
# Internationalization of Medical Education in Portugal
## An Overview of Students' Outward and Inward Mobility

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# Dedicatória

“Aqueles que passam por nós, não vão sós, não nos deixam sós. Deixam um pouco de si, levam um pouco de nós.”

- Antoine de Saint-Exupéry

# Resumo

A literatura atual corrobora que a internacionalização da educação médica tem sido promovida por diversos países, com o objetivo de aprimorar as competências dos futuros profissionais de saúde face à crescente globalização, e os desafios associados.

Esta dissertação tem como principal objectivo de analisar a situação atual da internacionalização da educação médica em Portugal, em relação à quantidade dos estudantes de medicina i*ncoming* e *outgoing* ao abrigo do programa de mobilidade Erasmus+, aos países de origem e destino, analisar o grau de envolvimento em diferentes programas de mobilidade (estudo ou estágio), bem como as políticas educativas adoptadas para promover a internacionalização em casa e o estabelecimento de parcerias institucionais internacionais por cada escola médica.

Os dados foram recolhidos através da "Agência de Educação e Formação Erasmus+", da base de dados "ETER"; da base de dados "Barómetro OG Erasmus +" e dos *websites* oficiais das universidades. Além disso, os coordenadores dos departamentos internacionais de cada associação estudantes de medicina foram inquiridos eletronicamente sobre a situação atual da internacionalização da sua escola médica.

Os nossos achados mostram que o número de estudantes de medicina *outgoing* ultrapassou o de *incomings* e o grau de envolvimento de estudantes de medicina no programa Erasmus+ é inferior à taxa de participação de estudantes universitários portugueses. Os principais países de origem e destino estão localizados na Europa do Sul, Central e de Leste. Além disso, observamos grandes discrepâncias entre as escolas médicas portuguesas, em relação ao fluxo de estudantes *outgoings*, ao tipo de mobilidade Erasmus+, políticas de internacionalização em casa e ao estabelecimento de parcerias institucionais internacionais.

Concluimos que em Portugal cerca de 3.7% dos estudantes de medicina participam em programas de mobilidade Erasmus+, o principal destino são escolas médicas/hospitais localizadas na Europa do Sul, Central e do Leste e todas as escolas médicas portuguesas incluiram pelo menos um aspeto de internacionalização em casa no seu curriculo médico regular. Observa-se uma grande assimetria entre as escolas médicas estudadas na medida em que 2 das 7 instituições de ensino superior estudadas são responsaveis por 68% dos *outgoings* e 59.1% das parcerias internacionais institucionais das escolas médicas portuguesas.

# Palavras-chave

Internacionalização; Educação médica; Programa Erasmus+; Competências interculturais; Parcerias institucionais internacionais;

# Abstract

The current scientific literature corroborates that internationalization of medical education has been promoted by several countries in order to improve the skills of future health professionals towards growing globalization, and its challenges.

This dissertation's main objective is to gain an understanding and develop a detailed up-to-date state of affairs of the current internationalization of medical education in Portugal, regarding the quantity and nature of incoming and outgoing medical students under the Erasmus+ programme, which are the countries of origin and destination, analysis of the outgoing distribution by different Portuguese medical schools and different international programs (study or traineeship), as well as the educational policies adopted by each medical school to promote the internationalization at home and the establishment of international institutional partnerships

The data was collected from "Erasmus+ Education and training Agency", "ETER" database; "Erasmus+ Barometer OG" and universities official website. Additionally, internationalization coordinators of each Portuguese medical school student associations/committees were electronically surveyed about the current situation of internationalization in their medical school.

According to our findings, the number of medical outgoings surpassed the number of incoming medical students, additionally the outgoing medical students engagement rates on Erasmus+ mobility programme are below the participation rates of Portugal university students. The main origin and destination countries are located in Southern and Central & Eastern Europe. We witnessed big discrepancies between portuguese medical schools, regarding the student mobility flow, Erasmus+ mobility type, internationalization at home policies and international institutional partnerships.

We conclude that in Portugal about 3.7% of medical students participate in Erasmus+ mobility programmes, the main destinations are medical schools/hospitals located in Southern, Central and Eastern Europe and all Portuguese medical schools included at least one aspect of Internationalization at home in their medical curriculum. We witness a great asymmetry between the medical schools studied in that 2 of the 7 higher institution institutions studied are responsible for 68% of the outgoings and 59.1% of the institutional international partnerships of Portuguese medical schools.

# Keywords

Internationalization; Medical Education; Erasmus+ programme; Intercultural competence; International Institutional Partnerships;

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# List of Acronyms

| | |
|---|---|
| IoMe | Internationalization of Medical Education |
| ME | Medical Education |
| IoHE | Internationalization of Higher Education |
| IoC | Internationalization of Curriculum |
| IaH | Internationalization at Home |
| HEI | Higher Education Institution |
| SMS | Student Mobility for Study |
| SMT | Students Mobility for Traineeship |
| IFMSA | International Federation of Medical Students Association |
| Erasmus | European Community Action Scheme for the Mobility of University Students |
| IC | Incoming |
| OG | Outgoing |
| ETER | European Tertiary Education Register |
| DGES | Portuguese Directorate General for Higher Education |
| FMUL | Lisbon University Medical school |
| NOVA | Nova Lisbon University Medical School |
| EM-UM | Minho University Medical School |
| FCS-UBI | Beira Interior University Medical School |
| FMUC | Coimbra University Medical School |
| U-Alg | Algarve University Medical School |
| UP | Porto University |
| FMUP | Porto University Medical school |
| ICBAS | Abel Salazar Institute of Biomedical Sciences of Porto University |
| ECTS | European Credit Transfer and Accumulation System |

# 1. Introduction

Globalization is defined as the increased global mobility, interconnection, and mutual dependence (1), and it affects several facets of our life, including health (2).

With the current development of globalization and worldwide population migration, we are witnessing a growth of emergent communities with varied features, such as, social, linguistic, cultural, and financial aspects, which can be linked to distinct health outcomes. Bischoff et al. has shown in his studies that unfamiliarity and lack of expertise with migrant medical conditions or the impact of health variables in migrant communities can adversely influence the efficiency and quality of care (3).

Therefore, the ongoing globalization and cultural diversification of society is imposing new challenges for local healthcare systems (4) with the rise of new medical conditions (5). As a consequence, physicians in their local settings are presented with a wider range of diseases and patients linguistically and culturally diversified (6), prompting the health workers' need to obtain and develop greater capabilities to comprehend, investigate, and manage the health demands of migrant communities (7).

Furthermore, human population movement is a key indicator of global public health. This is due to its ability to connect regions with high-prevalence or endemic diseases to other regions of low-prevalence or non-endemic diseases through rapid or large-volume, global movements - or both - which is especially important, regarding the most recent international health events (i.e., the SARS and the COVID-19 pandemics) (8).

Considering the current global interconnectivity and its challenges in healthcare, the internationalization of medical education (IoME) is becoming progressively more important in order to raise awareness of international healthcare challenges. IoME can provide a basis for international cooperation and knowledge exchange, as well as expose students to a wider view of global clinical practice. In this way, the next generation of health professionals can operate efficiently and cooperatively in global health problems (9) by providing healthcare within a worldwide conceptual framework (10).

By integrating international and intercultural viewpoints on medical curriculum, IoME can contribute to Medical Education advancement by improving medical students' insight on social, cultural, and ethical diversity – thereby training them to incorporate the global medical society, which can have a leading effect on the development of healthcare delivery - at a local and global level (10).

Up until now, the IoME - the medical equivalent of IoHE (Internationalization of Higher Education)- has no formal definition. For the intent of this paper, we will employ a definition of IoHE that has been widely used in research and adapt it to medical education to characterize it as: "the process of purposefully integrating and infusing international, intercultural, or global dimensions into medical education in order to enhance its quality and prepare graduates for professional practice in a globalized world" (11), the explanation is aligned with research-based and commonly quoted definitions of IoHE (12), internationalization of curriculum (IoC), and internationalization at home (IaH), which are widely cited in higher education literature (13,14).

Although IoME and Global Health are two distinct domains, there is some crossover between them. Global health, in its wider definition, refers to the intent of enhancing the well-being of every individual. IoME, on the other hand, is viewed as an educational science, a pedagogical concept, a groundwork, and a method for all students to acquire global and intercultural learning results – not as an aim by itself. As a result, IoME is a way to promote global health and it involves obtaining cultural competencies and knowledge on health issues around the world (15), culminating in a more globalized and improved world in terms of healthcare.

Cultural competency is portrayed in a variety of discipline-specific methods, models, and usually refers to cross-cultural communication skills and delivery of culturally proper healthcare (16). This includes, for instance, analytical and insightful approaches regarding behavior, knowledge production of sociocultural settings and influential determinants of healthcare, as well as competence development in interviewing methodology (17) and assessment of circumstantial variables and interdependencies (18,19). Cultural competency training can be perceived as a means to reduce disparities across different cultural groups and communities, regarding health outcomes and healthcare delivery (20)

In IoHE, global competencies are often used to empower global citizen graduates by giving them international career prospects. Global competencies in IoME are less characterized, more complex, lacking consensus, and with different internationalization programs containing no official norms or agreed-upon formats (10,21,22).

Hanson (23) claims that the “social transformation model” of IoME is the one closely adjusted to contemporary international standards in medical education, as it connects critical analysis of global and intercultural concerns on a local and global sphere with a transformational educational methodology. From this viewpoint, knowledge of the different healthcare systems (24), the burden of global pathologies, traveler's medicine,

and immigrant health (5,6) appear inadequate without incorporating the expansion of critical thinking competencies (22); analytical, leadership, and management competencies (24); and cultural skills (25,26).

The current literature describes three areas of medical education research congruent with research in IoHE: International institutional partnerships, internationalization at home (IaH), and student mobility (11). Each category's definition is based on descriptions contained in the IoHE (11,16):

- International Institutional Partnerships – Programs in which universities and medical schools collaborate with other hospitals, medical schools or programs abroad to offer elements of IoME to medical students;
- Internationalization at Home (IaH) – The intentional integration of global and multicultural aspects into academic and informal curriculum for all students within a local educational environment (27).
- Student Mobility Programs – Consisting of studying abroad, clinical internships, research internships or short-term rotations. Usually these activities are organized through institutional partnerships and some are self-organized by medical student associations/committees.

IaH can be achieved through teaching and learning methodologies in global health courses and cultural competency training that incorporate multidisciplinary, multiprofessional, and collaborative approaches, experiential learning and real-scenario cases analysis (5,17,18,24), learning a second language (i.e. (17)), or perceiving an international health worker as a valuable resource (i.e. (18)). IaH advancements would also require the blending of global and patient-centered viewpoints within a self-reflective, transformational pedagogic process (5).

Current literature corroborates that international student mobility leads to pedagogical benefits for medical students such as gaining knowledge of worldwide pathologies; enhancement of clinical aptitudes (5,19); acquiring communication and language competences; acknowledging the economic and sociocultural impacts on health care (28); the impacts on career goals (19,28); self-development, self-confidence, and broadening experiences, among other things (29).

The Portuguese higher education system in particular has embraced this trend towards increasing internationalization. The elemental changes happened within the past three decades, with Portugal’s European Union (EU) membership and the signature of the Bologna Declaration (30).

Regarding mobility programs in portuguese medical schools the most prominent one is the Erasmus+ Programme ("European Community Action Scheme for the Mobility of University Students") which is a EU student exchange program established in 1987 (31,32), enabling university students in the EU to participate in long-term student mobility for studies (SMS) which can last one or two-semester abroad or perform a short-term student mobility for traineeship (SMT) abroad from 3 months up to 12 months (33). Despite that Erasmus Program's share of overall student international mobility is unknown, it is believed to make up 70% and 80% of all program-based student international mobility in the Europe 32 region. (34,35).

The Erasmus+ programme goals, budget, rules and legislation are reset and updated every 7 years by EU member states, to ensure that Erasmus+ programme fulfills current European youth concerns and needs (32). In this way, a renewed Erasmus programme is implemented in phases every 7 years, the last Erasmus+ programme was established between 2014 and 2020, and an expanded Erasmus+ programme phase began 2021-2027 (36).

Medical students in Portugal can also participate in international exchanges under IFMSA exchanges program ("International Federation of Medical Students Association") which provides medical students worldwide the possibility of 1 month international internship, in a clinical setting, or on a research project (37).

