

# Impact of ophthalmic webinars on the resident's learning experience during COVID-19 pandemic: An insight into its present and future prospects

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**Purpose:** To analyze the impact of ophthalmic webinars on the resident's learning experience during the COVID-19 pandemic (CP). **Methods:** This cross-sectional nationwide study was carried out for 1 month during CP and included a total of 382 ophthalmic residents. A questionnaire was sent through various social media platforms. **Results:** Residents expressed a decline in their clinical exposure (74%; 220), thesis work (58%; 218), and acquisition of the knowledge and skills (42.5%; 161) during CP. Benefits of webinars as perceived by the residents included gain in additional knowledge (77%; 286), feedback on queries (56%; 209), access to multiple speakers (50%; 191), and topics (30%; 110). Nearly 75% (291) of residents endorsed webinars as good to the very good academic tool, and 54% (202) preferred to continue attending webinars in the post-CP phase. However, connectivity/download/data issues (54%; 200) followed by loss of personal touch (53%; 188), lengthy or irrelevant topic (37%; 134), and poor transmission quality (33%; 121) were major deterrents against the webinar. **Conclusion:** The current study generated overall mixed responses from the ophthalmic postgraduate residents in favor of webinars. In the present format, webinars bear enormous potentials to supplement the traditional learning tools by providing uninterrupted learning experiences. However, they are still limited by their pedagogical and technical issues.

**Key words:** COVID-19 pandemic, impact, ophthalmology, residents, survey, webinar

Coronavirus disease (COVID-19) was declared pandemic (CP) by the World Health Organization on March 11<sup>th</sup>, 2020.<sup>[1]</sup> Subsequently, a nationwide lockdown was enforced in India from March 24<sup>th</sup>, 2020, which continued for 2.5 months till June 8<sup>th</sup>, before routine services started to resume.<sup>[2]</sup> Concern exists regarding the impact of CP on the professional education of residents across all specialty subjects.<sup>[3-8]</sup> Ophthalmology residency training programs (RTP's) have been particularly affected due to the suspension of the routine clinical practices and elective surgeries since the lockdown was imposed.<sup>[9,10]</sup>

Technology has now removed the barriers of time, space, and boundaries.<sup>[11]</sup> Since the countrywide lockdown was enforced, medical residents have been inclined to opt for various online learning tools in the wake of progressive disturbing hospital routines and decreasing learning opportunities. In particular, interest in webinars (online synchronous and real-time web-based seminar) has grown considerably during CP and was fairly palpable among the ophthalmology residents.

While medical activities were reduced to only emergency and nondeferrable procedures during CP, webinars continued to provide learning support to ophthalmic residents without compromising their safety.<sup>[12]</sup> Hence, it seems prudent to explore the potential of its impact on ophthalmology RTP in the background of the present health crisis.

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Till date, studies available in the literature are mostly based on the impact of CP on post-graduate RTP's.<sup>[3-9,11]</sup> While sporadic reports exist, studies that directly evaluated the impact of webinars on ophthalmic RTP on a nationwide scale during CP are not available, to our knowledge. Hence, through this cross-sectional nationwide survey, we attempted to analyze the impact of webinars on ophthalmic postgraduate learning experiences and also tried to decipher if they could contribute substantially to the traditional teaching methodology.

## Methods

This cross-sectional nationwide survey was carried out at a tertiary care center of north India from May 14<sup>th</sup>, 2020 to June 14<sup>th</sup>, 2020 during CP. It included 382 ophthalmic residents from medical colleges under the regulatory authority of the Medical Council of India. A self-standardized objective structured questionnaire [Additional File 1] containing 25 multiple-choice questions was circulated to the residents through various social media platforms by using an online cloud-based software-generated link. Attempts were made to reach residents from medical colleges of all 28 states and eight union territories. Recipients, who initially did not respond,

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received an automatically generated reminder within 72 h. All the partial responses were automatically rejected for entries in this survey. The responses were tabulated for data analysis. The protocol was approved by the institutional board of ethical committee and adhered to the tenets of the Declaration of Helsinki.

