

A Survey of Perceived Problems in Orthodontic Education in 23 European Countries

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Abstract. *This paper reports on a survey of perceived problems in the provision of orthodontic education at the stages of undergraduate, postgraduate, and continuing professional education (CPE) in 23 European countries in 1997. A questionnaire, together with an explanatory letter, was mailed to all members of the EUROQUAL II BIOMED project. Answers were validated during a meeting of project participants and by further correspondence, when necessary. The topics covered in the questionnaire were adequacy of funding, numbers of orthodontic teachers, availability of equipment, regulations, training centres, numbers of orthodontists, availability of books, journals, and information technology. Completed questionnaires were returned by orthodontists from all 23 countries. Respondents from seven countries did not answer all questions. Respondents reported a perceived almost universal lack of adequate funding for postgraduate orthodontic training (from 18 out of 20 countries) and, to a lesser extent, at undergraduate (13 out of 20 countries) and CPE levels (17 out of 21 countries). Respondents from 12 of the 20 countries reported adequate numbers of qualified teachers at undergraduate level, but only seven out of 18 at postgraduate level and eight out of 19 for CPE. Lack of suitable equipment was reported as a more frequent problem by central and eastern European countries (six out of 20 countries at undergraduate level, eight out of 20 countries at postgraduate level, and 12 out of 19 at CPE level). Too few or too many regulations were only perceived to be a problem by the respondent from one country out of 19 at undergraduate level, by seven out of 19 at postgraduate level, and by eight out of 16 at CPE level). Lack of training centres was more frequently reported as a problem by respondents from central and eastern European countries, but was generally not perceived as a problem by respondents from west European countries. Respondents from seven countries reported a lack of training centres for CPE. Respondents from six countries reported that they perceived there to be too many orthodontists at postgraduate level, from seven countries that there were an appropriate number, and from seven that there were too few. A lack of books, journals, and information technology was reported to be a problem by respondents from four out of 19 countries at undergraduate level, eight out of 20 at postgraduate level, and 10 out of 20 at CPE level. At both undergraduate and postgraduate level, the majority of respondents from central and eastern European countries reported problems with books, journals, and information technology. The results of the survey confirmed many anecdotal impressions and provided an extremely useful background against which to formulate quality guidelines for orthodontic education in Europe.*

Index words: Problems in orthodontic education, Europe.

Introduction

This survey was one of a series carried out by the Professional Development Group of the EUROQUAL BIOMED II (ter Heege, 1997).

The quality of orthodontic care depends on many factors (Behrents and Keim, 1991). One factor is a well-educated workforce, which has been well trained at undergraduate and postgraduate levels (van der Linden, 1996) and which updates its skills with regular CPE throughout a practising career. Adequate levels of funding are essential to facilitate

this goal, together with a sufficient number of well-qualified teachers and teaching centres at all three stages of orthodontic education. Good equipment and a sufficient number of patients with a suitable range of clinical problems must also be available. Another important factor is that both students and teachers need good access to up-to-date scientific publications, professional books and information technology which can be applied to the field of orthodontics and other related areas (Keith and Proffit, 1994). Even if all these resources are available, over or under prescriptive legal regulations can hamper education, and training at all

levels, in a variety of ways. Examples may include laws and a health provision system which preclude undergraduates from actually treating patients in person and barriers which prevent patients from obtaining easy access to specialists.

Aims

The current survey aimed to gather information on the problems encountered in various key aspects of orthodontic education in a range of European countries in early 1997. The topics considered at the stages of undergraduate, postgraduate and CPE were:

- (1) funds available;
- (2) numbers of teachers;
- (3) availability of suitable equipment;
- (4) regulations (too many/too few);
- (5) numbers of training centres;

- (6) numbers of trained orthodontists;
- (7) availability of books/journals/information technology.

Methods

The methods described in the general introduction to this series of papers were used. The questionnaire used in the current survey is at Figure 1.

Results

It was possible to validate responses from 23 of the 28 countries. It was not possible to validate the responses from Croatia, Estonia, Latvia, Lithuania and Romania. Of the 23 countries whose responses were validated, 16 were from Western Europe and seven from Central and Eastern Europe. Respondents from seven of the 23 countries did not answer all questions. Virtually no respondents gave an

Questionnaire

Will all members of the Euroqual Project please provide answers to the following questions by 6 March 1997 and return these answers to a member of the Professional Development Group on the first day of the Amsterdam meeting.

