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Experiences and Attitudes of Optometry Students Regarding Online Learning During the COVID-19 Pandemic



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# Burnout Among Faculty Members in Optometric Education: a Gender-Based Analysis

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***Abstract***

*Burnout among clinicians and educators is a growing problem that poses a threat to faculty vitality. The varied roles that optometric faculty members play in academic settings increase their susceptibility to burnout, especially for women. A national, cross-sectional survey of optometric faculty members identified levels of burnout, factors contributing to burnout and gender-based differences in burnout. The response rate was 28.4% (225 of 793). This study found that women are more likely than men to experience burnout ($p < .001$) and less likely to report an institutional culture that supports faculty wellness ($p = 0.038$). Work-life balance, compensation and advancement opportunities may inform these differences. Additional studies are needed to establish whether these factors are statistically significant.*

## Background

Optometric educators across the United States are active clinicians, scholars and administrators, often expected to serve in these roles within the same day. Whether taking responsibility for the development of their students, providing evidence-based care to their patients or fulfilling the mission of their academic institution, they constantly balance these related but competing interests with the roles they inhabit in their personal lives. This ceaseless balancing act can devolve into role conflict leading to burnout, especially for women.[1-5] Existing literature that addresses burnout has almost exclusively focused on larger professions or academic medicine; there is a significant gap in the literature regarding the relationship between gender and burnout among optometric educators.[6-8] This study focuses on that gap to contribute to a greater understanding of how gender and burnout intersect in optometric education by identifying contributing factors to burnout that have gender-based differences. A better understanding of the gender-based risk factors for burnout is the first step in creating academic environments where all faculty members can thrive.

The Association of Schools and Colleges of Optometry (ASCO) reports that there are approximately 800 full-time faculty members distributed across 23 schools and colleges of optometry in the United States, 60% of whom are women.[9] By comparison, the Association of American Medical Colleges (AAMC ) reports (2024) that there are more than 240 times the number of medical school faculty members (201,112) at medical schools in the United States than there are optometric educators.[10] Given the relative dearth of optometric educators, the dynamism required of these professionals to successfully serve in these roles, and the increasingly disproportionate representation of women in these roles, it is critical to understand the factors contributing to attrition, dissatisfaction and burnout especially among women optometric faculty members.

Burnout is described as an “occupational phenomenon” (ICD-11) characterized by three dimensions:

"feelings of energy depletion or exhaustion, increased mental distance from one's job or feelings of negativism or cynicism related to one's job, and reduced professional efficacy."[11] This article describes burnout in optometric educators and identifies gender-related trends based on a national survey.

*Trends in burnout*

The COVID-19 pandemic worsened a rising trend of faculty burnout in academic medicine,[12-13] especially among women in academic medicine.[14] Large-scale studies of burnout in optometric educators have not been done. A single study addressed burnout at one college of optometry, focusing on comparative rates of burnout between academic programs.[15] The current study is the first to assess levels of burnout among optometric educators on a national scale.

Studies conducted more broadly in academic medicine and health professions education are applicable given the similar expectations of faculty members across these disciplines. In a representative study of burnout among faculty members at U.S schools of pharmacy, the authors reported that 41.3% of faculty members identified being emotionally exhausted. Emotional exhaustion is a common characteristic of burnout[16] and is defined as "emotional and physical depletion without recovery" that leads to occupational disengagement.[17] Importantly, this symptom of burnout was noted to be disproportionately prevalent among faculty members at lower academic ranks and those having children age 1-12 years.[16] Having children is a particularly common burnout risk factor among medical professionals.[18-20] However, support from both colleagues and administrators has been shown to positively impact retention and job satisfaction.[21]

*Impact of gender*

The prevalence and severity of burnout is likely impacted by gender.[1-2] This disproportionate relationship between burnout and gender is particularly relevant given the over-representation of women in optometry as educators and students. Studies conducted in academic medicine suggest that women faculty members may suffer from higher levels of burnout than their colleagues.[2-4] A mismatch between actual percent effort among the various roles a faculty member holds and the priorities for individual faculty members has been shown to contribute to burnout in academic medicine, and this lack of alignment may be particularly impactful for women.[7-8] Some studies have estimated that burnout may be 20-50% higher in women than in men.[1,22] This is likely based on historical societal expectations and gendered expectations, the workplace gender climate, maternal bias and lack of parity in salary and promotion.[12,14,18] Gender climate has been described as the "formal and informal institutional attitudes and programs to promote gender equity in the workplace."[23]

Maternal bias occurs when individuals are discriminated against based on their role as a mother. One study found that one-third of physician mothers experienced maternal bias.[22] Although gender equity has improved substantially in the workplace and society at large, women are often still viewed as shouldering more of the caretaking tasks in their personal lives.[12,14,24] It has been unknown how gender impacts the experience of faculty members as it relates to burnout and work-life balance and to what extent the aforementioned issues impact the work experience of women in optometric education.

*Consequences of burnout*

Burnout negatively impacts faculty members' engagement with their students, patients, colleagues and administrators, leaving them less able to fulfill their many roles. Academic medicine studies suggest that burnout increases attrition and decreases productivity.[25-26] Additionally, when faculty members are experiencing burnout in their professional lives, they are less able to cope with the challenges in their personal lives and experience higher rates of sleep disorders, depression and pain, and lower levels of coping skills.[26]

## Statement of Purpose

Using the data gathered from a national survey of optometric faculty members,[27] we sought to describe quantitatively the degree of burnout among faculty members in the context of optometric education and to identify any differences related to the gender of those faculty members and how they experienced factors related to burnout. The original study from which this subanalysis was derived involved the distribution of the Standpoint™ Faculty Engagement Survey to faculty members at schools and colleges of optometry via ASCO. While the survey broadly addressed many different dimensions of faculty engagement that were described in a prior publication,[27] this article focuses specifically on burnout. By providing a description of the level of burnout, the contributing reasons and gender-based factors, the authors hope to help schools and colleges of optometry better understand and address the needs of their faculty in this area.

## Methods

*Instrument*

A modified version of the AAMC's Standpoint™ Faculty Engagement Survey was used in this study to assess levels of faculty engagement across 17 dimensions. The AAMC Standpoint™ Faculty Engagement Survey was developed by a team of AAMC staff, subject matter experts, clinicians and psychometricians and has been shown to have strong external and internal validity.[28-29] This online survey was designed to measure faculty engagement and job satisfaction among faculty members at U.S. medical colleges, but many aspects that influence engagement in academic medicine are also relevant to optometric education. Competing teaching, research, service and patient care roles are not unique to medicine, thus the AAMC Standpoint™ Faculty Engagement Survey is also an appropriate instrument for optometry, dental, chiropractic and pharmacy schools and colleges. To ensure validity of the instrument, only minor modifications were made such as inserting "optometric" or replacing "medicine" with "optometry"; the content of the instrument was preserved in terms of item number and type (Likert scale). Additional slight modifications were required to ensure alignment with the organizational structure and workplace environments of optometry schools and colleges compared to medical schools, but the content of the questions was retained. Due to the proprietary status of the Standpoint™ Faculty Engagement Survey, only portions of the full instrument were included in this article. Of the 15 primary dimensions having Likert-type response scales ranging from 1 – Strongly Disagree to 5 – Strongly Agree, each demonstrated adequate internal consistency reliability with the lowest subscale reliability value being ? = 0.774 (compensation) and the highest being ? = 0.950 (departmental governance).

More specific to burnout, this instrument included questions regarding the number of weekly hours, allocation of effort, faculty wellness, intent to leave and self-reported levels of burnout. Each of these aspects has been shown in previous studies to contribute to the complex equation that leads to burnout.[2,6-7]

*Data collection*

The target population was paid faculty members at U.S. schools and colleges of optometry. According to ASCO's Annual Faculty Data Report for academic year 2021-2022, 793 full-time faculty members were distributed across the 23 U.S. schools and colleges of optometry, with approximately 1,100 total paid faculty.[9] Following IRB approval from Robert Morris University, we obtained permission from the ASCO Board of Directors to distribute the survey to paid faculty members of member institutions. An introductory email with the accompanying hyperlink for the online survey, built and hosted on the QuestionPro platform, was sent to the executive director of ASCO who then forwarded the email to the deans and presidents of ASCO member institutions. Individual institutional leaders were responsible for forwarding the invitation to participate to their respective faculty members. The invitation included a

description of the survey along with an explanation of the purpose of the survey. The informed consent for the survey accompanied the survey, and after informed consent was obtained, faculty members could begin the survey. The survey was open for approximately 30 days in spring 2022. A reminder email was sent with 1 week left in the active window for the survey. All faculty members at the 23 U.S. schools and colleges of optometry with active email addresses had an opportunity to participate in the study; however, some faculty members may not have received the invitation and survey link due to the indirect method of distribution. As participants completed the survey online by accessing a hyperlink, anonymity was preserved as no identifying information was collected and IP addresses were not stored. Self-reported respondent characteristics are reviewed below.

*Analysis*

The survey data were exported from QuestionPro into SPSS statistical software (version 28) for analysis.[30] The data set was trimmed to exclude categories where the expected cases were less than five, which would violate the assumptions of the chi square analysis due to specific assumptions of the statistical analyses conducted.[31] Initial descriptive statistics that were calculated included measures of variability and measures of central tendency for summary scores of the topics embedded within the survey. Participation rate and completion rate were also computed, and the results of these calculations have been published elsewhere.[27] Chi square tests of independence were performed to determine whether respondent gender was independent from their responses on several items related to burnout. Gender-based analyses were conducted using binary terms (man and woman) because the number of respondents who identified as another gender was insufficient for conducting statistical comparative analyses. Respondents had the freedom to answer or skip items as they chose. The n value is reported for each survey item. Alpha for significance testing was set at 0.05.

## Results

*Respondents*

The final data set used for analysis included 225 total unique respondents. These respondents represent 28.4% of full-time faculty or 20.5% of all paid faculty. Respondents were faculty members at 18 of the 23 (78.3%) ASCO member institutions, with 67 (30.3%) of 221 respondents coming from the institution providing the largest portion of the sample and two institutions providing just one respondent each (0.5%). The median number of respondents per institution was 10. Of the overall sample of respondents, nearly all reported being full-time faculty members (n = 206 of 222, 92.8%). Additionally, most respondents identified as white (n = 141 of 179, 78.8%), a woman (n = 113 of 180, 62.8%) and had a Doctor of Optometry degree without other terminal degrees (n = 178 of 224, 79.5%). Of respondents choosing to answer an item about sexual orientation (n = 181, 80.4%), most identified as being heterosexual (n = 164, 90.4%).

