

Orthodontics Around the World

Orthodontics in Brazil: Excellence for a Minority

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Abstract Brazil is the largest country of South America, with an area of 8,511,965 km² and 150 million people. It has 113 dental schools and several orthodontic postgraduate courses variously at Certificate, Master, and Doctoral levels. The current article gives an overview of the speciality in Brazil. The discussion puts the delivery of orthodontic care within the context of social conditions in Brazil. Included is a description of two full-time orthodontic courses located in the city of Rio de Janeiro.

Index words: Orthodontics in Brazil, Postgraduate Courses, Public Universities, Private Offices, Social Aspects.

Introduction

Brazil is the largest country in South America with 150 million people and an area of 8,511,965 km². The profession of Dentistry is well established, with 113 Dental Schools that graduate more than 10,000 dentists annually. The schools are spread across Brazil, but show a larger concentration in the southeast area that is made up of the states of Rio de Janeiro, São Paulo, Minas Gerais, and Espírito Santo.

Brazilian dentistry has undergone significant changes in the last two decades and, as a part of that process, there has been a rapid increase in the demand for postgraduate education with a particular interest in speciality postgraduate courses. Amongst these specialities, Orthodontics is one of the most requested.

Orthodontics was first introduced to Brazil in 1923. However, it was only in 1926 that it generally became part of the dental undergraduate curriculum. Historically, the basic philosophy that was taught derived from the University of Washington through a number of Brazilian professors who had obtained a degree within that faculty. The first orthodontic postgraduate course commenced in 1960 at the Federal University of Rio de Janeiro which is still an important centre in terms of Master, Doctoral, and other research programmes. The State University of Rio de Janeiro started a 2-year Certificate of Orthodontics postgraduate course in 1980 and currently runs a structured 3-year Masters programme. The courses have many similarities in the curriculum content and both train students in the edgewise technique. However, the Certificate Course is directed to the students who are going to become private practitioners, whilst the Masters Course also aims to prepare the student to be able to teach. Thus, research must be pursued and publications produced for those undertaking the Masters degree.

Generally, across the country, there are several Orthodontics postgraduate courses, variously at Certificate,

Master, and Doctoral levels. The Dentistry Federal Council and The CAPES—which is an institution that belongs to Brazilian Education Ministry—recognize 74 Certificate, five Master, and four Doctoral Orthodontic Courses. Usually, the Certificate and Masters programmes range from 2 to 3 years in length and are full-time. The Doctoral programme covers 4 years, including a first year full-time research programme. The current article aims to give an overview of this speciality in Brazil and a detailed description of two well established full-time orthodontic courses, both of which are located in the city of Rio de Janeiro.

How to Become an Orthodontist at the Federal and State Universities of Rio de Janeiro, Brazil

After 5 years at Dental School and achieving qualification as a General Dental Practitioner, it is then possible to apply for a postgraduate programme in Brazil. The applicants' selection is based upon: written exams taken in General Dentistry, Orthodontics, and English; manual dexterity tests based on wire-bending ability; CV analyses; and, finally, a 30-minute interview with three staff members. The State University of Rio de Janeiro accepts six new students every year for the 2-year certificate programme and six students per year for its 3-year Masters programme. In contrast, the Federal University of Rio de Janeiro takes eight students per year for the Masters Programme and 2–3 students per year for a Ph.D.-based training programme.

Course Structure

Each course intends to equip the student with the knowledge required to work in an orthodontic environment, and to furnish the clinicians with the ability and skills to perform as an independent specialist in orthodontics. It follows a full-time 2-year educational and training programme with

a further period being committed for a year on a part-time basis for the elaboration of the Thesis necessary to obtain a Masters Degree.

The course consists of three major areas:

1. A longitudinal clinical training with supervised treatment of a selected range of malocclusions and orofacial abnormalities.
2. A basic programme of education, which includes instruction on how to teach, lecture and prepare classes.
3. The pursuit of a research project and preparation of a dissertation.

