IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Perception of regular Optometry students towards online Optometry learning

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Abstract:

Aim- To assess the perception of regular optometry students towards online optometry learning.

Methods- This questionnaire-based study was conducted among regular optometry students in pandemic era of COVID-19 in 2020. Responses were obtained by circulating the questionnaire through online link. Descriptive analysis was performed.

Results- Majority, 74.17% students responded that online classes are helpful. 77.50% believed that online lecture causes CVS while 53.33% experienced symptoms after attaining lectures and the main symptom was headache. The difficulties faced during online lectures were improper sound modulation, content invisibility, lack of interaction during lectures. Only 29.17% participants want to continue the online lectures for their curriculum.

Conclusion- we can't deny the necessity of online education in optometry. With appropriate solution to the problems, difficulties faced during online lectures can be overcome and online learning settings of optometry can be utilized in more efficient and effective way.

Index Terms **- Perception, Optometry, Online Learning, Pandemic, COVID-19**

I. INTRODUCTION

The word "Optometry" implies a health care profession that is particularly concerned with the examination of eye for errors of refraction and other eye deformities, with recommending corrective lenses in the form of spectacle or contact lenses, exercises of eye as well as vision rehabilitation care for visual impairment to patients, with diagnosing and treating the ocular diseases or referring the case for further management.[1,2] Throughout the past few years, the academic (teaching & learning) establishment of optometry in India has been evolved and is a vital part of the advancement of successful vision care & framework for prevention of blindness.[2,3]

Optometry is recognized by the World Health Organization (WHO) as an independent profession through its ongoing official relations with the World Council of Optometry (WCO) – the international optometric organization which represents almost 300,000 optometrists from 87 member organizations in 47 countries. Optometry as a profession has the primary public health responsibility for eliminating uncorrected refractive error. To provide excellent vision care to all the people of the country, India needs 116,000 optometrists. India currently has approximately 9,000 4-year trained optometrists and an estimated 30,000 2-year trained eye care personnel. [2]

Optometry as a profession has the primary public health responsibility for eliminating uncorrected refractive error (the leading cause of vision impairment globally). As primary eye care practitioners, optometrists have a vital role in detecting potentially serious eye diseases such as cataract, glaucoma and Diabetic retinopathy, age-related maculopathy, as well as general health conditions such as hypertension and diabetes, which means optometrists can also help alleviate the burden of other causes of blindness through diagnosis, referral and in some cases co-management. Optometry can and should play a leading role in eye care provision at the primary level, and can also assist at secondary and tertiary levels where possible, working with ophthalmologists and other eye care providers towards the unified goal of combating blindness [2]

COVID 19 has badly affects the human life and has changed normal pattern of livelihood. Due to the absence of exact vaccine and medication, the only solution to not get infected by COVID 19 was to maintain the social distancing. The concept of traditional education has changed radically within the last couple of months due to lockdown which has proved that being physically present in a classroom isn't the only learning option anymore. To maintain the social distancing, the lockdown was imposed everywhere. Due to lockdown all the university and colleges were closed and to continue the education the universities has started using the technology and adopted the online mode of teaching the students. In response to significant demand, many online learning platforms are offering free access to their services by different organization of the concerned department including schools & universities.

In today's modern era of increasing technologically determined learning atmosphere, it is crucial for a teacher to think about the effective way to approach the students.[4] In contemporary years, with the development of the information and communication technology including online education is influenced worldwide and is emerging as an effective mode of teaching & learning over the traditional ways.[5,6,7] Online education offer new paradigm to the educators constructed on adults learning theory that adults learn by combining new learning with the past experiences, by relating learning with specific needs and through practical applications of learning that leads to more potent learning experiences. Students, Faculties, administrators consider that e-learning is improving the teaching & learning both. [8] Flexibility and convenience are the significant factors that tempt students to join online education. [9]

Online education enables the teacher and the student to set their own learning pace, and there is additional flexibility of setting a schedule that fits everyone's agenda. As a result, using an online educational platform allows for a better balance of work and studies, so there's no

need to give anything up. Accessibility is easy through online education which enables to study or teach from anywhere in the world. This means there's no need to commute from one place to another, or follow a rigid schedule.

