

<https://dx.doi.org/10.4314/jnoa.v26i2.6>

# KNOWLEDGE AND ATTITUDE TOWARDS TELE-EYECARE AMONG OPTOMETRY STUDENTS IN UNIVERSITY OF BENIN

<sup>1</sup>Oseleonomhen Monica Odigie, <sup>1</sup>Jennifer Akpotiri, <sup>2</sup>Marco Zeppieri, <sup>1,3</sup>Mutali Musa

<sup>1</sup> Department of Optometry, University of Benin, Benin City, Nigeria.

<sup>2</sup> Department of Ophthalmology, University of Udine, Udine, Italy.

<sup>3</sup> Centre for Sight Africa Ltd, Nkpor, Onitsha, Nigeria.

**Corresponding author:** Mutali Musa | Email: [mutali.musa@uniben.edu](mailto:mutali.musa@uniben.edu) | Orcid: 0000-0001-7486-8361, Phone: +2348167184905

## Abstract

**Purpose:** Tele-eyecare is a form of tele-healthcare that engages in delivering eye care services to patients using telecommunications technology. This study aimed to assess the knowledge and attitude towards tele-eyecare among optometry students.

**Methods:** A convenience sampling technique was used to distribute pre-tested questionnaires to 268 students in pre-clinical and clinical classes of the Department of Optometry, University of Benin. The characteristics of the respondents were displayed using percentages and tables. The association between knowledge, attitude, and characteristics of respondents was tested using the Chi-square test.

**Results:** Among the respondents, 56.7% were females while 43.3% were less than 25 years of age. The majority of the respondents (92.6%) indicated that tele-eyecare involved the use of information and communication technology to provide eye care services. 86.6% of respondents believed that tele-eyecare can improve the quality and accessibility of eye care services while 75.4% agreed that tele-eyecare would benefit future eye care providers. Furthermore, 65% of respondents were interested in getting training on tele-eye care, age, gender, and year of study influenced the knowledge and attitude of the respondents ( $p < 0.05$ ).

**Conclusion:** The majority of the participants demonstrated good knowledge and a good attitude towards tele-eyecare, however, there is a need to close the tele-eye care knowledge gap among clinical optometry students.

**Keywords:** tele-eyecare, tele-healthcare, optometry, questionnaire.

## Introduction

Recent advancements in telecommunication technologies have resulted in changes in every

sector including the healthcare sector with the younger generation having more proficiency in technology compared to the older generation.<sup>1-3</sup>

1. Beheshti L, Kalankesh LR, Doshmangir L, et al. Telehealth in Primary Health Care: A Scoping Review of the Literature. *Perspect Health Inf Manag.* Winter 2022;19(1):1n.

2. Biruk K, Abetu E. Knowledge and Attitude of Health Professionals toward Telemedicine in Resource-Limited Settings: A Cross-Sectional Study in North West Ethiopia. *J Healthc Eng.* 2018;2018:2389268. doi:10.1155/2018/2389268.

3. Pathipati AS, Azad TD, Jethwani K. Telemedical Education: Training Digital Natives in Telemedicine. *J Med Internet Res.* 2016;18(7):e193. doi:10.2196/jmir.5534

Telehealth is the application of information and communication technologies (ICTs) for the delivery of health services where there is physical separation between healthcare professionals and/or patients usually over various distances.<sup>4</sup> It is made up of health surveillance, education, intervention, promotion, monitoring, and remote admissions.<sup>4-6</sup> Barriers can occur when attempting to physically deliver healthcare services to far distant regions in different parts of the world, telehealth can overcome this challenge by providing services to hard-to-reach areas thereby bridging the gap between the care provider and the recipient.<sup>1,7</sup> The achievement of these services depends on understanding the knowledge, attitude, and expertise of the professionals involved.<sup>2</sup> Although several benefits are associated with telehealth care, certain concerns such as privacy, wrong use of information, and security risks are still in existence posing a significant menace to its reliability.<sup>8</sup>

Tele-eye care is an aspect of tele-healthcare that deals with the provision of eye care to patients through the process of telecommunication technology and the use of digital medical equipment. The application of tele-eyecare includes access to eye care providers for patients living in remote regions, diagnosis, and monitoring of ophthalmic diseases, in addition to distant learning. A study conducted among

optometrists in Trinidad and Tobago revealed there was reduced knowledge but good attitudes towards tele-eye care among the participants.<sup>9</sup> As the incorporation of technologies continues to advance in patient care, students in healthcare-related fields must be exposed to this modality of care during their training programs in universities as they will likely be utilizing them in the future.<sup>10-11</sup> Therefore, the aim of this study was to integrate the latest research data concerning the knowledge and attitude of optometry students to tele-eye care.

