

Original Research Article

# A Study On The Role Of Optometrists In Abilities In The Public And Private Sectors.

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## Abstract

Optometry is an independent, trained, and regulated (licensed/registered) healthcare profession. Optometrists offer complete eye and vision care, including refraction and dispensing, detection/diagnosis and treatment of eye illness, and visual system rehabilitation. Optometrists assess patients for astigmatism. Optometrists examine eyes and visual system. They detect and treat eye illnesses, injuries, and other abnormalities. As required, they prescribe glasses or contacts. The main aim of this study is to discuss the role and abilities of Abilities in the Public and Private Sectors. A quantitative research approach was used to poll public and private optometrists. 420 surveys were completed. The sample was stratified. Data was analyzed by qualification, gender, and practice sector. Chi-square tests and Kendell's tau-b were employed to analyze frequencies and percentages. The research underlined the necessity for enforcing best practice standards and broadening the scope of defined practice since optometrists are better equipped for diagnostic roles and complete eye exams and can avoid preventable blindness.

**Keywords:** optometry, optometrists, public, private sector, abilities, skills etc.

## INTRODUCTION

Optometry is a sub-field of medicine that focuses on diagnosing and treating vision problems by conducting thorough examinations of the eye and its associated tissues. Optometrists are members of the medical community who provide primary eye care that is often comprehensive in nature. Those with a Specialist of Optometry degree are able to rehearse as optometrists. As well as giving consideration to refractive (optical) eye problems, these experts are additionally prepared and authorized to rehearse medication for eye-related sicknesses. Optometrists are the main medical services experts who have a first expert degree that is explicitly designed for eye care. Ophthalmologists are doctors who ordinarily hold a four-year professional education, a physician certification, and something like three years of residency preparing after clinical school, wiping out the requirement for an eye-explicit degree. Optometrists are the main medical services experts who have a first expert degree that is explicitly intended for eye care [1].

## Optometrists

Optometrists are the essential medical care professionals of the eye and visual framework; they offer administrations like refraction and administering, infection recognition and the executives, and visual framework recovery. This calling is independent, requires particular schooling and preparing, and is dependent upon government oversight through permitting and enrollment prerequisites [2]. The nation of India is home to in excess of fifty distinct optometry schools right now. In the year 1958, the Chief General of Wellbeing Administrations of the Public authority of India laid out two schools of optometry, one at Gandhi Eye Medical clinic in Aligarh, which is situated in the province

of Uttar Pradesh, and another at Sarojini Devi Eye Emergency clinic in Hyderabad, which is situated in the territory of Telangana. Both of these schools were essential for the second five-year plan. These instructive foundations gave optometry programs that endured to a sum of two years and prompted the granting of testaments by state clinical resources. In the years that followed, four extra schools were laid out in various pieces of India. These schools are situated at the Sitapur Eye Emergency clinic in Sitapur, Uttar Pradesh; the Bengalooru (previously Bangalore) in Karnataka; the Provincial Organization of Ophthalmology in Thiruvananthapuram (previously Trivandrum) in Kerala; and the Chennai (previously Madras) in Tamil Nadu. In 1985, the World class School of Optometry (ESO) turned into the primary foundation of its sort to give a degree program that went on for the full range of four years. The School of Optometry at Bharati Vidyapeeth Considered College in Pune was the principal establishment to give a degree course to understudies who previously held a confirmation through a sidelong passage program. The school was established in 1998. What's more, the initial two years of a graduate degree program in optometry were shown here at this area starting in the year 2003. Colleges in India that are perceived by the College Awards Commission (India), a legal body liable for the upkeep of the principles of advanced education in India, are the ones that can present scholarly degrees like the Lone wolf of Optometry, the Expert of Optometry, and the Specialist of Reasoning in Optometry to their understudies. Optometrists in all aspects of India are emphatically encouraged to join with the Optometry Gathering of India, which is a self-administrative association that was laid out as per the Indian Organization Act [3].

### **Role of Optometrists**

Optometrists are primary health care professionals educated to check the eyes to find visual defects, damage symptoms, ocular illnesses or abnormalities, and issues with general health. Optometrists diagnose, treat, and manage problems and diseases of the eye and visual system in the course of their work. Examine the eyes and the visual system, identify any issues or limitations, recommend corrective lenses, and provide therapy. May recommend medicinal medications to address certain eye diseases. We have also covered optometrist degrees and alternate careers in this post.

### **Roles**

- ✓ Test analysis
- ✓ Diagnosis
- ✓ Prescription
- ✓ Surgery
- ✓ Treatment
- ✓ Evaluation of medical history
- ✓ Counseling

The proper treatment for patients involves the participation of the appropriate specialists. Optometrists, also known as doctors of optometry, are highly trained professionals who are able to collaborate with other members of the medical community, such as primary care physicians, nurses, and pediatricians, to provide patients with the highest level of treatment that is clinically feasible. Better health results for Albertans of all ages are produced as a direct result of healthcare providers referring patients to optometrists. Before they are allowed to practice medicine, optometrists must first complete a rigorous educational program, much like their colleagues in the medical field. First, they get a Bachelor of Science degree from an approved university, and then they enroll in and graduate from a Doctor of Optometry program that lasts for four years [4].

