

Learners' acceptance of a webinar for continuing medical education

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Abstract. The aim of this study was to evaluate learners' acceptance of a webinar for continuing medical education that was instigated by the International Association of Oral and Maxillofacial Surgeons (IAOMS). A live, interactive webinar on orthognathic surgery was broadcast via the Internet. The learners' acceptance of the webinar was evaluated using a standardized, validated questionnaire (Student Evaluation of Educational Quality, SEEQ). One hundred and fifty-three participants attended the webinar; 55 participants (46 male, nine female) completed the questionnaire. The mean age of the respondents was 41.6 ± 10.0 years. The age of male and female respondents did not differ significantly. The respondents were spread over five continents, with the highest number from Brazil. The SEEQ showed a high level of acceptance for almost all subscales. There was no statistically significant difference between male and female respondents concerning acceptance of the webinar ($P = 0.614$). The wide distribution of participants shows the potential for webinars as facilitators of barrier-free distribution of knowledge. The webinar was well accepted by the attendees independent of sex, specialty, and work experience. However, the sex ratio reflects the underrepresentation of women in oral and maxillofacial surgery.

Key words: webinar; continuing education; questionnaire; orthognathic surgery.

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It is generally expected that healthcare professionals show dedication to lifelong learning. Advanced educational technologies such as online learning have been identified as facilitators of lifelong education, due to their general availability¹. The future perspective is that this technological shift will allow for high quality education at low cost^{2–4}.

Computer-mediated communication can be either asynchronous (delayed time) or synchronous (real-time). The latter is regarded as the most advanced form of

computer-mediated communication⁵. The webinar is an example of a synchronous tool that is adopted increasingly by various professions, including healthcare. It is considered state of the art for live distance learning. The term 'webinar' describes a seminar that is broadcast live via the Internet; this format enables teachers to share information with students located anywhere in the world, in real time^{6,7}. It further allows the advantages of traditional face-to-face learning, using a two-way format with interactive exchange in real-

time. Simultaneously, sufficient resources for a growing number of learners can be provided. Software-based webinar tools offer helpful learning modalities such as the incorporation of chat functions, which allow participants to ask questions and have them answered in real time⁸. The time commitment is limited to the duration of the webinar, which therefore becomes a relevant educational option during the working day. Consequently, the barriers to participating in a webinar are low⁹. Webinars create a new level of conve-

nience and affordability for medical education and may replace traditional face-to-face lectures in the future¹⁰.

Despite their increasing use and their convenience, webinars are still a recent innovation, and participant perceptions of webinars have not been studied widely. Although a number of studies have evaluated the use of webinars in the context of healthcare, research-based data on the learner's acceptance of live distance learning in oral and maxillofacial surgery are still lacking.

Therefore, the aim of this study was to evaluate learners' acceptance of a webinar for continuing medical education in oral and maxillofacial surgery.

Materials and methods

A webinar on the topic 'Management of transversal width of the maxilla in orthognathic surgery' was broadcast live from Vienna, Austria (time zone UTC + 1) on Thursday December 15, 2016 at 7:00 a.m. via specialized software (Adobe Connect, version 9.5.2; Adobe Systems Software Ireland Ltd, Dublin, Ireland) to members of the International Association of Oral and Maxillofacial Surgeons (IAOMS). Po-

tential attendees were invited by e-mail and had to register through the website of the IAOMS (<http://www.iaoms.org>). The invitation e-mail included a short summary of the content and learning goals of the webinar. In order to encourage participation, several reminders for the upcoming webinar were e-mailed to everyone who had registered: the first at 2 weeks before the webinar, then at 1 week before, 2 days before, and also on the day of the webinar. The webinar aimed to convey a specialist's personal clinical experiences in the field of orthognathic surgery and to talk about strategies in the surgical management of patients.

Directly after the webinar, the participants received an e-mail asking them to complete an anonymous online questionnaire (Student Evaluation of Educational Quality questionnaire, SEEQ; Table 1) about their experiences and opinions on the webinar via an online link (<http://www.soscsurvey.de/IAOMS/>). In addition, demographic data and data on the professional experience of the participants were collected (Table 2). The software used for the online questionnaire was distributed by SoSci Survey GmbH (Munich, Germany) and served as the platform for

the data acquisition. A reminder to fill in the questionnaire was sent out by e-mail to the participants after 1 week.

