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The Important Role of Optometrists in Eye Care Services in Primary Health Care Centers in Saudi Arabia

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ABSTRACT

Background and Aim: Optometrists play a critical role in delivering primary eye care worldwide. This study evaluates the availability, utilization, and impact of optometry services within primary healthcare centers (PHCs) in Saudi Arabia, focusing on their contributions to patient care and the healthcare system.

Methodology: A multicenter cross-sectional study was conducted across 10 PHCs in four regions of Saudi Arabia. Data on workforce distribution, the number of cases managed, referral rates, and available equipment were collected via surveys and analyzed.

Results: Among the 2,120 PHCs in Saudi Arabia, only 10 centers (0.47%) provided optometry services, staffed by a total of 11 optometrists and 3 opticians. These centers managed 36,849 eye care cases in 2022, with 10,526 (28.57%) referred to secondary care for further management. The referral rates varied significantly across the PHCs, ranging from 0% at Al-Fayhaa PHC in Riyadh, which handled all cases in-house, to 46.35% at Al-Safra PHC in Al-Qassim, which relied heavily on secondary care. Regional disparities in service utilization were also evident, with the Eastern Province managing the highest number of treated cases (13,078), while Al-Qassim recorded the lowest (1,754). The analysis revealed that refractive errors (36%), cataracts (29.1%), and diabetic retinopathy (20.9%) were the most common conditions managed by optometrists.

Conclusion: Optometrists significantly contribute to primary eye care in Saudi Arabia,

reducing the burden on secondary care and enhancing access to eye services. However, the limited availability of optometry services necessitates targeted interventions, including increasing workforce capacity, expanding service coverage, and raising public awareness about the importance of routine eye care.

KEYWORDS: Vision, Primary Eye Care, blindness, optometry, primary healthcare.

1. Introduction

Primary healthcare centers in Saudi Arabia play a vital role in delivering essential services to the population. Integrating optometrists into these centers can significantly improve eye care accessibility. Optometrists with expertise in conducting eye examinations, diagnosing common eye conditions, and prescribing corrective lenses can address a large portion of eye care needs (Figure 1). This not only reduces strain on ophthalmologists, but also provides timely intervention for refractive errors and early detection of potential eye diseases, ultimately promoting better overall eye health for the people of Saudi Arabia (Al-Ahmadi and Roland 2005).

Visual impairment and blindness are serious health problems that occur worldwide. The estimated number of blind persons in Saudi Arabia is 1.5% of the total population, and over 20% are aged 60 years or older (Tabbara 2001). Reports show that the prevalence of blindness according to WHO criteria is 0.8%, and that of visual impairment is 13.9%, which is caused by refractive errors (36%), cataracts (29.1%), and diabetic retinopathy (20.9%) (Al-Shaaln, Bakrman et al. 2011). According to reports, among all visits to outpatient services in Ministry of Health (MOH) hospitals, secondary hospital eye clinics comprised 12%. The most common diagnoses in eye clinics are conjunctivitis (31.7%), refractive errors (20.9%) (Khathlan 2021), and cataracts (14.8%). Among the younger age groups, the most common morbidities were strabismus (36.9%) and refractive error (26.5%).

Primary eye care has been under discussion since the development of the 2001 National Prevention of Blindness Program, when Saudi Arabia signed the Right to Sight initiative (Al-Ghamdi 2019). The inclusion of eye care facilities in primary health care centers is mandatory. A previous study reported that the majority of cases (93%) can be managed in a community clinic. They also mentioned that patient satisfaction with the care provided ranged from 88% to-95ittle literature is available on eye care services in primary healthcare settings.

