associated with its occurrence and severity. **Patients and methods:** Prospective descriptive study conducted over 12 months (January-December 2025) in the ophthalmology department of Moulay Ismail Military Hospital in Meknes, including 100 diabetic patients (type 1 and 2). Each patient underwent a standardized interview, laboratory workup, complete ophthalmological examination, fundus examination, and OCT. DR was classified according to the DRS/ETDRS classification. **Results:** The mean age was 55 years (25-82 years), with female predominance (57%). The overall prevalence of DR was 57%, dominated by proliferative forms (33%). Diabetic macular edema was present in 48% of patients. The prevalence of DR increased significantly with age, duration of diabetes (87.5% beyond 15 years), presence of arterial hypertension (>80%), and diabetic nephropathy (77.7%). Panretinal laser photocoagulation was performed in 31% of patients ; no surgery was necessary. **Conclusion:** DR is a frequent and serious complication in our population, justifying early and systematic ophthalmological screening in every diabetic patient, particularly in the presence of identified risk factors. National multicenter studies are necessary to better assess the scale of this pathology in Morocco.

KEYWORDS: Diabetic retinopathy; epidemiology; diabetes; risk factors; screening.

INTRODUCTION

Diabetes mellitus is a major global public health problem, with a prevalence that continues to increase, affecting 589 million individuals in 2025 and projected to reach 643 million by 2030. During its course, it exposes patients to microvascular and macrovascular complications responsible for significant morbidity and mortality and considerable socioeconomic cost.^[1-2]

Diabetic retinopathy is the main ophthalmological complication of diabetes. It is a retinal microangiopathy combining vascular hyperpermeability and occlusive phenomena, whose progression follows a stereotyped course from non-proliferative stages to the proliferative stage marked by neovascularization.^[3,4] It is the leading

cause of blindness before age 60 in industrialized countries.^[1] Its silent progression in the early stages makes systematic screening by annual fundus examination essential, allowing early management, particularly by laser photocoagulation, which is effective in preventing low vision.

Despite the scale of this public health problem, epidemiological, clinical, and therapeutic data concerning DR remain poorly developed. In Morocco, the number of diabetic patients followed is constantly increasing due to the multiplication of screening campaigns and the decentralization of healthcare provision.

It is in this context that we conducted a prospective descriptive study in the ophthalmology department of Moulay Ismail Military Hospital in Meknes. The objective was to describe the epidemiological and clinical aspects of diabetic retinopathy in our population and to identify factors associated with its occurrence and severity, in order to contribute to improving its screening and management.

PATIENTS AND METHODS

We conducted a prospective descriptive study over a 12-month period (January to December 2025) in the ophthalmology department of Moulay Ismail Military Hospital in Meknes, as part of a weekly consultation dedicated to diabetic patients.

100 diabetic patients (type 1 and type 2) referred for monitoring and screening for diabetic retinopathy by the hospital's endocrinology departments or by practitioners in the Meknes region.

For each patient, a standardized form was used to collect

*Demographic data (age, sex) and diabetes-related data (type, age at diagnosis, treatment, duration of disease).

*associated history (arterial hypertension, macroangiopathy, sleep apnea syndrome; ocular history).

*Laboratory workup (fasting blood glucose, HbA1c, lipid profile, proteinuria), performed in patients for whom it was available.

*Complete ophthalmological examination (visual acuity using the Snellen scale, anterior segment examination, Goldmann applanation tonometry, pupillary light reflex).

*Fundus examination after pupillary dilation, performed in all patients by direct and indirect ophthalmoscopy.

*Macular OCT performed in almost all patients, particularly to look for diabetic maculopathy.

*Fluorescein angiography, not feasible for most patients for technical reasons, but performed in a few to specify the extent of retinal ischemia.

Diabetic retinopathy was classified according to the DRS/ETDRS classification (no DR, mild/moderate/severe non-proliferative DR, complicated DR) and diabetic maculopathy according to the ETDRS classification (ischemic or edematous).

RESULTS

1- Characteristics of the population

The mean age of patients was 55 years (range : 25-82 years), with 65% of patients aged over 50 years. Patients with DR were significantly older (mean 62 years) than patients without DR (mean 45 years); more than 80% of patients over 50 years had DR, versus 16.9% in those under 50 years.

The population included 57% women and 43% men (F/M sex ratio = 1.32). However, the prevalence of DR was higher in men (30%) than in women (26%), as were

severe forms (severe proliferative DR: 23.3% of men vs 15.8% of women).

A history of cataract surgery (pseudophakic) was present in 22% of patients, of whom 75% also had DR.