## LITERATURE REVIEW

**Alrasheed, Saif. (2019) [5]** - The reason for this exploration was to assess the effect that Sudanese optometrists have had on essential eye care in the province of Khartoum in Sudan. This was a spellbinding cross-sectional overview that was completed in seven locales inside the territory of Khartoum during the long periods of February 2018 and January 2019. The data was assembled using a survey that was conveyed to 300 optometrists who were utilized at essential wellbeing offices in the province of Khartoum in Sudan. As per most of optometrists (99.7%), who partook in the review, they talked with their patients to get data on their eye wellbeing. By far most of optometrists, almost 100%, detailed that patient chronicles were taken during eye assessments. These narratives remembered data for the patient's overall wellbeing, family ancestry, and visual history. Optometrists just revealed involving demonstrative colors for their patients 22% of the time, as per the review. 53 point three percent of optometrists said that they alluded their patients to ophthalmologists for additional conclusion and treatment. Most of optometrists detailed that the essential difficulties that they confronted while giving essential eye care were the accompanying: there is no reasonable expected set of responsibilities sorting out the work, there is inadequate data about eye care, and there is an absence of abilities/skills to manage essential eye care, as well as the anxiety toward the legitimate issue. Also, there are insufficient instruments accessible for essential eye care.

**Osugwu, Uchechukwu et al. (2013) [6]** -The lack of knowledge, treatment, and management of systemic hypertension is an issue that affects the entire world, but the situation is far worse in Saudi Arabia. This research investigates the role that optometrists in Saudi Arabia play in the diagnosis and treatment of individuals suffering from systemic hypertension. To decide the level of information and consciousness of the job that optometrists play in the battle against fundamental hypertension, we led a study with an example size of 250 experts who are presently rehearsing in Saudi Arabia. Optometrists presently in private practice gave a reaction pace of 48.4% to our review. Most of optometrists who partook in the study had an ideal disposition in regards to the normal execution of circulatory strain (BP) screens into optometric rehearses. 46% of the optometrists approached a circulatory strain screen, and of these respondents, around 93% really utilized the screens while leading center meetings. Most of the time, computerized screens were utilized (54%). 51% of the optometrists said that they did habitually inquiry their patients about hypertension, and 49% of the optometrists got some information about the medications they were presently taking for hypertension. The request that was gotten some information about the patient's cholesterol level 21% of the time was one of the more uncommon ones. At the point when optometrists inspect hypertension patients, the tests that are used the most often incorporate direct ophthalmoscope with a red free channel (56%), while the test that is used the least habitually is binocular circuitous ophthalmoscope (21%).

**Souza, Neilsen Looi, (2012) [7]** - India has a long and renowned history of attempting to forestall visual deficiency, and it holds the qualification of being the main country on the planet to start a visual impairment control program that was focused on a model to address eye infections that could cause visual deficiency. In any case, considering that there are 133 million individuals who are visually impaired or have vision debilitations because of not approaching an eye test and a suitable sets of glasses, it is basic to lay out a framework of eye care experts who will work related to ophthalmologists to give extensive eye care. Co-managed care between optometrists and ophthalmologists is made possible through the employment of highly educated optometrists who have completed four years of training and are integrated into primary health care services.

**Constantin, Aurora et al, (2022) [8]**For the sake of study, an archive of ocular pictures is now being built. It will offer an infrastructure that will enable academics to carry out research that has

been authorized, validating, tweaking, and improving AI decision-support algorithms that have the potential to be used in Scottish optometry and beyond. Studies conducted all around the world have shown that artificial intelligence (AI) systems have the potential to be useful in the fields of optometry and ophthalmology. These findings are currently being investigated for their potential use in clinical settings. There has not yet been a widespread implementation of these practices in eye care.

**Arvind A, Clarke-Farr et al. (2021) [9]** - Optometrists in India who have completed varying degrees of schooling in the field of optometry provide eye care services to members of the general public in a variety of positions. The reason for the review was to decide the remaining of optometrists in the public and private sectors regarding their insight, abilities, and the consistency with which they utilize those gifts. The 650 members were each given a normalized and coordinated poll that contained just inquiries with foreordained responds to. We got a sum of 400 finished up reviews, for a reaction pace of 62%, with 207 male respondents (addressing 52% of the aggregate) and 193 female respondents (addressing 48% of the aggregate). Most of respondents had a four year college education (57%) with by far most working in the private sector (86%) and just 14% working in the public sector. (By and large, utilized their abilities/skills in aberrant ophthalmoscope less as often as possible as some other method. Optometrists are more qualified for symptomatic jobs and far reaching eye assessments, and they can really contribute towards forestalling preventable visual impairment, as per the discoveries of the review, which featured the requirement for ordering best practice principles and growing the extent of characterized practice.

## **RESEARCH METHODOLOGY**

Optometrists' information, expertise levels, and recurrence of expertise use in private and public sectors were surveyed utilizing a writing study, and a poll was concocted to contrast the optometrist's true capacity and their genuine practice.

### **➤ Study design and duration**

To assemble reactions from optometrists working in both the public and private sectors, a quantitative examination approach with the utilization of a formerly tried poll was picked as the plan of the review. The months of June through September 2020 were used to carry out this investigation.

### **➤ Data collection**

The information have been gathered through the essential and optional sources. The essential information have been gathered through the survey and optional information have been gathered through the web, sites, magazines, research papers, books, proposition, exposition etc.

### **➤ Sample Size and Design**

We used a technique of sampling that was both random and stratified, and there was a total of 420 people in our sample. [10].

### **➤ Questionnaire Development**

The examination was completed with the utilization of a time tested poll that had just inquiries with foreordained responds to. The overview requested that respondents give their age, orientation, and present place of employment title, number of long periods of involvement with that position, and the field where they work, as well as gathering segment information like that. In order for an optometrist to perform a thorough eye examination on a patient, the World Council of Optometry (WCO) outlined a list of 14 sets of abilities that must be possessed by the professional. These abilities sets were included in the questionnaire. On a Likert scale with five points, the responder was required to rate each ability based on knowledge level, skill level, and the frequency with

which they used the skill. A score of one indicated a low knowledge or skill level, while a score of five indicated an exceptional knowledge or ability level. In a similar manner, the frequency of executing the skill was evaluated on a scale from 1 to 5, where 1 represented never performing the ability and 5 represented always performing the skill. Everyone who participated in the survey was given a copy of the information sheet as well as a consent form. After that, we got them back from them, and then we preserved them as physical copies.