For online education, technology is not a biggest challenge, but the identification & implementation of techniques & strategies that offer effective learning opportunities to students. [10] Student satisfaction refers to the students' perception on the value of courses and their curriculum experience which is the important indicator of education quality. [11] As optometry programme consists of both theory and practical session so each part is equally important to be a qualified optometrist. In India, three program are being run by most of the institute, a two-year diploma in optometry program (D. Optom), four year undergraduate program i.e Bachelor of Optometry (B.Optom) & two year post graduate program i.e Masters in Optometry (M.Optom). According to the India Vision Institute report, about 164 institutions providing optometry diploma or degree courses in India and near to 49,000 optometrists are available in the country. Globally there are about 358 teaching institutions and 250,000 optometry specialists according to WCO. It's very evident that India contributes around 19.6% of the optometrists in the world as per the above data. [15]

Among Optometry students, especially in undergraduate courses, student may experience hesitation initially in adjustment to use the information & communication technologies in studies & encounter problems until and unless they achieved a level of comfort of expertise in using software & technologies.[1] Lack of confidence in utilizing the information and communication technology can reduce the rate of students satisfaction during online instructions which resulting in the degradation of their performance. Technical issues during the internet use also resulting in student dissatisfaction & frustration. [14] Sometimes, these problems are constituted by the lack of comprehensive & systematic learning content via online access. If these difficulties are not promptly addressed on time, then may likely cause the loss of interest among students towards online learning. [1]

While some believe that due to unplanned and rapid move to online learning with no training, insufficient bandwidth and little preparation will result in a poor user experience that is unconducive to sustained growth of students, but on other side it is also believe that a new hybrid model of education will emerge, with significant benefits.

The significant factors are online access and students' interaction which influences the student satisfaction. [12,13] In online setting, it is very important to investigate the student satisfaction because newly developed technology has changed the way that students interact with the teacher & classmates. The standard of interaction in online settings is greatly depend on its technological tools employed during teaching-learning process and ability to access them. [14]

Therefore, it is essential for the coordinators & teachers to make sure that their educational material is comfortably accessible to the learners regardless of place and time. [1] To improve the interest, motivation & engagement of students in optometry, visual & sound effects can be useful. Similarly, collaborative learning & peer support can also help to attract and engage students in the online learning settings. [1,2] Attitude, personality, motivation, effort and self-confidence are the several factors concerned to student engagement. [16]

METHODOLOGY

The present study was conducted during the lockdown period due to COVID 19 Pandemic in India in the month of April to May 2020. A random sampling method was applied to choose 120 Optometry students from different universities of India where Optometry programme being offered were participated. Altogether students from 11 universities pursuing Diploma in Optometry (D. Optom), Bachelors in Optometry (B.Optom) or Masters in Optometry (M.Optom) were participated in this study. A consent was taken from every student who has participated in the study

A structured questionnaire was designed to gather the information regarding student's perspective on online optometry education. Initially, all the questions of the questionnaire used in this study were assessed by the team of expect of the concerned field. The questionnaire was circulated among the Optometry students through online link in easy English language so that they could understand the questions easily and appropriate response could be collected from them.

The questionnaire consists of five sections with total ten questions, the questions used were closed ended in the form of Yes/No and other were to rate on the scale of zero to five. The first section consists of demographic data. The second section consists of which application (App) was being used for conduction of online classes and other section consists of how effective the lectures were being conducted, what were the problems being faced, study materials was appropriately circulated among students or not. Also highlighted about computer vision syndrome (CVS) being faced by students or not and further recommendation regarding the conduction of optometry programme through online platform or not.

For this study, only those students were included as participants who has already enrolled in any optometry programme (D. Optom, B. Optom & M. Optom) & has attained the online classes during lockdown.

All the optometry students had filled the data through the link and responses were submitted. All the responses were collected and later on descriptive analysis was carried out.

