RESEARCH ARTICLE

STUDENTS RECRUITMENT PROCEDURES IN THE SCHOOL OF DENTAL MEDICINE OF CASABLANCA

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ARTICLE INFO	ABSTRACT
	Introduction: the access in first year of the studies of dental medicine is opened on competition to the candidates holders of the high school degree (HSD) obtained in one of the series or the sectors -or the equivalent recognized diploma-: experimental sciences, economical sciences and mathematical sciences. The competition takes place in two phases including a preselection of the candidates and the written tests. The objective of this work is to try to figure out if this means of recruitment of the students in our school allows to select future graduates capable properly answering the requirements of odontology. **Material and methods:** the studied population is represented by the students of the fifth year (of the academic year 2012-2013 The list and the notes of the students during 1st, 2nd, 3rd, 4th and 5th years were obtained with the service of schooling of the dental Faculty of Medicine of Casablanca. The exploitation and the analysis of the results were realized by the SPSS 10.0 software. The threshold of meaning retained for all the tests is 5 % (p=0.05). **Results:** the studied results are relating to selection criteria. Then correlations were looked for between the results of the materials, the practical class and the clinical services on one hand, and the criteria of admission on the other hand. **Discussion:** the competition to the dental Faculty of Medicine of Casablanca does not contain either interview, or oral test, nor practical evaluation. The results of correlation between the results of the materials. practical class and clinical services with the criteria of admission, show a low positive association was observed in our study compared with other studies. Finally, several suggestions were proposed, to improve the quality of selection criteria in our faculty.

INTRODUCTION

Dental medicine, also known as dental surgery, odontology or dentistry is the set of teeth and gum care techniques. It is practiced by a dentist who has pursued his studies in the school of dentistry. In Morocco, five-year odontological studies are organized in three cycles: a first cycle of two years, a second cycle of three years followed by a third specialty cycle, which lasts four years for students who have passed the residency recruitment test or the students having validated their first two years of internship.

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There are 2 dentistry universities in Morocco, the first in Rabat receiving HSD from the north and from the capital, the second in Casablanca recruiting students from the same city and from the south of Morocco. At the end of the second cycle of studies, students should present a thesis to obtain their degree. Access for the first year in dentistry studies is carried out by competition for the HSD candidates in one of the following scientific branches; experimental, economic or mathematical sciences.

The competition takes place in two phases, the first one is the pre-selection of the candidates the 2nd is written tests.

- Pre-selection based on the overall average of the marks obtained by the candidates in the HSD exam. The screening

consists in classifying the candidates in order of merit according to the marks obtained at the HSD. The number of persons selected to enter the competition is the number of students set by the Ministry of Education and National Education multiplied by 15.

- Pre-selected students take 30-minutes written examinations, each on Mathematics, Natural Sciences and Physics-Chemistry.
- This method of selection is solely based on the academic results and the competition, and on the evaluation of the theoretical subjects previously sanctioned by the HSD examinations.

The aim is not to select only students with good grades, but above all persons with a sense of humanity communication skills and a minimum of manual dexterity. The objective of this work is try to figure out if the current recruitment means of students to join our faculty are fit for provinding future lauretas who will properly meet the requirements of dentistry.Thus, we conducted an epidemiological survey of fifth-year students within our institution. We present in this article the material and methods of this survey as well as the results observed. Finally, we discuss all the results by comparing them with the literature data in order to propose suggestions to improve the recruitment conditions of students within the school of dentistry of Casablanca.

MATERIAL AND METHODS

This is an analytical descriptive epidemiological investigation. A multivariate analysis using logistic regression was used to evaluate the predictive validity of selection criteria within the school of Dentistry of Casablanca, Morocco. The study population is represented by 67 students in the fifth year (from the academic year 2012-2013) of the 2007-2008 class at the faculty of dentistry in Casablanca. The list and the grades of the students during the 1st, 2nd, 3rd, 4th and 5th year were obtained from the school department of the school of Dentistry of Casablanca. For Grade 1 marks, they were taken from the school of Medicine and Pharmacy School Board because the students in this 2007-2008 class spent their first year in the school of Medicine. All information was gathered from student files.

The socio-demographic variables that we identified in each subject are represented by:

- Sex: male or female.
- Age: determined from the date of birth
- The student's home city
- Next, we highlighted the Admission Criteria variables:
- The HSD series
- The average of the HSD
- The average of the access contest
- The average of subjects and practical work in the 2nd year and the 3rd year
- The average of the subjects, practical work and clinical placements of the 4th year and the 5th year.