The Laboratory Training

The first term is spent mostly in the laboratory with wire-bending exercises and the treatment of different malocclusions on a Typodont. Usually, the ‘Classical Tweed’ approach to treatment and also the Tweed–Merrifield philosophy are given to the students as part of their basic knowledge. Manual dexterity is developed by the design and construction of both fixed and removable appliances. This laboratory work continues throughout the whole course since the students are supposed to construct all of the appliances for their patients.

Along with the typodont and laboratory work, they will also receive teaching in a variety of the basic and applied sciences. The basic disciplines are Anatomy, Histology and Embryology, Oral Pathology, Public Health Dentistry,

Occlusion, Dental Economy, Dental Materials, and Myofunctional Therapy and Dental Radiology. The specific disciplines are Cephalometric, Diagnosis, Records, Mechanics, Orthognathic Surgery, and Orthodontic special topics. These areas are mostly taught in a longitudinal fashion through the course, as demonstrated in Figure 1.

The Clinical Training

The clinical work starts on the second term following the careful selection of 10 new patients for each student. After collecting a set of full records, which includes: facial and intra-oral photographs and slides, three pairs of dental casts (one to be used for a Kesling Set-up), and panoramic and cephalometric radiographs, the student then has to prepare treatment plans to present in a seminar setting. No treatment is commenced prior to approval at the seminar. Once the student has completed their initial 10 cases, they will then also take over the care for patients whose treatment was not completed by their preceding colleague. During the course, further new patients will be assigned until the caseload reaches 60–70 patients for each student.

Case selection

In Brazil, all universities have very large patients’ waiting lists and therefore it is quite easy to expose students to a wide variety of different malocclusions. The reason for the

