

AVAILABILITY AND ADEQUACY OF HUMAN RESOURCES FOR REFRACTIVE
ERROR SERVICES IN PUBLIC SECTOR HOSPITALS OF DISTRICT PESHAWAR,
PAKISTAN: A CROSS-SECTIONAL SITUATIONAL ANALYSIS

1. Muhammad Imshad Khan

Assistant Professor Vision Sciences, RCAHS,RMI,Peshawar.

Email: muhammad.imshad@rmi.edu.pk

2. Shazia Noreen

Lecturer, Optometry, PICO,Peshawar.

Email: shazia@pico.org.pk

3. Anum Sarfaraz

Lecturer Vision Sciences,RCAHS,RMI,Peshawar.

Email: anum.sarfaraz@rmi.edu.pk

Corresponding Author:

Aamir Asif*

Lecturer Vision Sciences,RCAHS,RMI,Peshawar.

Email: aamir.asif@rmi.edu.pk

Abstract

Author Details
Received on 28 Feb, 2026
Accepted on 26 March, 2026
Published on 30 March, 2026
Corresponding E-mails & Authors*: Aamir Asif Email: aamir.asif@rmi.edu.pk

Background: Effective refractive error services depend on an adequate and appropriately distributed eye-care workforce. However, information on the availability of personnel providing refractive services in public hospitals in Pakistan is limited. **Objective:** To assess the availability and distribution of human resources for refractive error services in public sector hospitals of District Peshawar, Pakistan. **Methods:** A cross-sectional situational analysis was conducted over six months in eight public sector hospitals in District Peshawar: three

tertiary-care hospitals, two secondary-care hospitals, one district-headquarters (DHQ) hospital, and two tehsil-headquarters (THQ) hospitals. A non-probability consecutive sampling technique was used. Information on human resources was collected through interviews with hospital heads. Data were entered and analyzed using SPSS version 21, and descriptive statistics were reported as frequencies.

Results: Human resources were unevenly distributed across the eight hospitals. The tertiary-care hospitals had 10 optometrists, 3 refractionists, 23 ophthalmic technicians, and 20 ophthalmic nurses. The two secondary-care hospitals had only one optometrist, while the DHQ hospital had two optometrists and one ophthalmic technician. No personnel for refractive services were identified at either THQ hospital. Overall, specialist personnel and the widest range of services were concentrated at tertiary-care level.

Conclusion: Public sector hospitals in District Peshawar have an uneven distribution of human resources for refractive error services, with marked shortages at secondary, DHQ, and THQ levels. Workforce planning, recruitment and training of refractionists and other eye-care personnel, and integration of basic refractive services into lower-level healthcare facilities are needed.

Keywords: Human resources; refractive error; refractive services; optometrists; refractionists; public sector hospitals; Peshawar.

Introduction

Visual impairment is a major public-health concern because vision is essential for education, employment, independent living, and social participation. The World Health Organization (WHO) estimated that at least 2.2 billion people worldwide had vision impairment or blindness in 2019, and at least 1 billion cases were preventable or had not yet been addressed. The burden is not distributed equally; people in low- and middle-income countries and underserved communities often face greater barriers to timely and appropriate eye care [1].

Refractive errors are an important and treatable cause of vision impairment. When refractive errors are not identified and corrected, they can affect learning, work productivity, daily functioning, and quality of life. Effective refractive error services require more than the availability of examination equipment: services also depend on

trained personnel, clear professional roles, appropriate referral pathways, and access to affordable spectacles and other required interventions [1,2]. WHO has emphasized the need to improve effective coverage of refractive error services and strengthen the systems responsible for delivering them [2].

The eye-care workforce includes professionals with different competencies and scopes of practice, including optometrists, refractionists, ophthalmic technicians, ophthalmic assistants, ophthalmic nurses, and ophthalmologists. These cadres contribute in different ways to refraction, identification of eye conditions, referral, spectacle provision, and specialized eye care. The WHO's competency-based refractive error teams guidance recommends coordinated teamwork across community, primary, secondary, and tertiary levels, with defined roles, suitable training, and appropriate allocation of tasks [2]. In resource-constrained settings, shortages or an uneven distribution of these personnel can restrict service availability even when some facilities have basic infrastructure [1,2,3,4].

