



## ORIGINAL ARTICLE

## The impact of COVID-19 on global contact lens education



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### KEYWORDS

COVID-19;  
Contact lenses;  
Education;  
Online teaching;  
Educational  
technology

### Abstract

**Purpose:** To investigate the effects of the global COVID-19 pandemic on contact lens education around the world.

**Methods:** An online survey among contact lens educators (educator members of the International Association of Contact Lens Educators), conducted in May 2020.

**Results:** A total of 214 responses were received from 32 countries (representing a 39% response rate). Overall, 71% of respondents' institutions were closed to students to attend at that time. A majority (58%) were delivering more online education than they would normally provide. Live online lectures and discussion was the most commonly used method (68%). Zoom was the most common videoconferencing technology (56%) and the most popular social media platform for communicating with students was WhatsApp (48%). About half (54%) were running online exams or assessments, 24% holding these for students to attend in person, and 27% were conducting practical sessions. Two in three (68%) said they would conduct more than 50% of their total teaching online by the end of 2020, and 12% anticipated 90% or more of their teaching would be online. Of all respondents, 74% expressed interest in an online platform delivering educational resources.

**Conclusion:** The COVID-19 pandemic has had a major impact on the teaching of contact lenses, as educational institutions worldwide move to online delivery. Major challenges remain with online contact lens education, with respect to teaching practical skills, student assessment and interaction. More support will be needed for educators to meet these challenges as the recovery from the pandemic continues.

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## Introduction

The effects of the COVID-19 pandemic continue to be felt in many aspects of everyday life. Education has been especially affected with reports of institutions around the world closed to students and moving towards online teaching. A review of the socio-economic implications of the pandemic identified education as one of the service provision sectors most affected.<sup>1</sup>

In the contact lens field, surveys in April 2020 investigated the impact of COVID-19 on academic activities in optometry and on ophthalmology training.<sup>2,3</sup> A majority of optometry educators in India (94%) had switched to e-learning mode, with most teaching-learning and assessment carried out using video conferencing tools, dedicated educational portals and social media apps.<sup>2</sup>

In ophthalmology, before the pandemic nearly half of educators (48%) did not use any e-learning.<sup>3</sup> During the COVID-10 pandemic, there was a statistically significant increase in the use of all e-learning alternatives.

Today's students of contact lens practice will be delivering independent patient care in the near or medium term, so it is important to consider the effects the pandemic will have on their education. This survey was conducted to determine the current impact of COVID-19 specifically on contact lens education, and how educators and institutions plan to adapt.

## Methods

An online survey of 28 closed and open questions was sent to 546 contact lens educators who were educator members of the International Association of Contact Lens Educators (IACLE), in May 2020. The survey was conducted in English and Spanish, with translations into Simplified Chinese, Korean and Bahasa provided as a guide to completion.

Questions covered demographic information about respondents and their institutions, the current situation in light of COVID-19, technology and resources used, and future education provision.

The survey was sent via e-mail with a covering letter and links to Survey Monkey. Completed questionnaires were received between 11 and 31 May 2020. Responders could answer the survey only once. Participation in the survey was voluntary and without reimbursement.

## Results

A total of 214 responses were received from educators in 32 countries by the cut-off date, representing a 39% response rate. Results were analysed by region and for countries with the highest IACLE membership (China and India), as well as on a global basis.

Teaching was the principal activity for a majority of respondents (65%), with nearly one in three (29%) working mainly in clinical practice. About three-quarters (73%) said their principal location was a university/college and others cited clinical practice (13%), industry (8%) or hospital settings (5%).

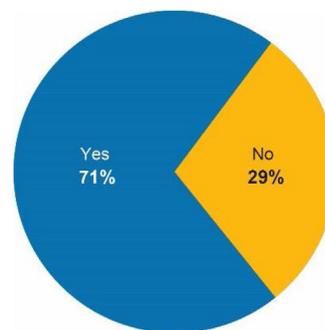


Fig. 1 Institution currently closed.

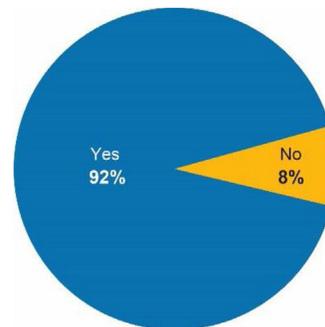


Fig. 2 Expected to open in 2020.

## Current education provision

Globally, 71% of the educators reported that their institutions were currently closed to students to attend in person (Fig. 1), but most (92%) expected their institution to be open to students to attend before the end of 2020 (Fig. 2).

