Research Article

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Evaluation of Initial Clinical Training: A Survey within the Graduates of the Faculty of Dentistry of Casablanca

Mahdoud FZ[1], Amzyl FZ[1], Hamza M[2] and Bennani A[3*]

[1]*Doctor, Department of Fixed Prosthodontics, Faculty of Dentistry, University Hassan II, Casablanca, Morocco.*

[2]*Professor of Department of Epidemiology and Biostatistics, Faculty of Dentistry, University Hassan II, Casablanca, Morocco.*

[3]*Professor, Head of Department of Fixed Prosthodontics, Faculty of Dentistry, University Hassan II, Casablanca, Morocco.*

[*]Correspondence:
Bennani Anas, Head of Department of Fixed Prosthodontics, Faculty of Dentistry, University Hassan II, Rue Abou Al Alaa Zahar 21100, B.P: 9157, Mers Sultan, Casablanca, Morocco, Tel: 00 212 661 327 303; E-mail: anasbennani2004@yahoo.fr.

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ABSTRACT

Objective: *The aim of this study is to assess the initial clinical program among graduates of the Faculty of Dental medicine of Casablanca (FDMC), previously received during their training at the Dental Treatment and Consultation Center (DTCC).*

Materials and Methods: *Through a cross-sectional descriptive study, 106 graduates were interviewed, namely, doctoral students of the year 2015-2016, interns and residents of the DTCC in practice during the year 2015-2016, as well as the private practitioners installed in Casablanca between 2010 and 2015. A twenty questions survey was designed to collect the required information for the present study.*

Discussion: *The evaluation of the initial clinical training received at the DTCC allowed us to highlight some disparities between the different disciplines. However, the most of our sample appreciates a clinical reorganization based on a problem-based-learning approach and considers it useful or even indispensable. Our respondents also suggest an open space organization for the new care center, where dental chairs are equipped for an overall patient management, clinical control and better caregiving.*

Conclusions: *In light of this work, some strengths have emerged needed to be maximized and some weaknesses to be corrected, through a problem based-learning (PBL) and multidisciplinary education action plan, which was suggested to the DTCC board.*

Keywords

Survey, Multidisciplinary practice, Practice by a compartmentalized system, Problem based education.

Introduction

The access to dental studies at the Faculty of Dental Medicine of Casablanca (FMDC) is carried out through competitive examinations, where the faculty receives a hundred students annually. The basic training lasts five years, encompassing two axes: theoretical and practical. Clinical training represents the majority of the practical aspect during the last two years of studies, namely the 4th and 5th year. It takes place in Dental Treatment and Consultation Center (DTCC) at the university hospital Ibn Rochd of Casablanca, which is organized in compartmentalized departments, divided into separate entities according to the discipline (surgical odontology, periodontology, conservative odontology, removable prosthesis, fixed prosthesis, dento-facial orthodontics, pedodontics, prevention, radiology and laboratory). For the proper functioning of the DTCC departments, the students are divided into clinical practice groups, and perform their clinical activities according to a pre-established schedule.

The acquisition of clinical skills, that allows dental practice under optimal conditions, ethics and safety, is among the educational objectives that the FMDC has set for its students. Since each educational system is considered ineffective, until proved otherwise, any training structure intended to educate must proceed

to its evaluation. In this context, the present study was conducted to assess the compartmentalized center and its impact on the future dental private practitioners, in comparison with the eventual training system based on multidisciplinary service.

The main objective of our survey was to evaluate the limitations and the weaknesses of this compartmentalized system. Thus the secondary objectives were:

- The integration of graduates in private practice through an initial clinical training based on overall approach in dental care management.
- To initiate the implementation of multidisciplinary care at the Dental Treatment and Consultation Center (DTCC).

The expected impacts of our survey will provide the teaching staff with an adapted and contextualized action plan enabling the dental students to provide an overall patient care.

Materials and Methods

We conducted a cross-sectional descriptive survey among practitioners of medicine dentistry from different areas of the city of Casablanca.

Eligibility criteria

Were included in this study:

- Dentists settled for private practice in Casablanca between the year 2010 and 2015.
- Doctoral students of the academic year 2015-2016.
- Interns of Casablanca DTCC in practice during the year 2015-2016.
- Residents of Casablanca DTCC in practice during the year 2015-2016.