Integrating eye care into primary health care is important for improving equitable access. The WHO World Report on Vision recommends a people-centred approach in which eye-care promotion, prevention, treatment, and rehabilitation are coordinated across health-system levels rather than being concentrated in a small number of specialist facilities [1]. Evidence and experience from different settings also indicate that access to refractive services is influenced by the distribution of trained staff and the organization of public-sector services [5,6,7,8]. Consequently, assessing workforce availability at individual facilities can help identify service gaps and inform planning for training, recruitment, deployment, and referral arrangements.

In Pakistan, public hospitals operate alongside private providers and non-governmental eye-care organizations. However, the availability of refractive services and personnel may vary across facilities and levels of care. The source study's situational assessment in District Peshawar therefore examined the presence and distribution of personnel involved in refractive error services across tertiary-care, secondary-care, district-headquarters (DHQ), and tehsil-headquarters (THQ) hospitals. The purpose was to identify workforce gaps that may affect service provision and to provide locally relevant

information for planning a more accessible and appropriately staffed refractive-care system.

Materials and Methods

The study used a cross-sectional design and was conducted over six months in eight public sector hospitals in District Peshawar: Hayatabad Medical Complex (HMC), Khyber Teaching Hospital (KTH), Lady Reading Hospital (LRH), Police and Services Hospital, Water and Power Development Authority (WAPDA) Hospital, Nasirullah Khan Babar Memorial Hospital, Moulvi Ameer Shah Memorial Hospital, and Satellite Hospital Shah Alam.

A non-probability consecutive sampling technique was used. Public sector hospitals representing tertiary, secondary, DHQ, and THQ levels were included; private hospitals were excluded. The study proposal was reviewed through the relevant graduate and research bodies, and ethical approval was obtained from the ethical committee of Hayatabad Medical Complex, Peshawar.

Human-resource information was collected through interviews with hospital heads using a predesigned questionnaire. Data were recorded separately for each hospital, coded, and analyzed using SPSS version 21. Descriptive statistics were used, and findings are presented as frequencies.

Results

Human resources in tertiary-care hospitals

HMC had five optometrists, one refractionist, twelve ophthalmic technicians, and twenty ophthalmic nurses. KTH had three optometrists, one refractionist, and three ophthalmic technicians, with no ophthalmic nurses. LRH had two optometrists, one refractionist, and eight ophthalmic technicians, with no ophthalmic nurses. Across the three tertiary hospitals, the total workforce comprised 10 optometrists, 3 refractionists, 23 ophthalmic technicians, and 20 ophthalmic nurses.

Human resources in secondary-care hospitals

Among the two secondary-care hospitals, Police and Services Hospital had one optometrist. WAPDA Hospital had no identified personnel for refractive services. Neither hospital had a refractionist, ophthalmic technician, or ophthalmic nurse.

Human resources in the DHQ hospital
Nasirullah Khan Babar Memorial Hospital had two optometrists and one ophthalmic technician. It had no refractionist or ophthalmic nurse.

Human resources in THQ hospitals
Neither Moulvi Ameer Shah Memorial Hospital nor Satellite Hospital Shah Alam had an optometrist, refractionist, ophthalmic technician, or ophthalmic nurse. Patients requiring refractive services were referred to tertiary-care hospitals.

Summary of workforce distribution
Across all eight hospitals, the reported workforce included 13 optometrists, 3 refractionists, 24 ophthalmic technicians, and 20 ophthalmic nurses. Most personnel were located in tertiary-care hospitals, while the THQ hospitals had no refractive-service workforce.