The SEEQ questionnaire (Table 1) is an internationally validated questionnaire and is described in detail elsewhere^{11–13}. It comprises 31 standardized questions spread across nine main dimensions of effective teaching. The first eight dimensions are measured using a five-point Likert scale (range: 1, strongly disagree; 2, disagree; 3, neutral; 4, agree; 5, strongly agree). The ninth dimension, 'Overall', is measured using a five-point scale (range: 1, very poor; 2, poor; 3, moderate; 4, good; 5, very good).

Dimension 1 ('learning') concerns the participant's perception of the learning content and its practical relevance to the student. Dimension 2 ('enthusiasm') deals with the motivational style of lecturing. Dimension 3 ('organization') addresses the skills of the lecturer in didactics and structuring of the learning content. In dimension 4 ('group interaction'), students are asked to evaluate the possibility of asking questions and engaging in discussions. Dimension 5 ('individual rapport') covers the lecturer's empathy and engagement with the students. Each of these first

Table 1. SEEQ questionnaire.

Item No.	Dimension	Question
1	Learning	I have found the course intellectually challenging and stimulating.
2	Learning	I have learned something which I consider valuable.
3	Learning	My interest in the subject has increased as a consequence of this course.
4	Learning	I have learned and understood the subject materials of this course.
5	Enthusiasm	The instructor was enthusiastic about teaching the webinar.
6	Enthusiasm	The instructor was dynamic and energetic in conducting the course.
7	Enthusiasm	The instructor enhanced presentations with the use of humour.
8	Enthusiasm	The instructor's style of presentation held my interest during the webinar.
9	Organization	The instructor's explanations were clear.
10	Organization	Course materials were well prepared and carefully explained.
11	Organization	Proposed objectives agreed with those actually taught so I knew where the course was going.
12	Organization	The instructor gave lectures that facilitated taking notes.
13	Group	Students were encouraged to participate in class discussions.
14	Group	Students were invited to share their ideas and knowledge.
15	Group	Students were encouraged to ask questions and were given meaningful answers.
16	Group	Students were encouraged to express their own ideas and/or question the instructor.
17	Rapport	The instructor was friendly towards individual students.
18	Rapport	The instructor made students feel welcome in seeking help/advice in or outside of class.
19	Rapport	The instructor had a genuine interest in individual students.
20	Rapport	The instructor was adequately accessible to students during office hours or after class.
21	Breadth	The instructor contrasted the implications of various theories.
22	Breadth	The instructor presented the background or origin of ideas/concepts developed in class.
23	Breadth	The instructor presented points of view other than his/her own when appropriate.
24	Breadth	The instructor adequately discussed current developments in the field.
25	Overall	Compared with other courses I have attended at the IAOMS, I would say this course is . . .
26	Overall	Compared with instructors in other courses I have attended at the IAOMS, I would say this instructor is . . .
27	Overall	As an overall rating, I would say this instructor is . . .
28	Additional	How likely is it that you will change your practice with regard to this event?
29	Additional	How do you rate the overall value of this event?
30	Additional	How useful and relevant was the content presented to your daily practice?
31	Additional	What is your overall rating of this live streaming event?

SEEQ, Student Evaluation of Educational Quality; IAOMS, International Association of Oral and Maxillofacial Surgeons.

Table 2. Professional experience of the attendees who filled in the questionnaire.

<i>n</i>	Age (years) ^a	Professional workplace		Professional experience (years)						Professional experience (cases) ^b				Professional specialty ^c			
		Private	Public	<5	5–10	10–15	15–20	>20	<10	10–50	50–100	>100	OMFS	Oral surgery	General dentistry	Orthodontics	
All	55	23	32	13	12	11	6	13	28	19	5	1	40	13	1	1	
Male	46	19	27	9	10	11	5	11	22	18	3	1	39	7	–	–	
Female	9	4	5	4	2	–	1	2	6	1	2	–	1	6	1	1	

OMFS, oral and maxillofacial surgery.

^aMean $\pm$ standard deviation.^bTwo participants (both male) did not report on the quantity of surgeries performed.^cSignificant difference between the sexes (χ^2 test; $P = 0.014$).

five dimensions consists of four questions. Dimension 6 ('breadth') consists of four questions regarding the scope of the presented material. Dimension 7 ('examination') and dimension 8 ('assignment') were excluded from the analysis in this study, as no examination took place and no assignments were required before attending the webinar. Dimension 9 ('overall') covers three items and reflects the participant's overall view of the webinar regarding the teacher and the overall rating of the webinar. Four additional questions ('Additional') were designed specifically for the present study. Questionnaires that were not filled in completely were withdrawn from the study; however participants were free to leave individual items unanswered.

