Article type: original study

Title: The dental healthcare professionals' competence in mentoring students in the clinical practice

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Conflict of interest

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Title: The dental healthcare professionals' competence in mentoring students in the clinical practice

Abstract:

Objective: The aim of this study was to evaluate dentists', dental hygienists' and dental assistants' competence in mentoring students, as well as to identify distinct mentor profiles.

Methods: The study employed a cross-sectional design. Data were collected using the Mentors' Competence Instrument (MCI), which includes 45-items structured under seven mentoring competence sub-dimensions. The data were collected during autumn 2017 from dentists, dental hygienists and dental assistants working in the Finnish primary healthcare (n=1097) using a paper survey, while dentists (n=26) who have completed mentoring education in one university completed an electronic questionnaire. Cases with more than 5% missing data (n=164) were list-wise deleted, while the remaining data (n=933) underwent analysis. K-mean clustering was used to identify significantly different mentor profiles, while comparisons of mentoring competence between the identified profiles were performed with Kruskal Wallis and Mann-Whitney tests.

Results: Three distinct mentor profiles (A, B & C) that differed in the level of mentoring competence were identified. The participants in profile A encompassed mostly dental assistants, profile B included mostly dental assistants and dentists, and profile C mainly comprised dentists and dental assistants. Profiles A, B, and C differed significantly in terms of education, job title, role of mentor and participation in mentoring education. The largest difference in competence was observed between participants of profiles A and C. Each

profile differed significantly from the other two across all seven competence areas. Most of the participants had not previously received any mentoring education.

Conclusion: There is room for improvement in the competence of dentistry student mentors, especially regarding knowledge of effective mentoring practices, goal-oriented mentoring, mentor characteristics and motivation for mentoring. Every mentor that works with oral healthcare students should receive mentoring training.

Keywords: mentor, clinical practice, oral healthcare, competence

1 INTRODUCTION

Clinical practice is an integral part of oral healthcare students' professional education.¹ Changes related to lengthening clinical practice and modifying previous educational structures necessitate higher competence among mentors of oral healthcare students. Mentors influence the development of students' professional competence by acting as role models.² Students at higher education institutions generally spend more time with their clinical mentors than with other educators.^{2, 3} Mentors help students plan their clinical practice program, set specific learning goals, and get acclimated to the working environment as they develop their professional competence.^{3, 4} Clinical mentoring needs to be based on current best practices and evidence-based guidelines,⁵ both of which are prerequisites for higher education students achieving successful outcomes.^{3, 4}

Clinical practice leaders and educators should be aware of the tasks that mentors need to complete while mentoring students in oral healthcare settings. Mentors can only successfully guide students into the working environment if they are provided with sufficient resources, adequate time, and the possibility to receive mentoring education.^{4, 6} According to previous studies, mentoring education is especially beneficial to improving mentors' competence in the areas of communication and collaboration between educators and clinical practice.^{7, 8} However, several other studies revealed that healthcare mentors had not necessarily received mentoring education,⁹ a finding which forces us to question the current quality of clinical practice.^{10, 11} We have focused on dental health care education as mentors' competence has – to the best of our knowledge – rarely been studied in this context.

The aim of this study was to evaluate dentists', dental hygienists' and dental assistants' competence in mentoring students, as well as identify distinct mentor profiles.

1.1. Background

Clinical placements are a fundamental component of oral healthcare education programs.¹ A Licentiate of dentistry can only be obtained from a university-level institution. The curriculum for this degree is guided by best academic practices for European undergraduate dental education, published by the Association for Dental Education in Europe (ADEE), and national degree guidelines.¹⁴ The degree program in Dentistry is based on 330 European Credit Transfer and Accumulation System (ECTS) credits, and can be completed in five-and-a-half years of full-time studies. Clinical education accounts for more than a fifth (70-80 ECTS) of the total theoretical studies. The mentor is usually a dentist by profession and is nominated from a pool of dentists with a minimum of two years of clinical dentistry work experience. Dental hygienists or dental assistants can also be part of the multiprofessional team.^{1, 3, 13}

Dental hygiene students study at a university of applied sciences, and the dental hygienist education is based on a European qualifications framework.¹⁴ Moreover, in Finland, the education is regulated by the University of Applied Sciences Act (2014). The dental hygienist degree program encompasses 210 ECTS credits and can be completed during three-and-a-half years of full-time studies. The program strongly emphasizes clinical education, which accounts for over one-third (75 ECTS) of the total studies. Students are mentored by clinical mentors who are dental hygiene professionals.^{1, 2}