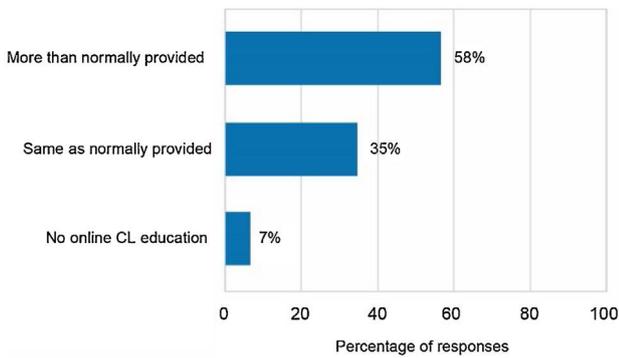
However, there were wide differences between countries depending on the progress of the pandemic at that time. In Americas and in the Europe / Middle East – Africa (EMEA) region, a high proportion of institutions (93%) were closed when the survey was conducted. In the Asia-Pacific (APAC) region, the proportion was similar to globally in India (92%), but only 41% in China were closed to students at that time.

Almost all institutions in EMEA (97%) expected to open by the end of 2020, compared to 76% in APAC countries other than China (93%) and India (94%), such as Korea, Malaysia and Indonesia. One institution in China had not been open at all in 2020, and the latest opening date anticipated at that time was February 2021 for a university in Colombia.

A majority of educators responding (58%) were already delivering more online education than they would normally provide and only a small proportion (7%) were providing no online education at all (Fig. 3).

When questioned about lecture formats, most were using live lectures to deliver online education, especially when combined with discussion (Fig. 4). PowerPoint and recorded lectures were used by about one in three educators. Very few were not delivering any online lectures (3%).

Just over half of educators (54%) said their institutions were running online exams or assessments (Fig. 5). Only about one in four were holding these for students to attend in person (24%) or conducting practical sessions (27%).



**Fig. 3** How much online education is your institution currently providing?

All EMEA respondents were providing some form of online education and these educators were likely to be teaching more online already (79%). In this region online student exams and assessments were also more commonly running (79%). Practical sessions and clinics were less likely to be taking place (both 17%), reflecting the high proportion of institutions in the region that were closed to students at that time.

### Use of technology

More than three in four respondents (77%) were currently using video conferencing technology such as Zoom, WebEx

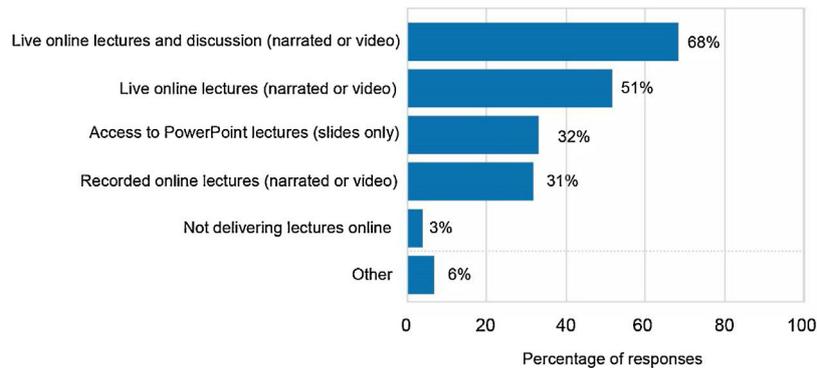
or others in their teaching, and nearly half (43%) were using an online teaching platform (virtual learning environment) such as Canvas or Blackboard (Fig. 6). Only 9% were not using any of this form of technology.

When asked about specific platforms, the most popular was Zoom – used by more than half of educators (56%), followed by WeChat, which is a Chinese platform similar to WhatsApp (Fig. 7). Google Classroom, Microsoft Teams and WebEx were the next most commonly used. One in five employed a variety of other platforms, principally GoToMeeting, QQ (a Chinese version of Facebook) and WhatsApp.