Other defining characteristics of the respondents included in the following analyses were somewhat more varied. Although most respondents (n = 94 of 179, 52.5%) were born between 1977 and 1995 and could be considered Millennials, this nearly 20-year span in the birth year category may suggest a notable variability across these respondents' experiences as related to age. Just more than half of the respondents (n = 118 of 224, 52.7%) were newer to their institutions, with their tenure ranging from having just started in the current academic year to 10 years. In terms of academic tenure and rank, interestingly, most respondents (n = 128 of 224, 57.2%) reported being Associate or full Professors, but only 34.3% (n = 76) of 222 respondents reported being tenured or on tenure track. Approximately a third of respondents reported that their primary appointment was in primary care (n = 72 of 223, 32.3%) followed by pediatrics/binocular vision (n = 44 of 223, 19.7%). Other primary appointments reported were in ocular disease, cornea/contact lens, basic science and other; each reported by approximately 11% of the respondents. Finally, half (n = 112 of 222, 50.6%) of faculty respondents served in some

administrative role in addition to their faculty role.

*Faculty wellness*

Faculty wellness was one of the lowest-scoring items on the entire survey. More than a third of respondents (36.2%, n = 75 of 207) felt that their optometry school or college did not cultivate faculty wellness. Of those, nearly half (12.6%, n = 26 of 207) strongly disagreed that faculty wellness was emphasized to the correct degree by their home institution. In addition to a relatively low mean compared with other survey items, there was a gender-based statistically significant difference in perceptions of faculty wellness. Women (M = 2.96) were less likely than men (M = 3.37) to respond that the culture at their institution cultivated faculty wellness, *t(173) = 2.090, p = 0.038.*

*Levels of burnout*

Of the 183 who responded to this item, 15.3% (n = 28) reported no burnout, 36.6% (n = 67) were at risk of burnout, and nearly half (48.1%, n = 88) reported that they were experiencing self-defined burnout. More pervasive and intense forms of burnout were reported by 15.9% (n = 29) of respondents. **Table 1** depicts the levels of burnout and corresponding faculty member responses.

**TABLE 1**
**Levels of Burnout (N = 183)**

| Item | n | % |
|---|---|---|
| I enjoy my work; I have no symptoms of burnout | 28 | 15.3 |
| I am under stress, and don't always have as much energy as I did, but I don't feel burned out | 67 | 36.6 |
| I am definitely burning out and have one or more symptoms of burnout (e.g., emotional exhaustion) | 59 | 32.2 |
| The symptoms of burnout that I'm experiencing won't go away. I think about work frustrations a lot | 21 | 11.5 |
| I feel completely burned out. I am at the point where I may need to seek help | 8 | 4.4 |



**Table 1.** Click to enlarge

**TABLE 2**
**Relationship Between Gender and Burnout**

| Chi Square Test of Independence | | | |
|---|---|---|---|
| Items | | Gender | |
| | | Man | Woman |
| I enjoy my work; I have no symptoms of burnout | Observed | 20 | 8 |
| | Expected | 10 | 18 |
| I am under stress, and don't always have as much energy as I did, but I don't feel burned out | Observed | 21 | 45 |
| | Expected | 23 | 43 |
| I am definitely burning out and have one or more symptoms of burnout (e.g., emotional exhaustion) | Observed | 14 | 42 |
| | Expected | 20 | 36 |
| The symptoms of burnout that I'm experiencing won't go away. I think about work frustrations a lot | Observed | 4 | 14 |
| | Expected | 6 | 12 |
| $\chi^2$ (3, N = 168) = 20.347, p < .001 | | | |



**Table 2.** Click to enlarge

A Chi square test of independence was performed to determine whether respondent gender was independent of reported levels of burnout. Observed and expected counts for each answer choice were calculated. The data set was trimmed to eliminate items and gender categories in which expected cell values were less than five. The results of the Chi square test of independence were statistically significant, indicating that gender and burnout were dependent, $?^2 (3, N = 168) = 20.347, p < .001$. The pattern of responses demonstrated that women experienced higher levels of burnout than expected and men experienced less burnout than expected. Although more women reported burnout at each level, the gender-based difference between expected and observed counts was the largest for the answer choice "I enjoy my work; I have no symptoms of burnout," where less than half as many women as expected reported no burnout and twice as many men as expected reported no burnout. The most important findings from this analysis indicate that the two categories of burnout in which women were most disadvantaged were in the categories of "no symptoms of burnout" and "definitely burning out." **Table 2** contains the results of the gender-based analysis of burnout using the Chi square test of independence.

*Intention to leave*

Respondent choices, disaggregated by gender, as to why they might leave their institution are displayed in **Table 3**. The value in the percentage column indicates the percentage of the respondents of that gender who selected the item as a potential reason for leaving the profession. In nearly every case, a higher proportion of woman respondents than man respondents identified choices as a potential reason

for leaving. More than a third of woman respondents (n = 41, 37.6%) reported that work-life balance/burnout was a reason they might leave, but only 20.3% (n = 12) of man respondents reported this as a potential reason to leave. Although slightly fewer woman respondents identified compensation/benefits as a reason they might leave (n = 38, 34.9%), this represented a difference of 18% over the proportion of man respondents who selected this item (n = 10, 16.9%). Women were nearly twice as likely as men to identify advancement opportunities as a reason they would consider leaving (13.6% of men, 25.7% of women). To summarize, the three key differences that appeared to disadvantage women vs. men were work-life balance, compensation and advancement opportunities.

**TABLE 3**
**Reasons for Leaving by Gender (N = 168)**

| Reasons you might leave (choose all that apply) | Man (n=59) | | Woman (n=109) | |
|---|---|---|---|---|
| | n | % | n | % |
| Work-life balance/Burnout | 12 | 20.3 | 41 | 37.6 |
| Compensation/Benefits | 10 | 16.9 | 38 | 34.9 |
| Personal/Family reasons | 17 | 28.8 | 34 | 31.2 |
| Professional and/or advancement opportunities | 8 | 13.6 | 28 | 25.7 |
| Geographic location | 10 | 16.9 | 19 | 17.4 |
| Change in institutional leadership | 3 | 5.1 | 8 | 7.3 |
| Workplace climate issues (e.g., respect, inclusion, equity) | 1 | 1.7 | 6 | 5.5 |
| Issues with department leadership/supervisor | 5 | 8.5 | 5 | 4.6 |



**Table 3.** Click to enlarge

A Chi square test of independence using the variables gender and how likely the faculty members were to leave their institutions found no significance difference in the likelihood of women and men leaving, $?^2 (4, N = 168) = 6.842, p = .144$. This finding suggests that although women and men have different reasons for potentially leaving their academic institutions, these gender-based differences do not necessarily translate to how likely the faculty member is to leave. The sample size for this question (n = 168) was smaller than for previous questions. The smaller sample size might have been related to the question's position in the survey, or respondents may have been hesitant to answer due to the content of the question.

*Workload*

The results of additional gender-based analyses indicate that there were no statistically significant gender-based differences in the areas of average work hours per week, $t(168) = 0.871, p = .385$. There was also not a statistically significant impact of gender on the perceptions of time allocation across the major dimensions of faculty responsibilities including teaching $t(174) = 1.110, p = .268$, research $t(174) = 0.267, p = .790$, patient care $t(174) = 0.218, p = .828$, and administration $t(174) = 0.472, p = .638$. The additional findings seemingly indicate that women and men are doing similar types and amounts of work, at least as measured on a general level by the survey items included in this analysis.

## Discussion

Given the gender-related differences in perceptions of faculty wellness, prevalence and severity of burnout, and reasons for leaving the school or college of optometry, it becomes clear that men and women experience the expectations of an optometric educator differently. These findings are consistent with gender-based differences in medicine.[5,22-24,32] Women felt more strongly that their institutions did not appropriately prioritize "faculty wellness." Women were more likely to feel that their wellness was not being prioritized, which may make them more susceptible to burnout. Given differing gender-based role expectations in their personal lives, wellness needs of optometric educators are also likely to vary based on gender. The results presented herein suggest that the specific needs of women optometric educators are neither being fully met nor recognized. Individual faculty wellness is a bulwark against burnout; therefore, it behooves optometric school and college administrators to understand and implement practices that facilitate and support faculty needs.[33]

The results of this study provide evidence that women in optometric education may be more likely to experience burnout and their experience of that burnout may be more severe than it is for men. This trend is consistent with other studies of women in academic medicine, a disparity that has become even more dramatic since the onset of the COVID-19 pandemic.[4,6,14] Because there were no gender-related differences in how much work was performed or the nature of the work, it is likely that the reasons for the disproportionate prevalence of burnout have more to do with other contextual factors.

Workplace climate issues (including respect, inclusion, equity and diversity) were responsible for the largest gender-related difference in satisfaction. Perhaps the most salient indicator of women's experience and how it relates to burnout were the top reasons women cited for potentially leaving their institution: work-life balance/burnout, family reasons, compensation/benefits and advancement opportunities. Work-life balance has been identified in academic medicine as a factor that disproportionality contributes to burnout in women.[1,5] "Family reasons" is another factor that contributes more substantially to burnout in women as measured by previous studies on the subject, but our study did not find a significant difference in this area.[2,19,32] Compensation and advancement opportunities are often linked, and women were substantially more likely to leave based on both of these reasons than men. If women feel that they are not being compensated equitably for the same work, it could contribute to disengagement and, ultimately, burnout.[34] Equally important, appropriate compensation promotes a feeling of being valued, which is also a protective factor against burnout.[34] The gender-based difference in promotion opportunities as a contributor to attrition represents an area for improvement for schools and colleges of optometry.

