

The Practice of Primary Eye Care by Optometrists Worldwide - A Systematic Literature Review

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ABSTRACT

Primary eye care involves detecting and managing conditions that cause preventable blindness, as well as diagnosing and treating eye diseases. Optometrists play a central role in primary eye care, yet their scope of practice and challenges vary globally. This systematic review was conducted to examine the roles, scope and challenges faced by optometrists in their practices. The systematic search was performed according to Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines using a registered review protocol. An electronic search of PUBMED, PubMed Central (PMC), Scopus, EBSCO, OVID, and Web of Science (WoS) was conducted between February and September 2022. Two reviewers independently screened and extracted eligible studies. Eleven publications met the inclusion criteria; 10 cross-sectional studies and one retrospective study. Extracted data focused on structural aspects of care delivery, including instrumentation, procedures, services, management, referral pathways, and training. The scope of practice varied widely, ranging from refraction to advanced clinical management, including therapeutic interventions. Standards of optometric practice in several settings extended well beyond refraction and dispensing, incorporating disease management and collaborative care. Optometrists are capable of delivering comprehensive primary eye care that extends beyond basic refractive services. Harmonising educational standards and implementing enabling policies can empower optometrists to work to the full extent of their training, thereby improving access to eye care services and reducing strain on general healthcare systems.

Keywords

Optometrist, scope, practice, primary eye care, vision, systematic review

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INTRODUCTION

The World report on Vision 2020 by World Health Organization (WHO) estimated that 2.2 billion worldwide have a vision impairment or blindness.¹ Of these, approximately one billion people have preventable vision impairment, with uncorrected refractive error and unaddressed presbyopia being the leading cause.¹ This reflects a growing demand for eye care services, compounded by the increasing prevalence of eye disorders such as cataracts, age-related macular degeneration, and presbyopia. A rise in referrals for minor eye conditions can strain tertiary care facilities, reducing the quality and timeliness of specialised services.^{2,10} This underscores the need for robust primary eye care services.^{2,10}

Primary eye care involves detecting and managing preventable causes of blindness, diagnosing and managing eye diseases, and referring patients when appropriate.^{3,4} These services should be capable of managing conditions at the primary level and making timely referrals to secondary or tertiary care.⁴ Primary eye care also provides initial access to refractions and optical correction (glasses or contact lenses), screening for asymptomatic disorders, diagnosis and treatment of common eye conditions, referral to specialists, and coordination with other healthcare services.^{1,5}

Optometrists key primary eye care providers, delivering comprehensive eye and vision care.⁵ An optometrists'

scope of practice includes refraction and dispensing, detection, diagnosis, management of eye diseases, and rehabilitation of visual system disorders.⁵ However, this scope varies widely across countries due to differences in legislation, licensing regulations, therapeutic privileges, and governance by regulatory bodies. Despite their high accuracy in detecting eye conditions, optometrists' skills remain underutilised.⁶

Despite the growing need for primary eye care practising optometrists, the limited integration of optometrists into primary healthcare systems can hinder early detection, disrupt referral pathways, and restrict resources for service delivery. Therefore, this systematic review aimed to explore and compare the optometrists' scope of practice worldwide.

MATERIALS AND METHODS

Study Design

This study used the systematic review of literature (SLR), which synthesizes existing evidence to provide a comprehensive overview of current knowledge in the field.⁷ The Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines were followed, and the review protocol was registered with the International Prospective Register of Systematic Reviews (PROSPERO) (CRD42022321326).

