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# Identification of influence factors for the implementation of communication curricula in dental education

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## Abstract

**Introduction:** The aim of the study was to reveal possible obstacles or advantages for the implementation of a dental communication curriculum. It was questioned whether (i) universities with a communication curriculum in medicine realise the same development in dentistry, (ii) the existence and usage of a learning objectives catalogue is a main factor to facilitate the implementation, and (iii) it is more easy to establish with a lower number of students.

**Material and methods:** Data of two recently published surveys were taken as the basis for further analysis. The quality of the curricula was evaluated by a scoring system. Correlations were calculated between the scores and possible influence factors. A *t* test for paired samples was accomplished to reveal differences between medical and dental curricula, and a Mann-Whitney *U* test to identify differences in schools with and without the usage of a learning objectives catalogue.

**Results:** No significant correlation was found between the quality scores of medical and dental schools; *t* tests revealed significant differences between them ( $P = .004$ ). Correlation between cohort size and quality of the curriculum was marginal. Mann-Whitney *U* test revealed significantly higher quality scores for dental schools using a learning objectives catalogue ( $P = .001$ ).

**Conclusions:** The existence of a learning objectives catalogue might facilitate the implementation of communication curricula at dental schools. A missing notable curriculum in the corresponding medical school should not detain from a respective campaign in the dental curriculum. Large student numbers should also not discourage from developing a communication curriculum.

## KEYWORDS

communication, competency-based curriculum, curriculum development

## 1 | INTRODUCTION

Teaching and assessment of clinical communication has become a major topic in the health professions.<sup>1-3</sup> Okullo et al<sup>2</sup> found communication as an important influence on patient satisfaction with oral health care. In a qualitative study, Abrahamsson et al<sup>1</sup> were able to show how important the communicative ability of the dentists is to anxiety patients. Additionally, a survey showed that the majority of dentists were convinced that the dentist-patient relationship is

important for the success of the therapy.<sup>3</sup> Moreover, it was repeatedly advocated that communicative skills should be taught in the course of studies.<sup>4,5</sup>

As a result, communication skills have become part of dental curricula in several countries.<sup>6-11</sup> For medical curricula, there are several consensus statements defining necessary skills and contents or demonstrating the longitudinal alignment of such curricula regarding the training of communicative competences<sup>12-18</sup>; for dental curricula, the literature is only limited.<sup>19</sup> In 2013, the teaching committee of

the European Association for Communication in Health care published European consensus on learning objectives for a core curriculum in healthcare professions.<sup>15</sup> A recently published survey from German-speaking countries could reveal that there are still large quantitative and also qualitative differences to which extent and how communicative topics are taught and assessed.<sup>20</sup> All dental schools in Germany, Austria and Switzerland received the same online questionnaire and answered it on a voluntary basis. Thirty-four dental schools participated in the survey (94.4% of all dental schools). At 26 of these dental schools (76%), communication skills training has been implemented.<sup>18</sup> Thus, there is still room for improvement and need for change management.

There are different guidelines or frameworks recommending how to accomplish change in educational institutions,<sup>21</sup> some of them particularly in a medical context for curricular changes<sup>22,23</sup>; likewise for dental education, the literature is rare.<sup>24</sup> Pruskil et al<sup>25</sup> published a recommendation especially focusing on the implementation of social and communicative competencies in medical education. In their paper, organisational (SWOT- and stakeholder-analysis) and human resource development are main aspects that should be considered. Pruskil et al emphasise that the presented recommendations are based on the literature and personal experiences. However, "the extent, to which the recommendations have resulted in any particular case to greater sustainability in the implementation of a communication curriculum, has not yet been assessed." Furthermore, they suggest retrospective case studies to be the next step to verify which factors may have led to a successful implementation of a communication curriculum.

There are a couple of approaches for the development of medical curricula. One which is widely spread is the six-step approach by Kern et al.<sup>26</sup> The existence of learning objectives and operationalisation of competencies always plays an essential role in those concepts leading to more outcome- and competence-based curricula. Pruskil et al<sup>25</sup> are pointing out the importance of defining learning objectives especially in the design of a communication curriculum in medical education.