RESULTS

In this study, total number of participants was 120. The mean age of participants was 20.98±2.43 years (mean ± SD). Out of 120 participants, 44.17% (53) were male and 55.83% (67) were female as shown in figure.1

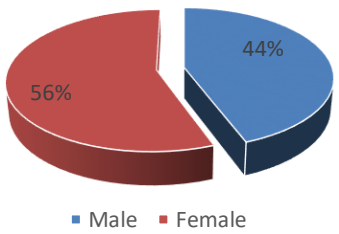

Figure 1-Gender wise distribution of participants

Among 120 participants, majority of the participants 81.67% (98) were undergraduate (Bachelor of optometry) students followed by 10% (12) postgraduate (Masters in optometry) students and 8.33% (10) diploma (Diploma in optometry) students as shown in figure.2

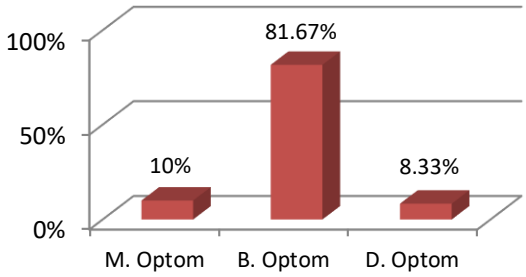

Figure 2- Participants distribution according to different Optometry programme

The most common app used to conduct the online optometry lecture was found to be zoom, which was 95.83% (115) followed by Skype and Google meet 7.5% (09), go to meeting 5.83% (07), university own app 2.5% and free conference call 1.67% (02). Among all the three optometry programme (Diploma, Under Graduate & Post Graduate), 100% (10) diploma students, 96.94% (95) undergraduate students and 83.33% (10) postgraduate students were using zoom app for the online lecture which was the maximum response elicited in this study as shown in table.1

Table.1-App being used for online lecture

Responses	M.Optom	B.Optom	D.Optom	Total
Yes	07 (58.33%)	47 (47.96%)	06 (60%)	60 (50%)
No	05 (41.67%)	51 (52.04%)	04 (40%)	60 (50%)

While assessing the response either they think that online classes were helpful or not, out of total 120 participants, majority of participants 74.17% (89) has responded "Yes" & 25.83% (31) participants has responded "No". We found the positive response rate was higher in undergraduate students (Bachelor of Optometry), which was 75.51% (74) followed by postgraduate students (Masters in Optometry) 75% (09), and diploma students (Diploma in Optometry) 60% (06) who responded that online classes were helpful for them as shown in table.2

Table.2 -Online classes are helpful

Responses	M.Optom	B.Optom	D.Optom	Total
Zoom	10 (83.33%)	95 (96.94%)	10 (100%)	115 (95.83%)
Skype	03 (25%)	06 (6.12%)	0 (0%)	09 (7.5%)
Go to meeting	04 (33.33)	03 (3.06%)	0 (0%)	07 (5.83%)
Google meet	07 (58.33%)	02 (2.04%)	0 (0%)	09 (7.5%)
University app	0 (0%)	03 (3.06%)	0 (0%)	03 (2.5%)
Free conference call	01 (8.33%)	01 (1.02%)	0 (0%)	02 (1.67%)

While evaluating the response either they believed that optometry programme can also be conducted through online lectures or not, 50% (60) of the participants responded "Yes" and 50% (60) responded "No". Maximum response was obtained from diploma students 60% (06) followed by postgraduate students 58.33% (07) and undergraduate students 47.96% (47) who believed that optometry classes can also be conducted through online setting as shown in table.3

Table 1- Optometry programme can be conducted through online lectures

Responses	M.Optom	B.Optom	D.Optom	Total
Yes	09 (75%)	74 (75.51%)	06 (60%)	89 (74.17%)
No	03 (25%)	24 (24.49%)	04 (40%)	31 (25.83%)

