PERSPECTIVES

Navigating Personal and Professional Development Through Social Media in Ophthalmology

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Background: Although social media use among physicians skyrocketed during the COVID-19 pandemic, its role for networking, mentorship, and support among ophthalmologists remains unknown. The objective of this study was to elucidate how ophthalmologists use social media for navigating challenges related to personal and professional development.

Methods: This was a cross-sectional survey study conducted during the height of the COVID-19 pandemic. A 40-item questionnaire investigating the usage of social media was developed and distributed to active social media users in ophthalmology including trainees and practitioners from November 2020 to December 2020 via social media channels. Quantitative responses were analyzed using descriptive and basic statistics, while a thematic analysis was conducted to examine the qualitative responses.

Results: One hundred and forty-nine respondents (67% women) completed the survey, with 56% of participants between the ages of 25–35 years old. Women were more likely to report experiencing workplace discrimination ($p < 0.005$) and work-life imbalance ($p < 0.05$) compared to men, and social media was found to be useful in addressing those challenges in addition to parenting and mentorship ($p < 0.005$ and $p < 0.001$, respectively). Compared to their older counterparts, younger ophthalmologists (<45 years old) cited more challenges with practice management ($p < 0.005$) and turned to social media for corresponding guidance ($p < 0.05$). Compared to late career ophthalmologists, trainees were more likely to report difficulties with career development ($p < 0.05$), practice management ($p < 0.0001$), and financial planning ($p < 0.05$), and found social media beneficial for learning financial literacy ($p < 0.05$). A qualitative analysis of the free-response texts found both positive and negative viewpoints of social media use in ophthalmology.

Conclusion: Social media is an invaluable tool for enhancing professional and personal growth for ophthalmologists, particularly for women, trainees, and younger surgeons through education and community-building. Future directions include exploring how social media can be used to improve mentorship, outreach, and training in ophthalmology.

Keywords: mentorship, professional development, social media, women in ophthalmology

Introduction

Social media has become an invaluable tool for both patients and physicians alike in today's digital age. "Millennial" physicians, in particular, were one of the first groups to embrace social media as a personal development and professional networking tool as they grew up and trained through the digital revolution.[1] With the onset of COVID-19 social distancing measures, traditional forms of professional engagement such as in-person conferences and networking opportunities became virtualized, and more physicians than ever hailing from different generations and diverse backgrounds took to social media to create online communities of discourse, mentorship, and education.[2]

Multiple studies have documented the role of social media in dissolving barriers and enhancing access to educational and career development opportunities in various fields of medicine, especially for women physicians and trainees.[3–7] Big data

analysis has demonstrated that physicians use specific social media platforms like Twitter for thought leadership, medical education, and professional networking in fields outside of ophthalmology.[8,9] An increasing proportion of ophthalmologists are now present on social media, with one survey study of usage patterns in ophthalmology demonstrating that nearly 40% of respondents utilized social media in a professional context.[10] Other studies characterizing social media use in ophthalmology have been mostly limited to practice promotion and patient education,[11–14] and little is known about how ophthalmologists use social media for personal and professional development, especially as it relates to career development, practice management, work-life harmony, and community-building through mentorship and networking.

We conducted a survey of active social media users within ophthalmology to evaluate their usage of social media during the height of COVID-19 social distancing measures when in-person interactions were less feasible. The goals of our study were to: 1) characterize the usage patterns of social media-using ophthalmologists; 2) identify challenges and explore motivations for using social media within personal and professional realms based on gender, race, age, and career stage; and 3) identify perceived benefits and potential shortcomings of social media use in ophthalmology.

Methods

Study Setting and Participant Recruitment

A 40-item questionnaire assessing the utilization of social media for personal and professional development in ophthalmology was developed based on themes extracted from a focused literature review on social media, training, mentorship, and personal and professional challenges in ophthalmology and medicine. A pilot study was conducted prior to survey distribution to assess appropriateness of the survey. The survey was distributed as an online link to active users of social media within ophthalmology including trainees and practitioners via major ophthalmology-related social media accounts on Instagram and Twitter and email listservs (e.g. Bryn Mawr Communications (BMC) Vision and Millennial Eye) from November to December 2020. Participants who indicated that they did not use social media were excluded and not permitted to continue the survey. As we specifically sought to characterize the usage of social media by ophthalmologists who actively use social media, we distributed the survey via large social media platforms to better access and target that group. For example, BMC Vision and Millennial Eye are major online ophthalmology trade publication groups with large subscriber bases composed of ophthalmologists who routinely read online educational content. This study received full ethics committee approval and was conducted in accordance with the principles of the Declaration of Helsinki.

