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Bibliometric Analysis of Top Medical and Surgical Retinal Diseases Publications from Arab Institutes and Countries Between 2000 and 2025

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ABSTRACT: This bibliometric investigation mapped the evolution, magnitude, and regional distribution of research on medical and surgical retinal diseases across Arab countries from 2000 to 2025. Using data retrieved from Web of Science, the analysis incorporated peer-reviewed articles and reviews authored by clinicians and vision-science researchers affiliated with institutions in the Arab World. After rigorous screening, eligible records were analyzed to quantify publication trends, institutional contributions, and cross-country disparities in scholarly productivity. Results depicted a steadily rising trajectory in retinal research output over the past 25 years, with accelerated growth after 2010. This upward curve aligns with the expansion of ophthalmology residency programs, the increased availability of retinal imaging technologies, and heightened regional awareness of diabetic retinopathy and other high-burden retinal diseases. Comparative global mapping highlights the emergence of Arab countries as a developing research cluster, which is increasingly contributing to worldwide retinal science, despite lagging behind Western regions in absolute volume. The institutional distribution visualized in the abstract reveals that a limited number of universities—most notably King Saud University, Cairo University, and Université de Monastir—generate a disproportionate share of publications. This concentration reveals the impact of academic infrastructure, postgraduate training, and availability of subspecialty expertise on research output. Country-level visualization further demonstrates marked heterogeneity: Saudi Arabia leads the region, followed by Egypt and Tunisia. In contrast, several nations exhibit minimal scientific activity due to limited resources, workforce shortages, or insufficient research funding mechanisms. A synthesis of journal dissemination patterns indicates strong representation in reputable ophthalmology outlets, suggesting an improvement in scientific quality and greater international visibility of Arab-affiliated retinal research. Together, these insights highlight both regional progress and persistent gaps, emphasizing the need for coordinated strategies to strengthen research capacity, expand funding, and promote cross-country collaboration for sustained advancement in retinal science.

INTRODUCTION

Retinal diseases represent a significant global health challenge and are ranked among the most common causes of blindness and severe visual impairment worldwide. The retina, the light-sensitive tissue at the back of the eye, is critical for converting light into neural signals that the brain interprets as vision. Damage to this delicate structure, often progressing silently, can lead to irreversible vision loss if left untreated [1, 2].

The spectrum of retinal diseases is broad, but several conditions are particularly notable for their prevalence and severity. These include age-related Macular Degeneration (AMD); the leading cause of irreversible blindness and central vision loss in adults over the age of 65 in developed countries [3, 4].

Diabetic Retinopathy (DR), which is the most common cause of vision loss and blindness in working-age American adults, results from damage to the retinal blood vessels due to diabetes. Retinal Detachment: an urgent condition where the retina separates from its underlying tissue, requiring immediate intervention to prevent permanent blindness. Inherited Retinal Diseases (IRDs) are groups of rare genetic disorders, such as Retinitis Pigmentosa, that cause the gradual degeneration of photoreceptor cells. Due to the sight-threatening nature of these conditions and the need for frequent monitoring and intervention, retinal diseases are a primary cause of patient visits to eye clinics and vitreoretinal specialists globally. The rising prevalence of systemic conditions like diabetes and the aging global population are poised to further increase the burden of retinal pathology, making ongoing research into their etiology, diagnosis, and treatment critically important [5-8] [9]. This bibliometric analysis aims to evaluate the scholarly output in the surgical management of different retinal diseases conducted by researchers affiliated with Arab countries and institutions between 2000 and 2025.

METHODS

This cross-sectional investigation employed a bibliometric approach to assess all original research articles and review papers published in ophthalmology journals by ophthalmologists, optometrists, ophthalmic surgeons, and vision-science researchers affiliated with institutions in Arab countries between January 1, 2000, and November 28, 2025. Because the study did not include direct interaction with or assessment of human participants, institutional review board approval was not required.