#### ➤ **Reliability and validity of the questionnaire**

Cronbach's alpha and test-retest reliability were the two methods that were utilized to analyze the dependability of the questionnaire. In order to validate the test-retest reliability of the questionnaire, it was given to the first 50 people who filled it out a second time, 15 days after the initial administration. All of the items in the questionnaire were included in the calculation of the Cronbach's alpha. When the score was 0.80 or above, it indicated that there was a good correlation between the questions, which indicated that the questionnaire was reliable overall. A high level of reliability was shown by the findings of the non-parametric statistical test performed by Wilcoxon, which demonstrated that there was no statistical difference between the outcomes of the two examinations.

#### • **Validity of the questionnaire**

The legitimacy of the survey was laid out utilizing a blend of two methodologies: content approval and face approval. Six experts in the field of optometry who were not engaged with the exploration region were approached to do a face approval on the survey that was used for the review. The course of face approval was completed by different subject matter experts, including scholastics and optometrists who work in both the public and business sectors. During the course of content approval, the survey was assessed by seven exceptionally qualified optometry experts from India. Among the seven specialists were optometrists who gave eye care administrations to the overall population in different settings, including medical clinics (eye clinics), centers, and optical stores. These settings were situated in both the public and private sectors. On a Likert scale with four potential reactions — "1" for not pertinent, "2" for marginally important, "3" for genuinely pertinent, and "4" for profoundly pertinent — the specialists were requested to evaluate the importance from every subject on the survey. The Substance Approval Record (CVI) was determined for each inquiry by choosing the reactions that were important and had a score of three or four on the Likert scale and barring the reactions that had a score of a couple on the Likert scale since they were not pertinent to the inquiry.

Estimations were taken of the Singular Substance Legitimacy Record (I-CVI), the Scale Level Substance Legitimacy File utilizing the typical procedure (S-CVI/Normal), and the Scale level Substance Legitimacy utilizing the widespread normal (S-CVI/UA). The way that each question had a score of 0.86 or higher on the I-CVI exhibits that the substance legitimacy of the singular things was high. The score for scale CVI utilizing the typical procedure was 0.86, which shows that it has amazing legitimacy. The score for scale CVI utilizing the all inclusive normal was 0.91, and any score that was more prominent than 0.90 was decided to have great legitimacy.

#### ➤ **Administering and recording questionnaire data**

##### ✓ **Data capture and analysis**

The data that was assembled was analyzed considering the factors addressing capability, orientation, and sector of training. With the end goal of examination, we utilized things like frequencies and rates, notwithstanding non-parametric insights like Chi-square tests and Kendell's tau-b.

### ➤ Ethical Considerations

Preceding the organization of the poll, endorsement from the Humanities and Sociologies Exploration Morals panel (HSSREC) of a major public establishment was gained to fulfill moral necessities. Both actual duplicates and electronic adaptations of the poll were conveyed to optometrists practically speaking by electronic mail and ordinary mail, individually. Each and every reaction was accumulated as actual duplicates, which were then coded and recorded into Microsoft Succeed. Every individual who partook in the exploration was expected to finish up and sign a consent structure. The scientist then doled out codes to the finished studies that were sent back to them and recorded the information into a Succeed accounting sheet. A twofold entering approach guaranteed precision of information entered. The main individual who approached the information was the scientist.

### DATA ANALYSIS AND RESULTS

#### • Demographic Profile of the Optometrists

##### *Gender*

Gender	F	%
Male	214	51%
Female	206	49%
Total	420	100%

Of the 600 surveys conveyed, 420 reactions were gotten out of which, 51% were guys and 49% were females.

##### *Age*

Age	F	%
19-28	63	15%
28-38	147	35%
38-48	84	20%
48-58	126	30%
Total	420	100%

The ages between 19 years and 58 years. 15% of the respondents are from the age gathering of 19-28, 35% of the respondents are from the age gathering of 28-38, 20% of the respondents are from the age gathering of 38-48 and 30% of the respondents are from the age gathering of 48-58.

##### *Qualification*

Qualification	F	%
Diploma	105	25%
B. Optom	231	55%
M. Optom	63	15%
Phd	21	5%
Total	420	100%

The capability of the respondents went from a confirmation to a PhD in optometry, albeit the larger part (55%) of the respondents are from four year college education graduates in optometry, 15% of the respondents are from bosses' certification, 5% are from Phd and 25% are from Recognition.

#### • Sector-wise analysis

##### *Sector Wise distribution of respondents*

Sector of Practice	F	%
Public Sector	210	50%

Private Sector	210	50%
Total	420	100%

Most respondents half delivered optometry eye care administrations in the private sector while half were in the public sector.

### *Sector of practice of respondents*

Sector of Practice	F	%
Primary eye centre	25	6%
Secondary eye care centre	80	19%
Tertiary eye care centre	189	45%
Multi-speciality hospital	25	6%
Optical chain	67	16%
Stand alone	34	8%
Total	420	100%

The review respondents were rehearsing in medical clinics, optical outlets and independent practices as displayed in table. From the over the table it is presumed that 6% has a place with essential eye community, 19% has a place with optional eye care focus, 45% has a place with tertiary eye care focus, 6% has a place with multi-specialty medical clinic, 16% has a place with optical chain and 8% has a place with remain solitary practice.