Please complete the following matrix by writing 'yes' in a box if there is a problem in your country and 'no' if there is no problem.

Problem	Undergraduate education	Postgraduate education	Continuing professional education
Lack of funds	1	2	3
Lack of qualified teachers	4	5	6
Lack of suitable equipment	7	8	9
Too many regulations	10	11	12
Too few regulations	13	14	15
Lack of training centres	16	17	18
Too many orthodontists	19	20	21
Too few orthodontists	22	23	24
Lack of books/journals	25	26	27
Lack of information technology	28	29	30

Where you have answered 'yes', please give a brief explanation on further sheets of paper using the numbers in the matrix boxes. For example, if you have answered 'yes' in matrix box 1 you should give a brief explanation of why and how your country has a problem with lack of funds for undergraduate education in orthodontics.

This questionnaire was completed by:

from:

FIG. 1 EUROQUAL project professional development group problems in orthodontic education in Europe.

explanation or further details when they answered yes to a question, as requested at the foot of the questionnaire (Figure 1).

Tables 1–7 summarize the answers to the questionnaire.

Lack of Funds (Table 1)

The respondents from Albania, Austria and Ireland did not answer this question for the funding of undergraduate and postgraduate education in orthodontics and from Austria and Ireland for CPE in orthodontics.

The respondent from only one country (France) answered that there was no problem with funding at all three stages of orthodontic education. The respondents from Norway and Switzerland answered that there was no problem at two stages (undergraduate and CPE for Norway, and undergraduate and postgraduate for Switzerland). In addition, the respondents from Denmark, Finland, Greece and Portugal reported no problem at undergraduate level, and from Italy and Slovakia for CPE.

The respondents from six Western European countries (Belgium, Germany, the Netherlands, Spain, Sweden, and the UK, and five Central and Eastern European countries (Bulgaria, Czech Republic, Hungary, Poland and Slovenia) reported problems at all three stages of orthodontic education.

TABLE 1 *Lack of funds*

	Yes	No	No answer
Undergraduate education	12 BEL, BUL, CZ, GER, HUN, IT, NETH, POL, SLVE, SP, SWE, UK	7 DEN, FIN, FRA, GRE, NOR, PORT, SWIT	4 ALB, AUS, IRE, SLVA
Postgraduate education	17 BEL, BUL, CZ, DEN, FIN, GER, GRE, HUN, IT, NETH, NOR, POL, PORT, SLVE, SP, SWE, UK	2 FRA, SWIT	4 ALB, AUS, IRE, SLVA
Continuing professional education	17 ALB, BEL, BUL, CZ, DEN, FIN, GER, GRE, HUN, NETH, POL, PORT, SLVE, SP, SWE, SWIT, UK	3 FRA, IT, NOR	3 AUS, IRE, SLVA

Lack of Qualified Teachers (Table 2)

The respondents from Albania, Austria, and Ireland did not answer this question. The respondent from Sweden did not answer for postgraduate and CPE, and from Switzerland for postgraduate education.

Overall, there was a fairly even divide in positive and negative answers to this question for all three levels of orthodontic education. Respondents from seven countries: three from Western European countries (Belgium, Nether-

TABLE 2 *Lack of qualified teachers*

	Yes	No	No answer
Undergraduate education	8 BEL, CZ, DEN, HUN, NETH, SLVA, SLVE, UK	12 BUL, FIN, FRA, GER, GRE, IT, NOR, POL, PORT, SP, SWE, SWIT	3 ALB, AUS, IRE
Postgraduate education	11 BEL, CZ, DEN, FIN, GER, HUN, NETH, POL, SLVA, SLVE, UK	7 BUL, FRA, GRE, IT, NOR, PORT, SP	5 ALB, AUS, IRE, SWE, SWIT
Continuing professional education	11 BEL, BUL, CZ, FIN, GER, HUN, NETH, POL, SLVA, SLVE, UK	8 DEN, FRA, GRE, IT, NOR, PORT, SP, SWIT	4 ALB, AUS, IRE, SWE

lands, and the UK), and four from Central and Eastern Europe (Czech Republic, Hungary, Slovakia, and Slovenia) reported the insufficient number of qualified teachers at all three stages of orthodontic education. However, respondents from six countries (all Western European) reported an adequate number of teachers at all three stages of orthodontic education; they were from France, Greece, Italy, Norway, Portugal, and Spain.

