MASTER IN MEDICINE

University of Minho
School of Health Sciences

2013 – A SNAPSHOT

ASSESSMENT OF THE ACADEMIC YEAR 2012/2013

UNIVERSITY OF MINHO
School of Health Sciences
Medical Education Unit

Foreword

This Snapshot presents a summary of the 2012/2013 edition of the original 6 year and of the alternative graduate entry tracks of undergraduate medical degree in the School of Health Sciences of the University of Minho (ECS-UM). It is a compilation produced by the Medical Education Unit (MEU) as part of the internal processes of quality assessment. The primary objective is that of contributing to the accountability before the general public, health care system and current and future students.

The annual Snapshot presents empirical data and results from educational research related to the undergraduate medical degree. It is sustained by permanent and systematic data gathering and organization by the MEU, that is also responsible for the considerations in the document. As in previous years, some highlights of this Snapshot are summarized in the Annual Report of the School of Health Sciences.

Relative to previous editions of the annual Snapshot, this document includes new elements, namely a comparison between graduate-entry and high-school entry students, a summary of studies conducted on student empathy and results from qualitative research on the experience of the graduate entry students in the transition to clinical training. As usual, the current snapshot includes student academic performance, student evaluations of the undergraduate medical degree (curricular units, faculty and clerkships) and a socio-demography of the annual entering class for 2012/2013. Also included is an update of Minho's Longitudinal Study of medical education (ELECSUM).

This Snapshot will be distributed to the School's External Advisory Committee, to faculty members and to the student body of the School of Health Sciences.

School of Health Sciences
Medical Education Unit
University of Minho

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1. STUDY PLAN

Alternative track

This was the second edition of the 4-year graduate entry track of ECS-UM's undergraduate medical degree. There were 18 positions available for graduate entry students (15% of numerus clausus - Decreto-Lei nº40/2007 of 20th February). The alternative track was approved by the Portuguese Agency for Assessment and Accreditation of Higher Education (A3ES) and credits student's previous academic accomplishments with 120 ECTS corresponding to the initial 2 years of the 6 year program.

Table 1: Study plan: Graduate entry track

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS
1st year	CBB / SC-CSH / P / C	Various	60
		TOTAL	60
2nd year	CBB / SC-CSH / P / C	Various	60
		TOTAL	60
3rd year	C	Introduction to Clinical Medicine	10,5
	CBB / P	Foundations of Medicine	45
	SC-CSH	Community Health, Human and Social Science	4,5
		TOTAL	60
		Degree in Medical Basic Sciences	180
4th year		The same as the original track	60
		TOTAL	60
5th year		The same as the original track	60
		TOTAL	60
6th year		The same as the original track	60
		TOTAL	60
		Integrated Master in Medicine	360

ECTS - European Credit Transfer Units
C - Clinical; CBB –Biological and Biomedical Sciences;
SC-CSH - Community Health, Human and Social Sciences; P - Pathology

Original track

This was the third edition of the original curricular plan implemented in the academic year 2010/2011. There were no significant changes to last years program.

Table 2- Study plan: original track

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS
1st year	CBB	Introduction to the Medical Degree Course	4
	CBB	Molecules and Cells	24
	CBB	Functional and Organic Systems I	25
	SC-CSH	Training in a Health Centre	1
	SC-CSH	First Aid	1
	CBB/SC-CSH/P/C	Option Project I	4
	SC-CSH	Vertical Domains I	1
		TOTAL	60
2nd year	CBB	Functional and Organic Systems II	26
	CBB	Functional and Organic Systems III	23
	SC-CSH	Family, Society and Health I	4
	CBB/SC-CSH/P/C	Option Project II	6
	SC-CSH	Vertical Domains II	1
		TOTAL	60
3rd year	P	Biopathology and Introduction to Therapeutics	43
	SC-CSH	Introduction to Community Health	4
	C	Introduction to Clinical Medicine	10,5
	SC-CSH	Follow-up of a Family II	1,5
	SC-CSH	Vertical Domains III	1
		TOTAL	60
		Degree in Medical Basic Sciences	180
4th year	SC-CSH	Health Centre Residency I	8
	C	Medicine I Residency	17
	C	Maternal and Child Health Residency	17
	C	Clinical Neurosciences	10
	C/P/CBB	From the Clinic to Molecular Biology I	3
	CBB/SC-CSH/P/C	Option Projects III	4
	SC-CSH	Vertical Domains IV	1
		TOTAL	60
5th year	SC-CSH	Health Centre Residency II	13
	C	Surgery Residency	18,5
	C	Medicine II Residency	16
	C	Optional Residencies	8,5
	C/P/CBB	From the Clinic to Molecular Biology II	3
	SC-CSH	Vertical Domains V	1
		TOTAL	60
6th year	SC-CSH	Health Centre Residency III - Final Training	10,5
	C	Hospital Residencies – Final Training	39,5
	C/P/CBB	From the Clinic to Molecular Biology III	3
	CBB/SC-CSH/P/C	Option Projects - Final Training	7
		TOTAL	60
		Integrated Master Program in Medicine	360

ECTS – *European Credit Transfer Units*

C – Clinical; **CBB** – Biological and Biomedical Sciences; **SC-CSH** – Community Health and Human and Social Sciences; **P** – Pathology

2. THE SECOND YEAR'S EXPERIENCE OF THE ALTERNATIVE TRACK STUDY PLAN

2.1 Selection Process

The 2012-2013 selection process of applicants to the graduate entry track was identical to the previous year. Applicants to the 18 places available were selected through a 3-step process: (1) administrative selection - mandated the delivery of a set of certificates, that included holding a previous degree with a final mark equal or above 14/20 points; (2) written examination of knowledge – a test with 100 multiple choice questions on biology, mathematics, chemistry and physics; (3) Multiple Mini-interview – a series of 10 short stations, intended to assess personal attributes and soft skills related to the practice of medicine. The MMIs applied in Minho were developed by a team of faculty with expertise in preparing and administering Objective Structured Clinical Examinations. The Blueprint is presented in

Table 3. The examination was set up on the 2nd floor of the ECSaude building, in three rounds, within one day.

Table 3: Blueprint for the 2012/2013 MMI examination

TOPIC	Dissuasion	Breaking bad news	Science and citizenship	Plagiarism & cheating	Moral dilemma	Self-appraisal	Previous studies	Collaboration, team work	Collaboration, team work
critical thinking			x						
ethical/moral decision making			x	x	x				
communication	x	x							
empathy	x	x							
integrity (INT)				x	x				
self-evaluation						x	x		
Team-work								x	x

In the second edition of the MMIs in Minho, there were 22 examiners, 17 (77.3%) who were ECS staff and there were 5 external (22.7%). In addition, there were invited external observers that delivered a written report on the experience. To evaluate the acceptability by applicants and assessors, both were asked at the end of each round to respond to a short questionnaire. When asked to state their preference between the format "Classical interview" or "Multiple Mini Interview", 26 (89,7%) of the responding applicants stated a preference for MMIS. Table 4 presents further evidence of high acceptability by applicants.

Table 4: Acceptability of the MMI by candidates (n=30)

	Strongly Disagree	Slightly Disagree	Disagree	Agree	Slightly Agree	Strongly Agree
This MMIs are a fair format	0	0	1	1	20	9
Classical interviews (CIs) are a fair format	6	11	5	6	1	0
I enjoyed participating in this MMIs	0	0	0	3	11	16
I enjoy participating in CIs	2	5	5	11	4	0
This MMIs are effective to assess my competencies	0	0	0	6	13	11
This CIs are effective to assess my competencies	3	6	4	14	2	0

The report delivered by the external observers referred an number of positive strong aspects in the MMI: inter-station diversity of scenarios that capture different facets of the candidates, diversity of profiles in the assessors, the sharing of marks in the meeting with all assessors at the conclusion of very circuiting the "socialization" of new assessors by having the opportunity of experiencing the stations live in previous circuits. The main suggestion for improvement in the future related to decreasing "some interpreter variability" in marking.

2.2 Applicants and entrants

In 2012/2013, there were 229 applicants to the graduate entry process (13 applicants/place). The 18 top-scoring 30 students were admitted to the MMIs. 18 new students were selected. Two did not register for the academic year and thus the next two in the selection were called in. Table shows the exam end MMI scores for the applicants and the selected students.

Table 5: Exam and MMI scores

	Written exam		**Multiple mini interviews**	
	Min - Max	Average ± Standard Deviation	Min - Max	Average ± Standard Deviation
Applicants	2,8 - 16,2	8,5±2,4	–	–
Top 30 applicants	11,4 - 16,2	12,3±1,0	6.6 – 15.1	11,5±2
Selected students	11,4 - 16,2	12,6±1,1	10,0 – 15,8	12,5±1,5

None of the 18 students who enrolled in the alternative track chose the University of Minho as first option. 63% also applied to other medical schools. Nevertheless, 89% intend to matriculate in Minho in the forthcoming curricular year. Student´s age varied from 22 to 35 (mean 27.4; SD 3.9) and 56% of the students were female. The main

reasons pointed by the students for choosing the medical degree were: educational, vocational and professional interest (78%), aspiring to a more stable professional future (72%) and dissatisfaction with their previous professional occupation (72%). Amongst the reasons that influenced students to choose ECS-UM were: the geographical proximity (61%) and the prestige of the degree (56%). The majority of students originated from the districts of Braga (35%) or Porto (35%). For 41% of the students, entering the ECS-UM medical degree implied changing home. The major difficulties anticipated were: time management (83%), learning problems or performance (39%) and economic problems (28%). 24% of the students hold a master degree and none were PhDs.

Table presents the previous degrees of the new students. For 31%, their previous degree had been their degree of preference and 50% had applied to Medicine as first choice and not succeeded. At start of the medical degree, 53% had no professional activity, 33% were working part-time and 13% were working full time. This new pool of students includes more Pharmacists and less Nurses than the previous. More detailed information can be found below (Table 6).

Table 6: Previous degrees of the graduate entry students

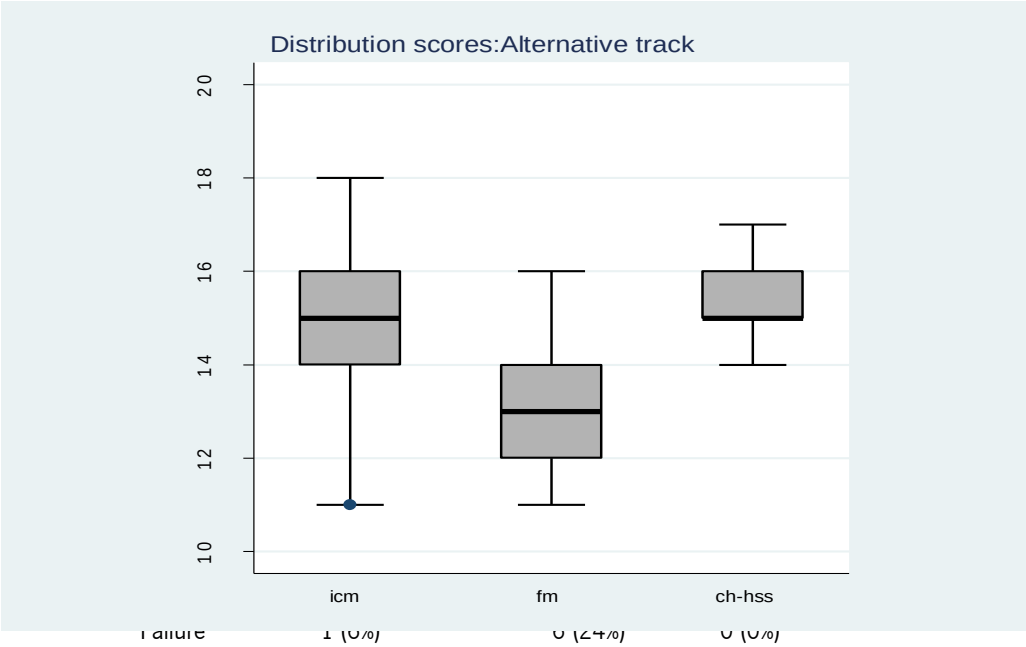
	2011/2012		2012/2013	
	N	%	N	%
Biochemistry	1	5%	1	6%
Biological Engineering	2	10%	0	0%
Biology	1	5%	0	0%
Cardio-Pneumology technician	1	5%	0	0%
Chemistry	1	5%	0	0%
Civil Engineering	0	0%	1	6%
Clinical analysis	1	5%	0	0%
Dental Medicine	1	5%	0	0%
Integrated Master in Industrial Electronics Engineering	1	5%	0	0%
Microbial Biology and genetics	1	5%	0	0%
Nursing	5	25%	2	12%
Nutrition Sciences	0	0%	1	6%
Pathology Anatomy	0	0%	2	12%
Pathology, cytology and anatological Anatomy	1	5%	0	0%
Pharmaceutical Sciences / Pharmacy	1	5%	5	29%
Physics and chemistry	1	5%	1	6%
Physiotherapy	0	0%	2	12%
Psychology	0	0%	1	6%
Radiology	2	10%	0	0%
Veterinary Medicine	0	0%	1	6%

2.2.1. Academic Performance

At the end of the academic year, 76% of the newly admitted students successfully concluded all the curricular units. These students will join the 4th class of the original track in 2013/2014. The highest failure rate(24%) was registered for the curricular unit "Foundations of medicine" which corresponds to 45 ECTS. In terms of the course "Introduction to clinical Medicine", the administrative records show that there were 17 students (94%) who went through the course's assessment process, of whom only one failed (this student had also failed the previous course). Also of importance, 100% of students who performed above the passing score in "Foundations of medicine" were also successful in "Introduction to Clinical Medicine". Therefore, the course "Foundations of medicine" prepared the students adequately to succeed academically in the subsequent clinical course.

In summary, there were lower failure rates in the alternative track program in comparison to the previous edition. The selection process and the course "Foundations of medicine" prepare students to succeed academically at start of the clinical phase of the Program.

Figure 1: Alternative track students' academic success.



Failure 1 (6%) 6 (24%) 0 (0%)

Legend:

icm: Introduction to clinical medicine
fm: foundations of medicine
ch-hss: community health, human and social sciences

2.2.2. Student evaluations of faculty and curricular units

Overall, student's assessed positively both the faculty and the alternative track curricular units. The percentage of students that found "Foundations of Medicine" and the faculty excellent was 86% and 89% respectively, a slight increase relatively to the previous year. "Community Health, Human and Social Sciences" was considered excellent by 40% of the students - a significant decrease from the previous year - and 76% of the students considered its faculty as excellent. Regarding to Introduction to Clinical Medicine it is not possible to present data on the assessment of the curricular unit and faculty since alternative track students answer anonymously and it is not possible to trace their responses within the pool of 3rd Year student answers.

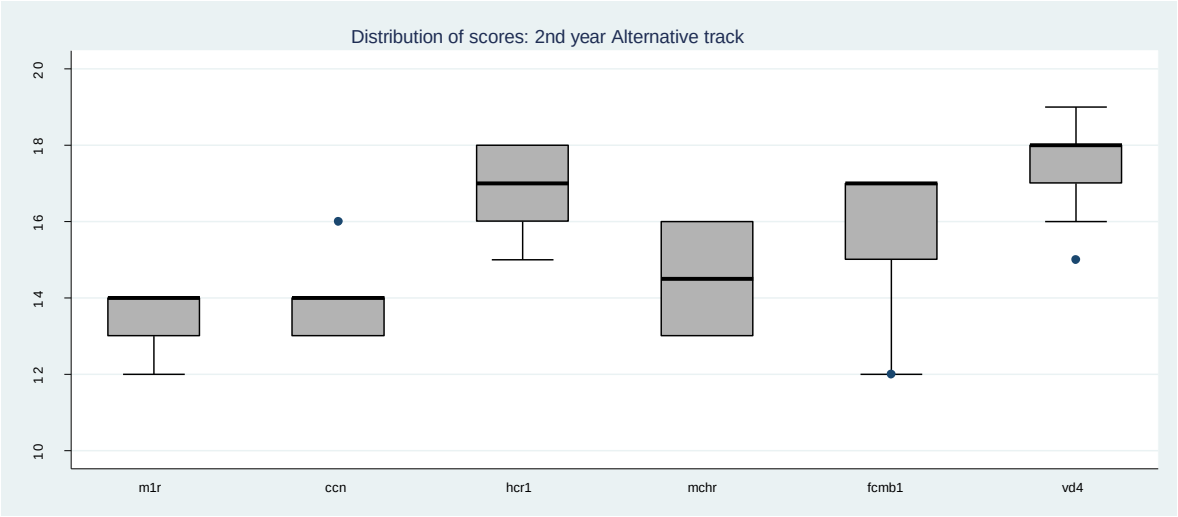
2.3 The first experience of a full clerkship year

2.3.1. Academic Performance

There were 11 students registered for the 2nd year of the alternative track in 2012-2013. At the end of the academic year, 73% of the newly admitted students had a positive outcome in all the curricular units[1]. These students will join the 5th year class of the original track in 2013/2014.

The highest failure rate (27%) was registered for the curricular unit Clinical Neurosciences which corresponds to 10 ECTS. 91% of the students from the 2nd year of the alternative track completed successfully Medicine I Residency and Maternal Child Health Residency, while the remaining curricular units had an approval rate of 100%.

Figure 2: Second year alternative track students' academic success.



Failure	1(9%)	3(27%)	0(0%)	1(9%)	0(0%)	0(0%)

Legend CCN – Clinical Neurosciences; M1R – Medicine I Residency; HCR1 – Health Centers Residency I; MCHR – Maternal and Child Health Residency; FCMB1 – From Clinical to Molecular Biology I; VD4 – Vertical Domains IV

2.3.2. Student evaluations of faculty and curricular units

It is not possible to present data on the assessment of other curricular units because students answer anonymously and it is not possible to identify graduate entry students appreciations.

2.3.3. Perception of students about their preparedness for clinical clerkships

At the end of the academic year 2011-2012, the Medical Education Unit conducted a focus group interview with graduate entry students to understand the experience after the first contact with the clinical environment (Henriques et al., in press[2]). The main goal was to characterize graduate entry students experiences with the transition to the clinical training in hospitals. There were 5 Participants who answered to an invite email and took part in the interview. The discussion was transcribed and analyzed using Grounded Theory principles.

Participants described they were comfortable with contacting patients, and that their prior study skills developed were useful to their learning. The students pointed out two separate aspects as their main difficulties in the clinical workplace. One was related to the first contact with death and disease in the hospital environment. The other was the large amount of content to be learned before starting clinical training, and the transfer of such knowledge to clinical practice. Students considered that more time would be beneficial to mature the foundations' content, and that this would facilitate the application of knowledge at the bedside. These difficulties could be attenuated by including more contact with patients and clinical practice during the pre-clinical part of the course.

3. ORIGINAL TRACK: THE ANNUAL EXPERIENCE WITH THE UNDERGRADUATE MEDICAL PROGRAM

The 2012/2013 experience in terms of student performance and student evaluations were generally identical to the previous year. Some important notes follow. The failure rates at Introduction to Medical Degree and Molecules and Cells dropped substantially as compared to the previous academic year (from 20% to 9% and 23% to 9%, respectively). Functional and Organic Systems I continues, however, to exhibit a high student failure rates (21%). The tendency for students who fail in first year courses to persist failing in following years persists, thus attesting the reliability of most pass/fail decisions. Furthermore, the second year curricular unit Functional and Organic Systems III doubled its students failure rate comparatively to the previous academic year (from 10% to 20%), while Functional

[2] L Henriques, A Salgueira, N Sousa, MJ Costa (2014). La experiencia de la transición a la fase clínica de los estudiantes de medicina que ingresan con posesión de otro grado: un estudio de caso. Revista de la Fundación Educación Médica (accepted for publication).

and Organic Systems II kept with a high and relatively stable students failure rate (20% in 2012/2013 and 19% in 2011/2012).

Student evaluations on the curricular units was clearly positive. There were 20 units in a total of 32 considered globally "excellent" by over 75% of the students, including all the electives and the vertical domains. The four curricular units that considered excellent by less than half of the respective classes - Introduction to Community Health, Community Health, Human and Social Sciences (alternative track) and From clinical to Molecular Biology (II, II) - in the previous year, maintained relatively poorer performances in 2012/2013. Further units receiving lower appreciations comparatively with the previous year were Functional and Organic Systems III, Community Health, Human and Social Sciences, Surgery Residence and From the Clinic to Molecular Biology II. In contrast, the courses Introduction to Medical Course, Health Centre Residency (I, II) and Vertical Domains V received appreciations superior in at least ten perceptual points relatively to the previous year.

4. ORIGINAL TRACK: STUDENT SOCIO-DEMOGRAPHY: RETROSPECTIVE DESCRIPTIVE ANALYSIS

Applicants

In 2012/2013, there were 1017 applicants to the undergraduate medical degree of ECS-UM for the national admissions process ("Concurso Nacional de Acesso", approximately 8 applicants/available place). There is no public available information on the remaining special admissions processes ("Regimes Especiais de Acesso").

New students

123 students were admitted through the National Admissions Process (contingents: general n=119 and islands n=4). 72% of these students chose the University of Minho as their first option (61% in the previous year). Admission grade point averages (GPAs) varied from 166.7 (island contingent) to 195.7 (general contingent) (M 184.9; SD 4.5). The lowest admission grade for the general contingent (M 185.5; SD 3.3) was 182.5 (184.5 in 2011/2012). The admission GPAs show no further significant differences from the previous years. 3 students were admitted through Special Admissions Processes (Athletes n1, Diplomats n1 and Portuguese speaking African country n1).

The socio-demography of the 126 students in the 2012/2013 entering class, overall, was similar to matriculates over the past years. 55% of the students came from the public school system and 91% were first time college students. Student´s age varied from 17 to 38 (mean 18.9; SD 2.5). 71% of the students were female. The

retrospective analysis reveals that the factors that have influenced students to choose the choice of ECS-UM have remained quite stable across time. In the present year, 73% of matriculates referred geographical proximity (it was the most influential for 47%). This might explain why only 30% students originate from districts in the country other than Braga (50% of matriculates) and Porto (21%). Nevertheless, 49% of the students left their family homes. Another primary factor taken into consideration by the students (60%) was the quality of the teaching and learning process (it was the most influential for 25% of the students). More detailed information can be found in the appendix.

5. ELECSUM: THE LONGITUDINAL STUDY OF THE SCHOOL OF HEALTH SCIENCES

The Longitudinal Study in medical education of the School of Health Sciences is one means to monitor the quality of the educational process. The current Snapshot appendixes include results derived from the ELECSUM which offer a more detailed view of Minho's students characteristics and summarizes results obtained on the empathy studies developed in Minho.

5.1. A CLOSER LOOK INTO MINHO'S STUDENTS

The ELECSUM was also useful as a means of understanding the contribution of the graduate-entry students to the diversity of the ECS Undergraduate student population. The admission questionnaire collects information about student socio-demography and expectations. Special regimes of entry in medical schools for graduate applicants were approved by the Portuguese authorities in order to enhance diversity between medical student. The appendix presents summary tables that compare the graduate entry end the high school entry student populations in Minho. It is clear that the graduate entry students are older and have parents who are less differentiated academically, went ore into public schools to completed previous education. Graduate entry students have specific challenges as a significant part are full time workers and express concerns about potential financial and economic issues. They are also more inclined to work in the public health systems, in medical specialties.

5.2. EMPATHY STUDIES

The ECS-Um was interested in understanding how the Minho's curriculum is having an impact on students in terms of empathy, as declines in empathy throughout medical education have been reported internationally, particularly in the transition to clinical training. Understanding how student empathy develops along the degree is important to infer whether the emphasis on empathy in several moments and learning contexts often curriculum

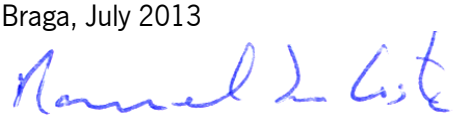
The ELECSUM offers opportunities for cross-sectional and longitudinal analysis on the empathy of medical students in Minho. Empathy was assessed using the Portuguese adaptation of the Jefferson Scale of Physician Empathy-students version (JSPE-spv) validated by the Medical Education Unit research group.

The current results are the following. Cross-sectional study: For 3 cohorts of undergraduate medical students in the first (n = 356) and last (n = 120) year, global JSPE-spv score differences were examined by year of medical school, gender and specialty preferences. Scores of students in the final year were higher as compared to first year students. Longitudinal study: Global JSPE-spv scores in 3 time points were analyzed with latent growth modeling, conditioned by gender and personality traits. Empathy scores at all times were higher for females than for males, but only significantly different at the end of the preclinical phase. The model showed a satisfactory fit level and undergraduate medical student's empathy did not decline over time. Empathy scores were significantly and positively related with Openness to Experience and Agreeableness at admission, but the rate of change across time was not significant. Globally, the cross-sectional and longitudinal results reveal a stability of empathy between the different time points. Therefore, available results suggest that the empathy of medical students does not deteriorate in Minho[3].

6. FINAL WORD

There were very positive results for both the original 6 year and the alternative 4 year graduate entry track of the medical degree. Alike the previous year, 100% of graduate-entry students who performed above the passing score in "Fundamentals of Medicine" were also successful in "Introduction to Clinical Medicine". In addition, the graduate entry students show personal characteristics and professional expectations that co0ntribute interesting diversity in the population. The School also seems to be able to sustain the empathy of medical students. In summary, the indicators available on the experience of the original track in 2012/2013 demonstrate that the delivery of the program continues to maintain standards of quality in medical education.

Braga, July 2013



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[3] Costa P, Magalhães E, Costa MJ. A latent growth model suggests that empathy of medical students does not decline over time. Adv Health Sci Educ Theory Pract. 2013 Aug;18(3):509-22.
Magalhães E, Salgueira AP, Costa P, Costa MJ. Empathy in senior year and first year medical students: a cross-sectional study. BMC Med Educ. 2011 Jul 29;11:52.

MASTER IN MEDICINE

University of Minho
School of Health Sciences

APPENDIX

AUTUMN 2013 – A SNAPSHOT

ASSESSMENT OF THE ACADEMIC YEAR 2012/2013 AT THE ENTRANCE OF 2013/2014

INFORMATION REFERRED IN THE MAIN DOCUMENT

The Snapshot's *Appendix* presents the corresponding academic year's final scores distributions and results of student evaluations, for the curricular units of the undergraduate medical program of the School of Health Sciences of the University of Minho (ECS-UM). A retrospective comparative socio-demographical analysis since 2001 is also included.

Typically, courses' final scores are combinations of scores that result from individual assessments at different points in time, such as modular or end-of-year written tests, skill examinations and attitudinal observations. The curricular units assessment methodologies are defined in the first two weeks of the academic year and establish how the different scores are combined to produce the final score for each curricular unit. The boxplots in this *appendix* are computed from the database of the ongoing *Longitudinal Study of the School of Health Sciences of the University of Minho* [1].

As to the student course evaluations, the appendix presents the instruments, the process and the results for the present and former years. The process was designed in 2006 by the Scientific Council of ECS-UM and is under the responsibility of the Medical Education Unit. The process is systematic and originates results that are an important part of the multidimensional internal quality evaluation mechanisms of the ECS-UM's undergraduate medical program.

In addition, the appendix includes descriptive elements about the socio-demography of the entering class of 2012-2013 and a comparison between groups of students since the opening of the medical degree (2001-2002). The information is collected with a survey that students respond to voluntarily during students' first week in the medical school form the data stored in a secure database. Informed consent is collected to collate the data to the *Longitudinal Study of the School of Health Sciences of the University of Minho*.

STUDY PLAN | 2012-2013

Original Track

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS
1st year	CBB	Introduction to the Medical Degree Course	4
	CBB	Molecules and Cells	24
	CBB	Functional and Organic Systems I	25
	SC-CSH	Training in a Health Centre	1
	SC-CSH	First Aids	1
	CBB / SC-CSH / P / C	Option Project I	4
	SC-CSH	Vertical Domains I	1
		TOTAL	60
2nd year	CBB	Functional and Organic Systems II	26
	CBB	Functional and Organic Systems III	23
	SC-CSH	Family, Society and Health I	4
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3rd year	P	Biopathology and Introduction to Therapeutics	43
	SC-CSH	Introduction to Community Health	4
	C	Introduction to Clinical Medicine	10,5
	SC-CSH	Family, Society and Health II	1,5
	SC-CSH	Vertical Domains III	1
		TOTAL	60
		Degree in Medical Basic Sciences	180
4th year	SC-CSH	Health Centre Residency I	8
	C	Medicine I Residency	17
	C	Maternal and Child Health Residency	17
	C	Clinical Neurosciences	10
	C / P / CBB	From the Clinic to Molecular Biology I	3
	CBB / SC-CSH / P / C	Option Projects III	4
	SC-CSH	Vertical Domains IV	1
		TOTAL	60
5th year	SC-CSH	Health Centre Residency II	13
	C	Surgery Residency	18,5
	C	Medicine II Residency	16
	C	Optional Residencies	8,5
	C / P / CBB	From the Clinic to Molecular Biology II	3
	SC-CSH	Vertical Domains V	1
		TOTAL	60
6th year	SC-CSH	Health Centre Residency - Final Training	10,5
	C	Hospital Residencies - Final Training	39,5
	C / P / CBB	From the Clinic to Molecular Biology III	3
	CBB / SC-CSH / P / C	Option Projects - Final Training	7
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Alternative Track

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		TOTAL		60
6th year		The same as the original track		60
			TOTAL	60
		Integrated Master Program in Medicine		360

ECTS - European Credit Transfer Units
C - Clinical; CBB –Biological and Biomedical Sciences;
SC-CSH - Community Health, Human and Social Sciences; P - Pathology

STUDENT EVALUATIONS (SE): BRIEF DESCRIPTION OF THE PROCESS

Student evaluations are obtained through a systematic process and uses questionnaires adapted to the ECS-UM approved by the School's Scientific Council in 2006 (summarized in table 1). The questionnaires are administered by the Medical Education Unit (MEU) that also manages the Student Evaluations of Teaching (SET) process and helps facilitate appropriate interpretations of SET figures. The questionnaires are typically applied within the 2 weeks following the end of a curricular unit. The questionnaires are used in Portuguese, therefore translations were developed for the purpose of inclusion in this appendix. There are specific SE forms used for distinct purposes.

"Overall Evaluation": of the general dimensions that all the curricular units should abide to; each student fills one questionnaire/curricular unit; includes the same 12 items (except for specific courses where some items do not apply);

"Evaluation of the Teaching and Learning Methodology": in years 1-3 for all courses that are primarily taught by ECS-UM´s faculty and make use of the methodology of "learning through modules of objectives" adopted by the medical school, each student fills one form/curricular unit; includes 10 items;

"Evaluation of Academic Faculty": on individual ECS-UM's faculty of all curricular units; each student fills one form/faculty - the global scores presented in this snapshot are computed for every faculty of the corresponding curricular unit and the individual scores are communicated to each faculty and the corresponding unit coordinator; includes 8 items;

"Evaluation of Clinical Tutors/Services": on individual clinical tutors in the affiliated Health Care Institutions, applied exclusively to courses with clinical attachments (from the 3rd to the 6th year); each student fills one form/faculty - the global scores presented in this snapshot are computed for every faculty of the corresponding curricular unit and the individual scores are communicated the corresponding unit supervisor; includes 10 items;

"Evaluation of Option Projects": used on all the elective curricular units of the medical degree; includes 8 items.