Data retrieval was conducted on November 28, 2025, using the ISI Web of Science database. Searches were performed through each platform's advanced search interface, and Rayyan was used to identify and remove duplicate records. The search was restricted to the "ophthalmology" subject category. Country filters were applied to capture publications originating from Arab nations, including Bahrain, Tunisia, Comoros, Djibouti, Algeria, Egypt, Iraq, Kuwait, Lebanon, Sudan, Oman, Libya, Morocco, Mauritania, Palestine, Jordan, Qatar, Saudi Arabia, Somalia, Syria, the United Arab Emirates, and Yemen.

To focus the analysis on contemporary research in ophthalmology and surgical retino-pathology, only documents published between January 1, 2000, and November 28, 2025, were included. Eligible publication types were limited to full research articles, articles in press, and review papers. Editorials, letters, commentaries, corrections, and author replies were excluded. Publications not meeting the predefined language criteria were also removed.

All retrieved records were exported to Microsoft Excel (Microsoft Office 365, USA) for data organization and analysis. The total number of publications served as the primary indicator of research productivity. Countries and institutions were subsequently ranked according to their publication output.

RESULTS

Firstly, from a total of 2190 publications retrieved from the Arab countries during the period 2000 to 2025, a clear upward trajectory in research output across Arab countries over the 25-year period. The growth becomes more pronounced after 2010, reflecting increased institutional investment, expanding ophthalmology residency programs, and improved regional research infrastructure. The progressive rise also coincides with global advancements in retinal imaging, surgical techniques, and diabetic retinopathy screening programs, which likely stimulated research interest. This positive trend suggests that retinal research has become a strategic clinical priority in several Arab health systems (Fig. 1).

While Western countries remain dominant, Arab countries represent an emerging research cluster with comparable outputs to several developing regions. The distribution highlights a widening geographical engagement with retinal research, reflecting globalization of ophthalmic science and cross-institutional collaborations (Fig. 2)

The multidimensional heatmap illustrating variations in research performance indicators—citations, H-index values, and citations per item—across Arab countries. The visual pattern reveals substantial heterogeneity, with a small number of countries demonstrating consistently high bibliometric strength. Countries such as Saudi Arabia, Egypt, and Tunisia appear to cluster in regions of higher intensity, reflecting stronger publication quality, greater international visibility, and more established research ecosystems. In contrast, several other countries show lower intensity across indicators, suggesting limited publication influence,

fewer high-impact articles, or minimal sustained research activity. This uneven distribution reflects systemic disparities in academic infrastructure, resource allocation, and volume of trained retinal specialists (Fig. 3).

Figure 3 identifies leading academic institutions in the Arab world contributing significantly to retinal research. Institutions such as King Saud University, Cairo University, Université de Monastir, and INSERM (Morocco) dominate output. The clustering of high productivity within a subset of countries suggests disproportionate research capacity across the region. It also indicates that institutional research culture and availability of subspecialty training strongly influence publication volume.

A substantial heterogeneity in publication output. Saudi Arabia leads with a wide margin, followed by Egypt and Tunisia. Countries such as Algeria, Iraq, and Syria demonstrate more modest contributions, while others have minimal or no representation. This disparity reflects differences in national research funding, availability of retinal specialists, and publication incentives (Fig. 4).

Table 1 reinforces the dominance of specific institutions in shaping regional research productivity. King Saud University (211 publications) and Cairo University (155) lead substantially, indicating robust academic ophthalmology programs and strong institutional backing. Tunisia's Université de Monastir (109) also demonstrates notable productivity despite the country's smaller population, suggesting high efficiency and specialization. Lower-output institutions may lack funding, equipment, or dedicated retinal subspecialty programs (Table 1).

It has been revealed that the majority of publications appear in high-impact, ophthalmology-specific journals, particularly *RETINA: The Journal of Retinal and Vitreous Diseases*. This concentration in top-tier journals suggests that Arab retinal research is achieving strong international visibility. Contribution to regionally focused journals such as *Journal Français d'Ophtalmologie* and *Bahrain Medical Bulletin* also indicates a parallel engagement with local scientific communities (Table 2).