This study found that women optometric faculty are more likely to experience burnout, a finding consistent with the literature.[3,19] This gender-related difference is likely driven by specific evidence from previous work showing that women were five times more likely to stay home to care for a sick child and spent 8.5 more hours per week on domestic activities than their partners.[1,5,32] These gendered and disproportionately deleterious expectations likely lead to increased conflict between personal and professional roles for women. According to a large cross-sectional survey of academic physicians, women were more likely to have experienced a recent conflict between their personal and professional lives.[1] This conflict between roles leads to increased stress that ultimately contributes to higher levels of burnout. The scope of this study was insufficient to address the complex factors contributing to burnout, but the results indicate that many of the larger trends regarding burnout present in academic medicine may also be relevant to optometric faculty members.

**Limitations**

This study has multiple limitations. This initial gender-based analysis of burnout was derived from a large, cross-sectional study on faculty engagement and burnout and was not intended to fully address the complex phenomenon of burnout among faculty members in optometric education. The validated instrument used in the study addressed burnout as one dimension of faculty engagement. Future work more narrowly and specifically focused on burnout could be beneficial toward informing how optometric education may best intentionally and effectively support its faculty and insulate them from burnout's contributing factors.

Examining intersectionality in the context of burnout was also beyond the scope of this study, but other studies in medicine have demonstrated it is an important area that should be addressed in future studies.[35-36] Specifically, the majority of respondents in this study were white (78.8%), and those with multiple marginalized identities are likely disadvantaged more severely and correspondingly more vulnerable to burnout than others. This complex interaction between gender, race and burnout warrants additional investigation.

A greater degree of gender inclusivity should be incorporated into future studies on the topic, but the

respondent characteristics and the methodology of this study did not facilitate examining the impact of gender except as a binary construct. Ultimately, the research reported here represents the initial effort to understand burnout and the differential experience of burnout by gender in optometric education on a national scale. Toward this end we were successful. However, we acknowledge that more must be done to not only deeply understand burnout, but also to develop interventions that promote the vitality of faculty members in optometric education, regardless of gender.

## Conclusion

Women are more likely to experience burnout, a finding of specific importance to optometric education given that most optometric faculty members are women. This analysis addressed a gap in the literature as previous studies have failed to address the topic of burnout among optometric educators. Important findings from this study are that women, more than men, feel that their wellness is not prioritized appropriately, and women are also more likely to list compensation, work-life balance and advancement opportunities as potential reasons to leave their academic institution. Collectively, these findings suggest that to reduce burnout and faculty attrition, culture change across optometric education may be needed to more effectively support a reality where women are the majority of optometric educators.

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**PEER REVIEWED**

# Racial and Ethnic Diversity Trends in Optometry and Ophthalmology Residency Training Programs: a 2-year Review

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***Abstract***

*The United States population increased in diversity in the past decade with nearly 40% of residents reporting race/ethnicity other than White. Recent studies indicate a large gap in racial/ethnic diversity in healthcare occupations with lower proportions of under-represented minority (URM) groups, especially among eyecare professionals. Understanding diversity trends in residency programs is essential to improving access to high quality eye care. The primary study goal was to determine whether there are differences in racial/ethnic representation among optometry and ophthalmology residents. Data analysis showed a disparity of URM resident trainees in both groups. Continued efforts to reduce gaps in diversity of eyecare professionals are necessary to improve racial, ethnic and cultural concordance among patients and their physicians.*

***Key Words:*** *race, ethnicity, optometry, ophthalmology, residents, diversity, trends*

## Background

The population of the United States of America is becoming increasingly diverse. According to 2020 Census data, approximately 40% of the population reports race or ethnicity other than White alone.[1] Recent studies indicate that racial and ethnic diversity in healthcare occupations does not mirror this trend.[2,3] An increasing amount of evidence suggests that racial, ethnic and cultural concordance between patients and their physicians fosters positive patient experiences by building better trust and communication and healthy doctor-patient relationships.[4,5] Additional benefits of increasing racial and ethnic diversity among healthcare professionals include improved healthcare quality and better access to care among underserved populations, which can further lower the overall cost of healthcare delivery.[6-8] Therefore, it is imperative that increased measures are taken to diversify the healthcare workforce. In healthcare academic settings, robust URM representation among faculty and staff could attract a more diverse pool of student applicants. An increase in diversity of students enrolled in healthcare training programs may lead to greater cultural competency, which would then allow trainees to better serve the healthcare needs of an ever-growing diverse population.[9]

To increase racial and ethnic diversity in the healthcare workforce, individuals from URM backgrounds must enroll in healthcare training programs. Recent efforts to report diversity in healthcare training programs indicate that there continues to be lower proportions of URM groups than would be expected based on population demographics, including enrollment in optometry school and ophthalmology residency programs.[2,10,11] For example, Census data indicate that in 2020, approximately 12.4% of the general population identified as Black or African American.[12] That year, only 1.7% of practicing optometrists and 3.3% of optometry students in the United States identified as Black or African American.[13] In addition, ophthalmology training programs have lower numbers of URM residents than many other medical subspecialties.[11] Understanding and acknowledging the diversity trends in optometry

and ophthalmology training programs is essential in creating strategies to improve access to high quality eye care for all members of the U.S. population.

Until recently, race and ethnicity data were not collected for individuals enrolling in optometric residency programs. Because residency training is commonly required for individuals pursuing careers in optometric education, a better understanding of the representation of URM populations entering optometric residency training is essential in planning future strategies to increase diversity of eyecare professionals. The primary goal of this study was to determine whether there are differences intraprofessionally (within optometry or ophthalmology only) or interprofessionally (comparing optometry and ophthalmology) in racial/ethnic representation among residents in optometry (OD) and ophthalmology (MD/DO) programs. A secondary goal of this study was to determine whether data collection for optometric residency programs is accurately capturing the intended information.

## Methods

This study was conducted under exempt status granted by Salus University and did not constitute human subject research.

*Data collection*

The self-reported data for racial/ethnic identities of optometry residents for the 2019-2020 and 2020-2021 academic years were obtained from the Optometry Residency Match (ORMatch).[14] The self-reported data for racial/ethnic identities of ophthalmology residents (medical and osteopathic) for the 2019-2020 and 2020-2021 academic years were extracted from the publicly available Data Resource Book published yearly by the Accreditation Council for Graduate Medical Education (ACGME).[15] Racial/ethnicity data on the U.S. population were obtained from the 2020 U.S. Census.[20] The Census collected race and ethnicity data using a two-part required questionnaire. One questionnaire part specifically asked for an individual's race, and a second part asked for Hispanic or Latino origin. The racial/ethnic category designations differed slightly between each of the data sources.

*Statistical analysis*

A descriptive analysis of the data was performed. Racial and ethnic categories were compared between the optometry and ophthalmology data for each year, 2019-2020 and 2020-2021. Differences for each category, where similarities between datasets existed, were calculated intraprofessionally and interprofessionally. In the intraprofessional difference comparison, a number deviating from zero demonstrated a difference in the percentage of URM residents between 2019-2020 and 2020-2021 within optometry and ophthalmology. In the interprofessional comparison, a number deviating from zero demonstrated a difference in the percentage of optometry and ophthalmology residents in that year. The interprofessional differences were calculated by subtracting the ophthalmology percentage from the optometry percentage.

Racial and ethnic category totals for the optometry and ophthalmology data were also compared to the 2020 U.S. Census data.

## Results

The racial/ethnic categories used by both ORMatch and ACGME were American Indian or Alaska Native, Asian, Black or African American, Hispanic, Latino or of Spanish Origin, Native Hawaiian or Other Pacific Islander, White, Other, and Unknown **(Table 1, Figure 1)**. In the 2019-2020 academic year, the number (percentage) of optometry residents in those categories were as follows: 0 (0%), 109 (28.4%), 10 (2.6%), 25 (6.5%), 1 (0.3%), 206 (53.6%), 0 (0%) and 33 (8.6%). In the 2019-2020 academic year, the number (percentage) of ophthalmology residents in those categories were as follows: 2 (0.1%),

371 (24.5%), 32 (2.1%), 61 (4%), 1 (0.1%), 760 (50.3%), 93 (6.2%) and 192 (12.7%).

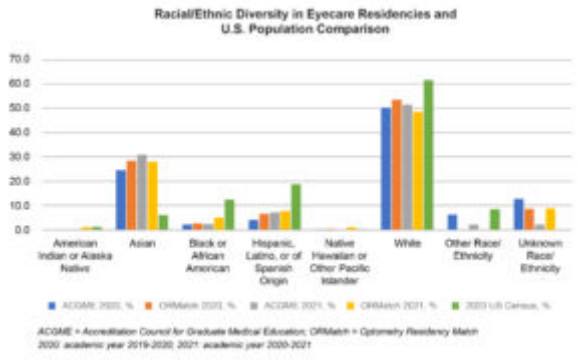


**Figure 1.** Click to enlarge

In the 2020-2021 academic year, the number (percentage) of optometry residents in those categories were as follows: 4 (1%), 111 (28%), 20 (5%), 30 (7.6%), 4 (1%), 193 (48.6%), 0 (0%) and 35 (8.8%). In the 2020-2021 academic year, the number (percentage) of ophthalmology residents in those categories were as follows: 1 (0.1%), 473 (30.9%), 35 (2.3%), 108 (7.1%), 1 (0.1%), 789 (51.5%), 32 (2.1%) and 32 (2.1%).

In the 2020-2021 academic year, the ACGME data included an additional category unique to only that dataset: Multiple Race/Ethnicity. The number (percentage) of ophthalmology residents in this category was 60 (3.9%).

Intraprofessional differences were calculated for both the optometry and ophthalmology data from 2019-2020 to 2020-2021. Findings are listed in **Table 2** in columns labeled OD-OD Diff 20-21 and OMD-OMD Diff 20-21.

Interprofessional differences were calculated between the optometry and ophthalmology data where each racial/ethnic category was the same for both years of data. The summary of these findings is listed in Table 2 in the columns labeled OD-OMD Diff 2020 and OD-OMD Diff 2021.

