

## Original Research Article

# Knowledge and awareness about optometry profession among rural versus urban population in Eastern India: a survey-based study

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## ABSTRACT

**Background:** The main purpose of this study was to determine the awareness of optometry and to create awareness of optometry among rural and urban population of Kolkata.

**Methods:** A cross-sectional descriptive study was conducted among rural and urban population. A total of 671 participants- male=378 and female=293, were enrolled in this study. An amplified self-structured questionnaire was used to collect data from the participants through a survey camp.

**Results:** Out of 671 subjects, (328 rural and 343 urban subjects), 62 (18.9%) and 166 (48.3%) (95%, CI: 1.93-1.88) were know about optometry in rural and urban population respectively. 4.9% and 14% (95%, CI: 1.97-1.94) did knew the difference between optometrist and ophthalmologists, while in participants opinion optometrist is assistant of ophthalmologist was 3.4% and 1.5% (95%, CI: 2.69-2.61) in rural and urban participants respectively. However, 18.2% (rural) and 32% (urban) (95%, CI: 2.31-2.17) participants think that optometrist is trained in detection and recognition of eye diseases while 22.6% and 26.8% (95%, CI: 3.20-3.02) thinks they can prescribe spectacles and contact lens independently in rural and urban participants respectively. All factors mentioned were found to be statistically significant ( $p < 0.05$ ) with the Chi square and ANOVA test in SPSS version 21.

**Conclusions:** These findings seem to indicate lack of awareness and knowledge about optometry profession. There is a need to increase campaign in these areas via educational programs, awareness survey camp, a poster explaining the eye care, social media regarding eye care provider's duties and practices, exhibitions for public concerning the profession of optometry.

**Keywords:** Optometry, Eye-care services, Primary eye-care, Optometrist

## INTRODUCTION

According to the American heritage dictionary, optometrist is a person who is professionally trained and licensed to examine the eyes for visual defects, diagnose

problems or impairments, and prescribe corrective lenses or provide other types of treatment.<sup>1</sup> According to the world council of optometry (WCO), optometrists are 'primary healthcare practitioners of the eye and vision system, who can successfully manage the leading cause

of vision impairment (refractive error) and can also help alleviate the burden of other causes of blindness through diagnosis, referral and co-management'.<sup>2</sup>

As specialists, optometrists have a major role in detecting potentially severe eye diseases such as cataract, glaucoma and age-related macular degeneration, and general health conditions such as hypertension and diabetes mellitus, which affect the eye. In a way, 'eye care' professionals, are an essential part of 'health care professionals' because we are the first point of contact for any eye ailment and in the process of providing optimal eye care we also detect systemic conditions such as hypertension and diabetes mellitus etc.<sup>3-5</sup> Optometry services diversify across different countries. An optometrist does practice in multiple areas like hospital/clinic-based practice, academics, optical retail, eye health research, administration, marketing, and independent private practice.<sup>6</sup>

Salient features of optometry eye care services:<sup>7-8</sup> Educating patients about maintaining and promoting healthy vision, performing a comprehensive examination of the visual system, screening for eye diseases and conditions affecting vision that may be asymptomatic in early stage, recognizing ocular manifestations of systemic diseases and systemic effects of ocular medications, making a differential and definitive diagnosis for any detected ocular abnormalities, performing proper refractions (subjective as well as objective method), fitting and prescribing optical aids, such as spectacles and contact lenses (including the specialized ones), deciding on a treatment plan and treating patient's eye care needs with appropriate therapies or exercises, counselling and educating patients about their eye disease conditions, recognizing and managing local and systemic effects of drug therapy, determining when to triage patients for more specialized care and referring to specialists as when needed and seemed appropriate, coordinating patient care with other physicians involved in the patient's overall medical management.

The profession of optometry is a mixture of legal, educational, practice, management, service delivery and public health initiatives that is unique to every country and based on culture, educational and regulatory frameworks.<sup>9-10</sup> The aim of WCO was to promote the establishment of a common global standard of optometric care for the benefit of the public at large. Refractive error management is optometry's core business as uncorrected refractive error is the second highest cause of blindness and the main cause of visual impairment globally.<sup>11,12</sup> The awareness and knowledge of eye care services, training hierarchy, professional roles, capabilities and responsibilities have been identified as important parameters influencing their utilization of available eye care services.<sup>13</sup> Prior studies suggest that the knowledge toward the differences between ophthalmologists and optometrists is lacking.<sup>14-17</sup> To our knowledge, there is limited contemporary literature or information about the

public's awareness in regard to the differences between ophthalmologists and optometrists in India.<sup>18-21</sup>

### **Objectives**

The knowledge generated from this study will give a basic picture to key decision-makers and educators concerning the support needs of future participants in neglected areas, creating awareness strategies for rural and urban population, and developing informed human resources which would be more efficient in-service delivery in eye health care.