The anonymous online survey was generated on Qualtrics and comprised of questions on demographic information including gender, race, age, country of training or practice, stage of career, number of children, and marital status. The survey then assessed challenges experienced in seven separate domains and whether social media was useful for overcoming those challenges (see Appendix 1 for survey questions). The domains assessed were: career planning and/or advancement, workplace dynamics, practice management, financial planning, work-life harmony, parenting, and mentorship.

Career planning and/or advancement encompassed areas related to job promotion and/or compensation; contract negotiation; fellowship application; board exams and certification; and seeking employment, leadership, public engagement, consulting, networking, and research opportunities.[15] Workplace dynamics included discrimination related to cultural, ethnic, religious, age or gender bias; sexual harassment; professional misconduct; interpersonal work conflicts; and institutional politics.[16] Practice management looked into practice philosophy, practice purchase and/or valuation, digital marketing, brand management, electronic medical record system management, human resources, shared expenses, remuneration logistics, and incorporation logistics.[15] Financial planning covered student loans, debt, investments, mortgage, and retirement plan.[15,17] Work-life harmony encompassed interpersonal relationships, household responsibilities, balancing parenthood with work and training, caregiving, self-wellness, and burnout.[18,19] Parenting included family planning, maternity and paternity leave, breastfeeding/pumping, and raising children.[18] Finally, mentorship encompassed both interpersonal education and networking among professional colleagues.

Data Analysis

Statistical analyses were performed using GraphPad Prism Version 9.1.0 (GraphPad Software, Inc., CA, US). Standard descriptive analyses were used to summarize participant demographics with categorical variables in frequency

and percent, and continuous variables in means and interquartile ranges. Kruskal–Wallis one-way analysis of variance (ANOVA) and two-sample t-tests were used to test for differences in the role of social media between gender, race, age, and career stages. General normality of the dataset was assessed using the Shapiro–Wilks test. Participants with less than 80% completion on the survey were excluded from the study. A p-value of less than 0.05 was statistically significant. Free-text responses were qualitatively coded using an inductive, line-by-line coding method to extract pertinent themes.

Results

Demographic Characteristics

There were 149 participants (67.1% women, 32.2% men) in this study, with a total 196 surveys opened during in the study and 149 surveys with >80% completion (survey participation rate of 76%). Over half of participants were between the ages of 25 to 35 years old (56.4%) with approximately one-third of respondents still in training (35.5%) and one-quarter (25.5%) in their first 5 years of practice. Most respondents were White (52.4%) or Asian (32.2%). Over two-thirds (69%) of respondents were married, and approximately half had children (49%). Anterior segment, cornea, and refractive surgery was the most represented subspecialty (26%), and private group was the most common practice setting. All demographic characteristics are listed in Table 1

Characteristics of Social Media Usage

The overwhelming majority of respondents (94%) reported having a professional social media account with the top three most popular platforms being Instagram (25.2%), LinkedIn (22.6%), and Facebook (19.6%). The majority (64%) of participants reported spending at least one hour daily on social media with nearly one-fifth (19%) spending more than 2 hours per day. The five most common reasons respondents reported using social media were: to stay in touch with family, to promote their practice and/or professional services, to educate patients and/or the public about ophthalmology, to share interesting clinical and/or surgical cases with colleagues in their field, and to find mentorship and/or networking opportunities (Figure 1).

Using Social Media to Overcome Challenges in Personal and Professional Domains by Gender

While workplace discrimination was one of the lowest reported challenges overall (Supplementry Figure 1), women were more likely to experience workplace discrimination compared to men ($p < 0.01$) (Figure 2), with gender bias cited as the most common reason for discrimination (Supplementry Figure 2). Women were also more likely to experience work-life disharmony compared to men ($p < 0.05$) (Figure 2). In navigating those challenges, women reported social media to be more useful for overcoming challenges related to workplace discrimination ($p < 0.01$), work-life disharmony ($p < 0.001$), parenting ($p < 0.0001$), and mentorship ($p < 0.05$) compared to men (Figure 2). Women were also more likely to utilize social media to discuss and support gender issues compared to men ($p < 0.05$). These findings are summarized Table 2.

Using Social Media to Overcome Challenges in Personal and Professional Domains by Age

Participants were divided into two mutually exclusive age groups: younger (under age 45) and older (over age 45). Forty-five was chosen as the threshold age as the average age of mid-career physicians are in the mid-forties.[20,21] Younger respondents were more likely to report inexperience with practice management ($p < 0.01$) and challenges with work-life harmony ($p < 0.05$) compared to older respondents. Younger respondents also spent more time on social media than older respondents ($p < 0.01$), and the former were also more likely to turn to social media as a tool to overcome obstacles related to practice management compared to older respondents ($p < 0.01$). Older respondents were more likely to utilize social media as a medium to provide mentorship to students, trainees, and/or colleagues in ophthalmology than younger respondents ($p < 0.05$). These findings are summarized in Table 2 and Figure 3.

