

## IN BRIEF

- A communication skills training programme 'How to deal with anxious patients' has been developed.
- As a result of the training, the knowledge and especially the communication skills of the students improved. They also acquired insights into their capabilities and limitations.
- It is suggested that knowledge and role-play tests should be introduced into the dental curricula.

## Effectiveness of a communication skills training programme for the management of dental anxiety

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The aim of this study was to develop and evaluate a communication skills training programme for the management of dental anxiety. The aims of the training were directed at the enhancement of knowledge and communication skills. The research design consisted of a pre-test–post-test–control group design. The instruments were a knowledge test, a behavioural role-play test and a learner report. Thirty-four graduate students participated in the study. The results showed that the communication skills training had an effect on the knowledge and a substantial effect on the behaviour of the students. Moreover, the results from the learner report showed that the students acquired important insights in their own capacities and limitations. The conclusions are that the course as a whole is effective for dealing with anxious patients. Finally, it is recommended that knowledge and behaviour examinations are introduced as a regular part of the curricula for dentistry students.

Dentists often have to deal with the anxiety and avoidance behaviours of their patients. The central question of this study is whether students are able to acquire a number of communication skills that are important for the reduction of anxiety and avoidance behaviours. We describe an investigation into the effectiveness of the communication skills training programme 'How to deal with anxious people' for graduate students in dentistry. This programme was developed at and executed by the Department of Social Dentistry and Health Education of the Academic Center for Dentistry in Amsterdam (ACTA), The Netherlands. The programme is an obligatory part of the curriculum for graduate students, who are in the fourth year of

their university education. For the past decades many educational programmes at universities in The Netherlands, like medicine and psychology, have introduced microskills training programmes into their curricula.<sup>1</sup> Communication skills training has also become a settled part of the university curricula in dentistry in The Netherlands.<sup>2</sup> Effective communication and the use of information are considered as necessary and essential conditions for the treatment of dental anxiety.

The main aim of this study was to gain an insight into the extent to which the communication skills training for dentistry students has an effect on their knowledge and their behaviour, especially their communication skills, and to discover individual learning effects.

### GENERAL GOALS OF THE COMMUNICATION SKILLS TRAINING PROGRAMME FOR DENTISTRY STUDENTS AT ACTA

Since the beginning of the 1980s, ACTA has been responsible for the communication skills training programme for students in dentistry.<sup>3</sup> These programmes are based on the microtraining method.<sup>4–7</sup> A meta-analysis of Baker and Daniels has shown the

general effectiveness of well-structured programmes following this microtraining method.<sup>8</sup> The general goal of the communication skills training programmes is to teach the students the skills to establish a professional co-operation relationship with the patient and to give effective health education. The final goal of this relationship is to improve the health behaviour of the patient and therefore the health of their teeth.

The general goal can be divided in two more specific goals:

- Enhancement of the *knowledge* of the students on elementary communication skills.
- Extension of the *behavioural repertoire* of the students: they should be able to use the skills in an appropriate manner and thus they should also express a warm and respectful basic attitude towards their patients.

### THE IMPORTANCE OF THE TRAINING 'HOW TO DEAL WITH ANXIOUS PATIENTS'

The main aim of the training is to answer the question 'how can dentists effectively deal with anxious patients?' People with dental anxiety tend to postpone their regular visits

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or even completely avoid the inspection and treatment of their teeth. One investigation showed that at least a quarter of the population has dental anxiety.<sup>9</sup> Another study indicated that 22% of people are anxious about going to the dentist, while 14% have no anxiety at all.<sup>10</sup> It has been found that most people from the first category finally decide to go to the dentist for treatment, often after much hesitation.<sup>11</sup> In extreme cases, the patient has to go to a centre that specialises in the treatment of anxious people.<sup>12</sup> At least 5% of people have a real dentist phobia – they never go to the dentist.<sup>13,14</sup> One research project of the Association for Special Dentistry was aimed at the evaluation of the treatment of extremely anxious patients; it concluded that even specialized treatment was no guarantee for a regular visit to the dentist. Together all this research justifies the special attention given to the question ‘How to deal with anxious patients?’ in the dentistry curricula.