### **METHODS**

#### **Research design**

This study was a cross-sectional survey-based study among rural and urban population in Eastern India. The study included all the profession (worker, business-man, tailor, house wife, barber, service man, students, nurse, fisher, teachers, sales man), who agreed to participate in this study. The study was conducted in Eastern India (Kolkata, West Bengal).

#### **Time frame**

Current study was conducted between October to December month of 2021.

#### **Sample size**

It was included 671 participants including rural and urban area participants.

#### **Procedure**

This study was included clustered-sampling methods to collect the data by adopted a validated questionnaire previously used in a related study in India and Abroad.<sup>22-26</sup> The questionnaire was modified according to objective of this study, it was entitled as a Google form questionnaire to delivered electronically in eastern zone of India by an awareness camp of optography, who agreed (rural & urban population) to participate in this study. It comprised 19 close-ended questions that explored demographic data, knowledge and awareness about optometry profession.

#### **Inclusion criteria**

Current study included only rural and urban populations, age 20 years to 70 years, who agreed to participate in this study.

#### **Exclusion criteria**

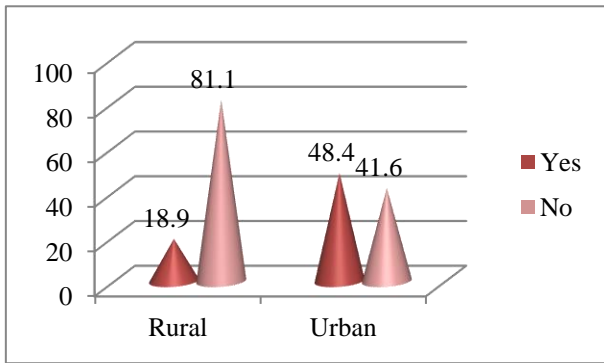
Current study excluded population, age <20 years or >70 years and who not agreed to participate in this study.

**Data analysis**

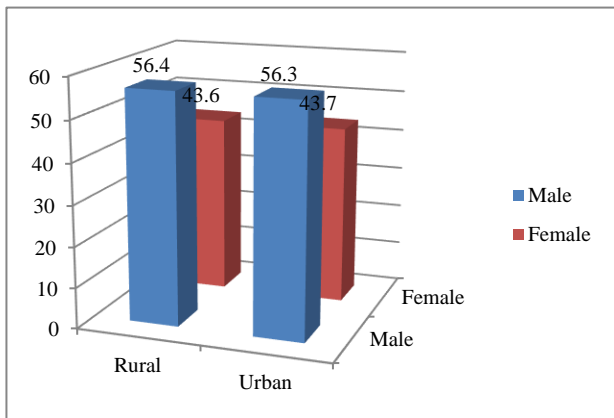
Data were captured and analysed with the statistical programme of social sciences (SPSS) version 21. Descriptive statistics were used to analyse values such as frequencies, mean, standard deviation, cross tabulation and percentage of collected data. Pearson Chi-square and One-way ANOVA test was used to analyse association between relevant variables. A p value of <0.05 was considered statistically significant.

**RESULTS**

The analysis was shows that out of 671 subjects, (328 rural and 343 urban subjects), 62 (18.9%) and 166 (48.3%) (95%, CI: 1.93-1.88) were know about Optometry in rural and urban population respectively (Figure 1).



**Figure 1: Rural and urban participant's knowledge score about optometry.**

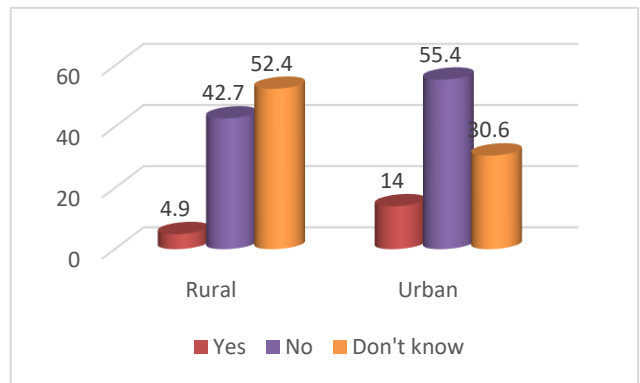


**Figure 2: Gender distribution (rural and urban).**

Total 4.9% and 14% (95% CI: 1.97-1.94) did knew the difference between optometrist and ophthalmologists, while in participants opinion optometrist is assistant of ophthalmologist was 3.4% and 1.5% (95% CI: 2.69-2.61) in rural and urban participants respectively. However 39.1% and 47.5% (95% CI: 1.65-1.58) have done eye examination, 29.3% and 32.6% (95% CI: 1.56-1.48) have spectacle correction in rural and urban participants respectively.