### • Role of the optometrists and their abilities

**Table1:** Comparison of public and private sector optometrists' knowledge, ability/skill level and utilization of abilities/skills

S. No.	List of abilities/skills	Knowledge level %			Level of abilities/ skills %			Frequency of ability/Skill utilization in %		
		Public sector	Private sector	<i>p</i>	Public sector	Private sector	<i>p</i>	Public sector	Private sector	<i>p</i>
1	History taking	98.1	99.9	0.493	97.9	99.9	0.428	97.7	95.4	0.240
2	Objective evaluation	92.6	99.9	0.035*	90.3	97.8	0.025*	75.8	93.3	< 0.001***
3	Subjective evaluation	92.8	94.3	0.628	91.8	93.3	0.543	85.5	91.1	0.040*
4	Slit lamp evaluation	73.4	95.2	< 0.001***	73.9	82.1	0.005	48.8	72.9	< 0.001***
5	Binocular vision evaluation	73.4	95.2	< 0.001***	67.8	90.1	< 0.001***	53.3	74.9	< 0.001***
6	Contact lens	73.9	84.1	0.095	65.1	78.9	0.009**	41.9	66.1	0.009**
7	Low vision evaluation	69.3	94.9	< 0.001***	64.5	88.3	< 0.001***	38.9	64.8	< 0.001***
8	Optical dispensing	92.1	95.9	0.346	90.9	89.3	0.624	77.3	79.1	0.643
9	Ancillary and diagnostic tests	68.5	85.8	< 0.001***	61.4	77.8	< 0.001***	36.1	63.8	< 0.001***
10	Direct ophthalmoscopy	86.1	70.3	< 0.001***	74.7	51.1	< 0.001***	40.3	42.1	0.590
11	Indirect ophthalmoscopy	70.9	65.1	0.135	55.1	43.5	0.007**	11.9	33.4	< 0.001***
12	Community/public health activities	94.5	99.1	0.429	93.9	95.8	0.664	86.9	77.3	0.004**
13	Referrals	94.9	93.4	0.628	92.1	92.3	1	76.10	93.1	< 0.001***
14	Recordkeeping	89.3	98.1	0.003**	80.9	100	< 0.001***	65.8	99.1	< 0.001***
15	Overall analysis	83.3	91.5	0.035	78.1	83.9	0.195	60.5	7.3	0.006**

\*, Significant; \*\*, highly significant; \*\*\*, very high significant.

The chi-square test was utilized to do measurable examination on the data given by the 420 optometrists in light of the 14 distinct abilities sets that were illustrated in the poll. Table 1 presents the information, expertise level, and recurrence of expertise/capacity utilize that are average among optometrists working in both the public and private sectors, alongside the separate p-values for each. The qualities for the mean information, expertise level, and recurrence of abilities use among public and private sector optometrists in the review show that they are under 60%, and the critical p-values are underlined in mauve (Table 2). Table 2 shows the general discoveries for every one of the 14 distinct abilities sets that were evaluated by the survey. The all out rate score of respondents was acquired, and the middle score of three or more on the Likert scale was utilized to reflect answers that were great, awesome, and amazing for the degree of information and mastery. For the inquiry on how regularly a capacity is utilized, the middle score of three or higher on the Likert scale was chosen. This shows that respondents once in a while, frequently, or consistently utilize the expertise.

**Table2:** Comparison of optometry diploma and degree holders' knowledge, skill/ability level, and frequency of utilization of ability

Item number	List of abilities/skills	Knowledge level (%)		p	Ability/Skill level (%)		P	Frequency of skill utilization (%)		P
		Diploma	Degree		Diploma	Degree		Diploma	Degree	
1	<b>History taking</b>	98.2	98.4	0.797	97.2	98.4	0.292	94.4	98.4	0.008**
2	<b>Objective evaluation</b>									
	Retinoscopy	96.3	98.4	0.092	92.6	94.1	0.310	91.6	97.1	0.010**
	AR	97.2	98.1	0.502	97.2	98.1	0.92	87.9	85.4	0.522
	NOT	83.2	96.4	< 0.001***	80.4	93.6	< 0.001***	61.7	74.2	0.015*
	Keratometry	91.6	96.7	0.019*	89.8	95.3	0.027*	70.1	84.4	< 0.001***
	Pupil evaluation	92.6	97.1	0.026*	90.7	96.7	0.007**	81.3	91.3	0.005**
	Overall analysis	92.1	97.1	0.020*	90.7	96.5	0.002**	80.3	87.1	0.006**
3	<b>Subjective evaluation</b>									
	Visual Acuity	100.1	96.8	0.546	97.1	98.4	0.292	97.2	98.1	0.502
	Subjective refraction	97.2	97.4	0.914	95.4	97.4	0.225	92.6	95.1	0.118
	JCC	73.9	93.10	< 0.001***	70.1	88.5	< 0.001***	52.4	73.2	< 0.001***
	Duochrome	78.5	94.7	< 0.001***	75.7	89.5	< 0.001***	69.2	90.6	< 0.001***
	Binocular balancing	77.6	95.3	< 0.001***	76.7	93.6	< 0.001***	67.3	82.7	< 0.001***
	Fogging	86.10	95.7	< 0.001***	85.1	94.3	0.003	80.4	91.3	0.003**
	Prescription writing	98.2	97.4	0.575	98.2	96.7	0.359	95.4	95.7	0.876
	Overall analysis	86.1	96.1	< 0.001***	85.1	94.1	< 0.001***	79.1	90.1	0.003**
4	<b>Slit lamp evaluation</b>									
	Anterior segment	80.4	92.10	< 0.001***	77.6	91.6	< 0.001***	67.3	80.3	0.007
	Anterior chamber	80.4	91.3	0.003**	77.6	85.8	0.046	61.7	77.3	0.003**
	Crystalline lens	78.5	93.6	< 0.001***	71.1	89.2	< 0.001***	56.10	77.6	< 0.001***
	Gonioscopy	38.4	70.8	< 0.001***	21.5	51.10	< 0.001***	7.5	30.5	< 0.001***
	Applanation Tonometry	71.1	89.2	< 0.001***	65.5	85.1	< 0.001***	46.8	60.2	0.017
	TBUT	76.7	93.3	< 0.001***	69.2	90.6	< 0.001***	51.4	70.4	< 0.001***
	Overall analysis	71.1	89.2	< 0.001***	64.4	83.1	< 0.001***	49.5	66.1	< 0.001***
5	<b>Binocular vision evaluation</b>									
	Diagnostic parameters	68.3	92.3	< 0.001***	61.7	86.8	< 0.001***	47.7	72.1	< 0.001***
	Sensory status	60.8	89.5	< 0.001***	54.2	84.8	< 0.001***	43.10	69.1	< 0.001***
	Vergence function	56.10	89.5	< 0.001***	54.2	85.8	< 0.001***	41.2	72.8	< 0.001***
	Amblyopia	73.9	90.9	< 0.001***	70.1	86.8	< 0.001***	52.4	70.1	< 0.001***
Overall analysis	65.1	91.1	< 0.001***	60.4	86.8	< 0.001***	46.5	71.1	< 0.001***	
6	<b>Contact lens</b>									
	SCL	83.2	92.3	0.007	78.5	85.4	0.092	60.8	70.4	0.066
	Patient instruction	82.3	92.6	0.003**	78.5	90.9	< 0.001***	65.5	76.2	0.030*
	RGP	53.3	83.4	< 0.001***	45.8	78.6	< 0.001***	29.9	54.8	< 0.001***
	Patient Instruction	53.3	85.8	< 0.001***	48.6	82.4	< 0.001***	32.7	61.6	< 0.001***
	Tonic fens	61.7	85.8	< 0.001***	53.3	81.1	< 0.001***	40.2	62.9	< 0.001***
	Cosmetic lens	66.4	89.5	< 0.001***	60.8	81.1	< 0.001***	49.6	57.5	0.160
	CL complications	63.6	86.8	< 0.001***	54.2	76.9	< 0.001***	49.6	55.1	0.329
	Specialty CL	50.5	71.1	< 0.001***	42.1	58.5	0.005	26.2	33.9	0.147
Overall analysis	64.8	86.3	< 0.001***	58.3	80.1	< 0.001***	43.8	59.1	< 0.001***	
7	<b>Low vision evaluation</b>									
	Low vision patient identified	69.2	93.3	< 0.001***	58.9	91.9	< 0.001***	36.5	61.9	< 0.001***
	being able to prescribe poor vision equipment to patients based on their	57.1	91.3	< 0.001***	51.4	86.8	< 0.001***	31.8	59.5	< 0.001***