### Results

The trend of responses received from the residents during CP is summarized in Table 1. A total of 102 government and 127 private medical colleges participated in this study. In all, a total of 382 residents were enrolled in the survey and a 100% completion rate was recorded. On average, the time to complete the survey questionnaire was 4 min and 31 s. About 65% (248) responses were from seven states and union territories. On average, 8.65 (range 1–25) residents skipped answering ≥1 question. The majority of the residents were females (71%; 267) who were either in their second or final year of RTP (nearly 75%; 281) and were from government medical colleges (59%; 219).

The overall impact of CP on RTP is summarized in Table 2 and Fig. 1. The decline in the clinical exposure, thesis work, and acquisition of knowledge and skills was recorded in 74% (280), 58% (218), and 42.5% (161) of the respondents, respectively. Nearly 49% (183) residents felt that they got enough time for self-study.

The overall impact of webinars on RTP during CP is summarized in Table 3 and Fig. 2. The majority of the residents were already used to attending intradepartmental webinars (57%; 214) or online meets through Skype/Zoom/Google (66%; 250) during the pre-CP-phase. Nearly 28% (104) of residents had never attended webinars nor had they heard about it ever before. Up to 70% (267) of the residents attended at least 5–10 ophthalmic webinars. Nearly 77% (286) residents admitted that they substantially gained knowledge from the topic concerned, 56.2% (209) queries were answered, and 50% (191) could interact with the speaker. Nearly 30% (110)

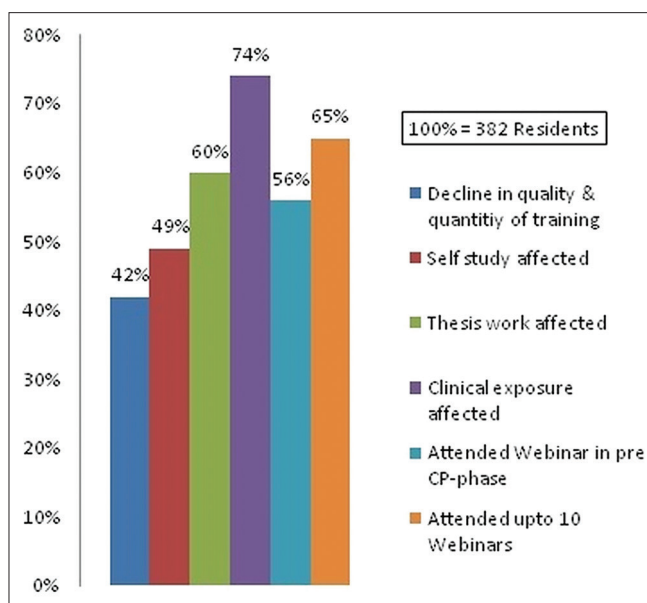
residents could access several speakers and topics from the same platform while simultaneously enjoying the advantage of homely comfort. Common technical issues related to the webinars were connectivity issues (54%; 200), followed by poor audiovisual quality (33%; 121), link-related issues (23%; 85), feedback issues (13%; 45), download/data issues, and odd transmission hours (<10%; <38). Common pedagogical issues with the webinars were the absence of personal touch (53%; 188), followed by too lengthy topic (37%; 134), lack of stepwise approach (26%; 94), irrelevant and non-understandable topic or monotony (<10%; <38). Distractions owing to time constraints were also felt by a few (<10%; <38). Among the subspecialty topics, the cornea (30%; 107), followed by glaucoma (28%; 97), were recorded as the most popular topics among the residents. Nearly 58% (211) residents experienced high mental stress primarily due to the difficulty in time management.

**Table 1: Overview of the responses**

Variables	Number (%)	Skipped (n)
Year of post-graduation		5
1 <sup>st</sup> Year	96 (25.46)	
II <sup>nd</sup> Year	127 (33.69)	
III <sup>rd</sup> year	154 (40.85)	
Gender:		2
Female	267 (70.26)	
Male	113 (29.74)	
States: Total	19/28 (67.85)	24
Union territory: Total	03 (37.50)	
Type of College		5
Government	219 (58.09)	
Private	136 (36.07)	
Trust	19 (5.04)	
Charitable	03 (0.8)	