## AIMS OF THE TRAINING ‘HOW TO DEAL WITH ANXIOUS PATIENTS’

Below we make a distinction between knowledge and insight aims on the one hand, and behavioural aims on the other. In this training the aims were formulated in advance. The student:

- is able to *articulate* theories concerning the development and persistence of anxiety and to explain how this anxiety can be reduced (knowledge and insight aim).
- is able to *apply* the necessary communication skills adequately in a simulated situation (behavioural aim).
- is able to diagnose anxiety and anxiety processes, to detect causes of the anxiety, and to identify anxiety - provoking stimuli for the patient and assess their severity (knowledge, insight and behavioural aim).

## CONTENT OF THE TRAINING

The training is placed in the fourth year of the curriculum for dentistry students. In the first and third year some attention is paid to the training of basic communication skills, such as attending behaviour and asking questions. Although these skills are considered as clear for the students, they are repeated and integrated in the exercises of the training, ‘How to deal with anxious patients’. Central elements in this training are:

- The intake interview with the anxious patient.
- Recognition of anxiety in the patient.
- Different methods for the treatment of anxious patients and anxiety reduction (systematic desensitization, hypnosis, use of nitrous oxide).
- The integrated use of the basic microskills: attending behaviour (active

listening, non-verbal communication), asking questions, paraphrasing, reflection of feeling, summarizing.<sup>4,5</sup>

The training consists of five three-hour sessions. An extended manual has been developed for trainers and students. The topics are extensively dealt with in a training syllabus, ‘*Training dentist, patient and society: anxiety in dentistry practice*’.<sup>15</sup>

## METHOD OF TRAINING: MICROSKILLS TRAINING

The training method is based on Rogers’ client-centered approach<sup>16</sup> and on principles derived from Bandura’s cognitive social learning theory (Bandura, 1986).<sup>17</sup> Whereas Rogers offers a basis for the attitude of the trainers towards their trainees, Bandura’s cognitive social learning theory and Ivey’s microtraining method offer a more concrete framework for the training method. Well-known elements in the microtraining method are:

- Theoretical instruction. Information on aims and contents of the different parts of the training.
- Modelling by means of videotapes. Here videotapes from real dental practices are demonstrated.
- Exercises in role-plays. According to the literature<sup>5,17</sup> this is a key element for skill acquisition.
- Feedback based on observations of the behaviours of the students during the role-plays.
- Transfer.<sup>18</sup> The students in this training are already engaged in some practice, so they can apply what they have learnt in practice and comment on their experiences during the following session.

## INFORMATION GIVING

Students are taught to inform their patients as soon as possible about what they can expect during and after the treatment. It is known that ‘informational control’ may reduce dental anxiety.<sup>19</sup>

## RESEARCH AIMS

In the effectiveness study we choose instruments that cover the knowledge and behavioural aims of the training. In order to cover the aim ‘enhancement of knowledge’ we used a knowledge test consisting of knowledge and insight questions. These multiple-choice questions cover the content of the training: a model for the first interview with the anxious patient, the cognitive basis of different communication microskills (eg asking questions, paraphrasing, reflection of feeling), the recognition of anxiety in the patient and special treatment methods for anxious patients.

In order to cover the aim ‘extension of the behavioural repertoire’ we used a behaviour role-play test. In this test the student has a real interview with an ‘anxious patient’; the ‘anxious patient’ is an actor, who received instructions on how to play his role. The interviews were videotaped and three independent observers assessed them. They rated specific behavioural criteria.

The disadvantage of general knowledge and behaviour tests’ is that they do not consider individual learning effects of the students. In order to discover these effects we decided to use a third instrument: the learner report.<sup>12</sup> With this instrument the students have to specify themselves what they have learnt from the training.

## METHOD

The research was executed according to a quasi-experimental pre-test–post-test–control group design (see Table 1). The experimental group followed the training between T1 and T2; the waiting-list control group followed the training between T2 and T3. For this group because of practical reasons only learner reports were administered after the training.