Respondents from three countries (Finland, Germany, and Poland) reported that there was a sufficient number of qualified teachers in undergraduate orthodontic education, but a lack in postgraduate and CPE. The respondent from Sweden reported a sufficient number of qualified teachers in undergraduate orthodontic education, but did not answer for postgraduate and CPE.

The respondent from Bulgaria reported sufficient teachers in under- and postgraduate orthodontic education, but not enough in CPE. The Swiss respondent reported a sufficient number of qualified teachers in undergraduate and CPE, but did not answer for postgraduate orthodontic education.

The Danish respondent reported that Denmark needs more qualified teachers in under- and postgraduate education, but that there was no problem for CPE.

Lack of Suitable Equipment (Table 3)

The respondents from Austria and Ireland did not answer this question. The respondent from Sweden did not answer for postgraduate and CPE, the respondent for Albania for undergraduate orthodontic education and the respondent from Switzerland for CPE.

Respondents from five countries—Czech Republic, Italy, Poland, Slovakia, and Slovenia reported a lack of suitable equipment at all three stages of orthodontic education. In contrast, the respondents from six countries reported that adequate equipment was available at all three stages. They were from Denmark, Finland, Greece, Norway, Portugal, and the UK. A further five countries: Belgium, Germany, Hungary, the Netherlands, and Switzerland were reported as having suitable equipment for under- and postgraduate orthodontic education.

TABLE 3 Lack of suitable equipment

	Yes	No	No answer
Undergraduate education	6 CZ, IT, POL, SLVE, SP	14 BEL, BUL, DEN, ALB, AUS, IRE FIN, FRA, GER, GRE, HUN, NETH, NOR, PORT, SWE, SWIT, UK	3
Postgraduate education	8 ALB, BUL, CZ, FRA, IT, POL, SLVA, SLVE	12 BEL, DEN, FIN, AUS, IRE, SWE GER, GRE, HUN, NETH, NOR, PORT, SP, SWIT, UK	3
Continuing professional education	12 ALB, BEL, BUL, CZ, GER, HUN, IT, NETH, POL, SLVA, SLVE, SP	7 DEN, FIN, FRA, AUS, IRE, SWE, GRE, NOR, PORT, UK	4

The respondent from Bulgaria reported adequate equipment at undergraduate level, but a lack at the postgraduate and CPE stages. The Swedish respondent reported adequate equipment at the undergraduate stage, but provided no information about the other two stages. The French respondent reported adequate equipment at undergraduate and CPE levels, but inadequate provision at a postgraduate level. The Spanish respondent reported the reverse situation, i.e. that it was adequate at a postgraduate level, but inadequate at the other two levels.

Regulations-Problems-Too Many/Too Few (Table 4)

The respondents from Albania, Austria, and Ireland did not answer the questions on this subject, and those from Sweden and Slovenia answered for only one of the three stages.

Generally, few problems were reported as far as too many regulations were concerned. No respondents reported this to be a problem at an undergraduate stage, those from Germany, Greece, and Sweden reported this to be a problem at the postgraduate stage and the one from Slovakia at the CPE stage.

Relatively few problems were reported as far as too many regulations were concerned. This was certainly the case for undergraduate orthodontic education where only the respondent from Spain reported too few regulations and to a lesser extent at postgraduate level, with the respondents from only five countries (Belgium, Bulgaria, Germany, Hungary, and Spain) reporting a problem. However, this number rose for CPE; at this level the respondents from seven countries (Belgium, Bulgaria, Denmark, Hungary, Italy, Poland, and Spain) felt that there were too few regulations whereas, those from eight countries thought the regulations to be appropriate.

