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Postgraduate training in Oral- and Maxillofacial Surgery: Results of a survey among 74 German interns

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ABSTRACT

The aim of this study was to assess a survey of residents to obtain relevant information about their current situation in training in Oral and Maxillofacial Surgery in Germany. Special focus was given to the personal and clinical preferences of the residents, their main subjects of interest and plans after residency. Furthermore, the different principles of education at German teaching hospitals were evaluated.

Overall, 74 questionnaires were completed on a voluntary and anonymous basis by German residents for Oral and Maxillofacial Surgery. Participants' mean age was 32.74 years (68% male, 27% female). Most participants were in the fifth year of training (32%) and members of the German Association of Oral and Maxillofacial Surgery (70%). This rate increased with progress in residency ($p = 0.006$). Most residents (70%) were employed at university hospitals, followed by non-university hospitals (26%) and private practices (4%). Residents from university hospitals (3.06 ± 0.39 years) were less advanced in training compared to residents from non-university hospitals and private practices (4.10 ± 0.54 years; $p = 0.005$). Part-time employed residents were significantly younger (30.64 ± 2.37 years) than full-time employed residents (33.25 ± 0.64 years, $p = 0.002$).

Structured concepts of training existed in 64% of the hospitals, while training depending on the current year of residency (42%) was most common. Most of the residents would prefer a systematic rotation system (59%). Main subjects of clinical interest were aesthetic (50%) and orthognathic surgery (46%). The interest in dento-alveolar surgery (34%) significantly increased with participants' age ($p = 0.008$). Clefts and malformations were favoured by few residents (16%). Most participants planned to specialize in facial plastic surgery after residency (76%).

The data collected might give evidence for an increasing importance of structured training concepts in Oral and Maxillofacial Surgery. It might be relevant to enhance the interest and the excitement of residents for oncology, traumatology, cleft and malformation surgery.

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1. Introduction

The Young Forum of residents of the German Association of Oral and Maxillofacial Surgery was originally founded in 2010 by one of

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the co-authors of this survey (Uwe Eckelt). The intention was to create a professional, scientific and political group representing the interests of residents in Oral and Maxillofacial Surgery within the German Association. The Young Forum is led by a chairperson and a vice chairperson chosen by biannual election. Eligible voters are residents who are members of the German Association of Oral and Maxillofacial Surgery. Co-chairpersons are being elected for the subjects of science and research and for education and training. There exists a close contact and cooperation between the Young Forum and the forum of the senior physicians of the German Association of Oral and Maxillofacial Surgery.

The academic conditions and the training in Oral and Maxillofacial Surgery significantly differ within the European Union and worldwide. As one of the few countries worldwide, in Germany a basic requirement for specialists in Oral and Maxillofacial Surgery is to be double qualified in medicine and dentistry. In most other countries of the European Union and worldwide, either a medical or dental degree is sufficient to become an Oral and Maxillofacial Surgeon. Currently, the time to become a fully-trained Oral and Maxillofacial Surgeon ranges between 13 and 16 years in Germany, including approximately 8–11 years for medical and dental school (dependent on the order) and 5 years for training in Oral and Maxillofacial Surgery. This time has increased in the past decades since a simultaneous visit of medical and dental school is no longer possible at most universities. Furthermore, the needed clinical training time has been increased from four years to five years. After this, a further two-year qualification program can be taken to earn a degree in facial plastic and aesthetic surgery. The contents of training in Oral and Maxillofacial Surgery in Germany are prescribed by the respective medical associations of the federal states and are to be implemented by the teaching hospitals or practices. In this context, teaching hospitals can use their individual training concepts to fulfil the required contents.

The aim of this study was to perform and evaluate a survey among German residents to obtain detailed information regarding their current situation in training in Oral and Maxillofacial Surgery in Germany.

2. Material and methods

A questionnaire consisting of 24 closed questions and several opportunities to provide additional information was used to obtain relevant information of the respondents about their training in Oral and Maxillofacial Surgery. The questionnaire's focus was laid on the preferences of trainees regarding the principles of education at German training hospitals, trainees' main subjects of interest and their further plans after finishing their trainee program. The questionnaire's contents are shown below (Table 1).