## MATERIALS AND METHODS

The research was cross-sectional study in nature and was conducted in the Optometry Department, University of Benin, Benin City between July-August 2022. Pre-clinical and clinical optometry students across three years of study (400 through 600) were selected using the convenience sampling technique.

### Ethical Consideration

Ethical approval was obtained from the Research and Ethics Committee of the Department of Optometry, University of Benin with an ethical approval number EC/UBEN/LSC.OPT/22/135. The study was carried out in line with the Declaration of Helsinki.

### Procedure

A pretested and modified questionnaire was

- Beheshti L, Kalankesh LR, Doshmangir L, et al. Telehealth in Primary Health Care: A Scoping Review of the Literature. *Perspect Health Inf Manag*. Winter 2022;19(1):1n.
- Biruk K, Abetu E. Knowledge and Attitude of Health Professionals toward Telemedicine in Resource-Limited Settings: A Cross-Sectional Study in North West Ethiopia. *J Healthc Eng*. 2018;2018:2389268. doi:10.1155/2018/2389268.
- Shaw DK. Overview of telehealth and its application to cardiopulmonary physical therapy. *Cardiopulm Phys Ther J*. Jun 2009;20(2):13-8.
- Masson M. Benefits of TED Talks. *Can Fam Physician*. Dec 2014;60(12):1080.
- Wilson LS, Maeder AJ. Recent directions in telemedicine: Review of trends in research and practice. *Healthc Inform Res*. 2015; 21(4):213–222.
- Jha AK, Sawka E, Tiwari B, et al. Telemedicine and community health projects in Asia. *Dermatol Clin*. 2021; 39:23-32.
- Gajarawala SN, Pelkowski JN. Telehealth benefits and barriers. *J Nurse Practition*. (2021) 17:218–211.
- Ezinne NE, Anyasodor AE, Bhattarai D, et al. Knowledge, attitude and perception of optometrists in Trinidad and Tobago towards teleoptometry. *Heliyon*. 2023; 9(2): 13686
- Kunwar B, Dhungana A, Aryal B, et al. Cross-sectional study on knowledge and attitude of telemedicine in medical students of Nepal. *Health Sci Rep*. 2023; 6(3): 1156.
- Musa MJ, Akpalaba RU, Atuanya GN, et al. Challenges and Successes of Virtual Learning: An Emerging Trend. *Benin J Educ Stud*. 2021;26:192-199. <http://dx.doi.org/10.13140/RG.2.2.34250.08644>.

distributed to all the participants after obtaining informed consent for the study. This questionnaire was simplified for easy understanding and distributed manually to all respondents. The questionnaire broadly covered three sections. The first section sought demographic data wherein the participants had to choose by ticking the range of options that best suited them. The second and third sections had seven and ten components respectively and were structured to assess the level of knowledge and attitude towards tele-eyecare among students attending Optometry schools as adopted from previous studies.<sup>9-10,12</sup> Knowledge was defined by how the participants had an overall understanding of what tele-eye care was all about. The attitude was defined by how the participants felt towards tele-optometry and the reasons why they would like to adopt it.

### Data Analysis

Data collected from these questionnaires were analyzed using Statistical Package of Social

Science (SPSS) computer software version 22.0, the results were presented in frequencies, percentages, and tables. The chi-square test was used to determine the association between variables, and statistical significance was set at a p-value <0.05.

### RESULTS

A total of two hundred and sixty-eight (268) respondents answered the questionnaires on their knowledge and attitude towards tele-eye care. The mean age of the respondents was  $20.1 \pm 12.2$  years.

Table 1 shows that of these 268 respondents, 116 (43.3%) were males and 152 (56.7%) were females. One hundred and seventy-six (65.7%) were below 25 years, 76 (28.4%) were between 26 and 30 years and 16 (6.0%) were above 30 years. One hundred and eight (40.3%), 54 (20.1%) and 106 (39.6%) were in 4<sup>th</sup>, 5<sup>th</sup> and 6<sup>th</sup> year, respectively.