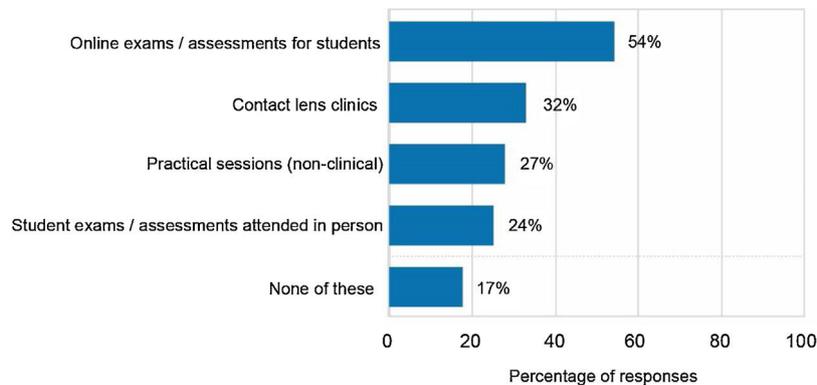
Nearly half of respondents (48%) were using the social media platform WhatsApp to communicate with students, followed by 36% using WeChat (Fig. 8), and 13% used no social media for this purpose.

When educators were questioned about their social media preferences for personal rather than professional use, WhatsApp (56%) and Facebook (48%) were most popular, followed by YouTube (42%) and WeChat (36%). While preferences overall were similar to those for communicating with students, LinkedIn, Instagram and Twitter were more widely accessed for personal use.

Online teaching technology and social media platforms differ around the world and are influenced by availability in individual countries. In China, WeChat was by far the most used for professional and personal purposes, at 68% and 84% of respondents respectively, since some platforms are not accessible.



**Fig. 4** How is your institution currently delivering contact lens lectures to students online?



**Fig. 5** Is your institution currently running any of the following?

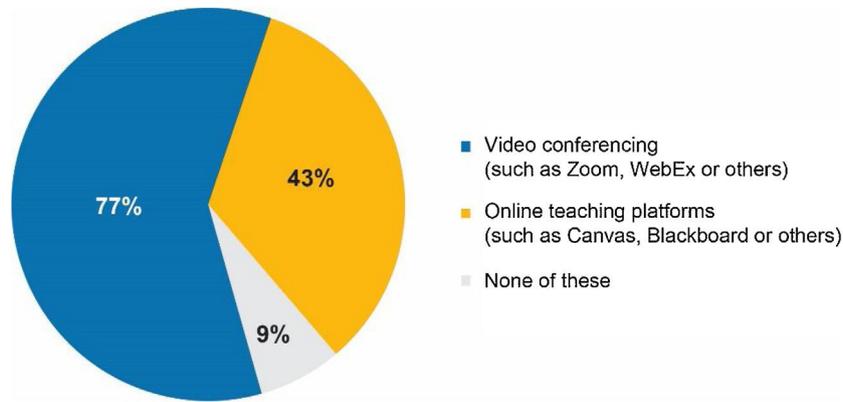


Fig. 6 Are you currently using the following types of technology in your contact lens teaching?