Were excluded from the study:

- DTCC professors and specialists as they have received a clinical training different than the one we are assessing in our study.
- Residents who entered the DTCC by means of an examination, as they have received both liberal and academic training.
- Practitioners in the city of Casablanca who engaged in the private practice before 2010, since their evaluation has become blurred in view of the elapsed time.

A total of 106 practitioners were selected for our study.

A six-page questionnaire containing twenty questions was intended to collect the information needed for our study. It was organized as follows:

- An informing introduction about the filling instructions and the safeguard anonymity of the data.
- A first section reserved to the practitioner identification and his dental activity.
- A second section on the evaluation of DTCC training and to what extent it has prepared the graduates of the faculty of dentistry of Casablanca for an optimal private practice.
- A third section exploring the sample's perception on a possible multidisciplinary reform at the DTCC.

Most questions were asked in a tabular form, where respondents were invited to check the desired answer, only three questions required a drafting one.

Three types of variables parameters were used in this survey: variables related to the population identification, variables related to the evaluation of the initial clinical training, and variables related to the eventual reform of the DTCC. A preliminary survey was conducted among eight practitioners to test the understanding of the questionnaire and to calibrate the interviewers. Data calculation and analysis were performed via the EPI. Info 6 software, within the biostatistics and epidemiology laboratory of the Faculty of dentistry of Casablanca.

Results

The sample identification:

Up to 69% of our samples were females and 31% were males. The majority of the respondents (61%) were aged between 20 and 25.

Respondents were divided according to their graduation year and their grade. The results showed that 45 participants were doctoral students, 35 practitioners were from the liberal practice sector, 20 respondents were residents and 5 are interns within the DTCC (Table 1).

	Population	Ratio
Doctoral students	45	42.5 %
Interns	5	4.7 %
Residents	20	18.9 %
Private sector practitioner	35	33.0 %
Non response	1	0.9 %
TOTAL	106	100 %

Table 1: Population distribution by category.

The sample was also split according to the type of exercise. Our study revealed that 70 participants were general practitioners, 10 were general practitioners with a predominant practice mode, 15 were specialists and 5 respondents did have another type of exercise (Figure 1).

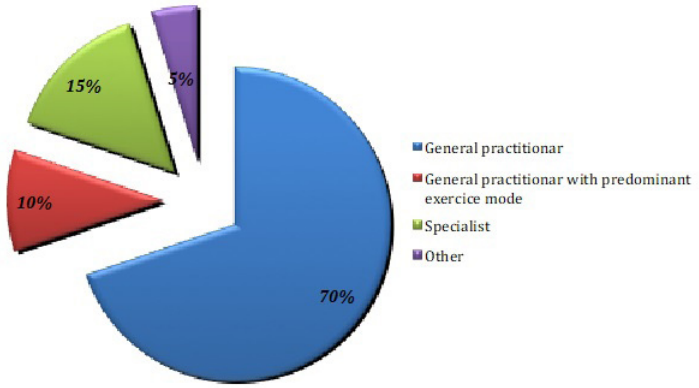

Figure 1: Population distrubution by exercice type 2015.

As part of our clinical training evaluation, we believed it was

necessary to know how many of our candidates were pursuing a continuous education program, in addition to the clinical training received within the DTCC. The results showed that 37 (35%) of the study's population have been participating in continuing education programs. Furthermore, 5% of the practitioners were subscribed to a scientific journal such as "The dentist's mail", "Medical Esperance" or "Doctinews".

The initial clinical education

In order to assess the initial clinical education, received at the DTCC, we evaluated the achievement of some clinical training goals, namely the skills acquired per field of study, the preparation of the graduates for liberal practice and certain parameters that influence the clinical learning. The overall satisfaction level of clinical training received at the DTCC was also estimated. The results were established according to the disciplines taught at the DTCC, in addition to the eventual private practice. We were convinced that this last parameter was interesting to consider, as within the liberal practice the practitioners are able to assess their training and find themselves faced with an overall patient care without the help of their mentors.