The study was granted an exemption from the need for ethical approval by the Ethics Committee of the Medical University of Vienna.

Statistical analysis

Mean values were recorded, with standard deviations. The two-sided Pearson χ^2 test was used for the analysis of differences in demographic data. Homogeneity of variances was checked by Levene's test. In cases of inhomogeneity of variances, Welch's *t*-test was performed. All tests were performed with a 0.05 level of significance. All statistical analyses were performed using IBM SPSS Statistics v. 23.0 (IBM Corp., Armonk, NY, USA).

Results

Webinar

The webinar lasted 68 minutes. The webinar was hosted by two of the authors (JA, JH), who welcomed the audience, introduced the presenter (GM), and gave an outline of the webinar. The educational part of the webinar started with a presentation of 76 slides (PowerPoint, Microsoft Office 2010; Microsoft Corporation, Redmond, WA, USA). Following the presentation, there was a Q&A session which both hosts started off by asking questions. Then the floor was opened up to the participants for a live, interactive, online chat with the presenter. All of the participants could follow the questions being asked via their chat forum. A recording of the webinar was made available online (<http://www.iaoms.org>) for registered members of the IAOMS.

Demographic data

One hundred and fifty-three (35.2%) out of 435 registrants attended the webinar. The participants attended the webinar from 51 countries, covering five continents. The response rate to the online questionnaire was 35.9% ($n = 55$). The data were subsequently included for further analysis. The 55 respondents logged on from five continents (25 different countries). The highest numbers of respondents were located in Brazil ($n = 13$), followed by the USA ($n = 6$) and Indonesia ($n = 3$). Forty-six of the respondents were male and nine were female. The mean age of the participants was 41.6 ± 10.0 years. There was no significant difference in age between male and female respondents (male, 42.5 ± 9.7 years; female, 37.3 ± 11.2 years).

Twenty-three respondents worked in private practice, while the remaining 32 worked in public healthcare (Table 2). The professional experience of the respondents was less than 5 years in 13 cases, 5–10 years in 12 cases, 10–15 years in 11 cases, 15–20 years in six cases, and more than 20 years in 13 cases (Table 2). The majority of the respondents were specialists in oral and maxillofacial surgery ($n = 40$), followed by specialists in oral surgery ($n = 13$). One participant each from the specialties of general dentistry and orthodontics took part in the questionnaire (Table 2).

In general, the majority of participants ($n = 28$, 52.8%) had performed less than 10 surgeries before attending the webinar. Nineteen participants (35.8%) had performed 10–50 surgeries and only six participants (11.3%) had performed over 50 surgeries. Two of the 55 participants (3.6%) did not report on the quantity of surgeries they had performed.

There was no significant difference between male and female participants with respect to years of professional experience ($P = 0.388$), the aspect of working in a private or public workplace ($P = 0.861$), or the quantity of cases performed ($P = 0.614$). However, there was a significant difference between the sexes with regard to the participants' professional specialties.

Student Evaluation of Educational Quality questionnaire (SEEQ)

The results of the SEEQ questionnaire are compiled in Table 3. Analysis of the webinar revealed a general positive atti-

Table 3. Results of the SEEQ questionnaire.

