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Portugal and Slovenia: Comparing Health Systems

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The voyage of discovery is not in seeking new

landscapes but in having new eyes

Marcel Proust

Acknowledgments

Resumo

A economia dos países pode estar relacionada com políticas aplicadas na área da saúde e, nos últimos 10 anos, muitos países têm sofrido crises económicas profundas. O desafio cresce quando os orçamentos diminuem devido às dificuldades económicas sentidas e, em particular, com o orçamento dirigido à saúde. Tal foi evidente em Portugal, e nos países de Leste, como a Eslovénia, recente membro da União Europeia, embora menos evidente.

O objectivo desta dissertação é comparar ambos os países no que diz respeito aos seus sistemas de saúde, para melhor compreender a sua respectiva dinâmica. Mais concretamente focando o seu modelo de financiamento, prestação e suas instituições, que nos permita compreender em que pontos se assemelham e, por outro lado, onde divergem, e tentar desenvolver uma lista de recomendações. Com esta comparação, os resultados alcançados poderão ser aplicados na revisão de políticas de cada país, permitindo uma maior aprendizagem, evitando erros e alcançando sucessos.

Esta dissertação compara Portugal e Eslovénia tendo em consideração os seus sistemas de saúde utilizando o modelo teórico proposto por Avedis Donabedian, dividido em Estrutura, Processos e Resultados. Os diversos indicadores são usados para esta análise encaixando nesta *framework* analítica.

Os sistemas de saúde português e esloveno possuem pontos coincidentes para análise, nomeadamente, os cuidados de saúde primários, secundários e terciários, esperança de vida ao nascimento, mortalidade infantil, anos de vida potencialmente perdidos, mortalidade considerando todas as causas e mortalidade devido a enfarte agudo do miocárdio e acidente vascular cerebral. Contrariamente, o financiamento dos sistemas de saúde, os indicadores de qualidade dos cuidados de saúde primários, as camas hospitalares, infra-estruturas onde são fornecidos os cuidados, consultas com médicos, as altas hospitalares, o tempo médio de internamento, o tempo de espera para cirurgias electivas, a mortalidade por causas seleccionadas e a auto-percepção do estado de saúde diferem entre ambos.

Esta informação comparativa será importante para estabelecer novas iniciativas, dado que, tanto Portugal como a Eslovénia podem melhorar o seu sistema de saúde aprendendo um com o outro. Os sistemas de saúde no futuro irão enfrentar desafios relacionados com o envelhecimento da população e, consequentemente, o aumento das doenças crónicas. Investimentos futuros na rede de cuidados de saúde primários poderá permitir lidar com esta situação pois constitui uma pedra basilar de um bom sistema de saúde. Com o propósito de melhorar continuamente os sistemas de saúde deve ser incentivada a adopção de bons sistemas de informação, assim como o desenvolvimento de programas de *guidelines* nacionais, permitindo avaliação constante dos indicadores de saúde e melhoria na prestação e standardização dos cuidados de saúde, respectivamente.

Palavras-chave

Portugal; Eslovénia; Sistemas de Saúde; Gestão; Medicina

Abstract

Countries economic may be related to policies regarding health, and in the last ten years a lot of countries struggled due to the economic crisis. A challenge arises when countries budgets shrink, as a consequence of economical difficulties, and therefore the budget allocated to health. Such was heavily evident in Portugal, but less so in eastern countries, and new comers to the EU, like Slovenia.

The aim of this dissertation is to compare both countries regarding their health care systems, to better understand their respective dynamic. More precisely, focusing on their financing model, provision and its institutions, this allows us to learn where they are similar, and on the other and, where they are different, and try to develop a list of recommendations. With this comparison, the results achieved might help health policy in each country learn with each other experiences, avoiding mistakes achieving further success.

This dissertation compares Portugal and Slovenia regarding their health care systems using Avedis Donabedian framework, divided in Structure, Process and Outcomes. The countries under scrutiny have common aspects such as levels of care, namely the presence of primary health care, and different aspects such as financing systems.

Portuguese and Slovenian health care systems have common aspects, namely, primary, secondary and tertiary care, life expectancy at birth, infant mortality, Potential Years of Life Lost, mortality from all causes and mortality following AMI and Stroke. On the contrary, financing of the health care system, primary health care quality indicators, hospital beds, health care facilities, appointments with doctors, hospital discharges, average length of stay, waiting time for elective surgery, mortality from selected causes and perceived health status, differ among these two.

The comparative information might be useful for policy makers, seeing that Portugal and Slovenia can improve their health care systems by learning from each other.

Health care systems in the future will face challenges due to the population ageing, consequently increasing the burden of chronic diseases. Future investments in primary health care networks will allow dealing with this situation. Furthermore, a good network of primary health represents a cornerstone of a good performing health care system. Aiming to continuously improve health care systems, policy makers should incentive the adoption of good information systems, as well as development of national guidelines programs, capacitating constant measurement of health care indicators and improve and standardize health care providing, respectively.

Keywords

Portugal; Slovenia; Health care systems; Management; Medicine

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Acronyms

ACES   Agrupamentos de Centros de Saúde – Primary Health Care Group Centers

AMI   Acute Myocardial Infarction

ARS   Adiministração Regional de Saúde – Regional Health Administration

COPD   Chronic Obstructive Pulmonary Disease

DM   Diabetes Mellitus

DRG   Diagnostic Related Group

ED   Emergency Department

EU   European Union

FHU   Family Health Unit

GDP   Gross Domestic Product

GP   General Practitioners

HCS   Health Care System

HIIS   Health Insurance Institute of Slovenia

INE   Instituto Nacional de Estatística – National institute of Statistics, Portugal

NHS   National Healthcare System

NOC   Norma de Orientação Clínica – Clinical Orientation Guidelines

OECD   Organization for Economic Co-operation and Development

OOP   Out-of-Pocket

PDS   Portal da Saúde – Health Portal

PHCC   Primary Health Care Center

PHCU   Primary Health Care Unit

PNS   Plano Nacional de Saúde – National Health Plan

PT   Portugal

PYLL   Potential Years of Life Lost

SLO   Slovenia

SUB   Serviço de Urgência Básico – Basic Emergency Department

SUMC   Serviço de Urgência Médico-Cirurgico – Medical-Surgical Emergency Department

SUP   Serviço de Urgência Polivalent – Polyvalent Emergency Department

ULSLA   Unidade Local de Saúde do Litoral Alentejano

VHI   Voluntary Health Insurance

WHO   World Health Organization

Introduction

According to the World Health Organization (WHO) *"Health is a state of complete physical, mental and social well being and not merely the absence of disease or infirmity"*[1]. Personal own health status might be consciously or unconsciously a concern that occupies peoples' mind most of the time, therefore one could expect population health to be an increasingly more relevant ongoing governmental concern.