Additionally, each individual university and medical school establish their own institutional partnerships with healthcare institutions or universities worldwide, enabling extra international mobility opportunities for its medical students as well as knowledge transfer between institutions. Regarding the institutional partnerships in Portuguese-speaking countries (e.g., Brazil, Angola, ) there are conventional international mobility partners (35,38) outside the Erasmus+ Programme.

Although there is plenty of knowledge about the benefits of the IoHE, few efforts have been made by the competent authorities to quantify the number of incoming and outgoing medical students who participate in mobility programs offered by higher education institutions. To our knowledge, the only research that quantifies the number of incoming and outgoing medical students in a specific country was carried out in the Netherlands with data from the nineties (39). There is no further research of this kind neither in Portugal nor in the rest of Europe.

This dissertation's main objective is to gain an understanding and develop a detailed up-to-date state of affairs of the current internationalization of medical education in

Portugal. In other words, it is intended to analyze the number of medical students who participated in Erasmus+ mobility programmes between 2014-2020 and what are the countries of origin and destinations of the medical students (incoming and outgoing), to examine the OG distribution by different Portuguese medical schools, as well as the educational policies adopted by Portugal's medical schools to promote the internationalization at home.

To account for the current situation of the Internationalization of Portuguese medical schools, the following research questions were defined:

- What is the quantity and nature of students' inward and outward mobility at Portuguese medical schools? What is the tendency of students' engagement in mobility programs in Portugal?
- What is the current state of IaH of Portugal medical schools?
- What is the outgoing student engagement in the Erasmus program in different Portuguese medical Schools?
- What are the similarities of the more common origin/ destination geographical regions? Is there a preference for a specific language?
- Do outgoing medical students prefer to participate in study mobility or under medical traineeships?

The specific objectives of these research projects are to:

- Characterize and quantify the incoming and outgoing of medical students in Portugal that participated in international Erasmus+ mobility program between 2014-2020;
- Study the evolutionary tendency of the internationalization of medical education in Portugal and of each medical school between 2014-2020;
- Study to which extent are the Portuguese Medical Schools promoting IaH and what efforts are being made to internationalize the medical curriculum;
- Analyze the gap between the number of incoming and outgoing medical students under mobility programs in Portugal;
- Study and characterize the ERASMUS international mobility programs in each Portuguese medical school as well as to determine which mobility type have higher engagement rates by outgoing medical students;
- Determine which geographical regions and countries of origin and destination are more common among medical students participating in international mobility programs, and whether there is a similarity between them;

# 2. Methods

The study population included all the IC and OG medical students to/from the 8 portuguese medical schools (40). Our focus was to analyze OG and IC medical students international mobility data from the civil years of 2014 to 2020, in accordance with the Erasmus+ program approved for 2014-2020, period when the data was reported in an analogous way, thus, allowing mobility patterns to be compared across time (33). An expanded Erasmus program phase began for 2021-2027 (36), the reported data changed and became more intricate, making comparisons with previous data problematic. The participation in the international mobility program was set as inclusion criteria.

The data was collected over seven years (2014-20) and analyzed with the use of Microsoft Excel.

As previously mentioned, this research intends to quantify and investigate the current state of Portuguese medical education internationalization. To answer this question, the methodology used will be mainly quantitative. This approach will be based on 3 steps focusing on three different areas of medical educational research congruent with research in international higher education, as explained before (11).

The first step of the quantitative methodology was the collection and analysis of key international Erasmus+ institutional partnership of each Portuguese Medical School, in order to appraise their visions and activities on internationalization. These data was collected from the institutions' official websites (41–47) and by institutions' international office email.

Afterwards, a survey phase followed. We electronically surveyed the Internationalization coordinators of each Portuguese medical school student associations/committees about the current situation of internationalization in their medical school, as well curriculum internationalization aspects. Internationalization at home education (IaH) was operationalized by five features of internationalization: "inclusion of courses in the regular medical curriculum given in English; inclusion of topics on (imported) tropical diseases; inclusion of topics on international health care systems; facilities for foreign language learning; facilities for skills training for dealing with patients from different cultural backgrounds" (39,48).

In order to quantify medical students' international mobility, closed questions were used to collect data on quantity and nature of student mobility, the countries of origin/ destinations and gender divided into different types of mobility programs. The mobility

programs were classified as Student Mobility for Study (SMS) or Student Mobility for Traineeship (SMT).

Regarding mobility programs we only considered the Erasmus+ Program, as further information regarding other programs was not provided by Portugal Medical Schools neither IFMSA Portugal.

It is anticipated that Erasmus+ programme represents 70% and 80% of all program-based student international mobility in the Europe 32 region (34,35) For the purpose of this research, statistics regarding Erasmus+ mobility will be used to follow the progress of Portugal international medical students' mobility, even if only to provide a partial picture of Portuguese medical schools mobility. This research methodology excludes student mobility with Portuguese-speaking countries (e.g., Brazil, Angola, …) as conventional mobility partners (35,38), as well as IFMSA exchanges, which account for a significant portion of total student mobility.

The data regarding Medical Students' Erasmus+ mobility was asked by email to Portuguese "**Erasmus+ Education and training Agency**", who provided data regarding the annual number of IC/OG medical students, the countries of origin/destination, as well as their gender.

Data regarding the total number of IC and OG by each university and the program (SMS or SMT) was retrieved from **ETER platform** (European Tertiary Education Register) (49). ETER is a European Commission project whose goal is to collect data on higher education institutions throughout Europe. Data was accessed by filtering variables "Erasmus" on the search engine, after it we selected the indicators "Erasmus Credit Mobility Incoming" and "Erasmus Credit Mobility Outgoing" and the Erasmus data "Erasmus Incoming students - total"; "Erasmus Outgoing students - total" and searched the results. After we inserted "Portugal" as selected country and "institution name", "Institution acronym" and "reference year" as variables, and study the Portuguese universities that currently have a medical degree.

From the Portuguese Erasmus Barometer OG we collected data of outgoings on portuguese Universities and medical schools regarding its distribution on SMS or SMT programmes, as well as the top host institutions in Europe for SMS and SMT. **Erasmus+ Barometer OG** (50) is a Dashboard, created by Erasmus+ Portuguese Agency, that reflects information on Outgoing mobilities of students, learners and staff from Portuguese institutions as part of Erasmus+ Programme. To collect the data we selected the Key Action "KA103 - Higher education student and staff mobility" and "KA107 - Higher education student and staff mobility between Programme and Partner

Countries" regarding student mobility for studies and student mobility for traineeship. Additionally, we selected "Medicine" as field of study and each portuguese university with integrated medical degree as "applicant organization".

The European Commission's website on Erasmus statistics was also consulted. Further data was asked to each university international office, without any reply.

The data regarding the total number of medical students and university students in Portugal was collected on PorData (51) database. The number of medical students of each medical school, was indirectly calculated based on the average annual number of new accepted medical students in Portugal between 2014 and 2020, according to DGES (Portuguese Directorate General for Higher Education) (52), and multiplied by 6 years. Pordata, is a database of certified statistics on Portugal, its municipalities and Europe. DGES is a public organism under direct Portuguese State administration and is subjected to the direction of the Ministry of Science, Technology and Higher Education (MCTES) (52).

The table 1 was built to summarize the data collections methods and sources of the current master dissertation.

**Table 1**- Data collection methods and sources

| Internationalization aspects studied | Source of Data | Information collected |
|---|---|---|
| **International Institutional Partnership** | University official website | Number of international Erasmus+ Institutional Partnership of each medical school |
| | University international office email | |
| **Internationalization at Home (IaH)** | Electronic survey to internationalization coordinators of each medical school students association/committee | Current situation of internationalization in Portuguese medical schools and curriculum internationalization aspects |

| | | |
|---|---|---|
| **Students Mobility** | ETER | Number of IC/OG university students |
| | Erasmus+ OG barometer | Number of OG medical students destination country, sending institution and Erasmus+ program (SMS or SMT). Number of OG university students by mobility type |
| | PorData | Number of enrolled medical students and university students |
| | DGES | Annual number of medical students per medical school |
| | Erasmus+ Education and training Agency | Annual number of IC/OG medical students, the countries of origin/destination and gender |

In order to study the outward mobility, we considered the Portuguese medical schools with the integrated medical degree which are:

- Lisbon University Medical school (FMUL);
- Nova Lisbon University Medical School (NOVA);
- Minho University Medical School (EM-UM);
- Beira Interior University Medical School (FCS-UBI);
- Coimbra University Medical School (FMUC);
- Algarve University Medical School (U-Alg);
- Porto University (UP) that includes two medical school on the same university, Porto University Medical school (FMUP) and Abel Salazar Institute of Biomedical Sciences of Porto University (ICBAS);

We analyzed ICBAS and FMUP medical schools OG mobility data as one University (UP), as their data is registered combined on "Erasmus+ Barometer OG" under Porto University medical students.

In order to analyze the origin of IC medical students, and destination countries of OG medical students we divided European countries into 4 geographical regions according to EuroVoc (53), presented on table 2:

**Table 2** - Division of European Countries into four geographical regions according to EuroVoc

| Southern Europe | Western Europe | Central & Eastern Europe | Northern Europe |
|---|---|---|---|
| Spain, Italy, Greece, Gibraltar, Malta, San Marino, Cyprus, Greece and Turkey | France, Ireland, United Kingdom, Luxembourg, Belgium, Netherlands, Germany, Switzerland, Liechtenstein, Andorra, Monaco and Austria | Albania, Hungary, Poland, Romania, Bulgaria, Belarus, Moldova, Bosnia Herzegovina, Croatia, Slovenia, Czech Republic, Slovakia, Kosovo, North Macedonia, Montenegro, Russia, Ukraine, Serbia, Georgia, Armenia and Azerbaijan | Denmark, Norway, Sweden, Finland, Estonia, Lithuania, Latvia, Iceland |

Additionally, the countries were divided according to the language tree of the state official language (54), presented on table 3:

**Table 3** - Division of European Countries according to the language tree of the state official language

| Romance Language | Germanic Languages | Slavic Language | Other European Languages |
|---|---|---|---|
| Spain, France, Italy, Romania, | Netherlands, Germany, United Kingdom, Ireland, | Poland, Czech Republic, Slovakia, Serbia, Slovenia, | Finland, Belgium, Estonia, Lithuania, Latvia, Iceland, |

| | | | |
|---|---|---|---|
| Andorra, Moldova, Luxembourg | Switzerland, Austria, Denmark, Norway, Sweden | Croatia, Bulgaria, Slovenia, North Macedonia, Russia, Belarus, Ukraine, Montenegro, Kosovo and Bosnia Herzegovina | Hungary, Greece, Turkey, Albania, Georgia, Armenia and Azerbaijan |

The present work was submitted to the University of Beira Interior Ethics Committee, as no ethical issue and moral principles violation was identified, a positive feedback was provided to continue de research (Annex 1).

# 3. Results

## 3.1 Quantity and Nature of the Students

### 3.1.1 Incoming and Outgoing Numbers and evolutive trends

According to PorData (51), between 2014 and 2020, Portugal had 816.987 university students of which 86.782 were medical students, representing 10.6% of all Portugal university students. Between the same time period, on average 4.5% of Portugal OG university students were enrolled in a medical degree. That way, we witness an under-participation of Medical Students on Erasmus+ Programs, as the weight of medical students in Portugal OG is almost half of the percentage of medical students enrolled in Portugal.