Questionnaires were handed out at the residents' day of the Young Forum at the 67th annual meeting of the German Association of Oral and Maxillofacial Surgery in Cologne-Bonn and during seminars and courses for German speaking residents currently in training. Insufficiently completed questionnaires failing to include basic information such as their age or current year of training were excluded from the study.

Results were collected in Microsoft Excel for Mac 14.7.7 and processed with Wizard Statistics version 1.9.16 (by Evan Miller, Chicago, Illinois, USA). A Student's t-test was performed to compare means of normally distributed, independent groups. Pearson correlation was used to identify and evaluate bivariate correlations. For each, p-values ≤ 0.05 were considered to be statistically significant.

3. Results

In total, 74 questionnaires were filled in sufficiently and were included into the study. The average participant age was 32.74

Table 1
Overview of the questionnaire.

Personal Information	- Age and Gender - Current year of training
Memberships	- Membership of the German Association of Oral and Maxillofacial Surgery - Membership of its Science and Research working group (AKWi)
Place of Employment	- Training in full-time or part-time employment - Employment at a university hospital, general hospital or private practice - Possibility to complete training at the respective hospital within 5 years - Possibility to start training single qualified
Training Concepts	- Availability of a clear training concept at the current hospital - If applicable, what kind of training concept is currently used? - Rating of the current training concept - Possibility of exemptions from regular duty (e.g. for research) - Are there regular performance interviews? - If applicable, at what interval? - If applicable, do they contain target agreements (for training)? - Overall rating of the current training situation
Personal Preferences	- What kind of training concept is personally preferred? - Is there a personal wish or need for exemption from regular duties (e.g. for research)? - What is the main intention after completing training? - What are the personal clinical preferences (e.g. oncology, traumatology, orthognatic surgery, dento-alveolar surgery, clefts and malformations, aesthetic surgery)? - Individual significance of clinical and surgical training - Individual significance of reconcilability of work and family - Individual significance of reconcilability of scientific work and clinical activities
Open Questions	At several points there was space given to the participants to give further information about their situation and personal preferences as free texts.

years, 50 (68%) were male and 20 (27%) were female. Four participants did not provide information about their gender (5%). 59 participants (80%) were employed full-time. This did not differ significantly by gender, yet part-time employed residents were significantly younger (30.64 ± 2.37 years) than full-time employed residents (33.25 ± 0.64 years, $p = 0.002$).

Regarding the current year of training, 8 (11%) participants were in their first year, 15 (20%) in their second, 17 (23%) in their third, 9 (12%) in their fourth and 24 (33%) in their fifth year. One participant (1%) had just recently completed his residency (Fig. 1).

Within the study group, 52 participants (70%) were registered as regular members of the German Association of Oral and Maxillofacial Surgery. The rate was higher for more senior residents ($p = 0.006$). Members of the German Association of Oral and Maxillofacial Surgery were on average at the middle of the fourth year of training (3.65 ± 0.38 years), while non-members were on average at the middle of the third year of training (2.68 ± 0.62 years). Trainees at university hospitals were on average at the beginning of the fourth year of training (3.06 ± 0.39 years) and trainees at other hospitals were on average at the beginning of the fifth year of training (4.10 ± 0.54 years).

52 (70%) participants were employed at university hospitals and 22 (29%) at non-university institutions (of which 19 (26%) were in non-university hospitals and 3 (4%) in private practices). Residents at a university hospital were on average at the beginning of the

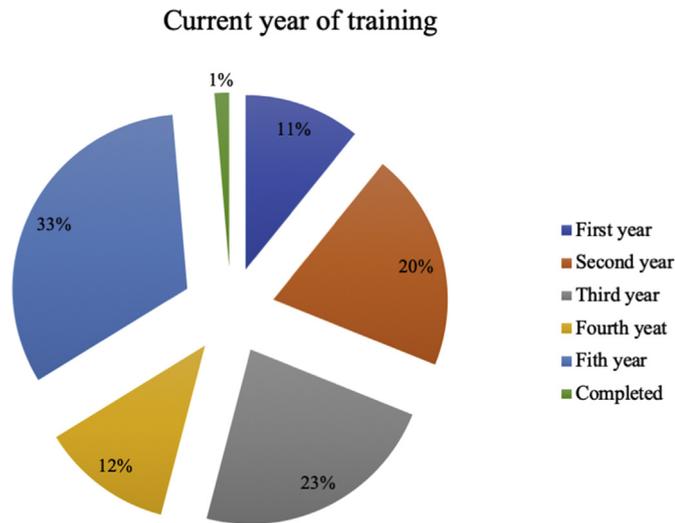


Fig. 1. Current year of training. Most of the participants of the survey were in the fifth year of training (33%), followed by the third (23%) and the second year (20%) of training.

