

## Awareness and Attitude toward Refractive Error Correction Methods, Among Goan Population

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**Abstract:** Objectives: This study was designed to determine the level of awareness and attitude toward refractive correction methods in a randomly selected population in Goa, India.

Materials and Methods: A random cluster sampling method was applied to choose 200 subjects aged 16 years and above from Goan population. A structured questionnaire with open-ended and closed ended questions was designed to gather the participants' demographic data such as: gender, age, educational status and occupation, as well as their awareness and attitude toward refractive correction methods (Spectacles, Contact lenses and Refractive surgery). **Results:** In overall, 75% of the participants had a clear idea of 'ophthalmologist' and 'optometrist' terms. 59%, 77.5% and 62% of respondents had no information of contact lens application instead of spectacles, cosmetic contact lenses and contact lenses side effects, respectively. 64% of participants were not aware of the possibility of refractive surgery for improving their sight and decreasing their dependency on spectacles. Awareness about refractive surgery's adverse effects were only 12%. **Conclusion:** Developing country like India with a huge population also has large population with refractive errors putting a burden on overall health care. Awareness and attitude towards refractive correction methods was moderately low among the participants of this study. Although, ophthalmologists were the first source of consultation on sight impairments among respondents, one third percentage of subjects were not even aware of obvious differences between an ophthalmologist and an optometrist. These findings emphasize the necessity for proper public education on ophthalmic care and the available services, specially the newer correction methods for improvement of quality of life.

**Keywords:** Attitude Awareness Refractive correction Refractive error

Date of Submission: 05-03-2018

Date of acceptance: 23-03-2018

### I. Introduction

Introduction The World Health Organization has made refractive error correction a priority in the global initiative to eliminate avoidable blindness: Vision 2020—the Right to Sight (1). Sight is an important indicator of health and quality of life (2). No person is going to be comfortable in his day to day activities without the normal sight. The common symptoms like headache, watering, eye discomfort, blurring of distant and near vision with which patient visit the ophthalmologist are related to the refractive errors. Uncorrected refractive errors are a major cause of visual impairment and blindness, globally. It is estimated that 153 million people worldwide have distance vision worse than 20/60 due to uncorrected refractive errors (3, 4). The prevalence of different refractive errors in India is not exactly known. In 2011, in Iran the >15 years is 22.36% (95% CI: 20.06-24.66) and 34.21% (95% CI: 31.57-36.85), respectively. The prevalence of astigmatism was 25.64% (95% CI: 23.76-27.51) (5). There is no single method for correction of refractive errors that is satisfying to patients. Some patients go for spectacles as the best choice, whereas contact lenses or refractive surgery are the correction method of choice in other circumstances (6). The American Academy of Ophthalmology reported that refractive examinations cost patients 1 billion dollars (7). On the other hand, refractive correction is a \$22.8 billion industry in the United States, with 59% of the US population possessing a refractive correction (8). So, refractive errors do not only impose a heavy financial burden on the society but if left uncorrected could significantly affect patient's independence, quality of life and well-being (9). Some studies have examined their prevalence and related factors. Study was done in Mashhad, Iran by Saber Moghoddan Ranjbar Ak, Pourmazar R, Gohary to know the awareness towards refractive error correction methods. But almost no single study about awareness of refractive error correction method in our region. To our knowledge, there is no complete and documented survey on the perception and insight of the people about refractive errors correction methods in Goan population. Study (Population based assessment of refractive error in India: The Andhra Pradesh Eye Disease Study by Dandona R, et al ClinExpOphthalmol. 2002) have been done on the prevalence of refractive errors, myopia prevalence was 3.19% (95% confidence limit 2.24% -4.13%) and hyperopia prevalence was 62.62% (95% confidence limit 57.10%-68.13%) this was in age group less than 15 or equal to 15. the prevalence

of myopia and hyperopia above 15 was 19.45% (95% Confidence limit 17.88%-21.02%) and 8.83% (95% confidence limit 6.91-9.85%) respectively. No studies are available regarding the refractive error awareness among Goan population to our knowledge. Therefore, we decided to perform this study for a better understanding about the level of awareness and attitude of the general population toward refractive correction. We hope our findings would offer useful details for proper public health policies and better eye services.

As India being a developing country with such a huge population the burden of refractive error corrective methods will also be large. Our study will help in little way to know about what is the exact attitude of general population towards the eye care. It will also tell what is the knowledge of people about eye health care provider. Do they care for the eye health.