**Table 2: The overall impact of COVID-19 pandemic on the resident's training program**

Variables	Number (%)	Skipped (n)
Decline in acquisition of academic knowledge and skills		2
>50% decline	161 (42.37)	
Upto 50% decline	86 (22.63)	
Upto 25% decline	68 (17.89)	
No decline	65 (17.11)	
Self-study schedule affected:		5
Getting more time		
Distraction, as no faculty/peer interaction	183 (48.54)	
Getting less time	53 (14.06)	
No change	34 (9.02)	
Thesis work affected		6
Getting no cases	218 (57.98)	
Not affected	97 (25.80)	
Thesis submitted	38 (10.11)	
Clearance issues	13 (3.46)	
Clinical exposure affected		3
>50% decline	280 (73.88)	
Upto 50% decline	62 (16.36)	
Upto 25% decline	27 (7.12)	
No decline	10 (2.64)	



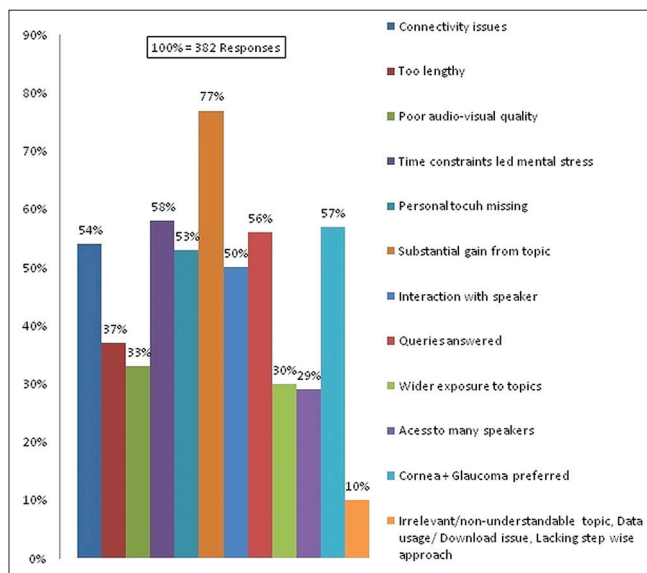
**Figure 1: Breakdown of responses by the overall impact of COVID-19 pandemic on the resident's training program**

**Table 3: The overall impact of webinars on the resident's training program**

Variables	Number (%)	Skipped (n)
Attended webinar before pandemic:		2
Infrequently	214 (56.23)	
Never	86 (22.63)	
Frequently	62 (16.32)	
Not aware of such	18 (4.74)	
Online meets (Zoom, Skype, Google) being organized in dept:		0
Yes	250 (65.45)	
No	88 (23.04)	
Have planned to implement	44 (11.52)	
Number of webinars attended during a pandemic:		1
Up to 5	155 (40.68)	
Up to 10	112 (29.40)	
Up to 20	64 (16.80)	
>than 20	31 (8.14)	
None	19 (4.99)	
Technical problem faced:		0
Connectivity issues	200 (53.91)	
Data usage	37 (9.97)	
Upgrading system	11 (2.96)	
All the above	92 (24.80)	
Others: Irrelevant topic, Monotony, audiovisual delink, time management issue	24 (6.47)	
Substantial gain from topic over preexisting knowledge:		7
Yes	286 (76.27)	
No	89 (23.73)	
Interaction with speaker:		0
Yes; Through chat	191 (50)	
Yes; Through video	144 (37.70)	
No	47 (12.30)	
Queries answered?		9
Yes	209 (56.03)	
Partly	123 (32.98)	
No	41 (10.99)	
Likings:		9
Wider exposure to topics	111 (29.76)	
Access to many speakers	107 (28.69)	
Homely comfort	105 (28.15)	
Discussions and interactions	50 (13.40)	
Disliking:		13
Too lengthy	134 (36.31)	
Poor audiovisual quality	121 (32.79)	
Link issues	85 (23.04)	
Difficulty to understand	29 (7.86)	
Missing:		23
Personal touch	188 (52.37)	
Stepwise approach	94 (26.185)	
Feedback	45 (12.53)	
Others: Odd transmission time, Not-downloadable, discussion, not PG-level oriented, distracting	26 (7.24)	
Mental stress during webinars:		15
Hectic schedule; Time constraints	211 (57.34)	
Never	113 (30.71)	
Stressful; Latest advanced studies	43 (11.68)	
Preferred subspecialty:		25
Cornea	107 (29.97)	
Glaucoma	97 (27.175)	
Lens and Refractive Surgery	55 (15.41)	
Neuro-ophthalmology	41 (11.48)	
Squint and Oculoplasty	33 (9.24)	
Retina and Uvea	14 (3.92)	