fourth year of training (3.06 ± 0.39 years) and residents at a general/non-university hospital were on average at the beginning of the fifth year of training (4.10 ± 0.54 years). At the time of the survey, residents from university hospitals were on average one year less advanced in their training than those from private hospitals and practices ($p = 0.005$).

Most participants (72, 97%) stated that they expect to be able to complete their training within the regular timeframe at their current place of employment. 64% (47) of the employers provided the participants of the current study with a structured concept of training. Most often, this was a stepwise concept dependent on the current year of residency (29, 39%), followed by concepts of rotation, e.g. to be for a specified period of time in the general ambulatory, followed by a specified period of time in the tumor consultancy and so on (26, 35%) (Fig. 2).

When being asked for their personal preferences, concepts of rotation (44, 59%) and training depending on the current year of residency (31, 42%) were preferred by most participants (Fig. 3).

Most residents evaluated the current concept of training as moderate (39, 53%) and very good (16, 22%). Ten residents (13%)

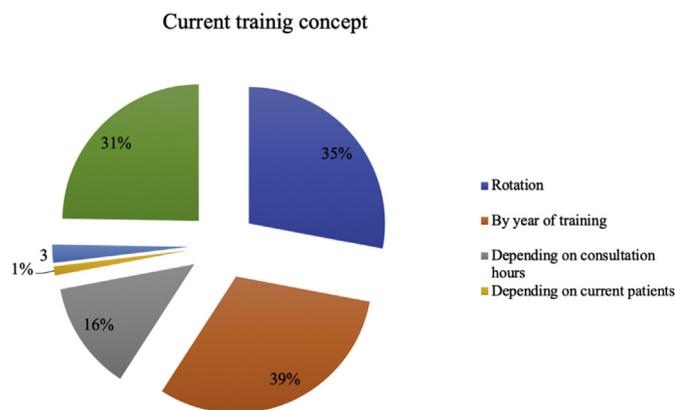


Fig. 2. Current training concept. The most often used training concepts in German hospitals (university and general/non-university hospitals) are the training concept that training is depending by the year of training (39%), followed by the rotation concept (35%) and other concepts (20%).

evaluated the current concept as inadequate, nine (12%) did not provide information on this topic. Applying for exemption from regular duties for scientific research was possible for 33 (45%) participants. 63 (85%) stated that they would favor this opportunity at their institution. This did not differ significantly by the personal progress within their residency, by age or by gender.

Regular performance interviews were conducted by the majority of participants' employers (64, 87%). These were mainly held on a yearly basis (55, 74%) or every six months (5, 7%). Other intervals were rarely found (3, 4%). Specific personal goals were discussed as a part of these regular evaluation interviews for 49 (66%) employees.

Most participants (59, 79%) stated that they worked in a clinic also offering employment for single-degree residents, that means residents who have, e.g., finished medical school and are still visiting the dental school while they are parallel working in the Department of Oral and Maxillofacial Surgery.

The most common personal goal after residency was to specialize within the field of plastic facial surgery (56, 76%). A postdoctoral scientific career was favored by 22 (30%), employment in a private practice or self-employment after completing their residency by 20 (27%) (Fig. 4). Participants were allowed to select multiple answers for these questions.

The filled-in questionnaires also provided information about main subjects of interest. Participants were allowed to select multiple answers for these questions. Aesthetic (37, 50%) and orthognathic surgery (34, 46%) were favored by most participants, followed by dento-alveolar surgery (25, 34%). Oncology was considered to be a subject of main interest for 18 participants (24%), whereas traumatology and cleft surgery were stated by 13 (18%) and 12 (16%) residents, respectively (Fig. 5).

Apart from the interest for dento-alveolar surgery increasing with the participants' age ($p = 0.008$), no statistically significant link was found for changes in personal interest dependent on place of employment or year of residency.