The 2020 Census collected race and ethnicity data using a two-part questionnaire, which allowed an individual to choose a race and also identify as of Hispanic or Latino origin. There was a total of six single-race categories: White, Black or African American, American Indian or Alaska Native, Asian, Native Hawaiian or Other Pacific Islander, and Some Other Race.[21] If an individual chose two or more races, they were categorized in the “Multiracial” population. For ethnicity, there were two categories: Hispanic or Latino and Not Hispanic or Latino. The largest race/ethnicity group was White alone (61.6%), followed by Hispanic or Latino (18.7%), Black or African American alone (12.4%), two or more races (10.2%), Some Other Race alone (8.4%), Asian alone (6%), American Indian/Alaska Native alone (1.1%) and Native Hawaiian/Pacific Islander alone (0.2%) (Figure 1).

TABLE 1

| Category | ACGME 2020, % (n) | ORMatch 2020, % (n) | ACGME 2021, % (n) | ORMatch 2021, % (n) |
|---|---|---|---|---|
| American Indian or Alaska Native | 0.1 (2) | 0 (0) | 0.1 (1) | 1.0 (4) |
| Asian | 24.5 (371) | 28.4 (109) | 30.9 (473) | 28.0 (111) |
| Black or African American | 2.1 (32) | 2.6 (10) | 2.3 (35) | 5.0 (20) |
| Hispanic, Latino, or of Spanish Origin | 4.0 (61) | 6.5 (25) | 7.1 (108) | 7.6 (30) |
| Native Hawaiian or Other Pacific Islander | 0.1 (1) | 0.3 (1) | 0.1 (1) | 1.0 (4) |
| White | 50.3 (760) | 53.6 (206) | 51.5 (789) | 48.6 (193) |
| Multiple Race/Ethnicity | - | - | 3.9 (60) | - |
| Other Race/Ethnicity | 8.2 (93) | 0 (0) | 2.1 (32) | 0 (0) |
| Unknown Race/Ethnicity | 12.7 (192) | 8.6 (33) | 2.1 (32) | 8.8 (35) |
| Grand Total | 1512 | 384 | 1531 | 397 |

*ACGME = Accreditation Council for Graduate Medical Education; ORMatch = Optometry Residency Match*
*2020: academic year 2019-2020; 2021: academic year 2020-2021; n: number; (-): data not available/applicable*

**Table 1.** Click to enlarge

TABLE 2

| Category | OD-OD Diff 20-21, % | OMD-OMD Diff 20-21, % | OD-OMD Diff 2020, % | OD-OMD Diff 2021, % |
|---|---|---|---|---|
| American Indian or Alaska Native | 1 | 0 | -0.1 | 0.9 |
| Asian | -0.4 | 6.4 | 3.9 | -2.9 |
| Black or African American | 2.4 | 0.2 | 0.5 | 2.7 |
| Hispanic, Latino, or of Spanish Origin | 1.1 | 3.1 | 2.5 | 0.5 |
| Native Hawaiian or Other Pacific Islander | 0.7 | 0 | 0.2 | 0.9 |
| White | -5 | 1.2 | 3.3 | -2.9 |
| Multiple Race/Ethnicity | - | - | - | - |
| Other Race/Ethnicity | 0 | -4.1 | -6.2 | -2.1 |
| Unknown Race/Ethnicity | 0.2 | -10.6 | -4.1 | 6.7 |

*OD-OD Diff 20-21: difference in ORMatch data from 2019-2020 to 2020-2021 academic year; OMD-OMD Diff 20-21: difference in ACGME data from 2019-2020 to 2020-2021 academic year; OD-OMD Diff 2020: ORMatch percentage – ACGME percentage for 2019-2020 academic year; OD-OMD Diff 2021: ORMatch percentage – ACGME percentage for 2020-2021 academic year; (-): data not available/applicable*
*ACGME = Accreditation Council for Graduate Medical Education; ORMatch = Optometry Residency Match*

**Table 2.** Click to enlarge

## Discussion

It has been firmly established that racial and ethnic disparities exist across most, if not all, medical specialties. It is known from prior reports that having a more diverse medical workforce translates to overall better access to health care, increased cultural competency within the workplace, and ultimately better health outcomes for the general population.[6,16,17] Studies indicate there are fewer practicing physicians in communities where high proportions of racial and ethnic minorities reside.[7] The physicians who serve these communities are more likely to be URM physicians, and URM physicians are more likely to care for patients of their racial or ethnic group.[6,7] According to Marrast et al., non-White physicians care for 53.5% of minority and 70.4% of non-English-speaking patients.[6] These trends indicate that increasing the number of practicing URM physicians may increase access to health care for URM patients, potentially decreasing the healthcare disparities in these populations.

Recent research indicates that racial and ethnic diversity may be decreasing in academic clinical medicine.[16] It is thought that perhaps this decline is due to inability of academic institutions to recruit and/or retain URM faculty due to factors such as lower compensation, biases in the hiring processes, and/or lack of advancement of existing URM faculty via promotion. The proportion of ethnic and racial diversity in medicine has also been seen to decrease with increasing academic rank.[18] These trends, as well as low numbers of faculty identifying as URM in ophthalmology[19] and optometry, may be a barrier to recruitment of URM into eyecare professions. Although mentorship and networking programs have been successful at increasing racial and ethnic diversity in U.S. medical residency programs,[3] further efforts to expand these opportunities should be considered in order to make substantive progress in creating a more diverse healthcare workforce in the eyecare professions.

The data presented in this review indicate that racial/ethnic representation among residents within optometry and ophthalmology residency programs varies from year to year in both professions. A limited dataset is available for optometry resident race and ethnicity, as this information has been collected by ORMatch since only 2019-2020 and published by the Association of Schools and Colleges of Optometry since academic year 2021-22. The optometry data from 2019-2020 to 2020-2021 (Table 2 OD-OD Diff 20-21) demonstrated an increase in residents for the American Indian or Alaska Native, Black or African American, and Hispanic, Latino, or of Spanish Origin categories. There was little to no change for the Asian, Native Hawaiian or Other Pacific Islander, Other Race/Ethnicity, and Unknown Race/Ethnicity categories. Lastly, there was a decrease in the White category. ACGME annual race and ethnicity data describing matched ophthalmology residents also indicated disparities in URM representation in ophthalmology residents for 2019-2020 and 2020-2021. Ophthalmology resident data from 2019-2020 to 2020-2021 (Table 2 OMD-OMD Diff 20-21) showed an increase in the Asian, Hispanic, Latino, or of Spanish Origin, and White categories, little to no change in the American Indian or Alaska Native, Black or African American, and Native Hawaiian or Other Pacific Islander categories, and a decrease in the Other Race/Ethnicity and Unknown Race/Ethnicity categories.

The interprofessional difference (OD-OMD Diff columns of Table 2) comparison showed a fairly stable number of residents in the categories of American Indian or Alaska Native and Native Hawaiian or Other Pacific Islander, but both were very small in number and percentage. Larger shifts were seen in nearly every other category. The shift in the Asian category was due to the increase in ophthalmology residents during the 2020-2021 year while the optometry resident population remained nearly unchanged. Variations for the White category were due to a relatively flat population of ophthalmology residents and a decrease in the percentage of White optometry residents in the 2020-2021 year. In 2019-2020, optometry and ophthalmology had similar percentages in the category of Black or African American, but optometry saw an increase in the next year. The opposite was true for the category of Hispanic, Latino, or of Spanish Origin where optometry had a higher percentage of residents in 2019-2020 and both professions had similar percentages in 2020-2021. The remaining differences in the categories of Other Race/Ethnicity and Unknown Race/Ethnicity showed more variability, which can be attributed to an

additional category of Multiple Race/Ethnicity in the ophthalmology-only data, causing a skew in these categories.

The proportion of URM groups in optometry and ophthalmology does not reflect the racial composition of the U.S. population. In addition, the categories utilized by different organizations collecting race/ethnicity data are not consistent. The data collection improvements made by the U.S. Census Bureau from 2010 to 2020 demonstrate the importance of including two or more races to accurately capture the racial and ethnic distribution in the United States. This yielded a better analysis of the diversity profile, specifically pertaining to race and Hispanic origin, to reveal that the U.S. population is indeed more multiracial or multiethnic than initially thought. The 2020 race and ethnicity data showed that the two-part questionnaire allowed for a more authentic representation of how the U.S. population self-identifies. The largest gain noted was in the Multiracial population, which increased by 276% from 2010 to 2020.[20-21] The Hispanic or Latino population grew from 16.3 % of the U.S. population in the 2010 Census to 18.7% in the 2020 Census. The Black or African American alone population remained somewhat stationery at 12.6% in 2010 to 12.4% in 2020. However, the Black or African American population in combination with another race such as White or Asian grew by 88.7% from the 2010 Census. Overall, all races in combination with another group, i.e., Multiracial, were captured more accurately and showed an increase over the race-alone categories when compared with 2010 Census data. Efforts to further improve the next decennial Census include utilizing a single combined question for race and ethnicity, which the Census Bureau believes will enable an even more accurate representation of how the U.S. population self-identifies.

There were a few limitations to this study. The first, which impacted the ability to perform a statistical analysis, was the size of the datasets. Due to the low number of individuals contained in some of the racial/ethnic category groups (< 5), a valid analysis could not be conducted with each individual category. This limited the ability to conduct and interpret the statistical analysis without combining groups. Second, the racial/ethnic categories between the ACGME and ORMatch data were not the same for the 2020-2021 year, which limited some of the direct comparisons that could otherwise be made. Third, the ORMatch data did not include individuals who matched in the post-match process, leading to an incomplete representation of the optometry residency data. Lastly, this study only utilized 2 years of data, which limited the ability to evaluate longitudinal trends and draw conclusions about diversity among each of the professions and comparatively.

Based on these findings, the following recommendations may assist in further determining the race and ethnicity trends among ophthalmology and optometry residents:

- Use consistent categories in both professions for collecting race/ethnicity data
- Allow choosing of multiple racial/ethnic categories for the ORMatch data to accurately and specifically document those who identify as mixed race, rather than using the category of “More than One Race” or “Multiple Race/Ethnicity”
- Include race/ethnicity post-match data in the ORMatch published data

## Conclusion

As the U.S. population becomes more diverse, there is value in evaluating the current racial/ethnic trends in healthcare trainees. These trainees will go on to become the workforce providing much needed health care to an aging and more racially diverse population. Thoughtful consideration must be given to establishing measures that attract URM students and residents to consider pursuing subspecialties in which there are diversity gaps. Eyecare professions have significant URM under-representation in both clinical and academic medicine. Continued efforts to evaluate existing URM representation in eye care and measures to improve gaps in the diversity of eyecare professionals are not only required but necessary for the future visual well-being of our increasingly diverse nation. To our knowledge, this study

is the first of its kind to compare the racial/ethnic diversity trends among optometry and ophthalmology residents. Future reports that include longitudinal data and consistent use of racial/ethnicity categories will allow for better understanding of URM representation in optometry and ophthalmology and inform diversity initiatives related to eyecare professionals.