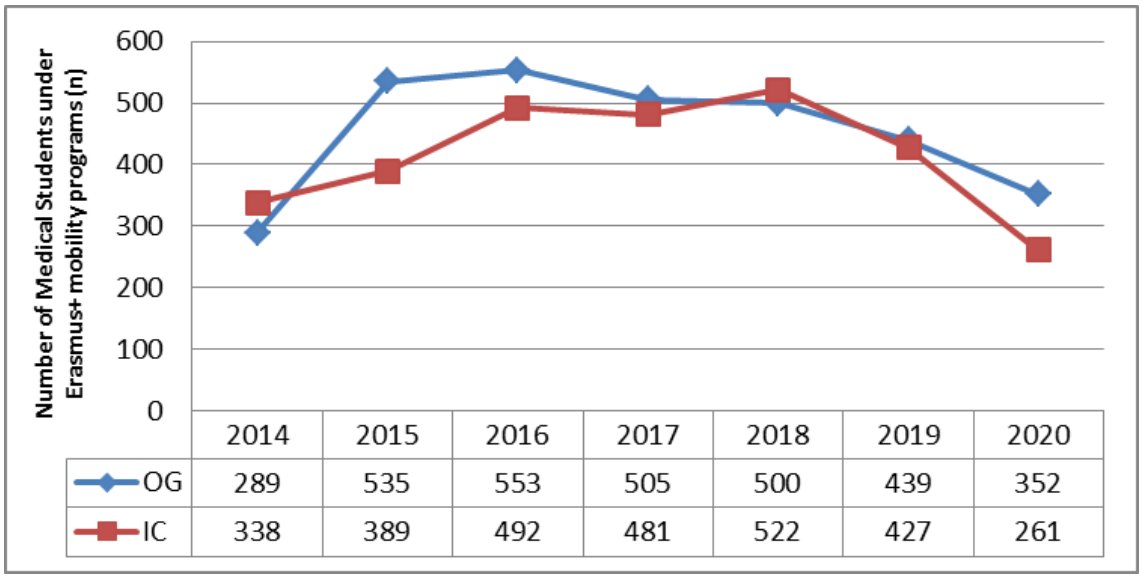
Although statistics show that at a national level, the number of participant students had a continuous growth since the creation of Erasmus+ programme in 1987 (Portugal had a growth between 26% and 50% (55)) , the incoming/outgoing ratio of medical students, contrary to the national trend, shows a significant imbalance in favor of outgoing students out of Portugal: the number of Portuguese medical students who went abroad has been almost always higher than the number of foreign medical students who came to Portugal (medical outgoing/incoming ratio corresponds to 1.09, while Portugal university students outgoing/incoming ratio corresponds to 0.82 (according to ETER(49)), as shown on figure 1. Usually as a country, Portugal is a good importer/receiver (56) of Erasmus students, that means Portugal usually receives more students than it sends, however this rule does not apply to medical students, as we witness a positive outgoing/incoming ratio.

The number of incoming medical students surpassed the number of outgoing medical students in 2014 and 2018, with a outgoing/incoming ratio of 0.86 and 0.96, respectively

Between 2014 and 2020, the number of OG medical students increased slightly: from 289 students in 2014, to 352 students in 2020.When analyzed more carefully the figure 1 we notice two different tendencies. Firstly, the number of outgoing medical students increased by 91,3% from 2014 to 2016. Secondly, the number of outgoing medical students decreased by 63,7% from 2016 to 2020. Between 2014 and 2020 Portugal sent abroad 3171 OG medical students (Figure 1)

Between 2014 and 2020, the number of IC medical students decreased: from 328 in 2014, to 268 in 2020. When analyzed more carefully, figure 1 shows us two different tendencies. Firstly, the number of Incoming medical students increased by 54,4% from 2014 to 2018. Secondly, the number of incoming medical students decreased by half from

2018 until 2020. Between 2014 and 2020 Portugal hosted 2910 IC medical students (Figure 1)




| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| OG | 289 | 535 | 553 | 505 | 500 | 439 | 352 |
| IC | 338 | 389 | 492 | 481 | 522 | 427 | 261 |

**Figure 1**- Number and evolutive trend of the total number of incoming and outgoing medical students in Portugal between 2014 and 2020

On the other hand, nationally on average 3,7% (range 2,4%-4,5%) of all medical students in Portugal participated in the Erasmus+ international mobility programme between 2014 and 2020, with its participation peak in 2016. While on average 8.1% (range 6.5%-8.8%) of all Portuguese university students participated on Erasmus+ international mobility programme between 2014 and 2020. As stated before, since 2016 the percentage of OG medical students in international mobility programs has been decreasing (Figure 2). However, the non-medical university students participation rates on Erasmus+ international mobility programme is of 7.7%

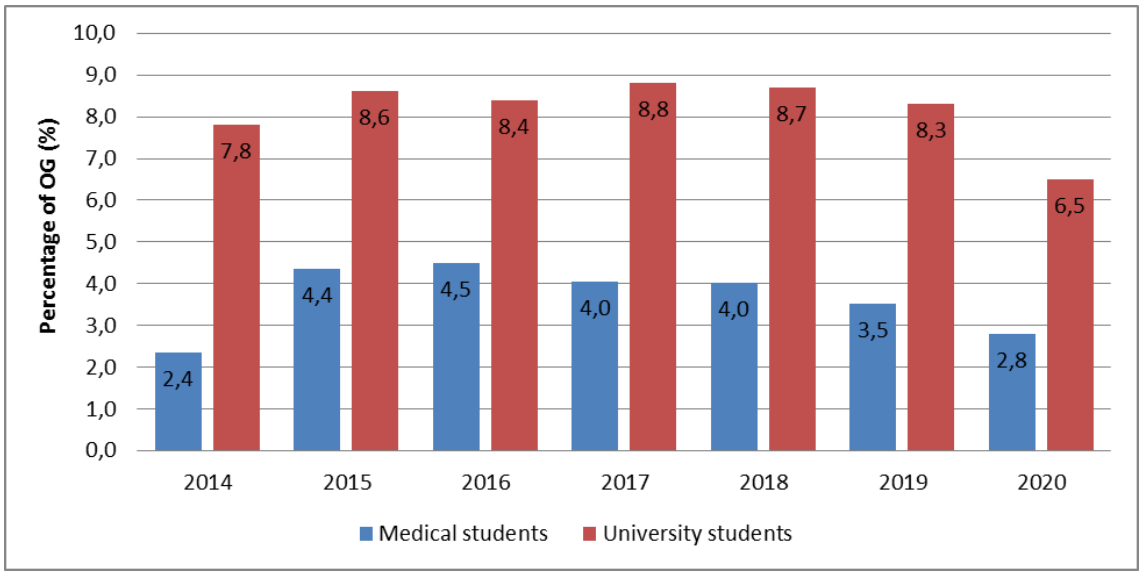



**Figure 2** – Percentage of medical and University students on Portugal participating on Erasmus+ international mobility programme.

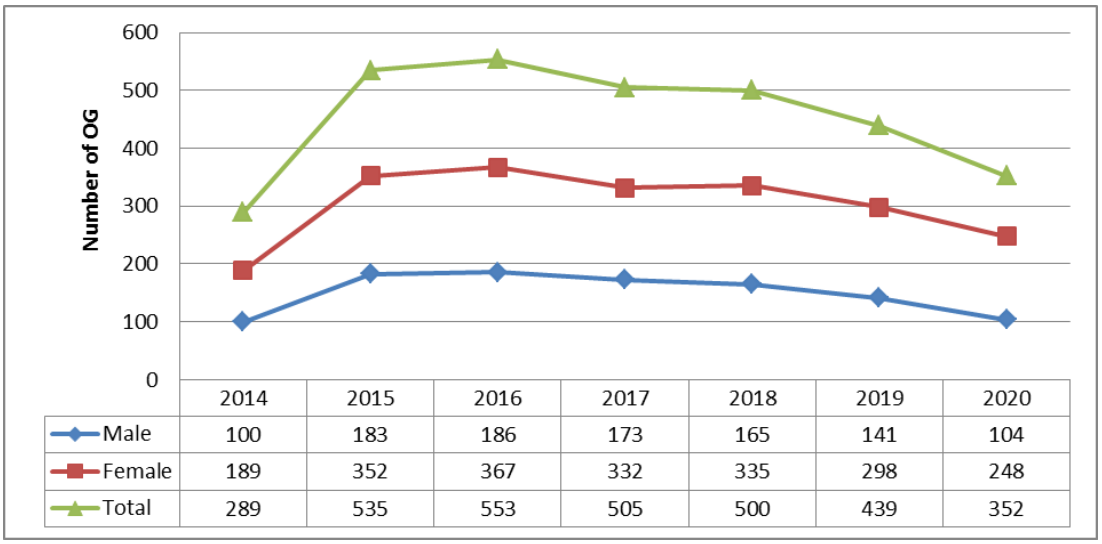
### 3.1.2. Gender Distribution

It is also interesting to perform a comparative analysis by gender. According to Pordata a total of 86.782 students were enrolled in the medical course in Portugal from 2014 to 2020, of which 57.926 are female, that way 66.7% of the total number of medical students in Portugal are female.

From the examination of Figure 3, it is also possible to verify that on average between 2014-2020, around 67% of Erasmus OG medical students were women and 33% were men. The female/male balance is also evident in SMT (Student Mobility for Traineeships), with women accounting for 67.6% of total medical students in SMT between 2014 and 2020, and in SMS (Student Mobility for Studies), with women accounting for 66.4% of total medical students in SMS between 2014 and 2020 (percentages automatically calculated by Erasmus barometer). Comparatively, 66.6% of the IC medical students were female.

That way, we witness a gender participation equality on the female/male ratio of the OG medical students , and within different Erasmus+ programs, as the participation ratio is very close to the female/male ratio of students enrolled in a medical degree in Portugal. Alternately, the female/male ratio of the IC and OG medical students are slightly equal.

On the other hand, between 2014 and 2020 53.7% of all Portugal university students were female, however 57.8% of Portugal OG students on Erasmus+ international mobility programs were also female, that way we witness a national overrepresentation of female OG students on Erasmus+ international mobility programs, contrary to the gender equality seen in OG medical students.



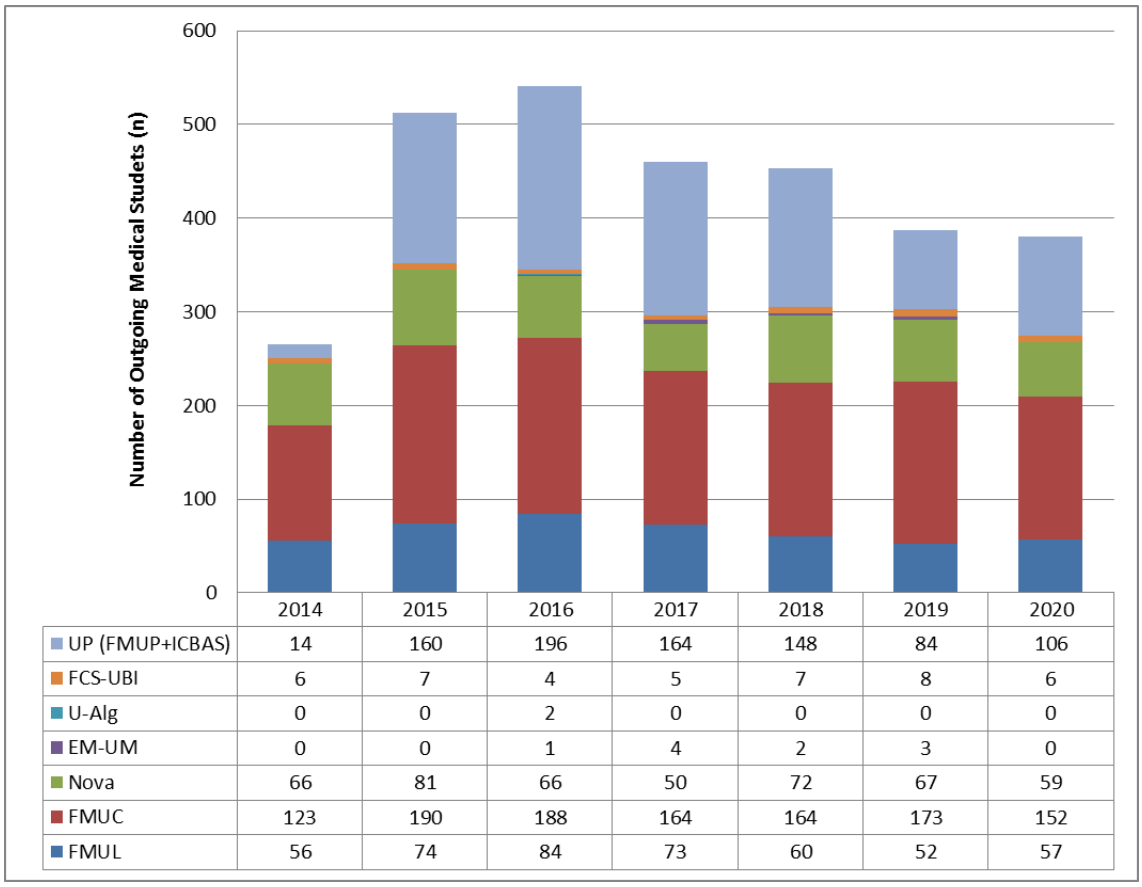

| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| Male | 100 | 183 | 186 | 173 | 165 | 141 | 104 |
| Female | 189 | 352 | 367 | 332 | 335 | 298 | 248 |
| Total | 289 | 535 | 553 | 505 | 500 | 439 | 352 |

**Figure 3** – Number of female and male OG medical students

### 3.1.3. Origin of OGs by each Medical school

When we analyze the origin of OG medical student participants in the Erasmus+ program, we notice that University of Coimbra Medical School (FMUC) is the one with the highest national participation rates, representing 39% of the total OG medical students from Portugal. On the other hand, the Porto University (UP), which includes 2 medical schools (FMUP and ICBAS) is the second university with the highest OG engagement in the Erasmus+ program, representing 29% of the OG medical students from Portugal. However, we notice a very low OG participation in the Erasmus+ program from Minho University and Algarve University Medical schools, representing both combined around 0,4% of the OG medical students from Portugal (Figure 4 & Figure 5).