Table 1 Participant Demographics. Various Demographic Characteristics of Survey Participants (n = 149)

Characteristics	Survey Participants n (%)
Country	
Canada	6 (4.0)
USA	111 (74.5)
Other	32 (21.5)
Gender	
Men	48 (32.2)
Women	100 (67.1)
Nonbinary	1 (0.7)
Age	
Under 25	3 (2.0)
25–35	84 (56.4)
36–45	35 (23.5)
46–55	13 (8.7)
56–65	12 (8.1)
66+	2 (1.3)
Ethnicity	
White	78 (52.4)
Black/African American	1 (0.7)
American Indian or Alaska Native	0 (0.0)
Asian	48 (32.2)
Non-white Hispanic/Latino	7 (4.7)
Native Hawaiian or Pacific Islander	0 (0.0)
Other	15 (10.1)
Career stage	
Resident	37 (24.8)
Fellow	16 (10.7)
0–5 years in practice	38 (25.5)
6–10 years in practice	20 (13.4)
11–20 years in practice	19 (12.8)
20+ years in practice	19 (12.8)
Type of practice	
Academic	34 (22.8)
Private solo	10 (6.7)
Private group	53 (35.6)
Hospital based	9 (6.0)
Large HMO based	3 (2.0)
Not applicable	35 (23.5)
Other	5 (3.4)
Subspecialty	
In training	38 (25.5)
Comprehensive	17 (11.4)
Anterior segment, cornea, and refractive	38 (25.5)
Glaucoma	15 (10.1)
Low vision rehabilitation	1 (0.7)
Neuro-ophthalmology	2 (1.3)
Ocular oncology	0 (0.0)

(*Continued*)

Table 1 (Continued).

Characteristics	Survey Participants n (%)
Oculoplastics	13 (8.7)
Pediatric ophthalmology	6 (4.0)
Retina/uveitis	19 (12.8)
Marital status	
Married	103 (69.1)
Divorced	6 (4.0)
Never married	40 (26.9)
Widowed	0 (0.0)
Number of children	
Zero	20 (51.0)
One	30 (13.4)
Two	15 (20.1)
Three	7 (10.0)
Four	1 (4.7)
Five	1 (0.7)
Professional social media platforms*	
Instagram	86 (25.2)
LinkedIn	77 (22.6)
Facebook	67 (19.6)
Twitter	53 (15.5)
YouTube	32 (9.4)
Other	5 (1.5)
None	21 (6.2)
Time spent on social media	
Less than 1 hour per week	6 (4.0)
Less than 1 hour per day	48 (32.2)
1–2 hours daily	66 (44.3)
3–4 hours daily	23 (15.4)
4+ hours daily	6 (4.0)

Note: *Total exceeds 149 as respondents were directed to select all that apply; data reflects tallied responses.

Using Social Media to Overcome Challenges in Personal and Professional Domains by Career Stage

Participants were divided into three mutually exclusive career stages: trainees (residents and fellows), early career (0–10 years in practice), or late career (11 or more years in practice). Other studies have considered early and middle/late career physicians to be those who have been in practice 10 years or less, and 11 years or more, respectively.[21,22] Compared to late career ophthalmologists, trainees were more likely to report difficulties with career planning/advancement ($p < 0.05$) and financial planning ($p < 0.05$). In addition, early ($p < 0.05$) and late career ($p < 0.0001$) ophthalmologists perceived greater challenges with practice management compared to trainees. Among ophthalmologists who were in practice, early career ophthalmologists were more likely to report parenting challenges than late career ophthalmologists ($p < 0.05$). Of the three career stage groups, trainees found social media to be beneficial for overcoming financial planning challenges. These findings are summarized in Table 2 and Figure 4.

No significant differences in social media usage were identified based on race.

