

EDITORIAL

Global issues with orthodontic education: a personal viewpoint

O. P. Kharbanda

Journal of Orthodontics International Editorial Board Member

Head, Division of Orthodontics, Centre for Dental Education and Research, All India Institute of Medical Sciences, New Delhi, India

Orthodontic education and training has traditionally been passed on to disciples as ‘guru mantras’ since the time orthodontics gained recognition as a specialty. While American orthodontists and researchers perfected fixed appliances, to achieve the finest of tooth movement, Scandinavians and Europeans laid greater stress on functional appliances. Geography and barriers in communication led much of the good work, views and important clinical observations to be limited to their areas of origin.

Today, the internet and technology have shrunk the world into a tiny village where several people can work on a single venture whilst sitting thousands of miles apart. This new situation warrants a ‘uniform curriculum and syllabus’ of orthodontic education around the world. At the same time, an orthodontist should be equipped to recognize the local needs of society. Probably, we need to define the ‘universal competencies’ of a graduate orthodontic specialist, in addition to the local competencies needed for working in a particular community or country. The latter may include familiarity and knowledge of the regional socio-cultural and economic aspects, language competencies and an appreciation of ‘regional norms of beauty’. With increased patient migration, orthodontists should be in a better position to provide quality orthodontic care to such transfer cases from across the globe.

Returning to the issue of curriculum and training, orthodontic education (whether in different parts of the world or between universities in the same country) may have large variations. This has obvious impacts on the quality and competencies of the graduating orthodontists. These variables are related to pre-graduate training requirements, eligibility/selection criteria for admission to graduate orthodontic programmes, total course duration, and duration and content of pre-clinical work. Other important issues include:

- technique/philosophy of orthodontic interventions;
- total case-load for students;

- availability and involvement in interdisciplinary care;
- treatment of dentofacial deformities.

A greater emphasis on clinical training has necessitated allocation of a larger share of working time to clinical hours at the cost of research time. However, other important issues that deserve attention are stipulation of the post-MDS (Master of Dental Surgery) requirements to be eligible for registration as a specialist with the ‘Specialty Board’ of the country and the need for Continuing Dental Education to maintain this specialist registration. This can vary from nil requirements in certain countries, to a strict performance-based registration in others. There are lessons to be learnt from research conducted on orthodontic education around the world. For example, it could help define the curriculum and competencies of graduate orthodontic programmes to prepare the Orthodontist for the delivery of best clinical care.

There has been genuine concern by those who care for the quality of orthodontic education, and much effort and research has been in progress. A positive step is the meeting of orthodontic educators within the AAO Annual Session. Orthodontic education across the USA during the last two decades has witnessed a clear and progressive trend, and the same has occurred elsewhere in the world. I have tried to highlight such major, global orthodontic educational issues below (summarized in Figure 1).

Declining numbers: shortages of experienced faculty staff and the role of part-time and visiting teachers

Globally, there has been a gradual decline in the number of experienced faculty members in full-time academic-related jobs. North America and Canada have witnessed noteworthy changes in the experience level of faculty from 1983–1999. Those ‘highly experienced’ full-time