When combined, FMUC and UP represent 68% of Portugal's OG Medical Students on the Erasmus+ programme.




| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| UP (FMUP+ICBAS) | 14 | 160 | 196 | 164 | 148 | 84 | 106 |
| FCS-UBI | 6 | 7 | 4 | 5 | 7 | 8 | 6 |
| U-Alg | 0 | 0 | 2 | 0 | 0 | 0 | 0 |
| EM-UM | 0 | 0 | 1 | 4 | 2 | 3 | 0 |
| Nova | 66 | 81 | 66 | 50 | 72 | 67 | 59 |
| FMUC | 123 | 190 | 188 | 164 | 164 | 173 | 152 |
| FMUL | 56 | 74 | 84 | 73 | 60 | 52 | 57 |

**Figure 4** - Number of OG Medical Students on each Portuguese medical school

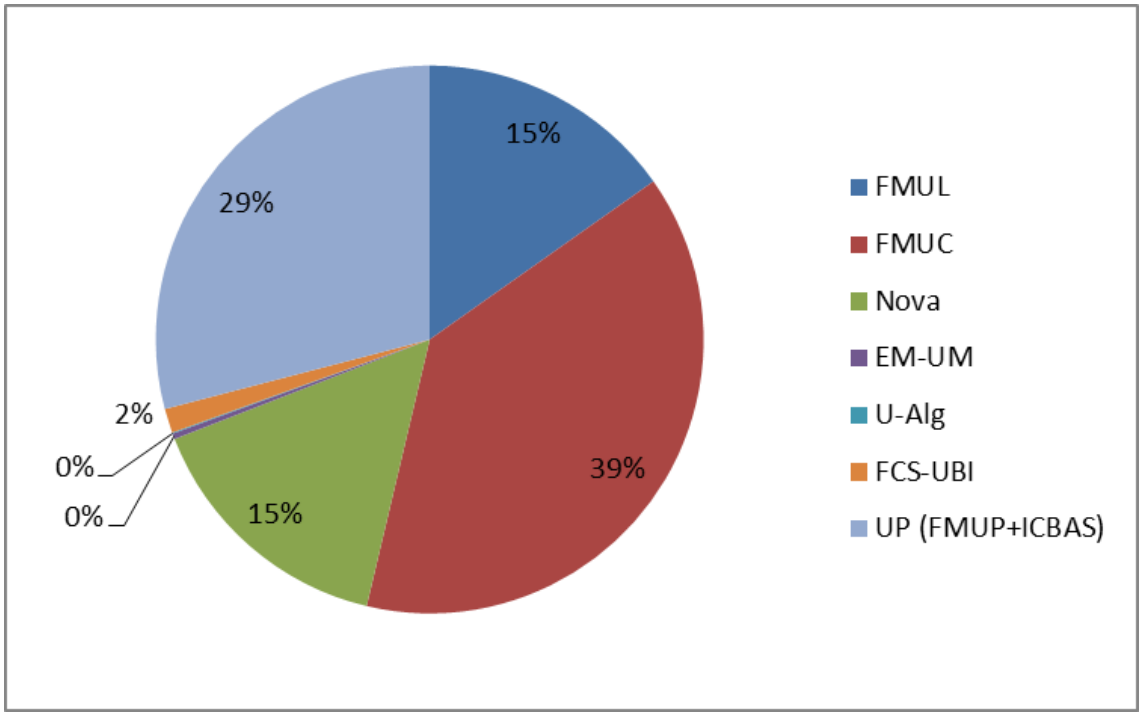



**Figure 5** - Distribution of OG medical students by each medical school

When we analyze the number of OG medical students according to the number of students enrolled on each individual medical school, we continue to see the same OG participation ratio differences between medical schools in Portugal, as stated above.

According to figure 6, FMUC continues to stand out as the top sender medical school of Portugal, with an OG participation rates on Erasmus+ mobility program of 10.9% of the total medical students enrolled in Coimbra University medical school, more than twice the OG participation rate of the second top sender university on Portugal. The highest sending medical schools are, University of Coimbra with 10.9% OG participation rate, Porto University with 5.1% OG participation rate and Nova Lisbon University with 4.7% OG participation rate. On the other hand, the lowest sending medical schools are the Algarve University with 0.1% OG participation rate, Minho University with 0.2% OG participation rate and Beira Interior University with 0.7% OG participation rate, as stated on figure 6.

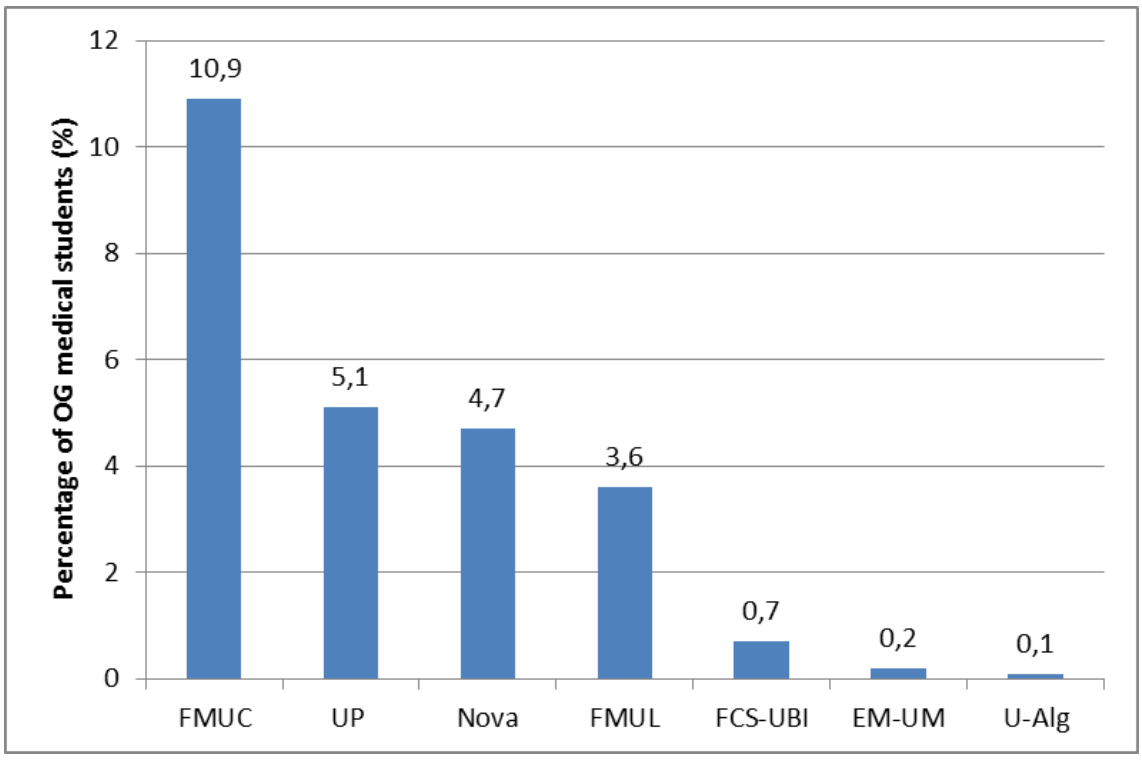



**Figure 6** - Percentage of OG participation rates on Erasmus+ mobility program on each Portuguese medical school, according to the total number of students enroled on each medical school annually.

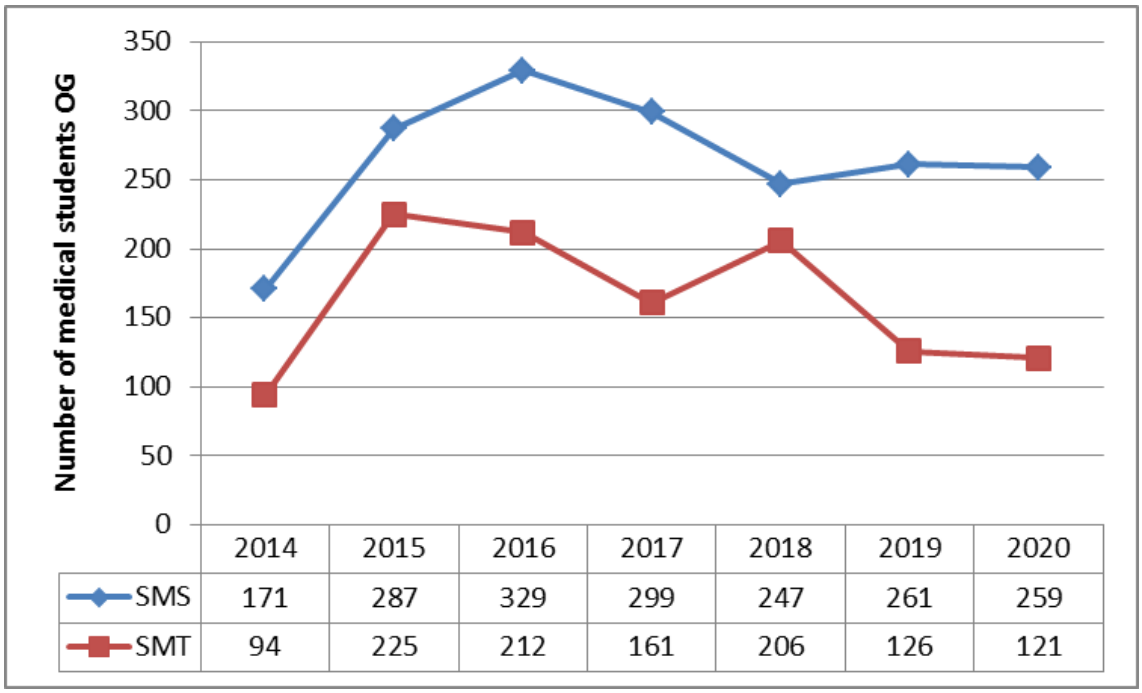
### 3.1.4. OG distribution by Erasmus+ Program mobility Types

The analysis of the data on student mobility in the period 2014-2020 indicates that most OG medical students continue to prefer the study modality - SMS (on average 61.8% of the total OG - with slight variations from 54.5% to 68.2%) rather than traineeship mobility. Thus, on average 38.2% of the Portuguese medical students opt for the

Traineeship modality - SMT (value with slight variations from 31.8% to 45.5%). Between 2014 and 2020, Portugal registered 1853 medical students OG on SMS program and 1145 medical students OG on SMT program, figure 7.

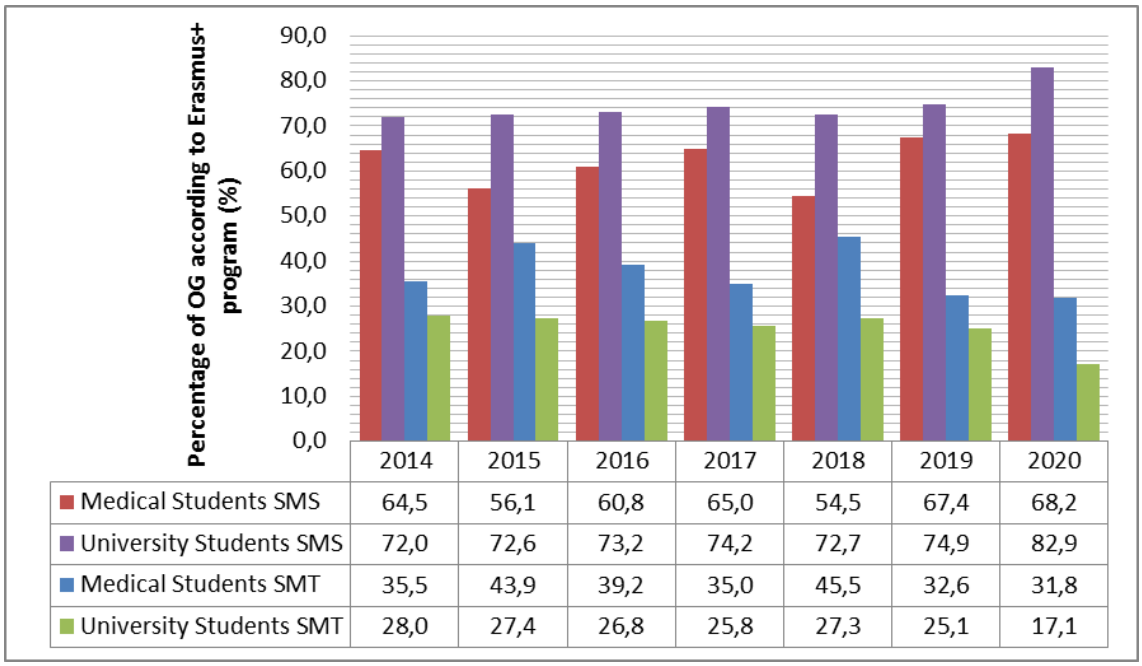
In contrast, on average 74.6% (range 72%-82.9%) of Portuguese university students were enrolled in SMS programs and 25.4% (range 17.1%-28%) were enrolled in SMT programs (figure 8). Meanwhile, non-medical students enrolment rates on the SMS program was 71.8%.