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**PEER REVIEWED**

# Experiences and Attitudes of Optometry Students Regarding Online Learning During the COVID-19 Pandemic

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*Optometric Education: Volume 49 Number 2 (Winter-Spring 2024)*

***Abstract***

*This study used a self-administered online questionnaire to assess experiences and attitudes of optometry students regarding online learning. A total of 159 participants responded to the questionnaire yielding a response rate of 66.3%. Approximately half of the participants (n = 78, 49.1%) were satisfied with online learning and motivated to participate in (n = 75, 47.2%) and attend (n = 89, 56.0%) online learning. However, many participants felt that online learning cannot compensate for practical education (n = 99, 62.3%) and would prefer a combination of online and face-to-face learning for future theoretical courses (n = 116, 73.0%). This information should be used by optometry curriculum developers and educators to strengthen online learning to enhance the learning process.*

***Key Words:*** *optometry education, online learning, optometry students, COVID-19 pandemic*

## Introduction

Coronavirus disease 2019 (COVID-19), which is caused by a severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), was the cause of a lengthy global pandemic.[1] The novel virus was identified in Wuhan, Hubei Province, China, in December 2019. The World Health Organization declared COVID-19 a public health emergency on Jan. 30, 2020, and a pandemic on March 11, 2020.[2] Since the outbreak of COVID-19, variants of the virus have emerged and become dominant in many countries.[3] As of July 9, 2023, more than 691 million cases and 6.8 million deaths caused by COVID-19 have been confirmed worldwide, making it one of the deadliest pandemics in history.[4] Several countries adopted national lockdowns and implemented social distancing and isolation protocols to stop the spread of the virus.[5,6] South Africa started its lockdown on March 26, 2020. The social distancing regulations during the period of lockdown led to suspension and/or restrictions of social, religious and political gatherings and had a profound impact on academic activities at all levels of the education system.[7]

The COVID-19 pandemic resulted in temporary closures and unprecedented adjustments in the way in which academic activities were implemented in schools and higher education institutions around the world.[8,9] This has had a devastating impact across all levels from basic to higher education with 75% of school learners in grades 1 to 12 in South Africa reported to be a full year behind where they should be.[10] Rotational attendance and sporadic closure of education institutions resulted in students losing 54% of learning time.[10] Globally, approximately 220 million students in the higher education sector were affected by disruptions caused by COVID-19 leaving institutions with the challenge of how to implement remote learning to save academic years, recover educational losses and ensure that no students were left behind.[8] Many higher education institutions had to quickly devise alternative methods to continue with academic activities and this included adopting distance and remote learning.[11,12] Online learning, also

referred to as e-learning or web-based learning, is a type of distance learning that uses electronic resources. It is different from traditional face-to-face learning as teachers and students use technology platforms such as video and audio messages, discussion forums and webinars as opposed to conventional in-person discourse to interact with each other.[13] As a result, various socio-economic factors ? including access to digital devices and technology, stable internet connection, availability of electricity, personal study space, technological knowledge and digital literacy skills ? may influence the online learning process.[9,14]

Some studies have reported on undergraduate students' experiences and perspectives of online learning during the COVID-19 pandemic.[13,15-19] Such information from students is necessary to identify areas of strength and best practice for online learning as well as areas where improvements need to be made for more effective online learning.[20] Sharma et al.[15] investigated medical students' (n = 434) satisfaction with online learning and noted that more than half were satisfied with online classes. In contrast, Adnan and Anwar reported that students from a higher education institution in Pakistan (n = 126) believed face-to-face learning was more beneficial than online learning for effective learning experiences. In addition, Adnan and Anwar reported that limited access to the internet, reduced interaction with teachers, delayed response times and reduced classroom socialization were major challenges that impeded online learning. Maqableh and Alia investigated humanities, science and health science students' perceptions and satisfaction with online learning and reported that more than one-third were dissatisfied with online learning experiences because of technological and connectivity challenges as well as time management issues.[17] As there are limited studies that have focused on optometry students, this study evaluated the experiences and attitudes of optometry students regarding online learning during the COVID-19 pandemic.

## Methods

### *Research design and study population*

This study used a case study research design and was conducted at the University of KwaZulu-Natal (UKZN). Ethical approval was obtained from the Humanities and Social Science Research Ethics Committee (HSSREC/00002846/2021), and all participants provided electronic informed consent prior to participating. The study participants included all eligible optometry students at UKZN. During the 2021 academic year, all 240 registered optometry students were invited to participate in the study through links sent via WhatsApp class groups. A reminder was sent after the initial invite to achieve a better response rate. At the time of data collection during the 2021 academic year, optometry students at UKZN were still engaging in 100% online learning.

### *Data collection*

Participants answered an online questionnaire that focused on their experiences, attitudes and concerns regarding online learning **(Appendix A)**. The questionnaire was adapted from a previous study[18] and modified for relevance in the South African context. Puljak et al. reported that the questionnaire was developed by subject experts in psychology, pedagogy, medical education and research methodology and piloted before being used.[18] The online questionnaire was created through Google Forms and was available from Aug. 14 to Oct. 10, 2021. The anonymous online questionnaire, which took an average of 10 to 15 minutes to complete, consisted of three sections. Section 1 contained the study information and consent to participate; section 2 contained questions related to demographic information; section 3 contained questions that explored students' experiences, attitudes and concerns regarding online learning. The items in section 3 focused on general satisfaction with online learning and comparison to traditional face-to-face learning, experience and engagement with online learning, information technologies skills and availability of devices to participate in online learning, efforts invested by UKZN for online learning, structure, implementation and organization of online learning, perceptions related to

lack of practical education and continuation of education during the pandemic. Overall, participants responded to 53 questions in the online questionnaire using either a 5-point Likert scale (completely disagree, disagree, neutral, agree and completely agree) or closed-ended responses. Prior to data collection, the questionnaire was piloted on seven students who were also undertaking online learning with a similar demographic profile. Based on the responses of the pilot study, no further amendments were made to the questionnaire.

*Data analysis*

Data from only fully completed and submitted questionnaires were captured on Microsoft Excel and analyzed using the Statistical Package for Social Sciences version 27. Data were analyzed using descriptive statistics including means, standard deviations, frequency counts and percentages. For the results, the Likert scale responses of “completely disagree” and “disagree” were combined and reported as disagreement, while responses of “completely agree” and “agree” were combined and reported as agreement.

## Results

*Student characteristics*

A total of 159 participants, 123 females and 36 males, completed the survey yielding a response rate of 66.3%. The sample was multiracial of which the majority self-reported as Black (n = 111, 69.8%), followed by Indian (n = 45, 28.3%), Coloured or Caucasian (n = 3, 1.9%). Regarding the level of study, 29 (18.2%) were in first year, 47 (29.6%) were in second year, 53 (33.3%) were in third year and 30 (18.9%) were in fourth year. Just more than half of the sample (n = 83, 52.2%) used university-provided data to undertake online learning, while the other participants used either uncapped Wi-Fi (n = 46, 28.9%), capped Wi-Fi (n = 20, 12.6%) or personal cellular data (n =10, 6.3%). The majority of participants used laptops for online learning (n = 139, 87.4%), while a small proportion used either smartphones (n = 19, 11.9%) or desktop computers (n = 1, 0.6%).

*Satisfaction with online learning and comparison to traditional face-to-face learning*

Approximately half of the participants (n = 78, 49.1%) were satisfied with online learning, followed by 58 who provided a neutral opinion (neither satisfied nor dissatisfied) and 23 who were dissatisfied. The average satisfaction score and standard deviation for online learning, which was assessed using a scale of 1 to 5 (maximum), was 3.4 ± 0.9. When comparing traditional face-to-face learning with online learning, 51 participants felt that online learning was better, 46 found that it was worse, while 62 provided a neutral response of neither better nor worse. Most of the participants reported they were equally motivated to participate (n = 75, 47.2%) and attend (n = 89, 56.0%) online learning when compared with face-to-face learning. In terms of time, most participants (n = 92, 57.9%) found that online learning required more time compared with face-to-face learning, while other participants reported that it required less time (n = 28, 17.6%) or the time required was the same (n = 39, 24.5%). More than two-thirds of participants reported that for future theory courses they would prefer a combination of online and face-to-face learning (n = 116, 73.0%) followed by a small proportion of those who preferred face-to-face learning only (n = 26, 16.4%) and online learning only (n = 17, 10.7%).

*Experience and engagement with online learning*

The majority of participants (n = 91, 57.2%) reported they were satisfied with how fast they had adjusted to online learning **(Table 1)**. More than half of the sample indicated that they missed classroom lessons (n = 81, 50.9%) and in-person communication with teachers (n = 92, 57.9%). Even though most participants disagreed with the statement that online learning is a complete waste of time for optometry students (n = 85, 53.5%), many felt that online learning cannot compensate for practical education, such

as supervised and self-directed sessions in the laboratory and clinical settings and seminars (n = 99, 62.3%). There was no predominant response concerning student participation in the form of questions and comments in online courses as 60 participants indicated that they agreed, while 62 participants indicated that they disagreed with this statement (Table 1).

*Personal resources (skills and equipment) and efforts invested by UKZN for online learning*

When asked about information technology skills and equipment to undertake online learning, more than half of the participants indicated they had sufficient skills (n = 111, 69.8%), internet access (n = 92, 57.9%), a computer (n =109, 68.6%) and other equipment (n = 83, 52.2%) to participate in online learning without disruption **(Table 2)**. The majority of participants felt that UKZN had quickly adapted to online learning (n = 87, 54.7%), organized online learning adequately (n = 88, 55.3%) and provided student support in the form of training (n = 83, n = 52.2%) and available technical problem-solving services (n = 77, 48.4%) for online learning. Furthermore, most participants agreed with the statements that UKZN provided timely information regarding the provision of online learning (n = 87, 54.7%) and expressed willingness to aid students with equipment needed for engaging in online learning (n = 86, 54.1%).

