

# Implementation of a communication curriculum in undergraduate dental education—students' opinions during a 5-year development phase

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## Abstract

**Introduction:** Communication training has become an essential part of the dental curriculum. The aim of this study was to evaluate the communication curriculum developed and introduced 2016–2021 at the University of Bern, School of Dental Medicine (SDM), Switzerland.

**Materials and Methods:** The curriculum was implemented cumulatively in three phases: (1) lectures and accompanying role plays, (2) forum theatre and trainer-based communication training and (3) self-assessment. Students were surveyed 2016–2021 at the end of each semester using anonymous online questionnaires with five-point Likert scales (0–4).

**Results:** A total of 191 fourth- and fifth-year students were surveyed, and 165 (86.4%) questionnaires were analysed. The mean age of the participants was  $24.2 \pm 1.4$  and 45.5% were female. While students' opinions about the need to communicate increased during weekly lectures in phase 1, their opinions about their ability to communicate simultaneously decreased. During phase 2, fourth-year students' opinions on the need to communicate with dental patients increased from  $3.22 \pm 0.61$  to  $3.73 \pm 0.45$  ( $p = .001$ ), anticipated benefits for dentists increased from  $2.78 \pm 0.71$  to  $3.43 \pm 0.57$  ( $p = .001$ ) and for patients from  $3.00 \pm 0.76$  to  $3.47 \pm 0.63$  ( $p = .022$ ). Only in phase 3, opinions on the ability to communicate statistically significantly increased for both fourth- ( $2.34 \pm 0.71$  to  $2.72 \pm 0.60$ ,  $p = .033$ ) and fifth-year ( $2.20 \pm 0.63$  to  $2.86 \pm 0.59$ ,  $p = .001$ ) students. Preferred teaching and assessment methods were trainer-based communication trainings (73.1%), lectures (67.3%) and self-assessments in the student clinic (59.6%).

**Conclusion:** Communication curricula in dental education using methods such as lectures and trainer-based communication trainings may additionally need to include self-assessments to be effective from the students' perspective.

## KEYWORDS

communication training, dental education, motivational interviewing

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## 1 | INTRODUCTION

There has been an epidemiological shift in dentistry for some time concerning the prevalence of oral diseases and the extent of their care. As highlighted by the World Health Organization and well recognised by the Association for Dental Education in Europe, oral health professionals are confronted with chronic diseases more frequently today than in the past.<sup>1</sup> Behavioural support, facilitated by good communication skills of all clinicians, is needed to ensure adequate management of such diseases.<sup>2</sup> The need to support lifestyle changes through communication has been emphasised in many areas of dentistry. In periodontology, the current S3-level treatment guidelines particularly highlight the need for smoking cessation and glycaemic control in diabetics as the basis of periodontal care.<sup>3</sup> In the field of cariology, consensus conferences emphasise the need for health behaviour change in oral hygiene, fluoride application and dietary interventions.<sup>4</sup>

These requirements can best be met by means of communication. Communication methods seem to be most effectively introduced during dental school.<sup>5-7</sup> Communication trainings and patient motivation exercises, which were implemented into numerous dental schools in the past, continuously demonstrated improvement in students' communication skills.<sup>8-12</sup> More recently, Centore reported on the evolution of teaching behavioural science in the dental curriculum. Dental students increasingly need high-quality medical and psychological knowledge for successful patient management. To this end, the teaching of behavioural sciences to dental students has been developed over the past two decades in the United States.<sup>13</sup> Communication skills training has thus become an important cornerstone of dental education. While studies show that communication trainings are successful, other key studies reveal what aspects inhibit dental students to use these skills. These aspects include inhibitions towards the patient, lack of confidence in the ability to conduct counselling sessions and knowledge of the impact of beneficial communication. Such barriers need to be overcome and considered when implementing communication curricula in dental schools.<sup>14-17</sup>

A previous survey study at the University of Bern, School of Dental Medicine (SDM) during 2008-2011 revealed that students wanted to develop their communication skills at the beginning of their clinical training.<sup>18</sup> However, a considerable part of the undergraduate dental curriculum at the SDM includes the acquisition of manual clinical skills. It was apparent that the curriculum offered little room for training students to communicate with their patients. A phased implementation over several years was therefore chosen, which could best accommodate the limited time in the student clinic as well as the limited resource of personnel.