Level of satisfaction with the clinical training received at DTCC

Clinical education must fulfill a number of requirements as well as the expectations of students during the training. Accordingly, we explored in our sample their level of satisfaction with the clinical training they have received at the DTCC.

The respondents stated that the clinical training was satisfactory with 51.8% in conservative odontology, 55.7% in periodontology, 51.9% in pedodontics, 49.1% in prevention and 37.7% in radiology. While they found that it was not sufficient in conservative dentistry, prosthetics and laboratory with respectively 45.3%, 58.5%, 41.5%, and not satisfactory at all in dentofacial orthopedics and removable prosthesis with a percentage of 57.5% and 48.1%, respectively (Figure 2).

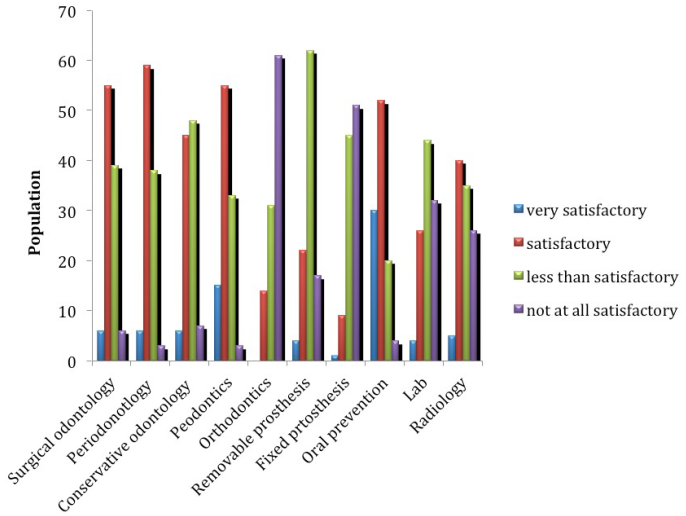

Figure 2: Level of satisfaction with training received in each discipline.

The training duration

The hundred and six graduates interviewed were invited to judge the duration of the clinical training. The results obtained showed a certain disparity between the different disciplines. Overall, the majority of respondents felt that the duration of clinical trainings was moderately sufficient for the following disciplines: Surgical odontology, periodontology and conservative odontology, with respectively 55.7%, 44.4% and 38.7%. This duration was considered sufficient for pedondontics, prevention, prosthetic laboratory and radiology, with respectively 40.6%, 75.5%, 31.1% and 45.3%. However, it is important to note that the majority considered that the duration of clinical training in dentofacial orthopedics, removable prosthesis and fixed prosthesis was insufficient, with respectively 81.1%, 43.3% and 81.1%. There are no significant differences between the laureates in private practice and those who are not yet installed (Figure 3).

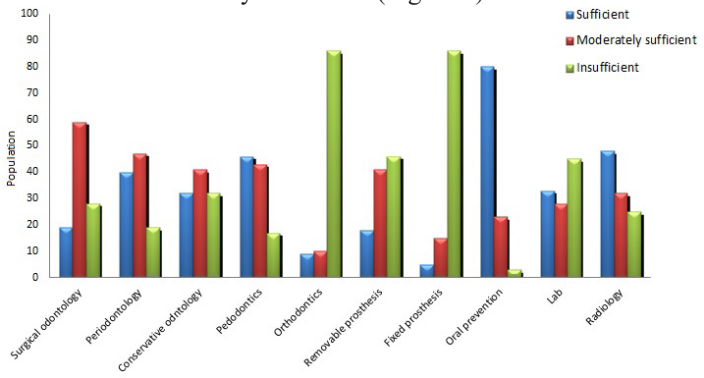

Figure 3: Evaluation of clinical training duration.

The acquired skills per discipline

In our sample, we did evaluate some of the performances considered essential in dental practice, such as, the overall patient management, the clinical examination, diagnostic and therapeutic analysis and problem solving, oral hygiene education and multidisciplinary teamwork.

These parameters were studied for the following disciplines: surgical odontology, periodontology, conservative odontology, dentofacial orthopedics, pedodontics, removable and fixed prosthesis.

For the same skills, the obtained results revealed some differences between the disciplines mentioned above.