Dental assistant students' study at a vocational college of professional education. The vocational education program provides up-to-date education that is in line with the needs of work life. Legal reforms of Finnish vocational education in 2018 transformed the program by making it more knowledge-based and customer-oriented, with an increased share of at-the-workplace learning. This on-the-job learning process occurs in an authentic professional setting during clinical practice.¹⁰

Mentors need to guide students in developing competence in various aspects, including professionalism, ethical decision-making, the integration of theoretical knowledge into practice, critical thinking, problem-solving skills and confidence with technical procedures. Every mentor should pay special attention to these competencies.³ It is important for mentors to recognize their own strengths and weaknesses regarding expertise and mentoring competence, as their actions strongly influence students' professional decision-making.² Previous studies have reported that mentors commonly guide clinical practice students based on their own clinical experiences rather than educational competencies.^{3, 4} This finding demonstrates the importance of mentoring education, as mentors who have completed this education will have developed skills related to goal setting and problem-solving in various learning situations.² Mentoring education also covers clinical mentoring and how to build a positive learning culture.⁷

Mentors who are competent at mentoring students need to be able to support students' personal and professional development⁷ as well as take into account students' distinct learning needs.² Mentors should provide clinical practice students with constructive and continuous feedback that is conducive to their professional competence development. Assessments of student performance must be clear and transparent, for instance include checklist criteria, to support continuous learning among students. Mentors can also promote continuous learning by supporting students in developing their self-assessment skills, as this will improve students' motivation towards professional development^{5, 16} and promote lifelong professional learning.

The mentor needs to offer students opportunities to develop their cognitive, psychomotor and affective skills, all of which are essential in facilitating the transition from student to healthcare professional.^{1, 2, 18} Previous research has identified several mentor characteristics, (e.g., positive attitude, effective communication skills, commitment, ability to listen to students), that positively affect students' learning experiences and adaptation to professional practice.⁵

As such, oral healthcare mentors perceive time management and commitment during increased workloads as their key challenges.⁴ Cooperation between educators and mentors needs to be enhanced to improve the quality of clinical placements and meet the requirements of specific higher education institutions.⁵

2 METHODS

2.1. Study design

The present study applied a cross-sectional study design.

2.2. Participants and settings

The participants were dentists, dental hygienists and dental assistants working in Finnish primary healthcare (n=1097), or dentists (n=26), who have completed mentoring education in one university. The provision of mentoring training in one university is organized by the university. The mentoring training in university was based on blended learning, including face-to-face seminars and workshops conducted during four days and home assignments with a total of five weeks' length. The provision of mentoring training to the primary healthcare workers was organized by the health care district, university of applied sciences, or other similar providing dental health education. Such type of mentoring training typically consists of a specialist lecture or seminar of one day. The inclusion criterion was that the individual was a dental healthcare professional (i.e., dentists, dental hygienists and dental assistants) working in a primary healthcare setting that provides clinical practice for students or at a university that offers dentistry education. Three distinct mentor profiles (A, B & C) that differed in the level of mentoring competence were identified. The participants in profile A encompassed mostly dental assistants, in profile B, mostly dental assistants and dentists, and profile C, mainly dentists and dental assistants. The data were analyzed for missing values by calculating Missing as Random (MAR), Missing Completely At Random (MCAR) and Missing Not at Random (MNAR) values. Cases with more than 5% missing data (n=164) were listwise deleted,²⁰ and the remaining data (n=933) underwent data analysis.

2.3 Data collection

Data were collected from all participants working in primary healthcare (N=3209) and dentistry (N=26), who have completed mentoring education in one university from October to November 2017. Dental healthcare professionals working in primary healthcare received a

paper questionnaire while the dentists who have completed mentoring education in one university answered an electronic questionnaire.

2.4. Instrument

The questionnaire included 12 background questions and the Mentors' Competence Instrument (MCI).^{18, 19} The background questions covered areas such as education, unit of work, work experience and mentor tasks. The MCI consists of 45 items over seven sub-dimensions, more specifically, mentor characteristics (7- items), mentor motivation (7-items), mentoring practices in the workplace (6- items), reflection during mentoring (6-items), goal-oriented mentoring (9- items), and student-centered evaluation (10 items). Respondents rate each item of the instrument using a 1-4 Likert scale (1=totally disagree, 2=disagree to some extent, 3=agree to some extent, and 4=totally agree). Tuomikoski et al. (2018) and Mikkonen et al. (2019) have conducted construct validations of the instrument. In the present study, the instrument was content validated by five experts. The experts evaluated the MCI items for content appropriateness and determine whether they were comprehensible to dental healthcare professionals. The reliability of the instrument – in terms of Cronbach's alpha – varied between 0.89-0.91 (see Table 1).