The aim of the present study was therefore to evaluate students' opinions during the development of the communication curriculum using anonymous questionnaires of students' opinions on various aspects of patient communication during the ongoing development of the SDM communication curriculum 2016-2021.

## 2 | MATERIALS AND METHODS

### 2.1 | Background

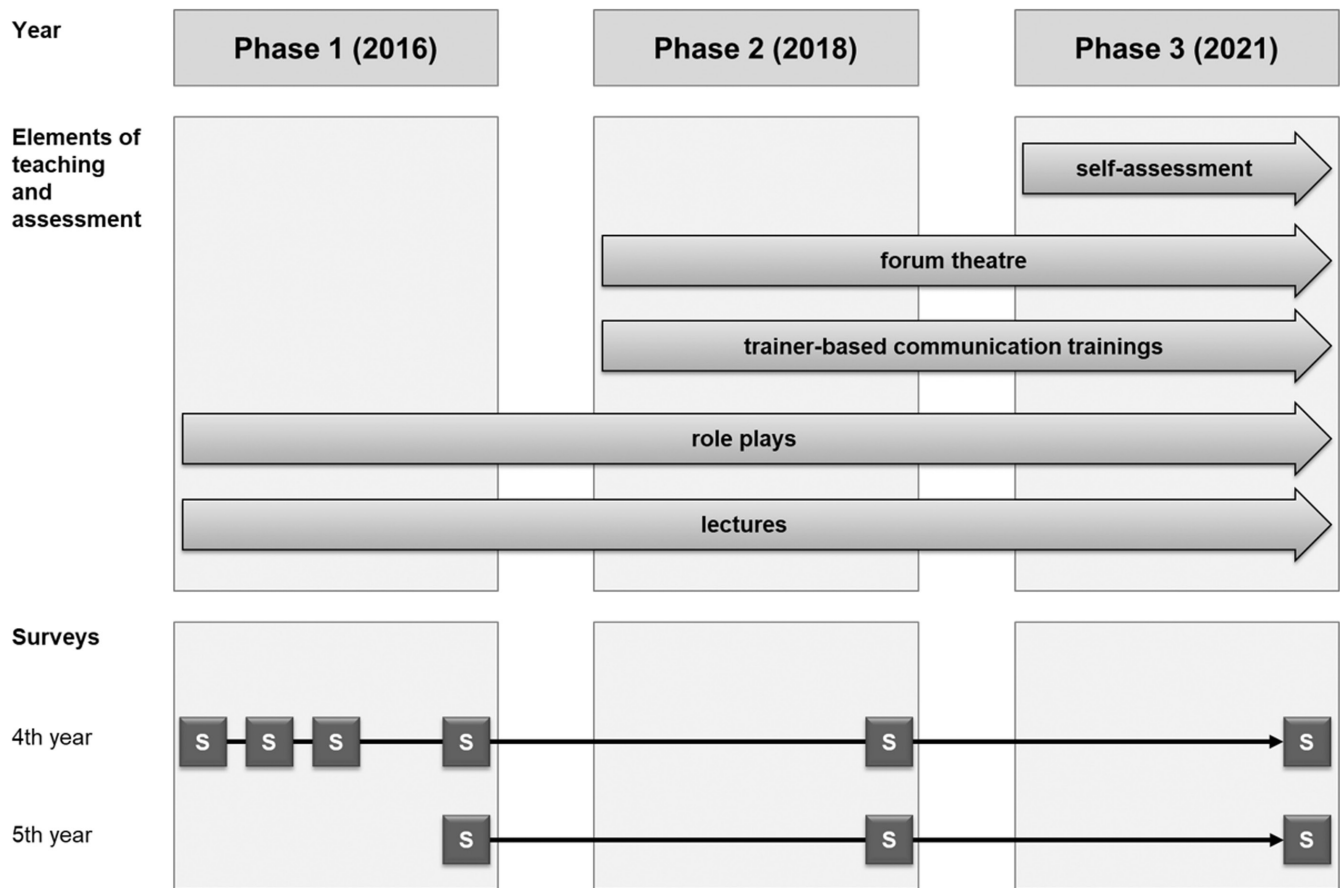
For many years, the study of dentistry at the University of Bern, Switzerland, consisted of three preclinical years of undergraduate education in the bachelor's programme and two clinical years leading to the master's degree in dental medicine. In the master's programme at the University of Bern SDM, emphasis is placed on clinical training. Students learn about various interrelated aspects of dentistry in a clinical course with comprehensive care. Students treat their assigned patients in the areas of oral surgery, periodontology, restorative dentistry, as well as fixed and removable prosthetic dentistry.