A systematic search was conducted in the following databases: PUBMED, PubMed Central (PMC), Scopus, Elton B. Stephens Company (EBSCO), OVID and Web of Science (WoS). These databases were selected for their relevance to public health and optometry. Additional searches were performed using Google Scholar and Google Search to capture grey literature, reducing publication bias. The PROSPERO register and Cochrane library were also reviewed to identify existing systematic reviews and prevent duplication. The search terms used for this review were as follows:

1. Profession-specific terms: "Optometr*", "Optician*", "Ophthalmic practitioner*".
2. Condition-specific terms: primary eye care, scope of practice
3. 1 AND 2

Inclusion Criteria

The search included only full-text studies published in English. Additional abstracts identified through google scholar were excluded if the full articles were not available in English. The search was limited to a 20-year period, from year 2002 till year 2022, to ensure that the synthesised evidence was current and reflective of contemporary practices, trends, and advancements in the field. This timeframe was chosen to focus the review on recent findings most likely to influence current practice and policy decision-making.

Exclusion Criteria

Articles published in languages other than English were excluded. The review also excluded literature reviews, technical reports, doctoral theses, and conference proceedings. Studies unrelated to the research topic, as well as duplicate publications, were also excluded.

Selection Criteria

The review included publications that explored optometrists' scope of practice using the Population, Interest, and Context (PICo) framework.

Population

The review focused on publications involving optometrists, whether or not they practising primary eye care. Publications primarily addressing patients' perceptions or ophthalmologists were excluded, as the primary focus of the publications was on optometrists' practices.

Interest

The core focus of this review was the scope of practices of optometrists in primary eye care. Studies assessing effectiveness of primary eye care were excluded, as the objective was to explore scope rather than outcomes.

Context

The context was the provision of primary eye care by optometrists, with emphasis on structural aspects of care delivery, including instrumentation, procedures, services, management, referral, and training. Publications centred

on the prevalence of eye conditions, patients' satisfactions, policy and regulations were excluded from this review.

Data Selection

The review included any primary research article from both the quantitative and qualitative study design. The selection process began with the screening of titles and abstracts by Reviewer 1. Publications meeting the inclusion criteria were classified as potentially eligible and were retrieved in full text. Reviewer 1 and Reviewer 2 independently assessed the full text to determine their relevance to the review question and compliance with the inclusion criteria. A preliminary list of potentially relevant publications was compiled, after which both reviewers discussed each publication until consensus was reached on the final list of included articles.

Data Extraction

Titles and abstracts of studies were retrieved using the search strategy. Publications from additional sources were also screened for eligibility. Full texts of potentially eligible studies were retrieved and assessed against the inclusion criteria. A data extraction table was created to summarise key study details, including author(s), year of publication, publication type/study design, country, survey methodology, study condition(s), and study population (if applicable). Extracted data were organised chronologically from the earliest to the most recent publication.

Data Analysis

Given the descriptive nature of this review, a narrative synthesis was conducted. Following data extraction, each reviewer independently examined the scope of practice reported in the studies to identify potential subthemes. Reviewer 1 and Reviewer 2 then met to refine these subthemes and determine overarching themes common across the studies. The reviewers continuously discussed until a consensus on the themes and sub-themes for the scope of eye practice on primary eye care by optometrists were reached.

RESULTS

The search identified a total of 43 articles across the databases. Of these, 29 articles were excluded due to duplication, two articles were excluded as they were article review, and one article was excluded as because only an abstract was available despite attempts to obtain the full text from the author. Consequently, 11 studies met the inclusion criteria and were included in the review. The literature selection process is summarised in Figure 1.