The overall patient management was seen to be adequate in surgical odontology, periodontology, conservative odontology, pedodontics and removable prosthesis with 45.3%, 50.0%, 41.5%, 48.1% and 51.9%, respectively, and was perceived as insufficient for 43.3% of the respondents in fixed prosthesis and insufficient with 58.5% in orthodontics (Figure 4).

The majority of the respondents stated that the clinical examination and the oral hygiene education were adequate in most disciplines except for orthodontics (Figures 5 and 6).

Diagnostic and therapeutic analysis and problem solving were perceived to be sufficient by the majority of respondents (Figure 7).

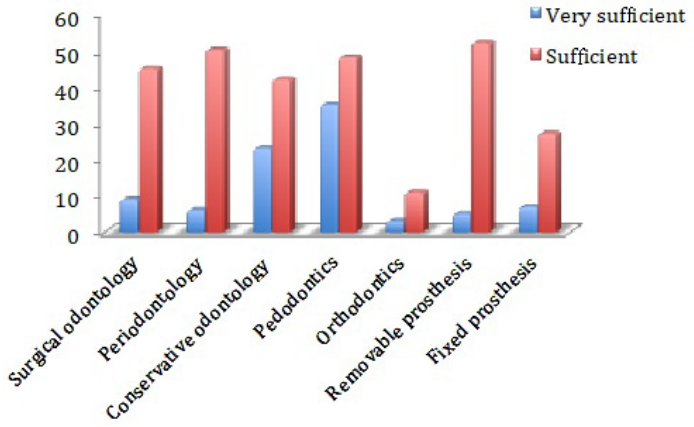

Figure 4: Patient overall management.

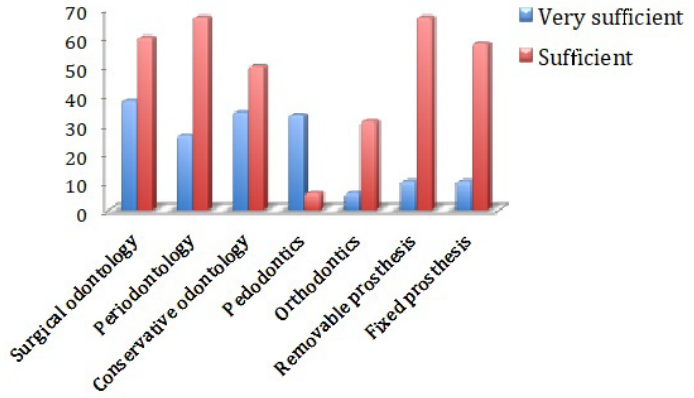

Figure 5: Clinical examination.

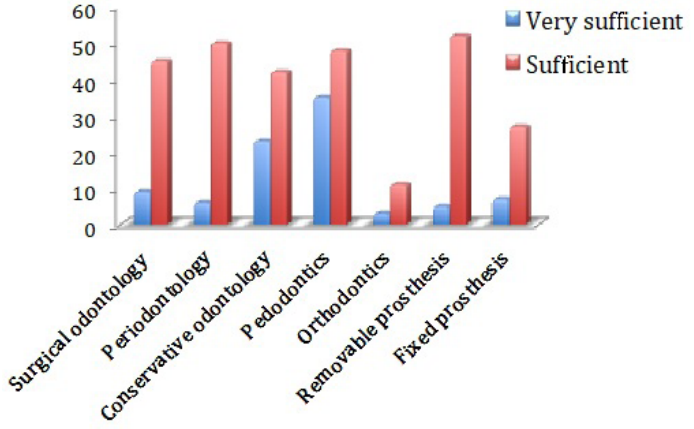

Figure 6: Oral hygiene.

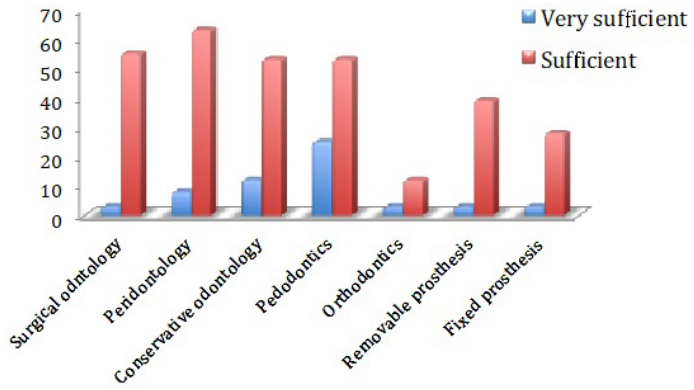

Figure 7: Diagnostic and therapeutic analysis and problem solving.