2- Characteristics of diabetes

Type 2 diabetes was largely predominant (75% of patients), with a higher prevalence of DR in this group. However, proliferative forms were more frequent in type 1 diabetic patients (75% vs 56.6% for type 2).

The mean duration of diabetes was 12 years (range: 1-40 years). The prevalence of DR increased markedly with diabetes duration: 31.4% for duration <10 years, 54.6% between 10 and 15 years, and 87.5% beyond 15 years, with an increasing proportion of severe proliferative forms (43.75% beyond 15 years).

Regarding antidiabetic treatment, 50% of patients were on insulin therapy, 30% on oral antidiabetic drugs, 7% on combination therapy, and 14% on diet alone. Insulin-treated patients had a higher prevalence of DR than those treated by diet alone (21.4%).

Glycemic control could only be assessed in 39% of patients (61% had no available HbA1c measurement). In patients who underwent testing, the mean HbA1c was 7.79%, and the prevalence of DR appeared higher in cases of poor glycemic control (HbA1c >8%), although this result was not statistically significant due to the small number of patients tested.

3- Clinical data

The reason for consultation was decreased visual acuity in 55% of cases (of whom 85.4% actually had DR) and systematic screening in 45% of cases (of whom 22.2% had DR).

On ophthalmological examination: total cataract was present in 30% of examined eyes (associated with DR in more than 80% of cases), vitreous hemorrhage in 12% of patients, and iris rubeosis in 5 patients. Intraocular pressure was elevated in 15% of patients, with a higher prevalence of DR in this subgroup (73.3% vs 54% in ocular normotensive patients).

Overall, arterial hypertension was present in more than half of patients, with a markedly higher prevalence of DR in hypertensive patients (>80%) than in normotensive patients (26.6%). Among associated degenerative complications, diabetic nephropathy was found in 9% of the total population (77.7% of whom also had DR), and ischemic heart disease in 3 patients. Dyslipidemia, present in 19% of the total population, was associated with a DR prevalence of 68.4%.

4- Distribution according to ETDRS/DRS classification and paraclinical data

The overall prevalence of diabetic retinopathy in our series was 57%, including 33% proliferative forms and 24% non-proliferative forms. Diabetic macular edema was present in 48% of patients.

Macular OCT, performed in 57% of patients, showed macular edema in 88% of explored cases, of focal type (54.2%), diffuse (25%), cystoid (12.5%), or mixed (8.3%).

5- Therapeutic management

Glycemic control with hygienic-dietary measures and endocrinological follow-up was instituted in all patients. Panretinal laser photocoagulation, indicated in cases of proliferative DR, was performed in 31% of patients. No surgical treatment was necessary in our series.

DISCUSSION

1- Overall prevalence of diabetic retinopathy

In our series, the prevalence of DR was 57%, a figure clearly higher than usually reported estimates. Worldwide, the prevalence of DR in diabetic patients is estimated between 27% and 34.6%, while a pooled analysis of hospital studies conducted in Africa reports a prevalence of 31.6%.^[5] Comparable African studies find variable figures: 32.5% in type 2 diabetic patients in sub-Saharan Africa, 30.4% in newly diagnosed Kenyan patients, or 39.5% in a recent Eritrean study of 309 patients.^[6] Our higher prevalence is probably explained by a recruitment bias specific to specialized hospital studies: our patients were referred specifically for DR monitoring or screening by endocrinologists, which selects a population at higher risk than a general population sample. This bias is classic in single-center hospital studies and must be emphasized as a major limitation in interpreting our results.

2- Risk factors: concordance with the literature

*Duration of diabetes

The progressive increase in DR prevalence with diabetes duration (31.4% before 10 years, 54.6% between 10 and 15 years, 87.5% beyond 15 years)^[7] that we observed is a classic and well-established result in the literature, the duration of exposure to chronic hyperglycemia being the best-characterized risk factor for diabetic microangiopathy.

*Glycemic control

Although not statistically significant in our series (due to the small number of patients who had an HbA1c measurement), the association between poor glycemic control and increased DR prevalence that we observed is consistent with literature data, in which the increase in DR prevalence with poor glycemic control and longer diabetes duration is statistically well established in larger cohorts.

*Arterial hypertension

The strong association found between hypertension and DR in our series (DR prevalence >80% in hypertensive patients versus 26.6% in normotensive patients) is consistent with data from a Moroccan cohort (EpiDiam, Fez), in which hypertension was present in 49.3% of diabetic patients, and retinopathy represented the complication (69.4%).^[8] This confirms the central role of blood pressure control in the prevention of DR, now well established as a pillar of comprehensive management of the diabetic patient.