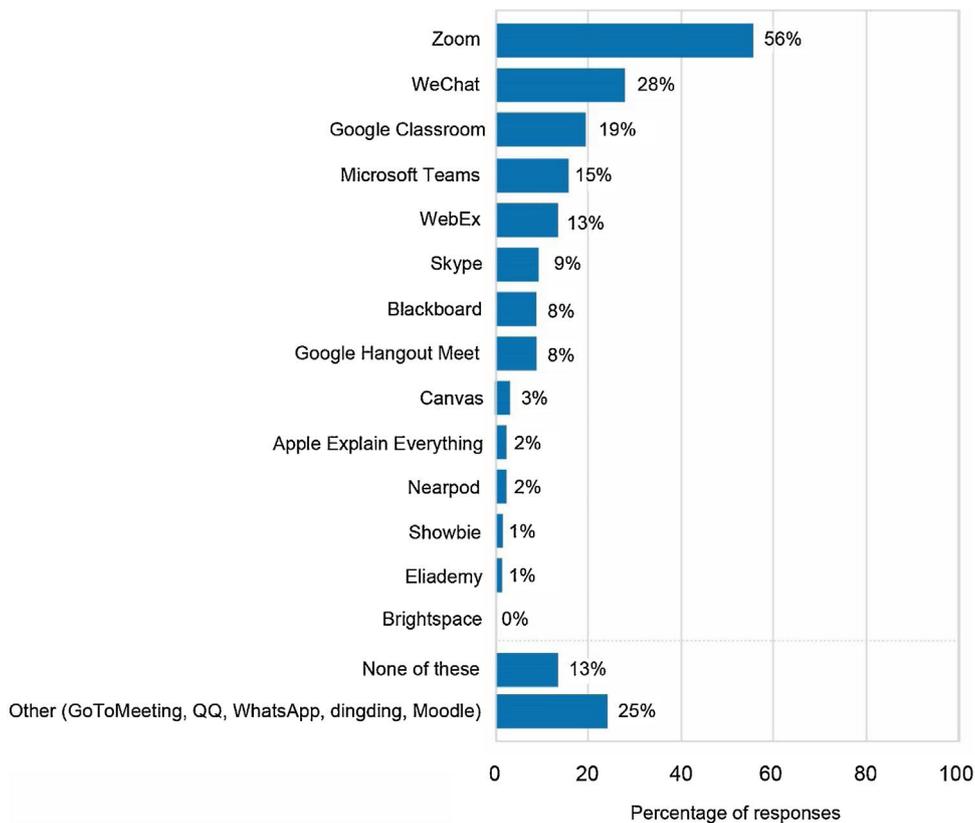


Fig. 7 What video conferencing or online teaching technology are you currently using to deliver contact lens education to students?

### Education before and after COVID-19

Asked about their contact lens teaching prior to COVID-19 restrictions, the largest proportion of educators (36%) estimated that online education had made up 10% or less of their total teaching (Fig. 9). One in five responding said that none of their teaching was conducted online prior to the pandemic.

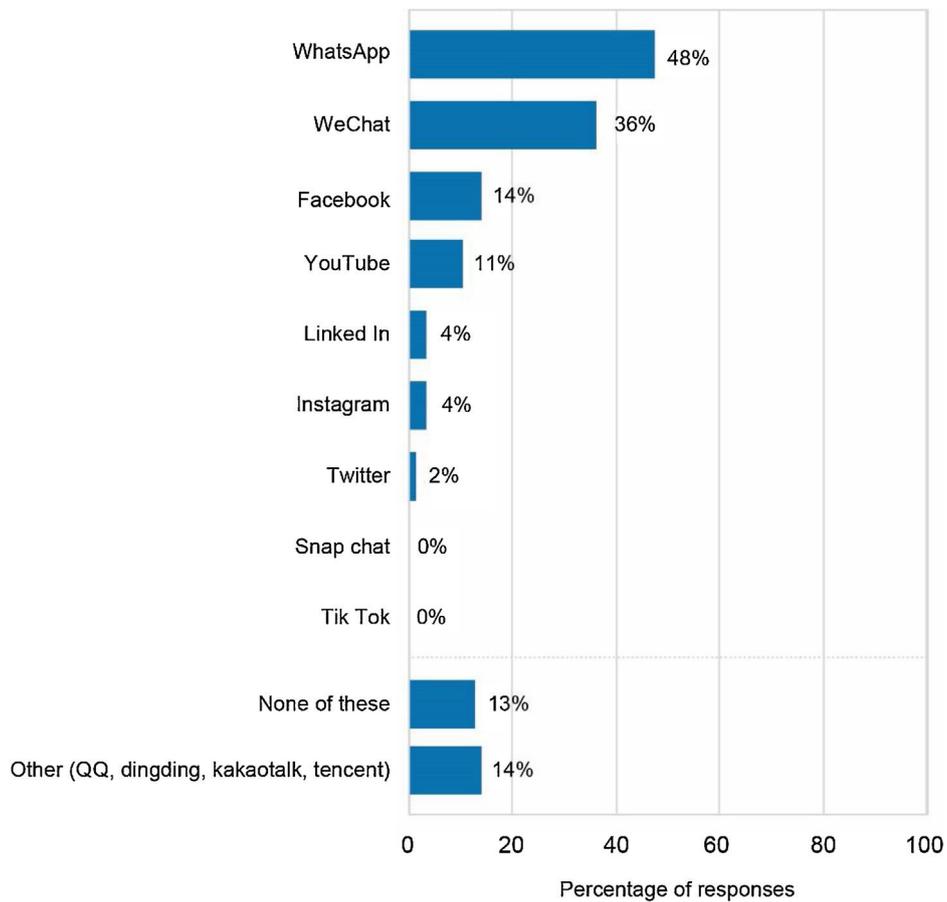
When questioned on how much of their teaching would be online by the end of 2020, 68% of respondents estimated they would be conducting more than half of their total teaching

online and 12% expected that 90% or more of their teaching would be online (Fig. 10).