### 2.2 | Implementation phase 1 (fall of 2016)

The communication curriculum was implemented simultaneously for all fourth- and fifth-year dental students enrolled at the SDM in the fall of 2016. The students in both years of study were given six lectures of 90 min each. The initial method of teaching the communication curriculum consisted of conventional lectures, which were supplemented in the fourth year by role plays in groups of three students taking the roles of patient, therapist and observer respectively (Figure 1). The content of the lectures and accompanying role plays for the fourth-year students included (1) an introduction to the communication curriculum, (2) building rapport with the patient, (3) showing empathy, (4) using reflection, (5) supporting self-efficacy and (6) applying brief interventions for tobacco use cessation. The respective content of the lectures for the fifth-year students consisted of an introduction to the curriculum followed by communication methods for (1) patients suffering from dental anxiety, (2) disabled patients, (3) children, (4) elderly, (5) patients with nutrition deficiencies and (6) patients with HIV.

### 2.3 | Implementation phase 2 (fall of 2018)

The forum theatre method as originally introduced by Augusto was first implemented at the SMD in a lesson of 90 min for the fourth-year students in the fall of 2018 (Figure 1).<sup>19</sup> The students were briefly introduced to the method and two theatrical scenes from a dental practice were played with two professional actors. Both scenes were acted out in a second round and moderated by a communication trainer. The first scene involved a situation with a nervous dentist patient who was surprised with a diagnosis of multiple caries. His increasing nervousness had to be properly dealt with. In the second scene, a stressed patient with pain in her masticatory muscles had to be explained empathetically how the therapy to relax these muscles could be carried out. In both scenes, the trainer asked the students in the audience to interrupt the new



**FIGURE 1** Overview of all the methods of teaching and assessment and the respective online surveys (S) per implementation phase (1–3) for fourth- and fifth-year undergraduate dental students at the University of Bern School of Dental Medicine, Switzerland in 2016, 2018 and 2021.

run-through of a scene if necessary and to suggest a modification in both communication and action that may have a direct impact on the direction of the conversation. The aim of the forum theatre was for the students to experience constructive problem-solving during their introduction to the subsequent communication training with communication trainers at the Bern University of Applied Sciences Health (ASH).

The trainer-based communication trainings were first conducted at the ASH in the fall of 2018 (Figure 1). The students had the opportunity to practice real patient conversations with professional communication trainers and to receive individual and differentiated feedback on each situation. During their training in groups of two, the students were once in the role of the therapist and once in the role of the observer. Video recording systems made it possible to view the communication situation immediately after the conversation. By working with professional actors who were communication trainers using given case example vignettes, the students were able to develop their communication skills. The selected vignettes contained topics that were current and relevant to dental practice.

Similar to the forum theatre method, the communication trainings were about the basics of communication as well as practicing different conversation techniques. The focus was on recognising

and interpreting the nonverbal communication of the counterpart as well as recognising one's own nonverbal communication.

## 2.4 | Implementation phase 3 (fall of 2021)

Later, in the fall of 2021, a self-assessment form was introduced in the student clinic for all fourth- and fifth-year students (Figure 1). The new form allowed students to receive feedback on their communication skills from both their peers and their patients during patient care in the student clinic. The basic structure of the self-assessment form followed the motivational interviewing treatment integrity code (MITI 4) developed by Moyers et al.<sup>20</sup> As suggested in the MITI coding manual, students rated their peers from 1 to 5 for the following behaviours: Giving information, persuading (with permission), asking, simple and complex reflection, affirming, seeking collaboration, emphasising autonomy and confrontation. Similarly, patients had the opportunity to rate the following criteria: language, friendliness, asking questions, timing, lecturing, case presentation, information about diagnosis, treatment and their consent, uncomfortable situations and anxiety. Students used both self-assessment forms on a voluntary basis but neither peer nor patient ratings were analysed in this study.

## 2.5 | Study design

The study protocol was submitted to and approved by the Ethical Committee of the Canton of Bern (KEK), Switzerland (Req-2020-00803).