2.5. Ethical Considerations

All of the research presented in this article followed guidelines for ethical research.²⁰ This cross-sectional study did not require the approval of an ethical committee.²¹ Research permission was obtained from the Finnish dental association, the participating primary healthcare organizations and Oulu university. All of the invited participants were clearly told that their participation was voluntary. Moreover, the cover letter of the questionnaire outlined the study purpose, protection of participants' anonymity, and contact details of the researchers. Answering the questionnaire was taken as conscious agreement to participate in the study.²⁰ Respondent confidentiality was assured throughout the study.

2.6. Data analysis

The data were analyzed with SPSS 22.0 (IBM, Armonk, NY, USA). The descriptive statistics were reported as frequencies, percentages, and standard deviations, as well as mean and

median values. K-mean clustering was performed to identify significantly different mentor profiles. The demographics of the three distinct mentor clusters were compared, with the t-test applied to scale variables and the Chi-square test applied to categorical data. Differences in various mentoring competence areas between the groups, identified through K-mean clustering, were analyzed using the Kruskal Wallis test and Mann-Whitney test with Bonferroni correction. All of the possible between-group comparisons (A-B, A-C, and B-C) were performed. The threshold for statistical significance was set at a p-value < 0.05.

Binary logistic regression analysis was performed on three factors: mentoring practices in the workplace; mentor motivation; and student-centered evaluation. The scores for these factors were then dichotomized to reflect lower competence (0=1-2.49 Likert scores) and higher competence (1=2.50-4 Likert scores). The goodness-of-fit of the produced binary logistic models was tested with the log likelihood ratio (2LL), Omnibus model coefficient, Hosmer and Lemeshow test, Cox and Snell test, and Nagelkerke R-square test. The results are presented as odds ratios (ORs) with 95% confidence intervals.²²

3 RESULTS

3.1. Sample characteristics

Data from a total of 933 participants were analyzed in this study. The participants were predominantly female (n=865, 92.2%), with only 7.1% of the participants (n=66) representing males. Participant age ranged from 18 to 66 years old (M = 46.13, SD = 11.83) and work experience in dental healthcare ranged from 2 months to 46 years (M = 19.72, SD = 12.92). Nearly half of the participants were dental assistants (49.3%), after which almost a third of participants were dentists (28.4%) and nearly one-fifth were dental hygienists (18.7%). Participants were “named mentors” (37.6%) or “mentors” (48.3%). Most of the participants (75.8%) did not report having previously received mentoring education.

3.2. Mentor profiles

The performed analyses identified three distinct mentor competence profiles (A, B, C). Detailed information about participant demographics and mentoring competence is provided in Table 2. Profiles A, B and C included 505, 354 and 70 participants, respectively. Participants belonging to profiles A, B and C differed significantly in terms of education, job title, mentor role and participation in mentoring education. Profile A encompassed mostly dental assistants (54.8%), profile B included mostly dental assistants (43.9%) and dentists (27.3%), and profile C mainly comprised dentists (51.4%) and dental assistants (35.7%). As expected, between-profile differences in job title closely reflected the educational background differences. Participants in profile A were mostly dental assistants, while a majority of profile C members were dentists ($p < 0.01$). Most of the profile A and profile B members were named mentors or mentors, while profile C only included participants who are mentors or not mentors ($p < 0.01$). Participants grouped in profile A were more likely to have completed mentoring education than members of profiles B or C ($p < 0.01$).

The largest competence difference was observed between profiles A and C. Each profile group differed significantly from the other two groups across all seven competence areas. Profile A participants evaluated their competence in reflection during mentoring the highest ($M=3.95$, $SD=0.12$) and mentoring practices in the workplace the lowest ($M=3.45$, $SD=0.49$). Profile B participants evaluated their competence in reflection during mentoring and mentor characteristics the highest ($M = 3.5$, $SD=0.40$), while mentoring practices in the workplace received the lowest score ($M=-2.69$, $SD=-0.60$). Profile C participants generally evaluated their competence in mentor characteristics ($M=3.0$, $SD=0.69$) the highest, but awarded mentoring practices in the workplace ($M=1.9$, $SD=0.63$) and goal-oriented mentoring ($M=1.8$, $SD=0.54$) the lowest scores.

Participants in profile A significantly differed from participants in both profiles B and C ($p < 0.01$ in both cases) in all the measured aspects of mentoring competence. Members of profiles B and C also differed significantly ($p < 0.01$) in terms of mentoring competence, with the most significant differences observed in mentoring practices in the workplace, goal-oriented mentoring and student-centred evaluation.