	demands									
	Patient instruction	66.4	90.9	< 0.001***	58.9	87.8	< 0.001***	42.1	63.3	< 0.001***
	Monitoring and evaluation	57.10	87.8	< 0.001***	48.6	84.4	< 0.001***	36.5	54.4	0.001**
	Rehab and further referrals	60.8	82.4	< 0.001***	49.6	77.6	< 0.001***	36.5	48.2	0.038*
	Overall analysis	61.8	89.2	< 0.001***	52.8	85.8	< 0.001***	36.5	57.8	0.003**
8	<b>Optical dispensing</b>									
	Interpretation skills needed for prescriptions	93.5	96.4	0.167	93.5	95.1	0.238	90.7	93.3	0.350
	Previous spectacle prescripts	93.5	96.7	0.109	93.5	97.7	0.017*	88.8	92.3	0.254
	Frame selection in addition to the choosing of ophthalmic lenses	90.7	97.1	0.004**	90.7	87.5	0.362	76.7	74.9	0.709
	being able to measure and mark faces and frames	85.0	89.5	0.203	83.2	86.1	0.454	69.2	72.5	0.516
	the ability to order lenses and check their compatibility with prescriptions before delivery	85.1	92.3	0.048*	85.1	85.8	0.855	71.10	73.5	0.762
	Patient education about the usage, maintenance, and care of eyeglasses	92.6	98.1	< 0.001***	90.7	81.6	0.766	82.3	85.1	0.49
	Managing and resolving patients with concerns	90.7	95.7	0.038*	90.7	86.8	0.279	78.5	80.10	0.576
	Overall analysis	90.1	95.1	0.129	37.1	49.1	0.313	78.1	81.1	0.563
9	<b>Ancillary and diagnostic tests</b>									
	Amsler test	72.6	95.3	< 0.001***	46.8	91.9	< 0.001***	46.8	74.7	< 0.001***
	Colour vision test	89.8	97.4	< 0.001***	90.7	96.7	0.008**	82.3	89.2	0.058
	Confrontation test	72.9	93.3	< 0.001***	68.3	90.2	< 0.001***	47.7	65.10	< 0.001***
	Diplopia charting	66.4	89.2	< 0.001***	59.1	83.7	< 0.001***	36.5	59.9	< 0.001***
	Topography	59.8	87.5	< 0.001***	46.8	75.9	< 0.001***	28.1	53.7	< 0.001***
	FFA	53.3	72.1	< 0.001***	42.1	60.9	0.003**	22.5	27.1	0.356
	OCT	56.10	80.3	< 0.001***	42.1	64.6	< 0.001***	28.1	48.2	< 0.001***
	HRT	31.8	53.10	< 0.001***	22.5	35.6	0.014*	12.2	14.1	0.628
	UFA	67.3	89.9	< 0.001***	59.8	83.4	< 0.001***	41.2	61.9	< 0.001***
	A-scan	75.7	87.2	0.006**	69.2	75.9	0.172	53.3	54.7	0.801
	B-Scan	56.10	77.6	< 0.001***	42.10	66.7	< 0.001***	22.5	33.2	0.0401*
	Overall analysis	64.5	83.3	< 0.001***	55.9	75.5	< 0.001***	37.8	52.7	< 0.001***
10	<b>Direct ophthalmoscopy</b>	57.8	85.8	< 0.001***	48.3	67.4	0.002**	25.3	46.7	0.260
11	<b>Indirect ophthalmoscopy</b>	48.8	75.1	0.007**	32.1	41.1	0.247	13.5	27.3	0.215
12	<b>Community/public health activities</b>									
	Screening camps=33	94.5	96.9	0.113	92.8	96.1	0.146	85.1	85.1	1.000
	Awareness camps	93.3	95.8	0.346	91.1	94.8	0.149	75.1	75.0	1.000
	Overall analysis	94.5	96.9	0.113	92.1	96.1	0.140	80.1	80.0	1.000
13	<b>Referrals</b>	89.9	96.1	0.099	88.3	94.0	0.083	82.1	82.1	1.000
14	<b>Record keeping</b>	92.1	94.1	0.438	89.1	91.0	0.387	78.1	84.1	0.426
15	<b>Overall analysis</b>	77.1	91.1	0.002**	71.1	84.1	0.025*	59.1	70.0	0.043*

