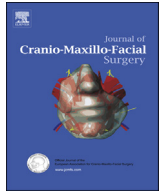




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Webinars for continuing education in oral and maxillofacial surgery: The Austrian experience

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ABSTRACT

The aim of the present study was to evaluate the acceptance of a webinar series for continuing medical education hosted by the Austrian Society for Oral and Maxillofacial Surgery (ÖGMKG).

A series of twelve webinars was streamed via the Internet and the participants' satisfaction was evaluated by an online questionnaire.

51 out of 140 participants (36.4%) completed the questionnaire completely and were included into the study for further analysis. The mean age of the participants was 37.9 ± 8.9 and did not vary significantly between gender ($p = 0.53$). The results of the questionnaire revealed a positive attitude of the participants towards this kind of webinar. The participants found that the webinars allowed for an adequate transfer of knowledge.

Continuing medical education by webinars in oral and maxillofacial surgery is well accepted by the participants. Although both male and female participants had a positive attitude towards the webinars, females gave even better ratings than their male counterparts did.

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1. Introduction

The term “webinar” describes a way of conferencing that involves a Web-based seminar delivered through the Internet. Webinars have recently been proposed as a tool for lifelong learning, and their use is growing continuously (Al-Hadithy et al., 2013). They facilitate lifelong learning due to their wide availability and ensure high quality education at low costs. This format enables teachers to share information with students anywhere and anytime through various Internet-capable devices (Buxton et al., 2012a, 2012b). Up-to-date technology allows mutual interaction between presenter and participants via video, audio and text, allowing the participants to ask questions and receive answers in real-time (Mayorga et al., 2014). As there is no travel time, the time commitment is limited to the duration of the webinar, which may

thus be incorporated into a regular workday. Hence, the effort to participate in a webinar is low (Grisold et al., 2009).

Although webinars show similarities to face-to-face lectures, they create a new level of convenience and affordability of medical education and may take the place of traditional lectures in the future (Burns, 2011).

Despite their increasing use, webinars are still an innovation. So far, participant perceptions of webinars have not been studied widely (Knipfer et al., 2018). Therefore, the present study aimed at assessing the attitude of participants towards a webinar series on oral and maxillofacial surgery.

2. Materials and methods

A continuing education program on oral and maxillofacial surgery consisting of a series of 12 webinars was offered by the Austrian Association of Oral and Maxillofacial Surgery. The webinars were delivered on a monthly basis between May 2015 and April 2016. The topics and the presenters are listed in Table 1. The content was planned according to the Austrian residency program curriculum. Adobe Connect™ software (Adobe Systems Software Ireland Ltd., Dublin, Ireland) was used for the broadcasting. Participants

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Table 1
Webinar overview.

Number of webinar	Topic	Presenter
1	Odontogenic tumors and cysts	Oliver Ploder
2	Local anesthesia	Wolfgang Puelacher
3	Orthognathic surgery	Ingeborg Watzke
4	Emergency medicine	Franz Watzinger
5	Diseases of the oral mucosa	Johann Beck-Managetta
6	Dental traumatology	Steffen Schneider/Emeka Nkenke
7	Preprosthetic surgery	Alexander Gaggl
8	Anticoagulation	Herbert Watzke
9	Diseases of the temporomandibular joint	Michael Rasse
10	Craniofacial surgery	Robert Gassner
11	Medication related osteonecrosis of jaws	Arno Wutzl
12	Infections of the head and neck region	Wolfgang Poeschl

had to register and log on via the web page of the Austrian Association of Oral and Maxillofacial Surgery individually or in groups by using their own computers or the departments' computers.

One of the authors (OP) coordinated and hosted the webinars. Each webinar lasted 60 min and covered a different field of the specialty. The presenters were content experts who were selected by the Austrian Association of Oral and Maxillofacial Surgery. Each webinar started with a short introduction to the topic by the host. Subsequently, an oral presentation of 45 min was held that besides slides could include videos and poll questions. During the presentations, the participants could ask questions using a chat tool that were answered by the host (author OP). Time for discussion was allotted at the end of each webinar. All presentations were made available on the web page of the Austrian Association of Oral and Maxillofacial Surgery for registered members.

Directly after the end of the 12th webinar all registered participants were invited by e-mail to complete an online survey about their experiences and opinions of the webinars. The e-mail included a link that allowed accessing the survey. A reminder was sent out 2 weeks after the first e-mail. For the survey the SoSci Survey software (SoSci Survey GmbH, Munich, Germany) was used. The participants filled in the questionnaire, anonymously. Demographic data and data on the professional experience of the participants were collected (see Table 2). The webinar evaluation questionnaire was based on the Trierer Inventar zur Lehrevaluation questionnaire (TRIL), which is a validated modular German-language questionnaire for the evaluation of courses at university (see Table 3).