The evaluation of the communication curriculum at the SDM was conducted with all fourth- and fifth-year dental students in the fall semesters of 2016, 2018 and 2021 (Figure 1). Fourth-year students were surveyed during weeks 1, 2, 3 and 6 of the 2016 fall semester using an online unblinded questionnaire posted on [www.findmind.ch](http://www.findmind.ch). The answers in the digital questionnaire were structured according to a five-point Likert scale. In addition, the same online survey was distributed to both fourth- and fifth-year students at the end of each fall semester in 2016, 2018 and 2021. In the most recent online survey in 2021, two additional questions were asked about preferred teaching elements and preferred assessment methods such as (1) self-assessments, (2) assessments by the tutors or (3) multiple-choice tests.

## 2.6 | Statistical analysis

Statistical analyses were performed with RStudio (version 1.4.1106, RStudio Team [2020]. RStudio: Integrated Development Environment for R. RStudio, PBC, Boston, MA URL <http://www.rstudio.com/>). Means, percentages and standard deviations were calculated using descriptive statistics. Categorical data were analysed with Fisher's exact tests while non-parametric data were assessed with Kruskal-Wallis rank sum tests and post hoc Bonferroni corrections were applied.

In order to quantitatively compare distributions of student opinions between the different phases of implementation, the answers from the Likert scale were converted into numerical values as follows: 0 = 'very low', 1 = 'low', 2 = 'medium', 3 = 'high' and 4 = 'very high' respectively. *p* values < .05 were defined as statistically significant.

## 3 | RESULTS

In the years 2016, 2018 and 2021, a total of 191 fourth- and fifth-year students from six classes were surveyed with an online questionnaire (Table 1). The overall return rate per class ranged from 65.7% (min.) to 100% (max.) with a mean of 86.4%. A total of 165 questionnaires were evaluated for the study (Table 1).

### 3.1 | Demographic data

The mean age of the study participants was 24.2 ( $\pm 1.4$ ) years with no statistically significant difference between the fourth- ( $p = .117$ ) and fifth-year students ( $p = .775$ ) (Table 1). The mean percentage of female students was 45.5% with a minimum of 17.2% and a maximum of 73.9%, with statistically significant differences between students

TABLE 1 Demographic data and unadjusted qualitative analysis of 165 students participating in the surveys 2016, 2018 and 2021.

	2016			2018			2021			p-Values between B & D & F (unadjusted)
	Fourth year		Fifth year	Fourth year		Fifth year	Fourth year		Fifth year	
	(A)	(B)	(C)	(D)	(E)	(F)				
Total n	35	30	30	36	34	26				
Response rate n (%)	32 (65.7)	15 (50.0)	30 (100.0)	36 (100.0)	29 (85.3)	23 (88.5)				
Age mean ( $\pm$ SD)	23.6 (1.2)	24.6 (1.5)	24.0 (1.1)	24.8 (1.2)	23.4 (1.5)	24.9 (1.4)	.117			.775*
Age min.-max.	22-26	23-28	22-25	23-28	22-28	23-29				
Gender (female) n (%)	17 (53.1)	8 (53.3)	14 (46.7)	14 (38.9)	5 (17.2)	17 (73.9)	.010			.032**

Abbreviation: SD, standard deviation.

\*Kruskal-Wallis rank sum test.; \*\*Pearson's chi-square of independence.

from the fourth ( $p=.010$ ) and fifth year of study ( $p=.032$ ) respectively (Table 1).

### 3.2 | Survey data

Distributions of fourth-year student's self-reported opinions on (1) the need for communication with the dental patient, (2) the benefit for dentists, (3) the effect on patients and (4) the ability to communicate are presented in Figure 2. While attending weekly lectures and participating in accompanying role plays, students indicated over a 6-week period that they rated all of the above aspects as high or very high (Figure 2A–D). While the students' opinion about the need to communicate seemed to increase after 6 weeks (Figure 2A), their opinions of their ability to communicate simultaneously seemed to decrease (Figure 2D).

The students' self-reported opinions on the above-mentioned aspects at the end of implementation phases 1, 2 and 3 on a scale of 0–4 are compared in Figure 3. Compared to the first year of implementation in 2016, fourth-year students' opinions on the need for

communication, after Bonferroni corrections, increased statistically significantly from  $3.22 (\pm 0.61)$  to  $3.73 (\pm 0.45)$  and remained high and very high ( $p=.001$ ) when compared to other years (Figure 3A). A similar increase of students' opinions on both the benefits for dentists from  $2.78 (\pm 0.71)$  to  $3.43 (\pm 0.57)$  ( $p=.001$ ) and the effects on patients from  $3.00 (\pm 0.76)$  to  $3.47 (\pm 0.63)$  were observed ( $p=.022$ ) (Figure 3B,C). These criteria remained high and very high on average for fifth-year students between 2016, 2018 and 2021, with no statistically significant differences between groups.