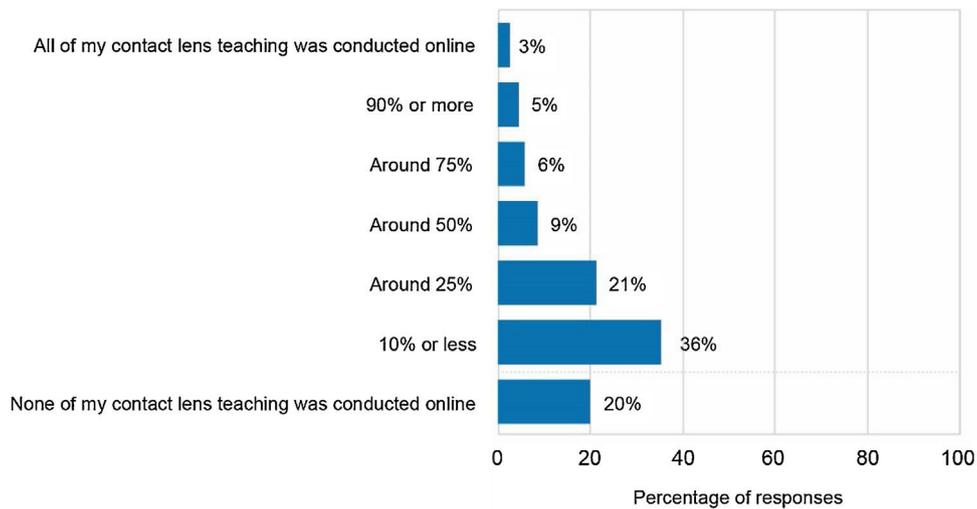
While the move towards more teaching online was general across all regions, some were starting from a higher base. In the Americas, 44% were already conducting around 75% of their teaching online.

### Use of resources

Among the resources that educators were currently employing to teach their students online were the IACLE contact



**Fig. 8** Which of the following social media do you currently use to communicate with your students?



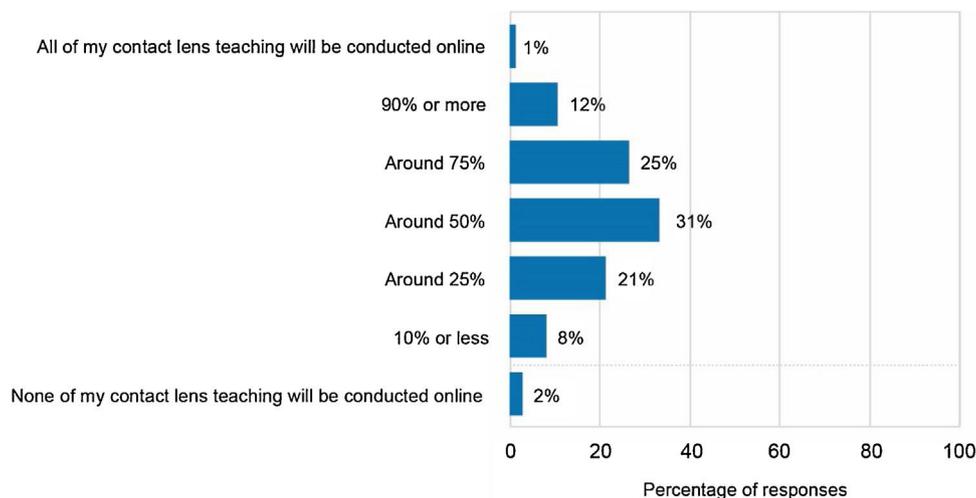
**Fig. 9** What percentage of your total contact lens teaching would you estimate was conducted online prior to COVID-19 restrictions?

lens course (77%), case reports (46%) and image galleries (44%). COVID-19 resources and updates (29%) and monthly research updates (26%) were also used.

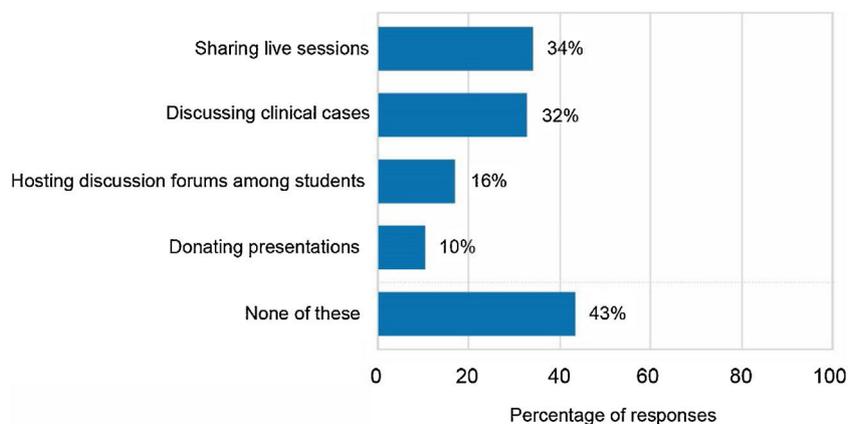
Some educators were collaborating across institutions and with colleagues (Fig. 11). About one in three were sharing live sessions (34%) and a similar proportion (32%) were

discussing clinical cases together. Only 10% were donating presentations to other institutions or colleagues, and 43% were not collaborating in any of these ways.