Item No.	Dimension	Total		Sex			
				Male		Female	
		Mean	SD	Mean	SD	Mean	SD
1	Learning	4.4	0.6	4.4	0.6	4.6	0.5
2	Learning	4.6	0.5	4.5	0.5	4.8	0.4
3	Learning	4.3	0.7	4.2	0.7	4.4	0.5
4	Learning	4.5	0.6	4.4	0.6	4.7	0.5
5	Enthusiasm	4.5	0.6	4.4	0.6	4.8	0.4
6	Enthusiasm	4.5	0.6	4.4	0.6	4.8	0.4
7	Enthusiasm	3.8	0.9	3.8	0.9	3.9	0.9
8	Enthusiasm	4.2	0.8	4.2	0.8	4.2	0.8
9	Organization	4.4	0.7	4.4	0.8	4.8	0.4
10	Organization	4.5	0.6	4.4	0.7	4.8	0.4
11	Organization	4.5	0.6	4.4	0.6	4.2	0.4
12	Organization	4.0	0.9	4.0	0.9	4.5	1.2
13	Group	3.9	0.8	3.8	0.8	4.5	0.5
14	Group	3.6	1.0	3.4	0.9	4.4	0.8
15	Group	4.0	0.9	3.8	0.9	4.5	0.8
16	Group	3.8	0.9	3.6	0.8	4.3	0.9
17	Rapport	4.2	0.7	4.1	0.7	4.5	0.5
18	Rapport	4.1	0.8	4.0	0.8	4.5	0.8
19	Rapport	3.9	0.8	3.9	0.8	4.5	0.9
20	Rapport	—	—	—	—	—	—
21	Breadth	4.0	0.7	3.9	0.8	4.4	0.5
22	Breadth	4.1	0.7	4.1	0.7	4.2	1.0
23	Breadth	4.2	0.7	4.2	0.7	4.6	0.5
24	Breadth	4.3	0.7	4.2	0.7	4.4	0.5
25	Overall	4.4	0.7	4.3	0.7	4.7	0.5
26	Overall	4.4	0.7	3.3	0.7	4.9	0.4
27	Overall	4.5	0.7	3.4	0.7	4.8	0.5
28	Additional	3.8	0.9	3.8	0.9	4.0	0.7
29	Additional	4.5	0.6	4.4	0.6	4.8	0.4
30	Additional	4.3	0.7	4.2	0.8	4.6	0.5
31	Additional	4.5	0.7	4.5	0.7	4.4	0.7

SEEQ, Student Evaluation of Educational Quality; IAOMS, International Association of Oral and Maxillofacial Surgeons.

tude of the respondents towards the online course for all 31 items.

All of the respondents agreed ($n = 25$) or strongly agreed ($n = 30$) that they had learned something valuable (item No. 2). Twenty-two respondents rated the educational value of this event as 'good' and 30 as 'very good' (item No. 29). The best mean rating in the SEEQ questionnaire was given for the item "I have learned something which I consider valuable" (mean score 4.55). There was no significant difference between male and female respondents in the overall acceptance of the webinar ($p = 0.614$). There were also no significant differences between male and female participants for any of the other items. Evaluation responses from attendees not specialized in oral and maxillofacial surgery ($n = 15$) were equally high for almost all dimensions.

Thirty-five respondents stated that it was likely ($n = 23$) or very likely ($n = 12$) that they would change their routine in orthognathic surgery as a conse-

quence of the webinar (item No. 28). However, one third of the respondents had either a neutral viewpoint on this item or they stated that it was unlikely ($n = 1$) or very unlikely ($n = 1$) that they would change their practice as a consequence. The statistical analysis (χ^2 test) showed no significant difference in the rating of this item regarding professional experience, specialty, sex, or workplace. However, a significant influence of the age of the participant on the rating of the item was observed ($P = 0.01$). Although the data evaluated were categorical, Pearson's R correlation was performed to investigate the relationships between these factors. On a descriptive level, the analysis showed a decreasing willingness of the participant to change their practices with increasing age (Pearson's $R = -0.213$; $P = 0.12$).

Accordingly, with more professional experience, the learning aspect decreases. Participants with over 20 years of experience were the only ones who rated item number 4 as 'neutral' ($P = 0.018$; learn-

ing: "I have learned and understood the subject materials of this course").

Discussion

Webinar-based teaching in healthcare is an approach that is being adopted by an increasing number of specialties. In oral and maxillofacial surgery, webinars are still relatively novel. This study aimed to assess the participants' acceptance of this type of continuing medical education.

This study was based on data obtained from a questionnaire, and the response rate to the invitation to complete the questionnaire was 35.9% (55 out of 153 participants). The total number of participants might have been higher than 153, because in some departments webinars are already established as a tool for continuing education and are mandatory for all staff members, and the staff follow the webinar together on one computer. The low response rate is comparable to rates reported previously in the literature¹⁴⁻¹⁶. The sample size is similar to that in previous studies. Therefore, the number of respondents appears to be acceptable with regard to yielding relevant and reliable results.

The webinar participants were from 51 countries across five continents. The wide geographical distribution of the participants shows the potential of webinars to reach a global audience. They may be considered a relevant tool for a worldwide distribution of knowledge, eliminating geographical barriers of knowledge distribution. Complex topics can be taught by leading experts to an audience of virtually unlimited size. There is no need for time-consuming and cost-intensive travel to conferences and meetings for either the educator or the recipient¹⁷. The webinar scenario creates a kind of virtual classroom; it respects the social aspect of learning and supports a motivating atmosphere that facilitates acceptance of the format and the learning process of the recipients.