Only questionnaires that were filled in completely were used for further evaluation. The results of these questionnaires were analyzed for gender differences and for differences between members of the baby boomer generation (born between 1946 and 1964, adolescence at a time of slow development of information technology), members of the generation X (born between 1965 and 1979, adolescence at a time of accelerating development of information technology), and members of the generation Y (born

between 1980 and 2000, adolescence with permanent confrontation to advanced information technology).

The study was granted exemption from ethical approval from the ethical committee of the Medical University of Vienna (No. 1988/2017).

2.1. Statistical analysis

Mean values are given with standard deviations. For the analysis of gender differences in the demographic data and the professional experience data the 2-sided Pearson χ^2 test was used. For the analysis of the answers to the TRIL questionnaire the unpaired sample t-test was adopted. Homogeneity of variances was checked by the Levene's test. In cases of inhomogeneity of variances, the Welch's t-test was performed. All tests were performed with a 0.05 level of significance. All statistical analysis was performed using IBM SPSS Statistics v.23.0 (IBM Corp., Armonk, NY, USA).

3. Results

140 participants were invited to fill in the questionnaire. 133 participants accessed the questionnaire and 60 respondents answered at least one question. 51 (36.4%) filled in the questionnaire completely and were included into the study. Demographic data and data on professional experience are given in Table 2.

The mean age of the participants was 37.9 ± 8.9 years and did not differ statistically significantly between genders ($p = 0.53$, see Table 2). There was no significant difference in the number of attended webinars and years of professional experience between men and women ($p = 0.54$ and $p = 0.95$, respectively, see Table 2). The largest subgroup of participants had up to 5 years professional experience (23 out of 51 participants).

The results of the participants' evaluation of the webinars by the TRIL questionnaire are compiled in Tables 4 and 5. The results revealed that the participants had a positive attitude towards the webinars (see Tables 4 and 5, Item 6.1). The entire group of

Table 2
Demographic data and professional experience of the participants, their mean number of attended webinars and its correlation to the gender.

	Participants (n = 51)		Pearson's Chi-Square Test		
	Male (n = 36)	Female (n = 15)	Significance (2-sided)	DF	Value
Mean age (in years)	38.25 (± 9.266)	36.93 (± 8.146)	0.526	24	22.903
Number of attended webinars	6.78 (± 2.695)	6.64 (± 2.405)	0.541	10	8.904
Professional experience:					
<5 years	15	8	0.953	4	0.685
5–10 years	6	2			
10–15 years	5	2			
15–20 years	4	1			
>20 years	6	2			

Table 3
TRIL (Trierer Inventar zur Lehrevaluation) Questionnaire.