Items for the Overall Evaluation

Curricular Unit (nuclear items)

1	I understood the learning objectives
2	The contents were delivered in accordance with the learning objectives
3	I have gained/developed abilities that I consider useful
4	The workload was appropriate to the time available for learning
5	The assessment process was coherent with the objectives
6	I was appropriately supervised in my learning process
7	The activities were well organized
8	The available resources were appropriate
9	My previous training prepared me adequately for this curricular unit
10	Globally, I consider the faculty is excellent
11	Globally, I consider the curricular unit is excellent
12	Globally, the curricular unit promoted my personal development

Items for the Overall Evaluation
First Aid (nuclear items)

1	I understood the learning objectives
2	The contents were delivered in accordance with the learning objectives
3	I have gained/developed abilities that I consider useful
4	The workload was appropriate to the time available for learning
5	The assessment process was coherent with the objectives
6	I was appropriately supervised in my learning process
7	The activities were well organized
8	The available resources were appropriate
9	I have been provided with a sufficient number of activities to practice skills
10	My previous training prepared me adequately for this curricular unit
11	Globally, I consider the curricular unit is excellent
12	Globally, the curricular unit promoted my personal development
13	I am prepared to provide first aid care in case of need

Items for the Evaluation of the Teaching and Learning Methodology in years 1-3

Phase 1	**1**	Contributed to clarify the objectives
	2	Allowed the reactivation of prior knowledge
Phase 2	**3**	The time provided was sufficient
	4	The activities were important to the learning process
Phase 3	**5**	I was stimulated to share what I learned
	6	Provided an opportunity for a self-assessment relatively to the learning objectives
Phase 4	**7**	Contributed to overcome some of my previously identified learning gaps
	8	The faculty were available
Phase 5	**9**	The time provided to complete the examinations was appropriate
	10	The examinations reflected the learning objectives

Items for the Evaluation of Faculty

Faculty

1	The faculty is knowledgeable in the concepts and phenomena implied in the learning objectives
2	The faculty arrives on time
3	The faculty aids in the identification, analysis and understanding of the learning objectives
4	The faculty orients the development of learning
5	The faculty stimulates and fosters critical thinking
6	The faculty motivates towards the fulfillment of learning objectives
7	The faculty helps in the synthesis and integration of knowledge
8	Overall, this faculty is excellent

Items for the Evaluation of Clinical Tutors/Services

Tutors/Services

1	I had access to all the service components (e.g.: meetings, visits, examinations, etc.)
2	I was stimulated to share my ideas, knowledge and doubts
3	The tutor was available to answer questions and to clarify uncertainties
4	The tutors' explanations were clear and organized
5	The tutor promoted contacts with patients with different pathologies
6	The tutor helped me to perform clinical procedures effectively
7	The tutor was knowledgeable the concepts, phenomena and clinical practices
8	I received appropriate supervision at the clinical settings
9	I rate this tutor as excellent
10	What I've learned in this service was useful

Items for the Evaluation of Clinical Tutors/Services (Optional Residencies)

Tutors/Services

1	The tutor was available to answer questions and to clarify uncertainties
2	The tutors' explanations were clear and organized
3	The tutor was knowledgeable the concepts, phenomena and clinical practices
4	I received appropriate supervision at the clinical settings
5	I rate this tutor as excellent
6	What I've learned in this service was useful

Items for the Evaluation of Option Projects

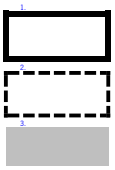
1	I understood the learning objectives
2	The elements of the assessment process reflect the objectives of the curricular unit
3	The assessment process was coherent with the objectives of the curricular unit
4	The evaluation parameters were defined in time
5	The workload was appropriate to the credit units
6	I would have developed this project, even if it was not compulsory
7	Globally, I learned a lot from this curricular unit
8	Globally, I consider this curricular unit excellent

Scale

Completely disagree	①
Strongly disagree	②
Disagree	③
Agree	④
Strongly agree	⑤
Completely agree	⑥
Without an opinion	⓪

Legend

- <u>for tutors, faculty and curricular unit assessment:</u>



Question with highest % of favorable responses

Question with lowest % of favorable responses

Question with less than 50% of favorable responses

RESULTS

1. **Distribution of Student Scores:**

As this snapshot is issued in July and there as there is a "Special season" for examination in the university of Minho, the figures included may change marginally in this year final records.

According to the University regulations, failures include:

- Non attendants: students with less than 2/3rds of class attendance; they fail accordingly to the University's regulation.
- Academic failing students: students who attended at least 2/3rds of classes; failure results from not complying to pass/fail for academic criteria.

2. **Student Evaluations**

STUDENT EVALUATIONS: RESPONSE RATES BY CURRICULAR UNIT

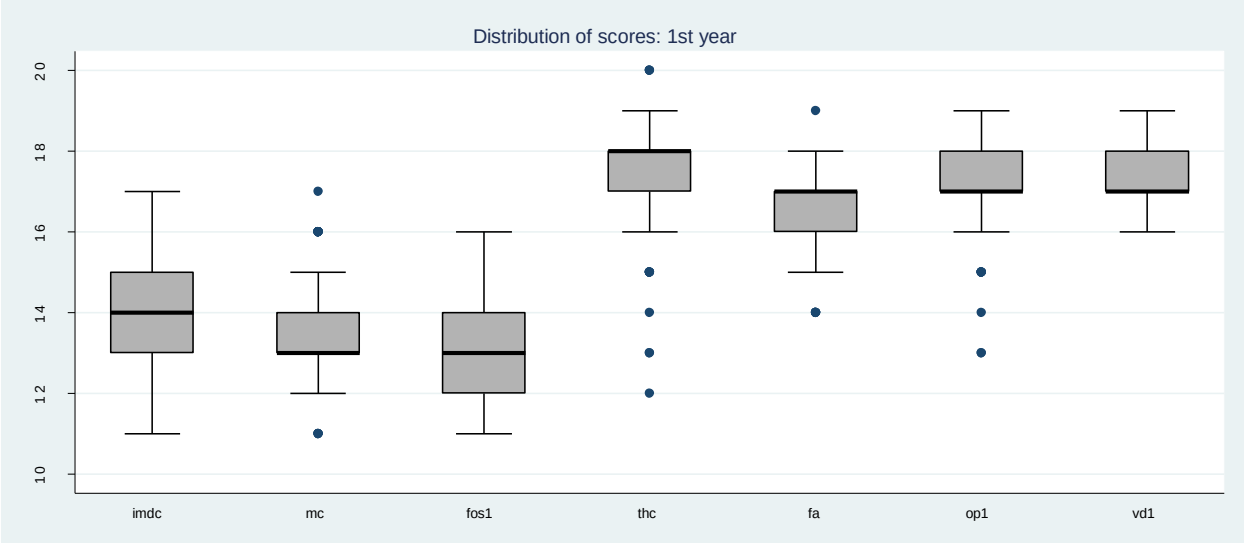
Curricular Unit	Curricular Year	Number of editions	Nuclear questions	Method questions	Specific questions	Number of students enrolled	Response rate (%)
Introduction to the Medical Degree Course	1	12	X	X	X	139	86
Molecules and Cells	1	12	X	X	X	142	61
Functional and Organic Systems I	1	12	X	X	X	143	42
Training in a Health Centre	1	12	X		X	122	92
First Aids	1	12	X		X	120	93
Option Project I	1	12			X	128	91
Vertical Domains I	1	9	X		X	118	96
Family, Society and Health I	2	3	X			126	73
Functional and Organic Systems II	2	11	X	X	X	142	68
Functional and Organic Systems III	2	11	X	X	X	128	55
Option Project II	2	11			X	123	78
Vertical Domains II	2	9	X		X	120	77
Biopathology and Introduction to Therapeutics	3	10	X	X	X	138	88
Introduction to Community Health	3	10	X	X	X	136	72
Family, Society and Health II	3	2	X		X	137	67
Vertical Domains III	3	9	X		X	139	84
Foundations of Medicine	3PA	2	X		X	26	85
Community Health, Human and Social Science	3PA	2	X		X	18	56
Introduction to Clinical Medicine	3/3PA	10	X		X	161	85
Medicine I Residency	4	9	X			135	71
Clinical Neurosciences	4	3	X			138	80
Health Centre Residency I	4	9	X			132	72
Maternal and Child Health Residency	4	9	X			135	69
From the Clinic to Molecular Biology I	4	9	X			134	57
Option Projects III	4	4			X	137	66
Vertical Domains IV	4	9	X		X	131	68
Surgery Residency	5	8	X			109	71
Medicine II Residency	5	8	X			110	66
Optional Residencies	5	8	X		X	114	n.d.
Health Centre Residency II	5	8	X			110	71
From the Clinic to Molecular Biology II	5	8	X			116	69
Vertical Domains V	5	8	X		X	115	In process
Hospital Residencies	6	7	X			79	In process
Health Centre Residency - Final Training	6	7	X			79	85
From the Clinic to Molecular Biology III	6	7	X			80	63
Option Projects - Final Training	6	7			X	80	85

1ST YEAR

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS	AVAILALBLE
1st year	CBB	Introduction to the Medical Degree Course	4	✓
	CBB	Molecules and Cells	24	✓
	CBB	Functional and Organic Systems I	25	✓
	SC-CSH	Training in a Health Centre	1	✓
	SC-CSH	First Aids	1	✓
	CBB / SC-CSH / P / C	Option Project I	4	✓
	SC-CSH	Vertical Domains I	1	✓
		TOTAL	60	

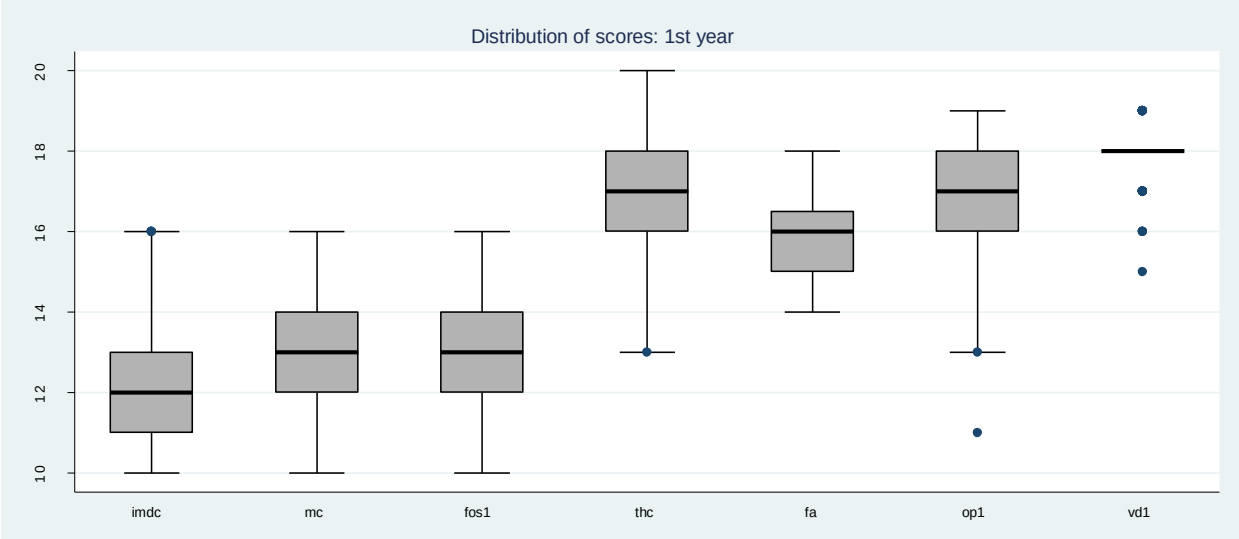
Distribution of Student Scores(*)

2012-2013



Failure	12 (9%)	13 (9%)	39 (27%)	8 (7%)	7 (6%)	8 (6%)	5 (4%)

2011-2012



Failure	28 (20%)	33 (23%)	35 (21%)	11 (9%)	9 (7%)	12 (9%)	5 (4%)

Legend
IMDC – Introduction to the Medical Degree Course
MC – Molecules and Cells
FOS1 – Functional and Organic Systems I
THC – Training in a Health Centre
FA – First Aid
OP1 – Option Project I
VD1 – Vertical Domains I

(*) Output provided by the database of ECS-UM Longitudinal Study.

Curricular Unit: **Introduction to the Medical Degree**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	1	0	1	0	1	0	2	1	1	1	3	2
	Strongly disagree	1	0	2	4	1	1	2	3	4	2	8	3
	Disagree	6	14	9	12	7	6	7	11	17	6	23	13
	Unfavorable responses	**8**	**14**	**12**	**16**	**8**	**7**	**10**	**14**	**22**	**8**	**33**	**18**
	Agree	33	34	36	38	38	35	40	40	38	37	38	37
	Strongly agree	45	35	38	33	35	29	35	28	27	34	23	31
	Completely agree	13	14	13	11	17	26	12	16	9	19	4	8
	Favorable responses	**91**	**83**	**87**	**82**	**89**	**90**	**87**	**83**	**74**	**90**	**65**	**75**
	No opinion	2	3	2	3	3	3	3	3	4	2	3	7
2011/2012	**Unfavorable responses**	**40**	**41**	**27**	**49**	**45**	**43**	**40**	**25**	**53**	**29**	**66**	**40**
	Favorable responses	**60**	**55**	**72**	**50**	**52**	**56**	**54**	**73**	**41**	**69**	**34**	**59**
	No opinion	0	3	1	1	3	1	6	2	6	2	1	1

Area (method items)		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	0	0	0	1	0	0	0	0	3	1
	Strongly disagree	2	3	2	4	2	5	2	0	8	3
	Disagree	8	6	23	15	12	10	5	1	17	8
	Unfavorable responses	**9**	**8**	**24**	**20**	**13**	**15**	**7**	**1**	**27**	**12**
	Agree	33	43	40	44	38	36	26	19	35	37
	Strongly agree	33	34	23	28	25	29	20	16	18	35
	Completely agree	22	12	9	5	20	18	13	38	19	15
	Favorable responses	**88**	**88**	**73**	**78**	**83**	**83**	**58**	**73**	**72**	**87**
	No opinion	3	3	3	3	3	3	35	27	2	2
2011/2012	**Unfavorable responses**	–	–	–	–	–	–	–	–	–	–
	Favorable responses	–	–	–	–	–	–	–	–	–	–
	No opinion	–	–	–	–	–	–	–	–	–	–

Evaluation of Academic Faculty

Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	0	0	0	0	0	0	0	0
	Strongly disagree	0	0	1	1	1	1	1	2
	Disagree	2	1	5	6	6	5	6	5
	Unfavorable responses	**2**	**2**	**6**	**7**	**7**	**6**	**7**	**7**
	Agree	11	14	19	22	20	22	21	19
	Strongly agree	26	22	34	33	34	32	32	34
	Completely agree	58	60	38	35	36	36	37	35
	Favorable responses	**95**	**95**	**91**	**90**	**90**	**91**	**90**	**89**
	No opinion	3	3	3	3	3	3	3	4
2011/2012	**Unfavorable responses**	**5**	**2**	**12**	**14**	**10**	**12**	**16**	**12**
	Favorable responses	**92**	**94**	**84**	**82**	**85**	**83**	**80**	**82**
	No opinion	4	4	4	4	4	4	4	6

Curricular Unit: **Molecules and Cells**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	0	0	1	0	0	0	0	2	0	1	1
	Strongly disagree	1	0	0	0	2	2	2	1	3	1	6	1
	Disagree	3	5	3	13	10	5	12	6	12	12	9	14
	Unfavorable responses	**5**	**5**	**3**	**14**	**13**	**7**	**14**	**7**	**17**	**13**	**16**	**16**
	Agree	31	31	31	38	38	31	38	36	42	30	47	38
	Strongly agree	48	45	48	28	31	36	33	35	26	40	27	28
	Completely agree	16	16	17	17	16	24	13	19	14	17	10	17
	Favorable responses	**95**	**93**	**97**	**84**	**86**	**92**	**84**	**90**	**81**	**87**	**84**	**84**
	No opinion	0	2	0	2	1	1	2	3	1	0	0	0
2011/2012	**Unfavorable responses**	**8**	**8**	**10**	**26**	**17**	**10**	**19**	**8**	**47**	**15**	**18**	**16**
	Favorable responses	**91**	**91**	**89**	**73**	**81**	**89**	**78**	**90**	**50**	**83**	**78**	**78**
	No opinion	1	1	2	1	3	2	3	2	3	2	3	6

Area (method items)		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	0	1	2	2	1	1	2	1	1	1
	Strongly disagree	0	1	2	5	1	2	0	0	0	5
	Disagree	5	3	14	17	6	7	7	1	1	6
	Unfavorable responses	**5**	**6**	**19**	**24**	**8**	**10**	**9**	**2**	**2**	**12**
	Agree	21	33	44	31	33	36	27	17	27	42
	Strongly agree	41	37	22	29	30	26	23	31	37	28
	Completely agree	30	21	13	13	27	26	14	27	34	19
	Favorable responses	**92**	**91**	**79**	**73**	**90**	**87**	**64**	**76**	**98**	**88**
	No opinion	3	3	2	2	2	2	27	22	0	0
2011/2012	**Unfavorable responses**	**9**	**14**	**26**	**32**	**10**	**8**	**17**	**7**	**17**	**14**
	Favorable responses	**90**	**84**	**72**	**66**	**87**	**88**	**42**	**58**	**82**	**85**
	No opinion	2	2	2	2	3	4	41	35	1	1

Evaluation of Academic Faculty

Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	2	1	1	2	2	2	2	2
	Strongly disagree	2	1	2	2	2	2	2	2
	Disagree	4	3	5	6	6	6	6	6
	Unfavorable responses	**7**	**5**	**9**	**10**	**11**	**10**	**9**	**10**
	Agree	20	18	26	26	26	28	25	25
	Strongly agree	29	29	32	31	30	31	31	33
	Completely agree	41	44	30	30	30	28	31	28
	Favorable responses	**89**	**91**	**88**	**87**	**86**	**87**	**88**	**87**
	No opinion	3	3	3	3	3	3	3	4
2011/2012	**Unfavorable responses**	**5**	**2**	**7**	**9**	**8**	**8**	**8**	**8**
	Favorable responses	**92**	**95**	**91**	**88**	**89**	**89**	**88**	**87**
	No opinion	3	3	3	3	4	3	4	5

Curricular Unit: **Functional and Organic Systems I**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	2	0	0	3	3	2	0	0	2	2	2	2
	Strongly disagree	0	2	0	8	2	2	5	2	3	2	0	0
	Disagree	3	12	5	18	15	10	12	7	17	10	10	5
	Unfavorable responses	**5**	**13**	**5**	**30**	**20**	**13**	**17**	**8**	**22**	**13**	**12**	**7**
	Agree	35	35	18	28	43	45	40	38	37	38	43	25
	Strongly agree	42	40	47	35	32	28	32	37	25	38	33	43
	Completely agree	18	12	30	7	5	13	12	17	12	10	12	25
	Favorable responses	**95**	**87**	**95**	**70**	**80**	**87**	**83**	**92**	**73**	**87**	**88**	**93**
	No opinion	0	0	0	0	0	0	0	0	5	0	0	0
2011/2012	**Unfavorable responses**	**3**	**4**	**1**	**22**	**13**	**5**	**9**	**3**	**22**	**5**	**4**	**5**
	Favorable responses	**96**	**91**	**96**	**75**	**85**	**91**	**86**	**93**	**74**	**92**	**93**	**91**
	No opinion	2	4	3	3	2	4	4	3	4	3	3	3

Area (method items)		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	2	0	3	0	2	0	0	0	0	0
	Strongly disagree	3	7	2	2	0	2	0	0	0	5
	Disagree	3	13	23	3	8	3	3	2	2	18
	Unfavorable responses	**8**	**20**	**28**	**5**	**10**	**5**	**3**	**2**	**2**	**23**
	Agree	40	43	38	47	33	35	25	23	18	40
	Strongly agree	30	23	23	30	37	32	17	20	30	22
	Completely agree	20	12	10	18	18	27	13	15	50	13
	Favorable responses	**90**	**78**	**72**	**95**	**88**	**93**	**55**	**58**	**98**	**75**
	No opinion	2	2	0	0	2	2	42	40	0	2
2011/2012	**Unfavorable responses**	**21**	**26**	**19**	**9**	**9**	**9**	**9**	**6**	**0**	**14**
	Favorable responses	**74**	**71**	**77**	**87**	**86**	**86**	**62**	**68**	**99**	**85**
	No opinion	4	3	4	4	4	4	29	26	1	2

Evaluation of Academic Faculty

Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	1	0	0	1	1	1	1	1
	Strongly disagree	0	1	1	1	1	1	1	1
	Disagree	3	3	5	5	5	6	5	5
	Unfavorable responses	**4**	**3**	**6**	**6**	**6**	**8**	**6**	**6**
	Agree	26	29	29	31	30	29	30	30
	Strongly agree	33	29	33	31	31	31	33	34
	Completely agree	37	37	32	30	32	31	30	29
	Favorable responses	**96**	**96**	**93**	**93**	**93**	**91**	**93**	**92**
	No opinion	1	1	1	1	1	1	1	2
2011/2012	**Unfavorable responses**	**2**	**1**	**4**	**4**	**4**	**4**	**4**	**3**
	Favorable responses	**89**	**90**	**87**	**87**	**87**	**86**	**87**	**86**
	No opinion	9	9	9	9	9	9	9	11

Curricular Unit: **Training in a Health Centre**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	1	0	-	6	2	5	8	5	-	-	1	0
	Strongly disagree	0	1	-	4	0	4	3	2	-	-	4	0
	Disagree	3	2	-	9	4	5	10	4	-	-	5	3
	Unfavorable responses	**4**	**3**	**-**	**20**	**5**	**13**	**21**	**10**	**-**	**-**	**9**	**3**
	Agree	15	18	-	19	21	21	23	31	-	-	22	8
	Strongly agree	32	35	-	28	36	15	22	23	-	-	33	33
	Completely agree	48	43	-	34	32	50	33	35	-	-	34	55
	Favorable responses	**96**	**96**	**-**	**80**	**89**	**86**	**79**	**89**	**-**	**-**	**89**	**96**
	No opinion	1	1	-	0	5	1	1	1	-	-	2	1
2011/2012	**Unfavorable responses**	**1**	**9**	**-**	**22**	**13**	**6**	**11**	**9**	**-**	**-**	**5**	**2**
	Favorable responses	**98**	**91**	**-**	**78**	**84**	**94**	**89**	**91**	**-**	**-**	**95**	**98**
	No opinion	1	1	-	0	3	0	0	0	-	-	0	0

Curricular Unit: **First Aid**

Overall Evaluation

Area (nuclear items)		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**
2012/2013	Completely disagree	0	0	0	0	1	0	0	0	1	2	0	0	0
	Strongly disagree	0	0	0	1	0	0	0	0	0	3	0	0	0
	Disagree	0	0	1	3	1	2	1	1	3	5	0	1	2
	Unfavorable responses	**0**	**0**	**1**	**4**	**2**	**2**	**1**	**1**	**4**	**10**	**0**	**1**	**2**
	Agree	15	13	8	15	15	15	14	16	22	24	10	7	13
	Strongly agree	31	38	28	36	33	34	39	36	31	29	42	35	36
	Completely agree	53	49	62	45	50	48	45	45	43	33	47	55	48
	Favorable responses	**99**	**99**	**98**	**95**	**97**	**97**	**98**	**98**	**95**	**86**	**99**	**97**	**97**
	No opinion	1	1	1	1	1	1	1	1	1	4	1	2	1
2011/2012	**Unfavorable responses**	**2**	**6**	**2**	**4**	**29**	**3**	**4**	**4**	**5**	**20**	**6**	**1**	**2**
	Favorable responses	**98**	**94**	**98**	**96**	**71**	**97**	**96**	**96**	**95**	**74**	**94**	**99**	**98**
	No opinion	0	0	0	0	0	0	0	0	0	5	0	0	0

Curricular Unit: **Option Project I**

Overall Evaluation

Area		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	0	0	0	0	0	1	0	0
	Strongly disagree	0	0	0	2	2	1	0	0
	Disagree	0	2	2	3	9	3	0	0
	Unfavorable responses	**0**	**2**	**2**	**4**	**11**	**5**	**0**	**0**
	Agree	10	16	16	12	31	25	8	14
	Strongly agree	37	41	47	39	34	29	40	42
	Completely agree	53	39	34	44	25	41	53	44
	Favorable responses	**100**	**97**	**97**	**95**	**89**	**95**	**100**	**100**
	No opinion	0	2	1	1	0	0	0	0
2011/2012	**Unfavorable responses**	**3**	**4**	**4**	**4**	**29**	**8**	**1**	**2**
	Favorable responses	**97**	**94**	**96**	**96**	**69**	**91**	**99**	**98**
	No opinion	0	2	0	0	2	1	0	0

Curricular Unit: **Vertical Domains I**

Overall Evaluation

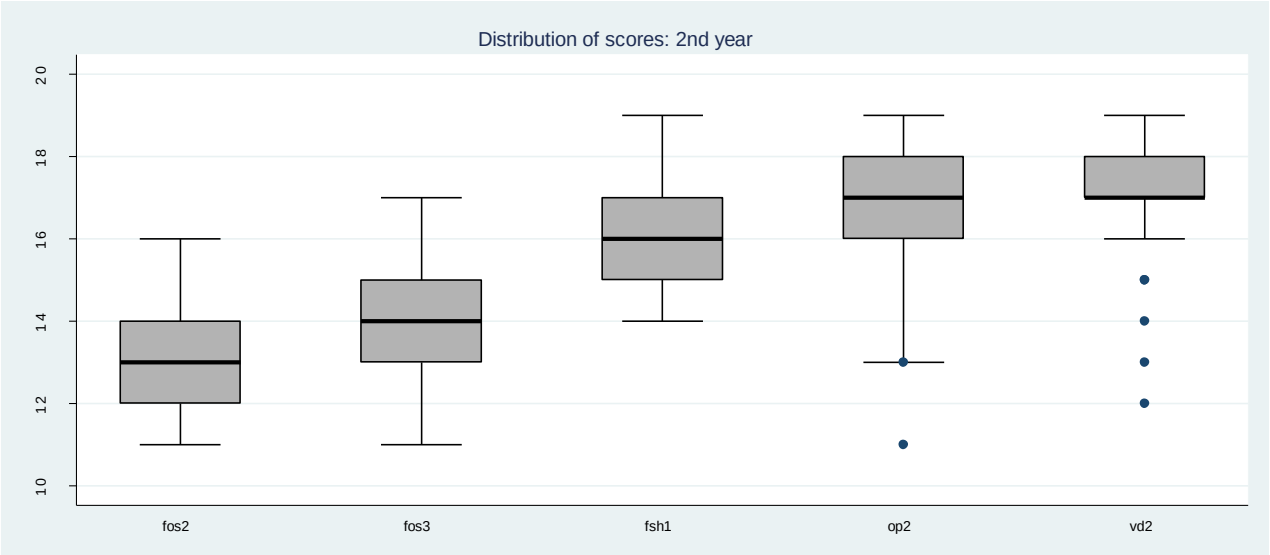
		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	0	0	0	0	0	0	1	2	1	0	0
	Strongly disagree	0	0	2	1	0	3	1	1	0	1	0	0
	Disagree	8	5	5	7	3	5	5	10	5	8	8	5
	Unfavorable responses	**8**	**5**	**6**	**8**	**3**	**7**	**6**	**12**	**7**	**10**	**8**	**5**
	Agree	23	22	32	29	29	25	32	45	23	25	23	22
	Strongly agree	39	47	30	41	41	42	40	24	31	38	39	47
	Completely agree	31	27	32	23	22	25	22	15	39	25	31	27
	Favorable responses	**92**	**95**	**94**	**92**	**92**	**93**	**94**	**85**	**93**	**88**	**92**	**95**
	No opinion	0	0	0	0	5	0	0	4	0	2	0	0
2011/2012	**Unfavorable responses**	**8**	**7**	**8**	**15**	**8**	**6**	**8**	**22**	**7**	**12**	**8**	**7**
	Favorable responses	**92**	**92**	**92**	**85**	**88**	**94**	**92**	**72**	**93**	**88**	**92**	**92**
	No opinion	0	1	0	0	4	0	0	5	0	0	0	1

2ND YEAR

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS	AVAILALBLE
2nd year	CBB	Functional and Organic Systems II	26	✓
	CBB	Functional and Organic Systems III	23	✓
	SC-CSH	Family, Society and Health I	4	✓
	CBB / SC-CSH / P / C	Option Project II	6	✓
	SC-CSH	Vertical Domains II	1	✓
		TOTAL	60	

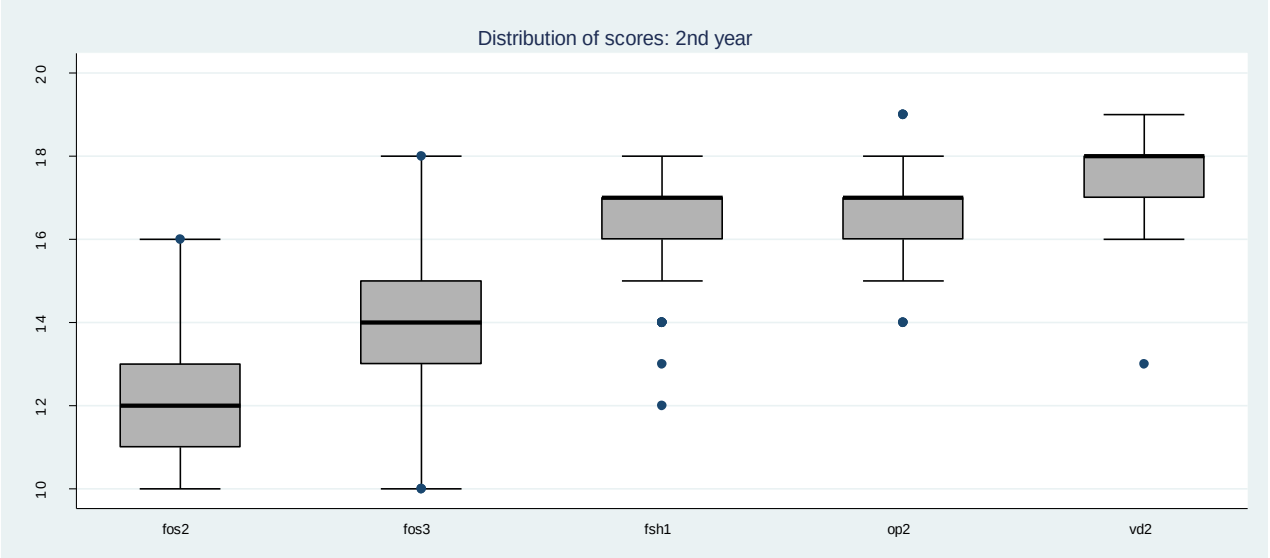
Distribution of Student Scores(*)

2012-2013



Failure	28 (20%)	25 (20%)	14 (11%)	12 (10%)	7 (6%)

2011-2012



Failure	26 (19%)	14 (10%)	10 (9%)	13 (10%)	9 (7%)

Legend
FOS2 – Functional and Organic Systems II
FOS3 – Functional and Organic Systems III
FSH1 – Family, Society and Health I
OP2 – Option Project II
VD2 – Vertical Domains II

(*) Output provided by the database of ECS-UM Longitudinal Study.