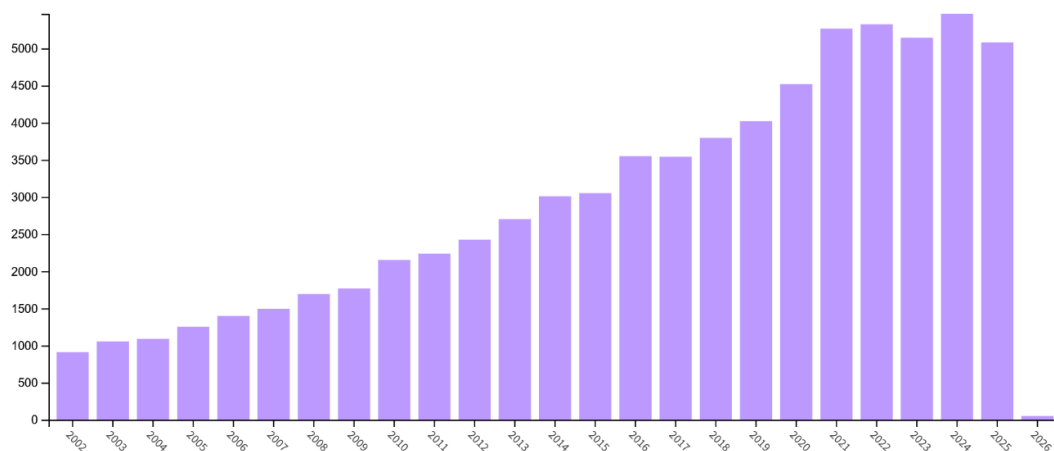


Figure 1 The total number of medical and surgical retinal diseases' publications from Arab countries for the period between 2000 and 2025

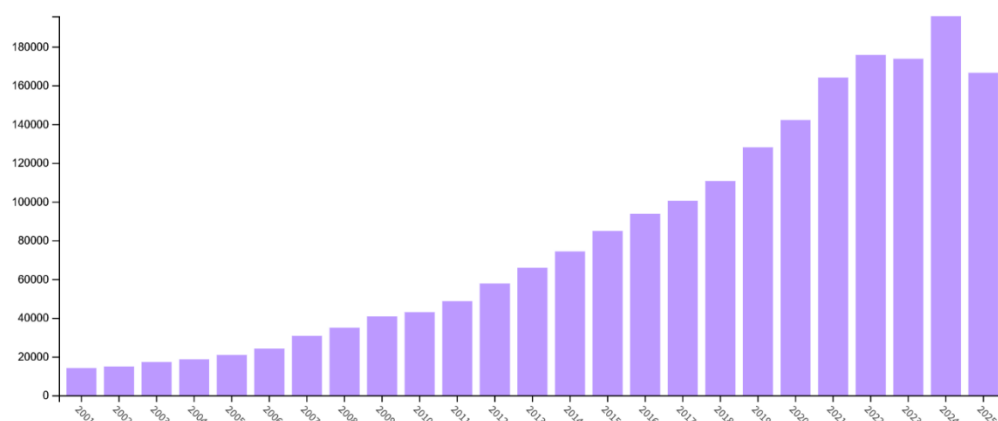


Figure 2 The Global volume of medical and surgical retinal disease publications between 2000 and 2025

Country	Citations	H-index	Per item
Jordan	89	5	9.2
Qatar	624	21	16.92
Lebanon	128	6	14.22
Saud Arab	16097	58	21.78
Bahrain	404	9	15.54
Palestine	2640	12	65.13
Sudan	208	7	17.33
Oman	847	24.91	13
Libya	300	42.86	2
Egypt	13112	52	20.58
Morocco	2,072	22	13.63
United Ara	92	5	10.22
Syria	184	6	12.27
Iraq	2715	17	36.69
Yemen	101	4	14.43
Tunisia	5960	32	25.91
Algeria	1289	14	29.98
Kuwait	1151	20	22.13