## SUBJECTS

Our aim was to include 36 students (three groups of 12) in the experimental group

**Table 1 Research design**

	T1	T2	T3
A. Experimental group (N = 25)	K, B	K, B, LR	
B. Waiting list-Control group (N = 9)	K, B	K, B	LR

K= Knowledge test  
B= Behavioural test  
LR= Learner Report

T1: pre-test for both groups; start of the training for the experimental group  
T2: post-test for both groups; start of the training for the control group  
T3: second post-test for the control group

and 36 (*idem*) in the control group. Unfortunately we did not achieve this aim. Finally, 34 students participated in the research: 25 in the experimental group and 9 in the control group. The most important reason for the drop out in the experimental group was the planning of the research schedule. Students were often too busy to have time for the individually applied behaviour test. The reason for the low number of control subjects was the same; in a number of cases they were unwilling to participate in the behavioural tests without having followed the training. However, there were no significant differences between the participating students and the drop outs on sex and age.

The students who participated were randomly assigned to one of each groups.

Both groups proved to be highly comparable at the pre-test for background variables sex, age and number of patients already treated; *t*-tests for the comparison of the mean scores yielded no significant differences.

## INSTRUMENTS

### Knowledge test

In order to evaluate the aim 'enhancement of knowledge' a multiple-choice knowledge test was developed. This test consists of 25 questions on the topics that are treated in the training. All the questions have two alternatives. An example of a question is:

Patient: *'I am reluctant to have root canal treatment'*

Which of the following questions is an open question:

- 'What is the reason for your reluctance?'*
- 'How often have you had such a treatment before?'*

(a is the correct answer)

In order to prevent learning effects of the pre-test we developed two different versions (A and B) of the knowledge test for the pre-test and the post-test. These were balanced over pre-test and post-test. The reliabilities of both versions (A and B) of the knowledge test were satisfactory. Coefficient alpha for version A was 0.71, and for version B was 0.69. (These knowledge tests are available upon request from the authors.)

### The behavioural role-play test

In order to evaluate the aim 'extension of the behavioural repertoire' we developed a behavioural test. This behavioural test is a role-play in which the student has to interview an anxious patient.<sup>21,22</sup> This anxious patient is an actor, who really has been an anxious patient in the past. This actor made use of four different roles with a comparable degree of difficulty. These roles were balanced over pre-test and post-test. The

role-plays were videotaped and afterwards assessed by three independent observers.

These observers used an instrument consisting of four parts:

1. Introduction of the interview (4 items, eg introduces him/herself).
2. Communication skills (11 items, eg avoids multiple questions, summarizes).
3. Diagnosis of anxiety (6 items, eg pays attention to the development of the anxiety).
4. Ending the interview (5 items, eg discusses with the patient the short-term plan).

This is based on an instrument that has been developed at the Department of Dental Medicine and Surgery, University of Manchester in England. Recent research has shown that this instrument is reliable (high inter-observer agreement) and appropriate for the assessment of communication skills of dentistry students.<sup>23</sup> For the sake of an objective assessment, we used a double-blind procedure. The order of the videotapes was randomized, so the observers did not know whether they assessed students from the experimental or the control group, or whether they assessed pre-test or post-test role-plays. In order to realize an optimal assessment they inspected each videotape twice. After the second observation they gave final scores, based on their written remarks. They finally assessed 68 role-plays, independently.

In order to assess the reliability of the behavioural test we used a measure for inter-observer-reliability. We calculated the mean Pearson product moment correlations of the three observers for the 26 items which were scored on a 7-point-Likert scale (see Table 2).

It is clear that the inter-observer-reliabilities were high for most items, varying from 0.65 (pre-test: introduces oneself) to 1.00 (pre-test: invites the patient to ask questions).

### The learner report

The instruments discussed so far offer the opportunity to evaluate the two most important aims of the training. However, these instruments do not cover certain learning experiences. Therefore, we decided to use the learner report.<sup>20</sup> In this instrument the students have to formulate for themselves the learning effects which they consider relevant.