Curricular Unit: **Functional and Organic Systems II**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	1	0	1	1	0	0	0	1	1	1	0
	Strongly disagree	0	4	0	6	3	4	2	1	4	3	4	3
	Disagree	2	10	3	32	22	7	13	6	19	9	9	2
	Unfavorable responses	**2**	**16**	**3**	**40**	**26**	**11**	**15**	**7**	**24**	**14**	**15**	**5**
	Agree	52	52	39	40	50	35	49	51	47	41	49	44
	Strongly agree	38	25	31	15	20	40	29	32	22	33	23	36
	Completely agree	6	4	25	3	1	10	4	6	3	8	10	13
	Favorable responses	**96**	**81**	**95**	**57**	**71**	**85**	**82**	**90**	**72**	**82**	**82**	**93**
	No opinion	2	3	2	3	3	3	3	3	4	4	3	2
2011/2012	**Unfavorable responses**	**2**	**11**	**2**	**35**	**20**	**4**	**6**	**8**	**11**	**9**	**8**	**6**
	Favorable responses	**98**	**88**	**97**	**63**	**79**	**94**	**92**	**91**	**87**	**89**	**89**	**93**
	No opinion	1	1	1	2	1	2	2	1	2	2	3	2

Area (method items)		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	1	1	1	0	1	1	0	0	1	3
	Strongly disagree	3	10	3	2	1	0	0	0	1	7
	Disagree	21	26	23	6	9	3	3	3	2	25
	Unfavorable responses	**25**	**38**	**27**	**8**	**11**	**4**	**3**	**3**	**4**	**35**
	Agree	54	42	36	52	38	35	26	18	23	40
	Strongly agree	10	11	29	26	35	41	17	17	36	19
	Completely agree	4	4	4	10	8	14	4	15	35	4
	Favorable responses	**69**	**57**	**70**	**89**	**81**	**90**	**47**	**49**	**95**	**63**
	No opinion	6	5	3	3	7	6	50	48	1	2
2011/2012	**Unfavorable responses**	**22**	**38**	**29**	**8**	**15**	**10**	**13**	**10**	**27**	**30**
	Favorable responses	**76**	**60**	**70**	**90**	**82**	**89**	**62**	**67**	**71**	**68**
	No opinion	2	2	2	2	3	2	25	24	2	2

Evaluation of Academic Faculty

Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	1	0	1	1	1	1	1	1
	Strongly disagree	1	0	1	2	1	1	1	1
	Disagree	3	2	5	6	5	5	4	5
	Unfavorable responses	**4**	**2**	**7**	**8**	**7**	**8**	**7**	**6**
	Agree	21	22	25	26	28	27	26	25
	Strongly agree	36	28	36	35	35	34	35	36
	Completely agree	38	45	30	29	28	29	31	29
	Favorable responses	**94**	**96**	**91**	**90**	**91**	**90**	**91**	**91**
	No opinion	2	2	2	2	2	2	2	3
2011/2012	**Unfavorable responses**	**4**	**2**	**5**	**6**	**7**	**7**	**5**	**6**
	Favorable responses	**90**	**92**	**89**	**88**	**87**	**87**	**89**	**88**
	No opinion	6	6	6	6	6	6	6	6

Curricular Unit: **Functional and Organic Systems III**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	3	4	3	9	11	3	4	3	4	7	10	6
	Strongly disagree	1	9	0	6	17	3	9	3	4	6	4	1
	Disagree	3	17	0	11	17	13	29	14	14	14	14	9
	Unfavorable responses	**7**	**30**	**3**	**26**	**46**	**19**	**41**	**20**	**23**	**27**	**29**	**16**
	Agree	37	33	33	41	33	40	33	39	37	40	34	31
	Strongly agree	37	31	43	21	17	33	21	33	27	24	27	31
	Completely agree	19	6	21	11	3	9	4	9	9	4	7	20
	Favorable responses	**93**	**70**	**97**	**74**	**53**	**81**	**59**	**80**	**73**	**69**	**69**	**83**
	No opinion	0	0	0	0	1	0	0	0	4	4	3	1
2011/2012	**Unfavorable responses**	**3**	**8**	**3**	**21**	**9**	**5**	**9**	**7**	**12**	**9**	**5**	**4**
	Favorable responses	**97**	**91**	**97**	**77**	**90**	**92**	**89**	**91**	**85**	**90**	**93**	**91**
	No opinion	1	2	1	3	1	3	3	2	3	2	2	4

Area (method items)		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	7	6	6	3	10	7	7	4	3	16
	Strongly disagree	10	11	3	4	3	1	0	0	0	19
	Disagree	17	21	19	17	11	11	4	6	0	19
	Unfavorable responses	**34**	**39**	**27**	**24**	**24**	**20**	**11**	**10**	**3**	**53**
	Agree	40	44	39	46	34	31	21	21	21	31
	Strongly agree	20	11	23	21	29	36	13	11	27	13
	Completely agree	6	6	11	9	10	10	1	6	49	3
	Favorable responses	**66**	**61**	**73**	**76**	**73**	**77**	**36**	**39**	**97**	**47**
	No opinion	0	0	0	0	3	3	53	51	0	0
2011/2012	**Unfavorable responses**	**23**	**29**	**14**	**9**	**15**	**9**	**9**	**6**	**4**	**6**
	Favorable responses	**74**	**67**	**84**	**88**	**79**	**87**	**70**	**74**	**95**	**93**
	No opinion	3	3	3	3	6	4	21	20	1	1

Evaluation of Academic Faculty

Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	1	1	2	2	2	2	2	2
	Strongly disagree	1	1	1	1	2	2	2	2
	Disagree	3	3	6	7	6	6	6	6
	Unfavorable responses	**6**	**5**	**10**	**11**	**10**	**11**	**10**	**9**
	Agree	22	20	26	27	27	27	26	25
	Strongly agree	36	34	34	33	35	33	34	33
	Completely agree	35	40	29	28	26	28	29	28
	Favorable responses	**93**	**94**	**89**	**88**	**89**	**88**	**89**	**86**
	No opinion	1	1	1	1	1	1	1	5
2011/2012	**Unfavorable responses**	**4**	**3**	**5**	**6**	**5**	**6**	**5**	**5**
	Favorable responses	**87**	**88**	**86**	**85**	**86**	**85**	**86**	**86**
	No opinion	9	9	9	9	9	9	9	9

Curricular Unit: **Family, Society and Health I**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	0	0	0	0	0	0	0	0	0	0	0
	Strongly disagree	2	2	2	3	5	3	2	2	3	2	2	2
	Disagree	2	2	0	3	8	3	14	3	7	2	3	2
	Unfavorable responses	**3**	**3**	**2**	**7**	**14**	**7**	**15**	**5**	**10**	**3**	**5**	**3**
	Agree	25	24	19	24	27	19	32	22	36	22	27	20
	Strongly agree	37	32	46	36	31	27	27	41	27	41	44	39
	Completely agree	32	39	32	32	25	46	24	31	15	29	20	36
	Favorable responses	**95**	**95**	**97**	**92**	**83**	**92**	**83**	**93**	**78**	**92**	**92**	**95**
	No opinion	2	2	2	2	3	2	2	2	12	5	3	2
2011/2012	**Unfavorable responses**	**4**	**4**	**3**	**10**	**15**	**7**	**15**	**7**	**18**	**10**	**11**	**5**
	Favorable responses	**96**	**96**	**97**	**88**	**81**	**90**	**85**	**93**	**76**	**89**	**87**	**94**
	No opinion	0	0	0	2	5	3	0	1	7	1	2	1

Curricular Unit: **Option Project II**

Overall Evaluation

		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	0	0	0	4	4	1	0	1
	Strongly disagree	0	1	0	4	12	2	1	1
	Disagree	3	1	3	8	11	4	0	4
	Unfavorable responses	**3**	**2**	**3**	**17**	**26**	**7**	**1**	**6**
	Agree	16	36	34	25	35	17	9	14
	Strongly agree	47	44	43	36	28	29	42	44
	Completely agree	34	16	19	20	9	43	48	34
	Favorable responses	**97**	**96**	**96**	**81**	**73**	**89**	**99**	**92**
	No opinion	0	2	1	2	1	4	0	2
2011/2012	**Unfavorable responses**	**3**	**4**	**6**	**19**	**14**	**7**	**1**	**3**
	Favorable responses	**96**	**93**	**90**	**81**	**85**	**92**	**99**	**97**
	No opinion	1	4	4	1	1	1	0	0

Curricular Unit: **Vertical Domains II**

Overall Evaluation

		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	2	2	4	2	1	1	1	2	2	4	2	2
	Strongly disagree	4	2	0	3	1	2	0	1	1	2	4	2
	Disagree	2	5	10	9	7	10	8	8	7	10	2	5
	Unfavorable responses	**9**	**10**	**14**	**14**	**9**	**13**	**9**	**11**	**10**	**16**	**9**	**10**
	Agree	46	43	41	43	45	45	49	53	36	42	46	43
	Strongly agree	30	30	27	27	28	30	28	19	37	22	30	30
	Completely agree	15	13	16	14	11	11	11	12	17	18	15	13
	Favorable responses	**91**	**87**	**85**	**85**	**84**	**86**	**88**	**84**	**90**	**81**	**91**	**87**
	No opinion	0	3	1	1	8	1	3	4	0	2	0	3
2011/2012	**Unfavorable responses**	**10**	**6**	**10**	**5**	**6**	**12**	**5**	**9**	**6**	**16**	**10**	**6**
	Favorable responses	**90**	**91**	**89**	**95**	**86**	**88**	**94**	**85**	**94**	**82**	**90**	**91**
	No opinion	0	4	1	0	7	0	1	6	0	3	0	4

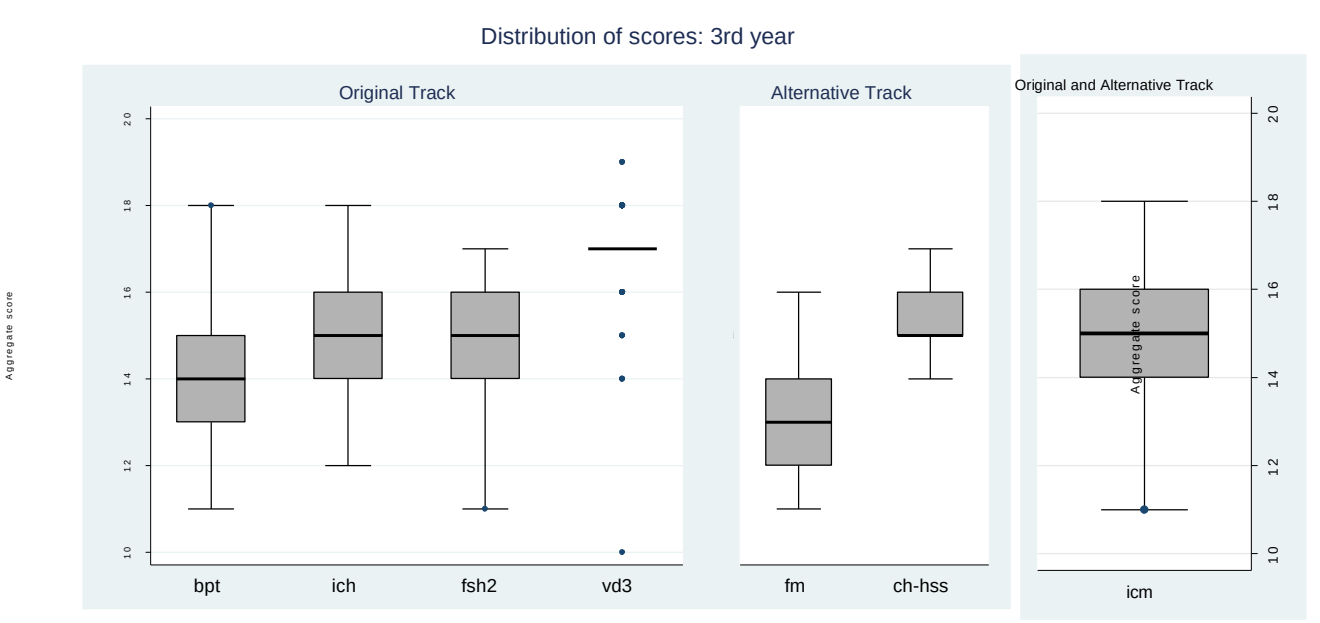
3RD YEAR

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS	AVAILALBLE
3rd year	P	Biopathology and Introduction to Therapeutics	43	✓
	SC-CSH	Introduction to Community Health	4	✓
	C	Introduction to Clinical Medicine	10,5	✓
	SC-CSH	Family, Society and Health II	1,5	✓
	SC-CSH	Vertical Domains III	1	✓
		TOTAL	60	

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS	AVAILALBLE
3rd year Alternative Track	C	Introduction to Clinical Medicine	10,5	✓
	CBB / P	Foundations of Medicine	45	✓
	SC-CSH	Community Health, Human and Social Science	4,5	✓
		TOTAL	60	

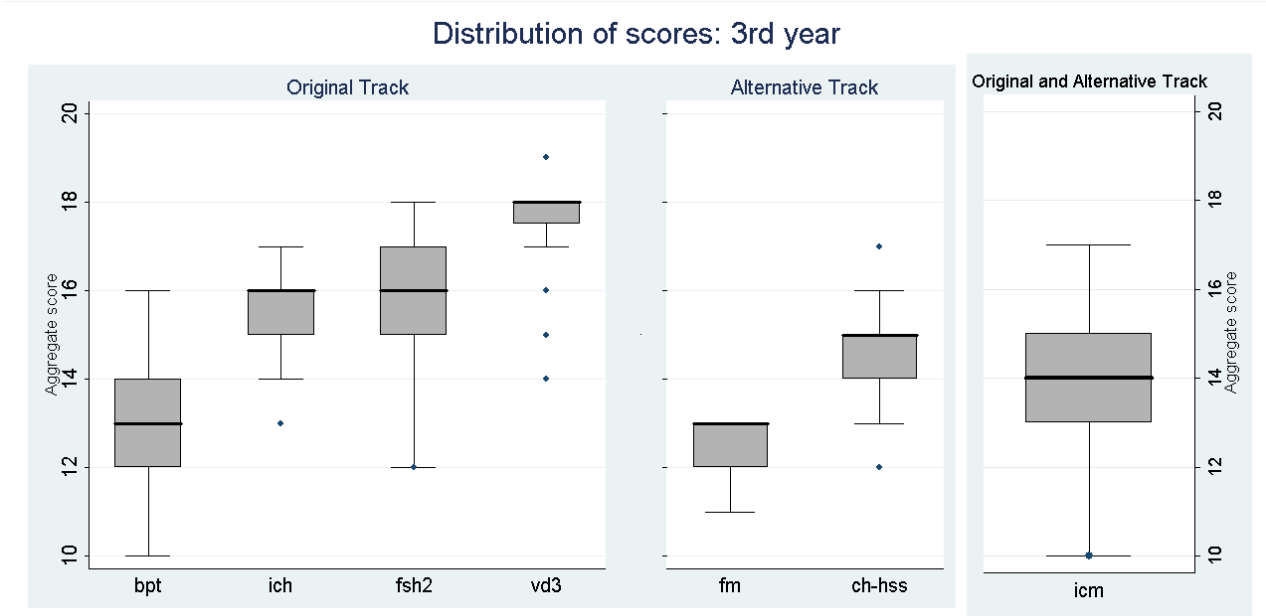
Distribution of Student Scores(*)

2012-2013



Failure	12 (9%)	12 (9%)	12 (9%)	4 (3%)	6 (24%)	0 (0%)	14 (9%)

2011-2012



Failure	12 (9%)	10 (8%)	3 (3%)	4 (3%)	9 (45%)	1 (5%)	17 (11%)

Legend

BPT – Biopathology and Introduction to Therapeutics
FSH2 – Family, Society and Health II
ICH – Introduction to Community Health
ICM – Introduction to Clinical Medicine
VD3 – Vertical Domains III
FM – Foundations of Medicine
CHHSS - Community Health, Human and Social Sciences
(*) Output provided by the database of ECS-UM Longitudinal Study.

Curricular Unit: **Biopathology and Introduction to Therapeutics**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	1	1	6	3	0	1	0	2	2	3	2
	Strongly disagree	0	3	0	4	4	1	1	2	2	1	2	1
	Disagree	3	6	2	21	18	5	4	4	6	6	7	5
	Unfavorable responses	**3**	**10**	**3**	**31**	**24**	**6**	**5**	**5**	**10**	**9**	**11**	**8**
	Agree	41	39	37	39	43	40	46	40	44	39	38	30
	Strongly agree	40	37	37	18	27	39	39	41	37	35	34	45
	Completely agree	15	12	22	11	4	11	9	12	9	12	13	15
	Favorable responses	**96**	**88**	**97**	**68**	**74**	**90**	**94**	**94**	**89**	**86**	**85**	**90**
	No opinion	1	2	1	1	2	4	1	1	1	5	4	2
2011/2012	**Unfavorable responses**	**3**	**6**	**3**	**38**	**17**	**6**	**17**	**8**	**12**	**7**	**9**	**4**
	Favorable responses	**97**	**94**	**97**	**62**	**83**	**92**	**80**	**91**	**87**	**93**	**91**	**93**
	No opinion	0	0	0	0	1	2	3	1	1	0	0	4

Area (method items)

Area (method items)		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	7	6	3	1	2	3	3	3	4	6
	Strongly disagree	5	4	7	2	7	3	6	4	3	7
	Disagree	12	15	15	7	9	9	5	3	20	19
	Unfavorable responses	**24**	**25**	**25**	**9**	**17**	**15**	**15**	**10**	**28**	**33**
	Agree	38	37	41	39	35	37	30	29	33	32
	Strongly agree	22	23	24	37	35	34	18	20	27	27
	Completely agree	9	7	8	12	6	8	9	11	10	6
	Favorable responses	**68**	**67**	**73**	**88**	**77**	**78**	**57**	**60**	**70**	**65**
	No opinion	8	8	3	3	6	7	28	31	2	2
2011/2012	**Unfavorable responses**	**32**	**32**	**29**	**6**	**15**	**11**	**19**	**6**	**6**	**20**
	Favorable responses	**66**	**66**	**71**	**93**	**83**	**88**	**54**	**72**	**94**	**79**
	No opinion	2	2	0	1	2	1	27	22	0	1

Evaluation of Academic Faculty

Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	1	2	2	2	2	2	2	2
	Strongly disagree	0	1	1	1	1	2	1	1
	Disagree	3	3	6	7	6	7	5	6
	Unfavorable responses	**4**	**5**	**9**	**10**	**9**	**11**	**8**	**9**
	Agree	20	21	27	29	27	29	28	28
	Strongly agree	32	28	34	32	32	32	32	32
	Completely agree	42	46	29	28	30	28	31	30
	Favorable responses	**95**	**94**	**90**	**89**	**89**	**88**	**91**	**90**
	No opinion	1	1	1	1	1	1	1	1
2011/2012	**Unfavorable responses**	**2**	**3**	**6**	**6**	**5**	**7**	**6**	**5**
	Favorable responses	**92**	**90**	**88**	**87**	**88**	**86**	**88**	**88**
	No opinion	6	7	6	6	7	7	6	6

Curricular Unit: **Introduction to Community Health**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	1	1	4	2	3	2	3	2	8	3	6	3
	Strongly disagree	2	3	1	3	4	1	6	1	5	4	3	3
	Disagree	5	8	9	10	4	10	19	9	20	17	21	18
	Unfavorable responses	**8**	**12**	**14**	**15**	**11**	**13**	**29**	**12**	**34**	**24**	**31**	**24**
	Agree	46	46	41	43	54	46	44	47	37	45	39	41
	Strongly agree	31	32	28	28	24	24	17	23	14	19	16	22
	Completely agree	11	6	13	10	6	11	5	11	4	6	4	7
	Favorable responses	**88**	**84**	**82**	**81**	**85**	**82**	**66**	**82**	**55**	**70**	**59**	**70**
	No opinion	4	4	4	4	4	5	5	6	11	5	10	5
2011/2012	**Unfavorable responses**	**33**	**36**	**35**	**33**	**24**	**49**	**60**	**41**	**56**	**48**	**58**	**36**
	Favorable responses	**67**	**64**	**65**	**67**	**63**	**50**	**39**	**57**	**41**	**48**	**39**	**60**
	No opinion	0	0	0	0	13	1	1	2	3	5	3	5

Area (method items)		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	7	9	1	3	5	6	4	3	4	4
	Strongly disagree	6	9	2	5	5	5	1	1	2	4
	Disagree	14	19	7	12	13	11	12	8	11	10
	Unfavorable responses	**28**	**38**	**10**	**20**	**23**	**22**	**17**	**12**	**17**	**18**
	Agree	48	39	41	48	46	42	27	21	37	39
	Strongly agree	13	12	29	20	18	24	8	15	23	24
	Completely agree	6	6	15	5	4	4	7	11	17	13
	Favorable responses	**67**	**57**	**85**	**73**	**68**	**70**	**42**	**48**	**78**	**77**
	No opinion	5	5	5	6	8	7	41	40	5	5
2011/2012	**Unfavorable responses**	**37**	**49**	**20**	**38**	**25**	**38**	**41**	**23**	**15**	**17**
	Favorable responses	**61**	**49**	**80**	**60**	**73**	**60**	**25**	**45**	**85**	**83**
	No opinion	2	2	0	2	3	2	34	33	0	0

Evaluation of Academic Faculty

Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	2	2	2	2	3	3	3	2
	Strongly disagree	1	1	2	2	2	3	3	3
	Disagree	6	6	10	9	8	11	9	8
	Unfavorable responses	**9**	**9**	**14**	**14**	**14**	**16**	**14**	**13**
	Agree	28	29	34	35	34	33	33	34
	Strongly agree	28	23	26	26	26	25	27	27
	Completely agree	29	34	20	19	21	19	19	19
	Favorable responses	**85**	**86**	**80**	**79**	**80**	**77**	**80**	**81**
	No opinion	6	6	6	7	6	6	6	6
2011/2012	**Unfavorable responses**	**7**	**8**	**13**	**15**	**13**	**15**	**13**	**11**
	Favorable responses	**64**	**63**	**60**	**59**	**59**	**58**	**59**	**60**
	No opinion	29	29	27	27	28	27	28	29

Curricular Unit: **Introduction to Clinical Medicine**

Overall Evaluation

		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	1	0	1	4	0	1	0	0	0	1	0
	Strongly disagree	0	2	0	2	6	1	1	1	1	1	1	1
	Disagree	6	13	2	13	17	13	9	7	9	7	4	2
	Unfavorable responses	**6**	**16**	**2**	**17**	**26**	**14**	**11**	**8**	**9**	**8**	**6**	**4**
	Agree	33	37	21	26	29	37	36	31	36	35	31	20
	Strongly agree	49	36	36	38	32	32	37	43	34	39	44	35
	Completely agree	12	9	40	18	10	16	14	17	18	15	16	40
	Favorable responses	**93**	**83**	**96**	**82**	**71**	**85**	**88**	**90**	**88**	**89**	**91**	**95**
	No opinion	1	1	1	1	3	1	1	1	2	3	4	1
2011/2012	**Unfavorable responses**	**5**	**22**	**1**	**13**	**32**	**12**	**8**	**4**	**4**	**5**	**7**	**1**
	Favorable responses	**94**	**76**	**97**	**84**	**61**	**84**	**88**	**93**	**93**	**91**	**91**	**98**
	No opinion	2	2	1	2	7	4	4	3	3	4	2	2

Evaluation of Clinical Tutors/Services

		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	1	0	0	0	0	0	0	0	0	0
	Strongly disagree	1	0	0	0	1	1	0	1	1	0
	Disagree	7	6	4	4	5	10	1	9	3	0
	Unfavorable responses	**8**	**6**	**4**	**4**	**6**	**10**	**1**	**10**	**4**	**0**
	Agree	22	16	15	12	14	13	10	17	17	11
	Strongly agree	31	35	25	30	24	26	21	23	24	27
	Completely agree	38	42	56	54	56	49	68	48	54	61
	Favorable responses	**90**	**93**	**96**	**96**	**93**	**88**	**99**	**88**	**95**	**99**
	No opinion	1	1	1	1	1	1	1	1	1	1
2011/2012	**Unfavorable responses**	**6**	**3**	**6**	**2**	**8**	**11**	**1**	**11**	**6**	**2**
	Favorable responses	**94**	**97**	**94**	**98**	**92**	**89**	**99**	**89**	**93**	**98**
	No opinion	1	0	0	0	0	0	0	0	1	0

Curricular Unit: **Family, Society and Health II**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	1	1	0	0	3	1	1	0	3	2	2	1
	Strongly disagree	2	2	7	3	4	2	4	3	3	3	3	3
	Disagree	9	10	10	7	16	12	15	5	7	11	17	10
	Unfavorable responses	**12**	**13**	**16**	**10**	**24**	**15**	**21**	**9**	**13**	**16**	**23**	**14**
	Agree	40	36	40	39	40	39	45	49	45	41	41	42
	Strongly agree	30	35	27	32	26	33	26	29	26	29	24	28
	Completely agree	15	11	14	17	5	10	7	11	11	8	7	12
	Favorable responses	**86**	**82**	**82**	**88**	**72**	**82**	**77**	**89**	**82**	**78**	**72**	**83**
	No opinion	2	5	2	2	4	3	2	2	5	5	5	3
2011/2012	**Unfavorable responses**	**13**	**12**	**14**	**13**	**18**	**16**	**23**	**13**	**12**	**10**	**18**	**11**
	Favorable responses	**85**	**86**	**84**	**85**	**76**	**82**	**75**	**85**	**85**	**88**	**80**	**87**
	No opinion	2	2	2	2	7	2	2	2	3	2	2	2

Curricular Unit: **Vertical Domains III**

Overall Evaluation

		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	1	1	2	2	1	1	1	0	1	0	1
	Strongly disagree	2	1	2	0	2	1	2	2	2	2	2	1
	Disagree	6	3	5	4	3	5	3	4	4	4	6	3
	Unfavorable responses	**8**	**5**	**8**	**6**	**7**	**7**	**5**	**7**	**6**	**7**	**8**	**5**
	Agree	41	44	47	43	43	41	38	40	41	39	41	44
	Strongly agree	28	35	24	28	32	34	31	28	28	33	28	35
	Completely agree	21	15	18	20	15	15	23	22	22	17	21	15
	Favorable responses	**91**	**93**	**90**	**91**	**91**	**91**	**92**	**89**	**91**	**89**	**91**	**93**
	No opinion	2	2	3	3	3	3	3	4	3	4	2	2
2011/2012	**Unfavorable responses**	**6**	**6**	**8**	**4**	**7**	**2**	**2**	**5**	**5**	**6**	**6**	**6**
	Favorable responses	**88**	**91**	**87**	**93**	**80**	**95**	**95**	**88**	**93**	**91**	**88**	**91**
	No opinion	5	4	5	4	13	3	4	7	3	3	5	4

Curricular Unit: **Foundations of Medicine**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	0	0	5	0	0	0	0	0	0	0	0
	Strongly disagree	5	0	0	9	0	0	0	0	0	0	0	5
	Disagree	5	18	0	41	27	0	14	5	32	5	9	0
	Unfavorable responses	**9**	**18**	**0**	**55**	**27**	**0**	**14**	**5**	**32**	**5**	**9**	**5**
	Agree	27	36	14	27	45	14	32	18	23	32	23	9
	Strongly agree	41	36	18	14	23	32	36	41	27	18	45	32
	Completely agree	18	5	64	0	0	50	14	32	9	41	18	50
	Favorable responses	**86**	**77**	**95**	**41**	**68**	**95**	**82**	**91**	**59**	**91**	**86**	**91**
	No opinion	5	5	5	5	5	5	5	5	9	5	5	5
2011/2012	**Unfavorable responses**	**23**	**23**	**8**	**62**	**23**	**0**	**38**	**15**	**23**	**15**	**23**	**8**
	Favorable responses	**77**	**69**	**92**	**38**	**69**	**92**	**62**	**85**	**69**	**85**	**77**	**92**
	No opinion	0	8	0	0	8	8	0	0	8	0	0	0

Evaluation of Academic Faculty

Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	0	0	1	1	0	1	1	0
	Strongly disagree	0	0	0	0	0	0	1	0
	Disagree	1	0	3	3	3	3	3	4
	Unfavorable responses	**1**	**1**	**4**	**4**	**4**	**5**	**4**	**4**
	Agree	4	9	14	17	9	14	14	13
	Strongly agree	21	24	29	27	29	25	27	30
	Completely agree	68	59	46	45	51	50	48	47
	Favorable responses	**92**	**93**	**89**	**89**	**89**	**89**	**89**	**89**
	No opinion	6	6	6	6	7	7	6	7
2011/2012	**Unfavorable responses**	**2**	**7**	**7**	**6**	**5**	**6**	**8**	**7**
	Favorable responses	**96**	**90**	**90**	**90**	**89**	**89**	**87**	**85**
	No opinion	2	3	3	4	6	5	5	8

Curricular Unit: **Community Health, Human and Social Sciences**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	0	0	0	0	30	40	0	10	10	20	0
	Strongly disagree	0	10	0	0	0	10	30	0	0	30	20	20
	Disagree	10	10	0	20	30	10	30	20	20	30	20	30
	Unfavorable responses	**10**	**20**	**0**	**20**	**30**	**50**	**100**	**20**	**30**	**70**	**60**	**50**
	Agree	30	40	60	10	30	40	0	30	10	20	30	10
	Strongly agree	40	20	10	40	20	10	0	40	50	0	0	30
	Completely agree	20	10	30	20	10	0	0	0	10	10	10	10
	Favorable responses	**90**	**70**	**100**	**70**	**60**	**50**	**0**	**70**	**70**	**30**	**40**	**50**
	No opinion	0	10	0	10	10	0	0	10	0	0	0	0
2011/2012	**Unfavorable responses**	**0**	**8**	**0**	**25**	**33**	**17**	**50**	**17**	**17**	**8**	**17**	**0**
	Favorable responses	**100**	**92**	**100**	**75**	**67**	**83**	**50**	**83**	**67**	**92**	**83**	**92**
	No opinion	0	0	0	0	0	0	0	0	17	0	0	8

Evaluation of Academic Faculty

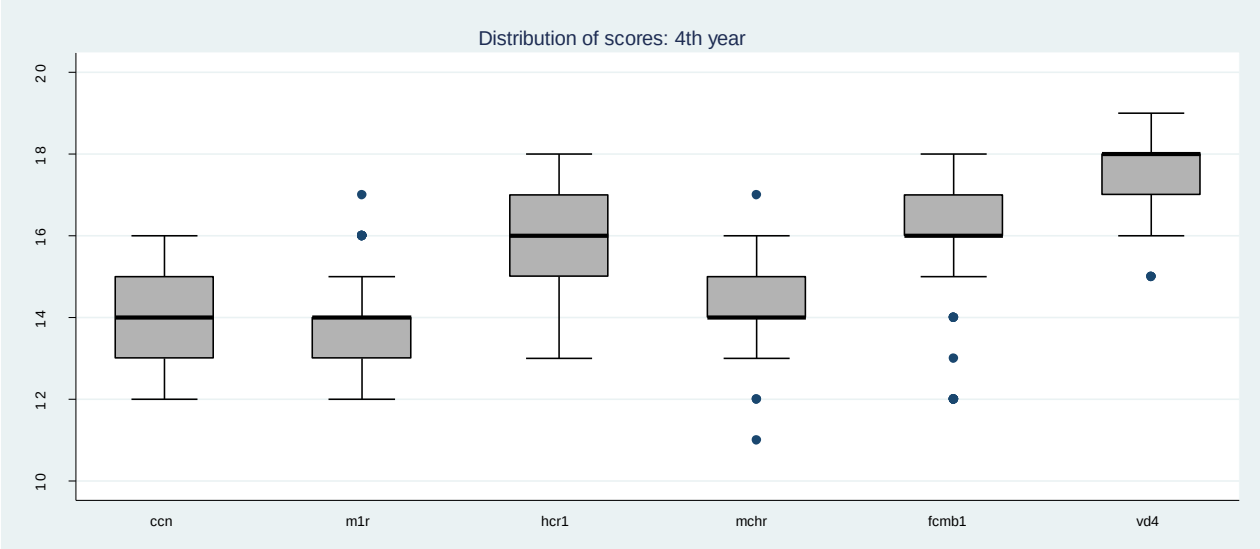
Faculty		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	0	2	4	8	4	6	0	0
	Strongly disagree	6	10	10	6	8	6	10	10
	Disagree	2	12	2	2	2	4	8	6
	Unfavorable responses	**8**	**24**	**16**	**16**	**14**	**16**	**18**	**16**
	Agree	2	8	10	6	12	10	6	12
	Strongly agree	25	16	35	29	25	24	27	31
	Completely agree	55	47	33	41	41	43	41	33
	Favorable responses	**82**	**71**	**78**	**76**	**78**	**76**	**75**	**76**
	No opinion	10	6	6	8	8	8	8	8
2011/2012	**Unfavorable responses**	**0**	**4**	**2**	**0**	**2**	**2**	**2**	**2**
	Favorable responses	**98**	**94**	**96**	**96**	**94**	**93**	**94**	**89**
	No opinion	2	2	2	4	4	6	4	9

4TH YEAR

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS	AVAILALBLE
4th year	SC-CSH	Health Centre Residency I	8	✓
	C	Medicine I Residency	17	✓
	C	Maternal and Child Health Residency	17	✓
	C	Clinical Neurosciences	10	✓
	C / P / CBB	From the Clinic to Molecular Biology I	3	✓
	CBB / SC-CSH / P / C	Option Projects III	4	✓
	SC-CSH	Vertical Domains IV	1	✓
		TOTAL	60	

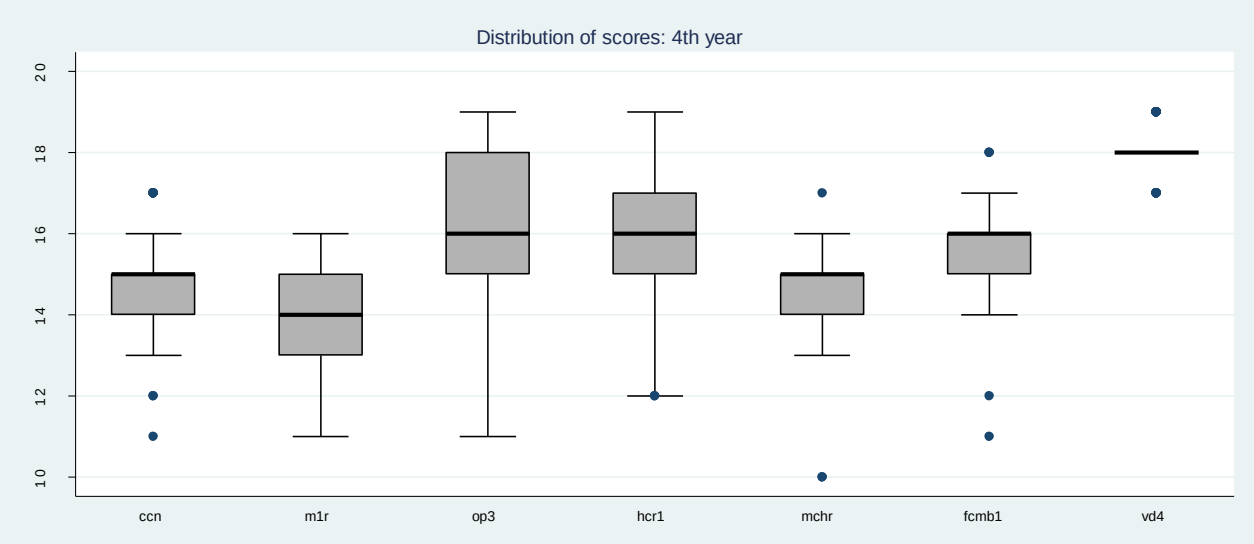
Distribution of Student Scores (*)

2012-2013*



Failure	19 (14%)	18 (13%)	2(2%)	10 (7%)	7 (5%)	7 (5%)

2011-2012



Failure	4 (4%)	2 (2%)	23 (20%)	1 (1%)	7 (6%)	1 (1%)	3 (3%)

* Option project III scores not available at the date of this report.