Lack of Training Centres (Table 5)

The respondents from four countries (Albania, Austria, Ireland, and Sweden) did not answer this question. The

TABLE 4 Regulations problems—too many/too few

	Yes	No	No answer
Undergraduate education	1	18	4
Too many:	–	BEL, BUL, CZ	ALB, AUS, IRE, SWE
Too few:	SP	DEN, FIN, FRA, GER, GRE, HUN, IT, NETH, NOR, POL, PORT, SLVA, SLVE, SWIT, UK	
Postgraduate education	7	12	4
Too many:	GRE, SWE FRA, IT, POL,	CZ, DEN, FIN, FRA, IT, NETH, POL, PORT,	AUS, IRE, SWE
Too few:	BEL, BUL, HUN, SP	SLVA, SWIT, UK	
Too many and too few:	GER		
Continuing professional education	8	8	7
Too many:	SLVA	CZ, FIN, FRA, GER, NOR	ALB, AUS, IRE, NETH, PORT, SLVE, SWE
Too few:	BEL, BUL, DEN, HUN, IT, POL, SP	SWIT, UK	

TABLE 5 Lack of training centres

	Yes	No	No answer
Undergraduate education	3 HUN, SLVA, SLVE	16 BEL, BUL, CZ, DEN, FIN, FRA, GER, GRE, IT, NETH, NOR, POL, PORT, SP, SWIT, UK	4 ALB, AUS, IRE, SWE
Postgraduate education	5 BUL, CZ, HUN, PORT, SLVA	13 BEL, DEN, FIN, FRA, GER, GRE, IT, NETH, NOR, POL, SP, SWIT, UK	5 ALB, AUS, IRE, SLVE, SWE
Continuing professional education	7 BUL, CZ, GER, HUN, POL, PORT, SLVA	10 BEL, DEN, FIN, FRA, GRE, IT, NOR, SP, SWIT, UK	6 ALB, AUS, IRE, NETH, SLVE, SWE

respondent from Slovenia did not answer for postgraduate education or CPE. The respondent from the Netherlands did not answer for CPE.

At undergraduate level, the respondents from 16 countries reported no problem. Those from three countries (Hungary, Slovakia and Slovenia) reported a problem.

At postgraduate level, the respondents from 13 countries reported an adequate number of training centres, whereas those from five (Bulgaria, Czech Republic, Hungary, Portugal, and Slovakia) reported a problem.

At CPE level, the respondents from 10 countries reported no problems. In contrast, those from seven (Bulgaria, Czech Republic, Germany, Hungary, Poland, Portugal, and Slovakia) reported a problem at this level.

How Many Orthodontists—Too Many/Too Few (Table 6)

By definition, this question does not apply to undergraduates.

The respondents from Ireland and Slovenia did not answer this question. Those from Albania, Austria, Belgium, the Netherlands, and Sweden only answered for one level.

The respondents from Germany, Italy, and Spain reported too many orthodontists at both postgraduate and CPE level. Respondents from a further three countries—Belgium, Greece, and Sweden reported too many at postgraduate level.

In contrast, the respondents from five countries—Czech Republic, Denmark, Poland, Portugal and the UK reported too few at both postgraduate and CPE levels, and a further four countries Albania, Austria, Finland, and Switzerland too few at one of the two levels.

The respondents from five countries—Bulgaria, France, Hungary, Norway, and Slovakia—felt that their countries had an adequate level at both levels.

TABLE 6 *How many orthodontists—too many/too few*

	Yes	No	No answer
Postgraduate education	13	7	3
Too many: 6	BEL, GER, GRE, IT, SP, SWE	BUL, FRA, HUN, NETH, NOR, SLVA, SWIT	ALB, IRE, SLVE
Too few: 3	AUS, CZ, DEN, FIN, POL, PORT, UK		
Continuing professional education	10	7	6
Too many: 3	GER, IT, SP	BUL, FIN, FRA, GRE, HUN, NOR, SLVA	AUS, BEL, IRE, NETH, SLVE, SWE
Too few: 7	ALB, CZ, DEN, POL, PORT, SWIT, UK		

Lack of Books/Journals, Lack of Information Technology (Table 7)

The respondents from three countries (Albania, Austria, and Sweden) did not answer this question. The Irish respondent did not answer for undergraduate orthodontic education.