Qualitative Data Analysis

A qualitative analysis was conducted from the free-text responses to the question "Is there anything else you think we should know about how and why you integrate social media into your career and/or personal life?" There were five
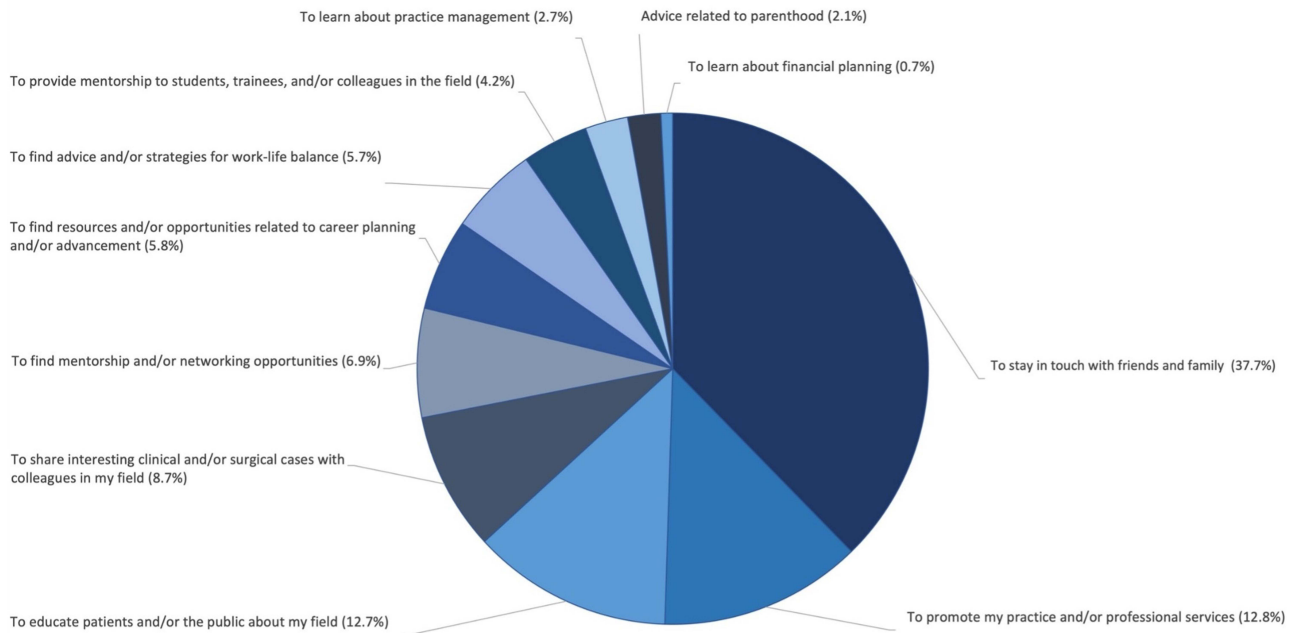
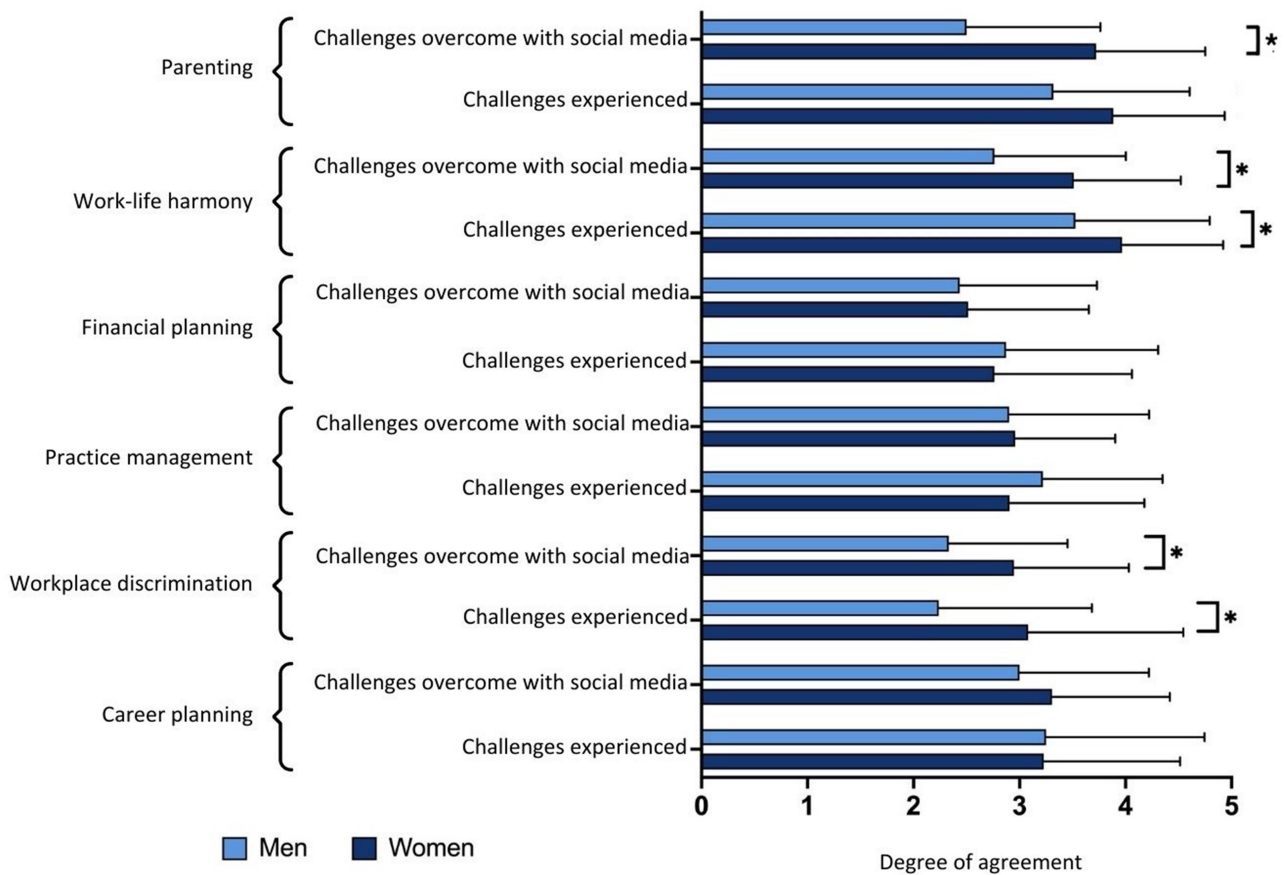**Figure 1** Reasons for social media use among respondents.