While assessing the response on either they believed that online lectures may lead to computer vision syndrome (CVS). Of all 120 participants, 77.5% (93) has responded "Yes" and 22.5% (27) has responded "No" with the maximum response obtained from undergraduate students 78.57% (77) followed by postgraduate students 75% (09) and diploma students 70% (07) who believed that online lectures could lead to computer vision syndrome (CVS). Similarly, while asked that either they felt any ocular symptoms after attending the online lectures or not, majority of participants 53.33% (64) responded has "Yes" while 46.67% (56) responded has "No". Symptoms was found more in post graduate students which was 83.33% (10) followed by undergraduate students 51.02% (50) and diploma students 40% (04) as shown in table.4

Table 2-Ocular difficulties faced by students after attending online classes

Responses	M.Optom	B. Optom	D.Optom	Total
Believe online lectures could lead to the (CVS)	09 (75%)	77 (78.57%)	07 (70%)	93 (77.5%)
Feel ocular symptoms after attaining the online lectures	10 (83.33%)	50 (51.02%)	04 (40%)	64 (53.33%)

When participants were asked about the ocular symptoms faced by them after attending online classes, the main symptom noted in this study was headache which was responded by 40.83% (49) participants followed by eye strain responded by 35.83% (43), dryness responded by 21.67% (26), redness responded by 12.50% (15) and double vision (diplopia) responded by 8.33% (10) participants as shown in figure.3

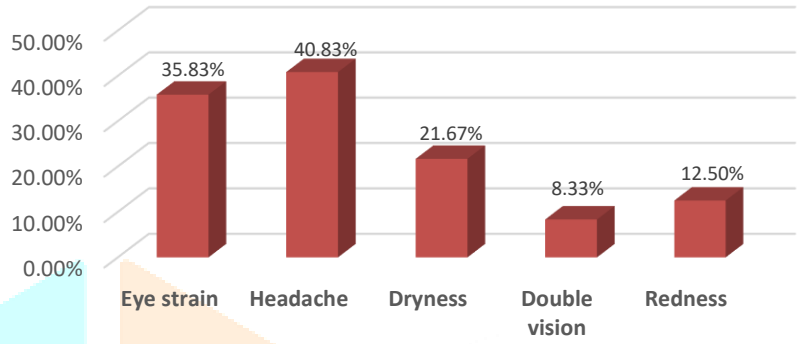

Figure 3-Ocular symptoms among students after attending online classes

While eliciting the response on online lectures regarding improvement in knowledge, the mean response obtained was 2.73±1.09 (Mean ± SD) which was pointing towards the "Neutral" means that they were neither agree nor disagree about the sufficiency of online lectures in improving the knowledge. When assessing the response among all three programme of optometry, the mean response in postgraduate students was 3.42±0.79 indicating towards "Neutral", in undergraduate students 2.55± 1.06 indicating "Neutral" and in diploma students, the mean response was slightly above neutral which was 3.6±1.07 pointing towards "Agree" means that diploma students were agree with that online lectures are sufficient enough for improving their knowledge as shown in table.5

Table 3-Online lectures are sufficient enough to improve the knowledge

	M.Optom	B. Optom	D.Optom	Total
Strongly disagree (1)	0 (0%)	09 (9.18%)	0 (0%)	09 (7.5%)
Disagree (2)	02 (16.67%)	24 (24.49%)	0 (0%)	26 (21.67%)
Neutral (3)	04 (33.33%)	27 (27.55%)	03 (30%)	34 (28.33%)
Agree (4)	05 (41.67%)	25 (25.51%)	04 (40%)	34 (28.33%)
Strongly disagree (5)	01 (8.33%)	13 (13.27%)	03 (30%)	17 (14.17%)
Mean	3.42	3.09	4.0	3.2
SD	0.90	1.18	0.82	1.16

While assessing the response on the content delivery by the teachers during online classes, mean response rate obtained was 3.2±1.16 pointing towards "Neutral" which means students neither agreed nor disagreed that the teachers could successfully deliver the content through online lectures. Similarly, in all the three-optometry programmes, postgraduate and undergraduate students responded "Neutral" as response rate was 3.42±0.90 and 3.09±1.18 respectively while the mean response rate in diploma students was 4.0±0.82 which pointing towards the "agree" means they agreed that teachers are able to deliver the content successfully during online lectures as shown in table.6