Topic 1 "structure and didactics"	
1.1	The materials (manuscripts, PowerPoint slides, etc.) provided during the course were helpful for the understanding of the learning content.
1.2	Didactic materials (flipcharts, PowerPoint slides, etc.) were used in an adequate way.
1.3	The lecturer gave short summaries in order to make clear which were the crucial points for understanding of the topic.
1.4	The time management of the lecturers was adequate.
1.5	The learning content of the single sessions were oriented on the learning targets.
1.6	The lessons plan at the beginning provided a good overview.
1.7	The webinar cycle followed a comprehensible thematic structure.
Topic 2 "motivational skills of the lecturers"	
2.1	The linguistic style of the lecturer was fluent and clear.
2.2	The lecturers were able to explain difficult learning content in an understandable way.
2.3	The lecturers spoke in a clear and comprehensible way.
2.4	The lecturers were able to keep contact to the audience (e.g. by eye-contact) during the webinar.
2.5	The lecturers created an inspiring atmosphere.
2.6	The lecturers were able to handle interruptions (e.g. through noise, the participants or technical problems) in an adequate manner.
2.7	It was easy for me to remain concentrated during the course.
2.8	I was inspired to follow the train of thoughts during the course.
Topic 3 "communicative competence of the lecturers"	
3.1	The lecturers ended the discussion at the right time.
3.2	The lecturers treated the students friendly and were open-minded.
3.3	The lecturers took the time to address the questions of the audience.
3.4	The audience could sufficiently participate in the webinar
3.5	The lecturers were willing to adequately address the requests of the audience.
Topic 4 "Applicability and practical relevance of the course"	
4.1.	During the course the relation between theoretical knowledge and practical application was adequately addressed.
4.2	The learning content of the course was adequately illustrated by practical examples (case studies, clinical applications, etc.).
4.3	The audience was encouraged to examine the learning content in a critical way.
4.4	The lessons should have been more practical oriented.
Topic 5 "questions on further aspects"	
5.1	I was satisfied with the availability of the lecturers outside of the webinar.
5.2	The lecturers answered questions adequately also outside of the webinar.
5.3	I prepared myself for the lectures on a regular basis (e.g. by reading of additional literature).
5.4	I did follow-up course work on a regular basis (e.g. by discussion with other students or by reading of additional literature).
5.5 ^a	The requirements of the course were:
Topic 6 "overall assessment"	
6.1**	The overall grade of the lectures sums up to
Topic 7 "online tools"	
7.1	All the materials necessary to follow the course has been provided online.
7.2	In the provided chats and discussions after the webinar my questions were addressed adequately.
7.3	The provided online materials could be opened without problems.
7.4	The webinar made learning more complicated.
7.5	The webinar facilitated learning.
7.6	There was a proper instruction for the use of the e-learning tool.
7.7	I quickly managed to orientate myself in the webinar interface
Topic 8 "specific questions on the attendees"	
8.1	The webinars were valuable as preparation for the boarding exams.
8.2	By attending the webinar I am less dependent on further external training.
8.3	The attendance of the webinar can sufficiently replace a face-to-face training.
8.4	I appreciate the fact that each webinar theme is presented by an expert in this field.
8.5	I attended the webinars mostly at my workplace.
8.6	I attended the webinars also in my spare time.
8.7	I attended the webinars mostly with my colleagues.
8.8	After attendance, I discussed the topics of the webinar with my colleagues.

Answers to the questions could be chosen between 1 and 6 (1 = I totally disagree, 6 = I totally agree) except for Questions 5.5 and 6.1.

**For question 6.1 possible answers were: 1 = failure, 2 = deficient, 3 = sufficient, 4 = satisfactory, 5 = good, 6 = excellent.

^a For question 5.5 possible answers were: 1 = too low, 2 = low, 3 = adequate, 4 = high and 5 = too high.

participants stated that the amount of knowledge delivered through the webinars was adequate, being neither too demanding nor under-challenging (see [Tables 4 and 5](#), Item 5.5).

The participants rated structure and didactics of the webinars, relevance of the content for daily practice, and communicational competence of the presenters as being on a high level. For three items, there were significant differences between male and female participants: The female participants were even more satisfied by the chosen didactics than their male counterparts were (see [Table 4](#), Items 1.1, 1.2). They also rated the intelligibility of the presenters' speech higher (see [Table 4](#), item 2.3). Throughout the entire questionnaire there were no significant differences found between members of the Babyboomers generation and generations X and Y (see [Table 5](#)).

4. Discussion

Webinar-based teaching in oral and maxillofacial surgery is still a new technique. A comprehensive curriculum can be taught by experts in the field from multiple locations to a global audience. The present study aimed at assessing the attitude of participants towards a webinar series.

This study is based on a response rate to complete the questionnaire of 36% (51 out of 140 participants). The response rate of the present study compares well to what has been reported in recent studies and therefore seems to be acceptable to yield relevant results ([Jussaume, 1990](#); [Buxton et al., 2012b](#); [Nicastro et al., 2015](#)).

The results of the survey reveal that the webinars are highly appreciated by the participants. The webinar setting facilitates

Table 4
Questionnaire results in relation to gender.