TABLE 1
Frequency of Responses for Experiences and Engagement with Online Learning (n = 159)

| Item | Completely Disagree n (%) | Disagree n (%) | Neutral n (%) | Agree n (%) | Completely Agree n (%) |
|---|---|---|---|---|---|
| I am satisfied with how fast I have adjusted to online learning | 19 (11.9) | 21 (13.2) | 28 (17.6) | 69 (43.4) | 22 (13.8) |
| I participate in the course with questions and comments, just like during regular classes | 19 (11.9) | 43 (27.0) | 37 (23.3) | 51 (32.1) | 9 (5.7) |
| I miss classroom lessons | 17 (10.7) | 22 (13.8) | 39 (24.5) | 45 (28.3) | 36 (22.6) |
| I miss in-person communication with teachers | 11 (6.9) | 19 (11.9) | 37 (23.3) | 53 (33.3) | 39 (24.5) |
| Online learning is a complete waste of time for optometry students | 33 (20.8) | 52 (32.7) | 57 (35.8) | 10 (6.3) | 7 (4.4) |
| Online learning cannot compensate for practical education and seminars | 13 (8.2) | 18 (11.3) | 29 (18.2) | 61 (38.4) | 38 (23.9) |

**Table 1.** Click to enlarge

TABLE 2
Frequency of Responses for Personal Resources and Efforts Invested by UKZN for Online Learning (n = 159)

| Item | Completely Disagree n (%) | Disagree n (%) | Neutral n (%) | Agree n (%) | Completely Agree n (%) |
|---|---|---|---|---|---|
| **Information Technologies Skills and Availability of Equipment at Home** | | | | | |
| I have sufficient information technology skills to participate in online learning independently | 11 (6.9) | 16 (10.1) | 21 (13.2) | 78 (49.1) | 33 (20.8) |
| I have internet at home, which enables me to participate in online learning without interruption | 18 (11.3) | 28 (17.6) | 21 (13.2) | 65 (40.9) | 27 (17.0) |
| I have a computer at home that I can use without interruption for online learning | 19 (11.9) | 12 (7.5) | 19 (11.9) | 76 (47.8) | 33 (20.8) |
| I have other equipment at home, besides a computer, that enables me to participate in online learning | 26 (16.4) | 29 (18.4) | 24 (15.1) | 54 (34.0) | 29 (18.2) |
| **Efforts Invested by UKZN** | | | | | |
| UKZN quickly adapted to online learning | 12 (7.5) | 25 (15.7) | 34 (22.0) | 67 (42.1) | 20 (12.6) |
| UKZN organized online learning adequately | 11 (6.9) | 15 (9.4) | 45 (28.3) | 65 (40.9) | 23 (14.5) |
| UKZN provided students with training about the teaching tools and software used for online learning | 9 (5.7) | 22 (13.8) | 45 (28.3) | 67 (42.1) | 16 (10.1) |
| UKZN is providing timely information regarding the provision of online learning | 10 (6.3) | 12 (7.5) | 50 (31.4) | 72 (45.3) | 15 (9.4) |
| For solving possible technical problems related to online learning, an information technologies office or another service is at our disposal at UKZN | 9 (5.7) | 18 (11.3) | 55 (34.6) | 68 (42.8) | 9 (5.7) |
| UKZN expressed willingness to help students in provision of equipment needed for participation in online learning | 8 (5.0) | 14 (8.8) | 51 (32.1) | 62 (39.0) | 24 (15.1) |

*Personal resources = skills and equipment; UKZN = University of KwaZulu-Natal*

**Table 2.** Click to enlarge

*Perceptions related to lack of practical education and continuation of education during the pandemic*

More than 40% of participants felt deprived (n = 65, 40.9%) and were concerned (n = 79, 49.7%) about the lack of practical education in online learning **(Table 3)**. In the same way, just less than half of the sample felt that it would not be possible to compensate for missed practical education during their studies (n = 75, 47.2%) and agreed that the lack of practical education will have permanent consequences on their job preparedness for the future (n = 73, 45.9%). In terms of continuation of education during the pandemic, the majority of participants agreed that practical education should be organized for students (n = 115, 72.3%). Participants also agreed with the statement that online learning needs to be improved for the continuation of education during the pandemic (n = 98, 61.6%).

*Structure, implementation and organization of online learning*

**Table 4** shows responses concerning the structure, implementation and organization of online learning for the 159 participants. Participants reported that they received timely feedback from their teachers (n = 99, 62.3%) and agreed that teachers had organized and adapted well to online learning (n = 115, 72.3%). In terms of the implementation, most participants agreed that teachers were giving instructions

tailored to online learning (n = 115, 72.3%), making an effort for students to follow (n = 116, 73.0%), verifying that students understood lessons by probing for questions and providing feedback (n =123, 77.4%), finding ways to motivate students to participate in online learning (n = 103, 64.8%) and providing tasks/activities for students to better understand the course (n = 124, 78.0%). Furthermore, many participants indicated that teachers provided adequate teaching materials (n = 109, 68.5%) and video lessons (n = 128, 80.5%) for online learning and were holding classes according to the official schedule (n = 131, 82.4%), following the curriculum (n = 136, 85.5%) and using software chosen by UKZN for online learning (n = 134, 84.3%). When asked if they felt left to their own devices during online learning, 70 (44.0%) participants agreed, 34 (21.4%) participants disagreed, while 55 (34.6%) participants provided a neutral response (Table 4).

TABLE 3
Frequency of Responses for Lack of Practical Education and Continuation of Education During the Pandemic (n = 159)

| Item | Completely Disagree n (%) | Disagree n (%) | Neutral n (%) | Agree n (%) | Completely Agree n (%) |
|---|---|---|---|---|---|
| **Concerns Regarding the Lack of Practical Education** | | | | | |
| I feel deprived because of the lack of practical education | 16 (10.1) | 36 (22.6) | 42 (26.4) | 40 (25.2) | 25 (15.7) |
| I am concerned about the lack of practical education | 13 (8.2) | 32 (20.1) | 35 (22.0) | 48 (30.2) | 31 (19.5) |
| I am afraid that it will not be possible to compensate for the lack of practical education during my studies | 13 (8.2) | 25 (15.7) | 46 (28.9) | 51 (32.1) | 24 (15.1) |
| I am afraid that the lack of practical education will have permanent consequences in terms of my future job preparedness | 14 (8.8) | 26 (16.4) | 46 (28.9) | 44 (27.7) | 29 (18.2) |
| **Continuation of Your Education During the Pandemic** | | | | | |
| Despite the pandemic, practical education needs to be organized for students | 8 (5.0) | 4 (2.5) | 32 (20.1) | 70 (44.0) | 45 (28.3) |
| Students should have suitable practical roles in health care, so they can help resolve the current pandemic | 6 (3.8) | 5 (3.1) | 32 (20.1) | 75 (47.2) | 41 (25.8) |
| Students working on final year research projects should immediately make alternative plans that can be completed under the current circumstances | 7 (4.4) | 4 (2.5) | 34 (21.4) | 70 (44.0) | 44 (27.7) |
| Online learning needs to be improved | 7 (4.4) | 6 (3.8) | 48 (30.2) | 57 (35.8) | 41 (25.8) |

**Table 3.** Click to enlarge

TABLE 4
Frequency of Responses for Structure, Implementation and Organization of Online Learning (n = 159)

| Item | Completely Disagree n (%) | Disagree n (%) | Neutral n (%) | Agree n (%) | Completely Agree n (%) |
|---|---|---|---|---|---|
| I receive timely feedback from the majority of teachers | 3 (1.9) | 20 (12.6) | 37 (23.3) | 75 (47.8) | 23 (14.5) |
| The instructions given by the majority of teachers (e.g., about participation in lessons, modes of examination, solving tasks or writing a seminar) are tailored to online learning | 6 (3.8) | 7 (4.4) | 31 (19.5) | 100 (62.9) | 15 (9.4) |
| Most of the teachers are making an effort to enable me to follow online learning more easily, for example, by highlighting the key elements of the lecture or highlighting the transition to new content | 8 (5.0) | 11 (6.9) | 24 (15.1) | 88 (55.3) | 28 (17.6) |
| The majority of teachers verify whether we have understood the lessons by seeking feedback or encouraging us to ask questions | 5 (3.1) | 13 (8.2) | 18 (11.3) | 90 (56.6) | 33 (20.8) |
| The majority of teachers find a way to motivate us to participate in lessons under these distance-learning conditions | 11 (6.9) | 8 (5.0) | 37 (23.3) | 76 (47.8) | 27 (17.0) |
| The tasks and activities that teachers provide during lessons or for homework usually help me to understand the course material better | 8 (5.0) | 5 (3.1) | 22 (13.8) | 97 (61.0) | 27 (17.0) |
| Teaching materials are adequate for the technical demands of online learning | 4 (2.5) | 18 (11.3) | 26 (17.6) | 91 (57.2) | 18 (11.3) |
| The majority of teachers provide video lessons | 6 (3.8) | 6 (3.8) | 19 (11.9) | 89 (56.0) | 39 (24.5) |
| Most of the teachers hold classes according to the official schedule | 4 (2.5) | 6 (3.8) | 18 (11.3) | 100 (62.9) | 31 (19.5) |
| Most of the teachers are following the official curriculum | 5 (3.1) | 5 (3.1) | 13 (8.2) | 104 (65.4) | 32 (20.1) |
| Some teachers mostly do not hold online lectures, but send students a presentation instead | 13 (8.3) | 14 (8.8) | 34 (21.4) | 75 (47.8) | 25 (15.7) |
| Most of the teachers of classes use software that UKZN chose for online learning (Moodle/Learn) | 5 (3.1) | 4 (2.5) | 16 (10.1) | 81 (50.9) | 53 (33.3) |
| I feel left to my own devices during online learning | 13 (8.3) | 24 (15.1) | 55 (34.6) | 59 (37.1) | 11 (6.9) |
| Teachers have generally organized themselves and adapted well to online learning | 5 (3.1) | 7 (4.4) | 32 (20.1) | 84 (52.8) | 31 (19.5) |
| My expectations related to online learning in these circumstances have been fulfilled | 11 (6.9) | 14 (8.8) | 55 (34.6) | 61 (38.4) | 18 (11.3) |
| I am satisfied with how fast adjustment to online learning occurred | 15 (9.4) | 20 (12.6) | 33 (20.8) | 74 (46.5) | 17 (10.7) |

*UKZN = University of KwaZulu-Natal*

**Table 4.** Click to enlarge

## Discussion

As a result of the COVID-19 pandemic, changes in teaching and learning practices were implemented by higher education institutions globally, which significantly altered how teachers and students interacted.[5] For 2 years, most higher education institutions provided educational activities to students via digital platforms to ensure continuity of academic activities.[9,13] Online learning refers to an interactive learning process where materials, activities, discussions and assessments are accessed using online platforms and learning management systems. Furthermore, online learning is student-centered and provides more flexible and accessible opportunities for students to engage with learning materials and activities.[9,13,20] Despite these advantages, there are challenges with online learning and an enhanced understanding of students' experiences and attitudes can be used to strengthen and further develop online learning. As optometry education programs worldwide were affected by the COVID-19 pandemic,[21] this study explored the experiences and attitudes of optometry students as such information can be used to improve and better develop the online learning process.