We have excluded from our study repeating students, students who have a foreign HSD and whose access to dental studies was without competition. The use and analysis of the results was carried out by the SPSS 10.0 software. The operation consisted of a descriptive analysis using tables. The significance threshold for all tests is 5% ($p = 0.05$)

RESULTS

Our study involved a sample of 67 students. Among these students, the female population is predominant with 52 female students either 77.60% and 15 male students, either 22.40%. The Sex / Ratio is 3.6. The age of our students varies between 16 and 21 years with an average age of 18.6 years and one (SD = 0.7). The majority of the students in our survey originate from the city of Casablanca, whose workforce is 21, i.e. 31.30%.

Regarding the results of the selection criteria, we found that: The average of the baccalaureate average varies between 14.49 and 17.59 with an average of 15.92 and a standard deviation (SD = 0.55). The average of the competition is 11.05, with a low average = 7.37 and a high average of 14.37 and a standard deviation (SD = 1.57). 63 students (94%) obtained a HSD degree in experimental sciences. The remaining four (6%) students in the sample have either a HSD degree in economics or a HSD degree in mathematical sciences. The majority of students (53 students), 79.1% received their HSD in 2007, 12 students (17.9%) obtained it in 2006, while two students (3%) had it in 2005 and 2004. Currently, A HSD with a maximum of four years' seniority is valid to pass the competition in our establishment. The correlation between the results of the competition and the average of the HSD revealed in the table below that there is an association between the averages of the HSD and the results of the competition.

Table representing Correlation between the results of the competition and the average of the HSD

	Moyenne du baccalauréat	
	r	P
Chemistry	0,305	0,031
Mathematics	0,368	0,009
Physics	0,308	0,029
Science of Life and Earth	0,222	0,122
Competiton's mark	0,461	0,001

The correlation between the results of the subjects of the 1st year and the criteria of admission revealed that there is a positive association between the anatomy 2 and the average of the HSD. There was also a positive association between biology and the average of the competition ($p < 0.05$). As for the practical work, we found that there was no association between the admission criteria and the results of practical work of the 1st year. The correlation between the results of the subjects of the 2nd year and the admission criteria revealed that there is a positive association between preventive dentistry and special physiology and admission criteria. There is also a positive association between general physiology and the average of the competition. Concerning the practical work, we found that there was no association between the admission criteria and the results of practical work in the 2nd year. The correlation between the results of subjects of the 3rd year and the admission criteria showed that there was no positive association between the admission criteria and the results of practical work in the 3rd year. On the other hand, there is a positive correlation between the average of the HSD and two subjects: pharmacology and periodontology. The correlation between the results of the 3rd year practical work and the admission criteria revealed no positive association except for

the practical work of dento-facial orthopedics. The correlation between the results of subjects of the 4th year and the admission criteria showed that there was a positive association between the joint prosthesis, pedodontics and psychology and the admission criteria. While the correlation between the results of the 4th year practical work and the admission criteria showed no positive association. Concerning clinical placements, a positive correlation was found between the admission criteria and the clinical placements of biomaterials and laboratory technology; And surgical odontology. The correlation between the results of the 5th year subjects and the admission criteria revealed no positive association. We note that the practical work is not taught during this academic year because the students are more involved in the clinical trainings. Concerning the clinical trainings, a positive correlation was found between the admission criteria and the clinical trainings of surgical odontology, pedodontics and periodontology.

DISCUSSION

Student selection is a major step in the training of future doctors and dental surgeons. Most medical schools in the world select their students to enter the curriculum (Seguin, 2007). The recruitment arrangements differ from one country to another. They generally take into account previous academic results (Seguin, 2007). This is typically an examination to help students assess whether they are suitable for a career in dentistry and to assist dental faculties in choosing first-year students. The objective is to select the best students according to the numerus clausus fixed by the public authorities and avoiding the discriminating factors of the recruitment modalities (Gillois, 2013). It is in 2003-2004 that the access to studies in the two schools of dentistry in Morocco takes place after a pre-selection based on the general average of the notes of the HSD and after the success in a contest of dentistry, Access. For the 2007-2008 academic year, the selection process involved 577 students enrolled in the access competition. However, only 430 students took part in this competition. The numerus clausus was fixed at 100 students during this academic year. On the other hand, the number of students enrolled in the first year was low: 86 students. The reasons for this low enrollment rate are not identified by the administration.