Legend
CCN – Clinical Neurosciences
M1R – Medicine I Residency
OP3 – Option Project III
HCR1 – Health Centers Residency I
MCHR – Maternal and Child Health Residency
FCMB1 – From Clinical to Molecular Biology I
VD4 – Vertical Domains IV

(*) Output provided by the database of ECS-UM Longitudinal Study

Curricular Unit: **Medicine I Residency**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	1	0	4	4	1	3	0	0	0	0	0
	Strongly disagree	0	3	0	2	5	3	5	1	2	1	1	0
	Disagree	1	21	3	25	31	11	28	7	1	8	19	0
	Unfavorable responses	**1**	**25**	**3**	**31**	**41**	**16**	**36**	**8**	**3**	**9**	**20**	**0**
	Agree	46	42	24	40	39	49	44	54	45	46	33	32
	Strongly agree	41	26	44	22	14	28	15	25	36	39	41	44
	Completely agree	11	6	28	6	3	6	4	10	15	4	5	21
	Favorable responses	**98**	**74**	**96**	**68**	**55**	**83**	**63**	**90**	**96**	**89**	**79**	**97**
	No opinion	1	1	1	1	4	1	1	2	1	2	1	3
2011/2012	**Unfavorable responses**	**2**	**9**	**2**	**32**	**8**	**10**	**20**	**10**	**2**	**7**	**10**	**2**
	Favorable responses	**98**	**91**	**98**	**68**	**69**	**88**	**78**	**90**	**97**	**92**	**89**	**98**
	No opinion	0	0	0	0	24	2	1	0	1	1	1	0

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	1	1	2	1	2	3	0	2	1	0
	Strongly disagree	1	2	2	1	1	3	0	3	2	2
	Disagree	8	5	4	4	7	9	3	8	7	3
	Unfavorable responses	**9**	**8**	**8**	**7**	**10**	**16**	**3**	**13**	**10**	**5**
	Agree	16	20	14	17	20	22	10	18	16	21
	Strongly agree	26	29	24	23	24	22	25	21	22	25
	Completely agree	45	40	49	48	40	31	56	43	44	45
	Favorable responses	**88**	**89**	**87**	**88**	**84**	**75**	**90**	**81**	**82**	**92**
	No opinion	3	3	5	6	6	9	6	6	8	3
2011/2012	**Unfavorable responses**	**15**	**7**	**8**	**7**	**12**	**19**	**3**	**14**	**11**	**6**
	Favorable responses	**83**	**91**	**89**	**89**	**83**	**72**	**92**	**83**	**83**	**94**
	No opinion	2	2	3	4	5	10	6	3	6	1

Curricular Unit: **Clinical Neurosciences**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	0	0	3	4	0	3	2	1	1	1	0
	Strongly disagree	1	3	0	3	5	2	4	3	1	0	1	0
	Disagree	3	5	1	5	13	7	8	4	6	8	3	2
	Unfavorable responses	**4**	**8**	**1**	**11**	**21**	**9**	**15**	**8**	**8**	**9**	**5**	**2**
	Agree	20	27	21	25	29	28	26	31	40	25	27	18
	Strongly agree	47	36	41	35	29	42	39	36	35	34	45	41
	Completely agree	26	25	35	26	16	18	17	21	14	29	21	35
	Favorable responses	**94**	**89**	**96**	**86**	**75**	**88**	**83**	**88**	**88**	**88**	**93**	**94**
	No opinion	3	3	3	3	5	3	3	4	4	3	3	5
2011/2012	**Unfavorable responses**	**3**	**9**	**3**	**12**	**13**	**7**	**11**	**10**	**15**	**7**	**8**	**4**
	Favorable responses	**96**	**88**	**95**	**87**	**81**	**91**	**87**	**88**	**82**	**89**	**90**	**93**
	No opinion	1	3	2	2	6	2	3	3	3	4	2	3

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	2	2	2	2	4	4	1	3	3	2
	Strongly disagree	5	3	3	3	5	6	1	4	2	1
	Disagree	13	8	4	4	7	10	3	8	6	6
	Unfavorable responses	**20**	**12**	**8**	**8**	**15**	**19**	**4**	**15**	**11**	**9**
	Agree	21	17	16	16	17	18	8	17	18	17
	Strongly agree	23	21	15	16	18	22	21	19	20	21
	Completely agree	36	50	61	60	49	33	66	48	51	53
	Favorable responses	**80**	**88**	**92**	**92**	**85**	**73**	**95**	**85**	**89**	**91**
	No opinion	0	0	0	0	0	7	1	0	1	0
2011/2012	**Unfavorable responses**	**13**	**11**	**4**	**4**	**15**	**15**	**2**	**17**	**12**	**5**
	Favorable responses	**87**	**88**	**94**	**94**	**84**	**77**	**96**	**82**	**85**	**95**
	No opinion	0	1	2	2	1	8	2	1	3	0

Curricular Unit: **Health Centers Residency I**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	2	4	3	6	7	7	8	7	4	3	7	5
	Strongly disagree	5	5	3	5	7	7	16	6	2	5	8	4
	Disagree	6	20	11	6	16	14	23	18	15	18	23	11
	Unfavorable responses	**14**	**29**	**17**	**18**	**31**	**28**	**47**	**32**	**21**	**26**	**39**	**20**
	Agree	45	38	43	34	26	39	32	37	38	38	37	45
	Strongly agree	26	18	28	28	22	19	11	18	23	21	15	20
	Completely agree	13	13	9	17	12	7	7	9	11	8	7	11
	Favorable responses	**84**	**68**	**81**	**79**	**60**	**65**	**49**	**64**	**72**	**67**	**59**	**76**
	No opinion	2	2	2	3	9	6	3	4	7	6	2	4
2011/2012	**Unfavorable responses**	**17**	**19**	**22**	**10**	**19**	**13**	**38**	**22**	**19**	**26**	**42**	**24**
	Favorable responses	**83**	**79**	**76**	**89**	**56**	**86**	**63**	**75**	**69**	**69**	**57**	**72**
	No opinion	0	1	1	1	25	1	0	3	11	4	1	4

Evaluation of Clinical Tutors/Services

not available

Curricular Unit: **Maternal and Child Health Residency**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	3	5	1	5	31	3	4	2	1	3	3	1
	Strongly disagree	1	2	2	9	14	2	5	1	3	2	5	2
	Disagree	3	13	0	15	23	15	18	5	5	11	8	3
	Unfavorable responses	**8**	**20**	**3**	**29**	**68**	**20**	**28**	**9**	**10**	**16**	**16**	**6**
	Agree	23	32	14	29	19	31	28	43	33	38	42	24
	Strongly agree	41	31	37	32	10	35	33	35	38	34	26	37
	Completely agree	28	14	45	9	1	11	9	11	16	10	15	32
	Favorable responses	**91**	**77**	**96**	**70**	**30**	**77**	**70**	**89**	**87**	**82**	**83**	**92**
	No opinion	1	2	1	1	2	2	2	2	3	2	1	1
2011/2012	**Unfavorable responses**	**6**	**11**	**8**	**22**	**17**	**8**	**16**	**11**	**24**	**13**	**17**	**11**
	Favorable responses	**93**	**88**	**91**	**76**	**76**	**90**	**82**	**87**	**72**	**84**	**81**	**85**
	No opinion	1	1	1	1	7	2	2	2	4	3	3	4

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	2	2	3	2	2	2	1	3	2	1
	Strongly disagree	3	1	1	1	2	1	0	2	1	1
	Disagree	9	5	2	4	8	5	1	5	3	3
	Unfavorable responses	**14**	**8**	**5**	**7**	**12**	**7**	**2**	**9**	**6**	**5**
	Agree	19	15	14	14	15	19	11	18	17	12
	Strongly agree	25	31	25	22	25	23	22	25	25	28
	Completely agree	40	44	53	54	44	46	60	46	47	52
	Favorable responses	**84**	**90**	**92**	**91**	**84**	**88**	**93**	**89**	**90**	**93**
	No opinion	2	2	3	3	4	5	4	2	4	2
2011/2012	**Unfavorable responses**	**16**	**10**	**10**	**8**	**16**	**17**	**4**	**15**	**11**	**6**
	Favorable responses	**81**	**86**	**86**	**87**	**78**	**76**	**90**	**82**	**82**	**91**
	No opinion	3	4	4	4	6	7	6	3	6	3

Curricular Unit: **From Clinical to Molecular Biology I**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	6	6	10	3	6	5	5	4	5	4	13	13
	Strongly disagree	1	0	3	3	4	1	4	3	3	1	5	4
	Disagree	9	13	14	12	12	17	10	8	12	6	16	13
	Unfavorable responses	**17**	**19**	**27**	**17**	**22**	**23**	**19**	**14**	**19**	**12**	**34**	**30**
	Agree	31	31	36	32	25	25	29	35	42	31	39	38
	Strongly agree	25	26	21	27	26	25	32	26	16	29	16	21
	Completely agree	25	16	13	17	16	17	16	18	17	21	9	9
	Favorable responses	**81**	**73**	**70**	**77**	**66**	**66**	**77**	**79**	**74**	**81**	**64**	**68**
	No opinion	3	8	3	6	12	10	4	6	6	8	3	3
2011/2012	**Unfavorable responses**	**38**	**32**	**40**	**20**	**43**	**20**	**28**	**22**	**37**	**22**	**58**	**53**
	Favorable responses	**55**	**60**	**55**	**75**	**38**	**60**	**68**	**70**	**45**	**65**	**33**	**33**
	No opinion	7	8	5	5	18	20	3	8	18	13	8	13

Curricular Unit: **Option Projects III**

Overall Evaluation

		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	0	0	1	0	2	2	0	0
	Strongly disagree	0	0	0	3	7	0	0	1
	Disagree	0	3	3	8	11	4	0	3
	Unfavorable responses	**0**	**3**	**4**	**11**	**20**	**7**	**0**	**4**
	Agree	16	17	20	22	32	21	12	16
	Strongly agree	38	43	45	33	30	23	36	36
	Completely agree	44	26	22	30	18	47	52	43
	Favorable responses	**99**	**86**	**88**	**85**	**79**	**91**	**100**	**96**
	No opinion	1	11	8	4	1	2	0	0
2011/2012	**Unfavorable responses**	**5**	**6**	**6**	**3**	**30**	**0**	**0**	**2**
	Favorable responses	**87**	**71**	**71**	**85**	**60**	**92**	**92**	**88**
	No opinion	8	23	23	11	10	8	8	10

Curricular Unit: **Vertical Domains IV**

Overall Evaluation

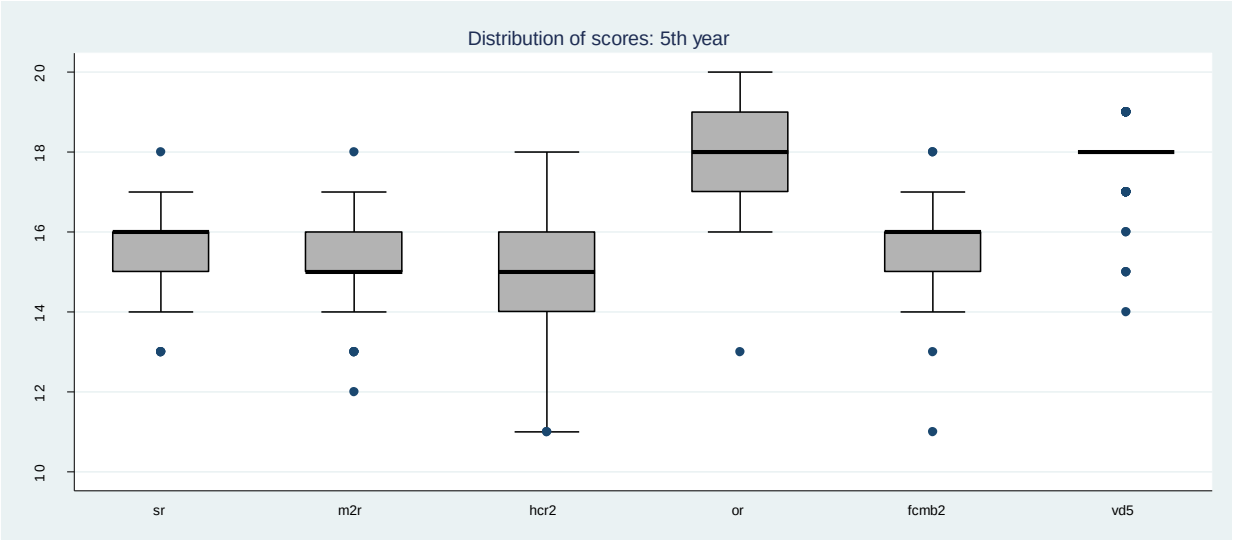
		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	1	2	1	2	5	1	1	1	1	2	1	2
	Strongly disagree	1	1	0	1	1	0	0	0	0	3	1	1
	Disagree	3	4	15	6	7	3	5	6	6	10	3	4
	Unfavorable responses	**6**	**8**	**16**	**9**	**13**	**5**	**6**	**7**	**7**	**16**	**6**	**8**
	Agree	31	29	30	29	24	33	31	30	33	27	31	29
	Strongly agree	33	35	29	29	36	40	36	33	34	38	33	35
	Completely agree	29	27	25	33	24	22	26	24	26	19	29	27
	Favorable responses	**93**	**91**	**84**	**91**	**84**	**94**	**93**	**86**	**93**	**84**	**93**	**91**
	No opinion	1	1	0	0	3	1	1	7	0	0	1	1
2011/2012	**Unfavorable responses**	**15**	**15**	**21**	**4**	**11**	**4**	**2**	**15**	**11**	**28**	**15**	**15**
	Favorable responses	**72**	**64**	**64**	**85**	**68**	**83**	**85**	**64**	**75**	**58**	**72**	**64**
	No opinion	13	21	15	11	21	13	13	21	13	13	13	21

5TH YEAR

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS	AVAILALBLE
5th year	SC-CSH	Health Centre Residency II	13	✓
	C	Surgery Residency	18,5	✓
	C	Medicine II Residency	16	✓
	C	Optional Residencies	8,5	✓
	C / P / CBB	From the Clinic to Molecular Biology II	3	✓
	SC-CSH	Vertical Domains V	1	
		TOTAL	60	

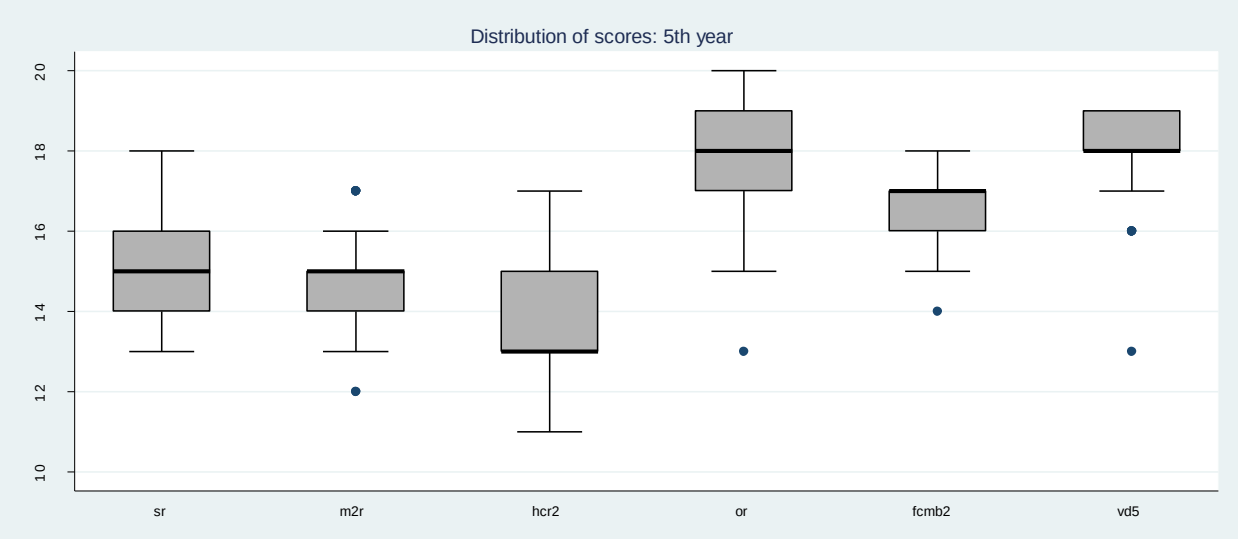
Distribution of Student Scores(*)

2012-2013



Failure	4 (4%)	5 (5%)	7 (6%)	5(4%)	4 (3%)	5 (4%)

2011-2012



Failure	1 (1%)	2 (2%)	3 (4%)	4 (5%)	3 (4%)	6 (7%)

Legend
SR – Surgery Residency
M2R – Medicine II Residency
HCR2 – Health Centers Residency II
OR – Optional Residencies
FCMB2 – From Clinical to Molecular Biology II
VD5 – Vertical Domains V

(*) Output provided by the database of ECS-UM Longitudinal Study

Curricular Unit: **Surgery Residency**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	1	0	1	8	6	0	10	0	1	1	4	0
	Strongly disagree	0	3	3	16	4	6	14	5	1	5	4	1
	Disagree	3	14	3	16	13	13	13	16	6	17	16	5
	Unfavorable responses	**4**	**17**	**6**	**39**	**23**	**19**	**38**	**21**	**9**	**23**	**23**	**6**
	Agree	21	35	25	34	35	47	30	36	42	38	30	36
	Strongly agree	47	30	36	17	23	17	23	27	31	22	25	22
	Completely agree	26	16	30	8	5	12	5	12	14	10	16	30
	Favorable responses	**94**	**81**	**91**	**58**	**64**	**75**	**58**	**75**	**87**	**70**	**70**	**88**
	No opinion	3	3	3	3	13	5	4	4	4	6	6	5
2011/2012	**Unfavorable responses**	**0**	**5**	**3**	**19**	**14**	**11**	**16**	**9**	**13**	**17**	**9**	**2**
	Favorable responses	**97**	**91**	**94**	**78**	**78**	**85**	**81**	**88**	**84**	**75**	**83**	**94**
	No opinion	3	5	3	3	8	5	3	3	3	8	8	5

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	2	3	2	2	3	4	1	4	3	3
	Strongly disagree	2	2	2	1	3	3	0	4	2	2
	Disagree	6	5	3	4	7	9	1	5	4	3
	Unfavorable responses	**10**	**9**	**7**	**8**	**12**	**15**	**3**	**13**	**9**	**7**
	Agree	20	16	14	14	18	19	13	17	14	17
	Strongly agree	29	29	25	29	24	23	29	26	27	32
	Completely agree	40	43	49	45	41	37	50	41	42	42
	Favorable responses	**88**	**89**	**88**	**88**	**83**	**79**	**91**	**84**	**83**	**91**
	No opinion	2	2	5	5	5	6	6	3	8	2
2011/2012	**Unfavorable responses**	**9**	**6**	**6**	**5**	**7**	**8**	**6**	**9**	**8**	**7**
	Favorable responses	**89**	**92**	**91**	**91**	**89**	**88**	**91**	**87**	**85**	**90**
	No opinion	2	2	4	3	3	3	3	3	6	4

Curricular Unit: **Medicine II Residency**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	0	0	8	0	0	3	1	1	0	1	1
	Strongly disagree	0	1	3	18	3	4	5	4	0	3	4	1
	Disagree	1	7	1	19	12	8	14	5	4	16	12	0
	Unfavorable responses	**1**	**8**	**4**	**45**	**15**	**12**	**22**	**11**	**5**	**19**	**18**	**3**
	Agree	36	41	25	25	37	40	40	40	42	33	37	44
	Strongly agree	40	34	38	18	27	30	23	32	27	32	29	25
	Completely agree	21	14	30	8	11	11	11	12	19	11	11	22
	Favorable responses	**96**	**89**	**93**	**51**	**75**	**81**	**74**	**84**	**89**	**75**	**77**	**90**
	No opinion	3	3	3	4	10	7	4	5	5	5	5	7
2011/2012	**Unfavorable responses**	**3**	**10**	**3**	**28**	**19**	**19**	**25**	**12**	**12**	**19**	**18**	**4**
	Favorable responses	**96**	**88**	**96**	**71**	**74**	**76**	**74**	**85**	**87**	**71**	**75**	**91**
	No opinion	1	1	1	1	7	4	1	3	1	10	7	4

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	2	1	2	1	1	3	1	2	2	2
	Strongly disagree	2	1	1	1	2	2	0	2	2	1
	Disagree	14	5	4	3	8	12	2	5	4	6
	Unfavorable responses	**18**	**7**	**6**	**5**	**10**	**17**	**3**	**9**	**8**	**9**
	Agree	21	21	18	19	23	24	16	20	21	23
	Strongly agree	23	29	29	29	24	20	29	27	24	24
	Completely agree	34	39	43	42	37	33	47	39	41	40
	Favorable responses	**78**	**89**	**90**	**90**	**85**	**77**	**92**	**86**	**86**	**87**
	No opinion	4	4	4	4	5	7	5	5	6	4
2011/2012	**Unfavorable responses**	**10**	**7**	**5**	**6**	**8**	**12**	**4**	**11**	**8**	**10**
	Favorable responses	**89**	**92**	**94**	**93**	**91**	**85**	**94**	**87**	**86**	**88**
	No opinion	2	1	1	1	1	3	2	2	6	2

Curricular Unit: **Health Centers Residency II**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	3	4	1	5	9	6	9	8	4	8	5	3
	Strongly disagree	0	5	1	5	9	4	8	6	1	4	3	0
	Disagree	10	17	0	10	12	9	17	5	5	23	23	5
	Unfavorable responses	**13**	**26**	**3**	**21**	**29**	**19**	**33**	**19**	**10**	**35**	**31**	**8**
	Agree	38	41	41	40	46	46	45	46	51	51	46	50
	Strongly agree	32	24	35	19	15	26	17	24	28	12	15	23
	Completely agree	17	6	22	19	4	9	5	9	8	3	5	18
	Favorable responses	**87**	**72**	**97**	**78**	**65**	**81**	**67**	**79**	**87**	**65**	**67**	**91**
	No opinion	0	3	0	1	5	0	0	1	3	0	3	1
2011/2012	**Unfavorable responses**	**29**	**63**	**21**	**24**	**81**	**43**	**60**	**48**	**25**	**48**	**54**	**30**
	Favorable responses	**71**	**37**	**78**	**76**	**17**	**57**	**40**	**49**	**71**	**48**	**41**	**67**
	No opinion	0	0	2	0	2	0	0	3	3	5	5	3

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	0	0	0	0	1	1	0	0	0	0
	Strongly disagree	1	1	1	1	0	0	1	1	1	1
	Disagree	1	0	0	1	0	3	0	0	0	0
	Unfavorable responses	**3**	**1**	**1**	**3**	**1**	**4**	**1**	**1**	**1**	**1**
	Agree	5	9	6	14	13	9	9	3	8	8
	Strongly agree	30	14	23	22	18	17	25	24	19	19
	Completely agree	62	75	69	61	68	70	64	72	71	72
	Favorable responses	**97**	**99**	**99**	**97**	**99**	**96**	**99**	**99**	**99**	**99**
	No opinion	0	0	0	0	0	0	0	0	0	0
2011/2012	**Unfavorable responses**	**4**	**6**	**2**	**2**	**6**	**6**	**0**	**2**	**4**	**6**
	Favorable responses	**94**	**92**	**96**	**96**	**92**	**92**	**98**	**96**	**90**	**90**
	No opinion	2	2	2	2	2	2	2	2	6	4

Curricular Unit: **Optional Residencies**

Overall Evaluation

not available

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6
2012/2013	Completely disagree	5	3	1	7	5	2
	Strongly disagree	1	5	1	3	5	5
	Disagree	2	5	1	6	5	3
	Unfavorable responses	**8**	**13**	**3**	**16**	**14**	**10**
	Agree	23	23	23	23	22	24
	Strongly agree	18	17	13	13	17	16
	Completely agree	48	45	56	48	44	49
	Favorable responses	**90**	**85**	**92**	**84**	**83**	**90**
	No opinion	2	2	5	0	3	0
2011/2012	**Unfavorable responses**	**6**	**5**	**4**	**6**	**6**	**3**
	Favorable responses	**91**	**92**	**94**	**91**	**89**	**95**
	No opinion	2	3	2	2	5	2

Curricular Unit: **From Clinical to Molecular Biology II**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	9	9	13	9	13	9	8	8	14	8	24	19
	Strongly disagree	8	10	9	3	16	8	5	3	3	4	14	10
	Disagree	21	23	23	10	20	10	11	13	23	14	25	24
	Unfavorable responses	**38**	**41**	**44**	**21**	**49**	**26**	**24**	**23**	**39**	**25**	**63**	**53**
	Agree	34	31	35	39	28	39	45	39	30	41	23	30
	Strongly agree	13	13	13	19	10	18	19	20	13	13	6	6
	Completely agree	11	6	5	15	5	6	9	9	8	9	3	5
	Favorable responses	**58**	**50**	**53**	**73**	**43**	**63**	**73**	**68**	**50**	**63**	**31**	**41**
	No opinion	5	9	4	6	9	11	4	10	11	13	6	6
2011/2012	**Unfavorable responses**	**24**	**31**	**34**	**23**	**34**	**29**	**26**	**24**	**27**	**31**	**50**	**39**
	Favorable responses	**76**	**69**	**66**	**77**	**60**	**69**	**74**	**73**	**69**	**61**	**45**	**55**
	No opinion	0	0	0	0	6	2	0	3	3	8	5	6

Vertical Domains V

Overall Evaluation

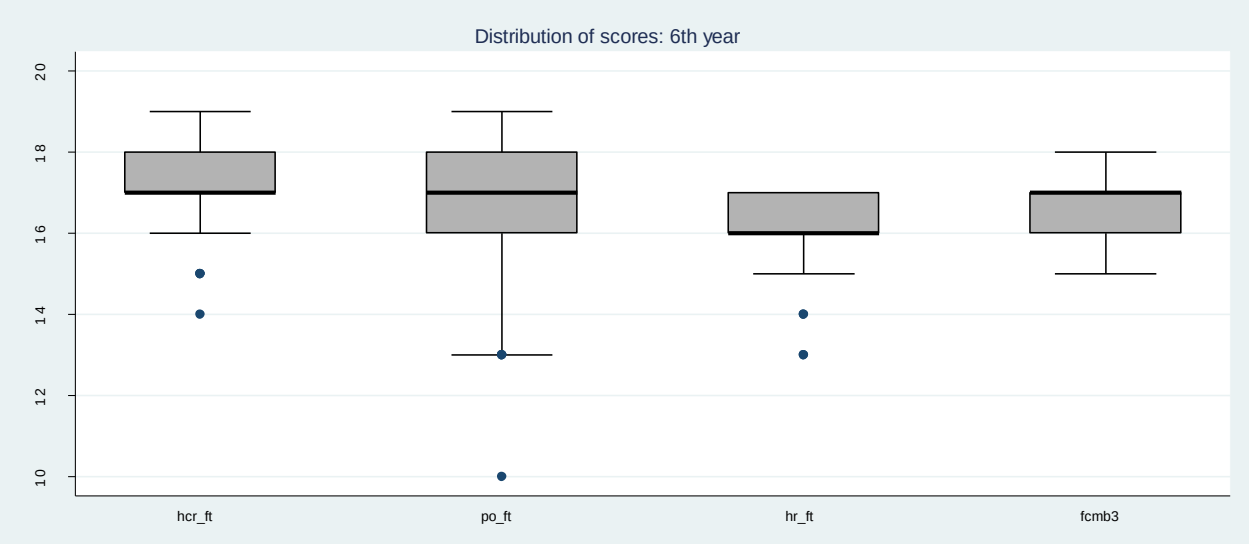
Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree Strongly disagree Disagree **Unfavorable responses** Agree Strongly agree Completely agree **Favorable responses** No opinion	In process											
2011/2012	**Unfavorable responses**	**5**	**14**	**9**	**10**	**12**	**-**	**14**	**12**	**7**	**-**	**7**	**19**
	Favorable responses	**93**	**83**	**88**	**88**	**81**	**-**	**84**	**83**	**85**	**-**	**91**	**77**
	No opinion	2	2	2	2	7	-	2	5	7	-	2	5

6TH YEAR

	SCIENTIFIC AREA	CURRICULAR UNITS	ECTS	AVAILALBLE
5th year	SC-CSH	Health Centre Residency - Final Training	10,5	✓
	C	Hospital Residencies - Final Training	39,5	
	C / P / CBB	From the Clinic to Molecular Biology III	3	✓
	CBB / SC-CSH / P / C	Option Projects - Final Training	7	✓
		TOTAL	60	

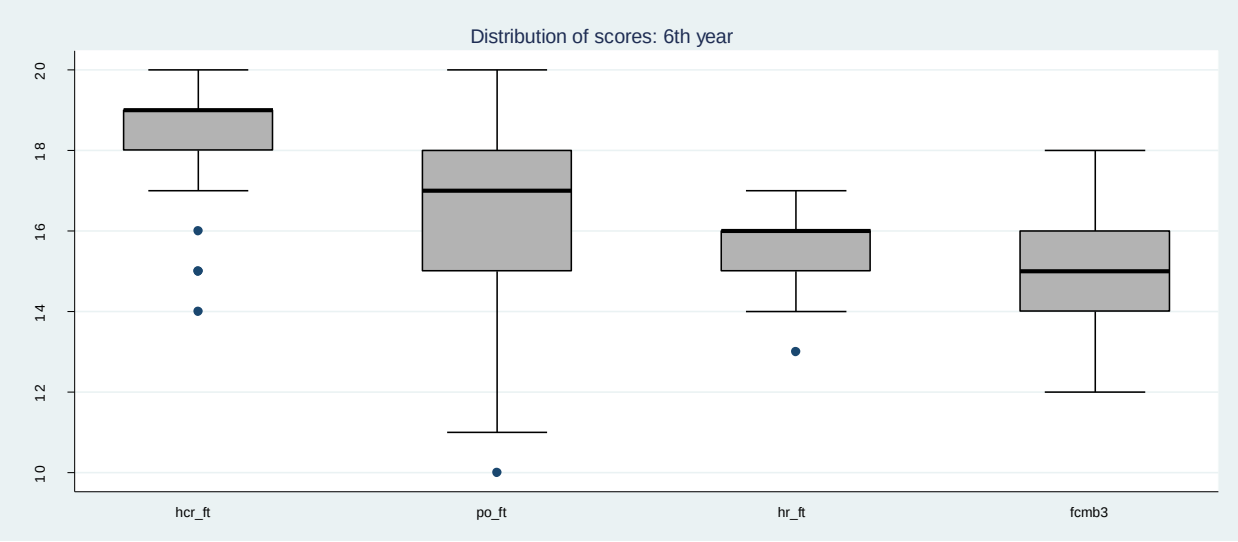
Distribution of Student Scores(*)

2012-2013



Failure	1(1%)	4(5%)	0(0%)	1 (1%)

2011-2012



Failure	0	0	2 (3%)	0

Legend
HCR_FT – Health Centers Residency - Final Training
PO_FT – Option Projects - Final Training
HR_FT – Hospital Residencies - Final Training
FCMB3 – From Clinical to Molecular Biology III

(*) Output provided by the database of ECS-UM Longitudinal Study.