Most residents stressed the importance of reconcilability of family and work (36 (49%) very important, 33 (45%) important, 4 (6%) not important). Options to conduct scientific work besides the clinical routine was important for 33 (45%), 22 (30%) found this very important. Seventeen (23%) did not consider this to be personally important. Neither the participant's individual year of residency, nor sex were shown to have significant influence on the individual importance of reconcilability of family or scientific career and clinical work.

4. Discussion

The participants of this survey were recruited from residents participating in the annual residents' day of the German Association of Oral and Maxillofacial Surgery. The mean age of 32.74 years seems in general to be above the expected for residents in Oral and Maxillofacial Surgery in Germany. This is likely to be due to the high requirements for training in Oral and Maxillofacial Surgeons in Germany, such as the necessity of double qualification and the long postgraduate training period ranging generally speaking from five to seven years.

The number of women in training (20%) seems to be low compared to other fields of medicine, such as internal medicine or cardiology (40%) (Walsh, 2018). Otherwise, a proportion of 20% of women in Oral and Maxillofacial Surgery within the limitations of this survey seems to be promising compared to other fields of surgery, such as orthopedic surgery in the U.S. (14%) (Chambers et al., 2018). Possible reasons for the low number of woman in Oral and Maxillofacial Surgery might be difficulties in reconciling family and profession life as well as gender inequalities concerning

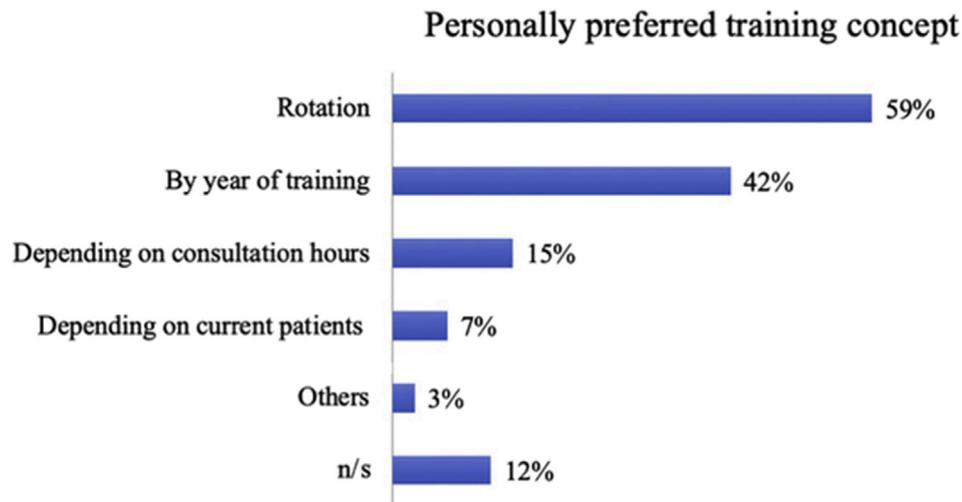


Fig. 3. Preferred training concepts. The training concepts most often preferred by residents are the rotation concept (59%), followed by the training concept that training is depending by the individual training level (42%) and the concept depending on consultation hours (15%). Multiple answers were possible. 12% of the participants did not provide an answer (n/s = not specified).

career developments. In this context, a recent study analyzed social factors and their influence and possibly resulting obstacles on the career of female Oral and Maxillofacial Surgeons in the Middle East. The findings showed significant differences concerning marital status, marriage partner's education and career between female and male surgeons. In comparison to male Oral and Maxillofacial Surgeons, female surgeons reported that marriage, family and children can be considered as significant career barriers. Contrary to male counterparts, female Oral and Maxillofacial surgeons were often unmarried and childless (Dar-Odeh et al., 2019). To conclude, the findings of that study demonstrated a gender distribution of 63.6% male and 36.4% female in Oral and Maxillofacial Surgery in Egypt, Jordan and Saudi Arabia that might give also further evidence for the limited number of female surgeons and residents in Oral and Maxillofacial Surgery in Germany (Dar-Odeh et al., 2019). This is supported by the findings of the present survey showing the probably increasing importance of the reconciliation of family and work for German residents. Besides this, woman in surgery have been shown to be more likely married to a full-time working partner. Especially in faculties, women like to undertake tasks such family planning and to manage their households (Baptiste et al., 2017). Radunz et al. analyzed career intentions of female surgeons in Germany. Female surgeons wished to get leadership positions and did not want to follow traditional social role models.