In this study, most participants were equally motivated to participate in and attend online learning when compared with face-to-face learning. Similar results were reported by Schlenz et al. as more than half of their sample of dental students felt motivated to learn using online platforms.[5] In contrast, Adnan and Anwar reported that 71.4% of their sample of students in a higher education institution in Pakistan felt that learning in the traditional classroom was more motivating than online learning.[16] The mean

satisfaction score with online learning was 3.4, and this is higher than the middle point in the Likert scale and the score (2.85) reported in a previous study.[20] The results of the present study were encouraging. Despite all participants not being completely satisfied with online learning, they were equally motivated to study using the online method compared with the traditional face-to-face method of learning. These findings could be explained by the desire of optometry students to learn and contribute to their professional development irrespective of the method of learning. Elkins et al. asserted that supporting students with appropriate knowledge and skills for online learning improves their self-efficiency, experiences and satisfaction regarding online learning.[22] Therefore, it is possible that optometry students in this study felt motivated to participate in online learning owing to support and interaction from their teachers and institution.[20]

The findings related to students' adjustment to and experiences in online learning were interesting. In the present study, more than half of the sample were satisfied with how fast they adjusted to online learning, which is similar to findings in previous studies.[6,18] In contrast, undergraduate students in Turkey were dissatisfied with their adaptation to online learning owing to inadequate teacher support and interactions as well as poor learning resources and methods for online learning.[20] Similarly, students in an American higher education institution were also dissatisfied with their adaptation to online learning because of poor student-teacher interactions, poor organization of courses, unhelpful learning materials and unrealistic teacher expectations. In the present study, approximately half of the sample reported that they missed face-to-face lessons and in-person communication with teachers during online learning. The finding is important because positive teacher-student interactions promote self-efficacy in students particularly when using blended teaching and flipped-classroom methods that are commonly employed in the online learning process. Consequently, it is recommended that optometry teachers use more effective communication strategies when using online learning platforms to improve student-teacher interactions and compensate for the lack of in-person communication.

In the current study, most students felt that online learning required more time, corroborating results from Coman et al. showing that students felt they had less free time with online learning than with traditional face-to-face learning.[13] Different results have been noted in other studies in which students reported that online learning required less time.[5,9,20] For example, Thapa et al. reported that 64.7% of their sample of nursing students felt that online learning helped to save time needed for learning.[9] Giray noted that their sample of engineering students felt online learning required less travel time and therefore was perceived as more time efficient.[20]

Most participants would prefer theoretical courses to include online learning in the future, which is consistent with the results noted by Schlenz et al.[5] However, Adnan and Anwar reported that although students could effectively manage online learning, 50.8% did not prefer courses to be completed online.[16] Similarly, Coman et al. reported that most of their students would prefer future courses using the traditional face-to-face method rather than online learning.[13] Most students in the present study felt that online learning could not replace practical sessions and seminars, and this finding is consistent with other studies.[6,19] Alsoufi et al. noted that 54.8% of their sample agreed that online learning cannot be used for clinical aspects of medical education.[19] This highlights the concern that practical and clinical education, which are more dependent on supervision and mentoring in a skills laboratory and/or clinical setting, have been adversely affected with the use of online learning.[6,13] This is because without appropriate simulation and/or patient engagement in a clinical setting, practical and clinical techniques are more difficult to teach using online learning.[9] This suggests that online learning has more value for theoretical education rather than practical education particularly in healthcare training undergraduate programs.[5,6]

More than half of the sample indicated that they had sufficient skills, internet access and computers to participate in online learning. Similar results have been reported by other researchers[5,16,19] concerning

digital devices and skills that are critical for online learning. For example, Adnan and Anwar noted that most of their participants had adequate access to the internet and proficient computer and information technology skills to engage in online learning.[16] In contrast to these results, lack of adequate devices and poor internet connectivity were reported as major challenges to successful engagement in online learning for students in Romania,[13] Turkey[20] and Nepal.[9] The challenge with access to the internet was also highlighted by Pather et al. who found that even though most students (98.8%) had access to digital devices, 15.7% reported that their devices were unable to connect to the internet.[12] The difference in findings between the present study and the Pather et al. study[12] may be explained by the times at which these studies were undertaken. Pather et al.[12] surveyed students very early in the national lockdown period in South Africa. Thus, both students and institutions may have had little time to adjust and prepare for the transition to online learning and/or secure devices and resources needed to engage in online learning. Nevertheless, higher education institutions, particularly those in the developing countries like South Africa, need to consider the digital divide and inequalities in access to digital devices and/or resources for students when planning online learning.[12]

Many participants in this study felt that UKZN had quickly adapted and organized online learning adequately as well as provided support in the form of training and technical problem-solving services for online learning. Moreover, participants agreed that UKZN had provided timely information regarding the provision of online learning and showed willingness to help students with equipment needed for engaging in online learning. Similar results were reported by Puljak et al. and Etajuri et al. in their studies involving health science students regarding institutional support and adjustment for effective online learning.[6,18] In contrast, students in Romania felt that their higher education institutions were inadequately prepared for online learning owing to lack of technical skills, support and platforms needed for optimal online learning processes.[13] Thapa et al. noted that students in a higher education institution in Nepal reported poor support from their institution because of inadequate technology and online learning training programs to improve students skills for online learning.[9]

Almost half of the sample were concerned about the lack of practical education and being unable to compensate for missed practical education. Furthermore, many participants felt that the lack of practical education will have permanent implications for their job preparedness. These findings suggest that students recognize the importance of practical education in undergraduate programs for vocationally oriented professions such as optometry. These findings are expected as both preclinical and clinical education and training are indispensable for the development of future healthcare professionals. Other studies[5,6,18] have also reported that future healthcare professionals expressed more concern regarding their practical education when engaging with online learning. Furthermore, nursing students from Nepal felt that reduced patient interactions was perceived as a major disadvantage of online learning.[9] Dental students from Malaysia reported that insufficient practical training was a major concern, and almost all students (98.6%) were worried about their levels of preparedness for their clinical competency examinations.[6] Other healthcare students also expressed concern about their level of practical preparation during the pandemic and felt uncomfortable about future practice.[5] In contrast to these findings, Alsoufi et al. reported that 45.4% of medical students felt that COVID-19 had no impact on their career and future specialty training.[19] Most of the students in the study by Alsoufi et al. served as volunteer allied healthcare workers during the pandemic and felt that medical faculty had provided adequate guidance.[19] Consequently, students in the study by Alsoufi et al. may have been less affected by the lack of practical training during the pandemic and its implications for future clinical practice.[19]

When asked about the structure, implementation and organization of online learning, most students in the present study had a positive response. Most participants felt that teachers were organized, held classes according to the schedule, adapted well and gave tailored instructions for online learning. Furthermore, participants reported that teachers provided adequate materials, tasks/activities and feedback and ensured that students were motivated. Similar results were noted in the study by Puljak et

al. where students felt that they received timely feedback and that the online learning lectures and activities helped them to understand materials better.[18] Schlenz et al. reported that their sample felt they were able to follow the content and that online learning courses were well structured.[5] Different results were noted by Coman et al. where one-third of their sample felt that teachers did not follow the schedule as classes did not start or end at the scheduled times.[13] Furthermore, Coman et al. noted that teachers did not clearly indicate course requirements, failed to offer support with problems, did not adapt their teaching styles or interact with students in the online environment.[13] Elkins et al. reported that most of their students felt that the learning materials provided were unhelpful and did not contribute to their development.[22] It is also possible that the teachers being evaluated in the studies by Coman et al. and Elkins et al. did not receive training for online learning or were unable to adequately adapt their teaching styles and courses as the transition to online learning happened unexpectedly and rapidly.[13,22] Thus, teachers in these studies[13,22] may have been unable to develop technical skills or adapt their courses and/or materials for effective online learning. This is different than the present study where teachers at UKZN were provided with training workshops and support services for adjusting and implementing online learning.

When comparing traditional face-to-face learning with online learning, only 32.1% of participants reported that online learning was better. Furthermore, 61.6% of participants agreed that online learning needs to be improved for the continuation of education during the pandemic. Possible reasons for this may be that optometry students may be more familiar with traditional face-to-face learning and in-person contact with their teachers and/or patients in clinical/skills laboratory settings. Other studies involving health science students[9,18] have reported similar findings regarding the comparison of online and traditional learning. For example, Puljak et al. noted that only 39.6% of their sample found online learning better than traditional learning.[18] Thapa et al. reported that only 34% of their sample felt that online learning was as effective as traditional learning with the majority preferring traditional face-to-face learning.[9] Even students in non-health science programs perceived that traditional face-to-face learning was better than online learning.[20] The lack of satisfaction with online learning, the low proportion of students perceiving online learning to be better than traditional face-to-face learning and majority of students perceiving that online learning needs to be improved is concerning as higher satisfaction is related to better academic performance and increased motivation as students need to self-regulate their learning and motivation particularly in online learning.[18] Furthermore, the development and incorporation of technology into education has revolutionized the teaching and learning process and is likely going to remain in optometry education programs in the post COVID-19 era.[9,21] Consequently, future studies should use qualitative research designs and data collection methods to explore reasons for the low proportion of optometry students perceiving that online learning is better than traditional face-to-face learning. These studies should also focus on better understanding students' perceptions of online learning needing to be improved and possibly explore suggestions and recommendations on how this can be achieved.