Question	Gender Differences			
	Mean score			t-test/Welch's t-test Significance
	Male	Female	Total	
Topic 1 "structure and didactics"				
1.1	5.14	5.80	5.33	0.043
1.2	5.14	5.80	5.33	0.025
1.3	4.92	5.40	5.06	0.120
1.4	5.22	5.60	5.33	0.179
1.5	5.50	5.60	5.53	0.700
1.6	4.56	5.13	4.73	0.144
1.7	4.49	5.27	4.72	0.076
Topic 2 "motivational skills of the lecturers"				
2.1	5.22	5.53	5.31	0.256
2.2	5.25	5.53	5.33	0.140
2.3	4.89	5.60	5.10	0.040
2.4	4.58	5.07	4.73	0.187
2.5	4.94	5.13	5.00	0.560
2.6	4.97	5.20	5.04	0.494
2.7	4.75	5.40	4.94	0.054
Topic 3 "communicative competence of the lecturers"				
3.1	5.19	5.47	5.27	0.362
3.2	5.42	5.67	5.49	0.361
3.3	5.31	5.47	5.35	0.551
3.4	4.61	5.33	4.82	0.055
3.5	4.97	5.33	5.08	0.270
Topic 4 "Applicability and practical relevance of the course"				
4.1	5.25	5.33	5.27	0.722
4.2	5.22	5.60	5.33	0.157
4.3	4.86	5.40	5.02	0.107
4.4	3.72	4.00	3.80	0.597
Topic 5 "questions on further aspects"				
5.1	4.53	5.00	4.67	0.234
5.2	4.44	4.87	4.57	0.286
5.3	3.14	4.07	3.41	0.096
5.4	4.17	5.00	4.41	0.062
5.5	2.94	3.33	3.06	0.084
Topic 6 "overall assessment"				
6.1	5.36	5.67	5.45	0.085
Topic 7 "online tools"				
7.1	4.74	5.20	4.88	0.242
7.2	4.97	5.47	5.12	0.120
7.3	4.51	4.60	4.54	0.853
7.4	2.23	2.27	2.24	0.943
7.5	5.25	5.27	5.25	0.950
7.6	4.34	4.40	4.36	0.915
7.7	4.60	4.73	4.64	0.780
Topic 8 "specific questions on the attendees"				
8.1	5.23	5.71	5.37	0.107
8.2	4.57	4.20	5.12	0.420
8.3	3.78	4.00	3.84	0.662
8.4	5.25	5.33	5.27	0.794
8.5	5.56	5.53	5.55	0.939
8.6	2.72	3.67	3.00	0.143
8.7	5.57	5.80	5.64	0.438
8.8	4.78	5.00	4.84	0.560

Bold is supposed to mean $p < 0.05$.

Table 5
Questionnaire results in relation to generation.

Question	Generations				
	Mean Score				ANOVA Significance
	Babyboomers	Generation X	Generation Y	Total	
Topic 1 "structure and didactics"					
1.1	5.83	5.33	5.22	5.33	0.458
1.2	5.50	5.39	5.26	5.33	0.828
1.3	5.17	5.00	5.07	5.06	0.937
1.4	4.83	5.39	5.41	5.33	0.364
1.5	5.67	5.56	5.48	5.53	0.878
1.6	4.67	4.67	4.78	4.73	0.955
1.7	5.00	5.11	4.38	4.72	0.225
Topic 2 "motivational skills of the lecturers"					
2.1	5.50	5.39	5.22	5.31	0.717
2.2	5.33	5.28	5.37	5.33	0.891
2.3	5.50	5.33	4.85	5.10	0.252
2.4	4.67	4.94	4.59	4.73	0.625
2.5	5.17	5.17	4.85	5.00	0.568
2.6	4.83	5.33	4.88	5.04	0.352
2.7	5.17	5.11	4.78	4.94	0.539
2.8	5.33	5.06	4.59	4.84	0.262
Topic 3 "communicative competence of the lecturers"					
3.1	5.00	5.56	5.15	5.27	0.292
3.2	5.67	5.39	5.52	5.49	0.783
3.3	4.83	5.22	5.56	5.35	0.133
3.4	4.83	4.67	4.93	4.82	0.793
3.5	4.67	5.22	5.07	5.08	0.545
Topic 4 "Applicability and practical relevance of the course"					
4.1	5.33	5.17	5.33	5.27	0.758
4.2	5.67	5.39	5.22	5.33	0.502
4.3	5.67	4.89	4.96	5.02	0.297
4.4	4.33	3.67	3.78	3.80	0.707
Topic 5 "questions on further aspects"					
5.1	5.17	4.82	4.46	4.67	0.399
5.2	4.67	4.59	4.54	4.57	0.975
5.3	3.00	3.17	3.67	3.41	0.566
5.4	4.67	4.28	4.44	4.41	0.845
5.5	3.17	3.06	3.04	3.06	0.928
Topic 6 "overall assessment"					
6.1	5.67	5.44	5.41	5.45	0.617
Topic 7 "online tools"					
7.1	5.67	4.78	4.77	4.88	0.267
7.2	4.67	5.11	5.22	5.12	0.500
7.3	4.00	4.67	4.52	4.54	0.557
7.4	1.67	1.94	2.56	2.24	0.354
7.5	5.33	5.00	5.41	5.25	0.282
7.6	3.83	4.59	4.33	4.36	0.654
7.7	4.00	4.76	4.70	4.64	0.552
Topic 8 "specific questions on the attendees"					
8.1	5.40	5.22	5.46	5.37	0.720
8.2	5.00	4.22	4.50	5.12	0.533
8.3	3.83	4.00	3.74	3.84	0.877
8.4	5.67	4.83	5.48	5.27	0.066
8.5	6.00	5.78	5.30	5.55	0.101
8.6	3.83	3.06	2.78	3.00	0.538
8.7	6.00	5.35	5.74	5.64	0.256
8.8	5.00	4.50	5.04	4.84	0.340

active participation, convenience and immediate feedback between presenters and participants. In the present study, multimedia presentations, poll questions and live discussions between host, presenter and participants were used as didactic measures to reach this goal.