AR, auto-refractometer; NCT, non-contact tonometry; JCC, Jackson's cross chamber; TBUT, destroy break time; SCL, delicate contact focal point; RGP, unbending gas penetrable; CL, contact focal point; FFA, fundus fluoresce in angiography; OCT, optical rationality tomography; HRT, Heidelberg retina tomograph; HFA, Humphrey field analyzer.

\*, **Significant**; \*\*, **highly significant**; \*\*\*, **very high significant**.

There was a measurably massive distinction (Table 1) in the degree of information between optometrists working in the public and private sectors for all abilities sets, except for taking patient narratives, performing emotional assessments, administering contact focal points, performing circuitous ophthalmoscope, partaking in local area and public wellbeing exercises, and making references. The information level in Subordinate and demonstrative tests was the least among optometrists working in the private sector, while the information level in roundabout ophthalmoscope was the most reduced among optometrists working in the public sector (70.9%). (Table 1). With the exception of getting patient accounts, doing emotional assessments, optical administering, local area/public wellbeing exercises, and references, public and private sector optometrists were found to have altogether unique capability levels in the greater part of the capacity or expertise classifications that were contemplated. The optometrists working in the public sector demonstrated the lowest levels

of ability in indirect ophthalmoscope (55.1%) and ancillary and diagnostic tests (61.4%), whereas the optometrists working in the private sector demonstrated the lowest levels of ability in indirect ophthalmoscope (43.5%), and direct ophthalmoscope (DO) (51.1%). (Table 1).

Optometrists working in the public sector used indirect ophthalmoscope (11.9%) and ancillary and diagnostic tests (36.1% of the time) the least frequently, whereas optometrists working in the private sector used indirect ophthalmoscope (33.4% of the time) and DO (42.1). There was a genuinely tremendous contrast in the recurrence of capacity utilization between optometrists working in the public sector and those functioning in the private sector for all capacity sets, except for history taking and DO (Table 1). As should be visible in Table 1, the general outcomes recommend that there is a measurably huge distinction in the information level ( $p = 0.035$ ) and the recurrence of usage of capacity ( $p = 0.006$ ) between optometrists working in the public sector and those functioning in the private sector.

The examination found that recognition holders made up half of respondents working in the public sector, though just fourteen percent of respondents filling in as optometrists offered their types of assistance in the public sector. Both confirmation and degree holders in the field of optometry were exposed to a thorough report that looked at their degrees of information, expertise, and the recurrence with which they utilized their optometry abilities/skills. The most reduced degree of information was tracked down in roundabout ophthalmoscope among certificate holders (48.8%), trailed by direct ophthalmoscope (57.8%) and low vision assessment (62%), while the least degree of information was tracked down in circuitous ophthalmoscope among degree holders (75.1%), trailed by subordinate and demonstrative tests (83.3%), direct ophthalmoscope (85.8%) and contact focal point (86.3%) (Table 2). The expertise level was least in roundabout ophthalmoscope (32.1%), symptomatic ophthalmoscope (48.3%), and low vision assessment (53%). Conversely, the capacity level was most minimal in roundabout ophthalmoscope (41%), demonstrative ophthalmoscope (67%) and auxiliary and analytic tests (75.5%). Recognition holders had the least ability level by and large. Most of the capacity sets, except for history taking, optical administering, local area/public wellbeing exercises, references, and record keeping, uncovered a genuinely tremendous contrast in the degrees of information held by the people who held either recognition or a degree. There was not a measurably huge contrast found between the skill levels in the accompanying regions: history taking; optical administering; helper and symptomatic testing; roundabout ophthalmoscope; local area/public wellbeing exercises; references; or record keeping.

Recognition holders utilized their abilities/skills the least as often as possible in circuitous ophthalmoscope (13.5%), Direct ophthalmoscope (25.3%), and low vision assessment (36.5%), while degree holders utilized their abilities/skills the least regularly in backhanded ophthalmoscope (27.3%), direct ophthalmoscope (47%) and auxiliary and symptomatic tests (53%). Roundabout ophthalmoscope was the least oftentimes utilized in general capacity. Except for optical apportioning, subordinate and symptomatic tests, DO, backhanded ophthalmoscope, local area/public wellbeing exercises, references, and record keeping, a measurably massive distinction in the recurrence of capacity usage among certificate and degree holders was noted in most of the capacity sets.

The general examination of the information, expertise, and recurrence of usage of abilities was done in light of schooling level among confirmation and degree holders in optometry, and it uncovered that there is a genuinely massive distinction in by and large information ( $p = 0.002$ ), capacity level ( $p = 0.024$ ), and recurrence of use of capacity ( $p = 0.043$ ) among recognition and degree holders in the review, as should be visible in Table 2.