3.3. Background factors related to mentor competence

Competence in the area of mentoring practices in the workplace was found to be related to job title, the frequency of mentoring students and previous mentoring education. For example, the dental assistants evaluated their competence in mentoring practices higher than dentists (OR=0.30, 95% CI=0.19-0.48, $p < 0.01$). The frequency of mentoring was also shown to be significant, as mentors who mentored students rarely reported lower competence in mentoring practices in the workplace than mentors who mentored students on a monthly basis (OR=0.50, 95% CI=0.26-0.96, $p < .04$). Also, mentors who had taken part in the university organized mentoring education evaluated their competence higher (OR=4.75, 95% CI=1.88-12.01) than those who did not have any education in mentoring.

Mentor motivation was found to be related to frequency of mentoring students and work experience in dental healthcare. The mentors who rarely mentored students (OR=0.46, 95% CI=0.23-0.93, $p < 0.03$) showed lower levels of motivation for mentoring than mentors who interacted with students on a monthly basis. Work experience was shown to negatively affect mentor motivation, as mentors with more experience (measured in years) reported lower motivation levels (OR=1.00, 95% CI=1.00-1.00 $p < 0.01$).

Competence in student-centered evaluation was related to previous mentoring education and the role of the mentor. Professionals with a degree in Dentistry (OR=0.36, 95% CI=0.23-0.56, $p < 0.01$) evaluated their competence in student-centered evaluation worse than participants with a vocational qualification. Dentists in leadership roles within primary healthcare (OR=4.25, 95% CI=1.29-13.96, $p < 0.02$) and named mentors (OR=3.02, 95% CI=1.47-6.20, $p < 0.03$) reported higher competence in student-centered evaluation than participants who were mentors or not mentors. The goodness-of-fit for the binary regression analysis models was calculated, with the model classification ranging from 83.0%-87.7% (see Table 3).

4 DISCUSSION

The results from this study revealed that most of the participants had not received education in mentoring. Previous research has shown that clinical mentors commonly base their mentoring on personal educational experiences rather than the current pedagogical practices.² In our study, the participants grouped in profile A were more likely to have participated in

mentoring education than participants grouped in profiles B or C. Paulis (2011) and Tuomikoski et al. (2019) showed that mentors who have completed mentoring education implemented pedagogical methods and had excellent organizational skills, encouraged reciprocal feedback with the students and used goal-oriented practices. According to previous studies, the completion of mentoring education influences a mentor's pedagogical skills, the quality of their guidance as well as professional and personal characteristics. It has also been linked to students' professional development.^{2, 5}

Our results showed that the largest competence difference was between members of profiles A and C. Profile A included mostly dental assistants who were named mentors or mentors, while profile C primarily included dentists who were either mentors or not mentors. Internationally, clinical training includes guidance by multi-professional teams.^{5, 16} In clinical practice, it is common that several professionals, rather than one mentor, share the responsibility of mentoring a student.¹ As such, part of the clinical learning experience is witnessing how a mentor can change roles, (e.g., from the healthcare professional who is tasked with ensuring patient safety to the educator) that must clearly explain a certain procedure, based on the situation in the clinical setting.

Mentors from profiles A and B reported high levels of competence in reflection during mentoring. The students need to engage with their mentors and interprofessional teams in order to learn, acquire clinical skills and understand diverse cultural and community values. Earlier studies have highlighted that high-quality feedback from mentors is pivotal to students' professional skills. This also applies to reflection during mentoring, as discussing a student's clinical experiences will improve their learning experience. Other research has shown that a mentor's empathetic and respectful attitude, as well as a professional approach, will enhance a student's personal well-being and directly affect student learning.¹⁵ Various mentors have reported problems related to scheduling meetings with students, and this issue should be closely monitored to ensure each student in clinical practice is afforded enough time to reflect on their experiences.⁷

Participants in profiles B and C evaluated the competence area of mentor characteristics highly. These participants were especially confident of their ability to be fair to all students, support students and value the student as a member of the oral healthcare team. This is a positive finding, as one of the main objectives of being a mentor is supporting students' personal and professional development.⁷ The competence area of mentor characteristics

includes knowledge, experience, critical thinking and problem-solving skills, professionalism, ethical values, and technical and procedural skills.⁵ Subramanian et al. (2012) recently highlighted availability, encouragement, approachability, constructive feedback and demonstrations skills as important mentor characteristics. Furthermore, a positive clinical mentor has previously been defined as a person who is able to provide positive feedback and support students during the learning process, (e.g., by teaching students that making mistakes is natural and it is important to learn from mistakes).²

Participants from all three profiles evaluated mentoring practices in the workplace as the weakest area of mentor competence. This finding may be explained by the lack of quality requirements and criteria for critical practice learning within dental healthcare education, as well as the absence of generally accepted practices for student mentoring. Mentors who rarely mentored students (less than on a monthly basis) reported lower competence in mentoring practice than peers who often mentored students. The provision of mentoring education is organized by the university, so higher education institutions should take more responsibility for the competence of their mentors by proactively offering employees mentoring education. The mentor, on the other hand, needs to take into account which work practices are most important when familiarizing the student with the work community in which they will be performing their clinical practice. As such, the results highlight that some set of quality requirements and criteria should exist for the dental healthcare clinical learning environment.