## II. Materials and Methods

This survey was conducted in Goa, India between July and October 2017. A random cluster sampling method was applied to choose 200 subjects aged 15 years and above. Prior to commencement of the study, ethical clearance was received from the ethical committee of Goa Medical College, Goa University, India. An informed verbal consent was also obtained from all participants by the researcher. A structured questionnaire was designed to gather information related to the awareness of the general population on refractive correction (table 1). Initially, all questions of the questionnaire used in this study were assessed by a team of the ophthalmologist and psychiatrist for ease of comprehension and psychological aspects of the questionnaire. The questionnaire used in Marshad, Iran study by Saber Moghoddan Ranjbar Ak, Pourmazar R, Gohary about the awareness toward refractive error correction methods guided us to formulate our questionnaire. Then, adjustments were made accordingly. The questionnaire had been standardized and was explained to the patient in his own language. The questionnaire comprised of five sections with 16 brief questions, both closed and open ended. Closed-ended questions were in the form of Yes/No and multiple choice with an option for "other". Open-ended questions were added to double-check the respondent answers to the related closed-ended questions. The first section contained questions according to demographic data such as gender, age, educational status and occupation. The second part was set to evaluate the ability of respondents to distinguish between an ophthalmologist and an optometrist. The remaining sections were arranged to assess respondents' attitude toward spectacles, contact lenses and refractive eye surgery. All interviewees were asked to answer the closed-ended questions by placing a "x" mark over the box next to the response that they have chosen. Also, there was enough space after every open-ended question for respondents' answers. All questionnaires were filled in with the assistance of our trained interviewers. Statistical data analysis was conducted using spss software. The Chi-square test was applied to identify differences between the studied variables as well as simple frequency tables to establish the frequency distribution of the responses. The threshold for statistical significance was set at a P-value less than 0.05.

### Survey Questionnaire (Table 1)

Thank you for your full participation in this questionnaire				
Section 1:				
Given Name:	Age:	Sex:	Educational status:	Occupation :
Section 2:				
• Have you ever had an eye examination? Yes No				
• If yes, who conducted it? Ophthalmologist Optometrist others please, mention the title. ....				
• Do you know the difference between an ophthalmologist and an optometrist? Yes No .				
Section 3:				
• Do you wear glasses? Yes No				
• Do you believe that glasses had limit day to day activities? Yes No If Yes, in which aspects?				
Section 4:				
• Do you aware of contact lens usage instead of spectacles? Yes No If yes, please explain				
• Have you ever worn contact lenses? Yes No If yes, how many years? How many hours in a day? • Who prepared the contact lens prescription? Ophthalmologist Optometrist others please, write the title. ....				
* Are you aware of possible contact lens side effects? Yes No If yes, please name the side effects.				
• Do you have any information about colored contact lenses worn exclusively for cosmetic purposes on normal eyes? Yes No				
No If yes, please explain what do you know about it?				
• Have you ever worn such cosmetic contact lenses? Yes No				
• Who prepared such contact lens prescription for you? Ophthalmologist Optometrist others				
• Are you aware of the presence of contact lenses which have both refractive correction and cosmetic properties? Yes No I do not know				
Section 5:				
• Are you aware of the possibility of refractive surgery in order to improve the eyesight and decrease or eliminate depending on spectacles? Yes No If yes, please explain what do you know about it?				
• Are you aware of possible refractive surgery side effects? Yes No If yes, what are its side effects?				
• If u wear glasses are you willing to undergo the refractive surgery? Yes No(explain the reason)				

### III. Results

Out of the 200 respondents, 82 (41%) were male and 118 (59%) were female (table 3). The 44% of the subjects were 35 and below 35 years age group, 30.5% in age group 36-50 and 25.5% above 50 (table 2). The table 4 and 5 shows the frequency distribution of different educational levels and occupation among the participants. The majority of participants had attended till higher secondary education (61.1%) and were and were unemployed.

#### **Ophthalmologist vs. Optometrist and overall eye health awareness (figure 1)**

80% (160) had an eye examination some or the other time but 40% (20%) never had eye check up in their lifetime. Those who had visited ophthalmologist for common symptoms like headache, watering, blurring of vision. Some do attend for routine checkup those belonging to high class. 75% (150) were knowing the difference between ophthalmologist and optometrist. When participants were asked about the differences between an ophthalmologist and an optometrist, the majority of could not distinguish between them. Only 75 (39%) correctly identified an ophthalmologist as the person who is responsible for diagnosing and treating eye-related diseases and an optometrist as the person who tests people's vision and orders glasses for them. There was a significant correlation between the awareness of respondents about the differences of an ophthalmologist and an optometrist with their educational status ( $p < 0.0001$ ) (Figure 1) and age ( $p = 0.004$ ). But their gender did not seem to have much influence on the matter ( $p > 0.05$ ). But those who were not knowing the difference between ophthalmologist and optometrist were of lower education.