Curricular Unit: **Health Centers Residency – Final Training**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	0	1	1	0	3	3	1	1	0	6	3	3
	Strongly disagree	1	1	1	1	0	3	6	1	0	6	3	1
	Disagree	6	18	7	7	12	18	16	12	7	19	16	7
	Unfavorable responses	**7**	**21**	**10**	**9**	**15**	**24**	**24**	**15**	**7**	**31**	**22**	**12**
	Agree	25	28	22	27	33	27	30	30	30	28	28	25
	Strongly agree	42	33	28	33	33	25	27	31	31	22	28	36
	Completely agree	22	15	36	28	15	15	15	18	25	13	16	24
	Favorable responses	**90**	**76**	**87**	**88**	**81**	**67**	**72**	**79**	**87**	**64**	**73**	**85**
	No opinion	3	3	3	3	4	9	4	6	6	4	4	3
2011/2012	**Unfavorable responses**	**2**	**7**	**2**	**2**	**18**	**7**	**7**	**5**	**0**	**5**	**7**	**7**
	Favorable responses	**95**	**89**	**95**	**91**	**80**	**89**	**86**	**86**	**98**	**82**	**91**	**91**
	No opinion	2	5	2	7	2	5	7	9	2	14	2	2

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	2	2	2	2	0	2	0	2	2	2
	Strongly disagree	0	2	0	0	2	2	0	0	0	2
	Disagree	5	2	0	2	2	5	3	2	2	0
	Unfavorable responses	**6**	**5**	**2**	**3**	**3**	**8**	**3**	**3**	**3**	**3**
	Agree	11	13	9	13	8	9	14	11	13	10
	Strongly agree	19	19	23	23	20	23	19	20	14	20
	Completely agree	64	63	66	61	69	59	64	66	66	67
	Favorable responses	**94**	**94**	**98**	**97**	**97**	**92**	**97**	**97**	**92**	**97**
	No opinion	0	2	0	0	0	0	0	0	5	0
2011/2012	**Unfavorable responses**	**7**	**5**	**5**	**7**	**5**	**2**	**2**	**9**	**7**	**5**
	Favorable responses	**93**	**95**	**95**	**93**	**95**	**98**	**93**	**91**	**93**	**95**
	No opinion	0	0	0	0	0	0	5	0	0	0

Curricular Unit: **Hospital Residencies - Final Training**

Overall Evaluation

Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	In process											
	Strongly disagree												
	Disagree												
	Unfavorable responses												
	Agree												
	Strongly agree												
	Completely agree												
	Favorable responses												
	No opinion												
2011/2012	**Unfavorable responses**	**3**	**13**	**0**	**3**	**16**	**9**	**22**	**6**	**0**	**0**	**6**	**0**
	Favorable responses	**97**	**88**	**100**	**97**	**78**	**88**	**75**	**88**	**100**	**75**	**88**	**97**
	No opinion	0	0	0	0	6	3	3	6	0	25	6	3

Evaluation of Clinical Tutors/Services

Tutors/Services		1	2	3	4	5	6	7	8	9	10
2012/2013	Completely disagree	In process									
	Strongly disagree										
	Disagree										
	Unfavorable responses										
	Agree										
	Strongly agree										
	Completely agree										
	Favorable responses										
	No opinion										
2011/2012	**Unfavorable responses**	**9**	**10**	**5**	**5**	**8**	**12**	**4**	**15**	**6**	**7**
	Favorable responses	**91**	**90**	**91**	**89**	**87**	**82**	**89**	**84**	**88**	**93**
	No opinion	0	0	4	5	5	6	6	1	6	0

Curricular Unit: **From Clinical to Molecular Biology III**

Overall Evaluation

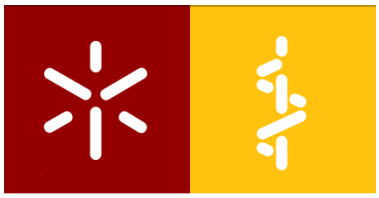
Area (nuclear items)		1	2	3	4	5	6	7	8	9	10	11	12
2012/2013	Completely disagree	12	10	14	6	14	12	10	8	10	6	22	16
	Strongly disagree	2	4	6	2	6	2	2	4	4	2	8	6
	Disagree	12	10	12	14	12	2	2	6	4	8	14	12
	Unfavorable responses	**26**	**24**	**32**	**22**	**32**	**16**	**14**	**18**	**18**	**16**	**44**	**34**
	Agree	36	40	40	42	46	44	42	44	40	48	30	40
	Strongly disagree	30	26	18	24	14	24	28	18	28	18	12	16
	Completely agree	4	4	4	8	4	8	12	16	8	6	4	6
	Favorable responses	**70**	**70**	**62**	**74**	**64**	**76**	**82**	**78**	**76**	**72**	**46**	**62**
	No opinion	4	6	6	4	4	8	4	4	6	12	10	4
2011/2012	**Unfavorable responses**	**46**	**65**	**63**	**42**	**69**	**31**	**38**	**21**	**40**	**23**	**83**	**75**
	Favorable responses	**54**	**31**	**38**	**56**	**25**	**54**	**56**	**73**	**46**	**69**	**17**	**23**
	No opinion	0	4	0	2	6	15	6	6	15	8	0	2

Curricular Unit: **Option Projects - Final Training**

Overall Evaluation

Area		1	2	3	4	5	6	7	8
2012/2013	Completely disagree	0	1	1	3	25	3	0	0
	Strongly disagree	0	0	0	0	8	1	0	0
	Disagree	0	3	1	1	12	9	0	4
	Unfavorable responses	**0**	**4**	**3**	**4**	**45**	**13**	**0**	**4**
	Agree	15	16	18	13	17	18	13	15
	Strongly agree	26	31	29	38	12	31	38	37
	Completely agree	59	44	46	43	25	36	47	42
	Favorable responses	**100**	**91**	**93**	**94**	**54**	**85**	**99**	**94**
	No opinion	0	4	4	1	2	1	1	1
2011/2012	**Unfavorable responses**	**5**	**12**	**14**	**2**	**64**	**34**	**0**	**12**
	Favorable responses	**95**	**78**	**79**	**98**	**36**	**61**	**100**	**85**
	No opinion	0	10	7	0	0	5	0	2

MASTER IN MEDICINE



University of Minho
School of Health Sciences

STUDENTS ADMITTED/REGISTERED	2013/2014

Index

PURPOSE

This document presents a socio-demographic descriptive analysis of the students registered in the Medical degree of the School of Health Sciences of University of Minho. The document compares the new class of 2012/2013 incoming students with all students from previous years, offering a perspective on the evolution of the sociodemography of Minho's students. The data were collected by Medical Education Unit at the moment of students' admission, as part of the Longitudinal Study of the School of Health Sciences.

ORGANIZATION

The document presents tables with descriptive statistics (number and percentage) for individual socio-demographic variables. The tables also present the numbers and Sample (representativeness) rates for individual classes, and for the total sample, in the columns shaded in gray (Sample (representativeness)). Rates below 100% reflect the existence of "missing values" in the longitudinal study data.

Table 1 shows the total numbers to consider (for students with valid registratuions) in the calculation of the percentage of collection of variables (excluding Table 2 and Table 3).

In order to compare students who entered medical school in the academic year 2012/2013 with all students who entered the school years earlier, and since no significant differences were found between the various classes[4], a single group was formed with students who entered medical school between the academic years 2001/2002 and 2011/2012.

This document presents descriptive statistics for the original track and the alternative track[5].

Used abbreviations:

SHS/UM – School of Health Sciences of University of Minho

NAP – National Admission Process

SAR – Special Admission Regimes

SAP – Special Admission Process

GPA – Grade Point Average

[4] Available in the document "A Snapshot, assessment of the academic year: October, 2012.

[5] Starting 2011/2012 years 1, 2 and 3 of the Medical degree of the School of Health Sciences (corresponding to the degree in Basic Sciences of the Medicine) are organized in 2 distinct Study Plans: (1) Original Track: for students who had not been admitted to the track of Medicine through the Graduate Entry Process to the track of Medicine for graduates; (2) Alternative Track: for the students who had been admitted to the track of Medicine the Special Admission Process to the track of Medicine for graduates (Decreto-Lei n.º 40/2007 de 20 de Fevereiro).

Table 1: Population totals used in representativeness calculations across the document

Track	Forms of Admission	Admission academic years		
		2001/2012	2012/2013	Total
Original	NAP: general contingent	828	119	947
	NAP: islands contingent	55	4	59
	NAP: handicapped contingent	18	0	18
	NAP: emigrants contingent	20	0	20
	NAP: military contingent	4	0	4
	Total National Admission Process	925	123	1048
	SAR: athletes	14	1	15
	SAR: diplomats	2	1	3
	SAR: Portuguese Speaking African Countries	3	1	4
	SAR: Timor	1	0	1
	SAP: graduates	26	0	26
	Transfers	5	0	5
	Extraordinary Legislation	2	0	2
	Total of other processes of admission	53	3	56
	Total	978	126	1104
Alternative	SAP: graduate-entry students**	20	18	38

** Track that began in 2011/2012.

Legend: NAP – National Admission Process; SAR – Special Admission Regimes; SAP – Special Admission Process.

A. ORIGINAL AND ALTERNATIVE TRACKS

A.1. ADMITTED STUDENTS

Table 2: Admitted students: registrations

	Academic Year of Admission					
	2001/2012		2012/2013		Total	
	N	%	N	%	N	%
Did not register	4	0%	0	0%	4	0%
Registered but applied for transfer during the 1st year	5	1%	0	0%	5	0%
Registered but changed degrees in another phase of the NAP	7	1%	0	0%	7	1%
Registered but canceled registration	2	0%	0	0%	2	0%
Total of invalid registrations	18	2%	0	0%	18	2%
Total of valid registrations	980	98%	144*	100%	1124	98%
Sample (representativeness)	998	100%	144	100%	1142	100%

* Includes Readmission 2011/2012

A.2. REGISTERED STUDENTS

Table 3: Admission Process

	Academic Year of Admission					
	2001/2012		2012/2013		Total	
	N	%	N	%	%	N
NAP: general contingent	828	83%	119	82%	947	83%
NAP: islands contingent	55	6%	4	3%	59	5%
NAP: handicapped contingent	18	2%	0	0%	18	2%
NAP: emigrants contingent	20	2%	0	0%	20	2%
NAP: military contingent	4	0%	0	0%	4	0%
Total National Admission Process	925	93%	123	85%	1048	92%
SAR: athletes	14	1%	1	1%	15	1%
SAR: diplomats	2	0%	1	1%	3	0%
SAR: Portuguese Speaking African Countries	3	0%	1	1%	4	0%
SAR: Timor	1	0%	0	0%	1	0%
SAP: graduates	46	5%	18	13%	64	6%
Transfers	5	1%	0	0%	5	0%
Extraordinary legislation	2	0%	0	0%	2	0%
otal of other processes of admission	73	7%	22	15%	94	8%
Sample (representativeness)	998*	100%	144	100%	1142	100%

* Includes Readmission 2011/2012

B. ORIGINAL TRACK

B.1. NATIONAL ADMISSION PROCESS

Table 4: Students' option for SHS/UM: all NAP contingents (The SHS/UM was my # option)

Academic Year of Admission	1st option		2nd option		3rd option		Other option		Sample (representativeness)	
	N	**%**	N	%	N	%	N	%	N	%
2001/2012	634	100%	100	11%	154	17%	20	2%	908	98%
2012/2013	86	70%	12	10%	25	20%	0	0%	123	100%
Total	720	70%	112	11%	179	17%	20	0%	1031	98%

Table 5: Students' option for SHS/UM: NAP general contingent (The SHS/UM was my # option)

Academic Year of Admission	1st option		2nd option		3rd option		Other option		Sample (representativeness)	
	N	**%**	N	%	N	%	N	%	N	**%**
2001/2012	587	72%	73	9%	148	18%	4	0%	812	98%
2012/2013	86	72%	8	7%	25	21%	0	0%	119	100%
Total	673	72%	81	9%	173	19%	4	0%	931	98%

Table 6: Grade point average: all contingents

Academic Year of Admission	Mean	Standard deviation	Minimum	Maximum	Sample (representativeness)	
					N	%
2001/2012	183,88	8,32	140,00	197,20	907	98%
2012/2013	184,93	4,48	166,70	195,70	123	100%
Total	184,01	7,70	140,00	197,30	1030	98%

Table 7: Grade point average: general contingent

Academic Year of Admission	Mean	Standard deviation	Minimum	Maximum	Sample (representativeness)	
					N	%
2001/2012	186,27	3,18	181,00	197,30	812	98%
2012/2013	185,49	3,31	182,50	195,70	119	100%
Total	186,17	3,20	181,00	197,30	930	98%

Figure 1: Grade point average: general contingent vs other contingents

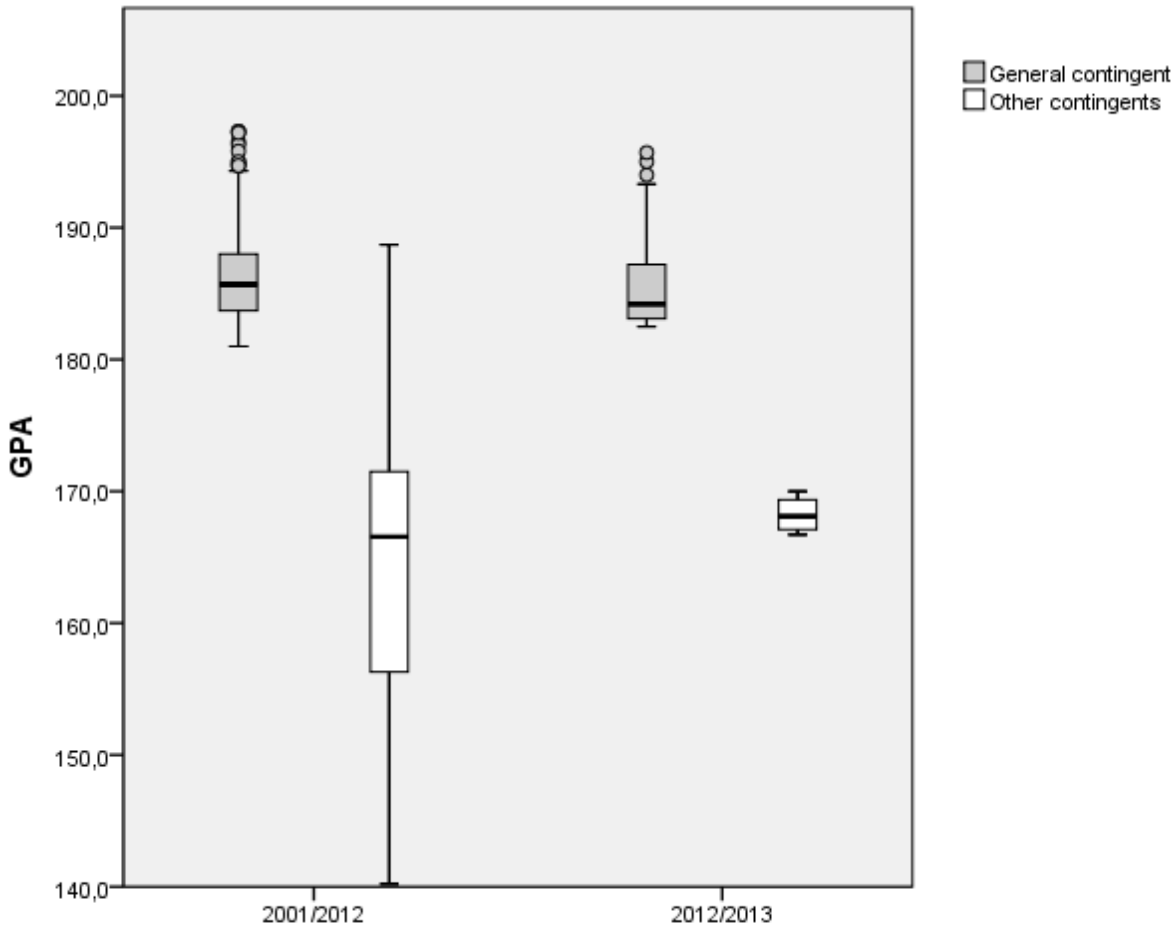


Table 8: Type of secondary school where the student completed the 12th year: all contingents

Academic Year of Admission	public		private		Sample (representativeness)	
	N	%	N	%	N	%
2001/2012	398	70%	170	30%	568	61%
2012/2013	71	65%	38	35%	109	87%
Total	469	69%	208	31%	677	59%

Table 9: Type of secondary school where the student completed the 12th year: general contingent

Academic Year of Admission	public		private		Sample (representativeness)	
	N	%	N	%	N	%
2001/2012	360	70%	153	30%	513	62%
2012/2013	68	65%	37	35%	105	88%
Total	428	69%	190	31%	618	65%

B.2. ALL ADMISSION PROCESSES: REGISTERED STUDENTS

Table 10: Students' Gender

Academic Year of Admission	Female		Male		Sample (representativeness)	
	N	%	N	%	N	%
2001/2012	643	66%	336	34%	979	100%
2012/2013	89	71%	37	29%	126	100%
Total	732	66%	373	34%	1105	100%

Table 11: Students' age

	Academic Year of Admission																	
	2001/2012						2012/2013						Total					
	N	%	M	DP	Min	Max	N	%	M	DP	Min	Max	N	%	M	DP	Min	Max
NAP	899	95%	18,75	1,18	16,88	35,23	112	97%	18,85	2,53	17,09	38,14	1011	95%	18,76	1,39	16,88	38,14
SAR	20	2%	18,50	,93	17,65	21,89	3	3%	18,15	,27	17,88	18,41	23	2%	18,45	,88	17,65	21,89
SAP: graduated	22	2%	28,66	3,37	24,07	40,59	0	0%	.	.	.	.	22	2%	28,66	3,37	24,07	40,59
Transfers	6	1%	26,16	3,95	20,72	29,59	0	0%	.	.	.	.	6	1%	26,16	3,95	20,72	29,59
Extraordinary legislation	2	0%	18,84	,15	18,74	18,95	0	0%	.	.	.	.	2	0%	18,84	,15	18,74	18,95
Sample (representativeness)	949	97%	19,02	2,05	16,88	40,59	115	91%	18,83	2,50	17,09	38,14	1064	96%	19,00	2,11	16,88	40,59

Table 12: Students' nationality

	Academic Year of Admission					
	2001/2012		2012/2013		Total	
	N	%	N	%	%	N
Canadian	4	0%	1	1%	5	1%
French	0	0%	0	0%	0	0%
Brazilian	0	0%	0	0%	0	0%
American	0	0%	0	0%	0	0%
Russian	1	0%	0	0%	1	0%
Cape Verdean	2	0%	0	0%	2	0%
Timorese	1	0%	0	0%	1	0%
Santomean	1	0%	0	0%	1	0%
Venezuelan	0	0%	0	0%	0	0%
Cuban	0	0%	1	1%	1	0%
All other Nationalities	9	1%	1	1%	10	1%
Portuguese	802	99%	113	98%	913	99%
Sample (representativeness)	811	83%	115	91%	926	84%

Table 13: District of origin

Academic Year of Admission	Braga		Porto		Others		Sample (representativeness)	
	N	**%**	N	**%**		N	**%**	N
2001/2012	574	60%	186	20%	194	20%	954	87%
2012/2013	57	50%	24	21%	34	30%	115	91%
Total	631	59%	210	20%	228	21%	1069	97%

Table 14: Students' admission: moving away from the family home (Coming to the SHS/UM meant I had to leave the family home)

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N		N	%
2001/2012	465	51%	440	49%	905	92%
2012/2013	58	51%	55	49%	113	90%
Total	523	51%	495	49%	1018	92%

Table 15: Students' registration in higher education: 1st time

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N		N	%
2001/2012	271	29%	667	71%	938	96%
2012/2013	22	19%	92	81%	114	90%
Total	293	28%	759	72%	1052	95%

Table 16: Factors that influenced students' decision to choose the medical degree (1st factor to 4th factor)

		Academic Year of Admission					
		2001/2012		2012/2013		Total	
		N	%*	N	%*	N	%*
To have the required classifications	1st factor	55	6%	6	5%	61	6%
	Total	532	54%	71	56%	603	55%
The track match my educational/ professional/vocational interests	1st factor	775	79%	101	80%	876	79%
	Total	894	91%	113	90%	1007	91%
Family tradition	1st factor	15	2%	2	2%	17	2%
	Total	78	8%	17	13%	95	9%
Friends influence	1st factor	18	2%	0	0%	18	2%
	Total	258	26%	20	16%	278	25%
Parents and/or relatives influence	1st factor	20	2%	3	2%	23	2%
	Total	544	56%	57	45%	601	54%
Former or actual students information	1st factor	11	1%	2	2%	13	1%
	Total	338	35%	58	46%	396	36%
Dissatisfaction with the previous/current professional activity	1st factor	0	0%	0	0%	0	0%
	Total	0	0%	7	6%	7	1%
Aspiration for a stable professional future	1st factor	0	0%	0	0%	0	0%
	Total	0	0%	3	2%	3	0%
Other	1st factor	17	2%	1	1%	18	2%
	Total	120	12%	5	4%	125	11%

Total: total of students who check this option as 1st, 2nd, 3rd or 4th factor.

* Students sample differ for each one of the items. Proportions calculated considering the total number of students admitted (2001/2012: 979; 2012/2013: 126).

Table 17: Factors that influenced students' decision to choose SHS/UM (1st factor to 4th factor)

		Academic Year of Admission					
		2001/2012		2012/2013		Total	
		N	%*	N	%*	N	%*
Geographical proximity	1st factor	406	42%	59	47%	465	42%
	Total	757	77%	92	73%	849	77%
Geographical proximity of relatives	1st factor	21	2%	2	2%	23	2%
	Total	76	8%	4	3%	80	7%
Economic resources owned	1st factor	31	3%	1	1%	32	3%
	Total	157	16%	16	13%	173	16%
Grade point average in the previous year	1st factor	44	4%	5	4%	49	4%
	Total	188	19%	23	18%	211	19%
Extracurricular academic life	1st factor	28	3%	0	0%	28	3%
	Total	143	15%	12	10%	155	14%
Quality of learning/teaching process	1st factor	229	23%	32	25%	261	24%
	Total	660	67%	75	60%	735	67%
Prestige of the degree	1st factor	83	8%	8	6%	91	8%
	Total	463	47%	76	60%	539	49%
I liked the curriculum of the degree	1st factor	69	7%	1	1%	70	6%
	Total	320	33%	29	23%	349	32%
I liked the learning/teaching methods	1st factor	88	9%	3	2%	91	8%
	Total	366	37%	28	22%	394	36%
Friends influence	1st factor	16	2%	0	0%	16	1%
	Total	127	13%	9	7%	136	12%
Parents and/or relatives influence	1st factor	29	3%	3	2%	32	3%
	Total	224	23%	24	19%	248	22%
Former or actual students information	1st factor	14	1%	0	0%	14	1%
	Total	138	14%	21	17%	159	14%
Method of selection	1st factor	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%
Track duration	1st factor	0	0%	0	0%	0	0%
	Total	0	0%	3	2%	3	0%
Other	1st factor	17	2%	1	1%	18	2%
	Total	32	3%	7	6%	39	4%

Total: total of students who check this option as 1st, 2nd, 3rd or 4th factor.

* Students sample differ for each one of the items. Proportions calculated considering the total number of students admitted (2001/2012: 978; 2012/2013: 126).

Table 18: The student says he is familiar with the SHS/UM medical curriculum

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2001/2012	346	38%	564	62%	910	93%
2012/2013	56	49%	58	51%	114	90%
Total	402	39%	622	61%	1024	93%

Table 19: Next academic year: the student intends to stay in the medical degree

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2001/2012	8	1%	896	99%	904	92%
2012/2013	0	0%	114	100%	114	90%
Total	8	1%	1010	99%	1018	92%

Table 20: Next academic year: the student intends to stay in the same university

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2001/2012	31	3%	857	97%	888	91%
2012/2013	5	4%	107	96%	112	89%
Total	36	4%	964	96%	1000	91%

Table 21: Difficulties/problems anticipated by students

	Academic Year of Admission					
	2001/2012		2012/2013		Total	
	N	%*	N	%*	%*	N
Difficulties/problems: economic	171	17%	14	11%	185	17%
Difficulties/problems: learning / performance	283	29%	50	40%	333	30%
Difficulties/problems: time management	727	74%	93	74%	820	74%
Difficulties/problems: money management	132	13%	8	6%	140	13%
Difficulties/problems: relationship with colleagues	70	7%	5	4%	75	7%
Difficulties/problems: relationship with teachers	19	2%	0	0%	19	2%
Difficulties/problems: relationship with family/boyfriend/girlfriend	122	12%	18	14%	140	13%
Difficulties/problems: of health (headaches, tiredness, nourishment...)	163	17%	21	17%	184	17%
Difficulties/problems: psychological (isolation, anxiety, depression...)	204	21%	29	23%	233	21%
Difficulties/problems: daily routine organization (nourishment, hygiene...)	156	16%	20	16%	176	16%
Difficulties/problems: other	15	2%	0	0%	15	1%

* Students sample differ for each one of the items. Proportions calculated considering the total number of students admitted (2001/2012:979 ; 2012/2013:126).

Table 22: Students' educational background on admission

	Academic Year of Admission					
	2001/2012		2012/2013		Total	
	N	%	N	%	%	N
Secondary school	906	97%	114	100%	1020	97%
Higher education - bachelor	3	0%	0	0%	3	0%
Higher education – "licenciatura"	21	2%	0	0%	21	2%
Postgraduate - Master	4	0%	0	0%	4	0%
Postgraduate - PhD	4	0%	0	0%	4	0%
Sample (representativeness)	938	96%	114	90%	1052	95%

Table 23: Students' employment status on admission

I intend to maintain that professional situation,		Without professional activity		Part-time worker		Full-time worker		Sample (representativeness)	
		N	%	N	%	N	%	N	%
2001/2012	In the first 3 years	583	95%	22	4%	9	1%	614	63%
	In the last 3 years	540	97%	12	2%	4	1%	556	57%
2012/2013	In the first 3 years	96	99%	1	1%	0	0%	97	77%
	In the last 3 years	79	99%	1	1%	0	0%	80	63%
Total	In the first 3 years	679	95%	23	3%	9	1%	711	64%
	In the last 3 years	619	97%	13	2%	4	1%	636	58%

Table 24: Student's father educational background

	Academic Year of Admission					
	2001/2012		2012/2013		Total	
	N	%	N	%	N	%
No qualifications	0	0%	0	0%	0	0%
1st cycle of basic education	129	14%	12	10%	141	13%
2nd cycle of basic education	76	8%	14	12%	90	9%
3rd cycle of basic education	140	15%	15	13%	155	15%
High school	210	23%	29	25%	239	23%
higher education - bachelor	58	6%	2	2%	60	6%
higher education – "licenciatura"	257	28%	28	24%	285	27%
Postgraduate - Master	48	5%	5	4%	53	5%
Postgraduate - PhD	14	2%	10	9%	24	2%
Sample (representativeness)	932	95%	115	92%	1047	95%

Table 25: Student's father professional category

	Academic Year of Admission					
	2001/2012		2012/2013		Total	
	N	%	N	%	N	%
Senior public administration, etc.	121	13%	12	11%	133	13%
Experts in intellectual and scientific professions	296	33%	36	32%	332	33%
Technicians	81	9%	8	7%	89	9%
Administrative staff and similar	68	8%	8	7%	76	8%
Service workers and salesmen	132	15%	14	13%	146	14%
Farmers and skilled workers in agriculture and fishing	8	1%	1	1%	9	1%
Workers, craftsmen and related workers	87	10%	13	12%	100	10%
Plant and machine operators and assembly workers	25	3%	3	3%	28	3%
Military	26	3%	4	4%	30	3%
Undifferentiated workers	55	6%	13	12%	68	7%
Sample (representativeness)	899	92%	112	89%	1011	92%

Table 26: Student's mother educational background

	Academic Year of Admission					
	2001/2011		2012/2013		Total	
	N	%	N	%	N	%
No qualifications	0	0%	0	0%	0	0%
1st cycle of basic education	115	12%	7	6%	122	12%
2nd cycle of basic education	72	8%	13	11%	85	8%
3rd cycle of basic education	114	12%	12	10%	126	12%
High school	165	18%	22	19%	187	18%
Higher education - bachelor	93	10%	1	1%	94	9%
Higher education – "licenciatura"	320	34%	47	41%	367	35%
Postgraduate - Master	46	5%	11	10%	57	5%
Postgraduate - PhD	13	1%	2	2%	15	1%
Sample (representativeness)	938	96%	115	91%	1053	95%

Table 27: Student's mother professional category

	Academic Year of Admission					
	2001/2012		2012/2013		Total	
	N	%	N	%	N	%
Senior public administration, etc.	58	7%	3	3%	61	6%
Experts in intellectual and scientific professions	398	47%	52	48%	450	47%
Technicians	53	6%	4	4%	57	6%
Administrative staff and similar	118	14%	18	17%	136	14%
Service workers and salesmen	83	10%	10	9%	93	10%
Farmers and skilled workers in agriculture and fishing	10	1%	0	0%	10	1%
Workers, craftsmen and related workers	58	7%	8	7%	66	7%
Plant and machine operators and assembly workers	5	1%	0	0%	5	1%
Military	0	0%	0	0%	0	0%
Undifferentiated workers	70	8%	14	13%	84	9%
Sample (representativeness)	853	87%	109	87%	962	87%

C. ALTERNATIVE TRACK

3.1. REGISTERED STUDENTS:

Table 28: Admission Process

	Academic Year of Admission					
	2011/2012		2012/2013		Sample (representativeness)	
	N	%	N	%	N	%
SAP: graduates	20	53%	18	47%	38	100%

Table 29: Information about previous degrees

Academic Year of Admission	Number of curricular years of previous degree					Number of years it took to complete the previous degree					Note of previous track final grade				
	N	%	Min.	Max.	Mean	N	%	Min.	Max.	Mean	N	%	Min.	Max.	Mean
2011/2012	20	56%	4	6	4.4	20	56%	4	6	4.4	20	56%	14	17	15.0
2012/2013	16	44%	3	6	4.6	16	44%	3	6	4.6	16	44%	14	17	15.2
Sample (representativeness)	36	95%	3	6	4.4	36	95%	3	6	4.5	36	95%	14	17	15.1

Table 30: My previous degree was my # option

Academic Year of Admission	1st Option		2nd Option		3rd Option		Another Option		Sample (representativeness)	
	N	%	N	%	N	%	N	%	N	%
2011/2012	8	40%	9	45%	0	0%	3	15%	20	100%
2012/2013	5	31%	6	38%	1	6%	4	25%	16	89%
Total	13	36%	15	42%	1	3%	7	19%	36	95%

Table 31: Medical Degree: When admitted to the previous degree, Medicine was my # option

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2011/2012	12	60%	8	40%	20	100%
2012/2013	8	50%	8	50%	16	89%
Total	20	56%	16	44%	36	95%

Table 32: Students' option for SHS/UM: The SHS/UM was my # option

Academic Year of Admission	1st Option		2nd Option		3rd Option		Another Option		Sample (representativeness)	
	N	%	N	%	N	%	N	%	N	%
2011/2012	13	65%	0	0%	1	5%	6	30%	20	100%
2012/2013	0	0%	0	0%	0	0%	18	100%	18	100%
Total	13	34%	0	0%	1	3%	24	63%	38	100%

Table 33: Present year: The student applied to other medical degrees

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2011/2012	10	50%	10	50%	20	100%
2012/2013	6	38%	10	63%	16	89%
Total	16	44%	20	56%	36	95%

Table 34: Factors that influenced students' decision to choose the medical degree (1st factor to 4th factor)

		Academic Year of Admission					
		2011/2012		2012/2013		Total	
		N	%*	N	%*	N	%*
To have the required classifications	1st factor	0	0%	2	11%	2	5%
	Total	0	0%	2	11%	2	5%
The track match my educational/ professional/vocational interests	1st factor	19	95%	13	72%	32	84%
	Total	20	100%	14	78%	35	92%
Family tradition	1st factor	0	0%	0	0%	0	0%
	Total	1	5%	0	0%	1	3%
Friends influence	1st factor	1	5%	0	0%	1	3%
	Total	2	10%	2	11%	4	11%
Parents and/or relatives influence	1st factor	0	0%	0	0%	0	0%
	Total	8	40%	7	39%	15	39%
Former or actual students information	1st factor	0	0%	0	0%	0	0%
	Total	12	60%	5	28%	17	45%
Dissatisfaction with the previous/current professional activity	1st factor	0	0%	0	0%	0	0%
	Total	15	75%	13	72%	28	74%
Aspiration for a stable professional future	1st factor	1	5%	1	6%	2	5%
	Total	18	90%	13	72%	31	82%
Other	1st factor	0	0%	0	0%	0	0%
	Total	3	15%	0	0%	3	8%

* Students sample differ for each one of the items. Proportions calculated considering the total number of students admitted (2011/2012:20; 2012/2013:18).

Table 35: Factors that influenced students' decision to choose SHS/UM (1st factor to 4th factor)

		Academic Year of Admission					
		2011/2012		2012/2013		Total	
		N	%*	N	%*	N	%*
Geographical proximity	1st factor	4	20%	4	22%	8	21%
	Total	13	65%	11	61%	24	63%
Geographical proximity of relatives	1st factor	0	0%	0	0%	0	0%
	Total	2	10%	1	6%	3	8%
Economic resources owned	1st factor	0	0%	0	0%	0	0%
	Total	2	10%	2	11%	4	11%
Grade point average in the previous year	1st factor	0	0%	4	22%	4	11%
	Total	0	0%	12	67%	12	32%
Extracurricular academic life	1st factor	0	0%	2	11%	2	5%
	Total	0	0%	6	33%	6	16%
Quality of learning/teaching process	1st factor	5	25%	1	6%	6	16%
	Total	14	70%	8	44%	22	58%
Prestige of the degree	1st factor	1	5%	3	17%	4	11%
	Total	10	50%	10	56%	20	53%
I liked the curriculum of the degree	1st factor	2	10%	0	0%	2	5%
	Total	8	40%	1	6%	9	24%
I liked the learning/teaching methods	1st factor	3	15%	0	0%	3	8%
	Total	14	70%	1	6%	15	39%
Friends influence	1st factor	0	0%	0	0%	0	0%
	Total	2	10%	1	6%	3	8%
Parents and/or relatives influence	1st factor	0	0%	1	6%	1	3%
	Total	0	0%	5	28%	5	13%
Former or actual students	1st factor	0	0%	0	0%	0	0%

information	Total	3	15%	3	17%	6	16%
Method of selection	1st factor	6	30%	0	0%	6	16%
	Total	12	60%	2	11%	14	37%
Track duration	1st factor	0	0%	2	11%	2	5%
	Total	1	5%	3	17%	4	11%
Other	1st factor	0	0%	0	0%	0	0%
	Total	0	0%	0	0%	0	0%

Total: total of students who check this option as 1st, 2nd, 3rd or 4th factor.