Participants in profile C ranked their competence regarding goal-oriented mentoring the second lowest. The participants were characterized by poor evaluations of their competence regarding students' learning goals; hence, the mentors should work harder to ensure that they clearly understand each student's learning goals and can help them achieve them. Hence, educational institutions offering dental healthcare programs should ensure that mentors are aware of each student's level of knowledge and experience before they begin clinical practice, and then fully understand their role once clinical practice begins. Dental healthcare education would benefit from an improved set of goals for clinical mentors.⁵

Both the frequency of mentoring and work experience in oral healthcare were shown to be related to mentor motivation. Mentors who had more work experience and mentors who infrequently mentored students showed the lowest motivation. A key trait of effective clinical mentors is their motivation to mentor students.¹⁶ A lack of encouragement and constructive feedback from colleagues may have undermined the willingness of dental healthcare

professionals to develop their mentoring skills. Changes in the way oral healthcare is structured have contributed to increased workloads as well as ability to influence one's own work among healthcare professionals. Both of these trends may have increased the willingness of certain professionals to give more responsibility and tasks (i.e., mentoring of clinical students) to younger colleagues.

Members of profile C, especially dentists, provided the lowest scores for student-centred evaluation. A lack of objectivity in the clinical assessment of students was identified as another problem. Furthermore, the lack of clear guidelines on how mentors should assess clinical practice students (the most prevalent assessment tool is clinical observations) leads to inconsistencies. However, dentists with leadership positions in primary healthcare evaluated their competence in student-centered evaluation higher than participants who were not named mentors. The professionals who are in charge of organizing clinical practice should grasp the importance of ensuring that each mentor will have sufficient time to meet with their students.

5 LIMITATIONS

This study focused on mentors' self-assessments. The participating dental healthcare professionals varied greatly in terms of both education and background, which may have influenced how they ranked their mentoring competence through self-evaluation. Furthermore, we feel that asking participants about their attitudes, interests, and motivation regarding mentoring may have influenced the presented results. It is important to note that the sample size of dentists from one university was small (n=26). The STROBE Statement checklist was used throughout the planning, conducting and reporting of the study to improve overall research quality.²³

6 CONCLUSION

The analyses presented in this paper identified three distinct mentor profiles from a pool of oral healthcare professionals. Interestingly, all of the participants assessed competence in mentoring practices in the workplace assessed as their main weakness. Participants from profiles A and B ranked their competence in reflection during mentoring the highest. Participants from profiles B and C ranked their competence in mentor characteristics highly.

Members of profile C also assessed their competence in goal-oriented mentoring as a weakness. The aspect of student-centered evaluation was found to be related to previous education and the mentor's role. Participants with a university-level degree evaluated their competence of student-centered evaluation lower than participants with vocational qualifications. However, the participants who had a leadership role in primary healthcare and/or were named mentors reported high levels of competence in student-centered evaluation. The findings confirmed that mentors who infrequently mentor students and have more work experience show the lowest motivation for mentoring. The results also showed that most of the participants had not received any mentoring education; however, having completed mentoring education was found to influence the self-reported level of competence in nearly every mentoring competence area. In this study, the competence in the student-centered evaluation was related to previous mentoring education and the role of the mentor. The mentors who had taken part in the university organized mentoring education evaluated their competence higher. Dental healthcare mentors perceived time management and commitment during increased workloads as their key challenge. The mentoring training will be needed more for ring-fenced time for mentoring and as well as more mentoring training to improve mentoring skills. The results of this research can be utilized in the development of student mentoring education and in cooperation between the practice place and educational institutions. When planning mentoring education, we strongly recommend that all dental health care personnel obtains basic level training from which they can build mentoring competence and support students' learning processes. The administrators responsible for establishing mentoring programs should consider maximizing the experience of mentoring for all dental health care personnel, especially among the new employers. Besides, we recommend that oral health education graduating students would receive a short module on mentoring training before entering clinical work. Continuous education can be further planned for highly experienced mentors in offering to deepen their competence levels in reflection discussion, student-centered evaluation and feedback. Further research is needed in evaluating mentors' competence effective of it upon the students' learning, different effects of educational methods, length and teaching content.