Besides didactics, there is another aspect that may explain the good acceptance of the webinars by the participants in the present study. Compared to conventional ways of continuing education, webinars allow flexibility as far as the location of instructors as well as participants is concerned. Therefore, expenses and inconveniences for both parties are minimized and the time-commitment for education is limited to the duration of the webinar (Power et al., 2014). For the present webinar series, it was

real-time multimedia demonstrations and supports multi-level interaction. Presenters can lecture, interact with the participants, and supervise participant group collaboration in a real-time format (Marjanovic, 1999). Typically, the webinar content is archived and can be accessed by the participants at a later point of time in order to deepen the learning effect by repetition. Moreover, persons who missed the synchronous real-time session can access the webinar content asynchronously (Mayorga et al., 2014). Consequently, all presentations of the present webinar series were made available online on the webpage of the Austrian Association of Oral and Maxillofacial Surgery.

The results of the present study show that webinars should be considered an acceptable teaching modality, facilitating interaction,

chosen to integrate the session in the workday. The webinars started at 7 a.m. in order to reduce disturbances of the daily work routine to a minimum. This aspect is of importance because European working time directives have resulted in a reduced presence of doctors at their workplaces. If doctors make use of conventional postgraduate educational opportunities, the consequence is a further reduction of working time. In this context, it has already been reported that clinical and operative abilities of the new generation of surgeons is subjected to impairment (Al-Hadithy et al., 2013). Now, doctors can attend webinars at their workplace, which means that they can follow continuing medical education with a minimum of loss of working time. Therefore, webinars may contribute to an increased participation of doctors in continuing medical education.

24 out of the 51 participants, who filled in the questionnaire completely, were 25–35 years of age. They belonged to the generation Y that was born between 1980 and 2000. This age group dominated the study as far as the number of participants was concerned. The members of the generation Y have characteristic preferences: they favor collaborative and team work, are multi-tasking and as the most important trait show a strong dedication to technology like the Internet (“digital natives”) (Mayorga et al., 2014). 21 participants belonged to generation X, born between 1965 and 1979. They are characterized by flexibility (challenge to keep up with the acceleration development of communication technology), the need for independence, the willingness to take responsibility and the fact that they grew up while communication technology started to develop faster and faster. Six participants belonged to the baby boomers born between 1946 and 1964. This group is characterized by idealism. It grew up without higher communication technology. Although the current literature attributes characteristic traits to the different generations, their acceptance of webinars did not differ significantly in the present study. Obviously, this format is suitable for each of the three generations.

The present study also analyzed gender differences. Previous studies on technology-enhanced learning showed that women were less familiar with technology and, therefore, encountered barriers that were not present for males (Nkenke et al., 2015). However, in the present study comparable results could not be found. Instead, female participants were even more satisfied with some aspects of the webinars than their male counterparts were. It seems that webinars have a potential for securing gender equality. With the increasing number of female doctors this aspect has a high relevance because women have to be attracted to do their specialization in oral and maxillofacial surgery, where they are still underrepresented at the moment (Nkenke et al., 2015).

In general, the success of adult learning depends on the relevance of the content. The learning motivation increases when adults can identify the usefulness of the knowledge to be acquired in their daily work (Allen, 2002). Moreover, reflection and formative feedback are important factors that facilitate the acquisition of knowledge and new abilities (Sieber, 2005). The new technology-driven teaching methods like webinars allow including all aspects mentioned afore and, therefore, seem to be well suited for the new generations of professionals (Mayorga et al., 2014).

Based on the results of the answers to the questionnaire, the present webinar series should be considered a relevant addition to continuing medical education in oral and maxillofacial surgery. Therefore, the Austrian Association of Oral and Maxillofacial

Surgery has decided to extend the webinar series to a 3-year curriculum.

5. Conclusions

Continuing medical education by webinars in oral and maxillofacial surgery is well accepted by the participants independent of age. Although both male and female participants had a positive attitude towards the webinars, females gave even better ratings to the webinars than their male counterparts did.

Conflicts of interest

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.jcms.2019.01.009>.

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