However, it was noted that the multidisciplinary teamwork was considered inadequate in dentofacial orthopedics by 57.7% of the respondents, and not sufficient in the following disciplines: surgical odontology, periodontology, conservative odontology, removable prosthesis and fixed prosthesis, with a percentage of 40.6%, 47.2%, 44.3%, 48.1% and 38.7% respectively. However, 42.5% of the respondents found it sufficient in pedodontics (Figure 8).

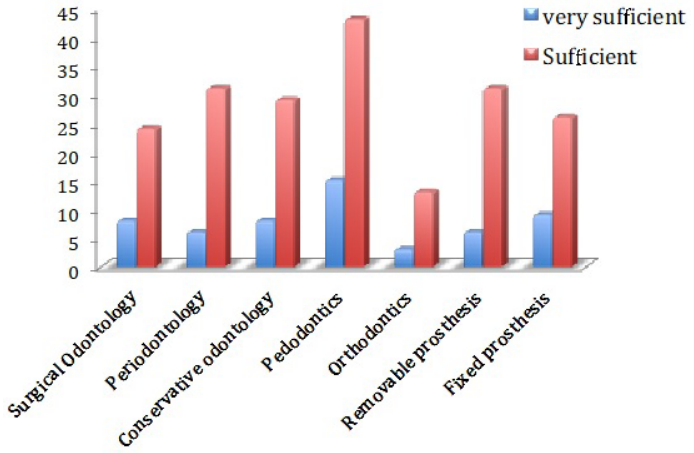

Figure 8: Multidisciplinary teamwork.

The preparation for Liberal practice

We asked our sample to which extent did the clinical training obtained at the DTCC has prepared them for an optimal liberal practice. Out of 106 respondents, only 3 (2.8%) found that the initial training received at the DTCC has fully prepared them to the liberal practice, which represents one practitioner among the 35 installed in the private sector. 84 of the total respondents (79.3%) said they were moderately ready for the Liberal practice, but 19 (17.9%) felt they were not ready at all for this kind of practice, which means 17.1% of private practitioners and 18.6% of non-installed practitioners.

The perception of an eventual clinical training reform at the DTCC Since the disposition of the clinical structure has an impact on the clinical training, we chose in this second part, to assess the current compartmentalized organization of the DTCC and to probe the practicality of an eventual reform.

The current organization of the DTCC was deemed to be very appropriate by 4% of respondents, appropriate by 41.5%, inappropriate by 43.4%, and not at all suitable for 11% of respondents.

Furthermore, an eventual multidisciplinary organization was perceived as indispensable by 39 graduates (36.8%), useful by 60 (56.6%), not very useful by 2 (1.9%) and quite useless by 3 respondents (2.8%).

A clinical organization based on a problem-based learning (PBL) approach was also evaluated. It is a learning approach

where students are led to work in small groups and acquire new knowledge to solve genuine, complex and multidisciplinary problems, representing the everyday practice [1]. In other words, student centered approach in which students determine what they need to learn. It is up to the learners to derive the key issues of the problems they face, define their knowledge gaps, and pursue and acquire the missing [1,2].

It is also described in the litterature as a curriculum method that has frequently been advocated as a way to provide a better learning environment for health professions students [3].

This reorganization based on PBL was considered essential by 42.5%, useful by 53.7% and quite useful by 3.8% of our sample. Thus, we proposed to our respondents either to keep the DTCC with its actual compartmentalized disposition, or to choose between the open space and the tri-pole center (Surgery, functional rehabilitation, Pedodontics/dentofacial orthopedics) as an eventual reorganization for their healthcare and clinical training entity.