The respondents from nine countries reported no problems with books and journals, or with the availability of information technology. These countries were: Denmark, Finland, France, Greece, Hungary, Norway, Portugal, Switzerland, and the UK. The respondent from Bulgaria reported problems with books, journals, and the availability of information technology at all three stages of orthodontic education. The respondents from the Czech Republic and

TABLE 7 *Lack of books/journals (B/J) and lack of information technology (IT)*

	Yes	No	No answer
Undergraduate education	4	15	4
Lack (B/J) 2	BUL, CZ	BEL, DEN, FIN, FRA, GER, GRE, HUN	ALB, AUS, IRE, SWE
Lack (IT) 4	BUL, CZ, IT, SLVE	NOR, POL, PORT, SLVA, SP, SWIT, UK	
Postgraduate education	8	12	3
Lack (B/J) 5	BEL, BUL, CZ, POL, SLVA	DEN, FIN, FRA, GER, GRE, HUN, NETH, NOR, PORT, SP, SWIT, UK	AUS, IRE, SWE
Lack (IT) 7	BEL, BUL, CZ, IRE, IT, SLVA, SLVE		
Continuing professional education	10	10	3
Lack (B/J) 5	BEL, BUL, POL, SLVA, SP	DEN, FIN, FRA, GER, HUN, NOR, PORT, SWIT, UK	ALB, AUS, SWE
Lack (IT) 7	BEL, BUL, CZ, IRE, IT, NETH, SWE		

Italy reported problems with the availability of information technology at all three stages, and from Bulgaria at all three stages as far as books and journals were concerned.

In general, fewer problems were reported at undergraduate level than at postgraduate level and fewer at postgraduate level than during CPE.

Discussion

Results from this survey must be interpreted with caution. Apart from the possibility that respondents from larger countries answered the questions from the perspective of their own institution or province rather than taking an overview of the situation in their countries, questionnaires which require yes/no answers may well mask the extent of problems. Nevertheless, the results of this survey have confirmed many anecdotal impressions.

Some problems were reported to be commoner in the countries of Western Europe than those of Central or Eastern Europe and vice-versa. Although, overall, the survey suggested that there were many more problems at all stages of orthodontic training in the countries of Central and Eastern Europe. The survey also suggested that as far as the issues considered were concerned, there were often fewer problems at undergraduate level than at postgraduate or CPE levels. However, one problem, a lack of funds, was perceived as being almost universal as far as postgraduate orthodontic education was concerned and generally a problem for CPE. The relative wealth of a country, as measured by Gross National Product (GNP) *per*

capita may not necessarily be reflected in the spend on orthodontic education. In this context, it was interesting to note that the respondents for two of the member states of the European Union with the lowest *per capita* GNP (Greece and Portugal) did not perceive a problem with the funding of undergraduate orthodontic education, whilst those from 'richer' countries such as Germany and Sweden did.

A perceived lack of qualified teachers was reported as frequently by respondents from Western European countries as by those from Central and Eastern European countries. The problem was reported as worst at postgraduate level and may well reflect either relatively low pay of academic orthodontists as opposed to those in clinical practice or a shortage of orthodontists.

A lack of equipment was generally reported to be a greater problem at all levels of orthodontic education in Central and Eastern Europe than in Western Europe. It was not perceived to be a problem at undergraduate level in the majority of Western European countries.

Although too many or too few regulations were almost universally not perceived to be a problem at undergraduate level, a number of respondents reported the perception that there were too few regulations at postgraduate and CPE levels. It was disappointing that no respondent commented on why they felt this to be the case or which regulations they felt needed to be added. In view of the evidence of a very wide range of hours dedicated to undergraduate orthodontic education in the curriculum (Shanley *et al.*, 1997). It is also perhaps surprising that respondents felt little need for more regulation of undergraduate orthodontic education.

A lack of training centres was another problem which respondents perceived as afflicting the countries of Central and Eastern Europe more frequently than those of Western Europe. As with many other problems, this problem was reported to be more frequent at CPE level.

The answers to the question on numbers of orthodontists were particularly interesting. At postgraduate level (numbers of specialists), six respondents reported that their countries (all Western European) had too many, seven that there was no problem, and seven that there were too few. Respondents from three of the five largest European countries (Germany, Italy and Spain) reported that they perceived there were too many orthodontists at CPE level (general dentists and orthodontists), as well as at postgraduate level. To date, there has been no attempt to plan the size of the European dental workforce, let alone its orthodontic workforce. These issues need to be addressed.

At an undergraduate level, lack of books, journals, and availability of IT was only reported to be a problem by respondents from Central and Eastern European countries. However, at CPE level, respondents from half of the countries, and from Western, Central and Eastern Europe, reported problems in these areas. Again, suggesting that there are more problems with orthodontic CPE in Europe than at undergraduate or postgraduate level.

Conclusions

This survey has highlighted many problems in orthodontic training in Europe and provided much useful background for the formulation of quality guidelines for orthodontic education in Europe.

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