CONFLICT OF INTEREST

All authors have no conflict of interests in the authorship or publication of this contribution.

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Table 1. The dental health care professionals' competence in mentoring students in clinical practice (n=933)

Factor	Item	mean ($\pm$ SD)	median	min	max	skewness	kurtosis
MENTORING PRACTICES IN WORKPLACE							
($\alpha=0.92$)		3.06 ($\pm$ 0.72)	3.17	1	4	- 0.75	0.08
	A.1. I am well-acquainted with the quality requirements and criteria relating to clinical practice and learning at work in social and health care.	2.83 ($\pm$ 0.88)	3	1	4	-0.56	-0.29
	A.2. I am well-acquainted with the mentoring process of students in clinical practice within my organization.	3.03 ($\pm$ 0.85)	3	1	4	-0.66	-0.14
	A.3. I am aware of generally agreed practices for student mentoring within my organization.	3.04 ($\pm$ 0.88)	3	1	4	-0.66	-0.26
	A.4. I follow generally agreed practices during student mentoring.	3.29 ($\pm$ 0.77)	3	1	4	-0.97	0.54
	A.5. I am familiar with the tasks and responsibilities of the person in charge of mentoring students.	3.00 ($\pm$ 0.91)	3	1	4	-0.56	-0.53
	A.6. I am familiar with the tasks and responsibilities of the mentor.	3.15 ($\pm$ 0.88)	3	1	4	-0.80	-0.15
MENTOR CHARACTERISITCS							
($\alpha=0.90$)		3.64 ($\pm$ 0.44)	3.86	1	4	-1.62	4.09
	1.1. It is easy for students to approach me.	3.57 ($\pm$ 0.59)	4	1	4	-1.16	1.19
	1.2. I am empathetic towards students during mentoring.	3.62 ($\pm$ 0.54)	4	1	4	-1.27	1.80
	1.3. I am flexible during the mentoring of students.	3.55 ($\pm$ 0.58)	4	1	4	-1.05	1.00
	1.4. I am patient during the mentoring of students.	3.59 ($\pm$ 0.59)	4	1	4	-1.34	1.66

1.5. I am supportive of students.	3.71 (± 0.51)	4	1	4	-1.75	3.34
1.6. I value the student as a member of the health care team.	3.69 (± 0.54)	4	1	4	-1.73	3.24
1.7. As a mentor, I am fair to all students.	3.72 (± 0.53)	4	1	4	-2.03	4.96
MOTIVATION OF THE MENTOR						
($\alpha=0.84$)	3.21(± 0.6)	3.40	1	4	-0.79	-0.40
3.1. Positive experiences in mentoring students increase my confidence regarding my ability to work as a mentor.	3.52 (± 0.62)	4	1	4	-1.16	1.39
3.2. Encouragement from colleagues regarding the mentoring of students increases my enthusiasm to mentor students.	3.07 (± 0.85)	3	1	4	-0.60	-0.34
3.3. Constructive feedback regarding my mentoring of students increases my motivation to mentor students.	3.34 (± 0.76)	3	1	4	-0.98	0.47
3.4. I want to learn and develop as a mentor.	3.23 (± 0.84)	3	1	4	-0.87	0.04
3.5. I am interested in mentoring students.	2.88 (± 0.93)	3	1	4	-0.35	-0.83
GOAL-ORIENTATION IN MENTORING						
($\alpha=0.91$)	3.21(± 0.68)	2	1	3	-1.02	-0.84
5.1. I guide students in setting the goals that they want to achieve during the clinical practice.	3.24 (± 0.76)	3	1	4	-0.74	0.07
5.3. I find out if the student's learning goals are concrete enough so that in practical situations the student knows what his or her goals are and how to attain them.	3.02 (± 0.82)	3	1	4	-0.57	-0.18

	5.4. I find out whether or not the student's learning goals correspond with the learning opportunities provided at the place where the clinical practice is completed.	3.12 (± 0.84)	3	1	4	-0.71	-0.10
	5.5. I clarify to the student what is expected of him or her in order to reach the set goals.	3.15 (± 0.81)	3	1	4	-0.77	0.14
	5.6. I provide feedback to the student on the goals that he/she has set.	3.29 (± 0.79)	3	1	4	-0.95	0.39
	5.7. I encourage the student to follow the fulfillment of his or her goals independently.	3.26 (± 0.78)	3	1	4	-0.96	0.60
REFLECTION DURING MENTORING ($\alpha=0.95$)		3.69 (± 0.51)	4	1	3	-2.46	7.83
	6.1. During the reflection time, I aim to encourage reciprocal feedback with the student.	3.68 (± 0.58)	4	1	4	-1.99	4.39
	6.2. I try to create a safe atmosphere during the reflection time.	3.72 (± 0.56)	4	1	4	-2.25	5.80
	6.3. I encourage the student to share his or her experiences.	3.69 (± 0.58)	4	1	4	-2.09	4.90
	6.4. I relate empathetically to the student's experiences.	3.69 (± 0.58)	4	1	4	-2.05	4.66
	6.5. I am aware that the student's experiences are unique and significant for his/her learning.	3.67 (± 0.60)	4	1	4	-2.00	4.42
	6.6. I believe that discussion on the student's experiences improves his/her learning.	3.69 (± 0.58)	4	1	4	-2.13	5.33
STUDENT-CENTERED EVALUATION							