Until now, the literature is lacking in comparable recommendations for dental education. It seems likely that important aspects for change management and development in medical education are transferable; or, going one step further, that medical schools with a well-established communication curriculum also stand out with a similar curriculum in dentistry. This is also supported by the facts that in several—but not all—German-speaking universities, the dental and medical students share some courses in the first 2 years and that the organizational structures (deanery, commissions, committees, etc.) are often the same for both studies.

The most common format, in which communication skills are taught in German-speaking dental schools, is training in small groups.<sup>20</sup> It was demonstrated that training the faculty to facilitate communication skills training plays an important role in the development of a curriculum.<sup>27</sup> Furthermore, the high costs of such teaching programmes have been reported.<sup>28</sup> The same can be found for the necessity and the costs of assessment of reflective competencies,

especially objective structured clinical examinations (OSCEs).<sup>29</sup> This all could mean that, in addition to structural and organizational aspects, limited human and financial resources may impede the implementation of a communication curriculum in particular, which is accomplished in small group formats.

Taken the two present surveys of the authors as a basis,<sup>20,30</sup> this study is the first attempt to analyse retrospectively, which factors may have had an influence on the implementation of a dental communication curriculum.

Our three exploratory questions were as follows:

Is there a link between communication curricula in universities with medical schools and dental schools?

Does the use of a learning objectives catalogue facilitate the successful implementation of a communication curriculum in dental education?

Is a communication curriculum in dentistry more easily to establish with a lower number of students per semester requiring less human and financial resources?

## 2 | MATERIALS AND METHODS

The data of two recently published surveys were taken as the basis for further analysis.<sup>20,30</sup> In these surveys, German-speaking medical and dental schools state the current situation regarding the teaching of communication skills at their university.<sup>20,30</sup> Both were cross-sectional studies with the aim of a census at all medical and (n = 43), respectively, dental schools (n = 36) in Germany, Austria and Switzerland. They were two separated online surveys (one for medical schools, one for dental schools) and participation was voluntary and anonymity was guaranteed. All dental schools (and, respectively, medical schools) received the same questionnaire and could ask for help if there was some reason for misunderstanding. The full questionnaires and all details have already been published.<sup>20,30</sup>

The Ethics Committee of the University of Munich declared that this project does not need further ethical evaluation and no official ethical approval (UE No. 140-13).

The first aim of the previous studies was to identify universities with a well-established communication curriculum. For this purpose, a quality score system was developed considering literature-based success factors of well-implemented communication curricula.

We considered the existence of a longitudinal curriculum as the most important factor. A spiral curriculum in which topics are taught and learned over the entire course of study with an increasing degree of complexity is reported to be the best way to promote learning success.<sup>29</sup> Van Dalen et al<sup>31</sup> could demonstrate that a longitudinal, integrated approach leads to a greater overall effectiveness regarding teaching communication skills compared with concentrated courses. Also, Silverman<sup>32</sup> demands a longitudinal, helical and integrated communication curriculum. Based on these publications, the authors (AH and SR) decided to reflect the importance of the longitudinality in the scoring system of our study. Thus, ten points

**TABLE 1** Five factors and scores for the quality of communication curricula

Factor	10 Points	5 Points	0 Points
Longitudinal curriculum	Implemented	Partially	Only single courses
	1 Point		0 Points
Point of time for teaching	At least two different times		Less than two different times
Different formats of teaching	At least two different formats		Less than two different formats
Existence of assessment	Exists		Not existing
Point of time for assessment	At least two different times		Less than two different times
Different formats of assessment	At least two different formats		Less than two different formats
Total points	Maximum: 15		Minimum: 0

were awarded for each school stating a full longitudinal curriculum for communication, and five points for those partly longitudinal. If only single courses were available, “curriculum” would not be the adequate term. According to the aspects described by Silverman<sup>32</sup> for increasing maturity of communication curricula, further points were rated as following:

- More than two point of times (semesters) in which communication skills are taught
- More than two different formats used for teaching communication (eg presentations, role-play with simulation patients, conversation with real patients, role-play with students, feedback, e-learning, complex situations (eg simulator))
- Existence of assessment of communication skills
- More than two point of times (semesters) in which communication skills are assessed
- Usage of different formats of assessments (eg OSCE, written exams, presentations)

For each of these parameters, one additional point could be scored (see Table 1). Thus, a missing longitudinal curriculum could not be compensated by other points.