49% of the respondents perceived the new DTCC as an open space, 25% opted for a tri-polar center, and 12% chose to keep it compartmentalized. However, 14% of the practitioners opted for a combination of open space or tri-polar to provide the initial training and compartmentalized for the specialized one (Figure 9).

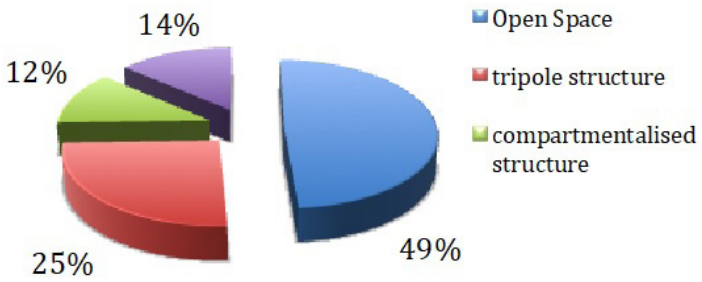

Figure 9: The perception of the new center organization.

In order to evaluate the necessity of the liberal sector participation in the initial clinical training, we questioned our sample on the utility of a clinical training within a private structure, as well as an education program provided by the practitioners of the liberal sector during their university clinical training. Out of the 106 participants, 53 stated that the internship would be capital whereas 69 answered that clinical supervision would be beneficial.

Discussion

With the fast growth and expansion of medical education, any educational structure must assess the quality of the training provided to its students.

The teaching effectiveness can be defined as the extent to which the teaching activity fulfills its intended purpose, function, and goal. Its assessment can be achieved using diverse evaluation strategies, the combination of which is referred to as triangulation. According to Berk, triangulation methodology provides "a more accurate, reliable, and comprehensive method of teaching effectiveness than just one source. The three most frequently used data sources that comprise the triangle are student ratings, peer observations, and self-assessments [4].

To that end, we conducted this survey among the graduates of the faculty of dentistry of Casablanca to assess the clinical training they have received at the DTCC.

Clinical education holds a special place in the training of dental students. It is a form of learning and application of the theoretical and technical knowledge, offering the student the opportunity of placing his knowledge in a real overview as a healthcare provider. Clinical learning must take place in an organized environment well equipped with human and material resources, enabling the student to provide patient care and to acquire clinical competence under the mentor supervision.

The clinical training environment involves some layers of complexity, as it may fill a dual role; learning and training of the student on one side; and health institute where the care is provided by the same trainer on the other. Consequently, the learning environment at the clinic or hospital is a challenging area for both the teacher and the student [1].

The DTCC is the clinical training ground for students, which consists of a range of departments appointed by discipline.

One of our objectives during this study was assessing patient management within a partitioning structure in comparison with an eventual multidisciplinary reform. The questionnaire used in this study does not represent a standard model for the evaluation of dental care structures. We ensured through it to reveal the problems and detect the deficiencies of the initial clinical training as well as the impact of a compartmentalized service on the overall patient care and consequently on the preparation of the graduates to liberal practice. Nevertheless, the freedom to complete our anonymous questionnaire and its structure were sufficient to accurately reflect the real opinion of the graduates.

Demographically, our survey reports that the general population of the faculty of dentistry of Casablanca is mostly female (69%). It is judicious to notice that feminization leads to an increased prevalence of part-time private work and consequently to partnership practice. The majority of the respondents are general practitioners, which is an enabling factor for assessing overall patient management among the FMDC graduates.

Regarding the selected time interval, it was noticed that interviewing private practitioners for a relatively short duration allowed an exact training evaluation through their daily exercise, without faded memories. This evaluation of the initial clinical training received at the DTCC allowed us to highlight some disparities between the different disciplines.

Exceptionally, the training at pedodontics-prevention department was a satisfactory in this evaluation. The fundamental characteristic

of this department is the overall management of the child, offering him a whole dental care, provided by the same practitioner, except in emergency cases.

The fixed prosthesis department gets a very negative score. First, it is important to underline that before the academic year 2015-2016, the fourth grade students were not able to provide dental cares during their clinical training at this department. For the validation of their fifth year, they were supposed to realize a single prosthetic restoration. On the other hand, the number of patients in this discipline is not sufficient to meet the needs of our students, due to the high costs of fixed prosthetic rehabilitation which does not take the patients indigence into consideration.