Figure 3 Heatmap of Arab countries' publications according to their citations, H-indeices, and citations per item

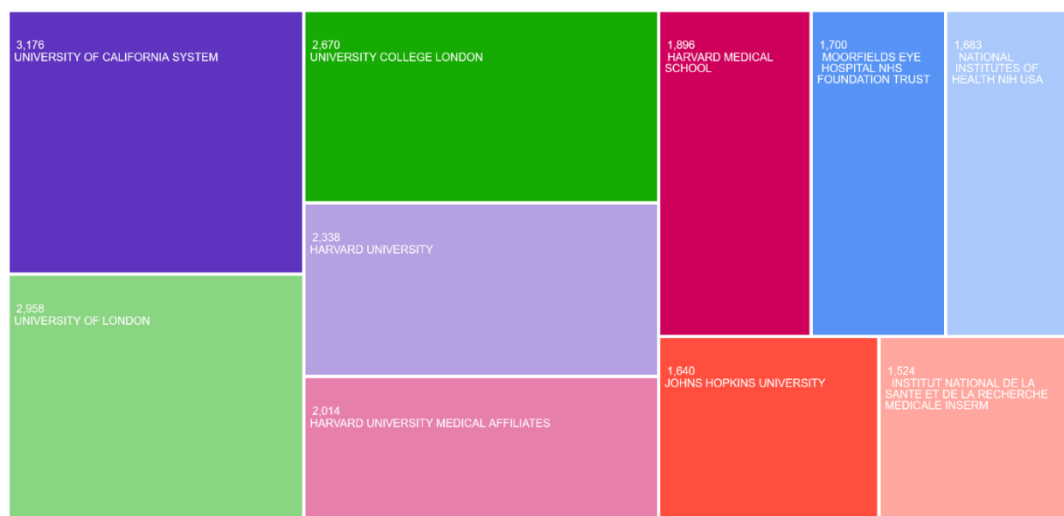


Figure 4 Top affiliations recorded from different countries regarding medical and surgical retinal diseases' publications between 2000 and 2025