**Table 1: Demographic distribution of respondents**

Item	Groups	Frequency	Percentage (%)
Sex	Male	116	43.3
	Female	152	56.7
Age	<25 years	176	65.7
	26 – 30 years	76	28.4
	> 30 years	16	6.0
Year of study	400 level	108	40.3
	500 level	54	20.1
	600 level	106	39.6

9. Ezinne NE, Anyasodor AE, Bhattarai D, et al. Knowledge, attitude and perception of optometrists in Trinidad and Tobago towards teleoptometry. *Heliyon*. 2023; 9(2): 13686

10. Kunwar B, Dhungana A, Aryal B, et al. Cross-sectional study on knowledge and attitude of telemedicine in medical students of Nepal. *Health Sci Rep*. 2023; 6(3): 1156.

12. Fouad A, Mahmood, AO, Yasmin MM, et al. Awareness, Knowledge, Attitude, and Skills of Telemedicine Among Mental Healthcare Provider. *Middle East Cur Psych*. 2023; 30(1):5.

Table 2 summarizes the knowledge of respondents of tele-eyecare. The majority of the respondents (89.6%) either agreed or were neutral about tele-eyecare being a remote delivery of eyecare services, while 0.7% disagreed that it is the use of information and communication technology to provide eye-care services. A majority of the respondents (91.8%) also agreed or were neutral about tele-eyecare being eye consultation provided by eyecare providers over phone and text messages as compared to 4.4% who disagreed with tele-eye being eye care providers consultation using phone and text messages. Few of the respondents (7.5%) disagreed that tele-eye care was the education of patients and eye care providers on managing eye problems. The majority of the respondents (73.9%) disagreed or were neutral about tele-eyecare meaning using the internet to search for their symptoms and conditions by patients.

**Table 2: Knowledge of tele-eye care by respondents**

S/N	Item	Responses				
		SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)
1.	It is the remote delivery of eye care services	4 (1.5)	24 (9.0)	46 (17.2)	134 (50.0)	60 (22.4)
2.	It is the use of information and communication technology to provide eye care services	2 (0.7)	0 (0.0)	18 (6.7)	132 (49.3)	116 (43.3)
3.	Exchange of information between eye-care providers	2 (0.7)	20 (7.5)	52 (19.4)	120 (44.8)	74 (27.6)
4.	Eye care providers consultation over phone and text message	6 (2.2)	6 (2.2)	54 (20.1)	118 (44.0)	84 (31.3)
5.	Online interaction between patients and eye care providers	2 (0.7)	8 (3.0)	16 (6.0)	136 (50.7)	106 (39.6)
6.	The education of patients and eye care providers on managing eye problems	4 (1.5)	16 (6.0)	50 (18.7)	112 (41.8)	86 (32.1)
7.	Patients using the internet to search for their symptoms and conditions	38(14.2)	78 (29.1)	82 (30.6)	48 (17.9)	22 (8.2)

SD – Strongly disagree; D – Disagree; N – Neutral; A – Agree; SA – Strongly Agree

Table 3 shows that 94.1% of respondents agreed to or were neutral towards the idea of tele-eyecare improving the quality and accessibility of eye care services, while 84.4% of the total respondents felt it was a safe and convenient way of managing patients. About half of the respondents (50.7%) agreed or were neutral about tele-eye care partially replacing face-to-face consultation in the future. 95% of the respondents agreed or were neutral about tele-eyecare saving a lot of time (95.5%) reducing the quality of patient care (76.9%); 72.3% agreed that tele-eyecare endangered confidentiality

(72.3%), improving eye care provider-patient relationship (85.1%) and 79.1% reducing unnecessary referrals and cost of patient care delivery (79.1%). Majority of the respondents agreed or were unsure that tele-eye care in undergraduate studies would benefit future eye care providers (94.1%) while few of the respondents (9.7%) had no interest in tele-eye care training.