*Type of diabetes

The higher prevalence of proliferative forms in our type 1 diabetic patients (75%) compared with type 2 (56.6%) is also found in several African series^[7], although the literature emphasizes that this difference mainly reflects a longer unrecognized duration of disease in type 2 patients, often diagnosed late.

3- Regional comparison and local specificities

Available Moroccan and North African data remain limited, confirming the observation already made in our introduction. A study conducted at the Mohammed VI University Hospital in Oujda involving 129 type 2 diabetic patients followed in endocrinology found a mean age comparable to ours (58.2 years versus 55 years in our series) and a similar female predominance [9]. This convergence of demographic profiles between Moroccan series suggests a certain homogeneity of the diabetic population consulting in the country's hospital structures, while confirming the need for larger multicenter data.

4- Paraclinical data and contribution of OCT

The high frequency of diabetic macular edema found on OCT in our series (88% of explored patients) highlights the value of this non-invasive examination, complementary to fundus examination, particularly useful in a context where fluorescein angiography remains difficult to access for technical and logistical reasons. A limitation shared by many centers in low-resource countries.

5- Strengths and limitations of the study

The main strength of our work lies in its prospective nature, limiting information bias and missing data usually encountered in retrospective studies, as well as in the standardization of clinical data collection and systematic fundus examination in all patients.

However, several limitations must be emphasized

Single-center nature and limited sample size (n=100), restricting the generalizability of the results to the entire Moroccan diabetic population.

Hospital recruitment bias, with patients referred specifically for ophthalmological monitoring, which probably increases the observed prevalence compared with the general population.

Incomplete biological data: only 39% of patients had an HbA1c measurement and 35% a lipid profile, limiting the statistical power of analyses concerning these variables.

Lack of use of fluorescein angiography in the majority of patients, the reference examination for evaluating retinal ischemia, replaced by OCT whose contribution, although complementary, does not fully substitute for angiography.

absence of prolonged longitudinal follow-up, not allowing assessment of the incidence or course of DR over time, but only its prevalence at a given time.

6- Practical implications and perspectives

Our results confirm the importance of systematic and early ophthalmological screening in every diabetic patient, particularly in the presence of identified risk factors (diabetes duration >10 years, poor glycemic control, uncontrolled arterial hypertension, insulin therapy). They argue for strengthening collaboration between endocrinologists and ophthalmologists, as well as for setting up larger-scale multicenter studies in Morocco, in order to establish robust national epidemiological data on DR, currently lacking in the local literature.

CONCLUSION

Diabetic retinopathy remains a frequent and serious complication of diabetes, with a prevalence in our series of 57%, reflecting the scale of the problem in our hospital context. This prospective descriptive study made it possible to establish an epidemiological, clinical, and therapeutic profile of DR within our department, confirming the central role of well-established risk factors (duration of diabetes, glycemic imbalance, and arterial hypertension) in its occurrence and severity.

These results underline the crucial importance of early and systematic ophthalmological screening in every diabetic patient, particularly in the presence of these risk factors, as well as the need for multidisciplinary strengthening between endocrinologists and ophthalmologists. Given the limited epidemiological data available on DR in Morocco, larger-scale multicenter studies appear essential to better define the true scale of this pathology at the national level and adapt the resulting screening and management strategies.

REFERENCES

1. S. Baillif, "Diabetic retinopathy (excluding maculopathy)," *Diabetic retinopathy*, 15.
2. "GLOBAL INITIATIVE FOR THE ELIMINATION OF AVOIDABLE BLINDNESS ACTION PLAN 2006-2011 WHO Library Cataloguing-in-Publication Data"
3. "ALFEDIAM Recommendations for screening and monitoring of diabetic retinopathy. *J Fr Ophtalmol*, 1997; 20: 302-310."

4. "WHO (World Health Organization) Priority eye diseases / diabetic retinopathy www.who.int/blindness/causes/priority."
5. Zegeye AF, Temachu. (Prevalence and factors associated with diabetic retinopathy in type 2 diabetic patients in specialized hospitals of the Amhara northwest region, northwestern Ethiopia, 2021. *BMC Ophthalmol* 23, 9.)
6. Glover SJ, Burgess PI. (Prevalence of diabetic retinopathy, cataract and visual impairment in patients with diabetes in sub-Saharan Africa.)
7. Zineb Boulbaroud, Siham El Aziz. (Risk factors for diabetic retinopathy: about 454 patients.)
8. Frequency, types and determinants of degenerative complications of type 2 diabetes in Morocco. "EpiDiam" cohort inclusion data. *East Mediterr Health J.*, 2015.
9. Study on the prevalence of diabetic retinopathy and update of risk factors in type 2 diabetic patients, Mohammed VI University Hospital, Oujda. ECE2019 Poster presentation.