Teaching and assessing contact lens clinical skills is challenging in the absence of clinic facilities and practical sessions. One in four of the educators were not providing



**Fig. 10** What percentage of your total contact lens teaching would you estimate will be conducted online by the end of 2020?



**Fig. 11** Are you currently collaborating with other institutions or colleagues in any of the following ways?

contact lens practical training in any form, and a similar proportion (22%) were not conducting student assessments at the time of the survey.

More encouragingly, 49% were using an online teaching platform or virtual learning environment for assessing their students.

The survey also reveals a variety of challenges to online provision of contact lens education, from the difficulty in measuring learning outcomes and monitoring students, to limited interaction and feedback (Fig. 12). Unstable or limited internet connectivity was also an issue for a substantial proportion of educators (41%).

### The future of contact lens education

Most respondents expected to have to change their teaching in the post-COVID situation and in varying ways (Fig. 13). The most common – cited by 76% of educators – was to provide more online lectures, followed by new methods to deliver practical education (63%). More than half of educators were also looking at introducing new teaching platforms and more online assessment methods.

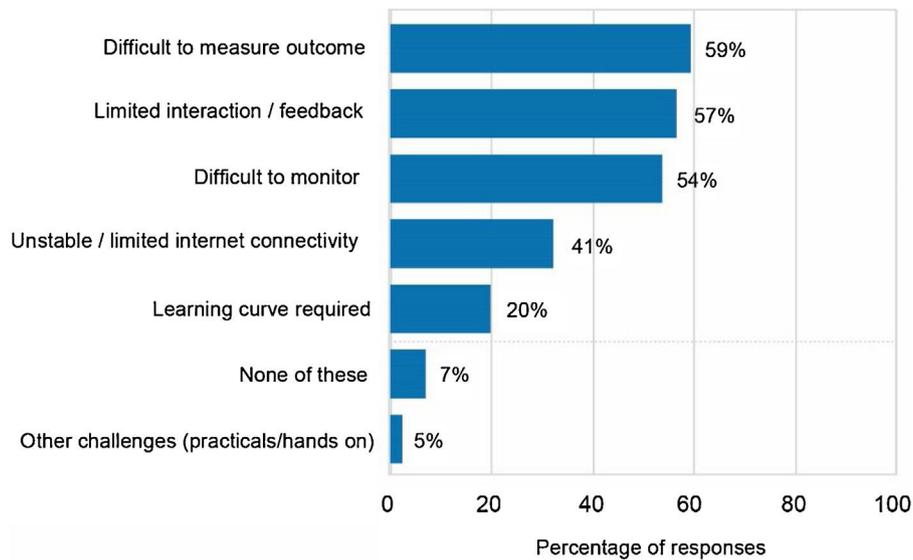
Asked about specific resources for future use, there was support for a range of online resources. Notably, 74% of the educators would be interested in using an online platform delivering educational resources.

More webinars, discussions and debates, videos, case reports and images were popular choices to aid future teaching, along with methods for delivering and assessing practical/ clinical concepts remotely. There was also support for more collaboration between institutions in different regions and countries.