Strengths of this study included that the experiences and attitudes of optometry students after engaging with online learning for approximately 1 year were investigated. Overall, the response rate was relatively good and thus may be representative of the experiences and attitudes of optometry students regarding online learning at UKZN. Participants responded to the questionnaire anonymously, and all students could access the questionnaire during the study period using either data provided by the institution or personal data. The questionnaire was adapted from a previous study[18] that assessed student perceptions regarding online learning and was piloted prior to data collection. As the sample only included optometry students from one institution, the study findings may not be generalized to other student populations. Thus, it would be useful to extend the study to the three other institutions in South Africa that train optometry students to better understand the experiences of these students and make comparisons across the institutions. Future longitudinal studies would also be useful to assess how optometry students have adapted to online learning and if their experiences and/or attitudes regarding

online learning change over time.

## Conclusion

This study investigated the experiences and attitudes of optometry students regarding online learning during the COVID-19 pandemic. Findings showed that a majority of participants were satisfied with their adjustment to online learning and the way it was implemented by the institution and their teachers. Challenges with the lack of practical education, particularly in a vocationally oriented program like optometry, is concerning and should be addressed using supplementary programs to enhance practical and clinical competencies. The use of blended learning approaches in optometry education programs has the potential to enhance the learning process for optometry students. Consequently, this information should be used by optometry curriculum developers and educators to strengthen online learning together with face-to-face learning to achieve better outcomes and have a more positive impact on student learning. Such changes would be critical for a robust optometry curriculum particularly if online learning continues effectively in the post COVID-19 era for the training of future optometrists who are fit for purpose.

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# APPENDIX A

## Experiences and Attitudes of Optometry Students Regarding Online Learning During the COVID-19 Pandemic

### Demographic characteristics

Age: 18-20 years; 21-23 years; 24-26 years; over 26 years
Gender: male; female
Race: Black; Caucasian; Indian/Asian; mixed
Level of study: 1st year; 2nd year; 3rd year; 4th year
How do you primarily (most commonly) access the internet for online learning? university data; personal data; uncapped WiFi; capped WiFi
What type of device do you primarily (most commonly) use to engage in online learning? laptop; desktop computer (in LAN or private); smartphone

### General satisfaction with online learning and comparison to traditional face-to-face learning

Rate your general satisfaction with the overall online learning that has been provided thus far:
1 – completely dissatisfied
2 – dissatisfied
3 – neither satisfied nor dissatisfied
4 – satisfied
5 – completely satisfied

How would you rate the online learning you have had so far, compared to the classic classroom learning you had before? Online learning is:
1 – much worse
2 – worse
3 – neither better nor worse
4 – better
5 – much better

Compared to classroom lessons, I attend online learning (less frequently, equally, more frequently)
The longer the online learning continues, my motivation to participate in such lessons (increases, remains equal, decreases)
Compared to classroom learning, during online learning I am connected with my colleagues and teachers (more, equally, less)
Regarding time, compared to classic classroom lessons, online learning requires (more time, equal time, less time)
Compared to classroom lessons, I am motivated to participate in online learning (more, equally, less)

### Please rate these statements regarding your experience and engagement with online learning

1 – completely dissatisfied
2 – dissatisfied
3 – neither satisfied nor dissatisfied
4 – satisfied
5 – completely satisfied

I am satisfied with how fast I have adjusted to online learning
I participate in the course with questions and comments, just like during regular classes
I miss classroom lessons
I miss in-person communication with teachers
Online learning is a complete waste of time for health sciences students
Online learning cannot compensate for practical education and seminars

### Please rate your level of agreement with the following statements, related to the possibility of your participation in online learning, based on your information technologies skills and availability of equipment at home

1 – completely dissatisfied
2 – dissatisfied
3 – neither satisfied nor dissatisfied
4 – satisfied
5 – completely satisfied

I have sufficient information technology skills to participate in online learning independently
I have internet at home, which enables me to participate in online learning without interruption
I have a computer at home that I can use without interruption for online learning
I have other equipment at home, besides a computer, that enables me to participate in online learning

### Please state your agreement with the following statements related to the efforts invested by University of KwaZulu-Natal (UKZN) in order to enable you to participate in online learning

1 – completely dissatisfied
2 – dissatisfied
3 – neither satisfied nor dissatisfied
4 – satisfied
5 – completely satisfied

UKZN quickly adapted to online learning
UKZN has organized online learning adequately
UKZN has provided students with training about the teaching tools and software used for online learning
UKZN is providing timely information regarding the provision of online learning
For solving possible technical problems related to online learning, an information technologies office or another service is at our disposal
UKZN has expressed willingness to help students in provision of equipment needed for participation in online learning

### Please rate your level of agreement with the following statements related to the structure, implementation and organization of online learning

1 – completely dissatisfied
2 – dissatisfied
3 – neither satisfied nor dissatisfied
4 – satisfied
5 – completely satisfied

I receive timely feedback from the majority of teachers
The instructions given by the majority of teachers (e.g., about participation in lessons, modes of examination, solving tasks, or writing a seminar) are tailored to online learning
Most of the teachers are making an effort to enable me to follow online learning more easily, for example, by highlighting the key elements of the lecture or highlighting the transition to new content
The majority of teachers verify whether we have understood the lessons by seeking feedback or encouraging us to ask questions
The majority of teachers find a way to motivate us to participate in lessons under these distance-learning conditions
The tasks and activities that teachers provide during lessons or for homework usually help me to understand the course material better
The teaching materials are adequate for the technical demands of online learning
The majority of teachers provide video lessons
Most of the teachers hold classes according to the official schedule
Most of the teachers are following the official curriculum
Some teachers mostly do not hold online lectures, but send students a presentation instead
Most of the teachers of classes use software that UKZN chose for online learning (Moodle/Learn)
I feel left to my own devices during online learning
Teachers have generally organized themselves and adapted to online learning well
My expectations related to online learning in these circumstances have been fulfilled
I am satisfied with how fast adjustment to online learning occurred

### Please state your level of agreement with the following statements related to possible concerns you might have regarding the lack of practical education during online learning due to the COVID-19 pandemic

1 – completely dissatisfied
2 – dissatisfied
3 – neither satisfied nor dissatisfied
4 – satisfied
5 – completely satisfied

I feel deprived because of the lack of practical education
I am concerned about the lack of practical education
I am afraid that it will not be possible to compensate for the lack of practical education during my studies
I am afraid that the lack of practical education will have permanent consequences in terms of my future job preparedness

### Please rate your level of agreement with the following statements about the continuation of your education during the pandemic

1 – completely dissatisfied
2 – dissatisfied
3 – neither satisfied nor dissatisfied
4 – satisfied
5 – completely satisfied

Despite the pandemic, practical education needs to be organized for students
Students should have suitable practical roles in health care, so they can help resolve the current pandemic
Students working on final year research projects should immediately make alternative plans that can be completed under the current circumstances
Online learning needs to be improved
Considering the experience with online learning, what would you prefer in the future for theoretical education? (classical classroom lessons; online learning; a combination of both)

**Appendix A.** Click to enlarge

Darshan Chetty is a 2022 graduate of the University of KwaZulu-Natal Discipline of Optometry, Durban, South Africa.

Fanelesibonge Sinamile Dubazane is a 2022 graduate of the University of KwaZulu-Natal Discipline of Optometry, Durban, South Africa.

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# Features

## Editorial

# What's on Your Mind?

*Keshia S. Elder, OD, MS, MS, FAAO* | *Optometric Education: Volume 49 Number 2 (Winter-Spring 2024)*

Keshia Elder, OD, MS, MS, FAAO

As I continue settling into my new role as Editor of *Optometric Education*, I want to hear more about what is on the minds of the journal readership.

Pertaining to the journal itself, in addition to the peer-reviewed research papers published in each issue, would you like to see articles or recurring features that address a specific topic or topics, and what would those topics be? Over the years, the journal has presented many recurring features on specific topics, such as technology in optometric education, teaching theories and methods and book reviews. We are always open to considering your ideas for guest editorials and installments of Educator's Podium, too.

I am also interested in knowing what you feel are the most pressing challenges and issues you face as you navigate through your daily responsibilities as teachers and doctors. We of course face some overriding issues that are already matters of national conversation and solution-seeking, but we may also have more subtle observations and experiences that feel as if they may become overriding issues.

### Is the Student-Teacher Relationship Shifting?

I've been thinking more lately, for example, about our need as optometric educators to compartmentalize. Given the multiple roles we fill, the need has always been there. But I feel it is becoming much more necessary. I wonder if this is at least partly due to students wanting to have a more personal connection to their faculty and administrators, as was found in a Student Voice survey by Inside Higher Ed and College Pulse.[1] In that survey, approximately one-third of students indicated that professors taking more of an interest in getting to know them would promote their success. Certainly, considering more holistically what students need has its benefits, such as a better understanding of their

overall well-being, but how far from the traditional, strictly professional rapport is prudent? Should we be accepting invitations to connect on social media platforms that we also use personally? (My policy has been to connect, if asked, only on LinkedIn. Once a student graduates, I'm open to connecting on other platforms.) Does the kind of tie students seem to be seeking further complicate already difficult conversations about their academic successes and failures? As far as compartmentalizing, how can we be the teachers our students need us to be, the doctors our patients need us to be, and still maintain a part of ourselves?

**Drop Me a Line**

What do you think? Is it time to move past some traditional boundaries when it comes to the teacher-student relationship or perhaps set some new ones? Let's share thoughts and potential strategies. I welcome your insights on this and any topic that is on your mind. Email address below.

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Dr. Elder [elderk@umsl.edu], Editor of *Optometric Education*, is a Clinical Professor and Dean of the University of Missouri-St. Louis College of Optometry.

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