**Table 4: The level of acceptance of webinars modules as compared to the other learning module**

Variables	Number ( )	Skipped (n)
Webinar Vs. Classroom:		6
Classroom teaching preferred	184 (48.94)	
Both should run parallel	162 (43.09)	
Prefer webinar	30 (7.98)	
Webinar Vs. Live conference:		0
Both should be balanced	182 (47.86)	
Live conference is better	130 (34.22)	
Webinar saves time to travel	68 (17.91)	
Webinar Vs. Social media Platform (Youtube, Podcast, Slide-share, etc):		8
Both offer different content	173 (46.26)	
YouTube, more flexible	103 (27.54)	
Webinar, more interactive	98 (26.20)	
Grade webinar as an academic tool:		7
Good	176 (46.93)	
Very good	115 (30.67)	
Excellent	53 (14.13)	
No advantage	31 (8.27)	
Would like to attend a webinar in the post-COVID phase:		4
Only if, exclusively designed for residents	202 (53.44)	
Occasionally	122 (32.28)	
Always	45 (11.90)	
Never	9 (2.38)	

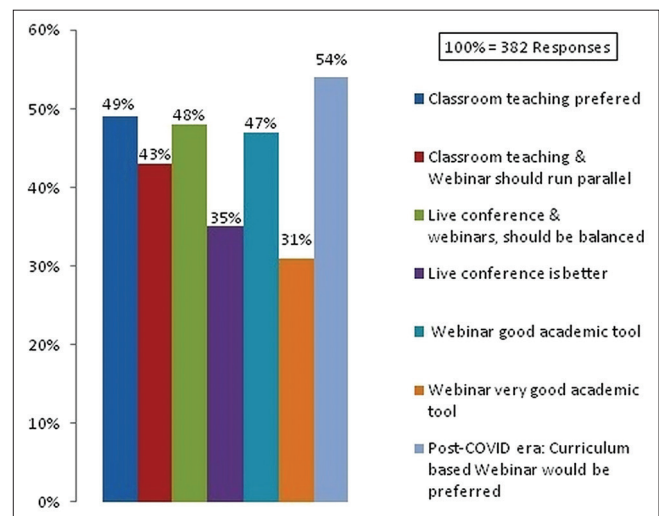


**Figure 2: Breakdown of responses by the impact of webinars on the resident's training program**

The level of acceptance of webinars as compared to the other learning module is summarized in Table 4 and Fig. 3. In order of frequency, nearly 75% (291) residents graded webinars as good to the very good academic tool, 54% (202) preferred to attend webinars in post-CP-phase provided they are exclusively designed for the residents. Besides, 49% (184) of residents still preferred face-to-face classroom teachings, and nearly 43% (162) felt that webinars should run parallel with face-to-face classroom teachings.

**Discussion**

This pan-Indian questionnaire-based study was primarily envisaged to analyze the impact of webinars on ophthalmology



**Figure 3: Breakdown of responses by the level of acceptance of webinars as compared to the other learning modules**

RTP's during CP. We also tried to decipher whether webinars contribute substantially to the traditional teaching methodology. At the time of writing this manuscript, studies that directly evaluated the effect of ophthalmic webinars on RTP were limited, to our knowledge.

The preponderance of female residents (71%) and responses from government medical colleges (58%), as observed in this study, fairly resemble the result of another recently reported pan-Indian study.<sup>[9]</sup> Nearly 75% of the residents who participated in this study were from the second or final year-level of their RTP, made this survey more meaningful in that the residents at a higher training-level require more hands-on surgical training and more study subjects to achieve a reasonable sample-size for completion of their thesis

project. They, thus, constituted the majority, for whom a vital part of the professional learning phase was disrupted amid CP. A miserable decline in clinical exposure (74%), thesis work (58%), and acquisition of the knowledge and skills (43%), clearly indicate the quantum of their perceived academic loss, which corresponds well with other recently reported studies.<sup>[6-9,13]</sup>

Rapid adaptability to transition from the existing medical education program towards online format in residents during CP was a remarkable feature of this study. A large number of residents were already used to various departmental online academic activities, which perhaps helped them acclimatize rapidly to the surge of webinars with greater ease. Nearly 70% of the residents attended at least 5–10 webinars and 25% attended  $\geq 20$  webinars during CP; this provided enough evidence to support their growing interest in webinars.