Table.6- Teachers are able to deliver the content successfully during online lecture

	M.Optom	B. Optom	D.Optom	Total
Strongly disagree (1)	0 (0%)	19 (19.39%)	0 (0%)	19 (15.83%)
Disagree (2)	01 (08.33%)	26 (26.53%)	01 (10%)	28 (23.33%)
Neutral (3)	06 (50%)	36 (36.73%)	05 (50%)	47 (39.17%)
Agree (4)	04 (33.33%)	14 (14.29%)	01 (10%)	19 (15.83%)
Strongly disagree (5)	01 (8.33%)	03 (03.06%)	03 (30%)	07 (05.83%)
Mean	3.42	2.55	3.6	2.73
SD	0.79	1.06	1.07	1.09

When participants were asked about the difficulties faced by them during online lectures, we found that the main difficulty was "sound not clear" responded by 77.50% (93) participants followed by "lack of interaction" during online lectures responded by 66.67% (80) participants, "doubt not get cleared" responded by 39.17% (47) participants and "diagram not clearly visible" was responded by 35% (42) participants as shown in figure.4.

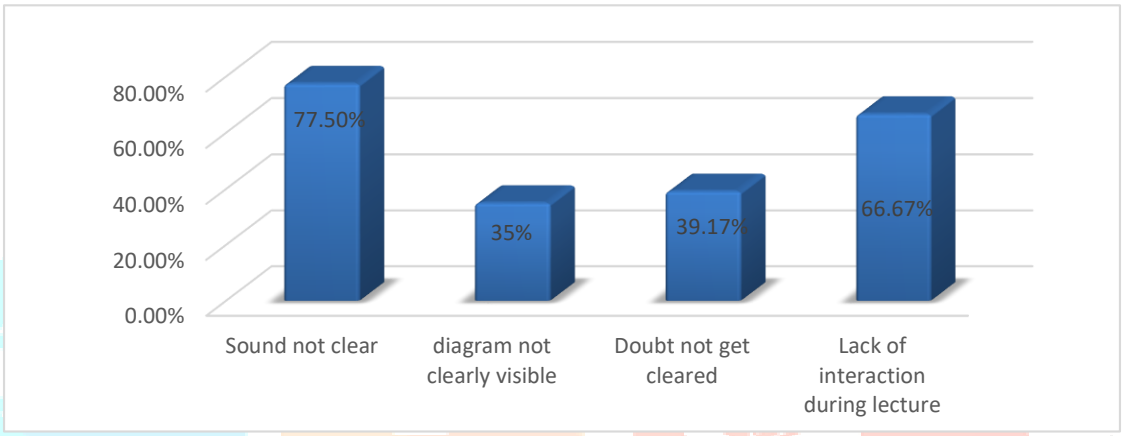

Fig.4- Difficulties faced by students during online classes

When participants were asked to rate their experience with online classes over face to face lectures in classroom, the mean response rate obtained was 2.79±1.17 which was pointing towards the "satisfactorily" experience with online classes. When assessing the response rate among all the program, we found that the experience of postgraduate and undergraduate students was "satisfactorily" with online classes as mean response rate was 3.08±1.00 and 2.65±1.16 respectively while of diploma students was 3.8±0.92 which indicating the "good" experience as shown in table.7

Table 7-- Experience of online classes over face to face classes in classroom

Responses	M.Optom	B.Optom	D.Optom	Total
Very poor	0 (0%)	15 (15.31%)	0 (0%)	15 (12.5%)
poor	04 (33.33%)	35 (35.71%)	0 (0%)	39 (32.5%)
Satisfactorily	04 (33.33%)	25 (25.51%)	05 (50%)	34 (28.33%)
Good	03 (25%)	15 (15.31%)	02 (20%)	20 (16.67%)
Very good	01 (8.33%)	08 (8.16%)	03 (30%)	12 (10%)
Mean	3.08	2.65	3.8	2.79
SD	1.00	1.16	0.92	1.17