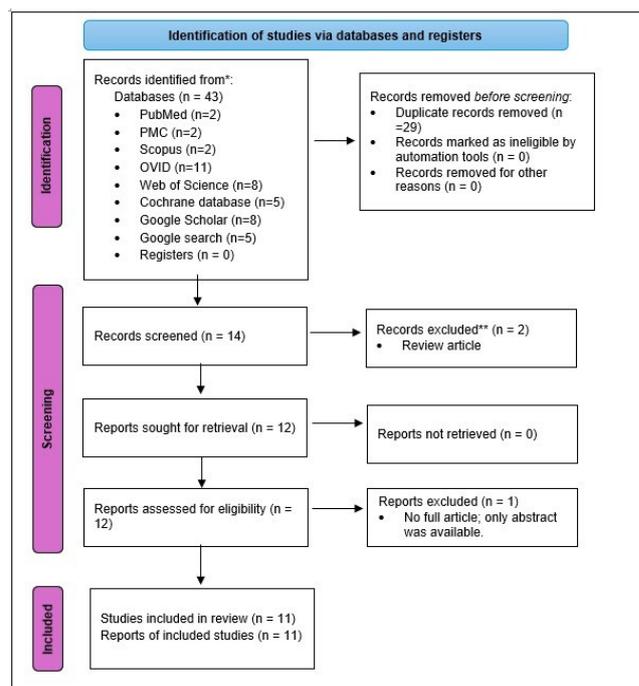


Figure 1. Overview of Literature Selection Process

Overview of Included Studies

The review identified 11 primary research publications, of which 10 employed a cross-sectional study design and one utilised a retrospective design involving analytical review of patients' record. The studies were conducted between 2008 and 2021, with the exception of one undated study. The geographic distribution of the studies was classified according to the World Economic Situation and Prospects (WESP) by the United Nations; developed, developing and under developed.²³ Six studies originated from developed countries (United Kingdom, Australia, Ireland, Scotland, Portugal), four from developing countries (Ghana, Saudi Arabia, Sudan, Singapore), and one from an underdeveloped country (Kenya).

Study Population and Tools

All studies targeted optometrists, with approximately 90% of respondents being community-based practitioners.^{8,9} In the remaining publications, the specific practice setting was not reported. One retrospective study conducted in the Middle East reviewed patient records maintained by optometrists, whereas all other studies collected data using online self-administered questionnaires.¹⁰ The preference for this method was attributed to its ease of administration and cost-effectiveness, particularly for studies involving larger cohorts.

Response Rate

Reported response rates for the self-administered questionnaires ranged from 23% to 100%. Six of the 10 cross-sectional studies reported response rates below 50%. Lower participation was observed when questionnaires were distributed via email, whereas rates of 80% or higher were achieved when questionnaires were disseminated through professional associations or targeted optometrist networks. An overview of the selected studies is presented in Table 1.

The analysis revealed notable regional disparities in the scope of primary eye care practice. In countries such as the United Kingdom, Australia, and Scotland, optometrists practise at an advanced scope, which includes the management of ocular diseases, prescribing therapeutic medications, and performing minor surgical procedures. In contrast, in countries with more restrictive

regulatory frameworks, particularly parts of Asia and Africa, optometrists' roles are limited to vision testing and prescribing corrective lenses. Across all 11 studies, optometry practices were identified based on the procedures performed. Fundamental procedures, such as history taking and refraction, were consistently undertaken by optometrists. The overall scope of practice for each study is summarised in Table 2.

WCO Classification of Optometric Services Categories

The World Council of Optometry (WCO) have classified optometric services into four categories. Category 1: dispensing only, Category 2: dispensing and refraction, Category 3 is sub-divided into two sections; Category 3(a): services in Category 2 plus screening for eye diseases, and Category 3(b): services in Category 3(a) plus diagnosis of eye conditions using diagnostic agents, Category 4: provision of ocular therapeutic services. Using this framework, all reviewed studies were classified at Category 3(a) or higher, indicating that worldwide, optometrists engage in primary eye care that includes screening for ocular conditions in addition to refraction and dispensing. The highest levels of service (Category 4) were reported in Ireland and Australia, where optometrists provide comprehensive ocular therapeutic care.¹¹ In contrast, some developing countries continue to operate at the minimal threshold of primary eye care relative to the WCO model.^{9,13,14,15} The categorisation of the reviewed studies according to WCO standards is presented in Table 3.

Table 1. Description of Study Population and Responses.