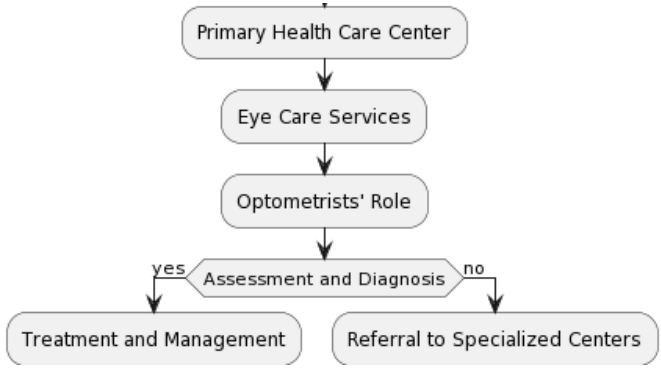

Figure 1: Flow chart for optometrists in eye care services in primary health care centers in Saudi Arabia

According to a comprehensive review by Pascolini and Mariotti, uncorrected refractive errors account for 43% of the visual impairments experienced by 285 million people worldwide, with cataracts accounting for 33%. Of these, 285 million and 246 million are partly sighted, and 39 million are blind(Pascolini and Mariotti 2012). Globally, 228 million individuals (80% of the population) suffer from avoidable vision impairment(Pascolini and Mariotti 2012). The World Health Organization (WHO) estimates that 5 million people (13%) in the Eastern Mediterranean Region are blind, and a study estimated that 4758 million people (around 50% of the world's population) are expected to be myopic (nearsightedness)by the year 2050 (Modjtahedi, Abbott et al. 2021).

This study aims to address the critical gap in the literature regarding the role of optometrists in eye care services within primary healthcare centers in the Kingdom of Saudi Arabia, particularly those affiliated with the Ministry of Health. Through a comprehensive cross-sectional approach, this research seeks to provide valuable insights into the availability, utilization, and impact of optometry services in these settings. Ultimately, the study aspires to highlight the contributions of optometrists and enhance the provision of eye care within primary healthcare centers across the country.

2. Method

Study Design and Population

This research was designed as a multicenter cross-sectional study conducted across primary healthcare centers (PHCs) in various regions of Saudi Arabia. The study aimed to assess the availability, utilization, and impact of optometry services provided in PHCs. The study population consisted of PHCs in Saudi Arabia with optometry services affiliated with the Ministry of Health. A total of 10 PHCs were

selected for the study, representing diverse regions within the country. These centers were chosen based on the presence of optometry services and available workforce, allowing for a representative sample to capture regional variations.

Data Collection, Variables, and Measurements

Data collection involved a comprehensive survey distributed to the relevant health affairs and health clusters overseeing the selected PHCs. The survey gathered data on the number of cases treated by optometrists, referrals to secondary hospitals, and the availability of essential eye care equipment, such as visual acuity charts, auto-refractometers, and phoropters.

The primary variables collected included:

- Number of Treated Cases: The total number of eye-related cases managed within the PHC by optometrists.

- Number of Referred Cases: Cases requiring advanced care, referred to secondary hospitals for further management.

- Referral Rate: Calculated as the proportion of referred cases to total treated cases in each PHC.

Secondary data included workforce statistics (number of optometrists per center) and available diagnostic equipment, facilitating an understanding of resource distribution across regions.

Data Analysis

Data was analyzed using the Statistical Package for Social Sciences version 26. Descriptive statistics were used to summarize the availability and utilization of optometry services, with referral rates calculated to highlight collaboration between PHCs and secondary hospitals. Comparative analyses were conducted across regions to identify differences in optometry service coverage and referral patterns.

Ethical Considerations

Ethical approval was obtained from the National Committee of Bio & Med Ethics (NCBE) (Registration No. H-04-Q-001). The study adhered to the principles of confidentiality, ensuring that no identifying information of patients or healthcare providers was included in the publication.

3. Result

Overview of Eye Care Services in PHCs

Table 1 summarizes the availability of optometry services, workforce availability, cases treated, and cases referred in PHCs across four regions of Saudi Arabia. The study included a total of 10 PHCs distributed across four regions of Saudi Arabia. The Eastern Province accounted for three PHCs, while the Makkah Region had two PHCs. The Riyadh Region represented the largest proportion, with four PHCs, whereas the Al-Qassim Region was represented by a single PHC. This distribution highlights regional variability in the availability of optometry services within the selected healthcare centers. The Eastern Province had the highest number of treated cases (13,078), while Al-Qassim recorded the least (1,754). A total of 36,849 (77.8%) cases were treated in 2022, with 10,526 (22.2%) referred to secondary hospitals (Figure 1).