The health status of a given population depends of its health care system, defined by the WHO as *"the sum total of all organizations, institutions and resources whose primary purpose is to improve health"*[2]. A health system needs staff, funds, information, supplies, transport, communications and overall guidance and direction[2]. Moreover, according to the 2000 World Health[3] report a health care system has 3 fundamental goals:

- Improving the health of the population it serves;
- Responding to the reasonable expectations of the population;
- Collecting funds, in a way that is fair.

"A good health system delivers quality services to all people, when and where they need them. The exact configuration of services varies from country to country, but in all cases requires a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies; well maintained facilities and logistics to deliver quality medicines and technologies"[35].

With the upcoming of the XXI century, the economics and politics of a lot of countries have suffered changes, particularly after 2008, when the financial crisis set in. Economics are a main driver influencing decisions regarding education, social and employment policies, amongst other. Health is no exception to this. As a consequence, the economic status of countries reflects their health policies and potentially, their health status. *Per se* an economic crisis does not generate the willingness for comparing countries – the willing and need is constant; nevertheless, an economic crisis does allow to evaluate how the system is prepared, or not, for coping with stress. This stress arises either from budget cuts, either from social/employment-worsened conditions, which in turn can stress healthcare demand. This scenario allows a holistic appreciation of system performances (good, bad, medium), creating a sort of meta-outcome indicator.

Health care presents as a very important issue during an economic crisis. Access and equality concerning health care providing is, or should be, a primary government concern and thus should not be restricted to a few as economic restriction set in because, according to the Universal Declaration Of The Human Rights, everyone as the right to health no matter their economic situation.

The real challenge arises when government have to provide the same services with smaller budgets, leaving the policy makers with the challenge of "*maintaining universal access to essential-high quality care with reduced resources*"[5]. Different countries have different cultures, different habits and life routines. These differences tend to reflect also in the health care systems organization and care providing.

These economical events render the comparison between countries struggling with economical issues, an important tool to develop new strategies of management by learning from each other. Throughout the years investigators have been comparing countries health care systems aiming to learn from each other successes and mistakes. Health at a glance is a well-known work, published year after year by the OECD. Another example of the willingness to compare health care systems in different countries is the Health In Transition Reviews, by the European Observatory of Health Care Systems and Policies, comprising a series of books describing the functioning of health care systems in countries, as well as reforms and policy initiatives, covering countries in the WHO European Region, as well as some additional OECD countries. The use of these comparisons in used very often, even though most of the times the scope is a general and superficial overview of the study objects.

This work attempts to compare two EU countries, separated by approximately 2500 kilometers, Portugal and Slovenia, regarding their health systems, focusing on their financial model, provision, and institutions. This may allow us to understand their differences and similarities, and try to develop a list of recommendations for policy-makers. With this comparison, the results achieved might help policy-makers on each side learn with each other experiences, avoiding mistakes and absorbing successes.

To fulfill the aim of this work a transversal analysis of two health care systems, was carried, taking into account the Avedis Donabedian framework. Overall this framework is divided in 3 main topics: structure, process and outcome. These are broad topics, which makes possible to notch the several points important for the development of this dissertation.

For studying the countries health care systems, a series of indicators where selected. The chosen framework provided a comprehensive model where the selected study indicators could be incorporated, as shown in figure 1.

Structure	Process	Outcome
- Health policies - Primary, secondary and tertiary levels of care, and emergency care; - Financing models; - Health care providing facilities; - Hospital beds.	- Appointments with doctors; - Hospital discharges; - Average length of stay; - Waiting times for elective surgery.	- Life expectancy at birth; - Infant mortality; - Potential years of life lost (PYLL); - Mortality from all causes and mortality from selected causes; - Mortality following Acute Myocardial Infarction (AMI) and Stroke; - Perceived health status.

Figure 1 – Contents of Structure, Process and Outcome

Other Comparison Studies

Most developed countries usually measure and compare health indicators. These comparisons often represent important tools for further improvements on their national health systems. This said, the need for comparing two or more health care systems exists and is well established. Nevertheless, comparison of health care systems in general terms, are not very common. Usually, comparisons tend to focus of specific part of the systems, such as, for example, cancer-associated mortality or financing and managing models.

The following papers compared health care systems between different countries:

- Comparison of health care systems in the United States, Germany and Canada[54];
- International comparison of health care systems using resources profiles[55];
- How does the quality of care compare in five countries?[56]

In the first paper, its authors approached each health care system focusing three main areas; description of health care systems, evaluation and comparison regarding equity and efficiency and overview of recent changes and future reforms. The chosen indicators used for studying equity and efficiency were: population number; health expenditure related indicators; number of physician and beds per capita; average length of stay; equipment indicators; life expectancy and infant mortality rate[54].

The paper written by Anell A, and Willis M, studied health care systems from Denmark, France, Germany, Sweden, United Kingdom and United States of America. To compare systems the analyses was limited to 10 indicators, separated in three main bullets: measures of monetary expenditures, measures of real resources priced in international markets and measures of real resources prices in domestic markets[55].

The last health care system comparison looks at five health care systems, particularly: Australia, Canada, New Zealand, England and United states. The authors accomplished this by evaluating 21 indicators, such as: five-year cancer relative survival rates; 30-day case fatality rates; breast cancer screening rates and asthma mortality rates. Essentially, for the discussion, the selected indicators were divided in process and outcome[56].

Avedis Donabedian (framework)

The Avedis Donabedian framework (first published in 1966 by the *Milbank Quarterly*[47]) is a conceptual framework designed for approaching health care systems quality, consisting of a three-branch methodology, to be defined in the next paragraphs.

After Avedis Donabedian's work, researchers developed other frameworks aiming to assess quality. World Health Report 2000, Behavioural Healthcare, Control Knobs and Systems Thinking, are other of these frameworks.

This framework is used for health care system comparisons seeing that it is flexible enough for applications in diverse health care systems. Furthermore, it is considered a good model when considering large health care system comparisons. Avedis Donabedian framework is used in several works regarding health care quality such as Larson JS in *Managing the Quality of Health Care*[46], and is mentioned in *Health Systems Performance Comparison* by Irene Papanicolas and Peter C. Smith[11].

The information from which inferences can be drawn about the quality care can be classified under three categories: 'structure', ´process', and 'outcome'" according to Avedis Donabedian *in The Quality of care*[7]. *"This three-part approach to quality assessment is possible only because good structure increases the likelihood of good process, and good process increases the likelihood of a good outcome"*[7] also according to the same author, wherein the three categories are defined (figure 2).