They wanted to combine work and family (Radunz et al., 2017). A further reason might be a possible gender payment gap. In Japan, the salary of male surgeons is significantly higher than the salary of female surgeons. While married men are better paid compared to unmarried men, this was not observed for female surgeons (Okoshi et al., 2016). Currently, there is no literature available regarding this topic in Oral and Maxillofacial Surgery in Germany. This could be evaluated in a further study. It could be of further interest whether the low number of woman (20%) might be demonstrating a reduced interest in conferences such as the annual meeting of the German Association of Oral and Maxillofacial Surgery in comparison to male surgeons. Next, the necessity of double qualification in medicine and dentistry might also have an influence since the overall long education and training to become an Oral and Maxillofacial Surgeon and the resulting late start of a career might additionally complicate the reconciliation of family and work, especially for women. In this context, the question of whether a full double qualification is required, or alternatively, e.g., a shortened training in dentistry after finishing medical school, is adequate to become an Oral and Maxillofacial Surgeon is discussed controversially (Sand et al., 2013; Kumar 2017, Martin-Granizo, 2017). Prospectively, the number of women training in Oral and Maxillofacial Surgery might increase, since the number of female students in medicine and especially in dentistry has continuously increased in

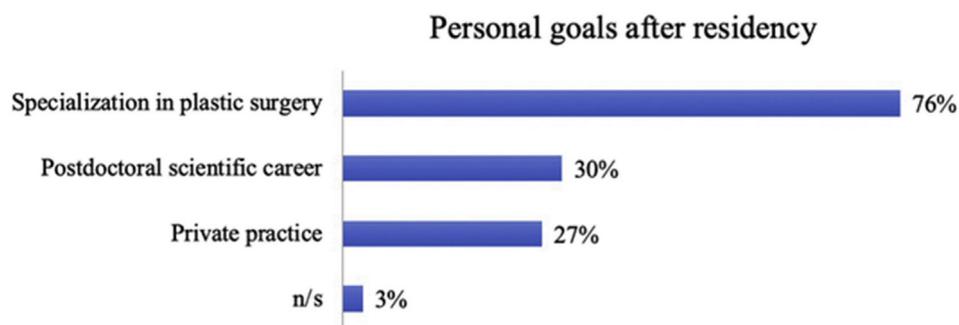


Fig. 4. Personal goals after residency. Most of the residents (76%) focus on a specialization in facial plastic surgery after finishing their training in Oral and Maxillofacial Surgery. Next, a postdoctoral scientific career (30%) and a private practice (27%) are in the focus of interest. Multiple answers were possible. 3% of the participants did not provide an answer (n/s = not specified).