Table 1: comprehensive assessment of optometry services offered in primary healthcare centers (PHCs) across various regions of Saudi Arabia

Region	Number of PHCs with Optometry Services	Workforce Responders	Treated Cases (2022)	Referred Cases (2022)
Eastern Province	3	4	13078	3069
Makkah	2	3	7825	2011
Riyadh	4	5	14192	4633
Al Qassim	1	2	1754	813
TOTAL	10	14	36849	10526

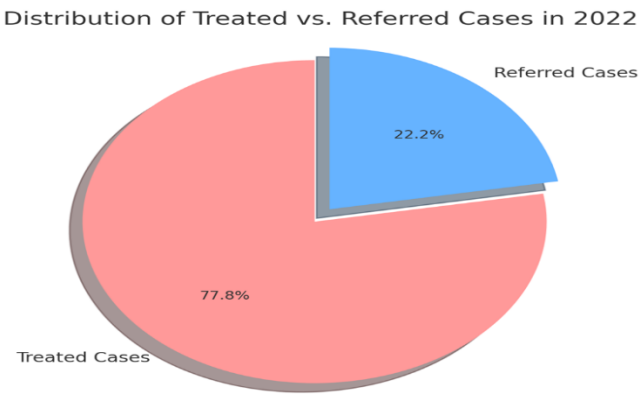

Figure 1: Distribution of Treated vs Referred cases in primary healthcare centers (PHCs) across various regions of Saudi Arabia, 2022

Case Management by PHCs

Table 2 and Figure 2 collectively highlight the variability in the management and referral of cases across the 10 PHCs included in the study. The percentage of cases treated locally at the PHCs ranged from 53.65% at Al-Safra PHC in Al-Qassim to

100% at Al-Fayhaa PHC in Riyadh, which had no referrals, showcasing complete in-house management of all cases. Conversely, referral rates varied significantly, with Al-Safra PHC reporting the highest rate (46.35%) and several centers, such as Prince Sultan PHC in Riyadh (45.91%) and Al-Yahya PHC in the Eastern Province (42.17%), also exhibiting high reliance on secondary care. The data reveal regional disparities in service delivery, with some centers effectively managing the majority of cases locally while others demonstrate a greater need for additional resources to reduce referrals. These findings underscore the critical role of optometrists in managing eye care at the primary level and the necessity of addressing gaps in capacity to enhance service delivery and accessibility across all regions.

Table 2: A breakdown of the data for the 10 PHCs in Saudi Arabia

PHC	Treated Cases (%)	Referred Cases (%)
Al-Omran PHC (Alhassa - Eastern Province)	93.13%	6.87%
Al-Yahya PHC (Alhassa - Eastern Province)	57.83%	42.17%
Al-Faisaliyah PHC (Dammam - Eastern Province)	69.26%	30.74%
Musherfah PHC (Jeddah - Makkah)	73.40%	26.60%
Al-Waha PHC (Jeddah - Makkah)	75.12%	24.88%
Al-Falah PHC (Riyadh)	67.58%	32.42%
Al-Faiha PHC (AlMajmah - Riyadh)	100.00%	0.00%
Atigah PHC (Riyadh)	77.65%	22.35%
Prince Sultan PHC (Riyadh)	54.09%	45.91%
Al-Safra PHC (AlQassim)	53.65%	46.35%

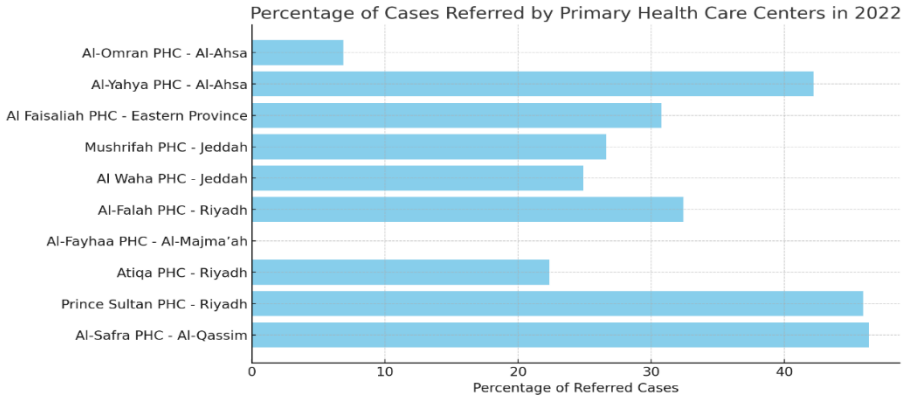

Figure 2: Percentage of Cases Referred by Primary Health Care Centers in Saudi Arabia