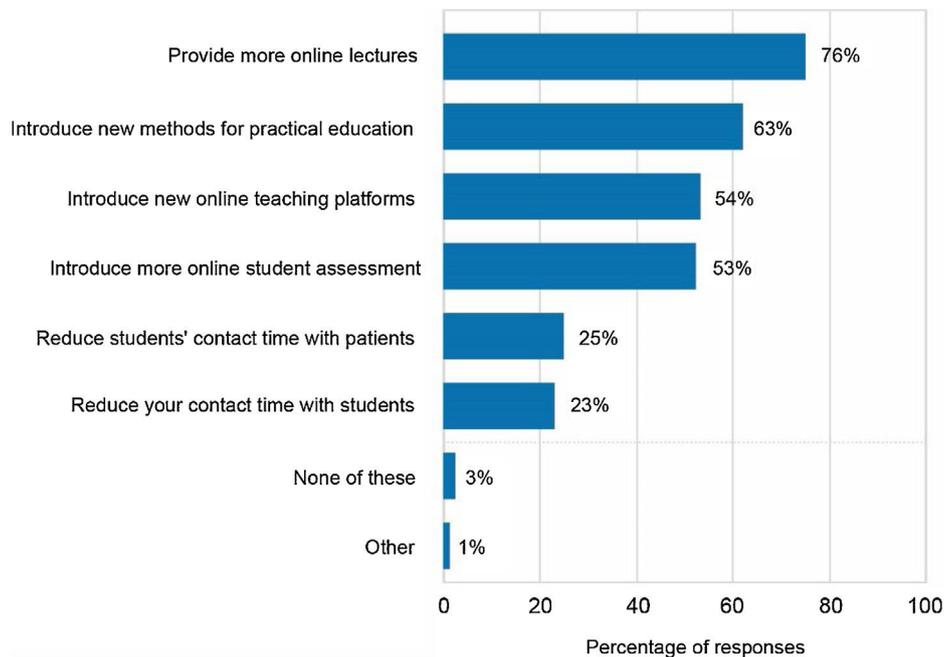
### Changing practices

Re-opening institutions will require education providers to introduce new measures to minimize the spread of the virus. Questioned on precautions needed for students to attend in person, 90% of respondents expected to be using personal protective equipment (Fig. 14).

Hand sanitization and disinfection of contact lens trial sets and equipment were widely anticipated. Social distancing and use of slit-lamp shields were also envisaged. Reduced patient contact, anticipated by 65% of the educators, will challenge the teaching of practical skills and assessment.



**Fig. 12** What are the challenges you currently face in providing online education?



**Fig. 13** How do you plan to adapt your contact lens teaching in future in light of the COVID-19 pandemic?

Almost all the educators expected to change their advice to students in light of the pandemic (Fig. 15); 93% said they would place greater emphasis on hand hygiene and lens care procedures. There was support for additional hygiene measures that COVID-19 had highlighted – keeping unwashed hands away from the face and temporarily ceasing lens wear when unwell – and a move towards recommending daily disposable lenses.

Overall, 18% of the educators would anticipate a change towards recommending spectacles rather than contact lenses. But this figure masks some substantial regional differences: only 4% in Americas would change their advice to students in this direction, but in China 29% expected their recommendation to change in favour of spectacles.

## Discussion

Conducted in May 2020 when countries around the world were at different stages in the COVID-19 pandemic, this survey reveals its current impact and the future implications for global contact lens education. To the authors' knowledge, this is the first study specifically to investigate the impact on teaching of contact lenses.

A majority of institutions were closed to students to attend in person at the time of the survey. Most anticipated opening to students by the end of 2020, although expectations varied by region and would clearly depend on the progress of the pandemic in the months or years to come.

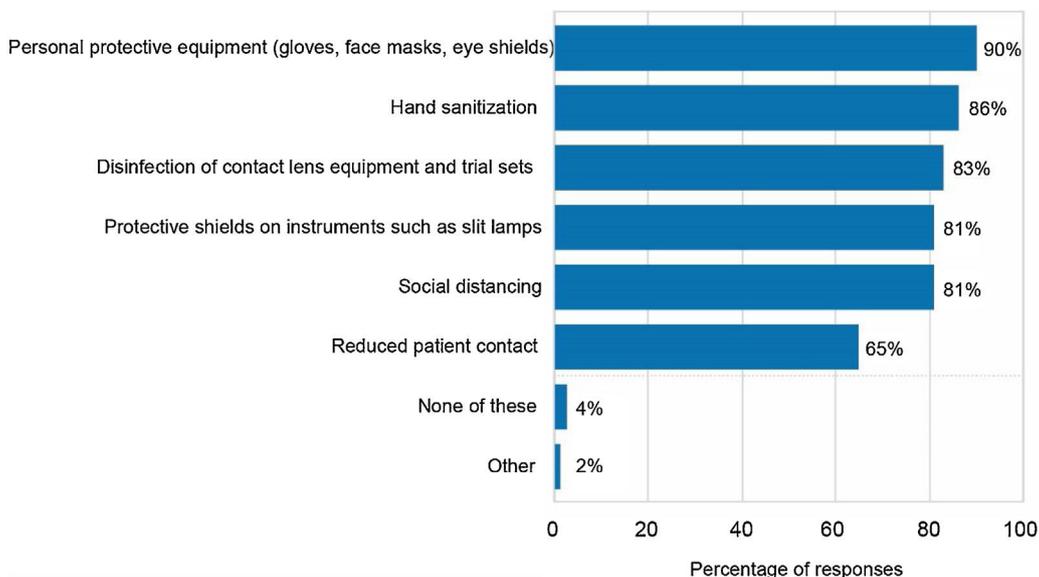


Fig. 14 What precautions do you expect to take when students attend your institution in person?