($\alpha=0.93$)	3.15 (± 0.63)	3.22	1	3	-0.79	-0.67
7.1. I encourage the student to remember his/her experiences as they happened and to evaluate them.	3.19 (± 0.75)	3	1	4	-0.69	0.17
7.2. During the evaluation, I guide the student in dealing with possible negative feelings.	3.03 (± 0.80)	3	1	4	-0.62	0.08
7.3. I ask the student to critically and holistically reflect upon why things happened the way they did.	3.09 (± 0.79)	3	1	4	-0.60	-0.06
7.4. I encourage the student to evaluate the situation from many perspectives / to find alternative explanations for events.	3.07 (± 0.78)	3	1	4	-0.49	-0.24
7.5 I emphasize that the evaluation of one's own learning can bring forth new thoughts, feelings and performances that the student may not have previously been aware of.	2.96 (± 0.83)	3	1	4	-0.46	-0.34
7.6. I guide the student to question what is regarded as self-evident.	3.04 (± 0.80)	3	1	4	-0.45	0.40
7.7. I support the student in evaluating his or her own activities.	3.38 (± 0.72)	3	1	4	-1.03	0.84
7.8. I encourage students to actively deal with their experiences during the entire clinical practice.	3.26 (± 0.78)	3	1	4	-0.88	0.38
7.9. I reflect upon which activities could be developed and how together with the student.	3.32 (± 0.76)	3	1	4	-0.91	0.33
CONSTRUCTIVE FEEDBACK						
($\alpha=0.83$)	3.44 (± 0.55)	3.50	1	3	-1.27	2.47

8.1. At the end of the clinical practice, I give a positive final evaluation of the student's performance.	3.43 (± 0.71)	4	1	4	-1.19	1.25
8.2. I provide feedback immediately following a certain activity.	3.37 (± 0.70)	3	1	4	-0.89	0.37
8.3. I provide feedback for the future and development of the student.	3.52 (± 0.64)	4	1	4	-1.25	1.49
8.4. I provide feedback so that the student can change their practices.	3.45 (± 0.66)	4	1	4	-1.03	0.85

Table 2. Mentors' characteristics and competence defined by profiles (n=933)

Characteristics	Profile A (n=509)	SD	Profile B (n=354)	SD	Profile C (n=70)	SD	p-Value
Age in years	45.29	11.97	47.21	11.42	46.90	12.47	0.075*
Female, pcs, (%)	483 (95.1)		319 (90.4)		63 (90.0)		
Male, pcs, (%)	25 (4.9)		34 (9.6)		7 (10.0)		
Education, pcs, (%)							< 0.01*
Vocational qualification	263 (51.9)		149 (42.1)		24 (34.3)		
College degree	114 (22.5)		78 (22.0)		3 (4.3)		
University of applied Sciences (Master's) degree	7 (1.4)		1 (0.3)		0.0 (0.0)		
University (Master's) degree	9 (1.8)		2 (0.6)		1 (1.4)		
University (Licentiat of Dentist) degree	104 (20.5)		121 (34.2)		41 (58.6)		
Other	10 (2.0)		3 (0.8)		1 (1.4)		
Job title							< 0.01 ¹
Dental assistant	279 (54.9)		155 (43.9)		25 (35.7)		
Dental hygienist	100 (19.7)		63 (17.9)		3 (4.3)		
Dentist	74 (14.6)		96 (27.3)		36 (51.4)		
Specialist dentist	4 (0.8)		8 (2.3)		4 (5.7)		
Head of dental assistant	5 (1.0)		4 (1.1)		0 (0.0)		
Head of dental hygienist	5 (1.0)		3 (0.8)		0 (0.0)		
Head of dentist	26 (5.1)		15 (4.2)		2 (2.9)		
Other	15 (3.0)		9 (2.5)		0 (0.0)		
Year of completion of education	1997.98	12.83	1995.17	12.29	1995.72	12.96	0.44*
Work experience in dental health care, years	18.50	13.12	21.36	12.41	21.23	12.96	0.38*
Role of mentor, pcs, (%)							< 0.01 ¹
Leading dentist in primary health care	29 (5.8)		14 (4.0)		2 (2.9)		
Named mentor	231 (46.0)		105 (30.1)		10 (14.7)		
Mentor	206 (41.0)		198 (56.7)		40 (58.8)		
Not mentor	36 (7.2)		32 (9.2)		16 (23.5)		
Most recent case of mentoring, pcs, (%)							0.06 ¹
During the last month	183 (36.8)		106 (30.5)		27 (40.9)		
During the last halve year	114 (22.9)		84 (24.2)		13 (19.7)		
During the last year	99 (19.9)		65 (18.7)		6 (9.1)		
Over one year ago	101 (20.3)		92 (26.5)		20 (30.3)		
Participation to mentoring education, pcs, %							< 0.01 ¹
Mentoring education of hospital district (local and online education)	39 (7.7)		15 (4.3)		0 (0.0)		
Mentoring education of University/ University of applied sciences	86 (17.0)		34 (9.7)		3 (4.3)		
Territorial mentoring education of hospital district (one day event)	35 (6.9)		12 (3.4)		0 (0.0)		
Not participate	346 (68.4)		288 (82.5)		66 (95.7)		