Figure 2 Challenges experienced and overcome with social media for gender category. Degree of agreement: 1 – strongly disagree, 2 – somewhat disagree, 3 – neither agree nor disagree, 4 – somewhat agree, 5 – strongly agree. (*denotes statistical significance).

Table 2 Reported Challenges in Professional and Personal Domains and Perceived Utility of Social Media for Overcoming Those Challenges by Gender, Race, Age, and Career Stage. Kruskal–Wallis One-Way Analysis of Variance Was Used to Analyze These Domains

	Gender (p value)	Age (p value)	Career (p value)
Time spent on social media	0.3265	0.0110*	0.1069
Career planning and/or advancement			
Challenges experienced	0.9264	0.1909	0.0465 (trainee vs late career: p=0.0396)*
Challenges overcome with social media	0.1289	0.3955	0.1789
Workplace discrimination			
Challenges experienced	0.0021*	0.2419	0.5558
Challenges overcome with social media	0.0028*	0.9530	0.8272
Practice management			
Challenges experienced	0.1732	0.0027*	<0.0001 (early career vs trainee: p=0.0176; late career vs trainee: p <0.0001)*
Challenges overcome with social media	0.7798	0.0143*	0.2424
Financial planning			
Challenges experienced	0.6703	0.5720	0.0252 (trainee vs late career: p=0.0405)*
Challenges overcome with social media	0.7241	0.5207	0.0446 (early career vs trainee: p=0.032; late career vs trainee: p=0.033)*
Work-life harmony			
Challenges experienced	0.0320*	0.0459*	0.1353
Challenges overcome with social media	0.0005*	0.1727	0.2096
Parenting			
Challenges experienced	0.0617	0.2093	0.0428 (early vs late career: p=0.0356)*
Challenges overcome with social media	<0.0001*	0.111	0.1554
Mentorship			
Provided on social media	0.1130	0.0361*	0.2271
Received on social media	0.8121	0.1380	0.7187
Challenges overcome with social media	<0.0301*	0.4311	0.1334

Note: *Denotes statistical significance, underlined group denotes the group that were more likely to experience the challenge.

positively oriented themes: promotion of career-development opportunities, community and networking, education, mentorship, and lifestyle recommendations; and two negatively oriented themes: risk of misinformation and perceived bias towards younger audiences.

Participants commented on the unique ability of social media to allow for rapid and expansive amplification of career advancement and learning opportunities, particularly in the realm of networking, community building, fostering education, and facilitating mentorship. Several comments touched on the power of social media for connecting geographically and socially distant individuals, which can transcend the professional domain and may protect against feelings of loneliness and burnout.