Structure	Process	Outcome	**Improving Health Care Quality**
- Denotes the attributes of the settings in which care occurs. eg – Facilities and organizational structure.	- Denotes what is actually done in giving and receiving care. eg – practitioners/ patients activities.	- Denotes the effects of care in health status of patients and populations. eg – clinical outcomes.	
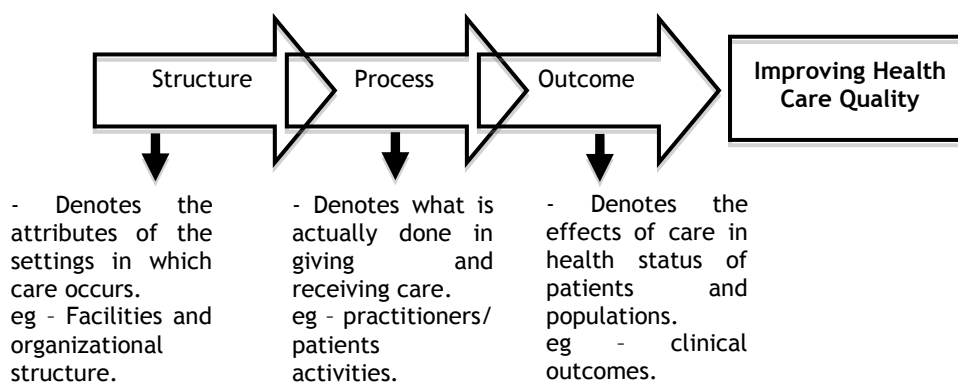
Figure 2 – Avedis Donabedian Framework (developed by the author with information present in *The Quality of care. How can it be assessed?* By Avedis Donabedian[7])

"Structure – structure denotes the attributes of the settings in which care occurs. This includes the attributes of material resources (such as facilities, equipment, and money), of human resources (such as number and qualifications of personnel), and of organizational structure (such as medical staff organization, methods of peer review and methods of reimbursement)."[7]

"Process – Process denotes what is actually done in giving and receiving care. It includes the patient's activities in seeking care and carrying it out as well as the practioners's activities in making a diagnosis and recommending or implementing treatment."[7]

"Outcome – Outcome denotes the effects of care on the health status of patients and populations. Improvements in the patient's knowledge and salutary changes in patient's behaviour are included under a broad definition of health status, and so is the degree of the patient's satisfaction with care."[7]

Besides these three categories, patient satisfaction should also be under scrutiny seeing that may be considered to be one of the most desired outcomes of care, even an element in health status itself. An expression of satisfaction or dissatisfaction is also the patient's judgement on the quality of care in all its aspects, but particularly as concerns the interpersonal process.[7]

Financing Model

Regarding the financing of health care systems two main models of health care can be distinguished, based on the source on their funding. The first is the Beveridge model, which is based on taxation and has many public providers. The second is the Bismarck 'mixed' model, funded by a premium financed social insurance system and with a mixture of public and private providers. In a public provider system, access to health care is virtually 100%, whereas in mixed model countries difference from 100% is made up by supplementary insurance. Countries with this former model usually spend less of their GDP on health care; nonetheless, the quality of care is similar[8].

Despite the differences in financing the health care systems, these are strongly influenced by the underlying norms and values in the respective societies. Due to these influences, health care systems are different all over the world.

The Bismarckian model presents advantages, such as: the population's generalized willingness to pay for services, not having a direct dependence/relation with the government and the direct access provided by the public system to the majority of the privately owned health care facilities. On the other hand, the poorest, most often, need to be subsidized to

have access to the services, requiring the establishment of effective contracting mechanisms to prevent price escalation[9].

The Beveridge model has as advantages having centralized governance, robust health public health programs with strong emphasis on primary care. Nevertheless, financing is unstable seeing that there are annual changes in the national budgets, and there is lack of incentives to the public sector[9].

Levels of Care Provision

Whereas the financing models differ between countries, the structure of health care providing is, more or less, the same throughout the European Union being divided in primary, secondary and tertiary care, which in turn is different from primary, secondary and tertiary prevention.

Zurro defines the primary prevention as the set of measures that aim to stop or diminish the probability of suffering from a certain disease. Its purpose is to diminish the incidence, through actions and campaigns carried out during the pre-pathological period, such as actions for health promotion or health protection, directed to the individual and the environment, respectively.[10]

The secondary health care prevention activities aim at stopping the evolution of diseases, acting in the pre-clinical phase, when the symptoms and signs are not yet apparent, existing only subclinically, allowing early detection. Secondary prevention reduces the prevalence of diseases.[10]

Tertiary prevention regards actions directed to treatment and rehabilitation that result of a disease already diagnosed, delaying its progression and appearance of complications, as well as improving the patient's quality of life.[10]

The different types of prevention are very important to understand the care proving itself, namely the primary care (provided mainly in primary health care centres) and secondary and tertiary care (in hospitals and specialized centres), as well as the importance of the existence of screening tests for oncology diseases, and for evaluating cardiovascular conditions, mental illness, among other.

The primary care setting usually constitutes the first contact point of patients with the health care system. It is also responsible for managing patients with chronic diseases, as well as referring patients for secondary and tertiary care. Nowadays primary care setting is a reality in a considerable number of European countries, being a cornerstone of health care systems. Furthermore, throughout the years population have been ageing, meaning primary care will gain even more importance in a near future. A good working primary care network enhances the cost-effectiveness of the system as a whole, and means: easy access to first

contact services, a comprehensive supply of effective and safe curative and preventive services, continuity of care, coordination with other levels of care and interdisciplinary cooperation[11].

Secondary and tertiary care corresponds to the provision of specialized care, mainly by hospitals and includes provision of emergency care.

The three levels of care work in an integrated fashion, and coordinate patients mainly by means of a referral system. General Practitioners (GPs) represent the entrance point in the health care system. Whenever a patient is in need of specialized care, GPs can refer them to secondary and tertiary care. Besides this referral system, patients can visit emergency departments, in emergent or urgent situations, either freely or with referral letter/call only.

Country Macroeconomics

Portugal is located in the Iberian Peninsula, the most south-western part of Europe, plus the archipelagos Azores and Madeira, with a total geographic area of 93 947 km[2]. Portuguese estimated population was 10 581 860 in the 1st of January 2015[12].

Slovenia is located between the Alps, the Pannonian Plain, the Mediterranean Sea and the Balkans, bordering Austria and Hungary to the north, Italy to the west and Croatia to the South-east. It also has a small Mediterranean shoreline. The mainland is 20 273 km[2]. The estimated number of inhabitants was 2 047 116 in the 1st of January 2015.[14]

Both countries where severely affected by the economic crisis. Growth rates and Gross Domestic Product *per capita* cease to increase.