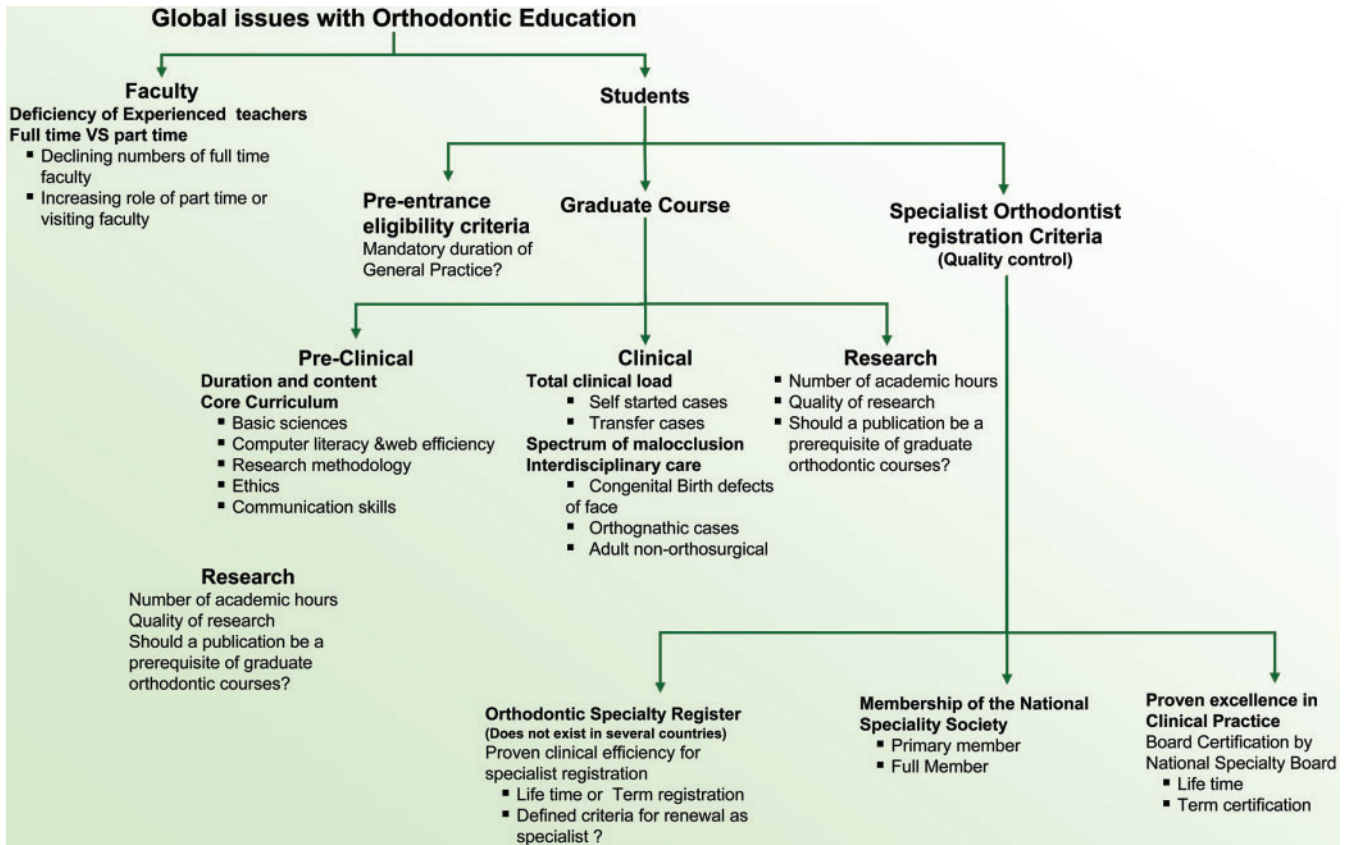


Figure 1 Global issues with orthodontic education

faculty staff with over 20 years of experience, declined by 23%.¹ A number of factors could have contributed to this, not least the meagre increase in salaries to keep pace with the growing inflation and social trends.¹ ABO* statistics indicate that approximately 725 such part-time educators work in the US and Canada.² These educators provide a significant component of the clinical instruction in most programmes. In Australia, too, the full-time faculty is greatly supported by visiting and part-time orthodontic teachers who make a significant contribution to the supervision of clinical cases.³ In India, while the number of new dental colleges mushrooms, the Dental Council does not permit the association of part-time instructors; this means that new graduate orthodontic departments have a shortage of experienced full-time teachers. Part-time instructors can both fill this void and supplement the work of the full-time faculty.

Pre-postgraduate requirements

The Australian Dental Council requirements for post-graduate Dental Education stipulate 2 years of general

dental practice prior to graduate course entry and the same is true in nine European countries, whilst 12 out of 23 countries insist on pre-postgraduate training.⁴ The period of training varies from 1 to 3 years and, of these surveyed countries, nine had a 2-year specification: two stipulated 1 year, and one country 3 years. In Germany, once qualified as a dentist, graduates must undertake at least 1 year of general dental practice prior to 3 years' training in orthodontic specialist practice, this followed by a university period of training.⁵ In India, no pre-postgraduate training as a general dental practitioner is required, which is also true for many other countries. Although such pre-postgraduate entry requirements prolong the entry years, they do have long-term advantages, not least the opportunity to practice and develop subject areas of interest, and to mature to undertake graduate training.

Pre-clinical training and work schedule

In the past, there was a trend towards orthodontic postgraduates spending many hours within the curriculum enhancing manual skills, such as making model bands and archwires. With the availability of newer

*American Board of Orthodontics.

materials and preformed archwires, however, there is now less need for emphasis on the development of such manual skills and, therefore, a short pre-clinical module would be ideal. An early entry to clinics would enable greater real-life experience, higher clinical load and better case completion rates, thus reducing the quantity of transfer cases to the following year of postgraduates.

Course content

Across the world, the main areas of curriculum change in the last two decades have included an increased interest in clinical photography, interdisciplinary care, functional occlusion, surgical orthodontics, TMJ dysfunctions and practice management. Interdisciplinary care and surgical orthodontics are perhaps the most critical areas of orthodontic expertise, which should be included in the modern curriculum. While the majority of institutions are expected to offer course modules in interdisciplinary care, treatment of such cases in interdisciplinary clinics should be mandatory.

To prepare orthodontic graduates to face the real world, the graduate orthodontic curriculum should also emphasize the development of communication skills practice management, ethics medical law, health-care financing and appropriate patient-doctor relationships. Other important topics are the role of computers and net-based applications in education, practice and research, orthodontics for medically compromised children and medical emergencies in the orthodontic office. However, the general tendency for superfluous expansion of the curriculum must also be curtailed. It should aim at igniting creativity and developing an aptitude towards lifelong, self-directed learning.