Significant differences in sex distribution were found in this study: out of the 55 participants who completed the questionnaire, 46 were male and only nine were female ($P = 0.014$). This unbalanced distribution indicates the underrepresentation of women in oral and maxillofacial surgery¹⁸⁻²⁰. Moreover, the small number of female participants might reflect the results of previous studies on technology-enhanced learning. These studies showed that women were less familiar with computer technology and, therefore, encountered barriers that were not present for their male counterparts¹⁹. It can be

speculated that this aspect might lead to a reduced motivation of women to participate in webinars with the consequence of a high male-to-female ratio^{18–20}.

The mean age of the participants was 41.6 ± 10.0 years. This is in line with recent studies that have shown a strong affinity for new technologies particularly in those of generation Y (born between 1980 and 2000)^{21–23}.

The data analysis revealed an equal distribution of years of professional experience amongst attendees, indicating that this novel concept of webinar-based learning is generally accepted, independent of level of experience (Table 2). However, the analysis of professional experience in the field of orthognathic surgery revealed that the majority of the attendees ($n = 28$; 52.8%) had conducted fewer than 10 cases themselves prior to the webinar. A steady decline in the number of participants was observed across the subgroups with increasing numbers of surgeries performed, indicating that there is a considerable demand for high quality continuing education for inexperienced surgeons (Table 2).

Most attendees were working in the specialty of oral and maxillofacial surgery ($n = 40$; 72.7%), followed by oral surgery ($n = 13$; 23.6%). Regarding the professional workplace of the attendees, 23 (41.8%) worked in a private practice and 32 in a public workplace (58.2%). This finding indicates that orthognathic surgery is mostly performed by oral and maxillofacial surgeons in public hospital settings.

With regard to the number of years of professional experience, the aspect of working in a private or public workplace, and the quantity of cases performed, no significant differences were observed between male and female participants ($P = 0.388$, $P = 0.861$, and $P = 0.614$, respectively). Sex differences were observed in the professional specialty, with 22.2% of the attending female participants (two of the nine) working in the discipline of general dentistry/orthodontics. In fact, only six of the female attendees actually worked in the profession of oral and maxillofacial surgery. However, these findings have to be interpreted carefully, considering that only nine women overall could be included in the study.

High scores were achieved for all items of the SEEQ questionnaire, which reflects the good acceptance of the webinar by the participants (Table 3). Thus, webinars can be considered an acceptable teaching modality in oral and maxillofacial surgery, facilitating interaction, active participation, convenience, and immediate feed-

back between presenters and participants^{5,8,24,25}. Besides didactics, there is another aspect that may explain the good acceptance of the webinars by the participants in this study. Compared to traditional methods of continuing education, webinars can be stored online and consumed at any time on a standard PC with a broadband Internet connection. Thus, they can also be consumed at home without the sacrifice of working time and consequently clinical experience and operative abilities^{1,8}.

The percentage of attendees from other specialties (27.3%) was higher than expected. The evaluation responses from attendees not specialized in oral and maxillofacial surgery indicate that despite not being the target audience, participation was beneficial for both groups on an equal level. Based on the results of the SEEQ, the present webinar series may be considered a relevant addition to continuing medical education in oral and maxillofacial surgery.

This study has some limitations. Although the SEEQ questionnaire is a valid and internationally recognized tool for self-evaluation of educational quality, it has not been adjusted for live distance learning like webinars. Therefore, the dimensions 'examinations' and 'assignments' were not taken into account for further analysis, as they did not apply to this webinar.

The response rate to the questionnaire was low. However, it is in line with rates described in the current literature^{15,16}. It is possible that only the most motivated attendees took the time to fill in the questionnaire. Information on the opinions and attitudes of non-responders towards the webinar would be a valuable addition to a comprehensive evaluation of the format. Initial research has been started on the aspect of how to maximize the response to questionnaire surveys^{15,25}.

In conclusion, this study assessed webinars in continuing medical education in oral and maxillofacial surgery and demonstrated a high overall acceptance rate for the attendees independent of sex, specialty, and years of professional experience. However, the sex ratio reflects the underrepresentation of women in oral and maxillofacial surgery.

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Competing interests

None.

Ethical approval

The study was granted an exemption from the need for ethical approval by the Ethics Committee of the Medical University of Vienna (ECS 1988/2017).

Patient consent

Not required.

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