Table 1: *Distribution of human resources for refractive services by hospital*

Hospital level	Hospital	Optometrists	Refractionists	Ophthalmic technicians	Ophthalmic nurses
Tertiary	HMC	5	1	12	20
Tertiary	KTH	3	1	3	0
Tertiary	LRH	2	1	8	0
Secondary	Police and Services Hospital	1	0	0	0
Secondary	WAPDA Hospital	0	0	0	0
DHQ	Nasirullah Khan Babar Memorial Hospital	2	0	1	0
THQ	Moulvi Ameer Shah Memorial Hospital	0	0	0	0

THQ	Satellite	0	0	0	0
	Hospital Shah				
	Alam				
Total	All eight	13	3	24	20
	hospitals				

Discussion

The findings demonstrate an uneven distribution of human resources for refractive error services across public sector hospitals in District Peshawar. Tertiary-care hospitals held most of the available workforce, whereas secondary-care facilities had very limited staffing, the DHQ hospital had only two professional categories represented, and both THQ hospitals lacked personnel for refractive services.

The concentration of staff at tertiary level may make access more difficult for patients who depend on lower-level facilities. The absence of a refractive-service workforce at THQ level also means that patients must be referred elsewhere, potentially adding travel, time, and cost burdens.

The findings are consistent with international evidence that shortages and unequal distribution of eye-care personnel can limit access to services, particularly where eye care is not adequately integrated into primary health care [1–5]. WHO guidance emphasizes workforce planning, defined competencies, teamwork, and coordination across levels of care as important components of strengthening refractive error services [2].

Strengths and limitations: This study provides a facility-level overview of human resources across eight public hospitals and different levels of care. However, it assessed staffing from the providers’ perspective and did not measure service effectiveness or include the perspectives of patients. The study period coincided with an academic year-end break, which may have affected staff availability and participation.

Conclusion

Human resources for refractive error services in District Peshawar are unevenly distributed and concentrated mainly in tertiary-care hospitals. Secondary-care hospitals

have limited staffing, the DHQ hospital has a small workforce, and no refractive-service personnel were identified at the two THQ hospitals. Strengthening the workforce through training, recruitment, retention, and deployment of eye-care personnel at lower levels of healthcare is needed to improve access to refractive services.

Recommendations

1. Develop a district-level workforce plan for refractive error services, with clear staffing requirements for each level of healthcare.
2. Recruit and appropriately deploy optometrists, refractionists, ophthalmic technicians, and other relevant eye-care personnel to secondary, DHQ, and THQ facilities.
3. Expand training opportunities and establish career pathways to support recruitment and retention of refractionists and allied ophthalmic personnel.
4. Integrate basic refractive services into lower-level healthcare facilities and establish referral pathways for services that cannot be provided locally.
5. Conduct periodic assessments of staffing levels and service availability to guide planning and monitor improvements.

References have been retained from the source manuscript. Please verify and complete the bibliographic details before journal submission, as several entries in the source document are incomplete or described generically.

References

1. World Health Organization. World report on vision. Geneva: World Health Organization; 2019.
2. World Health Organization. Competency-based refractive error teams. Geneva: World Health Organization; 2025. ISBN: 978-92-4-010920-9.
3. Sukati V, Moodley VR, Mashige KP. Knowledge and practices of eye health professionals about the availability and accessibility of child eye care services in the public sector in Swaziland. *African Vision and Eye Health*. 2019;78(1):1–7.
4. Ntodie M, Danquah L, Kandel H, Abokyi S. Toward eliminating blindness due to uncorrected refractive errors: assessment of refractive services in the northern

- and central regions of Ghana. Clinical and Experimental Optometry. 2014;97(6):511–515.
5. Mohamed FN, Omar R. A situational analysis of clinical refraction services in the capital city of the Maldives. Medical Hypothesis, Discovery and Innovation in Ophthalmology. 2021;10(4):146–155.
 6. Ntodie M, Danquah L, Kandel H, Abokyi S. Toward eliminating blindness due to uncorrected refractive errors: assessment of refractive services in the northern and central regions of Ghana. Clinical and Experimental Optometry. 2014;97(6):511–515.
 7. Mohamed FN, Omar R. A situational analysis of clinical refraction services in the capital city of the Maldives. Medical Hypothesis, Discovery and Innovation in Ophthalmology. 2021;10(4):146–155.
 8. Morjaria P. A situational analysis of refractive error services in Kenya. MSc thesis. London School of Hygiene and Tropical Medicine, University of London; 2009.