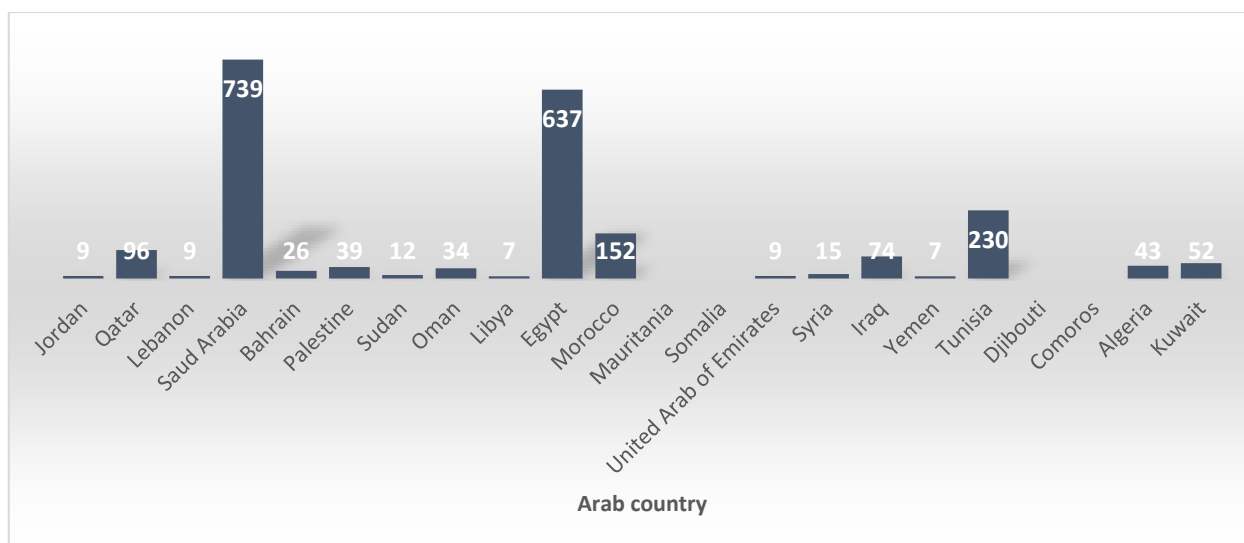


Figure 5 Total number of the medical and surgical retinal diseases' publications between 2000 and 2025 according to Arabian country

Table 1 Top ten Arab countries and/or institutions in medical and surgical retinal diseases' research ranked according to their number of publications produced from 2000 and 2025

Rank	Country	Affiliation	Publications
1	Saud Arabia	King Saud University	211
2	Egypt	CAIRO UNIVERSITY	155
3	Tunisia	UNIVERSITE DE MONASTIR	109
4	Morocco	INSTITUT NATIONAL DE LA SANTE ET DE LA RECHERCHE MEDICALE INSERM	53
5	Qatar	Qatar foundation	37
6	Kuwait	KUWAIT UNIVERSITY	26
7	Oman	SULTAN QABOOS UNIVERSITY	18
8	Algeria	UNIVERSITE ABOU BEKR BELKAID	8
9	Iraq	UNIVERSITY OF BAGHDAD	6
10	Syria	DAMASCUS UNIVERSITY	5

Table 2 Top journals for Arab-affiliated medical and surgical retinal diseases' related researchers from 2000 and 2025

Rank	Journal	Publications
1	RETINA THE JOURNAL OF RETINAL AND VITREOUS DISEASES	167
2	JOURNAL FRANCAIS D OPHTALMOLOGIE	37
3	AMERICAN JOURNAL OF OPHTHALMOLOGY	8

4	BAHRAIN MEDICAL BULLETIN	7
5	Genes	4
6	BAGHDAD SCIENCE JOURNAL	4
7	INDIAN JOURNAL OF OPHTHALMOLOGY	3

DISCUSSION

This bibliometric investigation mapped the evolution, magnitude, and regional distribution of medical and surgical retinal diseases research across Arab countries from 2000 to 2025. Using data retrieved from Web of Science, the analysis incorporated peer-reviewed articles and reviews authored by clinicians and vision-science researchers affiliated with institutions in the Arab institutions.

The trajectory in research output across Arab countries over the 25-year period. The growth becomes more pronounced after 2010, reflecting increased institutional investment, expanding ophthalmology residency programs, and improved regional research infrastructure. The progressive rise also coincides with global advancements in retinal imaging, surgical techniques, and diabetic retinopathy screening programs, which likely stimulated research interest. This positive trend suggests that retinal research has become a strategic clinical priority in several Arab health systems. To report longitudinal productivity and clearly supports the claim that Arab countries are becoming more research-active in ophthalmology, particularly in subspecialties related to retinal diseases. Li et al. in other analysis worked on few number of articles in all countries as he narrowed the rage of publication time [10].

While Western countries remain dominant, Arab countries represent an emerging research cluster with comparable outputs to several developing regions. The distribution highlights a widening geographical engagement with retinal research, reflecting globalization of ophthalmic science and cross-institutional collaborations, this visual comparison is essential for positioning Arab-region output within the global research ecosystem. It justifies focusing on regional growth patterns and research capability gaps as reported by Swelieh et al. [11].