Particularly in 2009, Slovenia's GDP *per capita* diminished 2 101 US dollars, from 29 589 US dollars, in the previous year, to 27 488 US dollars. By 2014 its GDP *per capita* was 30 114 US dollars, following a good evolution of GDP *per capita* since the decrease registered. The projected growth rate for 2016 is of 2,2% according to the OECD, the biggest growth rate since 2009.[15]

In Portugal, in 2009, the GDP *per capita* increased only 121 US dollars, whereas in 2007 it had grown 1337 US dollars. After 2009 the GDP *per capita* increased steadily and between 2013 and 2014 it is estimated by the OECD an increase of 952 US dollars, the biggest recorded since the economic crises sat in. In 2014, the same source estimates a GDP *per capita* of 28461 US dollars[16]. For 2016 the projected growth rate is the biggest registered since 2010 and is 1,5%.[16]

Portugal and Slovenia are both European countries struggling to overcome the economic situation, seeing that it has had its effects in the health care providing, and it is plausible that stakeholders made different decisions regarding this issue.

Health expenditure in real (adjusted for inflation) terms, fell in half of the countries in the European Union and slowed in the rest, between 2009 and 2012, according to the OECD.[5] This happened due to cuts in workforce salaries, lower pharmaceutical prices and increased co-payments. According to the same source, health care spending started to recover slowly, although in some countries like Portugal, Greece, Italy and Spain, it continued to fall.[5]

Methodology

This study consists of a transversal analysis of two health care systems taking into account the Avedis Donabedian framework. A series of topics and indicators were selected for each of the three categories depending on their availability and comparability.

Three main databases were used to collect information from both countries, namely: the OECD, the WHO Europe, and the EUROSTAT. The OECD Database was the most accessed. This allowed collecting data suitable for comparison. Besides these main sources, national databases were used, particularly the Portuguese National Institute of Statistics (INE – Instituto Nacional de Estatística) and the Slovenian Statistical Department, in the National Institute of Public Health.

Due to the complexity of this particular investigation and the fact that it requires the use of documents as a data collection method, and the need to reference them, this dissertation had to overlook the reference limitation number. This was seen as a requirement for identifying documents from different health care systems. To do otherwise would compromise the results, discussion and conclusion, or create less transparency for the reader.

Extensive list of definitions used for health care systems analyses were extracted from the OECD database[23]; however, for clarity, annex 1 displays definitions of the main indicators and concepts used.

Internships and *in loco* Investigation

The personal experience with the Portuguese National Health care System was an important source of information, especially being a medical student, allowing a good insight of its strengths and weaknesses. During the years as a medical student I had the opportunity to participate in activities and internships developed in Hospitals and Primary Health Care Centres (PHCC).

During the fifth year of university, through the module of Healthcare Leadership and Management, it was possible to participate in the first internship of one week in the Local Health Unit of Alentejo's coastline (ULSLA – Unidade Local de Saúde do Litoral Alentejano). The head of module, Professor Henrique Martins, was the mastermind behind the project, whose purpose was to push medical students in learning the working forces behind the management of a local health unit, and therefore a hospital and primary care units. The internship was a very important tool of work during the development of this master's dissertation.

To completely understand the Slovenian Health care System, an internship of 3 weeks was conducted, in coordination with the head of the Public Health Department (figure 4), Professor Tit Albreht, and Professor Matic Meglic. During this period of time in Slovenia it was

possible to learn the details of how it works, through interviews with people that work closely with the health care providing system.

The interviews where carried out sometimes formally, and sometimes informally. Twice a week, the head of the Public Health Department met formally with me to discuss, at first, the approach on the Slovenian Health Care System, and then to guide me through the health care system itself. Professor Matic Meglic also met formally once a week, to discuss the same points. Besides this, during the first week, I attended a metting of the Public Health Department, where I was introduced to the department staff, and the purpose of my work was explained. The same happened in the department headed by Professor Meglic. By the end of the internship, Professor Tit suggested a presentation in a meeting of his department, with the accomplishments and future work, which occurred in the 9th of October of 2014. All these occasions were opportunities to source for data, understand intricacies of the Slovenian Healthcare System and create a sense for it. Within this department, I also met with Doctor Mircha Pulgdrovac and Doctor Rade Pribakovic, in different occasions, to discuss the indicators to be compared and the sources to be used. Doctor Pulgdrovac and Doctor Pribakovic provided a lot of information about Slovenia, translated into English, overcoming the language barrier encountered during the development of this work.

During the stay in Slovenia it was also possible to contact with people in the most varied situations, being able to collect information about their health system. A very important meeting happened in Maribor with Doctor Miran K., a plastic surgeon working for the health care system. The main purpose was to understand the insight of professionals working in the health care facilities.
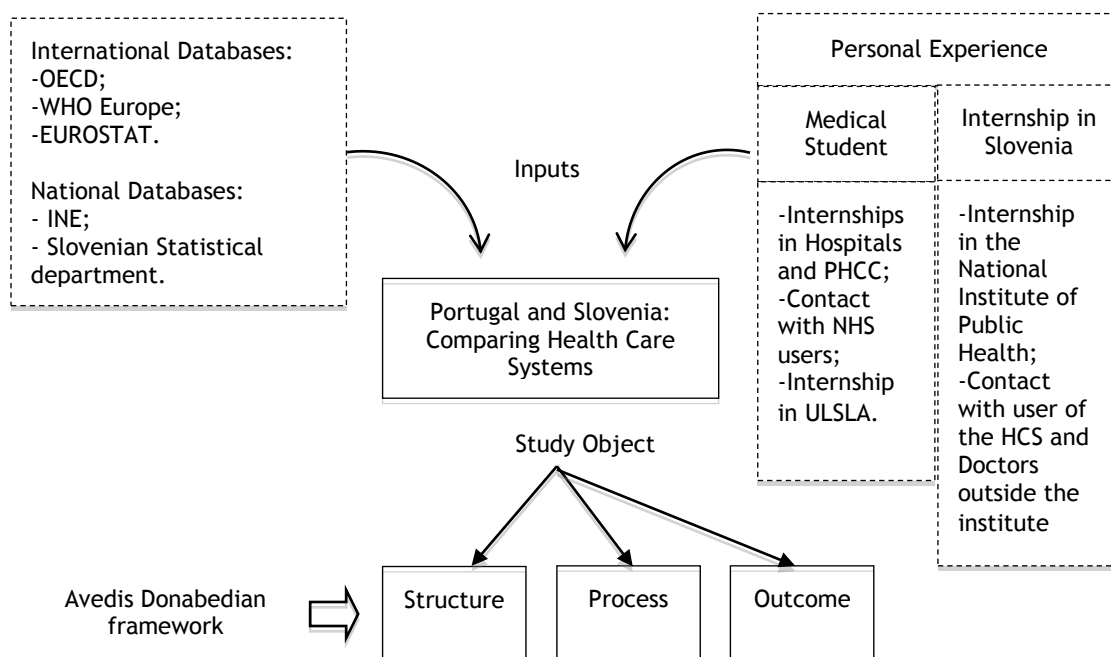
Figure 3 – Methodology organizational chart