Additionally, analyzing Figure 8, we conclude that medical students have a comparatively higher participation rates in the Erasmus+ SMT program when compared with OG university students from Portugal (25.4% of the OGs vs 38.2% of medical students OGs). On other hand, medical students have a lower enrolment rates on Erasmus+ SMS programs than university students (61.8% of medical students OG vs. 74.6% of the OGs).




| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| SMS | 171 | 287 | 329 | 299 | 247 | 261 | 259 |
| SMT | 94 | 225 | 212 | 161 | 206 | 126 | 121 |

**Figure 7** - Evolutive trend of the total number of OG medical students in Portugal under SMS and SMT, between 2014 – 2020




| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|---|---|---|---|---|---|---|---|
| Medical Students SMS | 64,5 | 56,1 | 60,8 | 65,0 | 54,5 | 67,4 | 68,2 |
| University Students SMS | 72,0 | 72,6 | 73,2 | 74,2 | 72,7 | 74,9 | 82,9 |
| Medical Students SMT | 35,5 | 43,9 | 39,2 | 35,0 | 45,5 | 32,6 | 31,8 |
| University Students SMT | 28,0 | 27,4 | 26,8 | 25,8 | 27,3 | 25,1 | 17,1 |

**Figure 8** – Percentage of medical and university non-students on Portugal participating on Erasmus+ international mobility programs SMS and SMT

## 3.2. Countries of Origin/ Destination

The geographical flows of incoming and outgoing mobility are similar, with Italy standing out as the major sending and receiving country of medical students supported by Erasmus+ in the period under study, with a weight of 33.1% and 31.0%, respectively; followed by Spain as the second largest sending and receiving country of medical students, with 15.8% and 11.0%, respectively (Table 4 and Table 5).

Czech Republic and Germany stand out as destination countries for Portuguese medical students (receiving 9.9% and 7.8%, respectively), while Portugal received a significant larger number of students from Germany (13.6% of the IC), although a small number of students from the Czech Republic came to Portugal (4.8% of Incoming students, compared to 9.9% of Outgoing students). Overall, Italy, Spain and Germany represent around 49.8% and 62.5% of the total number of OG destination and origin of IC medical students in Portugal, respectively.

At lower rates of mobility, Poland stands out as a sending and receiving country (11.6% of the OG and 7.4% of the IC). France, Slovenia and Hungary are also popular destination countries for OG medical students from Portugal (values around 4,9-7,2%), while Portugal medical schools host a fewer number of IC from those countries (values around 1,4-1,7%).

Also, out of countries with intermediate mobility flows, similarities between IC and OG can be detected. Romania and Austria send almost as many medical students to Portugal, in relative terms, as they receive.

**Table 4** - Main origin countries of incoming Erasmus students mobility in Portugal, 2014-2020

| Countries | INCOMINGS | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | % IC Medical Students | | | | | | | |
| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Total |
| Italy | 33,4 | 31,1 | 30,3 | 31,0 | 30,3 | 41,7 | 36,0 | 33,1 |
| Spain | 18,6 | 15,2 | 14,0 | 13,9 | 16,1 | 16,9 | 18,0 | 15,8 |
| Germany | 19,8 | 14,9 | 13,0 | 11,6 | 12,5 | 11,5 | 13,8 | 13,6 |
| Poland | 9,8 | 11,8 | 14,8 | 14,6 | 11,5 | 6,8 | 10,0 | 11,6 |
| Romania | 0,9 | 4,1 | 5,7 | 9,8 | 7,5 | 3,7 | 2,7 | 5,4 |
| Czech Republic | 3,0 | 5,7 | 2,4 | 5,4 | 6,1 | 5,4 | 5,7 | 4,8 |
| Austria | 1,8 | 3,9 | 3,9 | 2,7 | 1,5 | 1,9 | 0,0 | 2,4 |
| Hungary | 2,4 | 0,3 | 2,2 | 1,7 | 2,3 | 1,6 | 1,1 | 1,7 |
| Total Number (n) | 338 | 389 | 492 | 481 | 522 | 427 | 261 | 2910 |

**Table 5** - Main destination countries of outgoing Erasmus students mobility in Portugal, 2014-2020

| Countries | OUTGOING | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | % OG Medical Students | | | | | | | |
| | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | Total |
| Italy | 31,1 | 31,4 | 28,0 | 37,2 | 27,6 | 31,9 | 29,8 | 31,0 |
| Spain | 15,2 | 13,6 | 13,9 | 7,5 | 10,0 | 6,6 | 10,8 | 11,0 |
| Czech Republic | 6,2 | 9,0 | 8,7 | 12,9 | 8,8 | 12,8 | 9,7 | 9,9 |
| Germany | 8,7 | 8,6 | 6,3 | 8,5 | 8,8 | 6,2 | 7,4 | 7,8 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Poland | 3,5 | 6,2 | 8,0 | 6,5 | 10,8 | 8,9 | 6,3 | 7,4 |
| France | 14,2 | 8,8 | 7,8 | 5,1 | 4,0 | 6,6 | 6,3 | 7,2 |
| Slovenia | 4,2 | 5,2 | 8,3 | 4,4 | 5,8 | 6,4 | 7,4 | 6,0 |
| Hungary | 3,5 | 4,7 | 5,1 | 3,6 | 6,2 | 5,7 | 5,4 | 4,9 |
| Total Number (n) | 289 | 535 | 553 | 505 | 500 | 439 | 352 | 3173 |

According to EuroVoc (53) geographical distribution of European countries on table 2, the main European Higher Education Institutions hosting Portuguese medical students are mainly located in Southern Europe and in Central & Eastern Europe, which together host 78% of the OG medical students from Portugal. On the other hand, these same 2 regions are the ones that send the most medical students to Portugal, representing 78% of IC medical students in Portugal.

There is, however, an interesting difference between Western and Northern Europe in the degree of participation of medical students in the Erasmus+ programme to and from Portugal, when compared with the 2 European regions mentioned before. On the other hand, we observe a decrease in OG to Southern Europe (50% of IC vs. 43% of OG) and an increase in OG to Central and Eastern Europe (28% of IC vs 35% of OG), when comparing the same regions of origin of IC medical Students.

Thus, we can conclude that the geographical distribution of the origin of the IC students as well as the destination of the OG is similar. (Figure 9 & Figure 10).

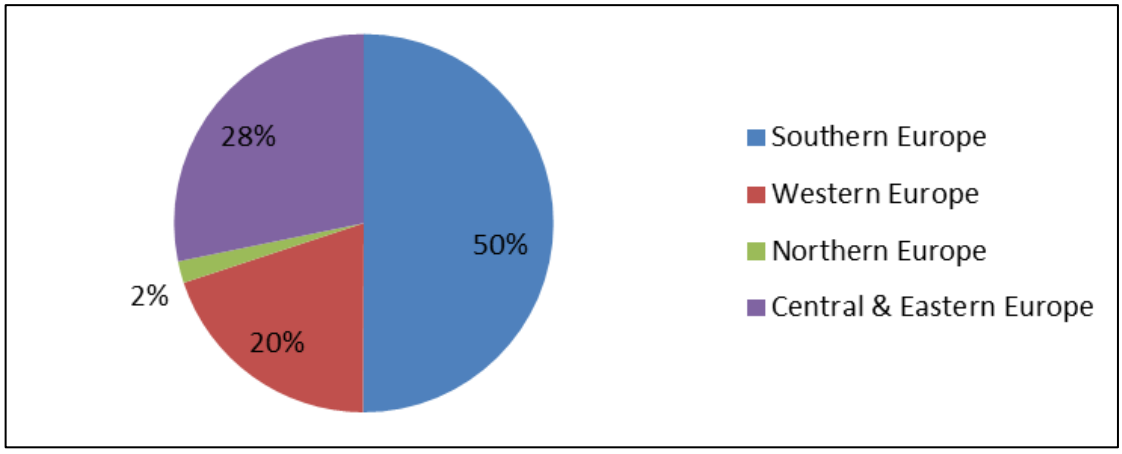



**Figure 9** – Distribution of geographical origin of Incomings medical students

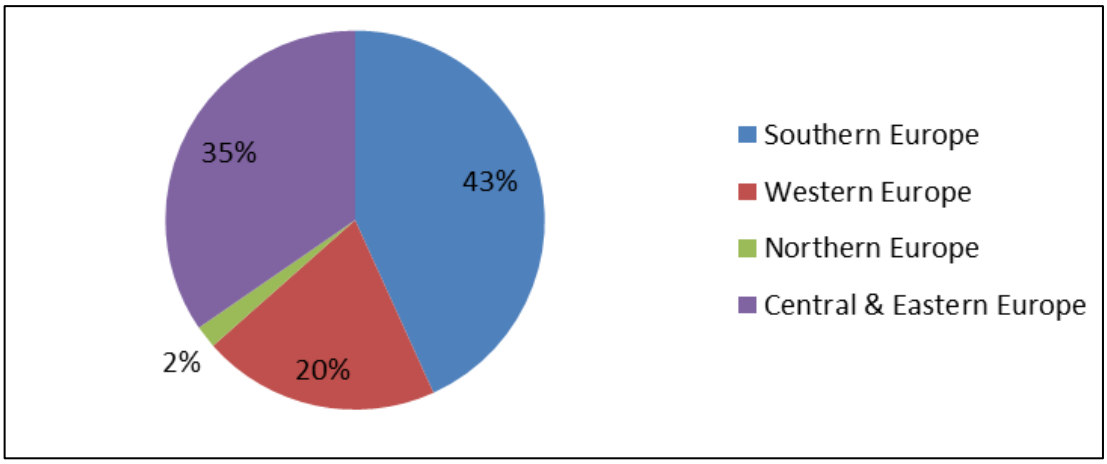



**Figure 10** – Distribution of geographical destination of Outgoings medical students

Between 2014 and 2020 the top 5 hosting institutions in Europe of OG medical students on SMS programs were the *Univerzita Karlova* (Czech Republic) hosting 105 medical students, *Universita degli Studi de Genoa* (Italy) hosting 78 medical students, *Univerzita Palackého v Olomouci* (Czech Republic) with 71 medical students, *Universita degli Studi de Palermo* (Italy) hosting 66 medical students and *Uniwersytet medyczny im. piastów Sląskich we Wrocławiu* (Poland) hosting 61 medical students. The top 5 hosting countries on SMS programs are Italy (686 students), Czech Republic (272 students), Poland (203 students), Spain (154 students) and France (141 students).

On another hand, the top 5 hosting institutions on Europe of OG medical students on SMT programs were the *Univerza V Ljubljana* (Slovenia) hosting 68 medical students, *Sveučilište u Rijeci* (Croatia) hosting 54 medical students, *Univerza V Maribor* (Slovenia) with 54 medical students, *Semmelweis Egyetem* (Hungary) hosting 51 medical students and *Universita degli Studi de Pavia* (Italy) hosting 61 medical students. The top 5 hosting countries of SMT programs are Italy (320 students), Spain (199 students), Slovenia (125 students), Germany (109 students) and France (88 students).