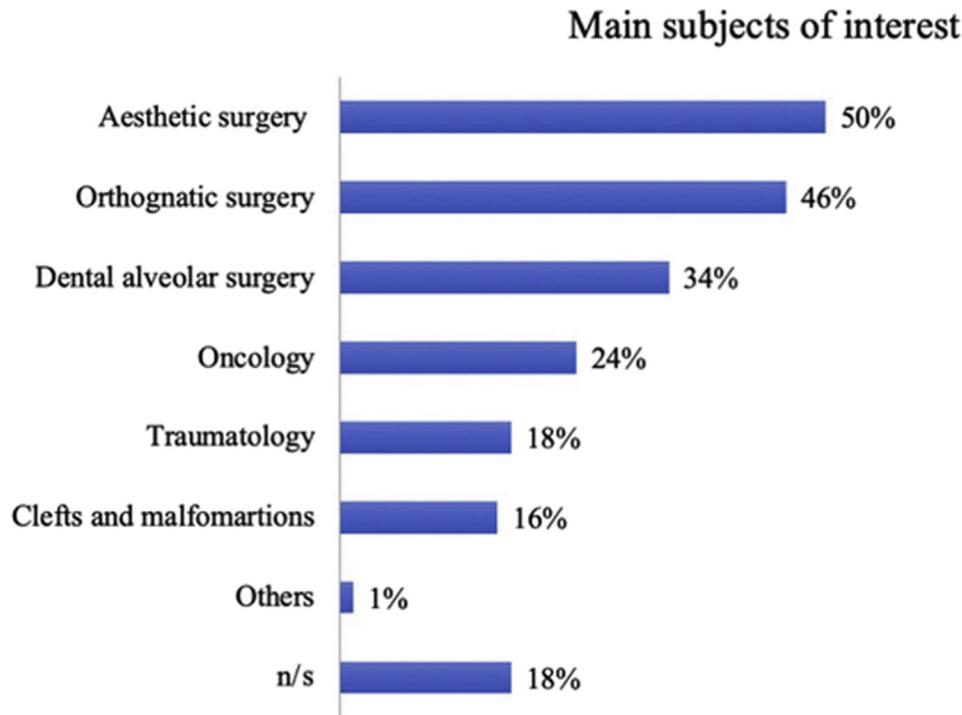


Fig. 5. Main subjects of interest. The main subjects of interest for residents in Oral and Maxillofacial Surgery were aesthetic surgery (50%), followed by orthognathic (46%) and dento-alveolar surgery (34%). The subject of interest with the lowest popularity was cleft- and malformation surgery (16%). Multiple answers were possible. 18% of the participants did not provide an answer (n/s = not specified).

the years (Nkenke et al., 2017). This trend can be expected to continue. In general, it will be an ongoing challenge to inspire dental and especially medical students for training in Oral and Maxillofacial Surgery since there is little time to teach Oral and Maxillofacial Surgery at medical schools, resulting in very limited knowledge about Oral and Maxillofacial Surgery (Kielty et al., 2017; Hamid et al., 2018).

In the present study, there were a high number of members of the German Association of Oral and Maxillofacial Surgery within the participating residents (70%). The frequency of members of the German Association of Oral and Maxillofacial Surgery was shown to be increasing by the year of training, and residents at university hospitals become members of the German Association earlier than residents of non-university hospitals, by trend. This might reflect their interest in a professional society, education, training, research, research presentation and professional policies within the field of Oral and Maxillofacial Surgery in Germany. It needs to be taken into consideration that the results of this survey may therefore be positively biased.

Training and education in Oral and Maxillofacial Surgery in Germany's hospital landscape is mainly focused on university hospitals, followed by non-university hospitals and then by private practices. Apart from regulations regarding the contents of training of the responsible state chamber of medicine, there seems to be no common proof of concept for training and education in Oral and Maxillofacial in Germany. Especially no uniform concept guiding and regulating the process of training and education was found. The overall satisfaction of residents with the training concept in the teaching hospital – if available – was “moderate”. This can be considered as a limited satisfaction. In contrast to this, nearly 80% of the trainees were satisfied with their surgical training (Gigliotti and Makhoul, 2015) in Canada. In the U.K., the overall satisfaction was reported to be 5.5 on a scale of 0–10 in a current study (Garg et al., 2018). This might also be influenced by the high costs for exams,

conferences and courses in the U.K. (Varley and Kumar, 2016). Since a high level of satisfaction represents a powerful instrument for residents' motivation and therefore work performance to an increased quality of patient treatment, teaching hospitals should consider this aspect intensively. A high level of satisfaction might additionally prevent work-related diseases such as anxiety disorders or burnout syndrome in residents in Oral and Maxillofacial Surgery, as reported in the United States, resulting in low levels of personal achievement (Shapiro et al., 2017; Al Atassi et al., 2018). Consequently, a high level of satisfaction and a high level of training and education should be a central aim for teaching hospitals and the German Association.

Dominating training concepts at German hospitals are training in a stepwise concept dependent on the current year of residency and the rotation concept, which is currently also preferred by most of the trainees. On the one hand, a uniform nationwide training concept (e.g. rotation system) might be helpful to standardize the training in Oral and Maxillofacial Surgery. On the other hand, individual scopes of action concerning the individual training concepts within the teaching hospitals offer a variety of possibilities, eventually leading to innovations and further developments within our profession.