## DISCUSSION

- **Knowledge level**

As per the discoveries of the review, optometrists have a decent degree of information in basically the abilities that are all given in the survey. The regions wherein they have the least mastery are aberrant ophthalmoscope, helper and demonstrative tests, and DO. The optometrist acquires the confirmation important to do an expertise because of the effect that information has on the level of capacity or capability accomplished. As per the discoveries of a past examination that was completed in India in 2015, optometrists who had post-graduate capabilities in optometry grasped the meaning of examinations and extensive clinical assessments, and they had a more elevated level of confidence while doing them.

This proposed that optometrists with an undergrad confirmation in optometry are not satisfactorily prepared as far as their insight and preparing, which keeps them from having the confidence to give total eye care administrations. Visual grimness ought to be tended to as a component of essential eye care to battle visual deficiency and visual impedance as well as visual dreariness [10]. Essential eye care is a fundamental part of thorough eye care. Optometrists' schooling ought to incorporate the parts that make up essential eye care, like eye wellbeing instruction, side effect recognition, visual estimation, a fundamental eye assessment, determination, and brief reference to an expert when vital. [11]

The assessment of the fundus is the last move toward the eye assessment process and is a fundamental part of any essential eye assessment. As indicated by the discoveries of the review, members knew about direct ophthalmoscope 79% of the time and backhanded ophthalmoscope 69% of the time. Terrible comprehension of ophthalmoscope, either straightforwardly or in a roundabout way, impacts the utilization of the expertise, as was found in the ongoing review. This examination showed that fundus assessment was the least performed expertise, which agrees with their unfortunate capacity usage. Ophthalmoscope is a fundamental part of an exhaustive eye test since it decides expected courses of treatment, as well as giving fundamental data on the soundness of the eye and the body in general. The analysis can be affirmed and different judgments can be disposed of with the utilization of subordinate and analytic testing. The examination additionally found that the information level of those with certificates was a lot of lower than that of those with degrees in the expertise classifications that were all thought about, except for history taking. Because of the absence of a skill based structure for the different units of optometry in India, there is a lot of misconception over the extent of training; thus, there are contrasts in the degrees of information among the discoveries of the review.

- **Ability/skill level**

As per the discoveries of this examination, each of the gifts given in the poll uncovered low expertise levels in contrast with the members' degrees of information, except for the capacity to take verifiable notes. Furthermore, the exploration found that the capacity level of the individuals who just had a secondary school graduation was recognizably lower than that of individuals who just had a degree. It is essential to note, notwithstanding, that the capacity level was self-revealed and mirrored the singular's impression of their own degree of capacity. Along these lines, the hypothetical information might be strong, however the work-based restriction in the viable viewpoint compromises the optometrist's capacity to play out a specific expertise with certainty. The generally detailed low degree of capacity contrasted with information level could be ascribed to less openness to the commonsense part of the ability. The absence of clinical preparation, which is the main part of any optometry educational program, may likewise be answerable for the unfortunate degree of capacity. It's conceivable that this is because of a deficiency of clinical preparation hardware, a lack of showing resources for preparing, and a lack of clinical preparation information and evaluation among showing resources at schools and universities generally all through the country. Arora et al. referenced the absence of affirmed norms or educational plans for united ophthalmic staff in their review. They likewise underscored the need for ability based

assessment using clinical rubrics to assess the degrees of information and expertise [12]. Making learning a pleasant and comprehensive experience by using state of the art strategies for guidance and assessment can fill in the information and capacity holes that have been distinguished [13].

▪ **Frequency of utilization of abilities/skills**

The findings of the study suggest that the individuals who participated in the survey regularly engaged in history taking in addition to objective and subjective evaluation. The findings are consistent with those of prior research by Thite et al [14] that was carried out in India. According to the findings regarding the utilization of a slit lamp on a regular basis, gonioscopy and applanation tonometry were the abilities that were utilized the least. This finding also correlates with their degree of knowledge and ability.

A review that was finished on metropolitan and provincial younger students in Tamil Nadu, India suggested routine evaluating for binocular vision irregularities subsequent to tracking down a high pervasiveness of non-strabismic binocular vision peculiarities that expanded with expanding age. The consequences of this study demonstrate that binocular vision assessment is definitely not a regularly performed expertise by and by, and this finding corresponds with the past concentrate by Thite et al, which detailed that just 45% of the respondents had their binocular vision assessed [15]. The ongoing investigation discovered that information and capacity levels in binocular vision assessment were 85% and 80%, separately. Nonetheless, expertise usage in binocular vision assessment was just 65%, which showed that binocular vision assessment was not a regularly performed ability, regardless of the way that it was higher contrasted with the discoveries in the past review completed by Thite et al. The discoveries recommend that binocular vision assessment is definitely not a regularly performed expertise. Optometrists working in the public sector and those functioning in the private sector didn't regularly play out these tests in spite of the way that a high commonness of non-strabismic binocular vision oddities has been accounted for and that these tests are a piece of the far reaching optometric assessment that depends on WCO rules.

As indicated by the discoveries of this review, the recurrence with which abilities/skills connected with contact focal points and low vision assessment are used is essentially low when contrasted with information and expertise level, which is practically identical to the discoveries of a past report. These discoveries propose either lacking preparation in these abilities/skills or unfortunate wellsprings of low vision helps and contact focal points. An examination that tried to profile optometrists and optometric rehearses in Ghana found that set of experiences taking, DO, visual sharpness, cut light biomicroscopy, and retinoscopy were the techniques that were completed the most often, while contact focal point and low vision appraisals were the methods that were done the least much of the time. Case history, visual keenness, and ophthalmoscope were viewed as abilities/skills that were every now and again finished in one more review that was completed in South Africa [16]. Then again, cut light assessment and non-contact tonometry were viewed as the abilities/skills that were played out the least. This finding is in accordance with the somewhat low reception pace of contact focal points in less fortunate nations. [17]

After ophthalmoscopy, the subordinate and symptomatic tests that were played out the least were things like variety vision tests, conflict tests, perimetry, Optical Cognizance Tomography (OCT), Fundus Fluorescein Angiography (FFA), and A-examine Ultrasound. This recommends that optometrists in India are not used for such analytic administrations. The demonstrative and helper tests help affirm or preclude a differential finding; they empower top to bottom assessment and ID of visual circumstances as well as the likely effects of fundamental issues. Optometrists have a significant influence in the finding of visual ailment and in enhancing the administrations gave by\to decrease the effect of avoidable visual deficiency [18]. Indicative abilities/skills ought to be an inborn piece of optometry preparing and the arrangement of administrations. The discoveries of

this exploration were in concurrence with those of a past report led by Thite and partners, which affirmed that demonstrative abilities/skills and the recurrence with which optometrists play out these abilities/skills are deficient in both the public and private sectors.