#### **Spectacles Awareness and Attitude (figure 1)**

74.5% (149) participants already had a history of wearing spectacles, while 189 (94.5%) believed glasses have limiting effects on daily lives (e.g. when swimming, taking a bath, etc.) this question was asked even to the person not using glasses. Concerning the costs of spectacles and contact lenses, the participants believed that, in average, spectacles cost 500Rs +/- 200 per year.

#### **Contact Lens Awareness and Attitude (figure 1)**

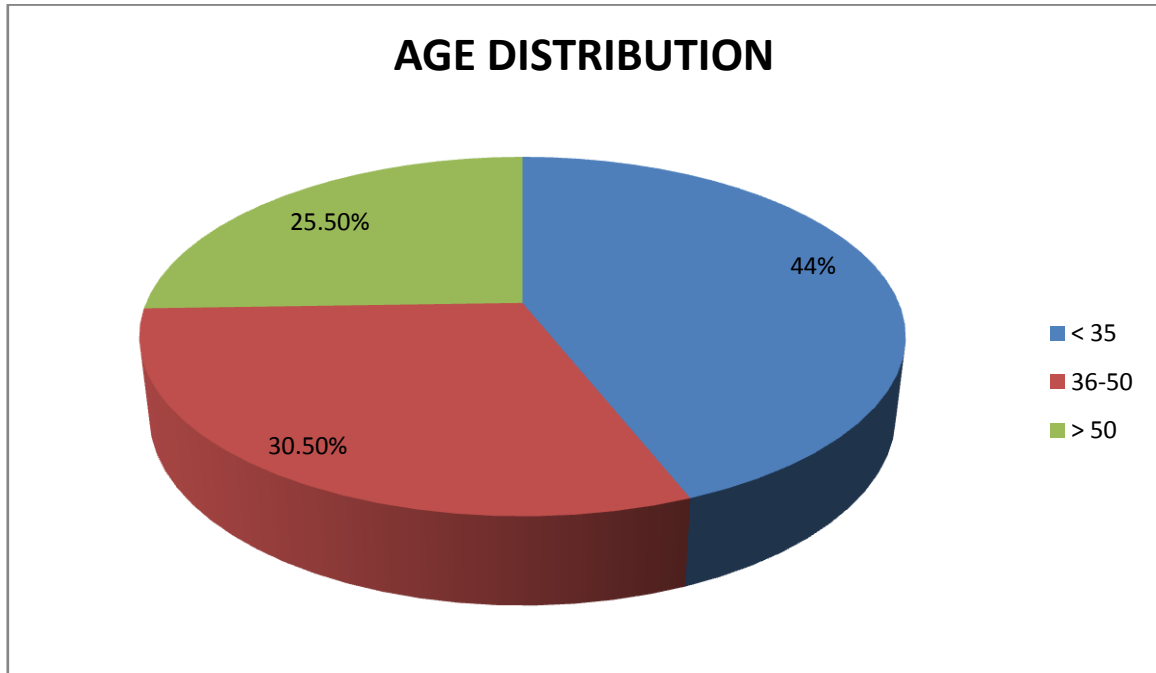
A 59% (118) of respondents were not aware of contact lens usage instead of spectacles. There was a significant statistical correlation between the individual's educational level and their knowledge about contact lenses usage instead of glasses ( $P = 0.01$ ). No participant had history of contact lens wear. Those belonging to high class profession were knowing the contact lens side effects, the difference between cosmetic contact lenses, who gives the contact lens prescription. 38% (74) were aware of contact lens side effect. 22.5% (45) were aware of presence of contact lenses which have both refractive and cosmetic properties. An the knowledge regarding contact lenses was much related to educational status of participants.

#### **Refractive Surgery Awareness and Attitude (figure 1)**

Only 36% (72) were knowing the possibility of refractive surgery being used to improve the eyesight and decrease or eliminate the dependence on spectacles. And mere 12% (24) were aware of refractive surgery side effects. Very few were willing to undergo surgery. Those who were not gave the reasons of cost expenses, lack of knowledge about the surgery. Those who had information about the surgery were highly educated or got the information through friends, family members, health care professional or media.