**Table 3: Attitude towards tele-eye care by respondents**

S/N	Item	Responses				
		SD n (%)	D n (%)	N n (%)	A n (%)	SA n (%)
1.	Tele-eye care can improve the quality and accessibility of eye care services	4 (1.5)	12 (4.5)	20 (7.5)	124 (46.3)	108 (40.3)
2.	Tele-eye care is a safe and convenient way of managing patients	10 (3.7)	32 (11.9)	80 (29.9)	100 (37.3)	46 (17.2)
3.	Tele-eye care can partially replace face-to-face consultation	54 (20.1)	78 (29.1)	58 (21.6)	64 (23.9)	14 (5.2)
4.	Tele-eye care saves a lot of time	4 (1.5)	8 (3.0)	56 (20.9)	136 (50.7)	64 (23.9)
5.	Tele-eye care reduces the quality of patient care	16 (6.0)	46 (17.2)	86 (32.1)	76 (28.4)	44 (16.4)
6.	Tele-eye care endangers confidentiality	20 (7.5)	54 (20.1)	74 (27.6)	92 (34.3)	28 (10.4)
7.	Tele-eye care will improve the eye care provider-patient relationship	8 (3.0)	32 (0.0)	80 (29.9)	104 (38.8)	44 (16.4)
8.	Tele-eye care will reduce unnecessary referrals and cost of patient care delivery	8 (3.0)	48 (17.9)	78 (29.1)	108 (40.3)	26 (9.7)
9.	Tele-eye care in undergraduate studies would benefit future eye care providers	2 (0.7)	14 (5.2)	50 (18.7)	126 (47.0)	76 (28.4)
10.	I am interested in getting training on tele-eye care	12 (4.5)	14 (5.2)	68 (25.4)	94 (35.1)	80 (29.9)

SD – Strongly disagree; D –Disagree; N –Neutral; A – Agree; SA – Strongly Agree

The relationship between the age groups of respondents and knowledge of tele-eyecare was tested using the Chi-Square test as shown in Table 4. The majority of the respondents had good knowledge of tele-eyecare. There was also a statistically significant association between age ( $p=0.002$ ), gender, year of study ( $p=0.000$ ), and knowledge of the respondents to tele-eyecare services ( $p=0.000$ )

**Table 4: Association between demographic factors and knowledge**

	Response		$\chi^2$	P-value
	Good	Poor		
<b>Age</b>			<b>66.312</b>	<b>0.002*</b>
< 25 years	168	8		
26 – 30 years	74	2		
> 30 years	14	2		
<b>Gender</b>			<b>47.936</b>	<b>0.000*</b>
Male	116	0		
Female	140	12		
<b>Year of study</b>			<b>82.075</b>	<b>0.000*</b>
400 level	102	6		
500 level	52	2		
600 level	102	4		

The respondents' attitude to tele-eyecare was tested for significance as shown in Table 5. The majority of the respondents had a good attitude towards tele-eye care. There was also a statistically significant association between age ( $p=0.000$ ), gender ( $p=0.001$ ), year of study, and attitude of the respondents towards tele-eye care services ( $p=0.001$ ).

**Table 5: Association between demographic factors and attitude**

	Response		$\chi^2$	P-value
	Good	Poor		
<b>Age</b>			<b>92.405</b>	<b>0.000*</b>
< 25 years	158	18		
26 – 30 years	70	6		
> 30 years	14	2		
<b>Gender</b>			<b>50.456</b>	<b>0.001*</b>
Male	104	12		
Female	138	14		
<b>Year of study</b>			<b>77.553</b>	<b>0.001*</b>
400 level	94	14		
500 level	52	2		
600 level	94	12		

## DISCUSSION

Telehealth is an emerging tool that provides new alternatives to patient care,<sup>13</sup> tele-eye care can bring about a reasonable adjunct to in-person optometry services.<sup>14</sup> As far back as 2007, Hom and Chous<sup>15</sup> proposed tele-health as a reliable adjunct in the event of a pandemic, 12 years later, its uptake can still be described as below par.<sup>15</sup> The prerequisites for successfully integrating this new tool are knowledge, attitudes, and acceptance of tele-eye care among optometrists. Barriers to telehealth were not sought in this study, however multicenter large-scale studies suggest that work-schedule rigidity, clinical skills and patient acceptability have been mentioned.<sup>16</sup> The lack of proper guiding framework for use also contributes to perceived timidity among health care systems towards tele-health uptake.<sup>17</sup>