Furthermore, the dissatisfaction among our respondents with orthodontics training points the specific education policy at this department, which provides the students of the FMDC with initial training based on a non-clinical training, differently from the rest of the disciplines.

In regard to the laboratory and the radiology department, further studies are needed to explore them closely.

The duration of the initial clinical training was one of the factors evaluated by our laureates. Clinical departments within the DTCC are based on pre-established tasks which are communicated to students at the beginning of each year. During the two years of clinical training, the students attend one session per week for each discipline, except for periodontology and surgical odontology which are biannual, and the fixed and removable prosthesis where the trainees attend one session fortnightly.

The survey reports that the training duration was considered sufficient to moderately sufficient for the majority of the respondents, except for the department of orthodontics and the fixed prosthesis where it is considered insufficient. We have noticed through our survey that the insufficient number of dental chairs determining the distribution of healthcare shifts among students, as well as the unavailability of certain equipment for all the trainees, were some of the factors affecting the training duration quality.

In terms of clinical competence, clinical examination and patient oral hygiene education were perceived as sufficient and adequate in almost all specialties. Clinical examination remains the first crucial step in the diagnostic approach of any dental disease or dysfunction.

Besides the methodology that differs from one service to another, the aim of an appropriate clinical examination during the training is to provide dental care for the patient in the relevant discipline. Inevitable result: the trainee tends to focus on the pathologies related to the discipline in question, and unconsciously neglects the overall examination of the oral cavity. In regards to the oral and dental hygiene education, the best perception was noted in Periodontology, where this competence was evaluated from sufficient to very sufficient. This is perhaps due to its place in a periodontal treatment which aims essentially to a periodontal debridement. It was noted that other services provide it in a respectable way, but more attention needs to be given.

Diagnostic and therapeutic analysis and problem solving were perceived as insufficient by the majority of respondents.

Working among a multidisciplinary team is not sufficient in all the departments except for pedodontics. It is clear that the compartmentalization of the DTCC does not encourage the acquisition of this competence. Moreover; the divisions are not only murals but also moral. This is an area where more education is required, so that these daily practice skills will be transmitted to the students.

Preparing students for the liberal practice is one of the clinical training aims in dentistry. Our survey has found that the majority of the respondents felt that the initial training received at the DTCC had moderately prepared them for the Liberal practice.

At the same time, they did mention the presence of deficiencies regarding the topic of dental office management during the initial training curriculum. However, the liberal practice requires sound financial and human resource management for the proper functioning of the dental office.

It is important to note, however, that only 35% of the laureates receive continuing training to compensate their initial training weaknesses. This raises questions about the educational pedagogy and more specifically the clinical aspect, and spurs on the continued efforts in this field as well as the introduction of the continuing education concept within the initial training curriculum.

The perception of an eventual multidisciplinary reform of the DTCC was one of our investigation's topics, in order to assess its necessity. Firstly, we evaluated DTCC's current organization. The majority of graduates considered it as inappropriate. A possible multidisciplinary reorganization was mainly perceived as useful.

Certainly the current organization in segregated departments allows the students to deepen their knowledge in each specialty, but does not bring them closer to the day to day practice of their future profession. However, the general dentist in the one who must deliver multidisciplinary treatments most of the time, with the main challenge of coordinating the different steps that are required more than the ability of managing highly complex cases.

An eventual clinical reorganization based on problem-solving approach was welcomed by the majority of our sample and considered useful, if not indeed indispensable. The introduction of such learning process will bring the trainee closer to the reality of the day to day practice, by forging a strong link between theoretic aspects and their practical applications, and consequently in charge of his initial and continuing training.

The Problem-based learning (PBL) has been frequently advocated

to provide a better learning environment for health professions students (1), as one of the effective curriculum methods.

Several countries have opted for this learning process, notably Malaysia that has introduced PBL among the initial clinical training at its Faculty of International Medicine. Through this method, students were able to successfully establish the link between their medical knowledge and the basic concepts of science. However, the Malaysian experience has evoked the constraints of evaluation methods; in other words, when traditional recipients of a PBL training are evaluated, this risks diminishing the effectiveness of this educational mode, hence the need to question the traditional means assessment [5].