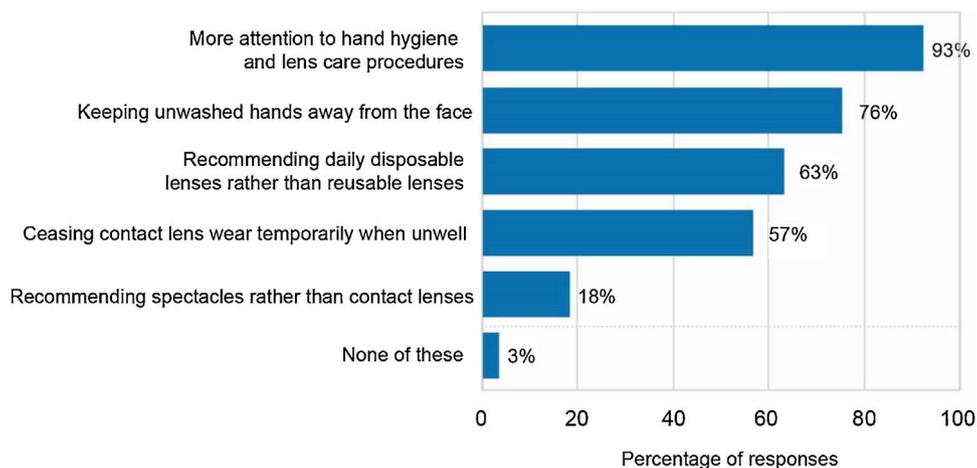


Fig. 15 Do you expect to change your advice to students towards any of the following in light of the COVID-19 pandemic?

Contact lens educators have adapted their teaching towards more online education in light of the pandemic and anticipate substantial increases in the proportion of their total teaching time conducted online, representing a major shift in the educational landscape. Since education delivery was already evolving prior to COVID-19, changes that are currently occurring seem likely to lead to permanent differences in the way contact lenses are taught in future.

A study in India found that the COVID-19 pandemic was proving to be a ‘constructive disruptor’, giving an opportunity for restructuring the present conventional, classroom-based educational system.<sup>1</sup> A worldwide survey into ophthalmology-related education concluded that the pandemic may change traditional teaching practices and provide new educational opportunities.<sup>2</sup> In the US, the pandemic is said to have been a driving force for technical innovations in optometric education, with moves towards competency-based programs and patient simulations.<sup>4</sup>

However, the present survey reveals that major challenges remain with online education delivery in contact

lenses, particularly with respect to teaching practical skills, student assessment and interacting with students. More resources and support will be needed to meet these challenges as the recovery from the pandemic continues.

IACLE has introduced its own learning management system for contact lens educators that offers an online student trial exam, interactive case reports, tools to support practical skills and recorded webinars, alongside its teaching and learning materials. Students and educators took part in a series of webinars that identified areas for future study, such as how to encourage interaction and engagement.

Greater collaboration and connectivity might also help educators and students adapt to new ways of teaching and learning. Two recent examples illustrate the potential for facilitating such initiatives within countries and regions: in Europe, educators and students from four institutions across Germany joined together for live online lectures; and in Latin America, IACLE is collaborating with a university in Puerto Rico to support contact lens teaching at the Dominican Republic’s first optometry school.

In education – as in practice – it is widely accepted that protective measures will be necessary to restore in-person contact. Industry can be reassured that educators’ advice to students on contact lenses is directed much more towards increasing hygiene measures than changing their recommendation in favor of spectacles.

## Conclusion

The COVID-19 pandemic has had a major impact on educational institutions worldwide that are teaching the contact lens practitioners of the future. As the contact lens community strives to bring the focus back to contact lenses, the results of this survey suggest the way forward for education, and consequently for contact lens practice and for the industry, in a post-COVID world.

## Disclosures

IACLE receives educational grants from the following companies for its educational activities: Alcon, CooperVision; Johnson & Johnson Vision; Bausch and Lomb; and Euclid.

## Declarations of interest

The authors have no conflicts of interest to declare.

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