Figure 4A – Ljubljana, Slovenia; Tromostovje and National Institute of Public Health (white arrow)

Figure 4B – Covilhã, Portugal; Faculdade Ciências da Saúde – Universidade da Beira interior (left white arrow) and Hospital Pêro da Covilhã (right white arrow)

Results

The figure 5 represents how the results can be organized. In the first section (Structure) a general overview of both health care systems is provided, namely their levels of care and financing, as well as the exploration of some structural indicators and health policies. In the Process section indicators the under scrutiny are the following: appointments with doctors, hospital discharges, average length of stay and waiting times for elective surgery. Finally, when considering Outcome, the following will be explored: life expectancy at birth, infant mortality, potential year of life lost, mortality and perceived health status.
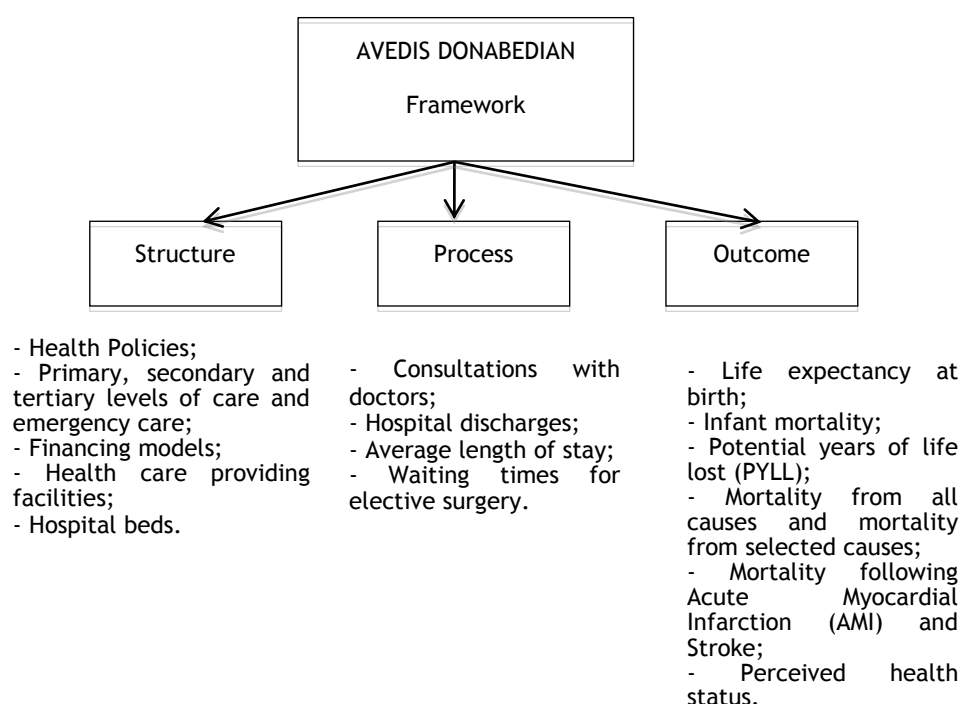
Figure 5 – Results presentation chart

Structure

Health Policies

Development of strategic documents for health care is an important tool for policy makers, setting orientations and recommendations transversal for all health care providing facilities.

Portugal developed its PNS (Plano Nacional de Saúde – National Health Plan), a strategic document that aims to capacitate and promote the empowerment of the health system, fulfilling its potential[53].

Slovenia also set the direction of strategic development for the health care system. Resolution on National Health Care Plan is a mid- to long-term health plan setting principles and guidance for the health care system. Nevertheless, its relevance is questionable, seeing that governments, usually ignore the document passed in the parliament, by the previous government (through personal contact with Dr. Pulgdrovac).

Besides these generalist documents, a series of other exists, namely priority health programmes. The General Directorate of Health, in Portugal, defined 9 priority programs, specifically:

- National Program for Diabetes;
- National Program for HIV/AIDS;
- National Program for Prevention and Control of Tobacco;
- National Program for Healthy Dietary Habits Promotion;
- National Program for Mental Health;
- National Program for Oncology Diseases;
- National Program for Respiratory Diseases;
- National Program for Cerebrovascular and Cardiovascular Diseases;
- National Program for Infections and Antibiotics Resistance Control.

These programmes focus on particular aspects of public health, aiming to control and improve health results.

Slovenia also created several priority programmes focusing, as in Portugal, particular aspects of public health. Through personal contact, with Doctor Mircha Pulgdrovac, the following programmes were identified:

- National Program for Quality and Safety in Health Care 2010-2015;
- National Cancer Control Program 2010-2015;
- National Diabetes Program 2010-2020;
- National Palliative Care Program from 2010;
- National Program on Nutrition and Physical Activity for Health 2015 – 2025.

Health programs mentions are not exclusive, for example they do not mean strategies for Child Care, vaccinations or other do not exist in the respective countries, rather they reflect current or more intensive/new concerns.

Health Care Systems

Slovenia's health care system is divided in three levels of care, mentioned in the introduction section, following the trend verified in most European countries. Primary, secondary and tertiary are provided between PHCC, hospitals, spas and other specialized centres.