When participants were asked about the continuation of online lectures in optometry programme after lockdown, out of 120 participants, only 29.17% (35) participants responded "Yes" while majority of participants 70.83% (85) responded "No". In in three program of optometry, postgraduate students showed higher positive response 33.3% (04) for continuation of online lectures after lockdown as shown in table.8

Table 8-lectures should be continued as a part of teaching methodology for optometry programme after Lockdown

Responses	M.Optom	B. Optom	D.Optom	Total
Yes	04 (33.3%)	29 (29.59%)	02 (20%)	35 (29.17%)
No	08 (66.6%)	69 (70.41%)	08 (80%)	85 (70.83%)

DISCUSSION:

The role of online education in optometry programme can't be denied especially in the current situation where we all were going through the COVID 19 pandemic worldwide & where there is significant demand of online education, many online learning platforms are offering free access to their services by different organization of the concerned department including schools & universities This study was conducted in India to assess the satisfaction with online learning among optometry students and the difficulties faced by them during online lectures. In this study, we found that 74.17% participants (optometry students) agreed that online classes are helpful for them but when they were asked that either online lectures are sufficient enough to improve their knowledge or not, we got the neutral response from participants. As optometry programme consists of both theory as well as practical or clinical course, the theory course can be taught online or offline mode but when it comes to practical or clinical course, it becomes quite difficult to deliver the whole content in effective way through online paradigm as these courses can only be taught effectively in a face to face regular classroom along with demonstration as well as interaction with patients. Present findings have suggested that the experience of participants was satisfactorily with online classes over face to face classes in traditional classrooms. Similarly, while students were asked about the continuation of online lectures as a part of teaching methodology for optometry programme after lockdown, the positive response was only 29.17% which was quite low and even less than 50%, which has clearly suggested that in spite of few advantage of online classes, students still want to continue their optometry education in traditional ways of learning by attaining the lectures by physically present in class room. In another study conducted by Dr. Ozkan Kirmizi (2015), 60.7% participants want to continue the online classes in future. [11] As all students enrolled in our study were pursuing optometry as a regular education programme, so they all were habitual of face to face traditional classrooms teaching methodology but due to unexpected exposure to online classes they may feel quite uncomfortable and obviously need time to adapt the online learning settings. In the study conducted by Cole, Shelley, and Swartz (2014) showed that the main reason of dissatisfaction with online classes was lack of interaction.[7] Similarly, in the another study conducted by Rebecca A. Croxton (2014), they found that student-teacher interaction act as a major variable in the online learning settings.[16] while in this study, we found that sound modulation was the main difficulty faced which was responded by 77.50% participants followed by lack of interaction, doubt not get cleared and visibility problem of content on screen during online lectures. Lack of access to online learning environment is one of the main reason behind the reason with sound modulation and visibility of content on screen as online education is totally depend on the internet access where both quality and quantity of networks matters a lot. Similarly, the problems like doubt clearance and lacking of interaction is virtually student and facilitator (teacher) dependent. It is most important that both facilitators & students must possess enough knowledge to work successfully in online learning environment. It's the responsibility of facilitator to create a supportive environment for students so that students can comfortably participate in online classes and can undergone proper interaction and their doubts can be easily cleared out by using appropriate tool during online lectures. In this study, other barrier to conduct the online learning can be the ocular symptoms which were faced by the 53.33% of students after attending the online lectures. The symptoms included were headache, eye strain, dryness, redness and double vision pointing towards the computer vision syndrome which is caused by the continuous use of digital screens for longer duration. Frequent blinking, timely rest breaks, proper viewing angles and distances, background lighting, seating position should be considered while using digital screen during online lectures so that associated symptoms can be minimized. Students should remind & implement the 20-20-20 rule which states that after every 20 min, look at the object which is at 20 feet away for 20 seconds. Activation of screen glare filter on their digital screens is found useful in minimizing the eye strain & protect eye from other ocular anomalies.