* Students sample differ for each one of the items. Proportions calculated considering the total number of students admitted (2011/2012: 20; 2012/2013:18).

Table 36: The student says he is familiar with the SHS/UM medical curriculum

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2011/2012	7	35%	13	65%	20	100%
2012/2013	4	25%	12	75%	16	89%
Total	11	31%	25	69%	36	95%

Table 37: Next academic year: the student intends to stay in the medical degree

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2011/2012	0	0%	20	100%	20	100%
2012/2013	0	0%	16	100%	16	89%
Total	0	0%	36	100%	36	95%

Table 38: Next academic year: the student intends to stay in the same university

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2011/2012	0	0%	19	100%	19	95%
2012/2013	0	0%	16	100%	16	89%
Total	0	0%	35	100%	35	92%

Table 39: Students' admission: moving away from the family home (Coming to the SHS/UM meant I had to leave the family home)

Academic Year of Admission	No		Yes		Sample (representativeness)	
	N	%	N	%	N	%
2011/2012	13	65%	7	35%	20	100%
2012/2013	10	59%	7	41%	17	94%

Total	23	61%	14	37%	37	97%

Table 40: Difficulties/problems anticipated by students

	Academic Year of Admission					
	2011/2012		2012/2013		Total	
	N	%*	N	%*	N	%*
Difficulties/problems: economic	8	40%	5	28%	13	34%
Difficulties/problems: learning / performance	4	20%	7	39%	11	29%
Difficulties/problems: time management	16	80%	15	83%	31	82%
Difficulties/problems: money management	4	20%	4	22%	8	21%
Difficulties/problems: relationship with colleagues	0	0%	1	6%	1	3%
Difficulties/problems: relationship with teachers	0	0%	0	0%	0	0%
Difficulties/problems: relationship with family/boyfriend/girlfriend	7	35%	4	22%	11	29%
Difficulties/problems: of health (headaches, tiredness, nourishment...)	2	10%	3	17%	5	13%
Difficulties/problems: psychological (isolation, anxiety, depression...)	2	10%	2	11%	4	11%
Difficulties/problems: daily routine organization (nourishment, hygiene...)	3	15%	3	17%	6	16%
Difficulties/problems: other	1	5%	2	11%	3	8%

* Students sample differ for each one of the items. Proportions calculated considering the total number of students admitted (2011/2012: 20students; 2012/2013:18).

Table 41: Students' Gender

Academic Year of Admission	Female		Male		Sample (representativeness)	
	N	%	N	%	N	%
2011/2012	13	65%	7	35%	20	100%
2012/2013	10	56%	8	44%	18	100%
Total	23	61%	15	39%	38	100%

Table 42: Students' nationality

	Academic year of Admission					
	2011/2012		2012/2013		Total	
	N	%	N	%	N	%
Canadian	0	0%	0	0%	0	0%
French	0	0%	0	0%	0	0%
Brazilian	0	0%	0	0%	0	0%
American	0	0%	0	0%	0	0%
Russian	0	0%	0	0%	0	0%
Cape Verdean	0	0%	0	0%	0	0%
Timorese	0	0%	0	0%	0	0%
Santomean	0	0%	0	0%	0	0%
Venezuelan	1	5%	0	0%	1	3%
Cuban	0	0%	0	0%	0	0%
All other Nationalities	1	5%	0	0%	1	3%
Portuguese	19	95%	17	100%	37	100%
Sample (representativeness)	20	100%	17	94%	37	97%

Table 43: Students' age

	Academic year of Admission					
	N	%	M	DP	Mín	Máx
2011/2012	20	100%	28,78	4,65	23,16	37,30

2012/2013	17	94%	27,37	3,92	22,18	35,18
Sample (representativeness)	37	97%	28,15	4,34	22,18	37,30

Table 44: District of origin

Academic year of Admission	Braga		Porto		Outro		Sample (representativeness)	
	N	%	N	%	N	%	N	%
2011/2012	9	48%	4	19%	7	33%	20	100%
2012/2013	6	35%	6	35%	5	29%	17	94%
Total	15	41%	10	27%	12	32%	37	97%

Table 45: Type of secondary school where the student completed the 12th year: all contingents

Academic year of Admission	Public		Private		Sample (representativeness)	
	N	%	N	%	N	%
2011/2012	19	95%	1	5%	20	100%
2012/2013	14	82%	3	18%	17	94%
Total	33	89%	4	11%	37	97%

Table 46: Students' educational background on admission

	Academic year of Admission					
	2011/2012		2011/2012		Total	
	N	%	N	%	N	%
higher education – "licenciatura"	13	65%	13	76%	26	70%
Postgraduate - Master	3	15%	4	24%	7	19%
Postgraduate - PhD	4	20%	0	0%	4	11%
Sample (representativeness)	20	100%	17	94%	37	97%

Table 47: Previous Track

	Academic year of Admission			
	2011/2012		2012/2013	
	N	%	N	%
Clinical analysis	1	5%	0	0%
Pathology Anatomy	0	0%	2	12%
Pathology, cytology and tanatological Anatomy	1	5%	0	0%
Biology	1	5%	0	0%
Microbial Biology and genetics	1	5%	0	0%
Biochemistry	1	5%	1	6%
CardioPulmonology	1	5%	0	0%
Nursing	5	25%	2	12%
Biological Engineering	2	10%	0	0%
Pharmaceutical Sciences / Pharmacy	1	5%	5	29%
Nutrition Sciences	0	0%	1	6%
Physics and chemistry	1	5%	1	6%
Physiotherapy	0	0%	2	12%
Psychology	0	0%	1	6%
Dental Medicine	1	5%	0	0%
Integrated Master in Industrial Electronics Engineering	1	5%	0	0%
Civil Engineering	0	0%	1	6%
Chemistry	1	5%	0	0%
Radiology	2	10%	0	0%
Veterinary Medicine	0	0%	1	6%
Sample (representativeness)	20	100%	17	94%

Table 48: Students' employment status on admission

Academic year of Admission	without occupation		part-time worker		full-time worker		Sample (representativeness)	
	N	%	N	%	N	%	N	%
2011/2012	7	50%	4	20%	6	30%	17	85%
2012/2013	8	53%	5	33%	2	13%	16	88%
Total	15	45%	9	27%	8	24%	33	87%

University of Minho
School of Health Sciences

A CLOSER LOOK INTO MINHO'S STUDENTS

Table *49.* Data for UM-ECS student's sociodemographic profile, distributed by track.

	ECS-UM		ECS-UM			
	%	**N**	**6 –Y %**	**N**	**4 –Y %**	**N**
Mean age (Range)	20(17-43)	271‡	18 (17-38)	238	28 (22-43)	33‡
Females (%)	67.04	267††	67.95	234	60.61	33
Education father (mother)						
4-Y Elementary school	9.43 (7.14)		6.9 (4.72)		27.27(24.24)	
6-Y Elementary school	12.45 (8.65)		12.5 (8.58)		12.12 (9.09)	
9-Y Elementary school	12.45(10.90)		12.07 (9.87)		15.15(18.18)	
Secondary Education	27.92(20.68)	265†† (266)	27.59(20.17)	232 (233)	30.3 (24.24)	33†† (233‡)
Higher Education	28.30(45.11)		30.17(48.07)		15.15(24.24)	
Post-Graduation	9.43(7.52)		10.78 (8.58)		.0 (.0)	
Career father (mother)						
Higher managerial	11.28 (3.64)		12.05(4.17)		6.06 (.0)	
Intellectual professions	31.13(47.77)		34.82(52.31)		6.06 (16.13)	
Intermediate managerial	8.17(4.86)		6.7(4.63)		18.18 (6.45)	
Sales person & services	20.23(26.32)		20.54(23.15)		18.18(48.39)	
Farming & fishing	1.95 (0.81)	257† (247††)	.89 (.0)	224 (216)	9.09 (6.45)	33‡ (31‡)
Skilled manual workers	15.56 (8.91)		14.73 (8.80)		21.21 (9.68)	
Army & cops	2.72(.0)		2.23 (.0)		6.06 (.0)	
Unskilled manual workers	8.95 (7.69)		8.04(6.94)		15.15(12.90)	
Secondary Education						
Public	64.02	264‡	60.61	231	87.88	33††
Private	35.98		39.39		12.12	

Notes:
‡ p=<.001
†† p=<.01
† p=<.05

Table 2. Data for changes in ECS-UM student's life after entry, distributed by track.

	ECS-UM		ECS-UM			
	%	N	6 –Y %	N	4 –Y %	N
Employment: before admission						
Unemployed/ no profession	37.93				37.93	
Part-time worker	24.14	29 ‡	a)		24.14	29
Full-time worker	37.93				37.93	
Employment: upon admission						
Unemployed/ no profession	90.38		97.83		33.33	
Part-time worker	4.00	260 ‡	2.17	230	26.67	30 ‡
Full-time worker	4.62		0.00		40.00	
Entering medical school meant changing residence	47.27	256 ‡	48.66	224	37.50	32
Difficulties anticipated by students						
• Economic	18.56	264 ‡	16.02		36.36	33 ††
• Learning/performance	35.98	95 ††	36.80		30.30	
• Time management	78.79	264 ††	78.79	231	78.79	33
• Relationship with faculty	78.79	264 ‡	78.79		78.79	
• Money management	12.12	264 ‡	10.39		24.24	33 †

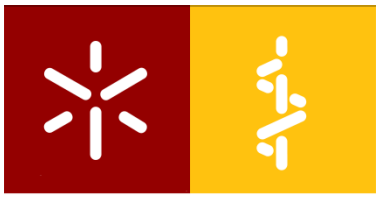
(…)

Notes:
‡ p=<.001
†† p=<.01
† p=<.05
a) Demographic questionnaire for 6-Year programme students doesn't include the item "Professional situation before entry.

Significant differences were not found between the UM 6-Year and 4-Year program ($\chi 2$ (4)=5.11 p=.276; *Cramer's V*=.14) on student's preferred specialty.

Table 3. Data for ECS-UM student's expectations, distributed by track.

	UM		UM			
	%	**N**	**6 –Y %**	**N**	**4 –Y %**	**N**
Workplace						
Big city	33.33		37.02		8.57	
Medium-sized city	59.63	270 ‡	57.02	235	77.14	35 ††
Small city	5.19		4.26		11.43	
Rural area	1.85		1.70		2.86	
Work context						
Public hospital	57.95		54.44		80.77	
Private hospital	17.44	195 ‡	19.53	169	3.85	26 †
Primary care centres	7.18		6.51		11.54	
Specialties						
Surgical	43.91		46.19		28.57	
Medical	30.26		28.81		40.00	
Diagnoses&Treatment	7.01	271 ‡)	6.78	236	8.57	35
Primary care	4.43		3.81		8.57	
No decision	14.39		14.41		14.29	



University of Minho
School of Health Sciences

PERCEPTION OF STUDENTS ABOUT THEIR PREPAREDNESS FOR CLINICAL CLERKSHIPS

A experiência de transição para a fase clínica de alunos de medicina detentores de grau prévio: um estudo de caso.

La experiencia de la transición a la fase clínica de los estudiantes de medicina que ingresan con posesión de otro grado: un estudio de caso.

The experience of graduate entry students in the transition to the clinical phase: a case study.

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Resumo:
Introdução: Internacionalmente tem-se assistido à extensão da oferta formativa de cursos de Medicina de menor duração a candidatos detentores de um grau académico superior prévio. Este estudo de caso procura compreender a experiência dos estudantes licenciados nestes cursos, a fim de identificar fatores que condicionem a sua formação durante o inicio da aprendizagem clínica em contexto hospitalar.
Sujeitos e métodos: Os participantes são estudantes licenciados do curso de medicina da Universidade do Minho em Portugal (n=5) que atravessam a transição entre a fase pré-clínica e a fase clínica do curso. No final da primeira unidade curricular clínica realizou-se um grupo de discussão. Os transcritos foram analisados segundo os princípios de Grounded-Theory.
Resultados: Os participantes relataram facilidade no contacto com os pacientes e utilização de competências de estudo durante a aprendizagem. Apontaram como dificuldades principais o primeiro contacto com a morte e a doença no meio hospitalar, a quantidade de conhecimentos a adquirir na antes de iniciarem a formação clínica e a transferência dos mesmos para a prática clínica.
Conclusões: Este estudo de caso revelou que as principais dificuldades dos estudantes licenciados se relacionavam com lidar com pacientes e com a mobilização para a prática da grande quantidade de conteúdo aprendido na fase pré-clínica. Estas dificuldades poderão ser minoradas pela inclusão de maior contacto com pacientes e com a prática clínica na fase pré-clínica.
Palavras-Chave:
1. Residência clínica
2. Curriculum
3. Educação, Médica, Estudantes Universitários
4. Grupo de discussão
5. Conhecimento Médico, Atitudes, Prática
6. Perceção

Resumen:
Introducción: En el ámbito internacional se ha extendido la oferta formativa de estudios de medicina de menor duración para candidatos que están en posesión de otros grados de educación superior previo. Este estudio de caso trata de comprender la experiencia de los estudiantes procedentes de otros grados en estos cursos con el fin de identificar los factores que limitan su aprendizaje clínica en el contexto hospitalario.
Sujetos y Métodos: Los participantes son estudiantes de posgrado de la Facultad de Medicina de la Universidad de Minho en Portugal (n = 5) que realizan la transición entre la fase pre-clínica y clínica del grado. Al final del primer curso clínico se llevó a cabo un grupo de discusión. Las transcripciones se analizaron de acuerdo con los principios de Grounded-Theory.

Resultados: Los participantes refirieron facilidad para el contacto con los pacientes y para el uso de técnicas de estudio durante su aprendizaje. Las principales dificultades son el primero contacto con la muerte y la enfermedad en el ámbito hospitalario, la cantidad de conocimientos que se deben adquirirantes de embarcarse en la formación clínica y su transferencia a la práctica clínica.

Conclusiones: Este estudio de caso reveló que las principales dificultades de los estudiantes procedentes de otros grados se relacionaron con el trato de los pacientes y con la aplicación a la práctica de la gran cantidad de contenidos aprendidos en la fase preclínica. Estas dificultades se pueden reducir mediante un mayor contacto con los pacientes y la práctica clínica en la fase preclínica.
Términos MeSH:
1. Aprendizaje clínica
2. Plan de estudios
3. Educación Médica de Pregrado
4. Grupo focal
5. Conocimientos, Actitudes y Prácticas
6. Percepción

Abstract:
Internationally, medical schools have been offering more fast-track undergraduate medical degree to graduate applicants. This case study aims to understand graduate entry students' experience in medical schools, namely to identify factors that condition their transition to the clinical training in hospitals.
Materials and methods: Participants are medical graduate students from the University of Minho in Portugal (n=5) going through the transition from a pre-clinical to a clinical part of a 4 year graduate entry curriculum. A focus group was conducted at the end of the first clinical course. The discussion was transcribed and analyzed using Grounded Theory principles.
Results: Participants described they were comfortable with contacting patients, and that they applied study skills developed prior to entry medical school to their learning. The main difficulties pointed out their were the first contact with death and disease in the hospital environment, the large amount of content to be learned before starting clinical training, and the transfer of knowledge to clinical practice.
Conclusions: This case study revealed that the main difficulties presented by medical graduate-entry students were related to the first contacts with patients and the practical application of a huge amount of knowledge, learned during the pre-clinical part of the curriculum, to the clinical practice. These difficulties could be attenuated by including more contact with patients and clinical practice during the pre-clinical part of the course.
MeSH terms:

1. Clinical Clerkship
2. Curriculum
3. Education, Medical, Undergraduate
4. Focus Groups
5. Health Knowledge, Attitudes, Practice
6. Perception

Introdução:

A implementação do processo de Bolonha na Europa tem questionado a estrutura tradicional dos cursos de medicina, designadamente os seus objectivos, conteúdos e as suas práticas pedagógicas [1]. Nesse sentido têm tido lugar desenvolvimentos internacionais incluindo Espanha e Portugal [2] sobre, por exemplo, a estruturação de cursos em função das competências do médico [2], a implementação de estruturas curriculares em 2 ciclos [3].

Paralelamente aos desenvolvimentos de Bolonha, a Europa toma consciência da importância de admitir estudantes com licenciaturas prévias aos cursos do ensino superior. Com efeito, muitas escolas de medicina em vários países como a Austrália, Reino Unido [4, 5] e também Portugal [6], têm estendido a sua oferta a este novo grupo de estudantes, muitas vezes criando currículos adaptados.

No Reino Unido, o tema da diversificação da população estudantil é particularmente relevante sendo promovido explicitamente na iniciativa "Widening Access" [7], que visa aumentar a diversidade social e reduzir o elitismo na população de estudantes de medicina, criando oportunidades de acesso a grupos sociais tradicionalmente excluídos [8, 9]. As expectativas institucionais relativas aos estudantes adultos é que possuam uma capacidade de aprendizagem superior aos jovens que acabam de terminar o ensino secundário, decorrentes da sua maior maturidade, sentido de responsabilidade e auto-motivação e da sua experiência prévia de sucesso no ensino superior. Estudos em curso concluíram que os estudantes licenciados têm características específicas, descrevendo-os como sendo menos ansiosos, confiantes, controlados, indagadores e detentores de uma maior maturidade emocional quando comparados com os estudantes provenientes directamente do ensino secundário [10,11].

Estudos comparativos das experiências enquanto estudantes de medicina, revelam que os estudantes licenciados apresentam desempenhos académicos idênticos aos estudantes tradicionais [12, 13] ou até superiores [14]. Os estudantes licenciados demonstram também uma maior segurança e motivação quanto à sua escolha profissional, [15]. Ao nível da selecção dos estudantes, autores como [16] Ian Blackman confirmam a relação entre um percurso académico prévio em áreas científicas e um melhor desempenho académico no curso de medicina. Outros autores relatam não existir uma desvantagem significativa por parte dos estudantes licenciados provenientes de outras áreas [17, 18].

A redução de seis para quatro anos de cursos de medicina, tem sido um modelo explorado com a finalidade de os adequar à população de estudantes adultos com um grau académico superior. Trata-se de um modelo usado com sucesso internacionalmente que pressupõe que os conhecimentos e as competências desenvolvidas durante a formação superior prévia dos candidatos, lhes conferem as características necessárias e suficientes para iniciarem a sua formação médica. Estes programas com duração reduzida foram pioneiros na Austrália, iniciados em 1997, e têm vindo a generalizar-se na Europa [19].

No caso específico de Portugal, duas universidades oferecem actualmente um curso de medicina para alunos licenciados com a duração de quatro anos seguindo modelos distintos. O programa da Universidade do Algarve, instituído em 2009, é baseado no modelo tradicional de *Problem Based Learning* (PBL), no qual o ensino das ciências básicas e clínicas decorre essencialmente através da exploração de casos que os estudantes devem trabalhar autonomamente em pequenos grupos [20]. Na universidade do Minho, é oferecido o modelo de quatro anos como percurso alternativo ao curso de seis anos.

Em Portugal, os estudantes do percurso de quatro anos são também uma população característica, sendo mais velhos, vindos de meios socioeconómicos mais desfavorecidos, e estando mais predispostos a trabalhar em pequenas cidades, quando comparados com os outros [21].

A transição do estudante de medicina de uma fase pré-clínica para uma fase clínica do curso, é um ponto-chave e um dos mais stressantes na preparação da aprendizagem clínica dos estudantes [22]. Trata-se de um período particular, ao requerer que o estudante descubra a sua identidade profissional de médico em contacto com os doentes [23] aplicando conhecimentos teóricos pela primeira vez na prática clínica. Trata-se de uma adaptação a um novo contexto de aprendizagem, a novas formas de ensino e aprendizagem. Relativamente à transição para a clínica dos estudantes licenciados os escassos estudos existentes concluem que as dificuldades encontradas são comparáveis às encontradas pelos estudantes de percursos mais longos [24].

Este artigo pretende corresponder à necessidade de compreender a experiência dos estudantes licenciados durante o período de transição de uma fase pré-clínica para uma fase clínica num curso com um plano de estudos de quatro anos numa escola médica portuguesa. O objectivo foi apurar através de uma discussão de grupo exploratória, que desafios e que obstáculos estes estudantes sentem durante o mencionado período e qual o contributo da sua formação prévia para a superação ou afirmação dos desafios encontrados.

Materiais e Métodos:

Contexto do estudo:

Este estudo exploratório foi conduzido na Escola de Ciências da Saúde da Universidade do Minho (ECS-UM), em Portugal. O curso de medicina com mestrado integrado da ECS-UM inclui um percurso de 6 anos destinados a estudantes admitidos pelo Concurso Nacional de Acesso ao Ensino Superior, ao qual se candidatam maioritariamente estudantes oriundos do ensino secundário, e um "percurso alternativo" de quatro anos para estudantes detentores de um grau académico prévio.

Os candidatos às 18 vagas anuais do percurso alternativo são selecionados através de um teste escrito que engloba as disciplinas de biologia, química, física e matemática um em conjunto com processo de mini entrevistas [6, 25]. Não é feita qualquer restrição em termos de formação superior prévia. Os candidatos admitidos no ano letivo a que se refere este trabalho detinham as seguintes licenciaturas: Análises Clínicas; Anatomia e Citologia Patológica; Biologia; Genética e Microbiologia; Bioquímica; Cardiopneumologia; Enfermagem; Engenharia Biológica; Farmácia; Físico-Química; Medicina Dentária; Eletrónica e Engenharia Industrial; Química; Radiologia.

Os estudantes admitidos frequentam, no primeiro ano do seu curso, uma unidade curricular denominada "Fundamentos de Medicina" que pretende habilitar os estudantes com os meios de aquisição de conhecimentos científicos, desempenhos e atitudes nas áreas de anatomia, fisiologia, histologia, embriologia e bioquímica ainda nas áreas de patologia, genética, imunologia, microbiologia/parasitologia e farmacologia, de forma integrada e coordenada, identificando a sua importância na prática médica. A unidade curricular "Fundamentos de Medicina" é composta por 6 módulos: Metabolismo; Sistema Circulatório; Sistema Respiratório; Sistema Génito-Urinário; Infeção e Imunidade e Sistema Locomotor e Nervoso, cujos conteúdos compreendem a aprendizagem integrada de objetivos em várias disciplinas. Esta unidade decorre paralelamente a outra denominada "Saúde Comunitária, Ciências Sociais e Humanas" que pretende dotar os futuros médicos de atitudes e aptidões na compreensão dos determinantes chave de saúde e doença nos indivíduos, dos seus condicionantes familiares e sociais, e do desenvolvimento de uma postura humanizada face ao indivíduo e sua família. Os alunos do percurso alternativo completam o final do seu primeiro ano frequentando, em conjunto com os restantes alunos, a unidade curricular "Introdução à Medicina Clínica", focada nos fundamentos e prática da entrevista e exame físico. Após a conclusão do seu primeiro ano, são integrados com os alunos do quarto ano do percurso tradicional. As unidades curriculares destes anos têm como objetivo principal a aprendizagem da prática clinica, decorrendo essencialmente em contexto de serviços hospitalares e de cuidados primários.

O contacto inicial com a realidade assistencial dos estudantes do percurso alternativo decorre nas últimas semanas do seu primeiro ano, no âmbito da unidade curricular "Introdução à Medicina Clinica" (IMC). Esta unidade curricular constitui, por isso, um momento importante em termos motivacionais e académicos, pondo à prova os conhecimentos destes estudantes. Os estudantes do programa de 6 anos frequentam a mesma UC mas têm maior contacto com o ambiente assistencial, pois existem unidades

curriculares que promovem gradualmente o contacto com esse ambiente desde o início do curso, determinada pela filosofia de integração curricular em Z [26].

Método de recolha de dados:

Com a intenção de compreender a experiência dos estudantes licenciados durante a transição de uma fase pré-clínica do curso para uma fase clínica do mesmo, foi conduzida uma discussão de grupo semiestruturada com cinco participantes (n=5).

Participantes:

Visando a compreensão da experiência dos estudantes licenciados durante o mencionado período de transição, foi utilizada uma amostra intencional [27], que se refere à selecção de sujeitos com maior potencial informativo. Como tal, todos os sujeitos eram estudantes licenciados da mesma turma, no mesmo momento formativo, após a conclusão da unidade curricular de Introdução à Medicina Clínica.

Os participantes foram recrutados por correio electrónico, numa mensagem enviada pelo coordenador da unidade de educação médica (MJC) a todos os estudantes do percurso alternativo inscritos no curso (n=18). A mensagem explicava o objectivo do estudo e contextualizava a sua importância para a compreensão da experiencia destes estudantes numa perspectiva de identificar aspectos do curso susceptíveis de merecerem modificações.

Elaboração do Guião:

O guião foi elaborado por dois autores (MJC e AS). Numa primeira fase, foi realizada uma pesquisa bibliográfica sobre dificuldades de estudantes de medicina no momento da transição para a formação eminentemente clínica. A listagem resultante deu origem a um guião, com o total de oito perguntas e respectivos tópicos essenciais, apresentados na Tabela 1.

Tabela 1: Perguntas feitas no grupo de discussão.

Procedimentos

Tendo em vista a documentação da visão dos estudantes sobre a sua experiência na prática clínica, usou-se um grupo de discussão para identificar temas relevantes ao contexto, reconhecidos a partir do ponto de vista dos estudantes, aproveitando a dinâmica inerente a esta metodologia para incentivar os estudantes a elaborar a sua visão, construindo sobre as ideias uns dos outros, e explorando os motivos subjacentes a eventuais divergências [28].

A discussão de grupo foi moderada por um investigador (MJC) com o auxílio de um anotador (AS). A discussão foi gravada (1h25min) e transcrita *verbatim*.

Visando uma análise qualitativa dos dados recolhidos, os investigadores consideraram os princípios encontrados em Grounded Theory [29, 30, 31] como sendo os mais apropriados para a sua realização, dado o seu potencial na compreensão do significado das experiências dos sujeitos. Open-coding bem como Axial-coding foram utilizados na concretização desta análise.

As transcrições foram codificadas independentemente por dois investigadores (LH e MJC) usando uma análise linha-a-linha para caracterizar os códigos presentes no texto. Os investigadores reuniram-se e discutiram a codificação até chegarem a um consenso quanto aos códigos finais. Analisaram-se pontos em comum entre os vários comentários dos participantes para discernir pontos-chave. Os códigos foram então agrupados.

Resultados:

A reunião dos vários comentários feitos pelos participantes permitiu a conceptualização de duas categorias principais de análise. Uma prende-se com a experiência dos estudantes durante os seus primeiros contactos com os pacientes, e a outra com refere-se às experiências de aplicação prática de conhecimentos em contexto clínico durante a transição. Os comentários mais pertinentes referentes a cada uma e aceites de forma consensual pelos participantes encontram-se presentes nas tabelas relativas a cada categoria.

Relação Estudante / Paciente:

Tabela 2: Amostras referentes às primeiras abordagens aos pacientes.

Os participantes relataram alguns desafios relevantes associados ao contacto inicial com a prática clínica em contexto hospitalar. O tema mais salientado foi o impacto da constante presença da morte, dos doentes e da doença no Hospital (amostra 1.a.). Vários participantes se referiram à carga emocional imposta pela necessidade de lidar com a morte dos pacientes e com o constante contacto com os doentes. Este aspeto era considerado dominante, por exemplo, sobre as dificuldades de gestão e aplicação de conhecimento no novo contexto (amostra 1.b). Houve referência ao facto de, terminado o período diário de aprendizagem no Hospital, os estudantes transportarem a vivência da morte para casa (amostra 1.b). Foi evocado o termo “complexo” (amostra 1.c.) e um participante referiu explicitamente a “mossa” sentida, revelando assim alguma impreparação emocional para esta experiência. Esta percepção coabita com a noção de que ser mais velho intensificará os desafios emocionais anteriores (amostra 1.c.).

Os participantes relataram também desafios no que se refere à necessidade de explorar um espaço íntimo durante a abordagem a doentes em avançado estado de debilidade física ou emocional. Adicionalmente referiram sensibilidade no que concerne à realização do exame físico ao paciente, em particular nos contactos iniciais. (amostra 1.e.).

Do mesmo modo, os estudantes demonstram uma grande preocupação pelo bem-estar do paciente, conferindo-lhe primazia sobre as necessidades do seu treino de procedimentos técnicos (amostra 1.f.).
Apesar dos desafios encontrados e das dúvidas aquando o seu primeiro contacto com a prática clínica, os participantes denotaram estarem atentos à sua postura profissional perante os doentes (amostra 1.g).
Em relação aos estudantes do percurso de 6 anos, os estudantes licenciados relatam facilidade (amostra 1.h.) e mesmo algumas vantagens no que se refere à comunicação e abordagem aos pacientes. Parte dessas vantagens referem-se à sua compreensão da linguagem utilizada por pacientes mais velhos (amostra 1.i.) e à sua tomada de iniciativa perante situações sensíveis (amostra 1.j.).
Estes estudantes relataram um grande nível de satisfação pelo seu contacto com outras pessoas, doentes ou não, durante a sua aprendizagem (amostra 1.k.).

Aplicação de conhecimentos

Tabela 3: Amostras referentes à aplicação de conhecimentos em contexto clínico.

Ao pronunciar-se sobre o contributo da sua formação durante o primeiro ano no curso de medicina para a sua experiência clínica, os estudantes destacaram três aspetos fundamentais: 1. Dificuldades na aplicação, perante o doente, de conhecimentos adquiridos em contexto académico; 2. A perceção de estarem equiparáveis aos colegas do percurso de 6 anos no que se refere à sua preparação teórica; 3. A importância do contacto com a prática clínica, percecionada a partir das suas próprias vivências ou inferida a partir de docentes clínicos, como essencial para a estruturação das suas aprendizagens.
Um dos principais desafios relatados está relacionado com a ignorância da forma como os conhecimentos académicos são reorganizados para terem utilidade prática. Daqui resultaram expressões de receio de falta de preparação para a aplicação dos conhecimentos (amostra 2.a.), independente da sua preparação teórica (amostra 2.b.). Esta mobilização de conhecimentos para a prática clínica é um processo distinto do da aquisição dos conhecimentos a serem mobilizados, que também suscita dificuldades particulares, exploradas seguidamente.
Quanto à sua preparação, os estudantes referiram que o ano de aprendizagem de conhecimentos que precedeu a sua experiência em IMC lhes havia conferido um nível de preparação equivalente ao dos estudantes do currículo normal. Apesar dos desafios relativos à aplicação de conhecimentos, e mesmo tendo apenas um ano de aprendizagem pré-clínica, os estudantes licenciados não sentiram qualquer disparidade quanto ao nível de preparação relativa a conhecimentos teóricos para a fase clínica do curso, afirmando que se sentem tão bem preparados como os estudantes do currículo tradicional (amostras 2.c. e 2.d.).
Apesar do seu sentimento de igual preparação teórica quando comparados com os estudantes do percurso tradicional, os estudantes licenciados descrevem uma falta de "amadurecimento" ou consolidação dos

conhecimentos. Os participantes consideraram que o período de aprendizagem era insuficiente para proporcionar as circunstâncias necessárias a esse "amadurecimento" (amostras 2.e.; 2.f.; 2.h.). O outro aspeto evocado foi a inexistência de oportunidades suficientes para a prática dos conhecimentos adquiridos (amostras 2.g.; 2.h. e 2.r.),

Foram referidas outras condicionantes associadas ao fator "insuficiência de tempo", por exemplo, como um importante condicionante do tempo disponível para estudar e, por conseguinte, como um forte obstáculo ao desenvolvimento do seu conhecimento (amostras 2.i. e 2.j.).

Os dados parecem apontar para o facto de um grande volume de informação e conhecimentos a adquirir, conciliado com o curto espaço de tempo que têm, levar a um sentimento de desorientação, conduzindo os estudantes a reconsiderarem as suas estratégias de estudo, reestruturando e priorizando os conhecimentos a adquirir (amostras 2.k.; 2.n.; 2.q.). Esta priorização, imposta pelas suas dificuldades, foi uma das maiores preocupações revelada pelos participantes.

Neste sentido, a vivência clinica tem efeitos sobre a forma com os estudantes consideram abordar o estudo, sugerindo que um contacto precoce com a prática clínica seria benéfica para a sua abordagem desde o início do curso. Vários fatores parecem contribuir para esta priorização dos conteúdos a aprender. Entre os principais, destaca-se o papel da experiência clínica (amostras 2.l. e 2.m.), que revela também ter um papel relevante na abordagem ao estudo e na preferência dos estudantes por docentes experientes na prática clínica (amostra 2.p.).

Outros fatores adicionais sugeridos como possíveis agentes nesta priorização de conhecimentos a adquirir são o grau de dificuldade dos conhecimentos (amostra 2.n.), levando os estudantes a darem prioridade ao estudo de matérias que considerem mais difíceis, e a perceção que têm da frequência com que vão aplicar esses conhecimentos na prática clínica (amostra 2.q.), sendo que os estudantes relatam dar prioridade à aprendizagem de conhecimentos que prevejam aplicar mais frequentemente. A priorização de conteúdos apresentada por docentes clínicos é referida também como um fator relevante na priorização das aprendizagens (amostra 2.p.), assim como o seu próprio juízo e competências de estudo provenientes da sua experiência enquanto estudantes autónomos durante o seu grau académico prévio (amostra 2.o.).