A multidimensional heatmap was carried out to illustrate variations in research performance indicators—citations, H-index values, and citations per item—across Arab countries. The visual pattern reveals substantial heterogeneity, with a small number of countries demonstrating consistently high bibliometric strength. Countries such as Saudi Arabia [12-14], Egypt [15-20], and Tunisia [21, 22] appear to cluster in regions of higher intensity, reflecting stronger publication quality, greater international visibility, and more established research ecosystems. In contrast, several other countries show lower intensity across indicators, suggesting limited publication influence, fewer high-impact articles, or minimal sustained research activity. This uneven distribution reflects systemic disparities in academic infrastructure, resource allocation, and volume of trained retinal specialists. A heatmap is particularly useful for comparing multiple performance indicators simultaneously, allowing clear visualization of which countries excel and which lag across all metrics. To provide supportive evidence for analytic statements regarding regional disparities and highlights specific countries with potential for capacity-building initiatives [23].

The leading academic institutions in the Arab world contributing significantly to retinal research. Institutions such as King Saud University, Cairo University, Université de Monastir, and INSERM (Morocco) dominate output. The clustering of high productivity within a subset of countries suggests disproportionate research capacity across the region. It also indicates that institutional research culture and availability of subspecialty training strongly influence publication volume. It was crucial to highlight productivity drivers and help identify centers of excellence that shape the regional retinal research landscape. In comparison, Deng et al. in previous bibliometric analysis, reported that Sun Yat-sen University was a leading institution in ophthalmology in general [24].

A substantial heterogeneity in publication output. Saudi Arabia leads with a wide margin, followed by Egypt and Tunisia. Countries such as Algeria, Iraq, and Syria demonstrate more modest contributions, while others have minimal or no

representation. This disparity reflects differences in national research funding, availability of retinal specialists, and publication incentives, it is in alignment with another recent bibliometric analysis conducted by Angeli et al., who reported that the greatest share of published work originated from Egypt, followed closely by Saudi Arabia.

This study has clearly shown the dominance of specific institutions in shaping regional research productivity. King Saud University (211 publications) and Cairo University (155) lead substantially, indicating robust academic ophthalmology programs and strong institutional backing. Tunisia's Université de Monastir (109) also demonstrates notable productivity despite the country's smaller population, suggesting high efficiency and specialization. Lower-output institutions may lack funding, equipment, or dedicated retinal subspecialty programs

It has been shown that the majority of publications appear in high-impact, ophthalmology-specific journals—particularly *RETINA: The Journal of Retinal and Vitreous Diseases*. This concentration in top-tier journals suggests that Arab retinal research is achieving strong international visibility. Contributions to regionally focused journals, such as the *Journal Français d'Ophtalmologie* and the *Bahrain Medical Bulletin*, also indicate a parallel engagement with local scientific communities. This concentration in top-tier journals suggests that Arab retinal research is achieving strong recognition in the last ten years and may achieve more powerful contributions afterwards.

CONCLUSION

This study demonstrated that Arab countries have shown consistent and substantial growth in medical and surgical retinal diseases research over the past two decades. A few countries—primarily Saudi Arabia, Egypt, and Tunisia—drive the majority of output, supported by well-established academic institutions. The global distribution reveals that while the region is still emerging compared to Western countries, its contribution is increasingly visible. Publication in reputable ophthalmology journals indicates improving research quality and global engagement. Nonetheless, significant disparities persist among countries, reflecting differences in resources, training opportunities, and institutional support.

This bibliometric analysis demonstrates that the Arab region's research landscape in medical and surgical retinal diseases is characterized by notable but uneven development. A few countries function as leading hubs with robust academic output, high citation impact, and strong scholarly influence, while many others contribute minimally. This distribution reflects broader structural differences in research capacity, funding, training, and institutional support. The findings underscore the need for a coordinated regional strategy aimed at enhancing research productivity and reducing disparities between countries.

A sustained and region-wide strategy is required to enhance retinal research capacity across the Arab world. Strengthening research infrastructure in underperforming countries is essential, particularly through investments in modern retinal imaging technologies, well-equipped research laboratories, and comprehensive training programs for ophthalmology residents. Such foundational improvements would help narrow current productivity gaps. Creating a formal regional retinal research network could further accelerate progress by supporting multicenter studies, pooling data, and setting unified research priorities.

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