According to De Groot<sup>20</sup>, two aspects are often neglected in traditional views on the evaluation of educational goals: 1) the acquisition of self-knowledge and 2) the discovery of exceptions. In order to fill this omission he constructed a classification system, based on a two-by-two distinction: world versus self, and rules versus exceptions (see Fig. 2).

Cell A1 concerns knowledge and insights, which can be objectively assessed with achievement or knowledge tests. Cell A2 contains cognitive and communication skill, which can be demonstrated; so, they are observable. Therefore they can be intersubjectively assessed, for example with behavioural tests. Cell B does not concern objectively nor intersubjectively testable insights in the existence of something. De Groot describes these kinds of insights as reportable: the student can communicate on them. Cell C covers self-insights in 'rules', that means characteristics somebody views as typical for him/herself. Cell D concerns 'exceptions to the rules': unexpected own abilities and capacities. Insights into oneself cannot be systematically evaluated, but they are communicable.

Knowledge tests or behavioural tests cannot cover the learning effects falling in Cells B, C and D. However, they can be assessed by means of the learner report, an instrument developed by De Groot. Following the four cells discussed before, the instrument consists of four parts. In the first part (rules about the world) the student has to add sentences like:

*'I have learnt that...'* (general rules)

In the second part (exceptions to rules about the world) sentences have to be added like:

*'I have learnt that it is not true that...'*

The third part (rules about oneself) starts with sentences like:

*'I have learnt that I...'*

In the fourth part (exceptions to the rules about oneself) the student has to add sentences like:

*'It is not true that I...'*

The learning experiences, which are insights into oneself, are not covered in this study by the knowledge test and the role-play test. Therefore, the addition of the learner report to the first two instruments was considered necessary.

First, the total number of learning effect sentences was calculated for each of the four cells. Then, following the methodology developed by Edens,<sup>24</sup> the authors assessed the complete collection of learning effect sentences on two, two-by-two categorizations: intended vs non-intended learning effects and positive vs negative learning effects.

## RESULTS

### Effects on knowledge and behaviour

In Table 3 we present the mean scores and standard deviations on the dependent variables knowledge and behaviour. In order to estimate the relevance of possible effects,

**Table 2 Mean inter-observer reliabilities for three assessors on the 26 items of the role-play test (pre-test and post-test)**

Behavioural categories	pre-test	post-test
<i>A. Introduction</i>		
The student:		
1. Greets the patient	0.85	0.73
2. Introduces him/herself	0.65	0.76
3. Invites the patient to explain the reason of the visit	0.94	0.89
4. Explains what will happen during the intake interview	0.98	0.94
<i>B. Communication skills</i>		
The student:		
5. Uses open questions	0.73	0.82
6. Uses questions which follow the topic raised by the patient	0.73	0.78
7. Avoids double questions	0.92	0.76
8. Paraphrases and reflects what the patient says in order to check correct understanding	0.87	0.88
9. Summarizes, in order to come back to main issues (if necessary)	0.83	0.70
10. Avoids technical language	0.92	0.89
11. Repeats questions, if necessary	0.85	0.86
12. Shows verbal empathy	0.75	0.72
13. Makes eye contact with the patient	0.63	0.74
14. Is directed to the patient (body language)	0.86	0.88
15. Shows an interested and active listening attitude (non-verbal)	0.86	0.76
<i>C. Assessment of anxiety</i>		
The student:		
16. Asks for the period the patient did not visit the dentist	0.82	0.82
17. Pays attention to the development of anxiety	0.86	0.81
18. Explores in more detail the development of anxiety	0.74	0.85
19. Specifies what the patient is fearing	0.79	0.77
20. Does a proposal how to break through the vicious circle of anxiety	0.70	0.68
21. Asks the patient to come with suggestions to break through the vicious circle of anxiety	0.90	0.91
<i>D. Closure</i>		
The student:		
22. Summarizes the problems of the patient	0.98	0.98
23. Discusses with the patient the plan for the short term	0.98	0.96
24. Discusses with the patient the plan for the long term	0.83	0.95
25. Invites the patient to ask questions	1.00	0.99
26. Takes an initiative to end the interview	0.98	0.97

we also calculated the Effect Sizes for both variables. We used the formula:

$$ES = \frac{M(\text{Experimental group}) - M(\text{Control group})}{Sd(\text{Control group})}$$

Cohen<sup>25</sup> considers an ES of 0.2 as a low effect, an ES of 0.5 as a moderate effect and an ES of 0.8 and higher as a large effect.