**Table 1: Demographic data of rural and urban participants (n=671).**

Variables	Rural, n=328		Urban, n=343	
	Frequency	%	Frequency	%
<b>Age (in years)</b>				
20-30	98	29.8	96	27.9
31-40	84	25.6	78	22.8
41-50	48	14.7	69	20.1
51-60	46	14.1	58	16.9
>60	52	15.8	42	12.3
<b>Gender</b>				
Male	185	56.4	193	56.3
Female	143	43.6	150	43.7
<b>Marital status</b>				
Married	260	79.3	266	77.6
Unmarried	68	20.7	77	22.4
<b>Literacy</b>				
Literate	88	26.8	248	72.3
Illiterate	240	73.2	95	27.7
<b>Occupation</b>				
House wife	96	29.3	74	21.5
Business-man	91	27.7	126	36.6
Worker	51	15.6	27	7.9
Students	40	12.2	55	16.1
Tailor	11	3.4	4	1.2
Barber	8	2.4	4	1.2
Service man	19	5.8	28	8.2
Nurse	1	0.3	5	1.5
Fisher	5	1.5	2	0.6
Teacher	5	1.5	10	2.9
Sales man	1	0.3	8	2.3



**Figure 3: Rural and urban participant's knowledge about difference between optometrist and ophthalmologist.**

Total 18.2% (rural) and 32% (urban) (95% CI: 2.31-2.17) participants think that optometrist is trained in detection and recognition of eye diseases while 22.6% and 26.8% (95% CI: 3.20-3.02) thinks they can prescribe spectacles and contact lens independently in rural and urban participants respectively.

**Table 2: Participants responses on knowledge about Optometry profession.**

Variables	Characteristics	Rural		Urban		P value
		N	%	N	%	
Knowledge about optometry	Yes	62	18.9	166	48.4	0.86
	No	266	81.1	177	51.6	
Knowledge about difference between optometrist and ophthalmologist	Yes	16	4.9	48	14	<0.05
	No	140	42.7	190	55.4	
	Don't know	172	52.4	105	30.6	
Opinion on optometrist is assistant of ophthalmologist	Yes	11	3.4	5	1.5	<0.05
	No	132	40.2	178	51.8	
	Don't know	185	56.4	160	46.7	
Have ever done your eye examination by an optometrist?	Yes	128	39.1	163	47.5	0.25
	No	200	60.9	180	52.5	
Have you ever used spectacles?	Yes	96	29.3	112	32.6	<0.05
	No	232	70.7	231	67.4	
Knowledge about benefits and drawback about spectacles	Yes	148	45.1	162	47.2	<0.05
	No	180	54.9	181	52.8	
Have you ever used contact instead of spectacles?	Yes	22	6.7	34	9.9	<0.05
	No	306	93.3	309	90.1	

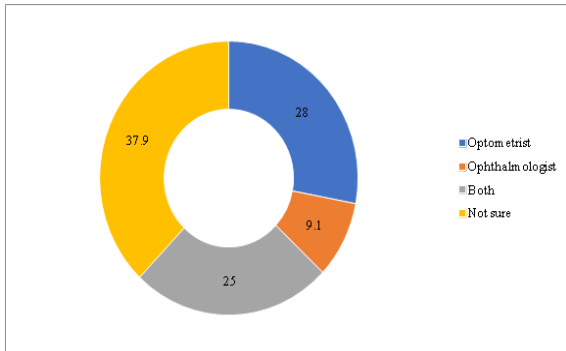
**Table 3: Participants knowledge level about role of an optometrist.**

Variables	Characteristics	Rural		Urban		P value
		N	%	N	%	
Which of them can prescribe glasses/spectacles independently?	Optometrist	72	21.9	112	32.7	0.34
	Ophthalmologist	6	1.8	8	2.3	
	Both	58	17.7	76	22.2	
	Not sure	192	58.6	147	42.8	
Which of them fits and prescribe the contact lenses?	Optometrist	98	29.9	162	47.2	<0.05
	Ophthalmologist	14	4.3	16	4.7	
	Both	46	14.0	62	18.1	
	Not sure	170	51.8	103	30	
Which of them can operate an eye surgery?	Optometrist	28	8.5	43	12.5	<0.05
	Ophthalmologist	172	52.4	154	45.0	
	Both	66	20.1	42	12.2	
	Not sure	62	19.0	104	30.3	
Which of them can conduct an eye examination?	Optometrist	124	37.8	113	32.9	<0.05
	Ophthalmologist	54	16.5	36	10.6	
	Both	90	27.4	102	29.7	
	Not sure	60	18.3	92	26.8	
Which of them consider as a primary eye care professional?	Optometrist	92	28.0	120	35.0	<0.05
	Ophthalmologist	30	9.1	26	7.6	
	Both	82	25.0	76	22.2	
	Not sure	124	37.9	121	35.2	