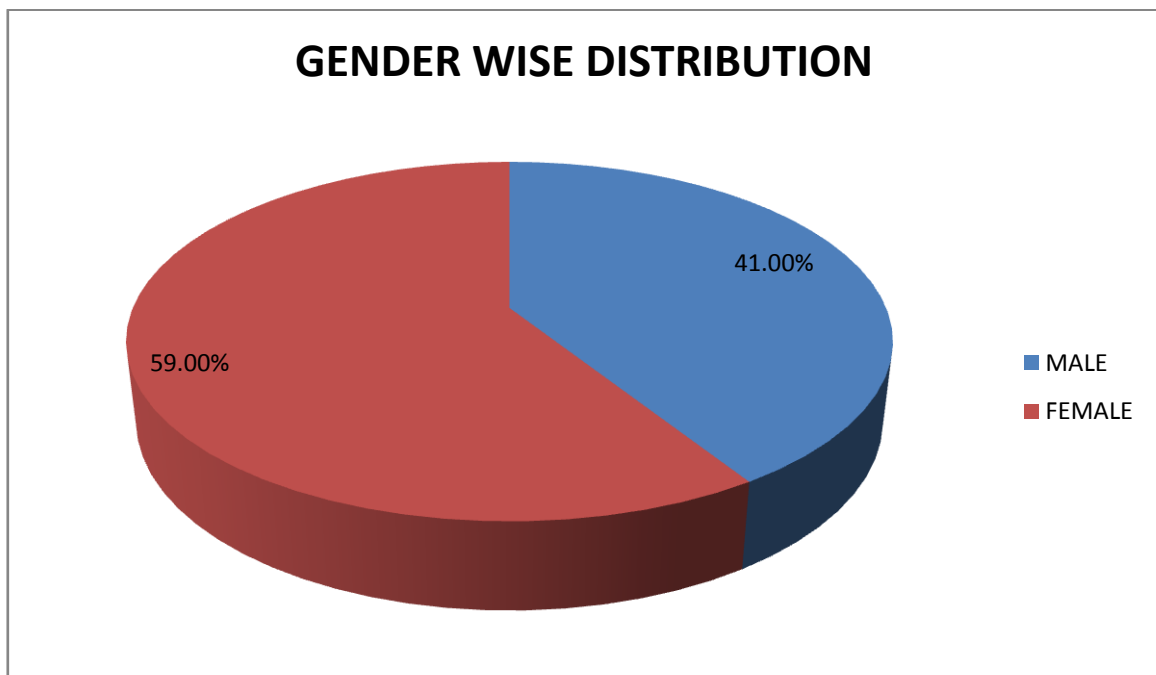
**Table 2: Age**

Age	No. of Patients	Percentage (%)
< 35	88	44
36-50	61	30.5
> 50	51	25.5
Total	200	100



**Table 3: Gender**

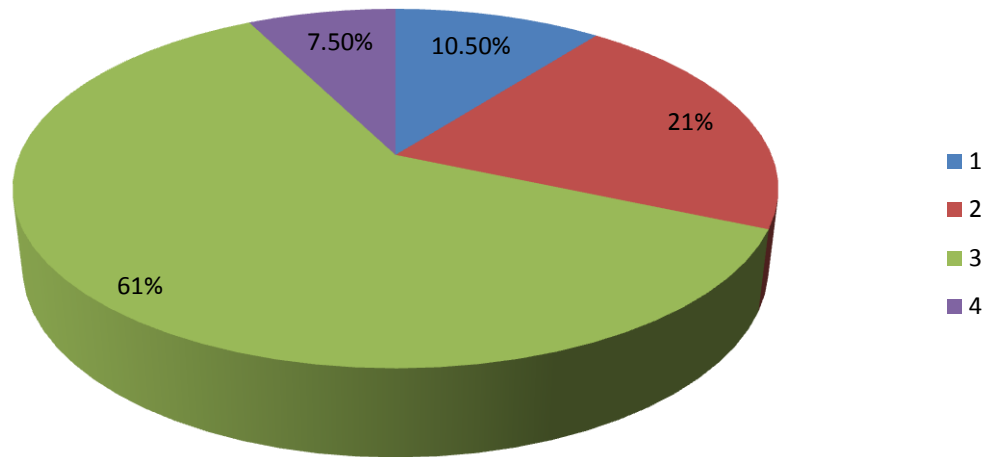
	No. of Patients	Percentage (%)
Male	82	41
Female	118	59
Total	200	100