**Knowledge test**

The score on the knowledge test is calculated by addition of the correct answers on the two-choice questions. Table 3 first shows that there is no difference between the experimental and the control group at the pre-test ( $t = -0.28$ ;  $P = 0.79$ ). After the training the

score of the experimental group is higher than the score of the control group; the difference with the control group is again not significant at the level of 5%, but is in the expected direction ( $t = 1.71$ ;

$P = 0.06$ ). The Effect Size for knowledge is 0.77; in terms of Cohen this should be considered as a large effect. Combining the tests for significance and relevance, we conclude that there are indications

**Fig. 2 Classification system of De Groot<sup>20</sup>**

	Rules	Exceptions
World	A1. Testable knowledge A2. Observable skills	B. Reportable insight in the existence of something (other facts, views, opinions)
Self	C. Communicable insights into oneself: Rules about myself (capacities, affinities, restrictions)	D. Communicable insights into oneself: Surprises about myself, own unexpected abilities and capacities

for an effect of the course on the knowledge of the trainees.

**Behavioural role-play test**

The dependent variable is assessed as follows. First the mean score for each observer on the 26 items is calculated. Then the mean score of the three observers is calculated. This index is called behaviour. Table 3 shows there is no difference between the

two groups at the pre-test ( $t = -0.66$ ;  $P = 0.26$ ). At post-test, however, there is a big difference between the experimental and the control group ( $t = 5.22$ ;  $P = 0.001$ ). The Effect Size for behaviour is 2.50; according to Cohen this should be interpreted as a very large effect. So, here we may firmly conclude that the course has an effect on the behaviour of the trainees. See Table 4 for a more specific break

down, showing the mean scores of the observers on each of the 26 items.

Table 4 shows that the scores of the experimental group on all the 26 items are higher at post-test than at pre-test. In the control group we see a lower score in 7 items (item 5, 7, 10, 13, 14, 17 and 18). For an assessment of the contribution of the different parts of the behavioural test, we also calculated the mean scores for the

**Table 3 Means (M), standard deviations (sd) on the dependent variables Knowledge and Behaviour of the experimental group and the control group at pre-test and post-test and Effect Sizes**

	Experimental group				Control group				Effect-Size
	Pre-test		Post-test		Pre-test		Post-test		
	M	sd	M	sd	M	sd	M	sd	
Knowledge	12.2	2.5	16.2	2.3	13.1	4.0	13.7	3.9	0.77
Behaviour	2.8	0.6	4.5	0.5	3.0	0.6	3.1	0.7	2.50

**Table 4 Mean scores of the three observers on the 26 behavioural criteria of the behavioural test for the experimental and control group at pre-test and post-test**