> Social media has helped me to stay in touch with mentors and mentees. I love to teach, and Instagram provides a great venue to build a collection of teaching materials that can be accessed by others in an asynchronous fashion. Particularly in 2020, social media has played a strong role in my journey by helping me stay connected with others in my field and even develop new
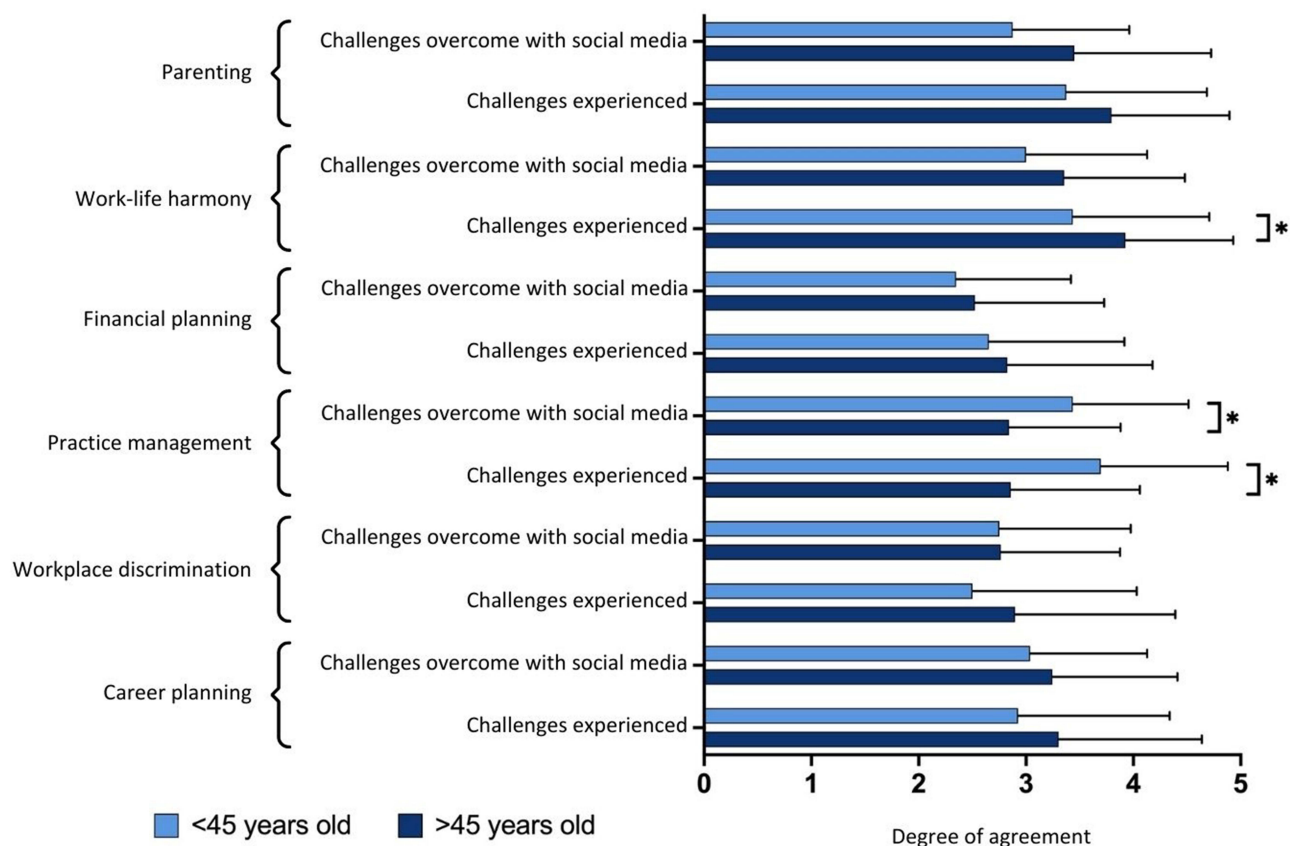
Figure 3 Challenges experienced and overcome with social media for age category. Degree of agreement: 1 – strongly disagree, 2 – somewhat disagree, 3 – neither agree nor disagree, 4 – somewhat agree, 5 – strongly agree. (*denotes statistical significance).

relationships, replacing (in an imperfect, more limited way) the type of organic connections that happen at in-person meetings. [Trainee]

Social media helps to find instant connection with colleagues that I would never otherwise meet. Practicing in small remote community limits access to professional communication and support. Sometimes [the] social media community fills the void of loneliness as well. [Early career ophthalmologist]

Connecting with others in medicine and feeling like I am part of the house of medicine has helped prevent burnout. [Late career ophthalmologist]

As someone who is very set at the same practice for more than 20 years—social media is still quite important. I use social media for many of the projects I work on. For example, I am involved in many conferences, and I will provide information/promotion of these events prior, and then post fun and interesting items after the conference—both educational—or just share fun photos from the events. [Late career ophthalmologist]

The less formal style of engagement fostered by many social media platforms was also emphasized, as evidenced by respondents' emphasis on "fun" and "creative" elements. Not surprisingly, some participants commented on social media participation favoring a younger audience—a finding that was also represented in our study as 81.9% of respondents were under the age of 45.