Common Causes of Visual Impairment

Common causes of visual impairment among Saudi adults attending PHC include refractive errors, cataracts, and diabetic retinopathy. Refractive errors accounted for 36% of low vision cases, followed by cataracts (29.1%) and diabetic retinopathy (20.9%). These findings highlight the importance of the early detection and management of these conditions to improve overall eye health in Saudi Arabia.

4. Discussion

Our analysis showed that optometrists play an important role in the delivery of eye care services in primary healthcare centers in Saudi Arabia, help reduce the burden on ophthalmologists, and facilitate access to eye care services for patients. As the analysis of our results highlights the following:

1. A high number of cases treated: A large number of patients (36,849 in 2022) were treated within primary care centers, demonstrating the crucial role of primary care in eye health.

2. Reducing the burden on ophthalmologists: A referral rate of 22.2% indicates an effective collaboration between optometrists and ophthalmologists. Optometrists handle a large portion of the eye care needs, allowing ophthalmologists to focus on more complex cases.

3. Improving access to care: The presence of optometry services in primary healthcare centers in various regions (Eastern Province, Makkah Al-Mukarramah, Riyadh, and Al-Qassim.) Enhances access to eye care.

Optometrists as primary eye care providers:

1. Our data suggest that optometrists are the first point of contact for most of the patients. In the table for “Effectiveness and impact on patients in 2022” (although the specific case is not mentioned), the percentages “seen” (presumably by optometrists) are consistently higher of the "referred" percentages. This means that optometrists can manage most cases and only refer to those that require specialist care.

2. Workforce Respondents: The presence of 14 workforce respondents in 10 PHC centers indicates the need to increase the number of optometrists in primary healthcare.

Primary eye care treatments currently available in Saudi Arabia's primary health centers are inadequate for the country's expanding population and come after poor vision rehabilitation therapies. Thus, careful planning of eye-care services is required to meet this demand. The need for optometrists as primary eye care providers is not limited to health centers. According to a study in 2023, which assessed low-vision services in the Kingdom of Saudi Arabia, out of all governmental and private facilities along with optical shops in the Kingdom, only 4% (20 facilities) offered services for low vision rehabilitation, with the majority (75%) being based in the central area. Furthermore, the vast majority of therapies (95%) provided were fundamental optometric rehabilitation therapies, whereas other services were either provided infrequently or not at all(Alanazi, Almutleb et al. 2023).

As the first point of contact for Saudi patients seeking eye care, optometrists are advised to operate as primary eye-care providers under the Ministry of Health Policy. Optometrists can treat approximately two-thirds of the patients who visit public hospital eye clinics because of the disproportionate number of patients seeking therapy for refractive issues. Consequently, optometrists should be the first professionals in primary health care centers to provide eye care services. By doing so, public hospitals' workloads and appointment waits can be reduced. In addition, this methodology will improve the timely identification of conditions that could impair vision, and ensure that the right people are referred to avoid further issues.(Aldebasi, Ahmed et al. 2018) In the USA, optometrists perform 85% of all comprehensive eye exams and prescribe 90% of vision correction treatments. (Foreman, Xie et al. 2018) In Australia, optometrists serve as the first point of contact for primary eye care services; nevertheless, their use in hospitals is not very prevalent(Fraga, Aydogdu et al. 2010).