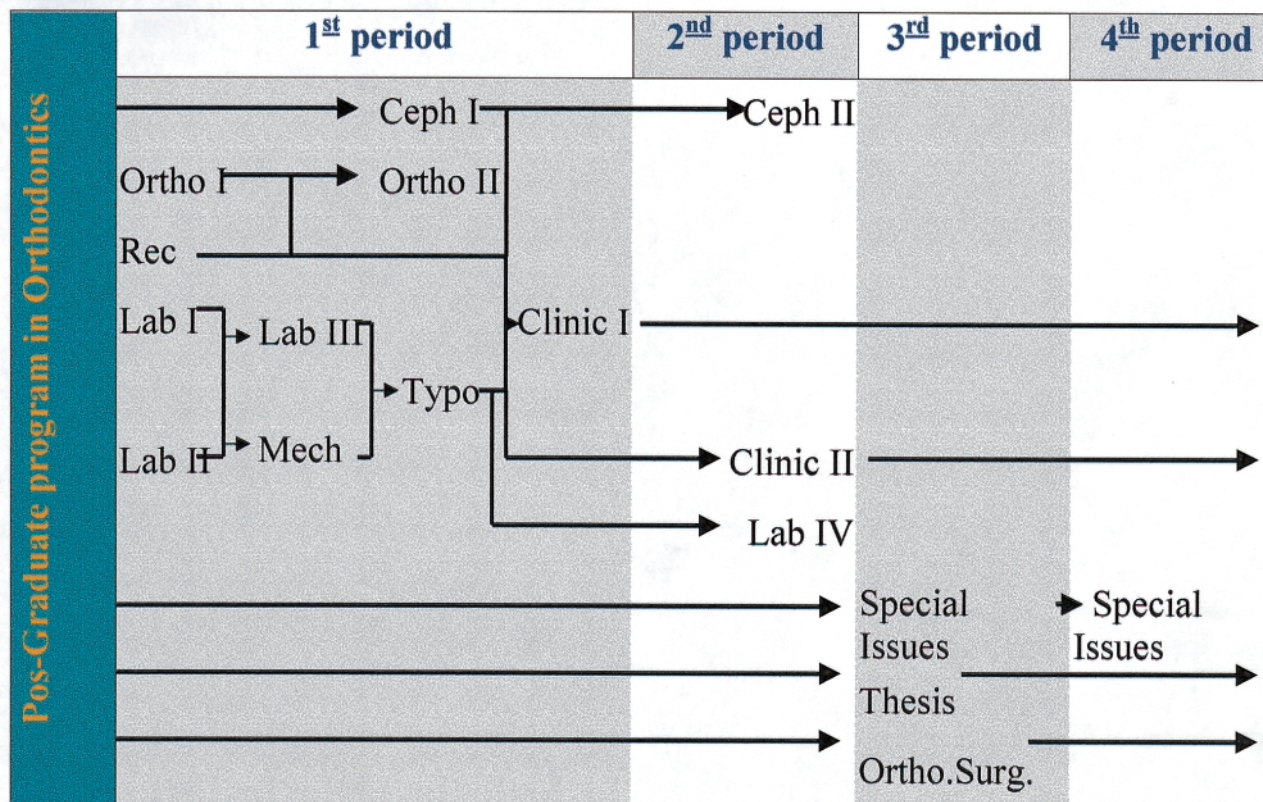


FIG. 1. Orthodontic courses timetable. Ortho = Orthodontics (theory); Lab = laboratory; Rec = records in Orthodontics; Ortho. Surg. = Orthognathic Surgery; Ceph = cephalometric; Mech = mechanics; Typo = typodont.

great number of patients on the waiting list is that universities charge low fees compared to those of the private specialist practitioners. Since the country does not have a social Dental Care system and the majority of the population cannot afford private fees, inevitably there is a large number of people deserving of orthodontic care that don't receive it.

All kinds of cases are treated at the University, from the mild Class I to the very severe facial deformity problems that might require orthognathic surgery. The students first select the type of malocclusion they want to treat and then present the list to the supervising Professor for approval. Generally, this selection process gives the students the opportunity to treat a range of malocclusions, using different appliances and techniques. Most of the clinical teachers employ fixed appliances based on the edgewise technique, an individual teacher being responsible for the clinic on a particular day.

Seminars

The seminars occur every day at the start of a session, either early mornings (7:30 a.m. to 8:30 a.m.) or at the beginning of the afternoon (1:00 p.m. to 2:00 p.m.). The Clinical Teaching Seminars can be divided into pretreatment, re-evaluation, final, and post-treatment analysis of treatments in progress. The initial pretreatment seminars are considered a priority since the student cannot start working on a patient before the treatment plan has been confirmed by this process.

Usually, seminars are presented through slides, consisting of:

1. Facial analyses (profile, symmetry, facial form, lip posture, lip profile, naso-labial angle, and chin button development, etc.).
2. Dental cast analyses (missing teeth, molar, and canine occlusion, Angle's classification, overjet, overbite, crossbite, arch length, occlusal wear, curve of Spee).
3. Functional analyses (regarding mandible excursions, movements, and TMJ disorders).
4. Special considerations (patient medical and dental history, habits, and chief complain).
5. Radiograph analyses (panorex, bite-wings, hand and wrist, cephalometric tracing with Tweed, Steiner, and Downs Analyses), sometimes frontal and occlusal maxillary X-rays are also presented as necessary;
6. Problems—solution table (a summary of the major problems and the possible solutions).
7. Treatment plan (including a summary of the diagnosis and the treatment objectives).

When the re-evaluation, final, and post-treatment cases are presented, superimpositions must be included. At this point, growth changes are identified and quantified, as well as the treatment result obtained thus far. Good records are always important to enable the monitoring of growth and the quantification of treatment change.

For the clinical seminar, where cases under treatment are considered, the student is encouraged to present support from the literature to confirm that the treatment suggested is clinically effective. During the semester, the Professor also will lead special seminars considering specific topics

such as mechanics, growth, diagnosis or an update topic from an orthodontic journal.

Complex clinical problems, where orthognathic surgery is to be considered, usually require special treatment seminars with the teaching staff and residents of the Maxillo-Facial-Surgery Department also involved. Such meetings usually occur on a monthly basis.