Discussão:

É necessário conhecer e compreender a experiência dos estudantes nos momentos de transição dos seus cursos de medicina para identificar pontos onde introduzir melhorias, tenham estas a ver com a sua aprendizagem a longo prazo ou com o melhoramento da experiência nesses momentos particulares. Tal torna-se particularmente importante no caso dos estudantes admitidos com o grau de licenciado em cursos de menor duração, tendo em consideração que se trata de um modelo formativo mais recente. Este estudo de caso, baseado numa entrevista a estudantes pouco tempo após a sua transição para a parte predominantemente clínica de um curso, revelou que os aspetos mais problemáticos se prendiam com

lidar com aspetos humanos da atividade médica e com a mobilização de conhecimentos adquiridos anteriormente de forma a poderem ser usados com eficácia nas interações sem contexto clínico.
Os elementos extraídos da análise qualitativa revelaram que os estudantes licenciados consideram estar em situação de vantagem num conjunto de circunstâncias. No que respeita à relação médico-doente, é notória a sua preocupação com o bem-estar dos pacientes e aforma como privilegiam o bem-estar do paciente sobre as necessidades que estes estudantes apresentam de praticar procedimentos clínicos. Ao mesmo tempo, relativamente aos seus colegas admitidos diretamente do ensino secundário, consideram ter maior iniciativa para lidar com situações delicadas, mais facilidade que os estudantes do currículo tradicional no estabelecimento da relação com os pacientes, na compreensão do seu discurso, bem como um enorme gosto pelo contacto com os mesmos.
Relativamente à aprendizagem de conhecimentos, a entrevista não permitiu identificar benefícios provenientes da sua formação académica anterior. Os resultados sugerem que o curso de medicina solicita aos estudantes o conhecimento de uma forma diferente daquela com que organizaram os seus conhecimentos académicos até ao momento. Ainda assim, foi possível concluir que as competências genéricas de estudo são consideradas relevantes para a aprendizagem. Segundo a perspetiva dos estudantes entrevistados, frequentar um curso de medicina com um curso prévio é vantajoso por tirarem partido das competências de estudo adquiridas durante a sua formação anterior.
No que se refere às dificuldades identificadas pelos estudantes licenciados durante os seus primeiros contactos com a prática clínica, uma das mais prementes advém do choque do primeiro contacto destes estudantes com o meio hospitalar, e refere-se à constante presença e convivência com a morte, com a doença e com os doentes. A idade dos estudantes foi apresentada como um fator significativo na afirmação desta dificuldade (amostra 1.a.).
Ao mesmo tempo, os participantes do grupo de discussão referiram ter algumas dificuldades na aplicação na prática clínica de conhecimentos adquiridos na unidade curricular precedente, tendo mencionado especificamente que tal dificuldade não advém da falta de conhecimentos (amostra 2.b.).
A falta de tempo relatada por estes estudantes aparenta ter um impacto negativo no seu nível de preparação para a prática clínica. Embora estes estudantes relatem um nível de preparação idêntico ao dos estudantes do percurso tradicional, o tempo é apresentado como um fator importante para a integração dos conhecimentos. Em conjunto com a falta de repetição das aprendizagens, (amostras 2.g. e 2.h.), estes dois fatores parecem dominar as dificuldades encontradas por estes estudantes no que se refere à sua preparação teórica. Embora não tenham sido relatadas dificuldades quanto à assimilação de novos conhecimentos, os comentários relatam problemas no que se refere à acomodação dos mesmos, mais especificamente à relação da quantidade de conhecimentos a adquirir com a curta duração do período pré-clínico, sugerindo dificuldades evidenciadas pela teoria da carga cognitiva [32]. Esta teoria explica que o esforço exercido sobre a memória de trabalho de um sujeito quando este tenta adquirir novos

conhecimentos, depende da quantidade de informação a adquirir, o tempo que tem para o fazer, e das estruturas de conhecimento que detém. Neste sentido, um especialista numa área terá mais facilidade em processar uma grande quantidade de informação nova num curto espaço de tempo pois já possui estruturas de conhecimentos adequadas à sua integração, por contraste às estruturas de conhecimento detidas por um principiante. Os dados sugerem que as dificuldades apresentadas pelos estudantes licenciados se referem à falta de estruturas de conhecimento em medicina, o que os impede de adquirir tanta informação em tão pouco tempo.

Segundo os participantes, esta dificuldade força os estudantes a selecionar os conhecimentos a adquirir. Neste sentido, a experiência clínica parece ter um papel fulcral enquanto orientadora do estudo. A previsão da frequência com que vão aplicar determinados conhecimentos, bem como a previsão do impacto que as suas práticas poderão ter no bem-estar dos pacientes, aparentam ser fatores determinantes quando estes estudantes se vêm obrigados a escolher o que estudar. Estas preocupações refletem-se no facto de preferirem aulas dadas por docentes com experiência na prática clínica.

Os resultados deste estudo têm uma aplicabilidade prática no que se refere à estruturação dos cursos de medicina de duração reduzida para estudantes licenciados. Para além de confirmar que a experiência dos estudantes licenciados lhes pode conferir vantagens - essencialmente na relação médico-doente e nas competências genéricas de estudo.

Os resultados sugerem a conveniência de proporcionar a estes estudantes mais prática clínica na fase inicial da formação dos estudantes licenciados. Neste sentido, será útil considerar a adoção de uma estrutura curricular atendendo a uma integração vertical em forma de Z [26], incorporando o ensino das ciências biomédicas com a aprendizagem clínica desde o início do curso. Atendendo aos resultados, esta integração ajudaria a atenuar o impacto do primeiro contacto dos estudantes com a realidade no Hospital, e teria um papel fulcral enquanto orientadora do estudo e reorganizadora do processo de aprendizagem. Do mesmo modo, a falta de tempo relatada, a grande quantidade de conhecimentos a adquirir, e as dificuldades que dela advém, poderão ter implicações na discussão sobre a duração dos cursos de medicina para estudantes licenciados. Apesar das competências de estudo relatadas por estes estudantes, as limitações e o processo de desenvolvimento apresentados pela teoria da carga cognitiva deverão ser tomadas em conta durante a estruturação destes cursos de duração reduzida.

Embora este estudo de caso apresente limitações relativas ao tamanho da amostra e ao seu foco de análise, acrescenta novos elementos sobre a experiência dos estudantes licenciados nos cursos de medicina, e poderá contribuir para a orientação de estudos futuros sobre este assunto.

Em conclusão, uma análise qualitativa sobre a experiência dos estudantes licenciados evidencia dificuldades características deste grupo de estudantes, mas também perceções de vantagens relativas aos seus colegas admitidos diretamente do ensino secundário.

Mensagens Chave:

Os estudantes licenciados consideram as suas competências de estudo desenvolvidas anteriormente vantajosas e referem ter maior facilidade na relação com os doentes do que os estudantes tradicionais.
Os estudantes licenciados descrevem dificuldade especificamente nos seus primeiros contactos com a morte e a doença e na aplicação clínica de conhecimentos adquiridos durante a fase pré-clínica do curso.
Um contacto com a prática clínica desde o início da sua formação poderá ajudar a atenuar as dificuldades relatadas.

Mensajes clave:

Los estudiantes que ingresan en Medicina en posesión de otros grados refieren tener ventajas relacionados con sus hábitos de estudio previos y una mayor facilidad en su relación con los pacientes que los estudiantes tradicionales.
Los estudiantes en posesión de otros grados refieren dificultades en su primer contacto con la muerte y la enfermedad, y la aplicación clínica de los conocimientos adquiridos durante la fase pre-clínica del curso.
El contacto con la práctica clínica desde el inicio de su formación puede ayudar a mitigar las dificultades relatadas.

Take-home messages:

Graduate-entry students consider that their study skills are an advantage and reported that it was easier for them to establish relationships with patients than for high school entrants.
Graduate-entry students describe difficulties in their first contacts with death and disease, and also in the clinical application of knowledge acquired during the pre-clinical studies.
Early contact with clinical practice, since the beginning of their training, can help mitigate such difficulties.

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Tabela 1: Perguntas feitas no grupo de discussão.

Como é que estão a experienciar esta nova fase do curso, de introdução à medicina clínica?
Querem fazer algum comentário sobre alguma coisa que tenham ouvido, que não tenham percebido e que não tenham sido vocês os emissores?
Vocês querem focar agora um bocadinho com mais detalhe aquilo que agora acham que são as principais dificuldades que têm a aprender a parte clínica? Quais são as dificuldades que vocês sentem na aprendizagem clínica, neste momento?
Tendo em conta a vossa preparação prévia, e estou a dizer toda, não estou a restringir-me a nenhum período, o que é que, na vossa opinião, ajudou neste período de transição? Em que medida ajudou nas dificuldades que mencionaram? De que forma o vosso percurso pré universidade trouxe elementos que ajudaram? O que houve na vossa formação prévia que não ajudou nada? Vocês são diferenciados academicamente relativamente aos estudantes provenientes do secundário, pois são doutorados. Isso trouxe alguma coisa? Que características e competências não académicas, desenvolvidas durante o doutoramento, ajudaram na transição?
Que outros aspectos, na preparação que vos foi dada, poderiam ser implementados para melhora-la? O que é que, atendendo à preparação que tiveram durante o primeiro ano, sentiram ou sentem mais falta e que vos pudesse ter preparado melhor?
Considerando aquilo que vocês têm vivido, aquilo que é exigido neste momento, o que é que vocês próprios teriam feito de forma diferente na vossa preparação durante a fase pré-clínica do curso? O que é que vocês próprios fariam de diferente?

Até agora nenhum de vocês falou na vossa vida pessoal e profissional. De que forma isso ajudou ou não ajudou durante esta transição?
Mais alguma coisa a acrescentar?

Tabela 2: Amostras referentes às primeiras abordagens aos pacientes.

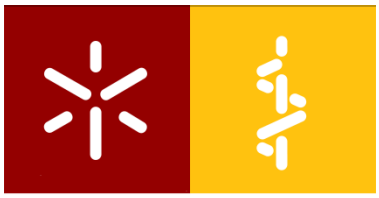
1.a. *"[…] foi bastante complexo para mim lidar com a morte e com a doença"* ;
1.b. *"A parte mais complexa para mim foi conviver diariamente com a morte e com a doença, e essas segundas partes, portanto o ver se o que tinha aprendido servia para alguma coisa ou era suficiente, a integração com os colegas, no meu caso, acabou por ser secundária a nível de impacto pessoal. Ou seja, eu ia para casa a pensar, não no se me dei bem com os colegas, não sobre o ser suficiente para estar aqui, mas ia para casa a pensar no que tinha visto";*
1.c. *"E por acaso acho que nos faz mais mossa, estranhamente. Acho que para alguém de 20 anos ou 19 anos a morte ainda é demasiado distante e não a sente da mesma forma";*
1.d. *"[…] eu não sabia o que fazer, porque eu estava com o coração e… estava mesmo emocionada de ver a senhora também ali".*
1.e. *"Eu senti algumas dificuldades porque acho que tudo é tão privado, é tanta a privacidade da pessoa, muitas vezes no estado de debilidade emocional e física em que a pessoa se encontra que me custou as primeiras abordagens ao exame físico";*
1.f. *"[…]e a minha preocupação obviamente não era estar ali com as coisas técnicas, era mesmo o respeito e ter a capacidade de perceber até onde é que eu poderia ou não magoar o doente";*
1.g. *"Mesmo nós tendo os mesmos receios que eles [estudantes do percurso tradicional] sabíamos enfrentar a situação de uma forma profissional".*
1.h. *"A abordagem aos doentes não foi problema nenhum";*
1.i. *"Mas é natural. Até mesmo em questões de nomenclatura, palavras que os do percurso normal … como por exemplo "jornaleiro", às vezes o diálogo com o doente… Eu lembro-me de estar a traduzir para as minhas colegas o que ele estava dizer";*
1.j. "[…] é desconfortável, de facto, estar ali a entrar na intimidade, mas assumo isso de uma forma natural. Os meus colegas não. Ficavam constrangidos e tinha que eu dar o avançar com o passo."
1.k. *"Por outro lado a parte de lidar com pessoas apesar de ser complicada, acho que*

para mim foi das experiências mais positivas do ano todo";

Tabela 3: Amostras referentes à aplicação de conhecimentos em contexto clínico.

2.a. *"Aquilo que eu senti mais […] era saber se de facto eu estou preparada em termos de teoria para poder na parte prática aplicar aquilo que eu sei".*
2.b. *"Mas o conhecimento não é tão facilmente mobilizável para a realidade clínica.[…] A partir daí essa mobilização para mim é aquilo que eu tenho alguma dificuldade, não porque não tenho os conhecimentos […]";*
2.c. *"[…] senti-me absolutamente ao nível dos outros colegas [estudantes do percurso tradicional]";*
2.d. *"Aquilo que eu reparei é que em termos teóricos não estamos assim tão diferentes em relação aos outros colegas".*
2.e. *"Por isso é que eu volto a insistir que, pelo menos no meu caso é importante ter tempo para sedimentar os conteúdos";*
2.f. *"O que estaria pior é não termos tempo de amadurecer aquilo que nós aprendemos"*
2.g. *"É a questão de amadurecer os conhecimentos, e quanto mais abordamos mais memorizamos, não é?";*
2.h. *"[…] porque realmente não tive tempo para sedimentar os meus conhecimentos, e ver e rever …".*
2.i. *"A matéria que se dá num dia, no dia a seguir, as horas da manhã não são suficientes para estudar, a maior parte das vezes, uma aula sequer, quanto mais a matéria que se deu inteira de um dia";*
2.j. *"Depois não tinhas tempo para estudar, o problema era esse".*
2.k. *" […] a decisão é "o que é que vai ficar de fora? O que é que não vou estudar desta vez?"";*
2.l. *"[A experiência clínica] ajudou-me certamente muito para no próximo ano ter já uma base muito mais sólida para no fundo adquirir os conhecimentos e até saber já como. Como já tenho a perspectiva de como depois mobilizar para a parte da prática clínica, vou fazer já uma abordagem diferente";*
2.m. *"Como já tive a experiência da parte clínica, daqui para a frente sei onde estão as minhas falhas, o que é que tenho que estudar mais, o que não tenho e de certa forma isso ajuda";*
2.n. *"[…]como temos o tempo limitado, restrito, se calhar era mais vantajoso termos dedicado esse tempo a outros assuntos mais importantes ou com um grau de dificuldade maior e que houvesse mais necessidade de explorar";*

2.o. *"Se calhar também diria, [um doutoramento ajuda a] saber distinguir o que é importante do que não é importante e do que é acessório. Porque tu na licenciatura não tens essa prática";*
2.p. *"[…] se as aulas fossem abordadas mais por clínicos e não por pessoas de cada uma das especialidades das ciências básicas, que se calhar nos beneficiaria, lá está, naquele sentido de a gente perceber se aquilo é ou não é tão importante que justifique a gente dedicar algumas horas de estudo,[…]";*
2.q. *"[…] nós temos o tempo muito limitado e à partida a parte de fundamentos seria para abordar aquilo que realmente era mais importante e que iria ser mais rotineiro";*
2.r. *"Eu acho que teve uma lacuna muito grande, que foi precisamente nós não termos tido mais componente prática, e para treinar estes procedimentos que nós temos que fazer em seres humanos, […]".*



University of Minho
School of Health Sciences

EMPATHY STUDIES

Please refer to the two papers presented next:

PAPER 1 - Empathy in senior year and first year medical students: a cross-sectional study

PAPER 2 - A latent growth model suggests that empathy of medical students does not decline over time

PAPER 1

Empathy in senior year and first year medical students: a cross-sectional study

BMC Medical Education

RESEARCH ARTICLE Open Access

Empathy in senior year and first year medical students: a cross-sectional study

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Abstract

Background: The importance of fostering the development of empathy in undergraduate students is continuously emphasized in international recommendations for medical education. Paradoxically, some studies in the North-American context using self-reported measures have found that empathy declines during undergraduate medical training. Empathy is also known to be gender dependent- (highest for female medical students) and related to specialty preference - (higher in patient-oriented than technology-oriented specialties). This factor has not been studied in Portuguese medical schools.

Methods: This is a cross-sectional study of undergraduate medical students on self-rated measures of empathy collected at entrance and at the conclusion of the medical degree, and on the association of empathy measures with gender and specialty preferences in one medical school in Portugal. Empathy was assessed using the Portuguese adaptation of the Jefferson Scale of Physician Empathy-students version (JSPE-spv) among three cohorts of undergraduate medical students in the first (N = 356) and last (N = 120) year. The construct validity of JSPE-spv was cross-validated with Principal Component Analysis and Confirmatory Factor Analysis. Reliability was assessed using Cronbach' Alpha. Global JSPE-spv score differences were examined by year of medical school, gender and specialty preferences (people-oriented vs technology-oriented specialties).

Results: The empathy scores of students in the final year were higher as compared to first year students ($F(1,387) = 19.33$, $p < .001$, $\eta^2_p = 0.48$; $\pi = 0.99$). Female students had higher empathy scores than male students ($F(1,387) = 8.82$, $p < .01$, $\eta^2_p = 0.23$; $\pi = 0.84$). Significant differences in empathy were not found between the students who prefer people-oriented specialties compared to those who favor the technology-oriented specialties ($F(1,387) = 2.44$, $p = .12$, $\eta^2_p = 0.06$; $\pi = 0.06$).

Conclusions: This cross-sectional study in one medical school in Portugal showed that the empathy measures of senior year students were higher than the scores of freshmen. A longitudinal cohort study is needed to test variations in students' empathy measures throughout medical school.

Background

Physicians who are able to establish good relationships with patients achieve better compliance [1], better patient satisfaction [1,2] and better clinical outcomes [3]. Empathy is one of the most influential "ingredients" of good physician-patient relationships [4]. A recent review defines empathy succinctly as the "appropriate understanding of the patient" [5]. The definition of empathy in the context of patient care used in this work was advanced by Hojat (2007) as a "predominantly cognitive (rather than an emotional) attribute that involves an understanding (rather than feeling) of the patient's experiences, concerns, and perspectives of the patient, combined with a capacity to communicate this understanding" [[4], p.80].

Empathy has been characterized in distinct ways in the medical education literature - from a personality trait [6] to a cognitive attribute [5] - but the view that empathy includes a cognitive component is consensual, i.e., one that refers to the ability of physicians to understand patients' emotions and to communicate such understanding [7]. Such a cognitive component should be amenable to training and, thus, medical schools can play a positive role in the development of students' understanding about empathy [8].

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Despite a general awareness of the importance of physician empathy in patient care, some studies in the North-American context have found a decline in self-reported measures of empathy of undergraduate students throughout medical school [8-10] and post-graduate training [11]. In those studies it is suggested that "erosions" in empathy can be associated with the learning context, the "hidden curriculum", student difficulties in dealing with stressors in medical education, and poor role modelling in the academic and clinical workplaces [12,13]. The disturbing possibility is that medical education might be injuring instead of nurturing empathy. Most of the evidence for a decline in empathy originates from studies developed in medical schools in the USA [8-10]. There is only one study outside the USA conducted in Trinidad and Tobago that shows a decrease of self-reported empathy [14]. The generalization of findings within the USA or elsewhere is uncertain, since the studies were restricted to one medical school and were based on self-reported measures of empathy - usually derived from physician scores on instruments completed in the absence of patients. Recent cross-sectional studies in Japan and Korea found the highest values for measures of empathy, by year of medical school, in senior students [15,16]. A cross-sectional study in Iran did not find variations in empathy [17]. The effect of undergraduate medical training on the development of medical students' empathy remains unclear.

There are research instruments available to measure the multifaceted construct of empathy. Among the self-reported instruments applicable in the context of medical education (e.g., Interpersonal Reactivity Index, Balanced Emotional Empathy Scale) [4-6,18], the Jefferson Scale of Physician Empathy (JSPE) is specific to patient care and exists in two versions, the physician version and the student version, both of which have been submitted to psychometric evaluation. The face validity, construct and content validity, criterion-related validity, and reliability of the scale have been demonstrated for the original English version in the USA [11,19]. The student version of JSPE has been adapted to several countries and languages [11,15-17,19-21] including Portugal [22]. Although the JSPE student version assesses the students' orientation towards empathy, JSPE measures have been found to be associated with behaviours of empathy [4].

Purpose of the study

As part of an ongoing longitudinal study with multiple cohorts, medical students in the School of Health Sciences of the University of Minho in Braga, Portugal were asked to complete the Portuguese adaptation of the JSPE (JSPE-spv) [22]. The present cross-sectional analysis addresses the differences in empathy scores between first year and senior students, between genders, and between specialty preferences. The research hypotheses were that empathy scores for first year medical students will be higher than for senior students, the scores for female students will be higher than the scores for male students' scores and a student preference for "people-oriented" specialties is associated with higher empathy scores as compared with a preference for "technology-oriented" specialties.

Methods

Participants

Participants included 476 medical students from 6 entering classes at the School of Health Sciences - University of Minho, in the first (N = 356) and sixth year (N = 120) of the curriculum. There were 321 females (67.4%) and 155 males (32.6%) students in the study population.

Three cohorts completed the questionnaires in the 1st year (cohorts defined here as 4, 5, 6) and 3 cohorts in the 6th year (cohorts defined here as 1, 2, 3). The study sample includes all students for whom the complete sets of data were available. The data were extracted from University of Minho's Medical Education Unit longitudinal database, which was the central repository for individual student data. Responses from first year medical students were collected at the beginning of the medical school and the responses from sixth year students at the end of training. The curriculum and the teaching methods were stable over the period in which the two cohorts were assessed. The response rate for the total sample was 92% (Table 1).

Instruments

The medical students completed two questionnaires: the Jefferson Scale of Physician Empathy - students'

Table 1 Description of study participants

		Frequency (%)	Response rate* (%)
Academic Year	1st year	356 (74,7)	
	6th year	120 (25,3)	
Gender	Females	321 (67,4)	
	Males	155 (32,6)	
Cohort			
(year of entering in medical school)	1 (2001)	43 (9)	86
	2 (2002)	30 (6.3)	79
	3 (2003)	47 (9.9)	94
	4 (2007)	105 (22.1)	95
	5 (2008)	130 (27.3)	94
	6 (2009)	121 (25.4)	93
	Total	476 (100)	92

Portuguese version (JSPE-spv) and an Admission Survey developed locally that includes an item asking students about their specialty preferences at the time.

Jefferson Scale of Physician Empathy (JSPE) - students Portuguese version

The JSPE-spv includes 20 Likert scale items which are scored from 1 (Strongly disagree) to 7 (strongly agree). The 20 items are classified according to one of three subscales: *"Perspective Taking"* (10 items); *"Compassionate Care"* (8 items) and *"Standing in the Patient's Shoes"* (2 items). The translation and adaptation of JSPE-sv has been described in a Portuguese publication [22] and followed established research guidelines [23]. The JSPE-spv was translated into Portuguese by a researcher with a detailed understanding of the instrument. Subsequently the instrument was reviewed by two bilingual individuals, and the "*Modified Direct Translation*" method was applied [23]. The back-translation was conducted by a native Portuguese speaker fluent in English. The latter version was then sent to the authors of the original version for their approval. The psychometric properties of JSPE-spv were previously tested with a different sample with a confirmatory factor analysis approach [22].

Specialty Preferences

This study focused on the following item of the Admission Survey: "*What is the specialty that you might consider choosing in the future?"* Forty-seven possible specialties choices were listed in this item. Student preferences were classified into two previously defined broad groups designated as "people-oriented" and "technology-oriented" specialties [21]. The "people-oriented" specialties require extensive encounters with patients and attention to psychosocial factors (e.g., Primary Care, Gynecology/Obstetrics, Psychiatry, Pediatrics, Internal Medicine and Cardiology). The "technology-oriented" specialties are centered on procedurals and require technical skills (e.g., Anesthesiology, General Surgery, Orthopedics and Radiology) [4].

Procedures

Participation was voluntarily and students were assured that their responses were confidentiality. Informed consent was obtained from all participants. Evidence of construct validity of scores was collected with the present sample and cross-validated. Data were analysed with PASW Statistics 18 (Predictive Analytics SoftWare Statistics) [24] and AMOS 18 [25].

Statistical Analyses

Two-way ANOVA was computed to assess differences on total scores related to gender, specialty preferences and year of medical school (first year vs. sixth year), and MANOVA was used to assess differences on the three dimensions of empathy. The absolute values of skewness and kurtosis for all items were within the acceptable range of the normal distribution (lower than 3.0 and 8.0, respectively) [26]. The cross-validation of the JSPE-spv structure was assessed using a holdout method with Principal Component Analysis and Confirmatory Factor Analysis, applied to two sub-samples which included 238 participants each (A and B) obtained from randomization of the full sample. Sub-sample A was subjected to an exploratory principal component analysis with *Varimax* rotation. The fit of the exploratory structure retained in this first step was then assessed to sample B using confirmatory factor analysis with Maximum Likelihood estimation. Reliability was estimated using *Cronbach* Alpha.

Results

Retest the construct validity of JSPE-spv

To strengthen the findings regarding differences in empathy measures as a function of medical training, we retested the psychometric characteristics of the instrument with the present sample. A previous exploratory study tested the factorial structure without a holdout method of cross-validation [22]. The present study follows a cross-validation process with Principal Components Analysis (PCA).

Our tests of the necessary assumptions to the application of PCA were successful: KMO = 0.77 (i.e., measure of sampling adequacy test) and Bartlett's Test of Sphericity was significant ($p < .001$) (i.e., the test of significance of correlation between variables). The cross-validation revealed a factorial structure that was in accordance with the three dimensions of original version, with the exception of six items that showed the highest loadings on unintended components (2, 10, 13, 18, 19, and 20) and two items (18,19) that showed poor loadings (lower than .30) (cf. Table 2).

The total variance explained by the three dimensions of empathy was 37.4% which is similar to the values reported in the literature [17]. Confirmatory Factor Analysis (CFA) revealed that the model with "no correlated errors" (Fit Model A) displayed poor fit index values, based on the $\chi 2/df$ ratio, the *Comparative Fit Index* (CFI) and *Root Mean Square Error of Aproximation* (RMSEA) [27,28]. Therefore, a second model was tested, with possible violations of "no correlated errors" (Fit Model B). A satisfactory level of model fit was achieved (Table 3).

Cronbach's Alpha for total scale was .77 which is similar to previous reliability values (.76) reported in the Portuguese publication. These values are below those reported by the original in the USA [4], but similar to the results found for adaptations developed in the Republic of Korea and Japanese [15,16].

Table 2 Principal Components with Varimax rotation solutions of JSPE-vs items

Item	Communalities	Components			Correlation
		Compassionate care	Perspective taking	Standing in the Patient's Shoes	r***
14. I believe that emotion has no place in the treatment of medical illness	.488	**.694**	-.016	.073	.594
8. Attentiveness to patients' personal experiences does not influence treatment outcomes	.466	**.662**	.089	.140	.591
1. Physicians' understanding of their patients' feelings and the feeling of their patients' families does not influence medical or surgical treatment	.423	**.624**	-.179	.030	.412
20. I believe that empathy is an important therapeutic factor in medical treatment	.512	**.583**	.411	-.054	.608
10. Patients value a physician's understanding of their feelings which is therapeutic in its own right	.376	**.572**	.219	.017	.553
13. Physicians should try to understand what is going on in their patients' minds by paying attention to their non-verbal cues and body language	.368	**.528**	.274	.117	.524
7. Attention to patients' emotions is not important in history taking	.243	**.469**	.126	-.081	.447
2. Patients feel better when their physicians understand their feelings	.247	**.454**	.170	.111	.346
11. Patients' illnesses can be cured only by medical or surgical treatment; therefore, physicians' emotional ties with their patients do not have a significant influence in medical or surgical treatment	.251	**.444**	.133	.190	.499
12. Asking patients about what is happening in their personal lives is not helpful in understanding their physical complaints.	.230	**.394**	-.015	.273	.466
17. Physicians should try to think like their patients in order to render better care	.520	.005	**.720**	.034	.435
9. Physicians should try to stand in their patients' shoes when providing care to them	.469	.085	**.658**	.167	.499
16. Physicians' understanding of the emotional status of their patients, as well as that of their families is one important component of the physician-patient relationship	.622	.454	**.644**	-.037	.612
15. Empathy is a therapeutic skill without which the physician' s success is limited	.382	.326	**.504**	-.147	.484
5. A physician's sense of humor contributes to a better clinical outcome	.215	.260	**.370**	-.102	.387
4. Understanding body language is as important as verbal communication in physician-patient relationships	.217	.196	**.364**	.214	.338
18. Physicians should not allow themselves to be influenced by strong personal bonds between their patients and their family members	.090	.138	**-.264**	.039	.192
6. Because people are different, it is difficult to see things from patients' perspectives	.690	-.068	.022	**.828**	.248
3. It is a difficult for a physician to view things from patients' perspectives	.565	.101	-.093	**.739**	.298
19. I do not enjoy reading non-medical literature or the arts	.108	.192	.075	**.256**	.216
Eigenvalues		4.42	1.69	1.36	
% of Explained Variance		17.65	11.85	7.89	
Cronbach's Alpha		.63	.74	.64	

Student empathy: comparisons considering the stage of training in medical school, gender and specialty preferences

Our tests of the homogeneity of variances by the Levene' test were succsessful (F(7) = 1.23; p = .287). A comparative analysis of the mean JSPE-vs scores, revealed that measures for seniors (M = 118.21; SD = 9.10) were statistically higher than for first year students (M = 110.31; SD = 10.63; F (1,387) = 19.33, p < .001, η^2_p = 0.48; π = 0.99). The self-reported measures showed that students in later stages of training had higher scores on two dimensions of the scale: "Perspective taking" (M = 59.38; SD = 6.31; F (1,475) = 27.41, p < .001, n^2_p = 0.55; π = 0.99) compared to freshmen (M = 55.82;

Table 3 Fit Indices for Empathy model

	χ^2(df) Sig.	Ratio χ^2/df	TLI	CFI	RMSEA (HI90)
Model A	481,401 (173) ***	2.8	.57	.61	.087 (.096)
Model B	200,444 (160)*	1.3	.94	.95	.033 (.046)

SD = 6.48) and also for "Compassionate Care" (F (1,475) = 32.31, p < .001, η^2_p = 0.64; π = 1.00; Seniors (*M* = 48.78; *SD* = 4.04) compared to freshmen (*M* = 45.81; *SD* = 5.22). No significant differences were found on the third dimension "*Standing in the Patient's Shoes*".

Therefore, the data contradicted the first hypothesis that the empathy total score of entering students is higher than in seniors and concur with previous cross-sectional studies that found highest measures of empathy in senior medical students [15,16].

In terms of comparisons by gender, the empathy scores of female students (*M* = 112.86; *SD* = 10.81) were higher than the scores of male students (*M* = 110.32; *SD* = 10.69; F (1,387) = 8.82, p < .01, η^2_p = 0.23; π = 0.84). Female students (*M* = 47.17; *SD* = 4.86) scored significantly higher than males merely on "Compassionate Care" (*M* = 45.30; *SD* = 5.38; F (1,475) = 14.53, p < .001, η^2_p = 0.30; π = 0.97). No significant differences were found on "Perspective Taking" and "*Standing in the Patient's Shoes*".

No significant differences were found between students with a preference for "people-oriented" (*M* = 113.18; *SD* = 10.92) vs "technology-oriented" specialties (*M* = 110.77; *SD* = 10.52; F (1,387) = 2.44, p = .12, η^2_p = 0.06; π = 0.06).

The Multivariate Analysis of Variance reveals an interaction effect between medical stage of training and specialty preferences, and between gender and medical stage of training. Specifically, the female students in the sixth year (*M* = 120.77; *SD* = 7.46) scored significantly higher on JSPE-spv than male students (*M* = 113.19; *SD* = 10.01; t(118) = -3.98 p < .001), but no statistically significant gender differences were found by gender in first year students. Students who preferred "people-oriented" specialties on the 6th year (*M* = 119.85; *SD* = 8.29) scored significantly higher on JSPE-spv than "technology oriented" students (*M* = 113.84; *SD* = 9.86; t(90) = -2.94 p < .01). No statistically significant differences in empathy scores by specialty preferences were found among 1st year students.

No interaction effects were found between gender and specialty preferences nor between gender, specialty preferences and medical stage of training (cf. Table 4).