When comparing students' opinions on their ability to communicate, after Bonferroni corrections, there was a statistically significant increase in 2021 for both fourth- ( $2.34 \pm 0.71$  to  $2.72 \pm 0.60$ ,  $p=.033$ ) and fifth-year ( $2.20 \pm 0.63$  to  $2.86 \pm 0.59$ ,  $p=.001$ ) students (Figure 3D).

Frequency analysis of the preferred elements of teaching and assessment elements of fourth- and fifth-year students revealed that in 2021, communication training (73.1%) and lectures (67.3%) were the preferred teaching methods, while self-assessment in the student clinic (59.6%) appeared to be the preferred assessment method (Table 2).

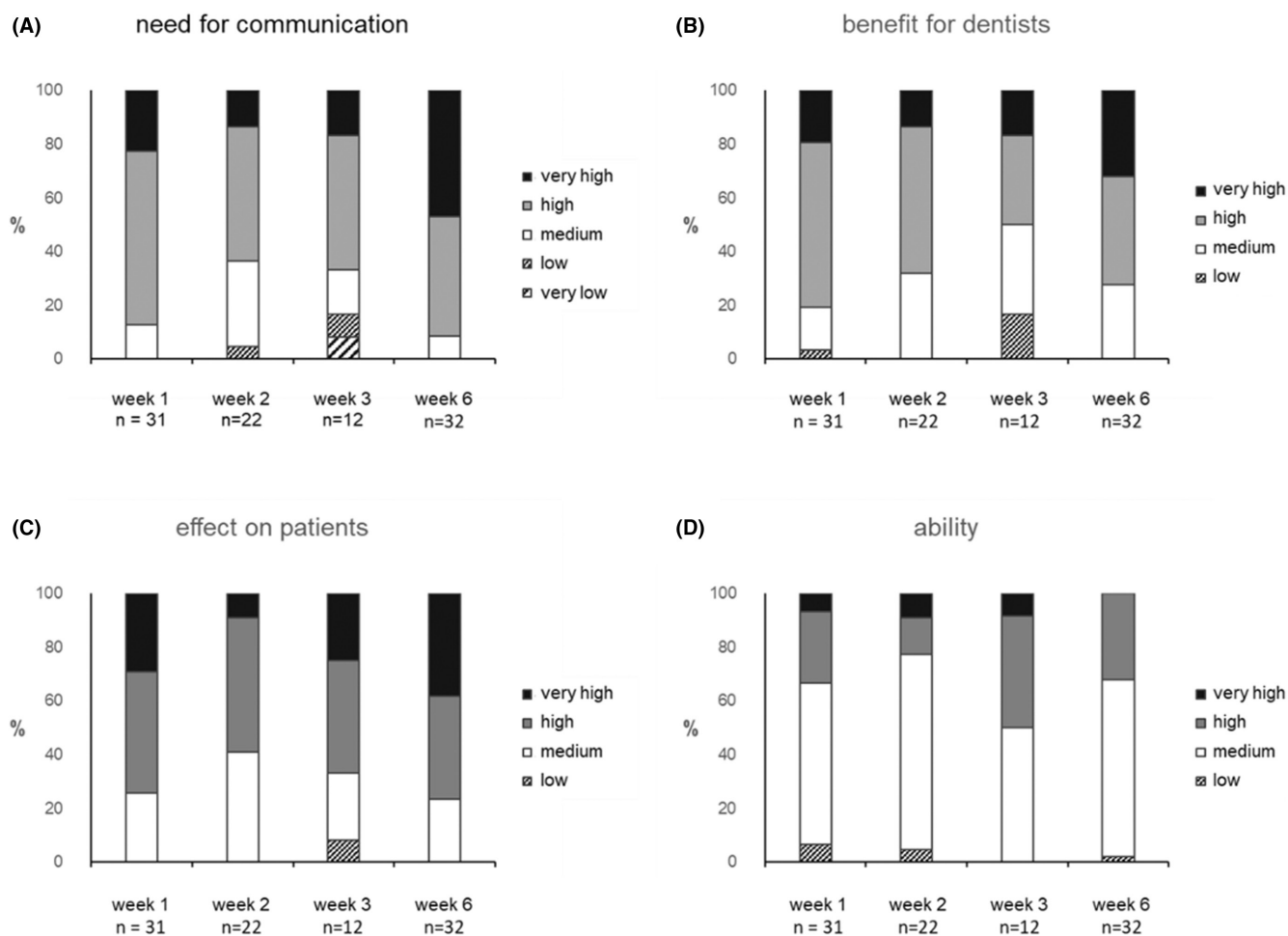


FIGURE 2 Self-reported opinions of fourth-year undergraduate dental students on (A) the need for communication, (B) the benefit for dentists, (C) the effect on patients and (D) the ability to communicate during implementation of the communication curriculum during the implementation stage 1 in the fall semester of 2016 (weeks 1, 2, 3 and 6).