When it was set up for the first time, the numerus clausus was 95 students and it raised up to 130 students in 2010-2011 then 150 in 2012-2013. This figure has increased steadily since the authorities raised the numerus clausus. The competition at the faculty of dentistry in Casablanca does not involve any interview, oral test or practical evaluation. Students are evaluated on one hand, on the files that take into account the previous performances of the candidates; And, on the other hand, on anonymous written tests including multiple choice questions. For comparison, in Romania, access to undergraduate and postgraduate studies in medicine, dentistry or pharmacy is based on a competitive examination consisting of a written test. It takes place once a year in July as in Morocco after the results of the second session of the HSD. On the other hand, in France and Austria, the selection of students is based on the results of a competition consisting of a few written and anonymous tests organized at the end of the first year of medical studies by each faculty. France has chosen to carry out this selection at the end of a first year of training open to all HSD holders. However, the effectiveness of this method of selection is called into question. It is the subject of

debate because it is a procedure that is not influenced by equal opportunities and freedom of access to dental studies. Indeed, each student has the right to pass the contest twice. However, if he fails, he will lose two years of his student life (Gillois, 2013). Thus, every year, only the luckiest 20% (perhaps the most competitive, the most resistant to such stress conditions) get the immense privilege of moving into the 2nd year (P2). In Canada, candidates can take the DAT (Dental Qualification Test) as many times per year as they wish. However, only the results of the last examination and the total number of attempts will appear on the official transcript of the DAT. The student is then more fortunate because it only needs to get good results to improve his record and be eligible again in dentistry. Regarding the profile of students selected in our faculty during the 2007-2008 academic year, this is a predominantly female population representing 77.60% of the general population. The Sex / Ratio in our study is 3.6. At the Faculty of Medicine in Grenoble, sex-ratio was also favorable to the female sex, with, for example, in 2006, 2 out of 3 students were female (66.3%) in the first year (Gillois, 2013). While in Ireland the predominance is male with a male/female ratio of 1.41 in 2006 (De Silva, 2006).

As for the variable: HSD degree, the majority of students (94% of students) earned a HSD degree in experimental sciences. 6% of the students come from the biological, natural and bilingual natural sciences series at 1.5% for each series. For the faculty of medicine of Grenoble, P. Gillois et al. 2012 found that more than 90% of the students were from general baccalaureate degrees, and more than 50% of the SVT (science and life of the earth), followed by mathematics and physics-chemistry. Only 10% of medical students had a non-scientific HSD (Gillois, 2013). Comparing the average of the HSD and the competition, there was a strong correlation between the results of the competition and the average of the HSD. This could be explained by the resemblance between the entrance exam and the HSD examinations. The competition is based on the same subjects as those taught at school. Concerning the results of correlation between the results of the subjects, and the admission criteria, a weak positive association was observed in our study. Moreover, the results of the correlation between the results of the practical work and the admission criteria revealed in our study that there is no positive association between the practical courses notes and the admission criteria during all Academic years except for dento-facial orthopedics in 3rd year (p = 0.024). Furthermore, there was no significant correlation between the results of the clinical trainings and the admission criteria in the five years of study.

These results are in line with those found in the following studies:

On the other hand, De Silva, NR, Pathmeswaran, R, de Silva, N, Edirisinghe, Kumarasiri, Parameswaran, SV, Seneviratne, Warnasuriya, De Silva, HJ conducted a study in 2006 to evaluate the admission criterion Within their institution. They showed that the evaluation exam used for the selection of medical students at the University of Kelaniya in Sri Lanka is a bad indicator of success in medical school. The only criterion for admission is the average of the student in the entrance exam, which is based on a written assessment that includes subjects already taught at the school (De Silva, 2006). In the United States it was found in 2007 by Curtis, Lind, Plesh and Finzen, that the admission criteria to the dental school of the University of California - based on secondary averages, written

exam and test of perceptual aptitude - dental students are generally weak indicators of student achievement in the first academic year (Curtis, 2007). In the same context, Arnold, Gonzalez, Gaengler, evaluated the criteria for admission to the faculty of dentistry Witten Herdech in Germany. The method of selection within this faculty is based on a written and practical test as well as an oral interview.

The authors concluded a positive and weak correlation:

On the one hand, between the results of the first year in dentistry and the selection examinations. On the other hand, between the notes of the practical selection test and the results of the first year (Arnold, 2011). In addition, a selection interview is often organized by the majority of dental faculties in Canada, including personal and circumstantial questions. This makes it possible to evaluate the motivations of the candidates, even their relational skills (Seguin, 2007 and Stein, 2011). The introduction of an oral evaluation in the access competition thus seems to be very useful. Indeed, the dental school of the University of Adelaide in Australia evaluates its students on the basis of a test including written and oral tests. A study conducted in 2012 by Gardner, Roberts-Thomson, found that this test is a good predictor of the performance of future winners (Gardner, 2012). In addition, an evaluation of several mini-interviews used as a means of selecting students wishing to continue their studies in a dental school was carried out in Brittany in 2012. The study showed that the oral interview plays an important role in the criteria Admission of a dental school (McAndrew, 2012). In the same direction, in 2013, Dowell, Foley and Hijazi. Have published a study that confirmed the correlation between the results of the oral interview and the academic and clinical performance of the student in dental practice (Dowell, 2013 and Foley, 2013). At the dental school of Queensland University in Australia, a study was also conducted in 2008 by Wilkinson, Zhang, Byrne, Luke, Ozolins, Parker. The results revealed that the recruitment mode - based on the student's academic performance, written test, and oral assessment - can predict student performance during four years of dental studies (Wilkinson, 2008).

Most of the methods used in the student selection criteria are based on intellectual or oral evaluation, while manual dexterity control is often overlooked by most dental schools, given that dental studies are essentially based on practical as well as practical and clinical practice. Some schools of dentistry in Canada require the manual dexterity test. The latter consists of a sculpture of a model specified in a cylinder of soap to be carved, specially formulated. In 2011, a study was carried out at the University of King Saoude in Saudi Arabia to assess the correlation between writing, drawing and clinical skills of future dentists.

This study is conducted with students in the second year of the dental college. It consists of a test consisting of three parts:

- A question in four lines
- The drawing of the image of a smile
- The realization of an amalgam site 1 on a tooth.
- The results showed a strong correlation between writing, drawing and skills in dental practice (Al-Johany, 2015).
- These results are in line with those found in 2010 by Beier, Kapferer and Ostermann. Who evaluated the

impact of a new admission test on the performance of students in a dental school in Austria. They concluded that both theoretical and practical assessment is a reliable tool for predicting the performance of dental students (Beier, 2010).

- The evaluation of the student's communication skills and a manual aptitude test therefore appear to be good indicators of the performance of future recipients in dental practice (Mercer, 2011 and Sandow, 2002).
- In addition, a psychometric test or a valid personality assessment associated with these tests appears to be a predictor of student performance such as Australia and Canada (Elliott, 2005 and Poole, 2007).

Consequently, each dental school is responsible for ensuring a constant review of the recruitment process and an evaluation of the selection criteria of its future students. This helps maintain an evidence-based program that offers free access to dental studies, an equitable comparison of the results of admission evidence, and training of skilled practitioners who can serve the profession and improve public health (Kingsley, 2007; Holmes, 2008).

Suggestions and Recommendations

According to our study, a number of suggestions concerning the evaluation of student recruitment procedures at the faculty of dentistry in Casablanca can be proposed to improve the quality of the selection criteria. We suggest that this competition include several components:

First part: corresponds to the evaluation on file of the previous performances of the candidates as well as the studies possibly undertaken in post-HSD. This would be an open-ended question with a response of no more than four to five lines.

The second part: concerns the control of French and English language skills, in particular that the majority of international articles are published in English.

Third component: Manual Dexterity Test (CT) to assess the manual abilities of each student. Indeed, it can be a drawing or a sculpture in a block of soap. This test appears to be useful in the criteria for admission to the Faculty of Dentistry. However, the value given to such a test implies further investigations and an appropriate consensus (Mercer, 2011).

Part 4: An oral interview conducted by a qualified person to determine the motivation of each candidate. Consequently, it is essential to give importance to the candidate's real interest and motivation to pursue an academic career in dentistry (Park,, 2010).

Finally, mentoring programs such as canada should be implemented and allow the student - who wishes to pursue dental studies - to assist and interact with clinicians. Thus, students who demonstrate an interest in pursuing dental studies may enroll in the first year (Stein, 2011). Indeed, studies have shown that students with prior knowledge - through one of their parents who is dentist - on dental practice or hold a previous medical degree are performing better during their university course (Stein, 2011 and Beier, 2012 and Beier, 2010).

Conclusion

In short, the dental training system in Casablanca has put in place a method of selection that will allow everyone to prove themselves. However, in actual fact, it is observed that it is not always the most deserving that succeed and that the equality so sought is not really at the appointment. Our study emphasized the importance of practical assessment, language proficiency testing and oral evaluation in the selection criteria for students who wish to pursue their studies in dentistry. The school of Dentistry of Casablanca is responsible for reviewing recruitment procedures and criteria for the selection of its students. We would therefore like the results of this study to be a reference to faculty and public authorities in order to review these admission criteria. This will ensure better equity between students for success in the competition by selecting the best students who will become the future health professionals.

Conflict of interest: The authors declare that there is no conflict of interest regarding the publication of this paper.

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