Table 4 Two way ANOVA: the association of empathy with specialty preferences, gender and Medical stage of training

	F	P-value	η^2_p	π
Gender	8.816	.003	.023	.842
Specialty Preferences	2.438	.119	.006	.344
Medical stage of training	19.326	.000	.048	.992
Gender*Specialty Preferences	.004	.953	.000	.050
Gender*Medical stage of training	5.482	.020	.014	.646
Specialty Preferences*Medical stage of training	4.025	.046	.010	.517
Gender*Specialty Preferences* Medical stage of training	1.511	.220	.004	.232

Discussion

The present cross-sectional study collected measures of empathy using the JSPE-spv from 6 cohorts of undergraduate students, to compare the students' understanding about empathy in seniors and first year medical students. Our findings are similar to those of past studies undertaken with 6 year undergraduate medical programs with Japanese and Korean versions of the instrument [15,16]. Even though no causal interpretations should be made in terms of increases empathy scores due to the cross-sectional design of the study, they open the possibility that the measures might have increased during medical training. To clarify how empathy measures vary throughout undergraduate medical education, an ongoing longitudinal study is collecting repeated measures of empathy of the same cohorts in years one and six.

This study identified differences on JSPE-spv scores by gender, confirming findings from other reports [7,8,21]. The study also found an interaction effect between stage of training and gender as the only significant gender differences in empathy scores were found in 6th year students. We can offer two non-exclusive explanations for the gender differences. One is based on the evolutionary theory of parental investment, according to which females are expected to develop a stronger sense of caring for offspring than men [11], and should thus be more skilled in understanding their offspring and in communicating such understanding. There is a possible parallel between such skills, as applied to offspring, and empathy, as applied to patients. This is consistent with the findings that the gender differences could be traced to the "Compassionate Care" dimension of the scale. The second explanation would be related to differences between genders in role expectations. Females are more likely to develop interpersonal relationships and to offer emotional support than males [11,15,20,21], and tend to exhibit more social sensitivity and humanistic and care-oriented attitudes, whereas men tend to adopt justice-oriented attitudes, dominance, independence and control [7].

The cross-validation of the psychometric properties of the JSPE-spv through Principal Component Analysis with the study sample, replicated the three factors in the

Portuguese version original model, "Compassionate Care", "Perspective Taking" and "Standing in the patients shoes", and explained 37% of variance. This is similar to results obtained in previous research [16]. The percentage of variance explained by JSPE-spv is relatively low, nevertheless, according to Hair and colleagues (1998) in the Social Sciences, solutions that account for 60% or even less of the total variance are considered satisfactory [29]. Confirmatory factor analysis modelling of the exploratory solution also yielded a good model fit with item correlated errors. Also, the reliability value of the Portuguese version (Cronbach' Alpha .77), albeit lower than the original (Cronbach' Alpha .89), is above the '.7 value and similar to other versions of JSPE (e.g., the Japanese version with Cronbach' Alpha of 0.80) [15]. As to the two items with poor loadings, they were maintained in the JSPE-spv after verification that their exclusion would lead to a minor improvement of the scale's reliability (Cronbach' Alpha 0.78 if items deleted).

Additionally, to test the influence of such items on our results, an alternative ANOVA was performed considering the dependent variable "JSPE-sv score" computed without those two items and the all conclusions remain [Gender: $F(1,380) = 6.77$, $p < .05$; Specialty Preferences: $F(1,380) = 3.17$, $p = .08$; Medical stage of training: $F(1,380) = 16.07$, $p < .001$]. Maintaining all items of the original JSPE-spv allows comparison with international studies using the same scale.

There are several potential limitations to consider. Firstly, our study is cross-sectional and not a longitudinal follow up. As such it does not reflect a real modelling of growth in empathy scores in the student cohorts. Secondly, the scores reported were derived from measures obtained with a self-reported instrument that have not been complemented with observational measurements.

The higher empathy scores among senior medical students could be cohort effects, but could also reflect the influence of training. It is not known which educational elements might be associated with the latter possibility. One plausible candidate would be the curricular emphasis on the principles of humanism and patient centeredness in medical care. This begins in the four weeks of medical school. A vertically integrated humanities program running from year 1 up to year 6, maintains this emphasis. There are other important elements across the curriculum aimed at nurturing the development of empathy. The training of communication skills starts in the second year. Students interview a family at different points in time during the second and third years. Twenty per cent of the clinical clerkship time spent in primary care in urban, sub-urban and rural settings. Clerkship assessments include the clinical teachers' score of student "professionalism". Each student is assessed up to 25 times during undergraduate studies (i.e., one assessment at each rotation) on this factor.

Further research is needed to identify how the formal curriculum may foster the growth of empathy in medical students [30,31]. Complementary methods and instruments, such as peer assessment or observational approaches, would be valuable contributions to the study of variation in student empathy.

Conclusions

Our results showed that sixth year students displayed higher scores of empathy than first year medical students. There were significant associations between gender and empathy scores. Our findings also add a third undergraduate medical program to the short list of programs that have reported data on positive cross-sectional self-reported empathy variation during medical school. Results will be confirmed with a longitudinal design, already under way.

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Authors' contributions

All authors designed the study. EM and AS administered the surveys. EM and PC developed the statistical analysis. EM wrote the first draft of the manuscript. All authors have reviewed and approved the text of the manuscript.

Competing interests

The authors declare that they have no competing interests.

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PAPER 2

A latent growth model suggests that empathy of medical students does not decline over time

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A latent growth model suggests that empathy of medical students does not decline over time

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Abstract Empathy is a relevant attribute in the context of patient care. However, a decline in empathy throughout medical education has been reported in North-American medical schools, particularly, in the transition to clinical training. The present study aims to longitudinally model empathy during medical school at three time points: at the entrance, final of pre-clinical phase and at the beginning of clinical training. Data collected with the adaptation to Portuguese of the Jefferson Scale of Physician Empathy (student version) were analysed with latent growth modelling, conditioned by gender, openness and agreeableness. Empathy scores at all times were higher for females than for males, but only significantly at the end of the preclinical phase. The model showed a satisfactory fit level and the primary finding was that undergraduate medical student's empathy did not decline over time. Empathy scores were significantly and positively related with Openness to Experience and Agreeableness at admission, but the empathy rate of change across time was not significant. The stability of empathy revealed by a longitudinal methodology applied for the first time to empathy studying, contradicts previous results of decline and contributes to the understanding of the empathy development of medical students.

Keywords Empathy · Students · Medicine · Latent growth modelling · Longitudinal analysis

Introduction

There is a wide awareness of the positive impact of physician empathy on patient trust and clinical outcomes (Hojat et al. 2011). Empathy encompasses cognitive and affective dimensions (Hojat 2007; Rahimi-Madiseh et al. 2010). The cognitive dimension in

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empathy refers to the ability of physicians to understand patients' emotions and to communicate such understanding (Hojat et al. 2002). Of the multiple self-reported instruments to measure empathy (reviewed by Pedersen 2009), the Jefferson Scale of Physician Empathy (JSPE) is specific to the context of patient care and exists in two psychometrically sound versions (the physician and the student version; Hojat 2007; Hojat et al. 2003).

Collectively, the evidence relating to the development of empathy in medical school, is contradictory. Longitudinal studies in the USA have reported empathy declines throughout medical school, both in students (Hojat et al. 2004, 2009; Michalec 2010) and in residents (Hojat et al. 2003). However, the practical significance of these findings has been questioned (Colliver et al. 2010) and findings from studies in empathy carried out in other countries are incoherent. Some studies reported no variations (Bombeke et al. 2011; Nunes et al. 2011), others found negative variations (Chen et al. 2007), while others reported increases throughout medical education (Kataoka et al. 2009; Magalhães et al. 2011; Roh et al. 2010; McKenna et al. 2011). Finally, others found no difference in empathy as a function of educational level in medicine (Rahimi-madiseh et al. 2010; Table 1).

The empathy of medical students has been consistently associated with personality and gender. Females outscore males in self-reported measures (Hojat et al. 2005; Nunes et al. 2011; Kataoka et al. 2009). Personality dimensions, assessed under different frameworks, show correlations with empathy measures: there are correlations with sociability (positive) and with Aggression-Hostility (negative; Hojat et al. 2005) and positive with Openness to Experience and Agreeableness (Magalhães et al. 2012). A cross-cultural comprehensive approach to assess personality characteristics like the Five-Factor Model (FFM; Costa and McCrae 1992; Muck et al. 2007) would be useful to clarify associations of personality with empathy across cultures. The FFM evaluates five personality dimensions that, altogether, reflect differences between individuals in their social, emotional and behavioural patterns (Costa and McCrae 1992; Rolland et al. 1998).

The empathy of medical students may be influenced by specific contextual moments in the educational continuum. For example, repeated measures analysis of variance or paired samples *t* test have associated declines in empathy with the transition from pre-clinical to the clinical phase of undergraduate training (Hojat et al. 2009). However, these statistical procedures miss the time factor in the analysis, which are considered in longitudinal methodological frameworks, such as latent-growth models (LGM). The use of LGM to model the development of empathy across time permits (1) an integrated approach to modelling development to describe an individual developmental trajectory; (2) a model of individual differences in one certain construct; (3) an integration of theoretical relevant concepts, simultaneously; (4) an accurate assessment of errors in indicators; and (5) an appropriate test of expected growth (with fixed and time varying covariates; Duncan et al. 2006).

In this study, the LGM was applied to analyse empathy measures of an undergraduate medical student cohort over time. The requirements for applying LGM were met: (1) a continuous dependent variable measured on three occasions; (2) measurement units are the same across time (from the first to fourth year of a 6-year program, encompassing the pre-clinical to clinical transition), refer to the same construct and are unstandardized; and (3) measures are "time structured", i.e. they were collected at the same time points (Kline 2005). The LGM includes a baseline level model (Intercept-only) which is a constant for any individual across time with fixed (or unfixed) factor loadings. The linear change factor (slope) model describes individual differences in the constant rate of mean-level change across measurement points. LGM was carried out using structural equation modelling (SEM).

Table 1 Studies reporting the empathy progress throughout medical school

Authors	Country	School(s)	Sample	Level	N	Instrument	Design	Empathy scores (pre–post)	Gender differences	Conclusion
McKenna et al. (2011)	Australia	Monash University	Undergraduate midwifery students	1st, 2nd, 3rd	52	JSPE-HP	Cross-sectional	101–120	Not reported	3rd > all other years
Bombeke et al. (2011)	Belgium	University of Antwerp	Medical Students	6th year (2 cohorts)	82 (Cohort1 = 45; Cohort2 = 37)	JSPE	Longitudinal (2 cohorts)	Cohort 1: 107–108; Cohort 2: 110–108	Non-significant differences	Non-significant differences
Magalhães et al. (2011)	Portugal	University of Minho	Medical Students	1st and 6th years	476	JSPE-SV	Cross-sectional	110–118	Females > Males	1st < 6th year
Nunes et al. (2011)	Trinidad and Tobago	St Augustine	Students: Medicine, Nursing Dentistry, Pharmacy,	1st Year	355	JSPE	Longitudinal	110–109	Females > Males	Unclear
Michalec (2010)	USA	University of Delaware	Medical Students	1st, 2nd, 3rd	352	JSPE	Longitudinal (3 cohorts)	Cohort 1: 119–115; Cohort 2: 118–115; Cohort 3: 116–113	Females > Males (only for Cohort 1 and 2)	Pre > post
Rahimi-madiseh et al. (2010)	Iran	Shahrekord University of Medical Science	Medical Students	1st, 2nd, 3rd, 4th, 5th	181	JSPE-SV	Cross-sectional	105–107	Non-significant differences	Non-significant differences
Roh et al. (2010)	Korea	Seoul National University College of Medicine	Medical Students	1st, 2nd, 3rd, 4th	493	JSPE-SV	Cross-sectional	Not reported	Non-significant differences	4th > all other years
Chen et al. (2009)	USA	Boston University School of Medicine	Medical students	2nd & 3rd Years	162	JSPE-SV	Cross-sectional	118–116	Not reported	2nd > 3rd

Table 1 continued

Authors	Country	School(s)	Sample	Level	N	Instrument	Design	Empathy scores (pre–post)	Gender differences	Conclusion
Kataoka et al. (2009)	Japan	Okayama University Medical School	Medical Students	From 1st to 6th year	400	JSPE-SV	Cross-sectional	99–108	Females > Males	6th > 1st
Hojat et al. (2009)	USA	Jefferson Medical School	Medical Students	Five moments: 1st; 2nd; 3rd; 4th, 5th;	456	JSPE-SV	Longitudinal (2 cohorts)	114–111	Females > Males	3rd > 4th and 5th years
Chen et al. (2007)	USA	Boston University School of Medicine	Medical students	Incoming, 1st, 2nd, 3rd, 4th	658	JSPE-SV	Cross-sectional	118–113	Not reported	2nd > 3rd
Austin et al. (2007)	Scotland	Edinburgh University	Medical Students	1st, 2nd, 5th years	273	JSPE-SV	Confuse		Females > Males	1st < 2nd (only for males)
Sherman and Cramer (2005)	USA	University of Washington; School of Dentistry	Dentist Students	1st, 2nd, 3rd, 4th	130	JSPE-HP	Cross-sectional	118		1st > all other years
Hojat et al. (2004)	USA	Jefferson Medical School	Medical Students	3rd year	125	JSPE-SV	Longitudinal	123–121	Not reported	At the beginning of 3rd year > at the end of 3rd year

JSPE Jefferson Scale of Physician Empathy, *JSPE-SV* Jefferson Scale of Physician Empathy—student version, *JSPE-HP* Jefferson Scale of Physician Empathy—health professionals

The present study extends previous cross sectional research in the same institution (Magalhães et al. 2011) and was designed to test the following hypotheses relating to the growth in empathy as it pertains to personality and gender. Empathy measures will: (1) increase overall throughout medical school; (2) decline from the pre-clinical to clinical phase of training; (3) be positively related to Agreeableness and Openness to Experience; and finally; (4) be higher in female as compared to male students.

Methods

Participants

The participants were 77 medical students [females, n = 53 (68.8 %); males, n = 24 (31.2 %)] from the same entering class at the School of Health Sciences—University of Minho. The study sample included all students for whom the complete set or of at least 2 empathy measures were available (there were participants that did not answer the empathy scale in the correct time points, respectively 3, 1 and 3 students in the time points 1, 2 and 3). The data were extracted from University of Minho's Medical Education Unit longitudinal database, which is a central repository for individual student data.

Instruments

The student Portuguese version of the Jefferson Scale of Physician Empathy (JSPE-spv) was used to obtain a measure of medical students' empathy level. The JSPE-spv includes 20 items answered on a *Likert* type scale from 1 (strongly disagree) to 7 (strongly agree). These items are further aggregated in 3 factors: "Perspective Taking" (10 items); "Compassionate Care" (8 items) and "Standing in the Patient's Shoes" (2 items). The psychometric properties of JSPE-spv were previously investigated (Magalhães et al. 2011). This study focused the analyses solely on the total empathy score (*Cronbach's Alpha* for total scale: 0.77).

The NEO-Five-Factor Inventory (NEO-FFI; Magalhães et al. 2012) was used to measure personality of medical students. The NEO-FFI includes 60 items, is usually completed in less than 15 min and assesses five dimensions: Neuroticism, Extraversion, Agreeableness, Openness to Experience and Conscientiousness. The answers format is a 5-point *Likert* scale ranging from 0 (strongly disagree) to 4 (strongly agree). The Portuguese version of the NEO-FFI corroborates the well-established reliability, factorial structure and the cross-cultural communalities of personality according to gender, age and educational differences (ibidem). Cronbach's Alpha values reported for each dimension were as follows: Conscientiousness = 0.82, Neuroticism = 0.82, Extraversion = 0.75, Agreeableness = 0.72 and Openness = 0.69 (ibidem).

Procedures

Participation was voluntarily and students were assured that their responses were confidential. Informed consent was obtained from all participants. Medical students of one entering class completed the JSPE-spv (in paper) at three points during their undergraduate degree: upon admission to medical school (month 0, Time 1); upon completing their pre-clinical phase of training—final of 3rd year (month 31, Time 2) and upon entering clinical

training—beginning of 4th year (month 42, Time 3). This study is part of a more comprehensive longitudinal study, which will include further time points for the administration of JSPE-spv. Statistical analysis (descriptive, correlations and t test) was performed using PASW Statistics (Predictive Analytics Software, IBM-SPSS Statistics version 18), the regression imputation and LGM analyses were performed by using the AMOS statistical package (Arbuckle 2009).

Latent growth modelling specifications

The first step was to ensure that the underlying assumption of normality was met with all variables. To test this assumption, we used the following rules-of-thumb: absolute skewness (Sk) and kurtosis (K) values lower than 3.0 and 8.0, respectively; Sk values from −0.774 | Conscientiousness to 0.179 | Openness; Sk ranges from −0.424 | Empathy at Time 1–1.273 | Conscientiousness; Kline 2005).

Cases lacking empathy scores at more than 1 time point were discarded. Missing values were replaced for seven participants with 1 missing on JSPE-spv. Regression imputation was performed in the missing data of seven participants.

In this study, the Latent Growth Model (LGM) was initially defined considering only three measurement time points (M1). Then, to analyse the effect of gender and personality, a conditional model (M2) was contrasted with an unconditional model (M3). The LGM was primarily fitted using maximum-likelihood (ML) estimation, subsequently the model parameters were set equal to their ML estimates. A linear regression was used to predict the missing values for each case as a linear combination of the observed values for that same case (Arbuckle 2009). The LGM assessed both the nature of the mean-level changes across the three measurement points and the individual variation in the initial level (the first time point). Two latent factors were estimated, that is, (a) the initial mean level and (b) the linear change of JSPE-vp scores. The factor loadings of the observed composite variables were fixed at 1 for each measurement point. The loadings for the linear change factor were fixed in ascending order (in this case 0, 31, and 42—representing the measurement months). The parameters of the LGM models were estimated using ML. Goodness-of-fit was evaluated using the χ^2 statistics as well as the following descriptive indices: (1) Comparative Fit Index (CFI) and (2) Root Mean Square Error of Aproximation (RMSEA; Hu and Bentler 1999; Schermelleh-Engel et al. 2003).

Results

Descriptive statistics

The means and standard deviations for the five NEO-FFI dimensions and for empathy scores are presented on the Table 2.

Latent growth model

The empathy scores were stable across time measurements points (Fig. 1). With respect to variations between the pre-clinical and clinical phases (between Time 2 and Time 3), non-significant differences on empathy scores ($t(76) = 1.04$, $p = 0.30$) were found between the pre-clinical ($M = 111.21$; $SD = 10.80$) and clinical phases ($M = 110$; $SD = 10.85$).

Table 2 Descriptive Statistics: means, standard deviation, minimum, maximum

	Minimum	Maximum	Mean	SD
Total sample				
Neuroticism	8	35	21.6	6.13
Extroversion	19	42	31.7	4.92
Openness to experience	14	44	29.5	5.72
Agreeableness	14	44	32.5	5.79
Conscientiousness	17	46	35.4	5.59
Empathy_1	81	132	108.7	10.98
Empathy_2	77	131	111.2	10.80
Empathy_3	78	134	110.0	10.85
Females				
Neuroticism	10	35	22.5	5.72
Extroversion	22	42	32.3	4.28
Openness to experience	14	44	29.5	5.65
Agreeableness	14	42	33.6	5.55
Conscientiousness	27	44	36.6	4.21
Empathy_1	81	132	109.3	11.61
Empathy_2	88	131	113.4	10.57
Empathy_3	94	134	110.8	10.84
Males				
Neuroticism	8	33	19.7	6.66
Extroversion	19	42	30.2	5.95
Openness to experience	20	43	29.5	5.99
Agreeableness	20	44	30.3	5.77
Conscientiousness	17	46	32.8	7.26
Empathy_1	85	129	107.4	9.55
Empathy_2	77	121	106.3	9.84
Empathy_3	78	128	108.3	10.88

The NEO-FFI items are scored from 0 (strongly disagree) to 4 (strongly agree) and the JSPE-spv items are scored from 1 (strongly disagree) to 7 (strongly agree)

Correlations were higher between Time 2 and Time 3 ($r = 0.56$, $p < 0.001$), than between one and two ($r = 0.27$, $p = 0.019$), and three ($r = 0.27$, $p = 0.016$; Table 3). The differences in the correlation values might be affected by the smaller time interval difference between 2 and 3.

A moderate, positive and significant correlation between Openness in Time 1 ($r = 0.24$, $p = 0.037$) and Time 2 ($r = 0.23$, $p = 0.045$) was found. Also, Conscientiousness significantly correlated with Time 3 ($r = 0.23$, $p = 0.043$) and with Extraversion ($r = 0.26$, $p = 0.020$; Table 3).

The gender effects on empathy on the three time points were also analysed. The Kolmogorov–Smirnov test (with Lilliefors Significance Correction) showed that the assumption of normality was met with all groups ($p > 0.20$) except for females at Time 2 ($p = 0.039$). Values for skewness ($Sk = -0.417$; $SE = 0.327$) and kurtosis ($K = -0.690$; $SE = 0.644$) were within the acceptable range values of the normal distribution.

A significant decline in empathy scores from pre-clinical ($M = 113.41$; $SD = 10.57$) to clinical phase ($M = 110.77$; $SD = 10.84$) was noticed, but only in regard to female students ($t(52) = 2.17$, $p = 0.035$; $d = 0.25$). The mean difference in empathy scores between pre-clinical ($M = 106.33$; $SD = 9.84$) and clinical phases ($M = 108.29$;

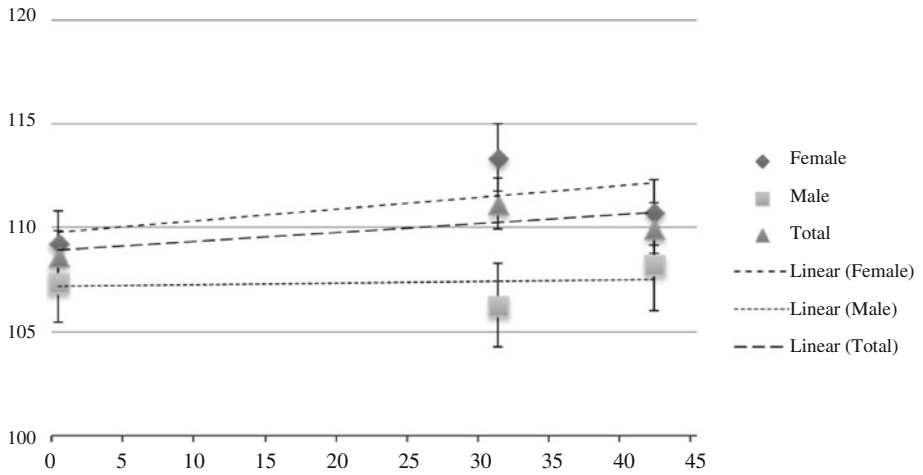

Fig. 1 Empathy across measurement time points (0, 31 and 42 months) by gender (M and SEM)

SD = 10.88) in male students was non-significant (t(23) = −0.786, $p = 0.440$). Considering all the three time points, a statistically significant difference between females (*M* = 113.4; *SD* = 10.8) and males (*M* = 106.3; *SD* = 9.8) was observed solely at Time 2 (t(75) = 2.78; $p = 0.007$; d = .68). In summary, a smooth linear growth in empathy between Time 1 and Time 3 was noted for both male and female students (c.f. Fig. 1).

The residual variances of the observed variables were fixed as equal across time for all models. Model M1 revealed a satisfactory fit level, χ^2 (3) = 4.08; $p = 0.253$ | CFI = 0.967 | RMSEA (HI90) = 0.07 (0.22). The Intercept is significant and indicates the initial empathy level, i.e. upon admission into medical school, t M(intercept) = 108.9 (SE = 1.222; $p < 0.001$). The slope is not significant and indicates the empathy rate of change across time M(Slope) = 0.042 (SE = 0.036; $p = 0.243$). That is, JSPE-spv scores are not significantly different from zero across the three measurement points. The correlation between intercept and slope is negative but not significant (r = −0.465, $p = 0.159$), which reveals that students who have higher empathy initial levels tend to display slower empathy growth rates.

The LGM conditioned on gender, openness and agreeableness (M2) also showed a satisfactory fit level, χ^2 (11) = 15.1; $p = 0.178$ | CFI = 0.910 | RMSEA (HI90) = 0.07 (0.15; Fig. 2). In this model, the mean baseline value was 82.75 (SE = 8.01; $p < 0.001$) and the average growth rate was 0.347 (SE = 0.206; $p = 0.092$). Empathy does not increase or decline over time, as both estimates of the parameters showed significant variances indicating inter-variability, either at baseline and in growth rates [V(Intercept) = 47.676 (SE = 18.6; $p = 0.010$) e V(Slope) = 0.038 (SE = 0.018; $p = 0.039$)]. Openness to Experience (β openness.intercept = 0.32; $p = 0.004$) and Agreeableness (β agreeableness.intercept = 0.30; $p = 0.042$) significantly and positively affect the baseline values of empathy. Students with higher values of Openness and Agreeableness showed higher values of empathy in start point. The slopes (growth rates) for gender (β gender.slope = −0.23; $p = 0.075$) and Agreeableness (β agreeableness.slope = −0.23; $p = 0.177$) were not significant.

Table 3 Descriptive statistics, correlations (below the diagonal), and variance/covariance (diagonal and above) matrices for the variables in the model

Variable	1	2	3	4	5	6	7	8	9
1. Time 1	120.5	31.5	32.7	−5.7	6.0	14.9	11.8	11.1	−0.40
2. Time 2	**0.266*** (**p = .019**)	116.7	65.3	10.4	9.6	14.1	10.2	11.0	−1.54
3. Time 3	**0.274*** (**p = .016**)	**0.557**** (**p = .0000001**)	117.7	5.9	14.4	11.9	1.3	14.0	−0.54
4. Neuroticism	−0.084	0.156	0.089	37.6	−3.8	−1.3	1.2	−2.4	−0.62
5. Extraversion	0.112	0.181	**0.269*** (**p = .018**)	−0.126	24.2	−0.4	2.4	7.2	−0.46
6. Openness	**0.238*** (**p = .037**)	**0.229*** (**p = .045**)	0.193	−0.037	−0.014	32.7	−1.9	0.7	0.01
7. Agreeableness	0.187	0.163	0.021	0.033	0.084	−0.057	33.5	6.3	−0.71
8. Conscientiousness	0.181	0.183	**0.231*** (**p = .043**)	−0.070	**0.264*** (**p = .018**)	0.023	0.195	31.2	−0.82
9. Gender (0-Females)	−0.078	**−0.306**** (**p = .007**)	−0.107	−0.218	−0.198	0.003	**−0.262*** (**p = .021**)	**−0.317**** (**p = .005**)	0.22

N = 77 | * $p < 0.05$; **$p < .01$ (** was labeled as $p < .001$, but the correct label is $p < .01$)

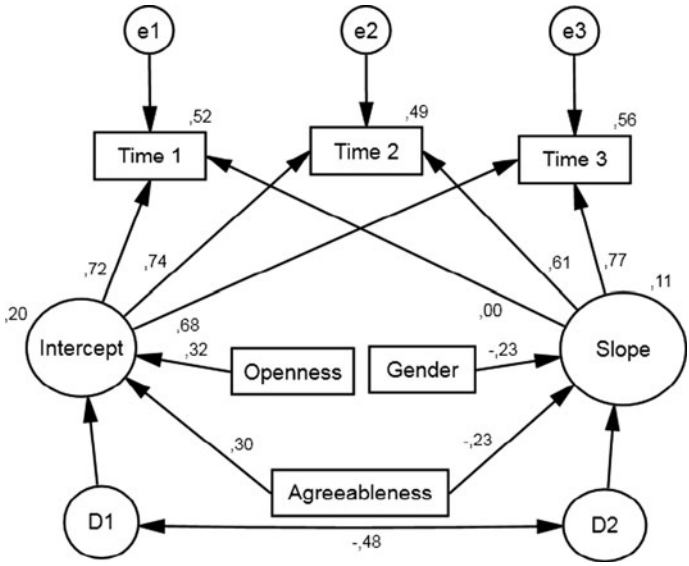

Fig. 2 Standardized estimates of Latent Growth Model for empathy conditioned by gender, openness and agreeableness

Comparing the overall significance of the unconditioned LGM (M3) with the conditional model (M2), the Chi-square test difference test shows that model t M2 provides significantly better fit than Model M3 (χ^2dif (4) = 13.98; $p = 0.007$).

Discussion

Prompted by the need to understand positive cross-sectional developments in empathy in one medical school (Magalhães et al. 2011), the present study successfully applied a Latent Growth Model framework with a fixed data collection schedule to measure changes in empathy across three time points in undergraduate medical training. The time points included the transition to clinical training, a challenging period for undergraduate medical students in which they experience new identities, demanding workloads and uncertainty as to what is expected of them (Godefrooij et al. 2010). Previous studies in the USA have suggested that the empathy of students is stable along preclinical training but, for some students, may decrease in clinical placements (Hojat et al. 2009). The authors have related their findings of erosion of empathy to a "escalation of cynicism and atrophy of idealism … as part of students' socialization in medical school and their adaptation to a professional role" (Hojat et al. 2009). Both the findings and the interpretations need further testing. To understand why some students may experience variations in empathy and others may not, statistical methods that take into account developmental trajectories are necessary.

In a previous cross-sectional study in our medical school, we found that the empathy of senior students was higher than first year students, so we hypothesized that empathy measures would increase with time in medical school. LGM models refuted our first hypothesis showing that JSPE-spv scores were longitudinally stable. As data on empathy for intermediate time points was not available, it was not possible to discriminate the

particular moment(s) that contributed to the reported increases. This study shows that there is a gender related evolution that, globally, results in a linear non-significant growth that is not hampered by the preclinical/clinical transition.

Based on the international literature (Hojat et al. 2004, 2009; Michalec 2010), we hypothesized a negative change in empathy at the transition from the preclinical to clinical training. Globally, our data did not confirm the hypothesis, as the empathy levels grew from the entrance in the medical degree to the start of clinical training. However, a significant decline in empathy was found in female students in the transition period. Such gender specific differences may be caused by gender-related personality characteristics that pervade the adult populations across cultures (Chamorro-Premuzic and Furham 2005; Feingold 1994; McCrae et al. 1998) and medical students in particular (Hojat et al. 1999). Males tend to be more assertive and females more anxious (Feingold 1994). Anxiety has been indicated as a typical response to stressful events such as transition phases (Stinson 2009).

As far as what concerns personality, students with higher scores on Openness and Agreeableness sub-scales scored higher on JSPE-spv upon admission to medical school. These was expected due to these dimensions' associations with interpersonal skills that are important in the establishment of an empathic physician-patient relationship (Chamorro-Premuzic 2007). Agreeableness involves a predisposition to be kindly and to cooperate with others that is related with attributes as friendliness, generosity and helpfulness (McCrae and Costa 1987). These attributes are important for physician empathy. Openness to experience is the dimension that offers the necessary sensitivity and insightfulness to meet and understand other people, and an ability to grasp the emotional and personal conditions of others. Therefore, a positive association of Openness to experience with empathy was also expected (McCrae and Costa 1987).

This is the second study in our medical school that disagrees with the notion that student empathy declines throughout medical training. There are curricular and organizational contextual factors that might be relevant to understand these results. The undergraduate medical curriculum has an underlying bio-psycho-social framework (Engel 1978) and routinely employs approaches that have been described to enhance empathy in medical education, such as emphasis on improving interpersonal skills, analysis of video-taped encounters with standardized patients, exposition to personalities who are well known role models on how they care for patients and studying literature and the arts (Hojat 2009).

The local organizational model of clerkships maintains student contact with the values cherished by medical school during clinical placements. Minho is geographically a small territory, which allows that all students have scheduled sessions academic (some debating topics related to humanities) at the medical school twice or three times a week. This is in marked contrast with clerkship models for medical schools that cover vast regions in which students literally move to live away from campus to do their clerkships. The contact with the medical school might have two effects: lessen the anxiety of experiencing the new clinical workplaces and a permanent recall of the values defended by the school.

Our findings should be interpreted in light of important caveats, namely a small sample size and single cohort analysis (from one institution). Nevertheless, the Hamilton, Gagne and Hancock (2003) study suggests that sample size may not bias the parameter estimates to a substantive degree. While samples of at least 100 are recommended, sample sizes of at least 50 can be used in order to obtain model convergence. Also, results are based on the total sample of medical students assessed so far at the three time points in our medical school (response rate 93 %). Another issue to consider is that the models could be built using the latent structure both for the empathy assessment and personality dimensions.

However, the (perhaps modest) gains in measurement precision by adding these constructs might not be justified by the increased complexity associated with these models. In planned longitudinal studies, inclusion of a fourth measurement point in the model might allow to detect any nonlinear component in the growth of students' empathy.

Conclusions

The present investigation found a non-significant positive evolution in empathy scores across three time points in Portuguese undergraduate medical students that cover the preclinical/clinical transition. This study has two fundamental implications for state of the art research on empathy in medical education. Firstly, the study challenges the idea that declines in empathy previously reported in longitudinal US studies are generalizable to all medical schools either in the USA or elsewhere. Perhaps alternative organizational and educational paradigms could circumvent the reported erosions in empathy. Secondly, the study calls for multi-institutional international research to clarify the impact on student empathy of curricular and organizational models at the transition to clinical training. The LGM framework would add significantly to simple comparisons of point estimates of empathy. Furthermore, we believe it would allow the clarification about which are the factors that medical schools could explore to nurture the development of student empathy at the transition to the bedside.

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