**Table 4: Education**

	No. of Patients	Percentage (%)
1-Post graduate and highly educated	21	10.5
2-Graduated	42	21
3-Higher secondary	122	61
4-illiterate to Primary school	15	7.5
Total	200	100

### EDUCATION WISE DISTRIBUTION

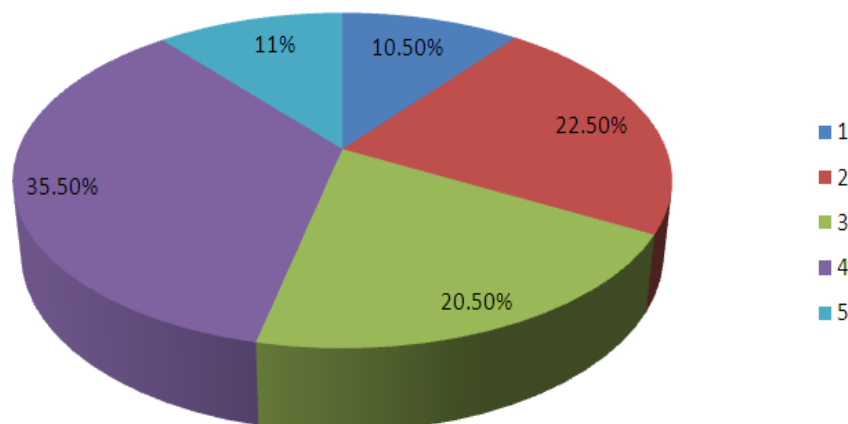


1-Post graduate and highly educated
2-Graduated
3-Higher secondary
4-illiterate to Primary school