Research Programme

At the end of each term, the students have an interview with the Head of the Department to assess progress on the course and on their research project. All postgraduate programmes have sessions dedicated to research and personal study. After the 2-year full-time programme the students have a further year to finish their dissertation in order to get their certificate. These projects are at different levels of standard and complexity depending on the level of qualification that the student is taking:

1. The specialization programme (certification course) requires a final project similar to a thesis, but doesn't need to have an oral presentation nor a thesis public defence.
2. The Masters Programme (MSc course) requires some form of original experimental or clinical research, and a thesis' oral presentation and public defence with three examiners.

In the past few years many research projects have been completed at the Federal and State Universities of Rio de Janeiro. Topics include: Evaluation of Different Orthodontic Treatments, Assessments of New Materials, Clinical Trials and Laboratory research. In addition, the facial and cephalometric characteristics of the Brazilian population have been defined and a Brazilian Index of Orthodontic Treatment Needs has been derived. Almost all of the results are published in national journals with some published abroad in international orthodontic journals.

The Doctoral Programme (PhD Course)

The applicant for the PhD course is supposed to always have completed the Orthodontic Masters degree and have sufficiency in two foreign languages. Also, it is usually necessary to be an university orthodontic lecturer. The Federal University is unique in the state of Rio de Janeiro in running a doctoral Programme. The other three Brazilian PhD course universities are located in the state of São Paulo.

The selection of two students per year is based upon two foreign languages exams, CV analyses, and an interview with department staff members.

The course is 4-year structured. The first year is full time and covers the following disciplines: Scientific Research Methodology, Orthognathic Surgery, Oral Biology and Pathology, Dental Materials Related to Orthodontics, Orthodontic Mechanics Philosophy, Dental Facial Growth and Development, Thesis Seminars and Special Topics on Orthodontics. To conclude each one of these disciplines, the student has to complete an experiment or a trial project, and usually writes a paper based on it for publication. After

the 1-year full time programme, the students have a further 3 years to finish their thesis. The Doctoral Programme (Ph.D. course) requires a thesis' oral presentation and public defence with some form of original research having been pursued. The candidate is publicly questioned by five examiners over an average of 5 hours during the thesis defence.

Conclusions

Brazil is a country of contrasts. This also holds true in the area of Orthodontics. As an example, on one hand there are postgraduate courses training specialist private practitioners, academics, and researchers. On the other hand, these professionals, when trained, tend to provide a clinical service for only the minority of the population that can afford the fees charged for a private orthodontic treatment. The consequences are high fees being paid by a small part of the population with the orthodontists being well rewarded. However, this market is limited and the numbers of trained orthodontists coming off the courses is starting to exceed the work available both within the private practice and the university clinical environment. As a result of this new phenomenon, competition is driving fees down that, whilst making treatment available to more of the population, has unfortunately also led to a rapid drop in clinical standards. Such dramatic changes in private practice are also having their effect on academic dentistry in Brazil.

Traditionally, part-time private practice has subsidised the lower academic salaries. It is now becoming very difficult to obtain an adequate income from such a part-time commitment in such a competitive area. There is doubt that, as a result, academic orthodontics in Brazil is under a very real threat and fewer clinicians will choose this option in the future.

Currently, Dental Health doesn't have a high priority for the Brazilian Government and this is particularly true for the speciality of Orthodontics. There is no data or statistics available to identify the numbers that might benefit from treatment, nor to support the development of a strategy for the delivery of a service or the future development of training programmes. There is no drive to identify the problems let alone to solve them. What is needed in Brazil is a proper and realistic assessment of the orthodontic needs of the population. An epidemiological approach using currently available tools such as indices of treatment need would be invaluable. A strategy for the delivery of a socialised service to those most in need can then be formulated based on a sensible socio-economic appraisal. Only when this has been achieved can the priorities for the orthodontic treatment of the population be established, and from this a plan for training orthodontists and a manpower control strategy be produced. Only by such an approach can the standards be maintained and the current spiral reversed, so that Brazilians receive the orthodontic service they deserve.