No.	Author/ Year	Study Design	Country	Population	Sample Size	Response Rate	Tools Used
1	Needle et al. ⁹ ,2008	Cross-sectional	United Kingdom	Optometrist	n=1288	24%	Online survey
2	Boadi-Kusi et al. ¹⁹ ,2015	Cross-sectional	Ghana	Optometrist	n=146	62%	Survey
3	Harper et al. ¹¹ ,2016	Cross-sectional,	United Kingdom	Optometrist	n=76	89%	Survey
4	Kiely et al. ¹³ ,2017	Cross-sectional	Australia	Optometrist	n=3898	43%	Survey
5	Aldebasi et al. ¹⁰ ,2018	Retrospective	Saudi Arabia	Patient records reviewed = 2601	N/A	N/A	Analytical, record-based study
6	Barret and Loughman ¹² ,2018	Cross-sectional	Ireland	Optometrist	n=737	27%	Survey
7	Alrasheed ¹⁴ , 2019	Cross-sectional	Sudan	Optometrist	n=300	97.90%	Survey
8	George et al. ¹⁸ , 2019	Cross-sectional	Singapore	Optometrist	n=766	30%	Survey
9	Carneiro et al. ⁸ , 2020	Cross-sectional	Portugal	Optometrist	n=1288	24%	Online survey
10	Muma and Obonyo, ¹⁶ ,2020	Cross-sectional	Kenya	Optometrist	n=146	62%	Survey
11	El-Abiary et al. ¹⁵ , 2021	Cross-sectional	Scotland	Optometrist	n=76	89%	Survey

Table 2. Scope of Practice by Optometrists

Study	Refraction	Dispensing	Anterior Segment	Posterior Segment Evaluation	Perimetry	Tonometry	Contact Lens	Low Vision	Binocular Vision	Pre & Post Operative
NEEDLE ET AL. ⁹ , 2008	P	N/A	P	P	O	P	N/A	N/A	N/A	N/A
BOADI-KUSI ET.AL ¹⁹ , 2015	P	P	P	P	P	P	P	P	P	P
HARPER ET.AL ¹¹ , 2016	P	N/A	P	P	P	P	N/A	N/A	N/A	N/A
KIELY ET AL. ¹³ , 2017	P	P	P	P	P	P	N/A	N/A	N/A	N/A
ALDEBASI ET AL. ¹⁰ , 2018	P	P	P	P	N/A	P	N/A	N/A	N/A	N/A
BARRET AND LOUGHMAN ¹² , 2018	P	P	P	P	P	P	N/A	N/A	N/A	N/A
ALRASHEED ¹⁴ , 2019	P	P	P	O	O	O	N/A	N/A	N/A	N/A
GEORGE ET AL. ¹⁸ , 2019	P	P	P	P	P	P	P	N/A	P	P
CARNEIRO ET AL. ⁸ , 2020	P	P	P	P	P	P	P	P	P	P
MUMA AND OBONYO, ¹⁶ , 2020	P	N/A	P	P	P	P	N/A	N/A	P	N/A
EL-ABIARY ET AL. ¹⁵ , 2021	P	N/A	P	O	O	O	N/A	N/A	N/A	N/A

(P-services provided by optometrists; N/A – no information available; O - no service available by optometrist)

Table 3. WCO Classification of Optometric Services Categories.

No.	Author/ Year	WCO category	Therapeutic agents	Referral
1	Needle et al. ⁹ , 2008	3 (b)	Use of diagnostic agents; stains	General practitioners and ophthalmologist
2	Boadi-Kusi et.al ¹⁹ , 2015	3 (b)	Diagnostic agents; pharmaceutical agents	N/A
3	Harper et.al ¹¹ , 2016	3(b)	Diagnostic agents; pharmaceutical agents	Ophthalmologist
4	Kiely et al. ¹³ , 2017	4	Diagnostic agents; pharmaceutical agents	Ophthalmologist and non-ophthalmic specialist
5	Aldebasi et al. ¹⁰ ,2018	3(a)	Diagnostic agents;	Ophthalmologist
6	Barret and Loughman ¹² , 2018	4	Diagnostic agents; pharmaceutical agents	Ophthalmologist
7	Alrasheed ¹⁴ , 2019	3(a)	Diagnostic stains;	Ophthalmologist
8	George et al. ¹⁸ , 2019	3 (a)	N/A	General practitioners and ophthalmologist
9	Carneiro et al. ⁸ , 2020	3(b)	Diagnostic agents;	Ophthalmologist
10	Muma and Obonyo, ¹⁶ , 2020	3 (a)	N/A	Ophthalmologist
11	El-Abiary et al. ¹⁵ , 2021	3 (a)	N/A	General practitioners and ophthalmologist