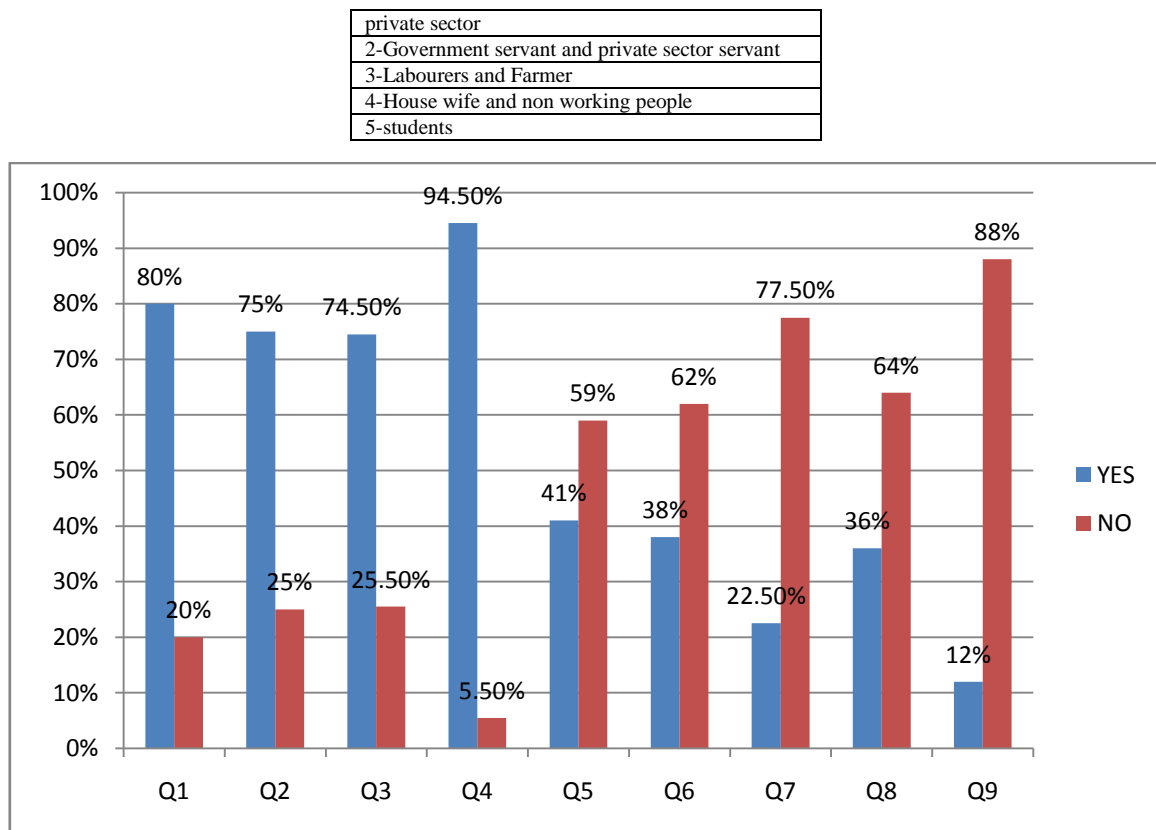
**Table 5: Occupation**

	No. of Patients	Percentage (%)
1-High class professional from government and private sector	21	10.5
2-Government servant and private sector servant	45	22.5
3-Labourers and Farmer	41	20.5
4-House wife and non working people	71	35.5
5-students	22	11
	200	100

### OCCUPATION WISE DISTRIBUTION OF CASES



1-High class professional from government and
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**Figure 1\***Bar chart showing the response of patients to the some of important questions which reveal the awareness towards the refractive correction methods .

- 1-Q1 Have you ever had an eye examination?
- 2-Q2 Do you know the difference between an ophthalmologist and an optometrist?
- 3-Q3 Do you wear glasses?
- 4-Q4 Do you believe that glasses had limiting effects on your daily life? Yes No If Yes, in which aspects?
- 5 -Q5 Do you aware of contact lens usage instead of spectacles?
- 6-Q6 Are you aware of possible contact lens side effects?
- 7-Q7 Are you aware of the presence of contact lenses which have both refractive correction and cosmetic properties?
- 8-Q8 Are you aware of the possibility of refractive surgery in order to improve the eyesight and decrease or eliminate depending on spectacles?
- 9-Q9 Are you aware of possible refractive surgery side effects?

#### IV. Discussion

This study is the only population-based survey on refractive correction method awareness in the Indian population and mostly one of the first in our region. Awareness in our study did not mean that participants were aware of the topic fully. The obtained results could have a possible significant effect on public health education because it was found that despite the fact that uncorrected refractive errors are a major cause of visual impairment and blindness globally, the level of knowledge about this issue and its correction methods is low in our region. The study participants were randomly selected without any criteria . Only few had knowledge about the contact lens side effects. . Many of the participants were not aware of the possibility of performing refractive surgery in order to improve their eyesight. Just 12% of participants were aware of refractive surgery side effects and very few of respondents unexpectedly mentioned fear of refractive surgery side effects as the main reason for not undergoing such correction methods. These findings says that not only most of our region's population does not get informed about these subjects by the eye care authorities but also gather information from unreliable sources. In the present study, there was a considerable correlation between educational status and awareness about contact lens applications and refractive surgery. This result may convey the idea that ocular health educational programs promoting awareness about correction methods, targeted mostly at university level and/or higher educated individuals might be related to certain socio-economic classes which provide a better access to the eye care services. Although there are no other surveys which have particularly examined the

awareness of the general public on refractive error correction methods, several published original researches have revealed the factors affecting the awareness of a population about under corrected refractive errors and other major eye diseases. Similarly, these surveys indicated that awareness and knowledge of such eye diseases were strongly correlated with the individual's educational status (10-16). A disappointing result of this survey is the fact that 25% were not knowing the difference between ophthalmologist and optometrist, 74.5% were using glasses and 94.50% were thinking glasses as a limiting factor in their daily routine work, this might provide the clue to the fact that they might not be using the glasses. Effective health education in eye care may influence the behavior of individuals towards considering regular ocular care. Communicating visual prognosis by primary health care clinicians and primary eye care practitioners would help to increase knowledge and compliance among patients (17) because needless to say, health promotion and communicating risk is a key public health strategy (18-20). These findings emphasize the crucial role of ophthalmologists and optometrists in bringing the general ocular health information to the public attention. After the questions being asked participants were happy to know about the new knowledge regarding the health care.

## V. Conclusion

The results of our study demonstrate major loose ends in the public awareness about the role of ophthalmologists as well as refractive error correction methods in Goa, India. Informing the general public about such important issues is a major step in improving proper ophthalmic services and preventing avoidable visual impairments. Thus, it is crucial for eye care management that ophthalmologists, general practitioners and optometrists provide proper information in details to patients about their refractive error condition and the available correction options.

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Dr Ugam P.S. Usgaonkar "Awareness and Attitude toward Refractive Error Correction Methods, Among Goan Population. *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 17, no. 3, 2018, pp 04-10.