Behavioural categories	EG (n = 25) Pre-test	EG (n = 25) Post-test	CG (n = 9) Pre-test	CG (n = 9) Post-test
<i>A. Introduction</i>	M	M	M	M
1. Greets the patient	1.6	4.7	1.4	1.7
2. Introduces him/herself	1.1	2.7	1.0	1.7
3. Invites the patient to explain the reason of the visit	2.8	5.2	4.4	4.7
4. Explains what will happen during the intake interview	1.2	2.9	2.0	2.0
<i>B. Communication skills</i>				
5. Uses open questions	4.1	5.7	4.6	4.1
6. Uses questions which follow the topic raised by the patient	3.1	5.0	3.7	4.4
7. Avoids double questions	4.2	5.6	4.5	4.3
8. Paraphrases and reflects what the patient says in order to check correct understanding	2.4	4.5	3.8	4.5
9. Summarizes, in order to come back to main issues (if necessary)	2.8	4.5	2.6	2.7
10. Avoids technical language	4.8	6.6	6.0	5.7
11. Repeats questions, if necessary	1.7	4.3	1.0	1.7
12. Shows verbal empathy	3.7	5.2	4.3	4.5
13. Makes eye contact with the patient	5.3	6.4	5.6	5.1
14. Is directed to the patient (body language)	5.2	6.4	6.1	5.2
15. Shows an interested and active listening attitude (non-verbal)	4.5	6.1	5.7	5.2
<i>C. Assessment of anxiety</i>				
16. Asks for the period the patient did not visit the dentist	3.4	5.0	2.9	3.6
17. Pays attention to the development of anxiety	3.2	5.6	3.4	2.7
18. Explores in more detail the development of anxiety	2.6	4.6	2.0	1.9
19. Specifies what the patient is fearing	3.6	5.6	2.2	2.6
20. Does a proposal how to break through the vicious circle of anxiety	2.8	4.8	2.0	2.9
21. Asks the patient to come with suggestions to break through the vicious circle of anxiety	1.8	4.8	1.1	1.7
<i>D. Closure</i>				
22. Summarizes the problems of the patient	1.2	2.4	1.0	1.0
23. Discusses with the patient the plan for the short term	1.0	2.2	1.9	1.8
24. Discusses with the patient the plan for the long term	1.2	2.1	1.0	1.4
25. Invites the patient to ask questions	1.0	1.7	1.0	1.0
26. Takes an initiative to end the interview	1.1	2.7	2.0	2.1

EG = Experimental group; CG = Control group

**Table 5 Means (M) and standard deviations (sd) of the three observers on the four main categories of the behavioral test**

General Category:	EG (n = 25) pre-test		EG (n = 25) post-test		CG (n = 9) pre-test		CG (n = 9) post-test		t-test pre-test		t-test post-test	
	M	sd	M	sd	M	sd	M	sd	t	P	t	P
A. Introduction	1.7	(0.8)	3.9	(1.4)	1.8	(1.1)	2.5	(1.4)	-0.31	0.38	2.33	0.01
B. Communication skills	3.8	(0.9)	5.5	(0.4)	4.3	(0.7)	4.3	(0.7)	-1.57	0.06	5.28	0.00
C. Assessment of anxiety	2.9	(1.0)	5.0	(0.7)	2.2	(0.9)	2.6	(0.9)	1.58	0.06	7.89	0.00
D. Closure	1.1	(0.3)	2.3	(1.2)	1.7	(1.6)	1.7	(1.0)	-1.81	0.15	1.20	0.12

EG = Experimental group; CG = Control group

four categories: introduction, communication skills, assessment of anxiety and closure (see Table 5).

In this table we first notice that there are some indications of differences between the experimental and the control group at the pre-test: the score of the control group on communication skills (M = 4.3) is higher than the score of the experimental group (M = 3.8). On the other hand, for Assessment of anxiety there is a higher score for the experimental group (M = 2.9) than for the control group (M = 2.2). The differences are almost significant (P = 0.06). At post-test, the differences are all in favour of the experimental group and they are significant for the categories A, B and C. Compared with the mean scores on category B and C, the mean scores of the experimental group on the categories introduction and closure are relatively low. Therefore, the more detailed conclusion is that the course has an effect on three of the four general categories, and most on communication skills and assessment of anxiety.

**The learner report**

Overall, the results from the qualitative material produced by the learner report show that the students acquired a number of relevant insights into their own functioning as a dentist. These insights were mainly intended by the course and most of them were positive. Below we give an impression of learning effects falling in the four cells of the learner report. Then we discuss the assessment of the learning effect sentences in two categories: intended vs non-intended by the course and positive vs negative.

The total number of learning effect sentences in Cell A was 75. Examples of these sentences are:

*'I have learnt that:  
...good listening is very important when you deal with an anxious patient'  
...as a dentist you have to announce what you are going to do'*

The total number of learning sentences in Cell B was 49. Examples of these sentences are:

*'I have learnt that it is not true that...  
...people with a dentist phobia cannot be treated at all'  
...patients are just anxious, it's always about something specific'*

Cell C yielded the most learning effect sentences: 101.