[Social media] is a little skewed towards students and trainees; it would be nice if more established ophthalmologists were more active on the platform. [Late career ophthalmologist]

It is a fun outlet and a way to connect and share. [Early career ophthalmologist]
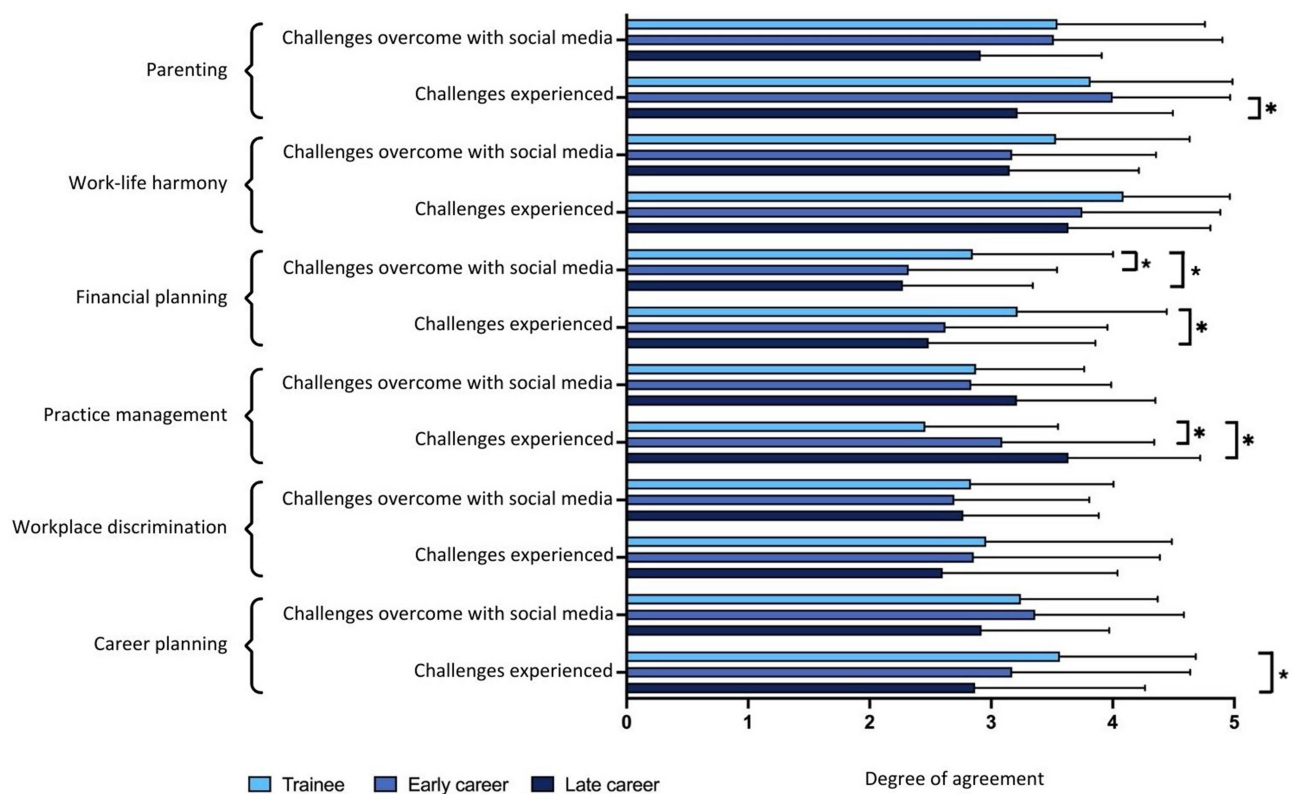
Figure 4 Challenges experienced and overcome with social media for career stage category. Degree of agreement: 1 – strongly disagree, 2 – somewhat disagree, 3 – neither agree nor disagree, 4 – somewhat agree, 5 – strongly agree. (*denotes statistical significance).

> To interact with other trainees in my field; for 'life hacks' [such as] cooking / organizing tips / ways to make life more efficient; for motivation, fashion, working out. [Trainee]

Despite the advantages of social media however, many respondents recognized its limitations, highlighting the risk of social media to cater towards less authentic, highly curated content as well as sometimes harboring negativity. Several respondents identified the value in using social media in moderation as a tool to supplement other professional outlets.

> It is not the end all be all for me; simply an outlet to occasionally connect with new folks and be aware of opportunities that may not be physically immediately around me. [Trainee]

> Although social media can provide a community and network, I feel gender discrimination is rampant on these platforms. I choose not to engage or promote platforms that are full of misinformation and harassment. [Trainee]

> I have abstained from creating a professional social media account, because I can't see myself fitting in with the highly followed doctors I see on social media. I don't think that posting a highly manicured photo that makes myself look beautiful and that makes my life appear seemingly perfect is a service to students and trainees. I wish to see more doctors being authentic on social media before I integrate it into my own career. [Early career ophthalmologist]

> It is a double-edged sword. [Late career ophthalmologist]

Discussion

While there have been studies highlighting the value of mentorship in ophthalmology residency programs,[23–25] social media offers an untapped potential for longitudinal guidance and support in dimensions that extend beyond the spheres of clinical training including practice management, financial planning, and work-life balance. Our study found significant

differences in the personal and professional challenges experienced by different demographic groups, and noteworthy ways by which social media may be harnessed to mitigate those challenges. We also noted some positive and negative themes on the impact of social media in ophthalmology.