In this study, the majority of the respondents (72.4%) stated that tele-eyecare was the remote delivery of eye care services. This was lower than the results obtained by optometrists (84.1%) and mental healthcare providers (84.8%),<sup>9,12</sup> however, a study conducted in Nepal revealed that fewer medical students (34.5%) thought telemedicine was the remote delivery of healthcare services which was in contrast to the

finding in this study.<sup>10</sup>

86.6% of the respondents in this study indicated that tele-eye care can raise the standard and accessibility of eye care services though many of them also expressed worries about the potential for medical errors and were not confident in the diagnostic results attained through tele-eyecare.<sup>9,18</sup> This makes sense given that a lot of optometry procedures involved performing a group of tests which may rely on the availability of equipment, the accuracy of images acquired, and the interpretation of the results, and some of these may not be attainable with the application of tele-eyecare.<sup>9</sup> Factors prognostic for better tele-health outcomes however include low cost, ease of use and instrument training.<sup>19</sup> There are however areas where there is a serious paucity of optometrists and it is important that tele-medicine contributes to healthcare delivery in these areas.<sup>21,22</sup> In Nigeria where many rural areas do not have adequate healthcare facilities, telemedicine may be preferred because it eliminates the hurdles associated with traveling for medical care for those living in rural areas, and for patients who may have restricted mobility thereby enhancing accessibility to care.<sup>23</sup> Steindal *et al.*<sup>20</sup> reviewed studies in

9. Ezinne NE, Anyasodor AE, Bhattarai D, et al. Knowledge, attitude and perception of optometrists in Trinidad and Tobago towards teleoptometry. *Heliyon*. 2023; 9(2): 13686
10. Kunwar B, Dhungana A, Aryal B, et al. Cross-sectional study on knowledge and attitude of telemedicine in medical students of Nepal. *Health Sci Rep*. 2023; 6(3): 1156.
12. Fouad A, Mahmood, AO, Yasmin MM, et al. Awareness, Knowledge, Attitude, and Skills of Telemedicine Among Mental Healthcare Provider. *Middle East Cur Psych*. 2023; 30(1):5.
13. American Optometry Association. Position Statement Regarding Telemedicine in Optometry. [https://www.aoa.org/AOA/Documents/Advocacy/position%20statements/AOA\\_Policy\\_Telehealth.pdf](https://www.aoa.org/AOA/Documents/Advocacy/position%20statements/AOA_Policy_Telehealth.pdf). Accessed March 21, 2024.
14. Massie J, Block SS, Morjaria P. The Role of Optometry in the Delivery of Eye Care via Telehealth: A Systematic Literature Review. *Telemed J E Health*. 2022; 28(12):1753-1763. doi: 10.1089/tmj.2021.0537.
15. Hom GG, Chous AP. The prospect of pandemic influenza: why should the optometrist be concerned about a public health problem? *Optometry*. 2007; 78(12):629-43. doi: 10.1016/j.optm.2007.04.099. PMID: 18054133; PMCID: PMC7106072.
16. Koivunen M, Saranto K. Nursing professionals' experiences of the facilitators and barriers to the use of telehealth applications: a systematic review of qualitative studies. *Scand J Caring Sci*. 2018 Mar;32(1):24-44. doi: 10.1111/scs.12445. Epub 2017 Aug 3. PMID: 28771752.
17. Kaplan B. Revisiting health information technology ethical, legal, and social issues and evaluation: telehealth/telemedicine and Covid-19. *Int J Med Inform*. 2020; 143:104239. doi: 10.1016/j.jmedinf.2020.104239. Epub 2020 Jul 31. PMID: 33152653; PMCID: PMC7831568.
18. Woodward AR, Ple-plakon P, Taylor B, et al. Eye Care Providers' Attitudes Towards Tele-ophthalmology. *Telemed J E Health*. 2015. 21(4): 271-273.
19. Aldebasi B, Alhassan AI, Al-Nasser S, et al. Level of awareness of Saudi medical students of the Internet-based health-related information seeking and developing to support health services. *BMC Med Infor Dec Making*. 2020; 20(1):209.
20. Steindal SA, Nes AAG, Godskesen TE, Dihle A, Lind S, Winger A, Klarare A. Patients' Experiences of Telehealth in Palliative Home Care: Scoping Review. *J Med Internet Res*. 2020; 22(5):e16218. doi: 10.2196/16218. PMID: 32369037; PMCID: PMC7238080.
21. Muma S, Naidoo KS, Hansraj R. Proposed task shifting integrated with telemedicine to address uncorrected refractive error in Kenya: Delphi study. *BMC Health Serv Res*. 2024; 24(1):115. doi: 10.1186/s12913-024-10618-8. PMID: 38254104; PMCID: PMC10801974.
22. Nagra M, Vianya-Estopa M, Wolffsohn JS. Could telehealth help eye care practitioners adapt contact lens services during the COVID-19 pandemic? *Cont Lens Anterior Eye*. 2020; 43(3):204-207. doi: 10.1016/j.clae.2020.04.002. Epub 2020 Apr 18. PMID: 32336578; PMCID: PMC7165279.
23. Olawole, M. The Choice of health care facilities in rural areas of Nigeria: analyzing the impact of distance and socio-economic factors. *Ife Res Pub Geo*. 2010. 9(1): 265 -281.