Examples are:  
*'I have learnt that I:  
...can structure the interview using my communication skills'  
...can build and maintain a relationship with the patient on the basis of mutual confidence'  
...can show more empathy than I thought'*

Cell D yielded 42 sentences. Examples are:

*'I have learnt that it is not true that I:  
...am not able to communicate with an anxious patient'  
...always can imagine what a person with some anxiety experiences'*

As for the difference between intended vs non-intended effects, the outcome was that 98% of the sentences were intended by the course. One example of an outcome that was not intended was *'I have learnt that I am more anxious to talk in a group session than I thought before'*. The percentage of positive learning effect sentences was 94, so 6% of the sentences was assessed as negative. Some negative learning outcomes were *'I have learnt that it is not true that I draw correct conclusions from the information of the patient'*, or *'...that it is not true that I always have patience for the patient'*. From these examples it may be clear that the effect is negative, but not unintended. These students have acquired a relevant insight into a limitation in their own functioning and therefore they can work at the improvement of that limitation.

**DISCUSSION**

The first aim of our research was to investigate the effects of the course *'How to deal with anxious patients'* on knowledge and behaviour. The results show that effects can be demonstrated for both dependent variables.

Although the difference between the experimental group and the control group on the knowledge test did not reach significance at 5% level, an analysis of the Effect Size made clear that the difference is relevant. A further analysis of the behavioural test shows the effectiveness for the categories introduction, communication skills and assessment of anxiety. There was no significant difference between the experimental and control group on the closure category of the interview. We may conclude that the students have acquired more communication skills to deal with anxious patients and more skills in the detection of anxiety. The effectiveness and usefulness of the course is also demonstrated by the data of the learner report. Overall, the learning effect sentences were intended by the course and positive. The few negative learning effects concerned increased insights in own limitations.

The results of the behavioural test indicate that students still have comparatively low scores on the categories introduction and closure. We therefore suggest paying some more attention in the course to these parts of the interview. The beginning of the interview is particularly important for the reduction of anxiety in the patient. Here we refer to the well-known saying: *The first blow is half the battle!*

When this research project started, students were not systematically assessed on their knowledge and skills. Just participating in the communication skills training was enough to fulfill the requirements of the curriculum. Therefore, a recommendation is to include the knowledge and behavioural test as a regular part of the examinations.

**Limitations of the study and recommendations**

The most important limitation of our study is the small size of the control group in comparison with the size of the experimental group. The main reason for the small number of students in the control group was that it proved to be very difficult to motivate them to participate in a rather time consuming behavioural test. In some cases, avoidance behaviour may also have played a part: being

videotaped and assessed on your professional behaviour is sometimes anxiety provoking.

A second limitation is that we have not been able to determine the long-term effects of the course. Of course, maintenance of behaviour change is very important in this area. So, it might be interesting to try to include the subjects in a follow-up research, preferably when they are already working as a dentist. Then it might be possible to make a global determination to what extent the course is effective in the long run. However, in the practice of ACTA, the use of a control group in a long-term follow-up design is almost impossible, because all students are obliged to follow the course 'How to deal with anxious patients'. It would be unethical to withdraw them from this course just for research purposes.

Based on the limitations of the research a number of recommendations for future research can be formulated. The first recommendation is to replicate this study with a higher number of control group subjects. The second is to investigate the maintenance of behaviour change in a pre-test-post-test follow-up design. Another theme could be the influence of the behaviour of the dentist on the anxiety of the patient. Here, one might think of a design in which one group of students having followed the course, 'How to deal with anxious patients' is compared with a control group which has not yet followed this course. When these groups already have to treat some 'real' patients, it would be possible to compare the anxiety levels

of both groups of patients. It still has to be shown that the anxiety level of the first group is lower than that of the second group. This would be the ultimate test for the effectiveness of the course discussed in this article.

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