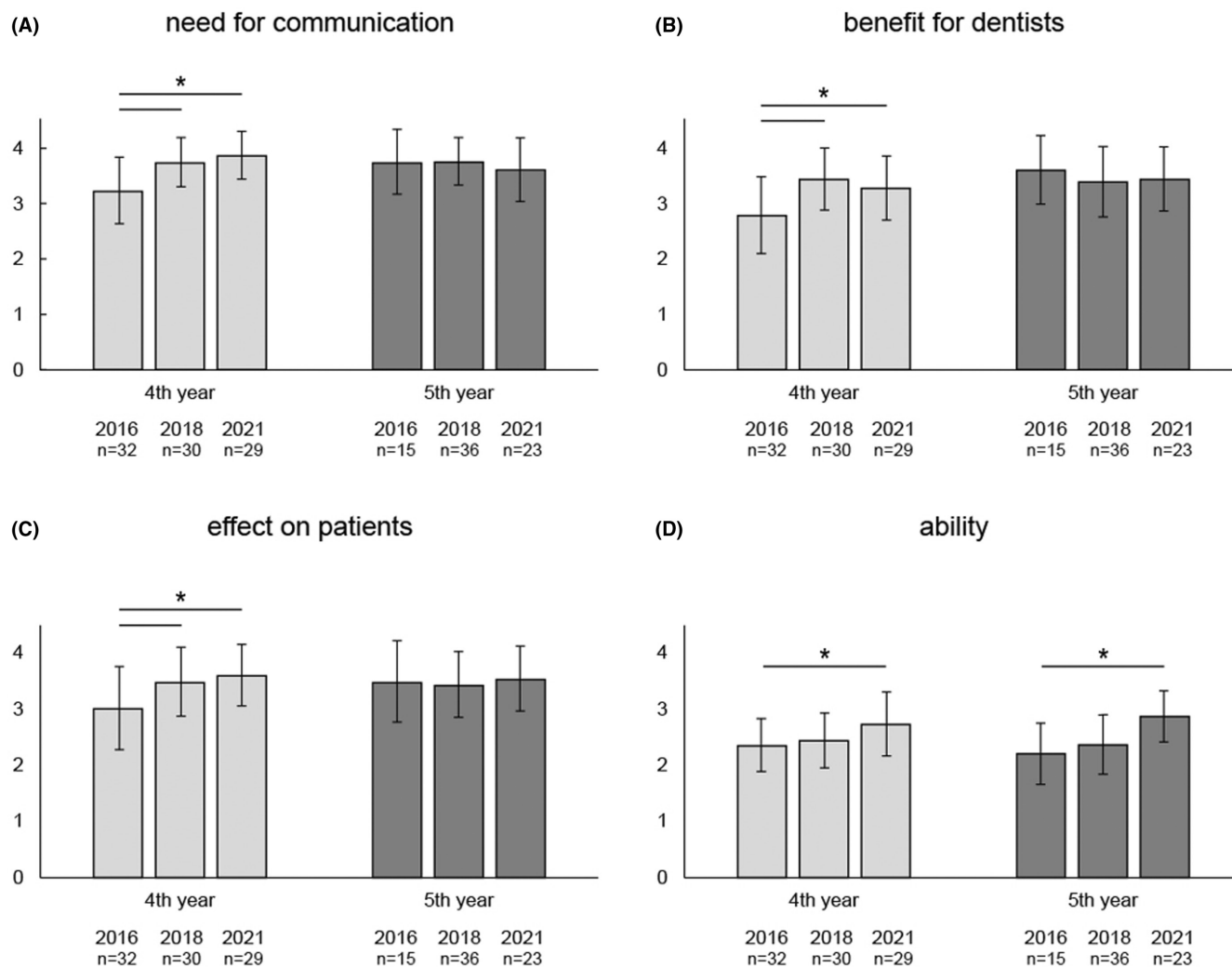


FIGURE 3 Means and standard deviations of self-reported opinions from fourth- and fifth-year undergraduate dental students on (A) the need for communication, (B) the benefit for dentists, (C) the effect on patients and (D) the ability to communicate at the end of the respective stages (1–3) in 2016, 2018 and 2021. \*: statistical between-group significance with Bonferroni's post hoc corrected  $p < .05$ .

## 4 | DISCUSSION

This study evaluated the cumulative implementation of a dental communication curriculum in three phases over the years 2016–2021. It was revealed that while students' opinions about the need to communicate with dental patients during weekly lectures with accompanying role plays increased in phase one (2016), their opinions about their communication skills decreased at the same time. The later implementation of the forum theatre method and trainer-based communication trainings in phase two (2018) resulted in increased anticipated communication benefits for both dentists and patients. Following the subsequent introduction of self-assessments in phase three (2021), opinions about self-perceived communication skills increased statistically significantly among both fourth- and fifth-year students. Finally, after all methods of communication training were implemented, students preferred trainer-based communication trainings (73.1%) over lectures (67.3%) and self-assessments in the student clinic (59.6%). Therefore, it was concluded that

communication curricula in dental education using combinations of available methods, such as lectures and trainer-based communication trainings may additionally need to include self-assessments to be effective from the students' perspective.

Evidence for the teaching and assessment communication skills at dental schools is of varying quality, but sufficient and shows an overall good acceptance of communication trainings by students.<sup>21</sup> This was the conclusion reached by Carey et al.<sup>21</sup> who analysed the teaching methods as well as assessment opportunities of communication skills specifically for dental students in a total of 11 studies. Various teaching methods were used, each based on a combination of theoretical lectures with clinical case scenarios. In line with our data, these studies demonstrated that students consider learning communication skills to be important.

In 2017, Ayn et al. used a literature review to develop recommendations for improving communication skills training. They examined different types of communication training with varying content and activities, often using seminar-style discussion sessions, patient