Clinical case-load

An optimum clinical case-load, manageable within the duration of a course, balanced with expert supervision and supported with didactic reasoning, should steer the development of competencies of a graduate orthodontic student. In a recently conducted survey in India, clinical training was considered the most significant of all aspects. A minimum case-load (i.e. 'self-started' and transfer cases) and case mix (including interdisciplinary cases, e.g. cleft lip and palate, and orthognathic surgical) has yet to be defined, but my personal experience at All India Institute of Medical Sciences (AIIMS), New Delhi, and the University of Sydney, suggests that the average case-load/student varied from 70–90 at AIIMS to 75–95 at Sydney, with some students having more than 110 cases. This differs from other institutions within India

where the case-load is much less. In North America and Canada there has been a similar tendency towards greater involvement of graduate students in clinical care. The average case-load/student (including 'self-start' and transfer) rose from 57.9 per student in 1983 to 72.1 per student in 1989 and 1994.¹ In a 1999–2000 survey, the average case-load/student was recorded as 85.2.¹ There was also an increase in the use of functional appliances and number of cases treated in the mixed dentition.

A significant trend has been the increase in the number of craniofacial anomalies in the USA. An increase of 270% was reported from 1983–1999.¹ A global trend of greater involvement of Orthodontists in interdisciplinary cleft care may require collaboration between institutions with different levels of service provision in, e.g. orthognathic surgery. In 2006, the issue of case-load was debated at the National Workshop of Postgraduate Dental Education organized by the Dental Council of India at AIIMS, New Delhi. The orthodontic group recommended an average case-load of 30–40 new cases with a variety of malocclusions and 10–20 transfer cases.

Research

Many departments require their students to undertake research in a priority field or an ongoing area of research. This provides the student an opportunity to be part of a comprehensive research investigation. The current trend in orthodontic research has shifted from clinical-cephalometric research to the fundamentals of biological sciences like muscle physiology, molecular biology and genetics. Presently, there is a greater emphasis on gene isolation and gene therapy, and to some extent stem cell research, as the basis of malocclusion and its treatment. The areas of research that have significant implications today are advanced applications of digital imaging and CAD-CAM. Research conducted towards postgraduate theses makes a significant contribution to orthodontic literature. It is high time that the quality of research, clinical innovations, patenting of research outcomes and such contributions be included in the accreditation system; departments should be accordingly graded based on the merit of their contribution to the science of orthodontics. Such research entails a collaborative involvement with the disciplines of medical sciences, biomaterials and computer sciences for its more effective execution.

Variations in requirements for specialist registration

Several countries do not have a specialist orthodontic register. A European survey reported that a specialist

orthodontist register is maintained by 12 out of 23 respondent countries. In 9 of the 12 countries, access to the specialist register is immediate. However, in Switzerland, case presentations are required. In 2 countries, access to a specialist register can take place only 1 year after completion of the training and involves passing an examination. In Sweden, access to the specialist register also requires examination, 3 years after completion of training. Whilst there seems to be a fairly uniform pattern of 3-year course duration (except in two countries), great diversity exists in the pattern of the final examination and access to specialist orthodontic registers.⁴ In Australia, all 5 dental schools offer Masters in Orthodontics and their respective degrees are recognized for 'specialist registration' by the Australian Dental Council.³ The Dental Council of India does not have a specialist register, but discussions are being held in this direction.

In general then, it seems that a new orthodontic graduate should prove their excellence in orthodontics by presenting 5–10 treated orthodontic cases, to be evaluated by, e.g., the National Orthodontic Society. Hence, orthodontists who so desire, could be offered

accredited membership by establishing their proficiency in quality treatment delivery. The possibility of a universal curriculum and world board of orthodontics may become a reality in the near future.

References

1. Keim RG, Sinclair PM. Orthodontic graduate education survey, 1983–2000. *Am J Orthod Dentofacial Orthop* 2002; **121**: 2–8.
2. Dykhouse VJ, Grubb JE, Greco PM. The role of part-time educators in defining knowledge and skill levels in orthodontic residency programs. *Am J Orthod Dentofacial Orthop* 2004; **126**: 523.
3. Freer TJ. Undergraduate and postgraduate Orthodontics in Australia. *Br J Orthod* 1999; **26**: 62–65.
4. McDonald JP, Adamidis JP, Eaton KA, Seeholzer H, Sieminska-Piekarczyk B. A survey of postgraduate (specialist) orthodontic education in 23 European countries. *J Orthod* 2000; **27**: 92–98.
5. Luther F, Cook PA. Orthodontic postgraduate training in Germany—have we something to learn? *Br J Orthod* 1998; **25**: 78–81.

The *Journal of Orthodontics* would like to thank all those who have given so freely of their time by reviewing papers in 2006. We could not have produced the Journal without this invaluable assistance from so many people.