Considering the financing model, Slovenia relies mainly in the Health Insurance Institute of Slovenia (HIIS) responsible for the collection and management of the compulsory health insurance.
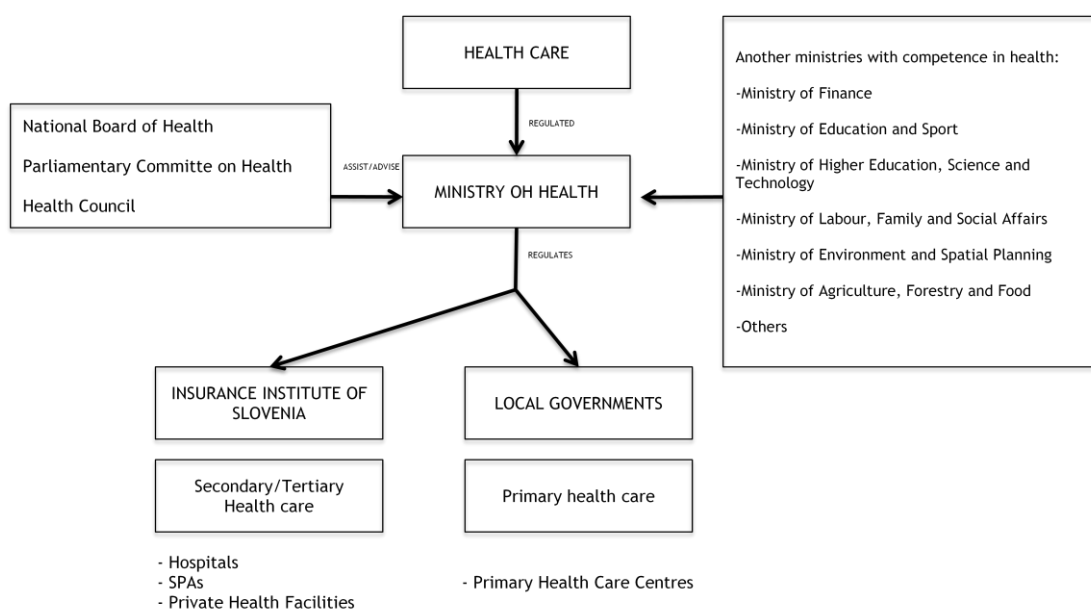
Figure 6 – Organizational chart, Slovenia. Developed in coordination with Dr. Rade Probakovic and Dr. Mircha Pulgdrovac of the National Institute of Public Health Slovenia.

Portugal also divided its health care system in three levels of care. Primary care is provided in PHCC – composed of Primary Health Care Units (PHCU) and, more recently, Family Health Units (FHU). Secondary and tertiary care, as in Slovenia, is provided mainly in hospitals.

When considering the prevailing financing model of the health care system, Portugal funds its National Health System (NHS) mainly via general taxation and health subsystems, both public sources.
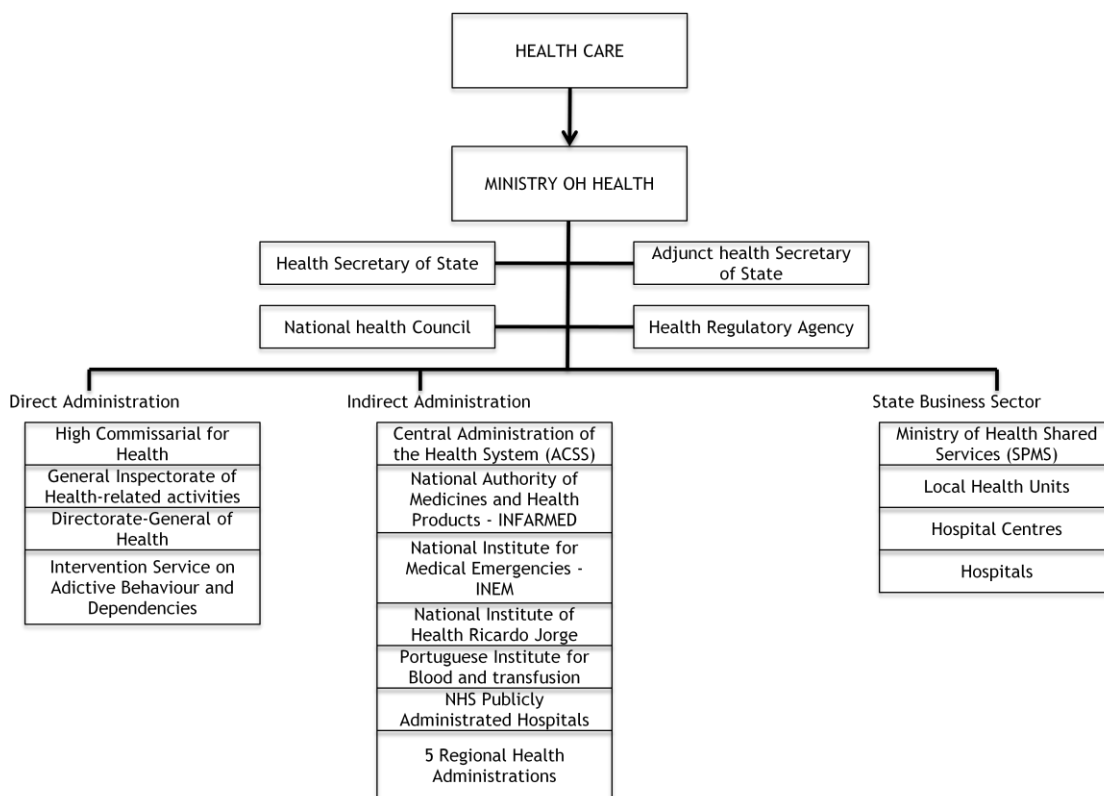
Figure 7 – Organizational chart, Portugal[17]

Primary Care

Slovenia

"According to the law and practice, a health care centre is a public institution, which provides as a minimum, preventive and curative primary health care for different target groups of inhabitants, notably many of those are at higher risk from a public health point of view."[4]

The types of health care provided in the primary health care setting include: emergency medical aid, general practice/family medicine, health care for women, children and youths, home nursing, laboratory and other diagnostic facilities, preventive and curative dental care for children and adults, medical aids and appliances, pharmacy services, physiotherapy and ambulance services.[4]

These services can be provided in two types of facilities: the health care centres and the health care stations, corresponding to the seats of former local communities and important local centres, such as small towns or villages, respectively. The last ones provide a smaller amount of services, as they are usually smaller.[4]

PHCC are municipality owned. They can be owned by one or more local communities that are responsible for management, administration and provision of adequate funds for maintenance of the premises. Apart from the public provision (from the local governments)

there is also private provision, carried out by either individual health professionals acting as providers, or by group practices with various combinations of services of specialties.[4]

The majority of primary health care providing happens in public premises; nevertheless some of this type of care is provided in private practices.

The delivery of primary health care in the public sector includes the following personnel: GPs, dentists, nurses, pharmacists, physical therapists, speech therapists, occupational therapists, psychologists or psychiatrists, midwives and other professionals necessary to carry out the work developed.[4] The GP and nurse compose the team responsible for providing the initial contact with the patients with the health care system, – where the GP is the team leader. "*The personal physician concept was introduced with the intention of improving the quality of relations between a patient and her or his physician and to ensure continuity of care*"[4], according to the HiT Slovenia. The patient owns the right to choose his or her personal physician, which in most cases is a General Practitioner. This said a paediatrician might act as a personal physician if a child is considered. Each GP has, on average ,1800 patients, according to the HiT Slovenia.[4]

Slovenia established a gatekeeping system through their GPs, meaning patients own the right to access specialized care only when their personal physician determines the necessity[4]. The personal physician is supposed to be the gatekeeper; the GP is the responsible for maintaining a good relationship with the patient, keeping track of their health status, prescribing medicines and maintaining file records. Whenever a patient needs specialized care, it is the personal physician responsibility of referring the patient to the secondary and/or tertiary level of care. The power of referral includes appointments with specialists, diagnostics and/or treatment procedures[4].