**TABLE 2** Frequency analysis of preferred elements of teaching and assessment of fourth- and fifth-year undergraduate dental students in 2021.

	All students responding to the survey		Fourth-year students responding to the survey		Fifth-year students responding to the survey		p-Value between fourth and fifth year
	n = 52	%	n = 29	%	n = 23	%	
<b>Preferred elements of teaching</b>							
Communication trainings	38	73.1	18	62.1	20	87.0	
Lectures	35	67.3	17	58.6	18	78.3	.722*
Forum theatres	28	53.8	16	55.2	12	52.2	
<b>Preferred assessment</b>							
Self-assessments	31	59.6	16	55.2	15	65.2	
Assessments by tutor	16	30.8	10	34.5	6	26.1	.327*
Multiple-choice tests	2	3.8	0	0.0	2	8.7	

\*Fisher's exact test.

simulations, case reports and videos. Despite this variety, they too concluded that most students were satisfied with communication training and found it useful.<sup>22</sup> They also pointed out a certain distance of dental students from patients of different generations. Moreover, students' gender, cultural background and socioeconomic status affected their attitudes and performance in communication training.<sup>23</sup> In the present study, a statistically significant difference in the gender distribution among all surveys (2016, 2018, 2021) was found. However, no influence of this parameter on the data of the surveys could be detected. Moreover, both the cultural and socioeconomic background of the students was not considered in our study as these parameters are generally homogenous among all students enrolled at the SDM.

Several studies point out the importance of providing communication training at the appropriate time during undergraduate dental education. Students with more clinical experience often considered communication training to be less important or less beneficial for either clinicians or patients.<sup>15,24,25</sup> In one specific study, students requested more communication training at the beginning of their clinical training.<sup>18</sup> The findings of the present study appear to support the significance of the timing of communication training in dental education. Only after the implementation of the forum theatre method and the trainer-based communication training at the SDM in 2018, students' opinions on the need for communication and the benefits for both clinicians and patients increased reaching a statistical significance. However, a similar trend in the fifth-year students could not be observed as these students were already trained in their preceding fourth year. Nevertheless, their previous training resulted in them indicating that they had a high opinion on all aspects of communication asked about in the survey.