Although not overwhelming, this nationwide survey generated an overall mixed positive response from ophthalmic postgraduate residents in favor of webinars. The noteworthy positive aspects as perceived by the residents that included the gain in additional knowledge regarding the topic presented (nearly 77%), satisfaction regarding their direct interaction with the speaker and queries were properly answered (nearly 50%), and ease of accessibility to multiple experts or topics (nearly 30%). They also considered webinars a good and very good academic tool (nearly 77%), definitely served content mastery evidence in support to gain in their meaningful learning experiences.

On the contrary, downsides were mostly limited to the resource/technical barriers, pedagogical aspects, and time framings or time management issues. Among these, the noteworthy to be mentioned were loss of connectivity (54%), link or download issues as well as poor audiovisual transmission quality (25–35%), lack of personal touch with the speakers (53%), lengthy or irrelevant topic selection (37%), lack of step-wise approach, distractions due to hectic schedule of COVID-duties, and monotony (25–30%), that requires urgent formulation in strategies to implement necessary corrective measures. Though there is no relevant study available till date, few recently published studies based on the impact of CP on postgraduate as well as under-graduate RTP reported that, a webinar could be a viable alternative learning tool to generate meaningful learning experiences. However, in its present format, it is still not without its inherent shortcomings.<sup>[9,10]</sup>

Nearly 54% of the residents in this study preferred to continue attending webinars even after CP-restrictions are lifted, which gives a fair idea of its acceptance among the residents at its present level. However, we need to overcome the aforementioned challenges to achieve the best outcome. Various subcommittees formed under the directives of national-level postgraduate academic committees (like, AIOS-ARC, YOSI, i FOCUS, WOS) should come forward to prepare the roadmap of interactive web-based training for the residents.<sup>[14]</sup> It was also suggested by a few authors that these subcommittees should be constituted comprising of most dynamic academicians of medical colleges in view to make the webinars more effective.<sup>[11,12]</sup> From the pedagogical point of view, we emphasize the need for well-planned webinars that are exclusively meant for the residents and have clearly defined learning objectives based on their existing curricula,

maintains synchronous communication based on interaction and formative feedback, have convenient transmission hours and preset time framings, and have no resource barriers or technical constraints. Besides, we suggest, to involve more information and technology (IT) sectors that would ensure better integration and learning experiences. The inclusion of on-demand lectures based on the topics selected by the resident as well as simulating video-based lectures has also been suggested by several authors.<sup>[9,11,14-17]</sup>

A high stress-level among the residents was although an important collateral finding of this study, is currently beyond the scope of this discussion, as it may be multifactorial in origin and not directly related to the effect of webinars. However, high stress-level might induce inattention in an individual that can have long-term disastrous psychological implications.<sup>[9]</sup>

This study may be limited in that this was not a comparative study, gain analysis was not performed to know the baseline knowledge, and the questionnaire was self-standardized. Future research is encouraged that compares the impact of webinars and classical face-to-face teachings using a standardized questionnaire along with additional inclusion of fellows and residents from other courses (like Diplomate of the National Board of Examination, Fellow of the Royal College of Surgeons, etc), to establish the validity of this study.

The major strength of this study was that this was probably the first nationwide study envisaged to analyze the impact of webinars on ophthalmic postgraduate residents. Further, the data were collected during the peak CP-lockdown period when face-to-face RTP's were maximally affected, responses had no recall bias that showed 100% completeness, and the survey was kept open for a reasonable period of 1 month to ensure maximum overall participation.