telehealth and opined that this technology statistically improved patient wellbeing and quality of life.<sup>20</sup> Similar results were obtained in a study out of Trinidad and Tobago, where 87.3% of respondents believed it would improve the practice of optometrists.<sup>9</sup>

Majority of the respondents (74.6%) acknowledged that tele-eye care saved time, while 44.8% and 44.7% believed that it reduced the quality of patient care and endangered confidentiality respectively. This response was similar to the result obtained among medical students, where 64.9% agreed that telemedicine saved time, but contrasted with the result obtained by optometrists and mental health providers, where only 1.6% and 22.7%, respectively, agreed that telemedicine saved time.<sup>12,20</sup> Another study<sup>12</sup> found that it was not suitable for emergencies and did not guarantee confidentiality.

About half of the respondents in this study (55.2%) agreed that improved patient-provider communication will result from tele-eyecare. Cegarra-Sanchez et al.<sup>24</sup> showed in their study that tele-health positively impacts on the ability to disseminate useful health information to counter potentially dangerous clinical knowledge from spreading. Similar to this, are

studies<sup>18,25</sup> that investigated the usefulness of teleconsultations in primary care and reported that for many people using primary care and mental health services, teleconsultations with the phone or videoconference can serve as a useful substitute to face-to-face consultations. In contrast, only 9.5% of respondents in another study recommended it for clinical consultation.<sup>9</sup> Additionally, a study<sup>26</sup> conducted in Saudi Arabia examined patient satisfaction with the application of telemedicine in the course of the COVID-19 pandemic and discovered that older study participants preferred face-to-face consultation over telemedicine.<sup>26</sup> This may be a result of the necessity of the older generation to engage in face-to-face interaction to converse about more sensitive topics and to verbally and nonverbally express all of their worries.<sup>27</sup>

Sixty-five percent of respondents showed interest in tele-eyecare training in this study. This was slightly lower compared to the findings obtained in similar studies from eye care providers, health science students, and optometrists, where 82.0%, 90.9% and 71.4% of their respective respondents were willing to either participate or incorporate telemedicine in their practices.<sup>15,28</sup> A comparative study on tele-health mediated low vision rehabilitation compared to in-

- 
9. Ezinne NE, Anyasodor AE, Bhattarai D, et al. Knowledge, attitude and perception of optometrists in Trinidad and Tobago towards teleoptometry. *Heliyon*. 2023; 9(2): 13686
  12. Fouad A, Mahmood, AO, Yasmin MM, et al. Awareness, Knowledge, Attitude, and Skills of Telemedicine Among Mental Healthcare Provider. *Middle East Cur Psych*. 2023; 30(1):5.
  15. Hom GG, Chous AP. The prospect of pandemic influenza: why should the optometrist be concerned about a public health problem? *Optometry*. 2007; 78(12):629-43. doi: 10.1016/j.optm.2007.04.099. PMID: 18054133; PMCID: PMC7106072.
  18. Woodward AR, Ple-plakon P, Taylor B, et al. Eye Care Providers' Attitudes Towards Tele-ophthalmology. *Telemed J E Health*. 2015. 21(4): 271-273.
  20. Steindal SA, Nes AAG, Godsken TE, Dihle A, Lind S, Winger A, Klarare A. Patients' Experiences of Telehealth in Palliative Home Care: Scoping Review. *J Med Internet Res*. 2020; 22(5):e16218. doi: 10.2196/16218. PMID: 32369037; PMCID: PMC7238080.
  24. Cegarra-Sanchez J, Cegarra-Navarro JG, Wensley A, Diaz Manzano J. Overcoming counter-knowledge through telemedicine communication technologies. *J Health Organ Manag*. 2017 Oct 9;31(7-8):730-745. doi: 10.1108/JHOM-06-2017-0148. PMID: 29187083.
  25. de Albornoz SA, Sia K-L, Harris A. The effectiveness of teleconsultations in primary care: systematic review. *Fam Prac*. 2021; 39(1) 1–15.
  26. Nasser, AA, Alzahrani RA, Fellah CA, et al. Measuring the Patients' Satisfaction About Telemedicine Use in Saudi Arabia During COVID-19 Pandemic. *Cureus*. 2021; 13(2):13382.
  27. Smith KA, Ostinelli EG, Ede R, Allard L, Thomson M, Hewitt K, Brown P, Zangani C, Jenkins M, Hinze V, Ma G, Pothulu P, Henshall C, Malhi GS, Every-Palmer S, Cipriani A. Assessing the Impact of Evidence-Based Mental Health Guidance During the COVID-19 Pandemic: Systematic Review and Qualitative Evaluation. *JMIR Ment Health*. 2023 Dec 22;10:e52901. doi: 10.2196/52901. PMID: 38133912; PMCID: PMC10760515.
  28. Malhotra P, Ramachandran A, Chauhan R, et al. Assessment of Knowledge, Perception, and Willingness of using Telemedicine among Medical and Allied Healthcare Students Studying in Private Institutions. *Tele Med Today*. 2020; 5(4). 1-14.