On the other hand, if we consider the language families in Europe, stated on table 3, more than half of the IC students come from Romance-language countries and more than half of the OG go to Romance-language countries. The Slavic-speaking countries are the second most representative language family for the origin of ICs as well as for the destination of OGs. Together, Romance and Slavic are spoken by 76% of the ICs and are the official languages of destination for 76% of the OG. (Figure 11 & Figure 12).

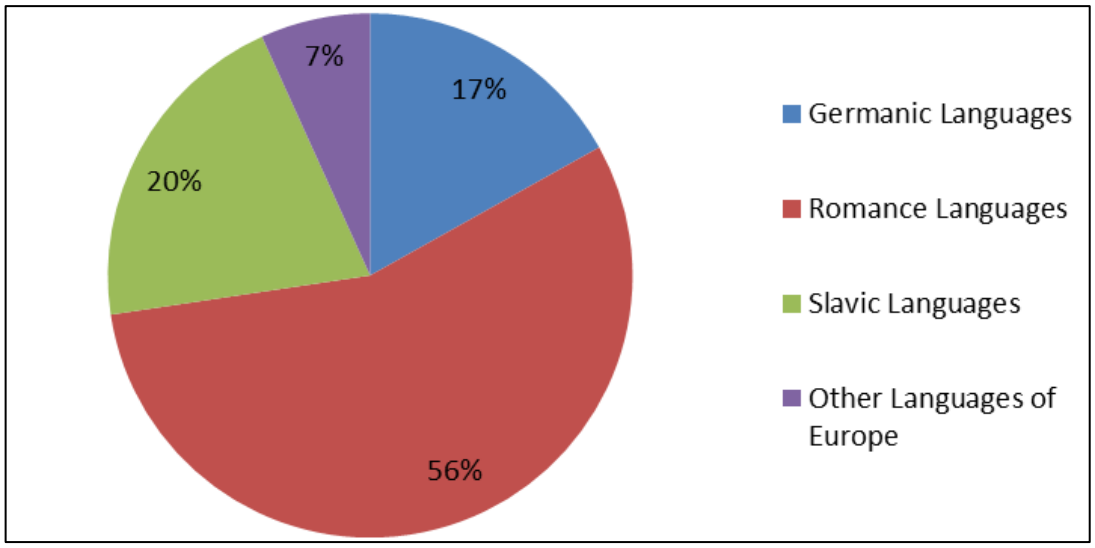



**Figure 11** - Language family of the IC origin Country

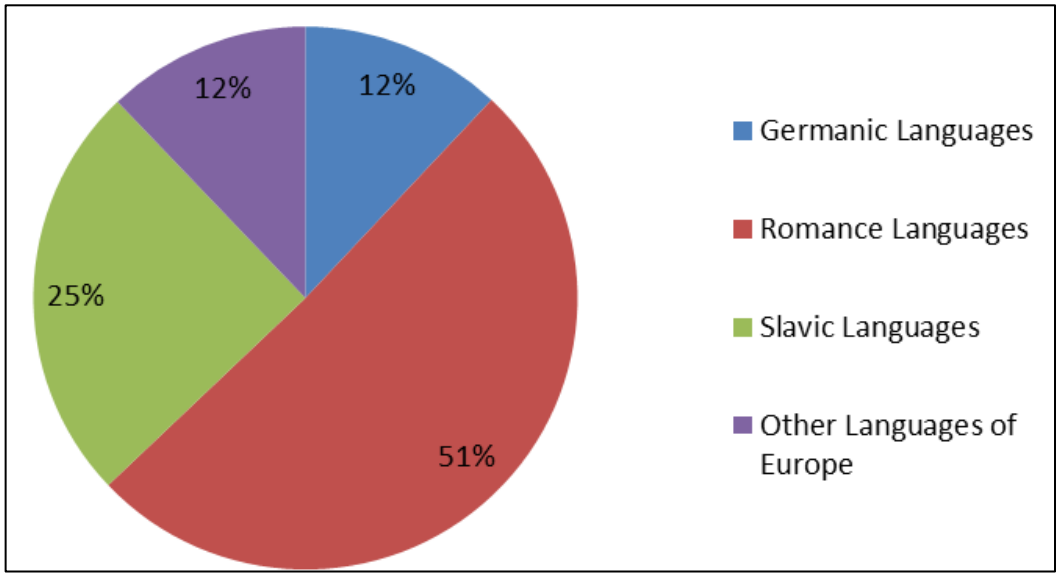



**Figure 12** - Language family of the OG destination Country

## 3.3 Erasmus OG characteristic of each Medical School on Portugal

According to the PorData, from 2014 to 2020, 86.782 medical students were enrolled in Portuguese higher education institutions, which can be translated to an annual average of 12397.4 medical students on Portugal. Thus, through the data presented on the Table 6, according to ETER, we can state that Portuguese medical schools sent abroad 3173 OG medical students, the participation rate of medical students on Erasmus+ mobility

program is 3.7% of all medical students. Regarding the type of Erasmus+ mobility program, 61.8% of the OG medical students chose SMS, while 38.2% chose SMT. Overall, medical students outgoings represent 10.3% of all OG from the Portuguese Universities that teach an integrated medical degree (Minho University, Porto University, Coimbra University, Beira Interior University, Lisbon University, Nova Lisbon University, Algarve University).

When we compare different medical schools data collected on "Erasmus+ Barometer OG" (50) on the Table 6, we notice that Coimbra University, Porto University and Nova Lisbon University OG medical students participation rates on Erasmus+ mobility programs are above the national average. While, Lisbon University OG medical students participation rates on Erasmus+ mobility programs are around the national average. Meanwhile, Beira Interior University, Minho University and Algarve University OG medical students participation rates are below the national average.

Regarding the Erasmus+ mobility programme type, in table 6 we notice that only Coimbra university participation SMT rates are above the national average. Inclusively 48.4% of the OG university students in SMT modality at the University of Coimbra between 2014 and 2020 were medical students.

When we consider the share of OG medical students among the total sending university OG students, just Coimbra University and Porto University medical schools are above the national average (OG medical students represent 10.3% of the OG from the universities teaching an integrated medicine degree). This means that Coimbra University and Porto University students have a higher representation on its own university Erasmus+ mobility program than the remaining medical schools. It is important to highlight that Coimbra University medical school sent 24.8% of all Coimbra University OG students.

**Table 6** - Erasmus+ mobility programs OG medical characteristics on each medical school and nationally

| University | Average number of students enroled annualy | Average number of OG per year | Total number of OG between 2014 and 2020 | OG annually participation rate (%) | % of OG under SMT | % of OG under SMS | % of OG medical students within the University * |
|---|---|---|---|---|---|---|---|
| **FMUC** | 1564.6 | 164.9 | 1154 | 10.9% | 65% | 35% | 24.3% |
| **UP** | 2430 | 124.6 | 872 | 5.1% | 34.6% | 65.4% | 10.9% |
| **NOVA** | 1409.1 | 65.9 | 461 | 4.7% | 6.7% | 93.9% | 9.3% |
| **FMUL** | 1798 | 64.9 | 456 | 3.6% | 9.2% | 90.8% | 6.2% |
| **FCS-UBI** | 879.6 | 6.1 | 32 | 0.7% | 25.6% | 74.4% | 4.2% |
| **EM-UM** | 733.3 | 1.6 | 10 | 0.2% | 70% | 30% | 0.4% |
| **U-Alg** | 192 | 0.3 | 2 | 0.1% | 100% | 0% | 0.3% |
| **National** | **12397.4** | **453** | **3173**** | **3.7%** | **38.2%** | **61.8%** | **10.3%** |

*Related with the data presented on the table 7;
**According to the data provided by "Erasmus+ Education and training Agency". The remaining data was collected from the "Erasmus+ Barometer OG**";**

**Table 7** - Number of OG on each medical school and correspondent university

| | **Total Nº of OG** | **Nº of medical students OG** | **% of Medical students OG within the university** |
|---|---|---|---|
| **Coimbra University** | 4746 | 1154 | 24.3% |
| **Porto University** | 8007 | 872 | 10.9% |
| **Nova Lisbon University** | 4942 | 461 | 9.3% |
| **Lisbon University** | 7356 | 456 | 6.2% |
| **Beira Interior University** | 1031 | 43 | 4.1% |
| **Minho University** | 2439 | 10 | 0.4% |
| **Algarve University** | 682 | 2 | 0.3% |

## 3.4 Internationalization at Home

Regarding the five aspects of internationalization, the status quo is described as follows.

One medical school offers some regular courses in English language and six medical schools have English or other languages teaching facilities, usually in partnership with the humanities faculty. Two medical students associations/committees refer to partnerships with local language schools. One medical school uses an annual English written exam, incorporated in an international consortium with other international medical schools.

All medical schools in Portugal have included (imported) tropical diseases in the normal medical curriculum, and one medical school offers an extra optional subject about tropical medicine, besides the regular curriculum subject. Additionally, six medical schools refer to the integration of global health related topics in the regular curriculum. No medical school offers an elective internship on tropical health.

Three medical schools cover International health care systems within the normal curriculum, and one medical school as an optional subject. The topic is not specifically addressed elsewhere. Along with the elements mentioned in the questions about IoME, one medical school mentioned their regular curriculum has an elective clinical internship, as an opportunity for students to deepen their knowledge on the topic.

One medical school refers that communication with patients from different cultural backgrounds are addressed throughout the medical degree with clinical cases discussion and reflection. One medical school has incorporated a course that focuses on intercultural communication with patients into the normal curriculum, with structured inter multiculturality seminars and role-playing practice. This component is not covered in the curriculums of five medical schools.

## 3.5 International Institutional Partnerships

Regarding the establishment of Erasmus+ institutional partnerships we notice big discrepancies within different portuguese medical schools. Just 7 of the 8 Portuguese medical schools have institutional Erasmus+ Partnerships

Portugal as a country, has 332 Erasmus+ institutional partnerships with foreign universities/ medical schools/ hospitals across 22 Erasmus+ programme countries, of those 332 partnerships, 276 institutional partnerships were established on SMS modality and 56 under SMT. Each Portuguese medical school established an average of 55,3 Erasmus+ institutional partnerships. On another hand, SMT institutional partnerships

accounts 16,3% of all the International institutional partnerships, and are only present on 3 medical schools (FMUC, UP and NOVA).

According to the Table 8 regarding Erasmus+ international mobility program, Southern Europe hosts 44.3% (n=147) of the institutional partnerships, Western Europe 28.9% (n=96) of the institutional partnerships, Central & Eastern Europe 26.8% (n=89) of the institutional partnerships, and surprisingly there is no established partnership with any country from Northern Europe.

Linguistically, Portuguese medical schools established 53,3% of the institutional partnerships with romance speaking countries (n=177), 18% with Germanic speaking countries(n=60), 18,7% with Slavic speaking countries (n=62) and 9.9% with other language family speaking countries (n=33)

Nevertheless, FMUC is the portuguese medical school with biggest number of institutional partnerships on SMS (n=86) and SMS (n=36) across the biggest number of countries (n=19), followed by UP. It is important to highlight that 56,8% of FMUC, Erasmus+ SMT traineeship were established with countries located in Central & Eastern Europe and FMUC is responsible for 66.1% of all Portuguese medical schools SMT institutional Partnerships. By another hand, FMUC and UP together accounts 59,6% of Portugal medical school institutional Partnership (table 9).

When we compare different medical schools data on Table 8, we notice that Coimbra University, Porto University are above the national average established institutional partnerships (n=55.3), but Nova Lisbon and Lisbon university are slightly below national average. Meanwhile, Beira Interior University and Minho University's number of institutional Partnerships are below the national average (n=55.3).

Italy stands out as the country with the highest number of institutional partnerships established with Portuguese medical schools (n=77), followed by Spain (n=66) and Germany (n=49). Overall Italy, Spain and Germany represent 57.8% of the total international institutional partnerships of Portuguese medical schools. All 7 analyzed medical schools have established partnerships with Italy and Spain, but just four of those medical schools have partnerships with Germany, table 9.

On the opposite spectrum 4 of 22 countries with institutional partnerships with Portuguese medical school just have one established partnership with a portuguese medical school (North Macedonia, Lithuania, United Kingdom and Netherlands), and 12 countries (Cyprus, Denmark, Estonia, Finland, Iceland, Ireland, Liechtenstein,

Luxembourg, Malta, Norway, Serbia, Sweden) have no university institutional partnership with portuguese medical schools.