Management

Beyond prescribing glasses and contact lenses, optometrists in the reviewed studies were also involved in the management of ocular abnormalities. From the reviewed studies, common conditions managed included dry eye syndrome, glaucoma, diabetic retinopathy, and

macula-related disorders. In all studies, optometrists referred patients to ophthalmologists or general practitioners for further management when ocular pathology was detected. An overview of management practices by the optometrists is summarised in Table 4.

Table 4. Management by Optometrists.

Study	Dry eye	Anterior segment abnormalities	Diabetic	Glaucoma	Macula	Referral
Needle et al. ⁹ , 2008	✓	✓	N/A	✓	N/A	GP and ophthalmologist
Boadi-Kusi et.al ¹⁹ , 2015	N/A	N/A	N/A	N/A	N/A	N/A
Harper et.al ¹¹ , 2016	✓	✓	✓	✓	✓	Ophthalmologist
Kiely et al. ¹³ , 2017	✓	✓	N/A	✓	N/A	GP and ophthalmologist
Aldebasi et al. ¹⁰ , 2018	N/A	N/A	N/A	N/A	N/A	Ophthalmologist
Barret and Loughman ¹² , 2018	N/A	N/A	✓	✓	✓	Ophthalmologist
Alrasheed ¹⁴ , 2019	N/A	N/A	N/A	N/A	N/A	Ophthalmologist
George et al. ¹⁸ , 2019	✓	✓	✓	✓	✓	GP and ophthalmologist
Carneiro et al. ⁸ , 2020	✓	✓	✓	✓	✓	Ophthalmologist
Muma and Obonyo, ¹⁶ , 2020	✓	✓	N/A	N/A	N/A	Ophthalmologist
El-Abiary et al. ¹⁵ , 2021	✓	✓	N/A	N/A	N/A	GP and ophthalmologist

(✓- areas managed by optometrists; N/A – no information available; GP – General Medical Practitioner.)

DISCUSSIONS

This systematic review synthesised published evidence describing the scope of optometry practice worldwide. Findings indicate that the scope of practice varies considerably across regions and has evolved over time, as reflected in more recent studies. Earlier research, such as Needle et al. (2008), reported that optometric practice was largely confined to refraction, with no evidence of sub-specialisation in areas such as binocular vision or contact lenses. In contrast, studies from 2019 to 2020 demonstrate that optometrists are increasingly practising beyond refraction, incorporating binocular vision assessment, contact lens fitting, low vision services, and comprehensive anterior and posterior segment evaluation, in addition to dispensing. While basic optometric practice remains centred on refraction and dispensing, the evidence shows a clear progression toward broader primary eye care services in alignment with the World Council of Optometry (WCO) model. These services include not only refraction and dispensing but also detection, diagnosis, and management of ocular diseases, as well as rehabilitation for conditions affecting the visual system.¹

The scope of primary eye care was found to vary significantly according to geographical location, particularly between optometrists practising in developed countries and those in underdeveloped nations (e.g., Kenya). Access to primary health care is especially crucial in poorer and rural communities, where health outcomes are generally worse than in urban areas. Rural populations experience approximately 1.5 times higher rates of illness and injury compared to city dwellers, with some cases resulting in premature mortality.¹⁹ One of the major challenges for health services is ensuring equitable access, especially in underserved or remote areas, where limited healthcare facilities, transportation barriers, and financial constraints can delay timely access to appropriate care. In such contexts, integrating optometrists into the primary healthcare team is essential to enable early detection of visual and ocular abnormalities.