person therapist-led management showed that outcomes were similar between the two groups with the tele-rehabilitation patients less likely to abandon their management.<sup>29</sup> This should serve as an encouragement for eye care providers to scale up tele-health services.

Overall, 95.5% of the respondents had good knowledge of and good attitude towards tele-eyecare in this study, the knowledge levels of the respondents varied by sex, age, and year of study. Only females (12) had inadequate knowledge of tele-eye care, according to their sex in contrast to a study<sup>12</sup> that indicated that women were more likely to attend conferences, speeches, or meetings about telemedicine technology to learn more about health-related

topics. Another study<sup>30</sup> that examined adults aged 18 to 34 in Manila, Philippines, during the COVID-19 pandemic, discovered that women had higher mean knowledge scores than men in telemedicine. Based on gender, fewer males had poor attitudes towards tele-eye care. This was similar to another report in which males had a better attitude toward telemedicine.<sup>12</sup>

### Limitations

This study had some limitations viz;

1. Some respondents did not fill out the questionnaires
2. Some of the forms were incomplete and discarded.

### CONCLUSION

Out of the 268 respondents interviewed in this study, the majority of them had good knowledge and a positive attitude towards tele-eyecare. In addition, many respondents also believed that tele-eyecare in undergraduate studies would benefit future eye care providers. Dedicated courses on tele-eyecare, covering its principles, technologies, and ethical considerations can be integrated into the optometry school curriculum. Research opportunities that inspire students to participate in projects associated with tele-eyecare can foster a deeper understanding of its applications and challenges. By implementing these recommendations, universities can enhance the knowledge and attitude of their optometry students toward tele-eyecare, preparing them for the evolving landscape of healthcare delivery.

[How to cite this article: Oseleonmhen Monica Odigie, Jennifer Akpotiri, Marco Zeppieri, Mutali Musa. KNOWLEDGE AND ATTITUDE TOWARDS TELE-EYECARE AMONG OPTOMETRY STUDENTS IN UNIVERSITY OF BENIN. *Journal of the Nigerian Optometric Association*.2024;26(2):34-42]

12. Fouad A, Mahmood, AO, Yasmin MM, et al. Awareness, Knowledge, Attitude, and Skills of Telemedicine Among Mental Healthcare Provider. *Middle East Cur Psych*. 2023; 30(1):5.
29. Bittner AK, Yoshinaga PD, Rittiphairoj T, Li T. Telerehabilitation for people with low vision. *Cochrane Database Syst Rev*. 2023 Jan 13;1(1):CD011019. doi: 10.1002/14651858.CD011019.pub4. PMID: 36637057; PMCID: PMC9837841.
30. Umayam KAD, Rosadia ANN, Tan RNR, et al. Knowledge, attitudes and perceptions on the use of telemedicine among adults aged 18–34 in Manila, Philippines during the COVID-19 pandemic. *J Med Uni Santo Tomas*. 2022; 6(1): 858–867.