#### 4.1 | Lectures and role plays

An earlier publication by El Tantawi et al. suggested that the use of role plays in dental education in addition to lectures can be

successful.<sup>26</sup> These authors used role plays to train a group of students in their role as instructors in a peer-assisted learning curriculum at Alexandria University in Egypt. The effectiveness of role play as a supplement to lectures was later confirmed by Kasabah et al.<sup>27</sup> Dental students were able to perform better in exams after experiencing role plays than students who had only attended lectures.<sup>27</sup> In addition, Alvarez and Schultz reported in their study that dental students could benefit from role-playing to acquire interpersonal skills in their training.<sup>28</sup> When role plays were implemented into the SDM communication curriculum in 2016, the topics chosen were therefore those of the fourth-year lectures that have traditionally been held at the SDM since 2008.<sup>18</sup>

#### 4.2 | Forum theatre and trainer-based communication trainings

After initiation of the communication curriculum with phase 1 in 2016, it was possible to expand the curriculum with the forum theatre method and trainer-based communication trainings, which were well received by the students. It is conceivable that following the implementation of these two methods, students have gained a more positive attitude towards communication due to the additional methods introduced. Furthermore, it seems to be important to recognise the impact of the communication trainers' professional feedbacks on students' communicational skills. These feedbacks seem to be particularly relevant when forming opinions about the benefits of communication for patients and clinicians.

#### 4.3 | Self-assessments

What still seemed to need improvement after the second implementation phase was the students' opinion on their communication

skills. Therefore, in the third phase of implementation in 2021, self-assessments on patient communication were implemented. This involved the students rating each other in groups of two when speaking to their true patient in the student clinic.

As the analysis of the responses in 2021 suggested, both fourth- and fifth-year students had statistically significantly higher opinions of their communication skills after using self-assessments. Students rated themselves more competent after completing training and assessment than after lectures and role plays alone. It seems common that dental professionals have difficulties to sufficiently judge their personal communication quality. Kruse et al. investigated the communicational quality of dentists with a long working experience compared to dental students by means of simulated patients, observing communication experts and self-assessment.<sup>29</sup> While dentists rated their communication skills statistically significantly higher compared to the dental students, the observed communication quality did not differ. In contrast, the students showed significantly higher empathy in the conversation with the simulated patients. This finding underlines that professional experience alone does not increase the quality of the dentist-patient conversation. Professional experience even carries the risk of losing one's empathy. Moreover, this risk has also been found in medical students.<sup>30</sup>

Both fourth- and fifth-year students preferred self-assessments to tutor tests or multiple-choice questions. This may be due to the fact that the students already had good experience with the self-assessment method used. While it is understandable that multiple choice tests are generally very effective for assessing dental students, the present results might suggest that during communication training, face-to-face feedback such as self-assessments or tutor assessments offers equivalent advantages as they are more preferred and provide a better opportunity to convey more comprehensive feedback.<sup>31,32</sup>

#### 4.4 | Strengths and weaknesses of the study

A strength of the present study is the collection of data from four different classes over the years 2016–2021. The response rate was reasonably high at 86.4%, and a total of 165 questionnaires were available for evaluation. Due to the anonymisation of the questionnaires, it can be assumed that the students answered the questionnaires honestly.

However, a few weaknesses need to be mentioned. The communication curriculum was implemented over a total of 5 years. The respective evaluations of the online questionnaires were used to plan the next phase and to select the respective teaching method. Due to this procedure, however, the effects of the individual methods can no longer be determined. Furthermore, the present evaluation lacks a control group, that is, a group that was not trained with any or a lower combination of the methods implemented 2016–2021. However, for ethical reasons, no such subgroup could be formed.

## 5 | CONCLUSION

Given the limitations of the present study, it may be concluded that communication curricula in dental education that use combinations of available methods such as lectures and trainer-based communication training may need to include additional self-assessments to be effective from the students' perspective.

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### FUNDING INFORMATION

This was a self-funded study.

### CONFLICT OF INTEREST STATEMENT

The authors declare that there are no conflicts of interest in this study.

### DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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