The fundus assessment is a fundamental and regularly performed part of a complete eye assessment. It is utilized to distinguish diabetic retinopathy as well as other exceptionally common circumstances like hypertensive retinopathy, vasculitis, Focal Retinal Course Impediment (CRAO), and Focal Retinal Vein Impediment. The fundus assessment can identify these circumstances and that's only the tip of the iceberg (CRVO) [19]. The aftereffects of this study showed that main 42% individuals who partook in the overview performed DO. Conversely, a review did in Ghana on optometrists found that 100% of them performed DO, which recommends that this capacity is regularly used in all practices. As per the discoveries of one more review that was completed in Ireland, DO was the strategy for assessment that was decided first for the fundus [20]. A prior concentrate on that was done in India on training designs correspondingly viewed that as just 21% of optometrists much of the time performed DO, while half finished just when required. This recommends that the fundus assessment isn't a piece of the ordinary optometry eye care assessment in India. A fundus assessment and other subordinate tests are expected to distinguish visual side effects of foundational sicknesses, for example, diabetes and hypertension, the frequency of which is rising. These foundational messes incorporate diabetes and hypertension. Without playing out a fundus assessment, an optometrist's work in essential eye care can't be viewed as complete. This test, which should be finished consistently and is a fundamental piece of any eye care practice, ought not be skipped. Exhaustive eye assessments help in the screening and early identification of normal eye sicknesses, accordingly lessening the grimness related with avoidable visual impairment and the weight of preventable illness. Optometrists' information and expertise levels are underutilized, as per the general examination, which can be credited to an absence of certainty welcomed on by deficient preparation or potentially an absence of hardware expected to play out specific clinical abilities/skills in a given climate, as well as a muddled meaning of the extent of training.

#### ▪ **Comparison**

Except for auto-refraction, there was a significant distinction in information levels among confirmation and degree holders while contrasting the degrees of information and abilities/skills and recurrence of expertise use among recognition and degree holders remembered for the exploration (AR). Except for AR, the capacity to request and check the arranged focal points against remedy preceding conveyance, patient guidance on display use, care, and support, capacity to oversee patients with protests, circuitous ophthalmoscope, screening camps, mindfulness projects, and record keeping, there were huge contrasts in capacity level and recurrence of purpose among degree and confirmation holders. This was expected given the units' restricted job and their support in screening programs and optical apportioning. Since 24% of the respondents in this review worked for optical chains or free practices, there was cross-over in crafted by certificate and degree holders, as was seen under the heading of optical administering, where there was no way to see a distinction in capacity level or recurrence of use of capacity. As indicated by the examination, in spite of the way that authentication holders and degree holders eventually play out similar administrations and exercises, the recurrence of capacity usage isn't significantly unique. In their 2009 review, Murthy and Raman examined the meaning of this viewpoint — the distinctions in information and abilities/skills — and stated that essential eye care is a critical part of exhaustive eye care. They additionally stressed the meaning of characterizing the information and capacity prerequisites of essential eye care laborers in the eye wellbeing conveyance framework. As per studies, lacking preparation and backing keep preparing programs from being executed, which bring about eye care suppliers having insufficient information and abilities and giving shoddy treatment to patients. [21]

## CONCLUSION

Optometry schooling and practice in India have generally been fairly scattered, yet throughout the course of recent years, huge steps have been made toward making a brought together, normalized, and managed calling that will satisfy its commitments for vision care, eye wellbeing, and the arrangement of optical administrations to everybody needing vision rectification.

There is an enormous information and capacity hole between the people who have an optometry confirmation and the individuals who hold an optometry degree in India. This outcomes in a significant underutilization of abilities/skills among optometrists working in both the public and business sectors. Despite these qualifications, each eventually offers administrations connected with eye care. Optometrists invest most of their energy offering types of assistance connected with refraction and optical administering, though significant auxiliary and indicative tests are the abilities that rehearsing optometrists execute the least. This is the case even after ophthalmoscope. Optometrists can assume a huge part in the early conclusion of sight-compromising issues prompted by fundamental problems like diabetes, hypertension, and weight, which are moving toward pandemic extents. This permits optometrists to save patients' vision and forestall further harm. This study recommends that optometrists are more qualified for demonstrative and the board jobs concerning managing visual and fundamental circumstances through proper schooling and preparing; accordingly, they can contribute really toward deflecting preventable visual impairment. In this manner, optometrists can possibly be used all the more successfully in both the public and private sectors to furnish patients with a more complete scope of eye care administrations. It is feasible to make the determination that the underutilization of optometry administrations in both the public and business sectors is because of the powerlessness to command the best practice guidelines and the presence of a deficiently characterized extent of training. It is conceivable that in the event that the public and private sectors had a plainly characterized extent of training for degreed and certificate level optometrists, it would reinforce the jobs that they play and advance vision and eye wellbeing the nation over.

Optometrists are more qualified for symptomatic jobs and complete eye assessments, and they can really contribute towards forestalling preventable visual impairment, as per the discoveries of the review, which featured the requirement for commanding best practice guidelines and extending the extent of characterized practice.

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