For all universities that include a dental curriculum, the same procedure was accomplished for the medical curriculum taking the second survey<sup>30</sup> as the database.

## 2.1 | Statistical analysis

The first and third research questions were answered by calculating the correlations between the medical and dental quality score and, furthermore, between the dental quality score and the number of students (Pearson's correlation). Differences between the quality scores of the dental and medical communication curriculum were detected by a *t* test for paired samples.

The second research question was answered by calculation of Pearson's correlation. Because of the nominal scale (learning objectives: yes/no), a Mann-Whitney *U* test was used to find differences in the quality score between the schools with or without a learning objectives catalogue.

All statistics were performed with IBM SPSS Statistics Version 23.0 (IBM Corporation., Somers, NY, USA). The statistical significance level for all tests was set at  $P < .05$ .

## 3 | RESULTS

Thirty-four dental schools took part in the survey. As there are 36 German-speaking universities offering a dental course, this is a response rate of 94%. A total number of 31 universities took part in both, the dental and the medical survey, and the correlation between the two curricula could therefore only be calculated for these. The mean for the quality score was 5.61 (SD = 5.2) for the dental schools and 9.74 for the medical schools (SD = 3.2). Distribution of the scores can be seen in Table 2.

The dental and medical quality score correlated negatively ( $r = -.160$ ), but this correlation was not significant ( $P = .39$ ). The *t* test revealed significant differences between the two study courses ( $t [df:30] = -3.153, P = .004$ ).

Six dental schools are using a learning objectives catalogue. Significantly, higher quality scores were revealed for those universities (Mann-Whitney *U*,  $z = -3.14, P = .001$ ). The quality score for the dental communication curriculum correlated positively with the existence of a learning objectives catalogue ( $r$  (Pearson) = .59,  $P < .001$ ).

The number of students was not significantly correlated with the quality score in the dental communication curriculum ( $r$  (Pearson) =  $-.01, P = .98$ ).

## 4 | DISCUSSION

Although teaching communication skills have been increasing over the last years in dental curricula, 24% of the German-speaking universities still do not teach communication skills at all.<sup>20</sup> On the other hand, there are also dental schools where a longitudinal communication curriculum has already been implemented. This large variance portends to the existence of facilitating and impeding factors to establish a communication curriculum into dental curricula. It is important to

**TABLE 2** Distribution of the quality scores in dental and medical schools for communication curricula taking into account whether they have a full or partly longitudinal communication curriculum (LCC) or not

Total quality score	Number of DS (n = 34)	Number of DS with full LCC	Number of DS with partly LCC	Number of MS (n = 31)	Number of MS with full LCC	Number of MS with partly LCC
0	10	0	0	0	0	0
1	1	0	0	0	0	0
2	5	0	0	1	0	0
5	2	0	2	2	0	1
7	2	0	2	1	0	1
8	2	0	2	8	0	8
9	1	0	1	4	0	4
10	4	1	3	7	0	7
11	2	2	0	0	0	0
12	1	1	0	1	1	0
13	1	1	0	0	0	0
14	1	1	0	4	4	0
15	2	2	0	3	3	0
Sum	34	8	10	31	8	19

All dental schools (DS) were included (n = 34) and all medical schools (MS) at universities with dental schools and medical schools.

reveal these factors for future curriculum development. The present study was the first retrospective case-control study to observe potential factors that could have had an influence on the implementation of a communication curriculum in dental education.