CONCLUSION

Online optometry education plays a significant role in learning settings during lockdown due to COVID-19 in response to significant demand, many online learning platforms but we can't ignore the challenges faced by the optometry students during online classes including technical issues, lack of student-teacher interaction during online lectures, limited delivery of practical knowledge, ocular symptoms associated with digital screens during online lectures which lead to computer vision syndrome (CVS) . So instead of many cons of online learning, we can't deny the necessity of online education in Optometry especially when we don't have other options to deliver the educational content to the students as in the current COVID situation where face to face traditional classes are not possible. With the help of appropriate solution to the problems, we can cope up with the difficulties faced during online Optometry lectures so that online learning settings can be utilized in more efficient and effective way. To conduct online optometry education, it is quite difficult but it could be conducted if we all need to be prepared for the online learning environment by improvement of unplanned and rapid move to online learning with no training, insufficient bandwidth and little preparation in this modern era, where technology is growing much faster. It has become very necessary to furnish the future generation for workforce with modern technology skills and competencies for the 21st century.

REFERENCES

1. Vivek k. Gupta & Veer B. Gupta: Using technology, bioinformatics and health informatics approaches to improve learning experiences in optometry education, research and practice. Healthcare (2016); 4(86).
2. Ministry of Health and Family Welfare Allied Health Section 2015-16. Model Curriculum Handbook OPTOMETRY.https://main.mohfw.gov.in/sites/default/files/Model_Curriculum_Handbook_Optome.pdf
3. Herse & Lee; Optometry and webCT: a student survey of the value of web-based learning environments in optometric education. Clinical and experimental optometry (2005);88(1).
4. Monica L. Acosta, Aran Sisleys, Jacqueline Ross, Lan Brailsfords, Anuj Bhargavas, Robert Jacobs, Nicola Anstice: Student acceptance of e-learning methods in the laboratory class in optometry. PLoS ONE (2018); 13(12).
5. Afzaal Ali & Israr Ahmad: Key factors for determining student's satisfaction in distance learning courses: A study of Allama Iqbal open university. Contemporary educational technology (2011); 2(2).
6. Heather Kauffman : A review of predictive factors of student success in and satisfaction with online learning. Research in Learning Technology (2015); 23.
7. Cole, Shelley, and Swartz : Online instruction, e-learning, and student satisfaction: A three year study. The International review of research in open and distance learning (2014); 15(6).
8. Jorge G. Ruiz, Michael J. Mintzer, Rosanne M. Leipzig: The impact of e-learning in medical Education. Acedemic medicine (2006); 81(3).

9. Shanna Smith Jaggars: Choosing between online and face-to-face courses: community college student voices. American journal of distance education (2014); 28(1).
10. Lana C. Jackson, Stephanie J. Jones, Roy C. Rodriguez: Faculty actions that result in student satisfaction in online courses. Journal of Asynchronous Learning Networks (2006); 14(4).
11. Dr. Ozkan Kirmizi: The influence of learner readiness on student satisfaction and academic achievement in an online program at higher education. Turkish online journal of educational technology (2015); 14(1).
12. Doris U. Bolliger, Trey Martindale: Key factors for determining student satisfaction in online courses. International journal on e-learning (2004); 3(1).
13. Rebecca A. Croxton: The role of interactivity in student satisfaction and persistence in online learning. MERLOT Journal of Online Learning and Teaching (2014); 10(2).
14. Yu-chun kuo, Andrew E. walker, Brian R. belland and Kerstin E.E. Schroder: A predictive study of student satisfaction in online education programs. International review of research in open and distributed learning (2013); 14(1).
15. Venugopal D, Lal B, Shirodker S, Kanojiya R, Kaushal R. Optometry students' perspective on optometry in suburban Western India: A qualitative study. Journal of Optometry. 2020 Mar 20
16. Julie A. Gray, Melanie Diloreto: The Effects of student engagement, student satisfaction, and perceived learning in online learning environments. International journal of educational leadership preparation (2016); 11(1).