Portugal

"*The primary care network promotes, simultaneous, health and disease prevention, including management of acute or serious health problems according to physical, psychological, social and cultural dimensions, without discrimination of whatever source, through a person-centred approach oriented towards the individual, her/his family and the community of which s/he is a member*"[13], as stated in Health in Transition Portugal.

In Portugal, the Primary care system represents the first port of call for patients with non-emergency situations and care for patients with stabilized chronic conditions. Besides this, it holds a major role in prevention activities[44].

Public and private providers can be found in the community, even though the vast majority are public, and all NHS GPs are public[13]. According to the OECD report on Portugal, in 2013 there where 458 PHCUs and 393 FHUs (islands not included)[44]. Primary care setting in Portugal is separated between two models, with a ratio of approximately 1:1. The prevailing

models in question are Primary Health Care Units (PHCUs) in one hand, and Family Health Units (FHUs) on the other hand[44]. These two differ both in staff size and makeup, in terms of facilities, payment methods, and contracting arrangements. PHCUs are composed of a variable number of GPs, responsible for providing care to their patient list, as well as for off-list patients[44]. The FHUs, established in 2006, are made of 3-8 GPs, 3-8 family nurses, and a variable number of administrative staff and were created with the intention of encouraging multidisciplinary work between the available professionals and successful cohesive teams. Furthermore, FHUs also have technical autonomy and a different payment method sensitive to performance, as stated in Raising Standards report, Portugal[44].

FHUs are separated in three models: Model A, Model B, and Model C (Model C has not yet been implemented)[44]. The main difference between the first two models regards the payment method of the staff, where besides the legislated remuneration process, there is also a variable remuneration process consisting of a supplementary payment that the FHUs receive, depending on individuals health professionals performance, and units results, across a selection of indicators. All FHUs start in the first Model, but can evolve to Model B[44].

The ACES (Agrupamentos de Centros de Saúde – Primary Health Care Group Centres), under the jurisdiction of the ARS (Administração Regional de Saúde – Regional Health Administration), deliver the primary health care, being organizationally and financially independent, and its mission is to assure primary health care provision of a given area[13]. In Portugal it is set by the law that the maximum number of ACES be 74 (Decreto-Lei 28/2008)[20].

Portuguese GPs, working in primary the primary health care facilities, act as gatekeepers, owning the power of referring patients to the secondary and tertiary levels of care, to obtain specialized care. Besides this, primary level of care contacts other levels of care by exchanging patient data, such as exams, discharge notes, among others[13]. Portugal is developing and implementing information systems, accessible in all health care facilities, to facilitate and improve the means of data exchange and access to patient data; PDS (Portal da Saúde – Health Portal) is an example[44].

Outpatient contacts per person, refers to the average number that one person visits his or her personal physician. Very few outpatient contacts per person occur every year, when comparing Portugal to the EU in the OECD database[13]. As in Slovenia, the GPs are the gatekeepers of the NHS, but in practice, patient bypass them by visiting the emergency departments. *"This is consistent with the disproportionately and, arguably, inefficiently high use of hospital care."*[13]

The GPs deliver most of the primary health care together with the family nurses. Some years ago, there where some primary health care centres that provided some specialized care, but today very few exist, and GP constitute the medical care providers. General Practitioners provide the following services in the primary care level, according to the HiT Portugal:

-General medical care for the adult population;

-Prenatal care;

-Children's care;

-Woman's care;

-Family planning;

-First aid;

-Certification of incapacity to work;

-Home visits;

-Preventive services[13].

At the moment, each GP has - on average - 1900 patients at his responsibility, which constitutes an increase of 400 compared to 2012[44].

Primary Health Care Quality Indicators

The OECD database presents a series of indicators that aim to evaluate quality of the primary health care.

Hospital admissions caused by uncontrolled asthma, COPD and diabetes, reflect the quality of the health care provided in the primary health care setting, seeing that this level of care is responsible for the management of chronic patients with these, and other, conditions. Health indicators measuring hospital admissions due to these diseases are considered indirect measures of quality in the primary health care level[44].

The following table present hospital admissions for asthma, COPD and diabetes.

Table 1 – Hospital admission due to asthma, COPD and uncontrolled diabetes; population with 15 years old and over; age (-sex) standardized death rate per 100000 population[23]

		2007	2009	2010	2011	Δt
Asthma	Portugal	17,8	15,3	n.a.	16	-1,8 (10,11%)
	Slovenia	n.a.	40	42,9	39,3	-0,7 (1,75%)
COPD	Portugal	101	76,4	n.a.	70,5	-30,5 (30,2%)
	Slovenia	n.a.	121,8	114,4	112	-9,8 (8,05%)
Uncontrolled Diabetes	Portugal	20,7	17	n.a.	16	-4,7 (22,71%)
	Slovenia	n.a.	n.a.	n.a.	n.a.	n.a.

Legend: n.a. – Data not available; Δt – variation between the first year and the last year available

Overall Portugal performs better than Slovenia regarding primary health care quality indicators. Furthermore, Portugal also registered better improvements in reducing avoidable

hospital admissions. For instance, table 1 shows a reduction of 30,2% reduction when considering hospital admission for COPD between 2007 and 2011.

Secondary and Tertiary Care

Slovenia

Secondary care is provided in hospitals, spas or in private health facilities. Tertiary care, comprising more complex health care, is provided in clinics and specialized institutes[4]. There are public and private providers; public providers are always contracted in the HIIS whereas private ones may, or not, have established contracts with this entity, although in Slovenia there are few purely private health providers, offering care and diagnostic services. Patients, who visit a private provider without the referral of their personal physician, have to fully cover the expenses Out Of Pocket (OOP). As mentioned, the personal physician owns the responsibility for referring patients for others levels of care, whenever the clinical situation justifies.

Secondary and tertiary care comprises Emergency medical care being defined as *"provision emergency service to a person in a life-threatening condition or to a person who may develop such a condition in a short time, caused by disease or injury"*[4]. Physicians and other health professional compose emergency teams, responsible for assuring emergent/urgent care[4]. Collaboration between primary health care services and hospitals essentially takes place in the form of referrals and the exchange of test results[4].

The emergency care is provided in Primary health care centres, as well as in hospitals.

Portugal

Hospitals are responsible for providing the majority of the secondary and tertiary health care and are classified according the provided services into:

- Hospital centres and groups, providing highly specialized services with advanced technology and specialized human resources;

- Specialized hospitals, providing a broad range of specialized care services in the areas of oncologic treatment, mental health, physical medicine, rehabilitation, and children hospital;

- Local Health Units (ULS), which constitute groups of NHS health care providers that integrate hospitals and primary care centres of the same geographical area;

- Other types of Hospitals, not integrated in hospital centres or groups, or other forms of concentration of hospitals[44].