As shown in the results of this survey, aesthetic and orthognathic surgery are of special interest for trainees in Oral and Maxillofacial Surgery in Germany. Alternatively, cleft and malformation surgery as well as trauma surgery seem not to be in the primary focus of interest for trainees. One reason might be the fact, that cleft and malformation surgery require extended surgical skills and are often only performed by a small group of more senior surgeons at centers or larger hospitals with a high frequency of these cases. Consequently, there is no necessity for a high number of Oral and Maxillofacial Surgeons who are focused in cleft and malformation surgery. Alternatively, it is also important to conserve the surgical skills in cleft and malformation surgery as care

competencies of Oral and Maxillofacial Surgery since the ENT- and Plastic Surgeons are performing cleft and malformation surgery (Raghavan et al., 2018; Rügge et al., 2019).

The findings of this survey demonstrate a strong and relevant interest of residents in specializing in facial plastic surgery after residency. As a possible reason, facial plastic surgery might be of special interest as it is lucrative for private practice, while oncology and malformation surgery are usually not the focus of Oral and Maxillofacial Surgeons in private practices in Germany. It should be the subject of further studies, whether the interest for plastic surgery exists from the beginning of the residency or is continuously developing during the course of it. In this context, it should be mentioned that facial plastic surgery is also performed by Head and Neck- (e.g., in the U.S.), ENT- (ear, nose, throat), plastic- and dermatosurgeons without the need for double qualification in medicine and dentistry. It can be discussed whether there are time- and cost-saving alternatives, such as training in ENT for residents who identify practicing in facial plastic surgery as their personal goal.

Contrary to facial plastic surgery, a double qualification in medicine and dentistry is essential for subjects such as oncology and cleft- and malformation surgery that were of interest for very few residents in this survey. The reasons for that are unknown and should be further evaluated.

Only 24% of the trainees were primarily interested in oncology. This should give cause for reflection, because oncology and oncologic reconstruction represent an extremely important part in Oral and Maxillofacial Surgery that is performed in high frequency and on a high medical level at almost all teaching hospitals. This is relevant since also ENT- and Plastic Surgeons are partially treating and reconstructing oral cancer patients. By comparison, in Canada the highest level of satisfaction was seen in the fields of traumatology and orthognathic surgery. The lowest level of satisfaction was observed in plastic- and reconstructive surgery as well as in cleft- and malformation surgery (Gigliotti and Makhoul, 2015). This high level of interest in trauma surgery is contrary to a low level of interest in trauma surgery in Germany.

Comparing different years of training, there was a (statistically non-significant) trend that the interest of German residents for dento-alveolar surgery continuously increased by the years of training completed. This observation might give evidence that there might be an increasing interest to prepare for employment in private practice corresponding with progress in training in Oral and Maxillofacial Surgery and the time that was spent for training. Whether personal interest or financial reasons contribute to this should be subject to further studies. Similar to the high interest of some residents for plastic facial surgery, even for participants with a high interest for dento-alveolar surgery, training in oral surgery for three to four years without a need for double qualification might represent a promising and effective alternative contrary to become an Oral and Maxillofacial Surgeon.

Overall, there might be a conflict of interest for German trainees either to pursue a scientific and clinical career in a hospital or alternatively to leave major hospitals and work in private practice. This might be another interesting topic for a future survey. Concepts of part-time work in private practice and hospital practice might help to keep experienced surgeons at teaching hospitals. These concepts have been proven to be very popular among trainees in Canada (75% approval rate) (Gigliotti and Makhoul, 2015).

Finally, the presented study might be biased since exclusively residents that participated at the residents' day of the Young Forum were invited. Therefore, this study can only be considered as a representative survey among all residents in Oral and Maxillofacial Surgery in Germany with limitations. Obtaining and evaluating

representative data among all German residents will be reserved for a further study.

5. Conclusions

Since residents' satisfaction rates concerning the training concept were limited, teaching hospitals might evaluate their current training concepts. Modifications might be performed, if necessary. Teaching hospitals without a teaching concept might think about the creation and introduction of such a concept. This might help to increase residents' level of satisfaction. Training concepts in general should be familiar with part-time employment and should enable a compatibility of family and profession. It might be attractive for residents to have the possibility to focus increasingly on a special field of interest in training, such as oncology, at a specific point of residency (e.g. at the last year of training).

Declarations of interest

None.

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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.2019.07.029>.