MCI sum-variable outcomes							
Mentoring practices in the workplace, mean	3.45	0.49	2.69	0.60	1.91	0.63	< 0.01 ²
Mentor characteristics, mean	3.85	0.23	3.46	0.40	3.00	0.69	
Mentor motivation, mean	3.53	0.42	2.92	0.56	2.25	0.66	
Goal-orientating mentoring, mean	3.61	0.35	2.84	0.43	1.78	0.54	
Reflection during mentoring, mean	3.95	0.12	3.54	0.42	2.58	0.81	
Student-centered evaluation, mean	3.53	0.38	2.85	0.41	1.89	0.49	
Constructive feedback, mean	3.75	0.30	3.18	0.44	2.57	0.78	
Groups compared A-B, A-C, B-C.							
Chi square ¹							
Kruskal Wallis test ²							
T-test*							
p-value < 0.05 (marked in hold)							

Table 3. Background factors related to three areas of mentor competence (n=933)

Independent variable	Outcome variable					
	Mentoring practices in the workplace		Mentor motivation		Student-centered evaluation	
	OR (CI 95%)	p	OR (CI 95%)	p	OR (CI 95%)	p
Age in years	1.01 (0.97, 1.04)	0.75				
Work experience in dental health care, years	1.00 (0.99, 1.00)	0.60				
Job title						
Dental assistant (ref.)						
Dental hygienist	0.64 (0.38, 1.08)	0.94				
Dentist	0.30 (0.19, 0.48)	< 0.01				
Specialist dentist	0.09 (0.03, 0.30)	< 0.01				
Head of dental assistants	1.18 (0.14, 9.91)	0.88				
Head of dental hygienists	18.9 (0.00)	1.00				
Head of dentists	1.08 (0.36, 3.28)	0.89				
Other	0.68 (0.18, 2.56)	0.68				
Frequency in mentoring students						
Monthly (ref.)						
Annually	0.95 (0.50, 1.81)	0.88	1.00 (0.48, 2.09)	1.00		
Less frequently	0.50 (0.26, 0.96)	0.04	0.46 (0.23, 0.93)	0.03		
Education in mentoring						
Yes (of hospital district, contact and online course)	38.5 (0.00)	1.00				
Yes (university, course)	4.75 (1.88, 12.01)	< 0.01				
Yes (of hospital district, educational days)	40.9 (0.00)	1.00				
No education (ref.)						
Education						
Vocational qualification (ref.)						
College degree					1.48 (0.77, 2.86)	0.24
University of applied Sciences (Master's) degree					21.0 (0.00, 0.00)	1.00
University (Master's) degree					0.90 (0.11, 7.30)	0.92
University (Licentiate of Dentistry) degree					0.36 (0.23, 0.56)	< 0.01
Other					0.57 (0.12, 2.74)	0.48
Role of mentor						
Head of dentists in primary health care					4.25 (1.29, 13.96)	0.02
Named mentor					3.02 (1.47, 6.20)	0.03
Mentor					1.09 (0.59, 2.03)	0.78
Not mentor (ref.)						
Work experience in dental health care			1.00 (1.00, 1.00)	< 0.01		
Omnibus		< 0.01		< 0.01		< 0.01
Hosmer and Lemeshow		0.44		0.65		0.58

Cox&Snell, Nagelkerke R Square	12.8%-21.0%	2.8%-5.4%	6.0%-11.3%
Classification	82.8%	87.8%	87.7%