**Table 8** - Number of institutional international partnerships, respective countries and geographical location, by each medical school and national panorama. Part = Partnerships; Cts= Countries; SE = Southern Europe; C&E= Central and Eastern Europe; WE = Western Europe; NE = Northern Europe.

| | **N. Part** | **N. Cts** | **SE** | | **C&E** | | **WE** | | **NE** | |
|---|---|---|---|---|---|---|---|---|---|---|
| Faculties | | | **Part** | **Cts** | **Part** | **Cts** | **Part** | **Cts** | **Part** | **Cts** |
| FMUC | 123 | 19 | 49 | 5 | 44 | 9 | 31 | 5 | 0 | 0 |
| UP | 75 | 16 | 27 | 4 | 24 | 8 | 23 | 4 | 0 | 0 |
| NOVA | 53 | 11 | 24 | 2 | 10 | 6 | 19 | 3 | 0 | 0 |
| FMUL | 53 | 10 | 23 | 2 | 11 | 4 | 19 | 4 | 0 | 0 |
| FCS-UBI | 21 | 5 | 18 | 3 | 0 | 0 | 3 | 2 | 0 | 0 |
| EM-UM | 7 | 3 | 6 | 2 | 0 | 0 | 1 | 1 | 0 | 0 |
| **Portugal** | **332** | **22** | **147** | **5** | **89** | **12** | **96** | **7** | **0** | **0** |

**Table 9** - Number of institutional international partnerships, respective countries and Erasmus+ mobility type, on each medical school and national panorama

| | FMUC | | UP | | NOVA | | FMUL | FCS-UBI | EM-UM | Portugal | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | SMT | SMS | SMT | SMS | SMT | SMS | SMS | SMS | SMS | Total | SMS | SMT |
| Germany | 1 | 14 | 1 | 11 | 0 | 9 | 13 | 0 | 0 | **49** | 47 | 2 |
| Austria | 0 | 2 | 2 | 2 | 0 | 0 | 3 | 0 | 0 | **9** | 7 | 4 |
| Belgium | 2 | 2 | 1 | 1 | 0 | 0 | 2 | 0 | 1 | **9** | 6 | 1 |
| Bulgaria | 2 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | **5** | 2 | 3 |
| Croatia | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | **2** | 0 | 2 |
| Slovakia | 1 | 2 | 1 | 1 | 0 | 2 | 0 | 0 | 0 | **7** | 5 | 1 |
| Slovenia | 2 | 1 | 2 | 2 | 0 | 1 | 1 | 0 | 0 | **9** | 5 | 4 |
| Spain | 5 | 20 | 1 | 6 | 0 | 11 | 9 | 10 | 4 | **66** | 58 | 6 |
| France | 3 | 6 | 3 | 3 | 1 | 8 | 0 | 2 | 0 | **26** | 19 | 7 |
| Greece | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **2** | 2 | 0 |
| Netherlands | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | **1** | 1 | 0 |
| Hungary | 3 | 3 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | **11** | 6 | 5 |
| Italy | 5 | 17 | 2 | 18 | 0 | 13 | 16 | 4 | 2 | **77** | 70 | 7 |
| Latvia | 0 | 2 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | **4** | 4 | 0 |
| Lithuania | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | **1** | 1 | 0 |
| North Makedonia | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **1** | 1 | 0 |
| Poland | 3 | 3 | 0 | 7 | 0 | 3 | 4 | 0 | 0 | **20** | 17 | 3 |
| United Kingdom | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | **1** | 1 | 0 |
| Czech Republic | 5 | 6 | 1 | 3 | 0 | 0 | 3 | 0 | 0 | **18** | 12 | 6 |
| Romania | 3 | 4 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | **8** | 5 | 3 |
| Switzerland | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | **2** | 2 | 0 |
| Turkey | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 4 | 0 | **6** | 6 | 0 |
| **TOTAL** | **37** | **86** | **17** | **60** | **2** | **51** | **53** | **21** | **7** | **332** | **276** | **56** |

# 4. Discussion of Results

The present research set the aim to develop a detailed up-to-date state of affairs of the current internationalization of medical education in Portugal, by investigating and characterizing the quantity, nature and origin/destination of students' inward and outward mobility at Portuguese medical schools under Erasmus+ program between 2014-2020. Another objective was to study what efforts are being made to internationalize the medical curriculum by each Portuguese medical school.

The shared denominator of internationalization is that IoME aims to equip medical students with the necessary expertise, know-how, skill sets, and attitudes needed to provide optimal and suitable medical assistance to every individual in a global setting. Their purposes, however, range from direct interactions with societies and foreign healthcare systems (international student mobility) to the integration of a more comprehensive, structural insight of health and healthcare and inter-connectedness on a global level (IaH), as well as expansion of culturally secure behaviours and multicultural communication skills (cultural competence) (5).

As a result, each strategy has its own importance regarding medical students' improvement of global and multicultural knowledge, abilities, and behaviours. Nevertheless, it appears that little emphasis is currently being given to whether or how these three approaches can be combined to frame a more consistent approach to IoME. (5). As a result, it is imperative that the 21st-century medical curriculum fully equips future's physicians with the knowledge, abilities, and behaviours necessary to answer the difficulties of an expanding global world (5).

The analysis identifies that between 2014 and 2020, Portugal hosted 2.910 IC medical students from 23 Countries and sent 3153 OG medical students to 27 Countries (despite just having an Erasmus agreement with 22 of them), however both numbers of OG and IC medical students present a decreasing participation trend line on time. The top IC sender countries and OG host countries have in common its geographical location on Southern Europe and speak a romance language.

On another hand, the data suggests that the majority of the OG participate on study mobility. However the traineeship mobility have a bigger participation rates by medical students than university students. The data suggests there are large discrepancies between portuguese medical schools, regarding its internationalization of medical education outputs, in which Coimbra University medical school stands out as national top sender medical school, as well as biggest share (%) of OG medical students within its Higher Education Institution.

Portugal hosts international university students from all European countries under the Erasmus+ Program, either in the modality of studies or traineeship. According to the Portuguese Erasmus+ National Agency and the European Commission (57), Portugal is also regularly among the top ten host countries in Europe.

However, the data shows that the number of medical OG surpasses the number of IC medical students, contrary to the national panorama of university students (55). To analyze these findings, first we need to understand what are the motivations of student enrolment on international mobility programs.

## 4.1 Motivations for international mobility

Several authors (e.g., (58,59)) state that development of personal and professional skills', professional prospects, leisure and further advantages prompt students to undergo international mobility while studying. Accordingly, self-development includes all aspects that can boost self confidence, relaxation, Independence and broadening horizons through interaction and exposure to new different people and contexts within cultural diversity (60,61). Essentially, professional development of international mobility emphasizes on programmes that allows knowledge and skills to be acquired to support students' future professional life and academic pursuits (61,62).

Kelo, Teichler, and Wächter (63) stated that on "temporary" or "credit" mobility the students complete a portion of their studies abroad, perhaps not at the institution they consider to be better, but at a different one (35).

Course structure elements were viewed as either barriers to mobility or as facilitators of mobility (35,64). Bologna's educational implementation in Portugal resulted in shorter degree programs with rigid and inflexible curriculum (e.g., more mandatory disciplines, strict annual disciplines), making it difficult to obtain academic recognition and equivalences of the period abroad (35,65). As a result, Portugal is one of the few countries where a significant proportion of students (around 40%) perceive international mobility experiences as a threat to their academic progress (35,66).

In addition to the strategic value of HEIs networks and collaborations, the student's selection of host country is influenced by multiple aspects, including the size of the country, the living costs, the language, the academic performance of the host institution, the geographical distance from home, the climate, and the availability of leisure and tourism activities (67,68). However, despite the EU's financial aid, the current literature frequently mentions that the main obstacle to participate in international mobility are

economic, therefore geographic proximity and living expenses are becoming more important factors when choosing a host country (35,68).

Considering the prior, IC students select Portugal as a hosting destination primarily due to the country's features (weather, coastal location, leisure possibilities, lower living expenses), confirming the attractiveness of the Mediterranean countries (61,67) and the "fun" aspect linked with Erasmus+ mobility (61). Participants in a group discussion concluded that "tourism" rather than academic aspirations motivates IC/OG when selecting the origin/ destination country (35,68).

The main drawbacks are Portugal peripheric location in Europe, its socioeconomical advancement below the European average, and the Portuguese healthcare system's damage since the economic crisis of 2009 (35,69). Portugal has been described as a “semi-peripheral society” of “intermediate development” (35,70).

The quality of the host university impacted the option to study abroad and decision of host country (35,64,67). Accordingly, Portugal doesn't stand out academically as a host country, and according to the Ranking of Shanghai, there is no Portuguese medical school in Europe's top 50, and just one of the Portuguese medical schools provide English classes. On the other hand, the medical employability opportunities in Portugal are scarce, and related with poor working conditions and lower wages when compared to Western Europe (35,71). That way we can assume, the biggest motivations for IC to choose Portugal are personal and leisure motivations, rather than academic or professional development.

For outgoing mobility, besides the personal and leisure motivation, employability plays an important role as a driving force behind international mobility and might be connected with the increasingly number of medical graduates without access to specialty training, which Portugal experienced recently and the rising numbers of medical doctors emigration as a consequence of the economic crisis, poor job condition and low wages (72). Actually, nowadays 55% of Portuguese junior doctors plan to emigrate in the next 10 years (71).

When it comes to international job prospects, students consider that employers appreciate candidates with international experiences (35,64). Accordingly, international mobility is a chance to live in another country as a prerequisite for possible professional opportunities. For students, a mobility period proves they can live in another country, as an important aspect of introspection and self-examination if they plan to work abroad. Additionally allows medical students to directly interact with international healthcare

systems, gain insight about work conditions on the host country, as well as specialty training programs (35).

## 4.2 Incoming and Outgoing Numbers and evolutive trends

All factors mentioned above when combined can explain the overrepresentation of Outgoing medical students, as well as the incoming decrease in participation rates between 2014-2020. Additionally, the decrease of OG and IC was more pronounced in 2020, as a result of physical mobility limitations due to COVID-19 Pandemic.

Briefly, international Medical Students prefer host countries geographically closer to home, portuguese employability and portuguese medical schools are not competitive enough to attract foreign students to undergo mobility in Portugal. By another hand, the current Portuguese crisis (73) associated with poor medical work conditions, low wages and limited access to specialty training (71), prompt Portuguese medical students to explore different work environments across Europe, by participating on Erasmus+ mobility programme.

Portugal is considered a importer country as hosts more ICs university students than sends OGs (55), however that trend doesn't apply to the Medical students panorama,

## 4.3 Gender Distribution

On the medical students cases we witness a gender participation equality on the female/male ratio of the OG, and within different erasmus+ programs, as the participation ratio is very close to the female/male ratio of students enrolled on a medical degree in Portugal during the same period. On the other hand, the female/male ratio of the IC and OG medical students are slightly equal.

The current literature corroborates that both genders' main factors when choosing the host destination are different as females motivations to enroll on international mobility program are more related to "tourism factors" as they desire a vibrant and famous place to live, with a thriving nightlife, a big variety of local attractions with a rich culture, art and history (61,74). On the contrary, males are more motivated by academic and professional growth factors (61,74)

This factor can explain the medical students' option to choose Southern Europe Mediterranean host countries (Spain and Italy), which are strongly associated with leisure activities.

Although in Portugal, overall we observe an inequality of gender participation on international mobility (55), with an over representation of female, that doesn't apply to the medical panorama.

## 4.4 Origin of OGs by each Medical school

The provenance of Portuguese OG medical students depends on the Higher Education Institution (HEI) they belong to and the IoMe dynamism of the university to promote international student mobility during the medical degree. Portuguese medical schools' different contributions, reflects different involvement rates on the Erasmus+ programme. This is consistent with the size of university and medical school and geographical differences, existing a contrasting dynamism between the urban centers and non-urban areas of Portugal (68).

The following factors should be perceived as important elements to understand the engagement level of HEIs and their active promotion of Erasmus+ Programme, as it reflects the number of OG students: the relevance and maturity of HEI cooperation networks between Portugal and other European countries, the expansion of the Erasmus+ Programme to first and second cycle of the medical degree, the ease of ECTS (European Credit Transfer and Accumulation System) equivalencies, flexibility of the curriculum plan, support in building the learning agreement, the equivalence of Erasmus+ traineeship within the curricular mandatory internship, the capacity of the university's ability to attract more students, and the availability of additional mobility scholarships to complement the Erasmus grant (68).

According to these findings we observe a big gap between Portuguese medical schools' engagement rates on the Erasmus+ Programme, as well as the type of mobility.