References

- Al-Atassi H, Shapiro MC, Rao SR, Dean J, Salama A: Oral and maxillofacial surgery resident perception of personal achievement and anxiety: a cross-sectional analysis. *J Oral Maxillofac Surg* 76: 2532–2539, 2018
- Baptiste D, Fecher AM, Dolejs SC, Yoder J, Schmidt CM, Couch ME, et al: Gender differences in academic surgery, work-life balance, and satisfaction. *J Surg Res* 2018: 99–107, 2017
- Chambers CC, Ilnow SB, Monroe EJ, Suleiman LI: Women in orthopaedic surgery: population trends in trainees and practicing surgeons. *J Bone Jt Surg Am* 100: e116, 2018
- Dar-Odeh N, Elsayed SA, Nourwali I, Ryalat S, Al-Shayyab MH, Abu-Hammad O: Social factors as career obstacles for female oral and maxillofacial surgeons in three Middle Eastern countries. *Int J Oral Maxillofac Surg*. <https://doi.org/10.1016/j.ijom.2019.03.001>, 2019 Mar 22 pii: S0901-5027(19)30106-7. [Epub ahead of print]
- Garg M, Collyer J, Dhariwal D: "Run-through" training at specialist training year 1 and uncoupled core surgical training for oral and maxillofacial surgery in the United Kingdom: a snapshot survey. *Br J Oral Maxillofac Surg* 56: 327–331, 2018
- Gigliotti J, Makhoul N: Demographics, training satisfaction, and career plans of Canadian oral and maxillofacial surgery residents. *Int J Oral Maxillofac Surg* 44: 1574–1580, 2015
- Hamid S, McNeill B, Saeed N: Knowledge of final-year medical students about oral and maxillofacial surgery: a two-centre study. *Br J Oral Maxillofac Surg* 56(7): 582–585. <https://doi.org/10.1016/j.bjoms.2018.06.006>, 2018 Sep [Epub 2018 Jul 3]
- Kielty PGC, O'Connor BR, Cotter CJ, Goodson AMC, Payne KFB, Tahim A: Medical students' understanding of oral and maxillofacial surgery: an Irish perspective. *Br J Oral Maxillofac Surg* 55: 371–377, 2017
- Kumar S: Training pathways in oral and maxillofacial surgery across the globe - a mini review. *J Maxillofac Oral Surg* 16: 269–276, 2017

- Martin-Granizo R: Double degree in oral and maxillofacial surgery - is it necessary? *J Oral Maxillofac Surg* 46: 34, 2017
- Nkenke E, Vairaktaris E, Schaller HG, Perisanidis C, Eitner S: Influence of gender of the teaching staff on students' acceptance of a virtual implant planning course. *J Craniomaxillofac Surg* 45: 614–619, 2017
- Okoshi K, Nomura K, Taka F, Fukami K, Tomizawa Y, Kinoshita K, et al: Suturing the gender gap: income, marriage, and parenthood among Japanese Surgeons. *Surgery* 159: 1249–1259, 2016
- Radunz S, Hoyer DP, Kaiser GM, Paul A, Schulze M: Career intentions of female surgeons in German liver transplant centers considering family and lifestyle priorities. *Langenbecks Arch Surg* 402: 143–148, 2017
- Raghavan U, Vijayadev V, Rao D, Ullas G: Postoperative management of cleft lip and palate surgery. *Facial Plast Surg* 34: 605–611, 2018
- Rüegg EM, Bartoli A, Rilliet B, Scolozzi P, Montandon D, Pittet-Cuénod B: Management of median and paramedian craniofacial clefts. *J Plast Reconstr Aesthet Surg* 72: 676–684, 2019
- Sand L: Oral & maxillofacial surgery- the double qualification dilemma. *Otolaryngology* 3: e110, 2013
- Shapiro MC, Rao SR, Dean J, Salama AR: What a shame: increased rates of OMS resident burnout may be related to the frequency of shamed events during training. *J Oral Maxillofac Surg* 75: 449–457, 2017
- Varley I, Kumar A: Cost of training in oral and maxillofacial surgery: beyond the second degree. *Br J Oral Maxillofac Surg* 54: 956–958, 2016
- Walsh MN: Women as leaders in cardiovascular medicine. *Clin Cardiol* 41: 269–273, 2018