The first part of the study dealt with the evaluation and quantification of the varying quality of the existing communication curricula in German-speaking dental education programmes. A first impression of the awarding of points seems to be very one-dimensional. However, we based our decision on how to weight the factors on the existing literature. Several authors from different countries postulate that a communication curriculum has to be consistent (ie that communicative aspects have to rise up frequently) and that these situations ideally have to be concerted.<sup>12,16,17,31-33</sup> Thus, we decided to set the longitudinal character of the curriculum to be the most important criterion for quality by far. The longitudinal approach is implicated by the term "curriculum". Single and isolated courses do not have a comparable impact.<sup>18,32</sup> This could also be demonstrated by van Dalen et al.<sup>31</sup> They compared the outcome of a longitudinal and a concentrated communication skills programme at two different medical schools and could show a better performance of students coming from the longitudinal programme. As there are only a few universities fulfilling the criterion of a longitudinal curriculum, we decided also to score points for a partly longitudinal one. As the importance of assessment of communication skills has been reported,<sup>13,14,34</sup> we also agreed to score for the existence of this and further score if more than one format or point of time of assessment occurs. Altogether, longitudinality was emphasised so that the score could not be compensated by all other factors. This was a personal decision by the authors based on the literature. Nevertheless, we are aware that this scoring system is only one aspect of quality. Other

aspects, such as the local individual realisation of each teacher, how the students actually are taught and assessed, and, finally, what they learn, are not determined by our survey.

The existence and the use of learning objectives have been pointed out as a general effort to implement a medical curriculum.<sup>15,26</sup> With the present study, we could demonstrate for the first time that this parameter indeed correlates with a successful implementation of a communication curriculum in dental education and, therefore, might be a crucial facilitator for the implementation. This confirms the importance of the recently published national competence-based catalogue of learning objectives in dentistry (NKLZ<sup>35</sup>). On the basis of our results, we would recommend to adapt this or other learning objectives catalogues to the individual situation at the various dental schools and, thus, to facilitate a successful implementation of a new communication curriculum. Keeping in mind that communication is a complex competence,<sup>36</sup> it would be desirable to use a competency-based catalogue (eg NKLZ<sup>35</sup>). A limitation of this result might be that the existence of a learning objectives catalogue did not facilitate the implementation directly. It could also just be an indicator for the presence of educational experts, which know how to develop a longitudinal curriculum.

The expected parallelism of the medical and dental studies was not confirmed by our results. We could identify both high scores for the medical but not for the dental communication curriculum and vice versa. We cannot compare these results with the existing literature as from our knowledge no comparable data exist until now. This fact should motivate members of dental faculties to get involved with the implementation of a communication curriculum even if the local medical branch does not have a notable curriculum regarding the teaching of communication. A limitation of the present study is that the

universities are not completely comparable regarding the combination of the medical and dental curriculum at one place in the first 2 years. All variations between a fully parallel and totally separated curriculum can be found.

Most of the dental schools use small groups to train communication skills (eg seminars, exercises, tutorials).<sup>20</sup> This implies that the higher the number of students in the respective university is the more teachers are necessary to accomplish the courses at that dental school. It led us to the question, if there is a tendency of more “smaller” universities having implemented a longitudinal curriculum. This was not confirmed by our data. A possible explanation could be that the personal dedication of each individual faculty member plays a more significant role than the number of these. Altogether, this result should help to encourage dental faculties with large cohort sizes to focus on the implementation of a communication curriculum. It can be performed.

To our knowledge, this study is the first retrospective quantitative investigation trying to reveal possible factors which might have enabled or hindered the implementation of a dental communication curriculum. Nevertheless, we have to face the limitations of this study determined in the retrospective study design. Furthermore, we were not able to control many of the possible confounders. The situation at the different universities is as well diverse as complex and, therefore, difficult to compare. Variety can be seen as a change and as an obstacle. It might be difficult to generalise empirical results to the different settings due to incomparability. So, this will always be a challenge for quantitative research. On the other hand, variety leads to a rich body of experience. Exchanging and comparing these experiences with a more qualitative approach might lead to ideas that could help others to improve dental education.

## 5 | CONCLUSIONS

The existence and usage of a learning objectives catalogue can facilitate the implementation of a communication curriculum at dental schools. A missing notable curriculum in the medical part at the same university does not detain from a respective campaign in the dental curriculum. Large student cohorts are not an obstacle as a matter of principle and, thus, should also not discourage from getting involved with the development of a communication curriculum.

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