As primary eye-care professionals, Saudi optometrists are required to hold a prominent place in medical facilities and provide medical services in the fields of contact lenses, poor vision, binocular vision, occupational vision care, and ocular disorders. For patients in primary eye care clinics, the best possible eye care is provided by assigning an educated optometrist as the complete primary eye care practitioner. In both developed and less-developed nations, optometrists are essential for the detection of refractive error, glaucoma, and DR screening(Mansberger, Johnson et al. 2005). Countries such as Australia, Hong Kong, Malaysia, Mauritius, New Zealand, the Philippines, Nigeria, South Africa, the Netherlands, Scandinavia, the UK, Canada, Mexico, and the US have independent and regulated optometry practices(De Souza, Cui et al. 2012). In nations with developed eye care systems, optometrists provide 90% of primary eye care services and approximately 70% provide comprehensive eye care.(Baker, Harper et al. 2016) Primary eye care serves as the first line of treatment and is a crucial component of comprehensive eye care, which aims to prevent blindness and visual impairment as well as lower ocular morbidity, which includes eye health education, history identification, visual acuity, refraction, screening for eye pathology, and identifying the systemic effects of ocular medicines and the ocular symptoms of systemic disorders. (Sison)Optometrists also

make appropriate referrals for subspecialty care when indicated. (Carmichael, Abdi et al. 2023)studies showed higher diagnostic accuracy for optometrists than for general physicians (Pierscionek, Moore et al. 2009, Bhagra, Tierney et al. 2016, Fung and management 2020)regarding eye problems.

The World Health Organization (WHO) estimates the optometrist-to-population ratio to be1:600,000 (Naidoo, Govender-Poonsamy et al. 2023). According to the WHO recommendations, by 2020, there should be at least one optometrist per 50,000 persons, an improvement of 1:100000 in 2010. The most developed countries (USA, UK, and Australia) have far exceeded the minimum target of optometrists for the population, with a ratio of approximately 1:8333 in the USA, 1:10 000 in the UK, and 1:7500 in Australia(Aldebasi, Ahmed et al. 2018). In Saudi Arabia, there is one optometrist per 95 000 of the population,(Aldebasi, Ahmed et al. 2018) This ratio falls short of the best-practice international benchmark for countries such as the USA, the UK, and Australia. However, as ophthalmologists are patients' main point of contact, optometrists as primary eye care providers are not prioritized in Saudi Arabian public eye clinic services.

5. Limitations and areas for improvement:

1. Coverage: With only 10 primary healthcare centers out of 2,120 primary healthcare centers providing optometry services by 2022, there is a need to expand coverage across the country.

2. Awareness: Data show that a relatively low percentage (0.229%) of the population will visit primary healthcare centers because of vision problems by 2022. Public awareness campaigns can encourage people to prioritize eye health checks.

3. The nature of treated and referred cases was not assessed.

This analysis underscores the vital role of optometrists in enhancing access to eye care and in reducing the burden on ophthalmologists in Saudi Arabia. Continued investment in expanding optometry services within primary health care centers will ensure comprehensive eye care for the population.

6. Recommendations

1. Scope of optometry services in primary health care centers: The Ministry of Health must work to expand the scope of optometry services in primary health care centers, as mentioned in their recent policies and procedures manual for optometry published in 2022 by the Office of the Assistant Deputyship for Medical Support Services - General Secretariat for Clinical Specialties in the Ministry of Health, to

include all parts of the Kingdom of Saudi Arabia. This will help to provide eye care services to more patients and reduce the burden on hospitals.

2. Increasing the number of optometrists: The Ministry of Health must increase the number of optometrists in Saudi Arabia. This is linked to the provision of eye healthcare services for further guidance during waiting time.

3. Raising the level of awareness of the importance of eye health: The Ministry of Health must work to raise awareness of the importance of eye health among members of the society. This is linked to encouraging individuals to undergo regular eye examination.

7. Conclusion

Optometrists significantly contribute to eye care delivery in Saudi Arabia's primary healthcare centers, easing the burden on ophthalmologists, preventing blindness, and enhancing patient accessibility to eye care. Saudi Arabia's primary health centers currently lack sufficient primary eye care services for its growing population.

References

Al-Ahmadi, H. and M. J. I. J. f. Q. i. H. C. Roland (2005). "Quality of primary health care in Saudi Arabia: a comprehensive review." 17(4): 331-346.

Al-Ghamdi, A. S. J. S. J. o. O. (2019). "Adults visual impairment and blindness–An overview of prevalence and causes in Saudi Arabia." 33(4): 374-381.