The Institute of Health and Development (ISED) of Dakar University in Senegal, was refocused in the year 2000 to solve the concrete problems that the trainees are confronted with [2].

The PBL method is also a part in the curriculum of the north American countries [6,7], as well as the European Union ones. (http://www.adee.org/cms/uploads/adee/FR_Profil_et_Competences_propositions_de_corrections.pdf).

Following a general assembly of the Association for Dental Education in Europe (ADEE), held in Cardiff in 2004, all the European Union countries officially recognized the PBL as a pillar of the initial dental training [8].

Among the various experiences mentioned in the literature, the dental faculty of the University of Hong Kong in China has completely introduced the PBL into the curriculum of its initial training. It is currently considered one of the leaders of PBL in dental field (facdenthk.org)

A better problem solving involves a process of Evidence-Based Care as « the conscientious, explicit, and judicious use of current best evidence in making decisions about the care of individual patients » [4].

It is a process of expressing a clinical problem in a form of questions, adopting a methodical approach to find and evaluate relevant researches, and integrate this information in order to govern clinical decisions. It represents, therefore, a global movement within all medical disciplines, a philosophical change in the clinical practice, a change that gives more importance to facts than opinions and, at the same time, more importance to judgment than the unquestioned obedience to rules. An approach that helps to bridge the gap between the health research and the patient care.

Students in clinical training represent a significant rate among care givers within the DTCC, and they are in constant confrontation with the medical structure. That is why their perception of a new disposition of the DTCC was found to be useful and valuable.

An open space center, where dental chairs are equipped for an overall patient care, to master dentistry and to provide a better clinical care, was the perception for the new DTCC organization by the majority of our respondents.

In the second place comes the tri-polar center. Though, the communication between the three divisions (Surgery, Functional Rehabilitation, Pedodontics/Dentofacial orthodopedics) turned out to be imperative, in order to meet the needs of the evolving students in terms of overall patient management and for a better coordination between different disciplines.

Only 13.2% of the respondents preferred to keep the current organization of the DTCC unchanging. The aim is to keep the academic aspect of the medical structure, and to focus on each specific discipline, which allows a better knowledge assimilation and improves mastery of basic skills.

Among the possible reforms, the private sector participation in the initial clinical training was appreciated by most participants in our sample. A clinical placement in a private dental office during the initial training is deemed worthwhile, even indispensable for almost all of our respondents, on the sole condition that the private practice structures will be licensed ones with standardized protocols of the art and science of dentistry.

Possible coaching by private practitioners is perceived beneficial to moderately beneficial by the majority of our respondents. That will bring the student closer to the private practice as well as it will renew the ties between private practitioners and their faculty.

In the light of the results obtained and the suggestions made by our respondents, and inspired by the experience of similar faculties around the world, we suggested to the direction of the DTCC an adapted and contextualized action plan, with the ultimate aim of creating a favorable environment and allow the students of the FDMC to acquire an overall patients care vision and consequently an optimal integration among the private practice (Figure 10).

In response to some of our recommendations, our faculty has been able to take some steps towards the new reform by:

- The establishment of a university degree in pedagogy of odontological science that combines several modules including the problem-based approach.
- Integrating additional clinical trainings for the students in coordination with private practitioners.
- Introducing a 6th year of internship among licensed private dental offices.

Conclusion

The clinical training should focus on basic information and skills immediately deployable to help deliver high quality care. Such training involves transferring knowledge, behaviors and skills to students by a qualified clinical trainer.

The goal is to develop a multidisciplinary treatment plan that comes from a sharp analysis of each care giver options for an

optimal overall care. This assumes to be able to reach a careful etiopathogenic diagnosis taking into consideration its evolution.

Thus, with the concerted goals and the combined therapeutic means the best result in the long term could be achieved. Once the patient is involved he will be at the heart of the therapeutic efforts and his cooperation should not be exempted.

Through our study, an adapted and contextualized action plan has been made available to the educational managers, enabling the incoming students of the FDMC to acquire a multidisciplinary care vision and to be prepared for independent clinical practice.

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