## Conclusion

To conclude, the current nationwide survey generated an overall mixed positive response from ophthalmic postgraduate residents in favor of webinars. Ophthalmic webinars in its current format might not be able to replace or substitute the classical face-to-face teaching module, but the interest in webinars have grown considerably. It bears enormous futuristic potential that can deliver uninterrupted learning experiences, attractively and innovatively. The need of the hour is that national-level postgraduate academic committees in association with medical directors and dynamic academicians of national repute should address the associated pedagogical and other deterrent issues, as pointed out in this study. The importance of IT-professionals in dealing with technical issues/resource barriers also cannot be overlooked. Further research on ophthalmic webinars is encouraged to extend the analysis incorporating a larger cohort, control educational format, and gain analysis to precisely evaluate the quantum of its impact in providing professional knowledge and skill.

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## Conflicts of interest

There are no conflicts of interest.

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## Additional File 1

Q 1. Year of post graduation you are in:

1. First year.
2. Second year.
3. Third (final) year.

Q 2. Gender:

1. Male.
2. Female.

Q 3. State you are studying in:

Q 4. Type of College:

1. Government.
2. Private.
3. Trust.
4. Charitable.

Q 5. Has there been a decline in the quality and quantity of PG academic program during COVID-Pandemic?

1. No.
2. 25% decline.
3. 50% decline.
4. > 50% decline.

Q 6. Have your self study schedule been affected during COVID-Pandemic?

1. No change.
2. Getting more time.
3. Getting less time.
4. Disturbing, as no faculty/peer interaction.

Q 7. Has your thesis-work been affected during COVID-pandemic?

1. No effect.
2. Official clearance issues.
3. No cases for case-based study.
4. Others (please specify).

Q 8. Has your clinical exposure been affected during COVID-Pandemic?

1. No.
2. Up to 25%.
3. 25-50%.
4. > 50%.

Q 9. Have you been attending webinars before COVID-Pandemic?

1. Frequently.
2. Infrequently.
3. Never.
4. Not aware of such activities.

Q 10. Online meets like Zoom, Skype and Google meets being organized in your department for PG teaching?

1. Yes.
2. No.
3. Planning, but not yet implemented.

Q 11. How many webinars did you attend during the COVID-Pandemic?

1. None.
2. 1-5.
3. 5-10.
4. 10-20.
5. > 20.



Q 12. What technical problem you faced most in attending webinars?

1. Upgrading system.
2. Data usage.
3. Connectivity issues.
4. All of the above.
5. Others (please specify).

Q 13. Did you gain significantly in the topic of presentation over your knowledge?

1. Yes.
2. No.

Q 14. Did you get chance to interact with the speakers?

1. No.
2. Yes, through chat.
3. Yes, through video.

Q 15. Were your queries related to the topic answered?

1. Yes.
2. No.
3. Partly.

Q 16. What did you like most about these webinars?

1. Comfort of not having to go anywhere.
2. Access to many speakers at the same platform.
3. Discussions and interactions.
4. Wider exposure to a variety of topics.

Q 17. What made you uncomfortable in webinars?

1. Too lengthy.
2. Non-understandable.

3. Link issues.
4. Poor audio- visual quality.

Q 18. What did you miss most in these webinars?

1. Personal touch.
2. Step wise approach.
3. Feedback.
4. Others (please specify).

Q 19. Which sub-specialty topic in webinar appealed to you most?

1. Cornea.
2. Lens and refractive-surgeries.
3. Glaucoma.
4. Oculoplasty & squint.
5. Neuro-ophthalmology.
6. Others (please specify).

Q 20. Webinars vs. Classroom teachings:

1. Prefer webinars.
2. Classroom teaching is irreplaceable.
3. Both should run parallel.

Q 21. Webinars Vs. Live conferences/CME's:

1. Webinar save both time and travel.
2. Live conferences give better exposure and hands-on experiences.
3. Both should be balanced.

Q 22. Webinars vs. Podcast /You Tube/ Slide-share, What's app or other social media as academic tool:

1. Webinars are more interactive.
2. You Tube etc. are more flexible.

3. Both are offering different content.

Q 23. Did you ever feel mental stress during webinars?

1. Never.

2. Time constraints make it hectic sometimes.

3. Upgrading to the latest advancement in the topic leads to higher stress-level.

4. Others (please specify).

Q 24. How do you grade webinars as academic tool for PG education program?

1. Excellent

2. Very good.

3. Good.

4. No added advantage.

Q 25. Post COVID era will attend webinars:

1. Always.

2. Need webinars to be exclusively designed for PG's.

3. Never.

4. Occasionally.