Al-Shaaln, F. F., M. A. Bakrman, A. M. Ibrahim and A. S. J. A. o. S. m. Aljoudi (2011). "Prevalence and causes of visual impairment among Saudi adults attending primary health care centers in northern Saudi Arabia." 31(5): 473-480.

Alanazi, M. K., E. S. Almutleb, Y. S. Badawood, M. A. Kudam and M. J. I. J. o. O. Liu (2023). "Perspectives and clinical practices of optometrists in Saudi Arabia concerning myopia in children." 16(2): 267.

Aldebasi, Y. H., M. I. Ahmed, W. A. J. A. V. Monaco and E. Health (2018). "Are optometrists necessary in primary health care centres in Saudi Arabia?" 77(1): 1-10.

Baker, H., R. Harper, D. Edgar and J. J. B. o. Lawrenson (2016). "Multi-stakeholder perspectives of locally commissioned enhanced optometric services." 6(10): e011934.

Bhagra, A., D. M. Tierney, H. Sekiguchi and N. J. Soni (2016). Point-of-care ultrasonography for primary care physicians and general internists. Mayo Clinic Proceedings, Elsevier.

Carmichael, J., S. Abdi, K. Balaskas, E. Costanza, A. J. O. Blandford and P. Optics (2023). "Assessment of optometrists' referral accuracy and contributing factors: A review." 43(5): 1255-1277.

De Souza, N., Y. Cui, S. Looi, P. Paudel, L. Shinde, K. Kumar, R. Berwal, R. Wadhwa, V. Daniel and J. J. I. j. o. o. Flanagan (2012). "The role of optometrists in India: An integral part of an eye health team." 60(5): 401-405.

Foreman, J., J. Xie, S. Keel, G. S. Ang, P. Y. Lee, R. Bourne, J. G. Crowston, H. R. Taylor and M. J. J. o. Dirani (2018). "Prevalence and causes of unilateral vision impairment and unilateral blindness in Australia: the National Eye Health Survey." 136(3): 240-248.

Fraga, J. C., B. Aydogdu, R. Aufieri, G. V. Silva, L. Schopf, E. Takamatu, A. Brunetto, E. Kiely and A. J. T. A. o. t. s. Pierro (2010). "Surgical treatment for pediatric mediastinal neurogenic tumors." 90(2): 413-418.

Fung, K. K. J. J. o. h. o. and management (2020). "Physician managers in Hong Kong public hospitals." 34(2): 215-230.

Khathlan, A. A. B. J. S. J. o. O. (2021). "Community ophthalmology clinic utilization and morbidities results from a private primary healthcare center in Saudi Arabia." 35(1): 34-38.

Mansberger, S. L., C. A. Johnson, G. A. Cioffi, D. Choi, S. Krishnadas, M. Srinivasan, V. Balamurugan, U. Kim, S. D. Smith and J. H. J. J. o. g. Wilkins (2005). "Predictive value of frequency doubling technology perimetry for detecting glaucoma in a developing country." 14(2): 128-134.

Modjtahedi, B. S., R. L. Abbott, D. S. Fong, F. Lum, D. Tan, M. Ang, S. Chiarito, S. A. Cotter, A. M. Fernandez and A. J. O. Grzybowski (2021). "Reducing the global burden of myopia by delaying the onset of myopia and reducing myopic progression in children: the Academy's Task Force on Myopia." 128(6): 816-826.

Naidoo, K. S., P. Govender-Poonsamy, P. Morjaria, S. Block, V. F. Chan, A. C. Yong, L. J. A. V. Bilotto and E. Health (2023). "Global mapping of optometry workforce." 82(1): 850.

Pascolini, D. and S. P. J. B. J. o. O. Mariotti (2012). "Global estimates of visual impairment: 2010." 96(5): 614-618.

Pierscionek, T., J. Moore, B. J. O. Pierscionek and P. Optics (2009). "Referrals to ophthalmology: optometric and general practice comparison." 29(1): 32-40.

Sison, J. M. B. "PEOPLE" S PERCEPTION TOWARDS EYE CARE, ITS USAGE, AND VISUAL."

Tabbara, K. F. J. B. j. o. o. (2001). "Blindness in the eastern Mediterranean countries." 85(7): 771-775.