Gender

Our study revealed women were more likely to report challenges with workplace discrimination and work-life balance compared to men, and that the former group perceived social media to be helpful in navigating through both those challenges. Evidently, the reasons for why women experience workplace discrimination and work-life disharmony more than men are multifactorial. Numerous studies have reported that compared to male physicians, female physicians were more likely to experience burnout, especially those who encounter gender discrimination, gender biases, and barriers to professional advancement in the workplace.[26–28] Moreover, while the percentage of women physicians has slowly risen over the past few decades globally, the representation of women in surgical fields has not kept pace.[29] Women medical students who are interested in surgery are known to face complex systemic challenges such as gender discrimination, concerns of inequitable career advancement, and unfavourable professional policies regarding family planning and childbearing, some of which was exacerbated during the COVID-19 pandemic when women physicians were increasingly burdened with childcare.[18,30–33] The lack of role models and female leadership representation,[34] concerns of gender pay gap,[35] and academic promotion discrepancies[36] may also dissuade women from pursuing surgical specialties, and those who do follow such career paths may experience a sense of isolation.[18,37]

Sixty-seven percent of our study participants were women. The greater use of social media among women is corroborated by a big data analysis of physicians' activity on Twitter which found that greater than 80% of users were women.[8] Recent studies have found that social media provides a contemporary vehicle for women surgeons to network, seek mentorship, and discuss strategies for achieving work-life harmony and success in the workplace.[5] The emergence of recent movements such as #WomenInMedicine, #WomenInOphthalmology, #IAmYourDoctor, #SheCanBeBoth, #MedBikini, and #ILookLikeASurgeon have also served as virtual communities of support to challenge hierarchical structures of power in medicine.[21] Our finding that women in ophthalmology are turning to online mediums for support regarding workplace discrimination and work-life harmony indeed aligns with the current body of literature.[38]

Age and Career Stage

Our study showed that trainees and younger respondents were more likely to report challenges with financial planning and practice management, respectively, compared to their more senior counterparts. Younger respondents were also more likely to turn to social media to seek guidance for practice management. Multiple studies have shown that financial literacy and practice management skills tend to be overlooked in medical education and incorporating these subjects in residency training is critical to ensuring graduating ophthalmologists have the financial competency in successfully managing a practice.[39–41] Our study found that social media offers educational opportunities related to practice management for budding ophthalmologists. Thus, professional organizations, societies, and academic institutions may consider filling this gap via virtual platforms such as social media, which are found to also be more commonly used by younger respondents in our study.

Limitations of our study include ascertainment, sampling, recall, and reporting bias which are common in survey studies. Specifically, the authors acknowledge the selection bias that is inherent to the distribution of surveys via social media channels, but this distribution method allowed for better targeting of our intended group of study—active users of social media in ophthalmology. There is also a generalizability limitation that is specific to cross-sectional studies. Despite these limitations however, our study population demonstrates heterogeneity in participant demographics, and we uncover novel insights—both positive and negative—into the usage patterns and role of social media among a diverse group of ophthalmologists. While no significant differences in social media use were seen based on race in our study, additional larger studies are needed. Future research directions include elucidating the usage patterns of social media among underrepresented individuals in ophthalmology to assess whether virtual spaces might expand access to mentorship and inclusion in the specialty. Additionally, it is important to identify strategies to diversify ophthalmology content

on social media by leveraging big data and emerging technologies such as sentiment analysis with emphasis on addressing the learning and community needs of individuals in ophthalmology.[41] In addition to personal and professional development for ophthalmologists, groups who stand to benefit from social media utilization from an education and advocacy perspective include non-profit organizations, training institutions, and patient education or support groups.

Conclusions

Our study explored the various reasons for social media use among ophthalmologists, focusing specifically on its role in overcoming personal and professional challenges during the height of the COVID-19 pandemic. For many ophthalmologists, especially women, trainees, and those early in their career stages, social media is an invaluable tool for education and community-building.

Ethics Approval

This study received ethics approval by the Newfoundland and Labrador Health Research Ethics Board (reference #: 2020.257). All participants provided informed consent, including publication of anonymized responses.

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Disclosure

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