This review shown that optometrists have expanded their roles beyond refraction to include ocular diagnostics,

disease management, and referrals. Comprehensive vision care provided by optometrists generally includes evaluation, assessment, management, and coordination of a wide range of eye health needs, with appropriate referrals to ophthalmologists or general practitioners when required. Many optometrists have invested in advanced technology, diagnostic instrumentation, and therapeutic capabilities.¹⁵ Being equipped with the necessary training and skills, optometrists are able to manage visual and ocular abnormalities effectively, positioning them as the first point of contact for patients with vision concern.

In addition to early detection and preventive care, optometrists play a vital role in patient education on vision and eye care.¹² Their contributions include advising patients on when to seek professional help, promoting healthy lifestyle choices, discussing visual ergonomics, identifying environmental risks to vision, and educating the public on ocular safety and preventive measures.¹⁸ Optometrists can detect eye conditions with high accuracy and provide timely referrals when necessary.⁶ Collaboration between optometrists, ophthalmologists, and other healthcare or rehabilitation professionals enhances patient management, reduces waiting times in public eye care facilities, and alleviates the burden on ophthalmologists, especially in cases involving minor eye diseases.² In many developing countries, healthcare systems remain heavily focused on tertiary care, resulting in the neglect of primary and secondary eye care services. This imbalance places additional strain on tertiary facilities and increases demand for quality eye care at the primary level.

This review found that, despite the diversity of optometric roles, they remain underutilised, particularly in community healthcare, where their potential to detect, manage, and treat vision and eye disorders is not fully realised.^{18,20,21} This review emphasised on the inventory of optometry practices and a wide scope of services provided by optometrists. Optometrists play a crucial role in early detection and referral.³ This highlighted the need for revamp in primary health care services, whereby vision care and eye care should be shifted to the optometrists.¹⁸

Optometry education generally produces competent practitioners, well-trained to deliver comprehensive vision care. However, some studies reported that services remain limited due to factors such as a country's economic status, rural versus urban practice location, and infrastructure constraints.^{4,19,21,22} The cost of eye care can also be prohibitive, particularly when it involves advanced diagnostic testing, heavy reliance on ophthalmologists, or uneven distribution of optometrists across regions. While this review focuses on the scope of practice, the findings cannot be generalised to specific legal frameworks, insurance coverage systems, or healthcare models worldwide. Nevertheless, the evidence underscores the importance of rethinking primary healthcare delivery so that optometrists can be more fully integrated into vision and eye care at the primary level. Further research is needed to explore barriers such as professional regulations, resource limitations, and public awareness that constrain the scope of optometric practice in primary eye care.

LIMITATIONS

As with any research, this systematic review has limitations. First, linguistic bias may have been introduced, as only studies published in English were included, potentially excluding relevant evidence from non-English sources. Second, methodological biases may exist, including possible sampling and selection bias, as well as low response rates in several of the included studies. Despite these constraints, a comprehensive search strategy and a systematic approach were employed to address the review questions using the best available evidence.

CONCLUSION

This systematic literature review demonstrates the diverse roles and practices of optometrists globally. Their scope extends well beyond refraction and dispensing, encompassing anterior and posterior segment evaluation, perimetry, and the diagnosis and management of vision-related conditions at the primary care level. The findings reaffirm that optometrists function as primary eye care providers, equipped to deliver comprehensive ocular assessments and initiate appropriate management.

While notable advancements have been achieved in certain regions, disparities persist, highlighting the need for greater harmonisation of training, stronger legislative support, and deeper integration into healthcare systems. Future research should expand the evidence base through larger, multi-centre studies and meta-analyses to explore barriers and challenges related to professional recognition, optometric education, and training. Furthermore, international collaborative efforts aimed at developing a standardised framework for the scope of optometry practice may enhance care quality and promote consistent professional standards worldwide.

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