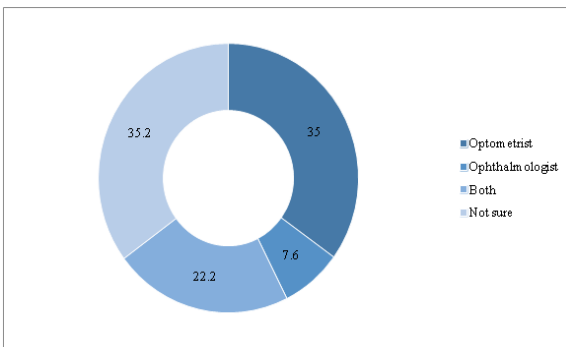
The participants when asked about who consider as a primary eye care professional, so 48.2% (rural) & 35.8% (urban) (95%, CI: 2.74-2.55) do not know while 28% & 34.9% (95%, CI: 2.48-2.30) knows optometrist are primary eye care professionals in rural and urban participants respectively (Table 2). All factors mentioned were found to be statistically significant ( $p < 0.05$ ) with

the Pearson Chi-square and One-ANOVA test in SPSS version 21. The demographic data of rural and urban population, in which mentioned the age, gender (M>F), marital status (married>unmarried), literacy (literate >illiterate in urban population and vice versa in rural population), occupation (worker, business-man, tailor, house wife, barber, service man, students, nurse, fisher,

teachers, sales man) is depicted in (Table 1). The gender distribution in rural (M:F 56.4%: 43.6% ) and urban population (M:F 56.3%: 43.7%) is shown in (Figure 2). The rural and urban participant’s knowledge about the difference between optometrist and ophthalmologist is shown in (Figure 3). In which, rural participants knows about optometry 4.9% and urban participants 14%. Hence 52.4% & 30.6% participants in rural and urban respectively didn’t knew about optometry.



**Figure 4: Rural participants responses on which of them consider as primary eye-care professional.**



**Figure 5: Urban participants responses on which of them consider as primary eye-care professional.**

**DISCUSSION**

The presence of a significant professional overlap between the ophthalmologist and optometrist creates public misconceptions regarding the specific roles and duties for which each has in the vision health system among common populations. The survey analysis shows that 81.1% and 51.7% rural and urban responders respectively were unaware about Optometry and 18.9% and 48.3% were aware of the study which is very less as compared to the study done by Aldebas et al 68% of awareness about optometry.<sup>27</sup> In current study sample shows that 18.2% and 32% rural and urban responders respectively think that Optometrist is trained in detection and recognition of eye diseases while 81.8% & 68% think they are not trained in rural and urban responders respectively. The public knowledge in our study is less as compared to Eze et al report which shows 55.6% of the

participants were knowledgeable regarding the difference in training requirements.<sup>28</sup>

The present study shows evidence that 16.5% respondents think ophthalmologist conduct eye examination, 37.8% think optometrist and 27.4% think both can conduct eye examination and 18.3% not sure while Okoye et al study revealed that 18.5% of the participants were knowledgeable about the specific tasks for both ophthalmologist and optometrist.<sup>29</sup> The responders, when asked about the difference between ophthalmologist and optometrist so 4.9% and 14% in rural and urban responders respectively knew the difference and the remaining 95.1% and 86% do not know the difference between the optometrist and ophthalmologist. The 29.3% and 32.6% rural and urban responders respectively in the present study was lesser the study done by Guffy et al (56%) and Eze (55.6%).<sup>28,30</sup> 44.4% of the subjects had a history of wearing glasses while 70.7% and 67.4% in rural and urban responders respectively did not wear it which was very less as compared to the study done by Desalegn et al and Osogbo.<sup>31,32</sup>

**Limitations**

The limitation of current study was to collect the data on the basis of rural and urban participants response, not done any comprehensive examination or provide any eye care accessories (like spectacles, contact lenses, sunglasses, reading glasses), only provided knowledge and create awareness about the optometry by the posters and speech etc.

**CONCLUSION**

These findings seem to indicate lack of awareness and knowledge about optometry profession among rural population is greater than urban participants in Kolkata (Eastern India). There is a need to increase campaign in these areas via educational programs, awareness survey camp, a poster explaining the eye care, social media regarding eye care provider’s duties and practices, exhibitions for the public concerning the profession of optometry. This study also showed a relatively low level of public knowledge of the difference between the role of the ophthalmologist and optometrist among a rural and rural population as well, there is an essential demand from the policy maker and ministry of health for awareness enhancement through campaigns and social media regarding eye care provider’s duties and practices. It is also recommended for researchers to conduct further similar studies in rural populations and consider different methods to include street adults and adults in firms to get more generalizable result.

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