Coimbra University Medical school's success might be related to its historical background, as the university was created in the XIIIth Century and had a longer period of time to establish and solidify international institutional partnership being well-known internationally. FMUC is also the portuguese medical school with bigger focus on SMT programs, rather than SMS, which can be proved with the bigger number of OG FMUC medical students on SMT mobility, as well as bigger number of SMT institutional partnerships rather than other portuguese medical schools.

On the other hand, Porto University Medical school's success can be related to the university's international office policies, as Porto University is one of the top 40 senders HEI in Europe, and that same success of the university has repercussions on medical students' engagement. UP, also has a big focus on the SMT mobility program.

Meanwhile, Algarve University, Minho University and Beira Interior University lower engagement rates can be related to HEI peripheric location in Portugal, innovative rigid curricular plan that makes ECTS equivalences harder. These HEIs are more recent and of small dimension, associated with lower maturity and fewer Erasmus+ institutional partnerships, and lack of dynamism on SMT programs as there is no established SMT institutional partnership on those institution

## 4.5 OG distribution by Erasmus+ Program mobility Types

The data suggest an over-representation of medical students on the Erasmus+ Traineeship program, which can be explained by the fact that the medical curriculum has a strong component of clinical practice in hospital settings, even more accentuated in the 6th grade of medical degree when students have clinical internship every day in the hospital.

As it seems, some medical schools in Portugal are making extra efforts to promote Erasmus+ traineeship among medical students as it comprises a shorter period of mobility (3 to 12 months), the Erasmus+ grant is higher (extra top-up grant of 100 euros for Erasmus+ traineeship students), the student has more freedom to choose the destination countries, as well as hosting institutions as the OG celebrate directly the partnership with the hosting hospital (33). Moreover, there could be more curricular flexibility because internship equivalences are awarded to the student, who needs to train the same number of hours and on the same specialties as he would do on its home institution, different medical schools implement different methods to assure the learning outcomes of the internship and to evaluate students clinical performance.

The big disparity in different medical schools' engagement rates in these types of mobility can be linked with HEI different internationalization policies, as well as medical schools' inner policies for internship recognition, equivalence and evaluation.

That way, promotion of Erasmus+ Traineeship program among medical students can be perceived as an opportunity to increase the outward mobility of medical students, with a necessity to nationally standardize the internship recognition and evaluation procedures.

## 4.6 Countries of Origin/ Destination

As stated before, Portugal's hosting capabilities are based on its coastal location, climate, and leisure opportunities, and less weight is given to the HEIs/hospitals quality and notoriety. The geography of proximity explains the big attraction of IC students from

Southern Europe Countries (Italy and Spain), which have a similar Mediterranean culture, gastronomy and common romance language roots. Additionally, low cost of living provide Portugal a competitive advantage, which likely contributes to its popularity among Central & Eastern European students (Poland, Romania, Czech Republic and Hungary), for whom the financial burden appears as the key mobility obstacle (35,66)

For Portuguese medical students, mobility grants are insufficient and the Portuguese families' lower incomes make it challenging for students to cover the living costs of Northern and Western European nations. These aspects may unravel why proximity (Spain and Italy) and living expenses (Central & Eastern Europe)) are becoming more important criteria when choosing the host country (35). However Western European countries, with higher living costs, represent an opportunity for medical students to get more insight of the country itself as a possible emigration destination after medical degree completion.

The language of the country plays a significant role on the medical students' mobility, as medical students have clinical practice in hospital settings, and despite being in a different country they need to communicate with their patients.

## 4.7 Internationalization at Home

From all the 8 surveyed medical schools, seven replied and one didn’t.

All Portuguese medical schools cover several aspects of internationalization in their curriculum and not just as student mobility. One medical school refers to the existence of an international elective as part of the regular curriculum.

The conception of ‘Internationalization at Home’ emphasizes the importance of teaching and learning in a multicultural environment (39,75). From this perspective, only one medical school included intercultural communication as a program on regular curriculum. Therefore, there is a national training gap regarding the interaction with patients from culturally diverse backgrounds in four of the medical schools, and this should be perceived as a serious defect in the curriculum.

On the other hand, the current globalization of the world and the increasing burden of diseases on developed countries together with a need for more efficient medical resources management makes it imperative that medical schools prepare their students to know and understand how international health care systems function around the world. Regarding these, just three Portuguese medical schools included these topics on

the regular curriculum and one as an optional subject. Therefore, a lack of knowledge about international health management resources on 4 medical schools is perceived.

All Portuguese medical schools address (imported) tropical medicine and include global health related topics throughout the degree. This becomes extremely beneficial as the future junior doctors will be much more prepared to diagnose, treat and manage patients with non-endemic diseases, since these are going to have an increased prevalence regarding population migrations and climate change.

Another aspect in the development of 'Internationalization at home' is that no Portuguese medical school offers a full English-language degree, which restricts the participation of foreign students on the regular curriculum. Having said this, the Portuguese medical schools council should start by offering regular study programs in the English language.

## 4.8 Institutional International Partnerships

Since the start of the Erasmus program in 1987, there has been a push to increase student mobility within Europe. The foundation of the program is the "bilateral inter-institutional agreements" that take place between participating HEIs. The majority of these agreements are established at faculty level, and usually started by personal professional contacts of individual professors, between few higher education institutions. (76,77).

One of the purposes of the Erasmus+ programme is to allow student international mobility under study or training periods, enabling students to complete a portion of their normal academic study or practice in one of the EU members and EU partner countries.

7 out of the 8 Portugal Medical Faculties have established Erasmus+ SMS partnerships (83.7% of all partnerships). However, only 3 of the 8 Portuguese medical schools have SMT partnerships (16.3% of all partnerships).

Portugal currently has 332 bilateral Erasmus+ agreements with universities, medical schools or hospitals from 22 countries. If a student wants to pursue an international mobility in a partner medical school with an already signed contract, the learning agreement can further be concluded.

Meanwhile, the student can directly establish a partnership with a hosting hospital for SMT international mobility, though for SMS, the partnership always needs to be established between the sending and hosting HEIs. These requirements give more

freedom to the OG medical students on SMT to choose a bigger variety of destination countries than OGs under SMS program.

The Erasmus+ institutional partnerships should specify the number of medical students and duration (months) of the mobility abroad. Each year, a tender is conducted based on these agreements, and each sending university should specify the terms and the process of candidates selection. The selected medical students must create a study plan with the help of the faculty Erasmus+ program coordinators and its counterpart on the partner hosting institutions. They must also get the study plan approved by the chairmen and heads of the institutions where they will be studying or training abroad. The mobility period is a time-limited programme that lasts between 3 to 12 months (57).

When analyzing more carefully, it can be noticed a big preference for Southern European countries and romance language speaking-countries, which is in accordance to the IC and OG flows to these regions. However, despite a vaster number of partnerships established with Western European medical schools (n=96 and 28,9% of the partnerships) rather than Central & Eastern European countries (n=89 and 28,9% of the partnerships), we witness that medical students OG prefer to go on mobility to Central & Eastern European medical schools (35% of the OG) rather than western European medical schools (20% of the OG). Additionally, 7 of the Portuguese medical schools have established partnerships between western Europe medical schools - but only 4 Portuguese medical schools have partnerships with Central & Eastern European medical schools, which is the second biggest geographical destination of OG.

In contrast, there is no medical school in Portugal with established partnerships between Northern European medical schools, and only one partnership with the United Kingdom and the Netherlands.

When we examine the network of European nations defined by the number of international institutional partnerships, we notice that the United Kingdom and Ireland, along with the northern European nations, play the authority role in the networks, while the Central & Eastern European nations play the hub-like role. Both roles are simultaneously played by Spain, France, Germany, and Italy (78)

The medical schools in the North and Center of Portugal are the ones with the higher number of active Erasmus+ agreements, varying from 123 partnerships in FMUC to 75 partnerships in UP. With respect to the universities in Lisbon, NOVA and FMUL have 53 links each. The medical schools outside urban centers and with innovative rigid curricular plans occupy the last positions with fewer number of established partnerships:

FCS-UBI with 21 links, EM-UM with 7 links and U-Alg with no links. Regarding foreign institutions, the higher number of agreements are established with Italian and Spanish medical schools, highlighting the deep cultural ties between Portugal and these two countries.

Additionally, it shows that the medical schools with the higher number of Erasmus+ international institutional partnerships are the ones with higher Erasmus+ OG engagement rates, highlighting the need for medical schools to diversify the destination countries of OG as well as the international programs on which medical students can enroll.

# 5. Conclusion

This research aimed to gain an understanding and develop a detailed up-to-date state of affairs of the current internationalization of medical education in Portugal. Based on a quantitative analysis of the number of IC and OG medical students who participated in Erasmus+ mobility programme between 2014-2020, the countries of origin and destinations, OG distribution by different Portuguese medical schools, as well as the educational policies adopted by Portugal's medical schools to promote the internationalization at home and established international institutional partnerships.

The available knowledge regarding the IoME is very scarce and the only research that quantifies the number of IC and OG medical students in a specific country was carried out in the Netherlands with data from the nineties, highlighting the importance of this master thesis.

Just one medical school provided the data requested by e-mail regarding the IC and OG medical students on Erasmus+ and portuguese-speaking countries exchange programs. Additionally, the IFMSA data provided was scarce and did not include the study period. That way, we decided to just consider the medical student mobility under Erasmus+ Program and the data was collected from already available databases

We believe the data is representative of Portugal's situation, as Erasmus+ programme represents 70% to 80% of all student mobility programs in Europe (34, 35). However, we witness some incongruences on the data depending on the database (e.g. the number of OG medical students according to "Erasmus+ Education and training Agency" and "Erasmus+ OG Barometer" is slightly different, as the national total number of OG according to "ETER platform" and "Erasmus+ OG Barometer").

The definition of IC students might be another limitation. For example, this study did not include international students who attend the complete regular medical curriculum in Portugal, while some people may think these students should have been included.

We witness that the number of OG and IC medical students is slightly decreasing since 2016 and 2018, respectively. By other hand, medical schools located in Southern Europe and Central & Eastern Europe are the main origin and destination countries.

According to these finding some conclusions can be drawn:

- OG Medical student participation rates (3.7%) on Erasmus+ programme is bellow Portugal's university students participation rates (8.1%).

- OG medical students prefer SMT mobility program (38.2%) rather than university students (25.4%)
- The number of OG medical students surpass the number of IC medical students, contrary to Portugal university students panorama.
- There is a big discrepancy between Portugal's medical schools regarding its number of OG medical students and established international partnerships. For instance, two medical schools are responsible for 68% of the Portugal's OG Medical Students and accounts 59,6% of Portugal medical school institutional Partnership.
- All medical schools have included at least one aspect of Internationalization at home on the regular curriculum

Only one out of the eight Portugal's medical schools included intercultural communication as a program on regular curriculum. Therefore, there is a national training gap regarding the interaction with patients from culturally diverse backgrounds and this should be perceived as a serious defect in the curriculum, which should be addressed in the future.

Besides student mobility, innovative approaches and investigation within IoME regarding the introduction and development of IaH in medical schools should be done, as it is within IoHE.

Further research on IoMe should be undertaken to analyze the European IoMe and to overcome students' mobility and IaH barriers and variables.

IoHE has been the subject of extensive research over the last decades. Now the recent area of "IoME" needs to be defined, set its purposes, find resources and structures to flourish and upgrade medical training and education with the global framework of nowadays society.

As a result, it is imperative that the 21st-century medical curriculum fully equips future's physicians with the knowledge, abilities, and behaviours necessary to answer the difficulties of an expanding global world.

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# 7. Annex

## 7.1. Annex 1 - Opinion of the UBI Ethics Committee

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**Parecer relativo ao processo n.º CE-UBI-Pj-2021-043:ID981**

Na sua reunião de 18 de maio de 2021, a Comissão de Ética apreciou a documentação científica submetida referente ao pedido de parecer do projeto **"Internationalization of Medical Education in Portugal: An Overview of Students' Outward and Inward Mobility"**, do proponente **Diogo Gonçalves Ferreira**, a que atribuiu o código n.º CE-UBI-Pj-2021-043.

Na sua análise não identificou matéria que ofenda os princípios éticos e morais, sendo de parecer que o estudo em causa pode ser aprovado.

Covilhã e UBI

A Presidente da Comissão de Ética

(Professora Doutora Ana Leonor Serra Morais dos Santos)
(Professora Auxiliar)