Specialist care providing is integrated in the current NHS model, most of which is provided in public hospitals. Despite this, some clinical services might be contracted to a private providers in certain circumstances as, for example, when waiting lists need reduction. In this case, the NHS pays for specialized care in private providers. The RHA (ARS) is responsible for establishing those contracts.[13]

Even though there are hospitals throughout the entire territory, Lisbon and Oporto concentrate the majority of the health resources, resulting in shortage of specialized human resources throughout the rest of the mainland. For example, in Portugal there are only three Institutes of oncology (Lisbon, Coimbra and Oporto).[13]

Emergency care

In Portugal, emergency care is provided mainly in the following emergency departments:

- SUP (Serviço de Urgência Polivalente - Polyvalent Emergency Department)
- SUMC (Serviço de Urgência Médico-Cirurgico – Medical-Surgical Emergency Department)
- SUB (Serviço de Urgência Básico – Basic Emergency Department)

SUB constitute the first level of EDs, being the less differentiated, less specialized and with less medical technology. In Portugal there are 41 SUBs. SUMC represent the second line in emergency medical care, and support the action of the SUB nearby. Presently in Portugal, one can count 34. The most differentiated are SUP, with 8 in the Portuguese mainland.

The three types of EDs, even though different in differentiation and medical technology, work in articulation referring between themselves, whenever it is needed. For instance, in the majority of situations of Stroke it is required emergent treatment in SUPs.

EDs represent the hospital emergency care; nevertheless, in Portugal there is also a network of pre-hospital emergency care. INEM (Instituto Nacional de Emergência Médica – Medical Emergency National Institute) is the institute responsible for delivering field emergent medical care, and assuring safe transport for the more suitable ED in the area.

Individuals can access the closest ED whenever the present with an emergent or urgent health situation, with a small cost for patients.

Portugal faces a problem regarding accesses to ED, registering a 7 300 892 visits to the EDs in 2012[50], causing long hours of waiting for patients[50].

Slovenian emergency medical care is provided in PHCC, as well as in hospitals. Three organizational levels compose it:

-First level includes 45 primary health care centres outside regional centres – open 24/7;

-Second level includes 15 primary health care centres in regional capitals – open 24/7;

-Third level includes hospital emergency services in acute hospitals – open 24/7[4].

The first level is present in small towns; the second in regional capitals and usually is near or within hospitals, besides being responsible for sending physician-staffed ambulances attending patients in the field; third level provides the most specialized care, by specialists, and it is based in larger acute care hospitals[52]. Non-hospital-based EDs usually are short on technological resources[52].

Slovenia introduced Emergency Medicine as a specialty in 2007, aiming to achieve a better organized emergency care[52].

Accessing EDs is equivalent as in Portugal; nevertheless, Jaklic B and colleges estimate 207 ED visits per day per 1000 individuals – a low number of visits when compared to other countries, namely the United Kingdom, Australia and the United States[52].

Financing the Health Care System

Slovenia

The prevailing financing model is based on the Bismarckian Social model, by the time the *Health Care and Health Care Insurance Act of 1992* laid its foundations. The Slovenian health care system is funded by the following main sources:

-Compulsory health insurance;

-State revenue;

-Voluntary Health Insurance (VHI);

-Out-of-pocket payments (OOP)[4].

The first two sources represent the public sources of revenue, whereas the last two represent the private ones.

The Compulsory health insurance is a national pooled health insurance (HIIS), which covers the majority of the public funding sources. The entire population living in Slovenia is covered under the sole compulsory health insurance scheme, either as contributing members or as their dependants.[4]

State revenue is gathered through national- and municipal-level taxation. This revenue is used mainly for maintenance of the primary health care facilities, seeing that these are owned by municipalities and therefore hold the responsibility for infrastructure maintenance.

The VHI represents a major portion of the private sources of revenue. The introduction of this second and voluntary insurance aimed to cover the introduction of co-payments to the

compulsory health insurance, nonetheless is too expensive for the general population. Although this is a type of private insurance, premiums do not vary with age and insurers are not allowed to deny coverage, granting access to most of the population and contributing for a relatively low OOP spending.[21]

Table 2 – Health care expenditure, Slovenia

Year	2000	2005	2008	2010	2011	2012	2013	Δt
Total health expenditure as % of GDP	8,3%	8,5%	8,4%	9%	8,9%	9%	8,8%	+0,5% (6%)
Public expenditure on health as % of total health expenditure	74%	71,9%	71,4%	72,8%	71,4%	72,4%	71,9%	-2,1% (2,83%)
Private expenditure on health as % of total health expenditure	26%	28,1%	28,6%	27,2%	28,6%	27,6%	28,1%	+2,1% (8,08%)
Government health spending as % of GDP	0%	0%	0%	0%	0%	0%	0%	0% (0%)
OOP payment as %of total health expenditure	10,5%	n.a.	n.a.	12,9%	11,8%	12,4%	12,6%	+2,1% (20%)

Legend: Δt – variation between the first year and the last year available; n.a. – Data not available; Information gathered through personal contact with Dr. Rade Pribakovic in March 2015, available in: Institute of macroeconomic analysis and development. http://www.umar.gov.si/fileadmin/user_upload/pubikacije/pr/2014/POR_2014.pdf

Total health expenditure as % of the Gross Domestic product has been growing since the year 2000, reaching, in 2010 and 2012, 9%, more 6% than in the year 2000. So investment in health is a growing concern in Slovenia. Between 2012 and 2013, total health expenditure as % of GDP fell by 0,2%, which might indicate the implementation of budget reductions regarding health care, or on the other hand, an increase in national GDP, while maintaining health expenses.

Regarding government spending, Slovenian government does not invest funds in health care, besides health care facilities maintenance.

Although the investment was higher is 2013 than it was in 2000, by 0,8%, the trends registered a decrease in the public expenditure - 74% in 2000 against 71,9% in the latest year available; on the other hand, an inverse tendency is registered when considering the private sources of expenditure, increasing 2,1% in the same period of time (more 8,08% than the value registered in the year 2000), comprising OOP payments and Voluntary health insurance.

Portugal

The Portuguese NHS is predominantly financed by public and private sources. Public sources comprehend general taxation and health subsystems, whereas private sources are

voluntary health insurance and out-of-pocket payments/co-payments.[13] In Portugal, up to a quarter of the population are covered by supplementary private insurance, through health subsystems and voluntary health insurance (covering mainly pharmaceutical products, diagnostic technologies, and appointments with physicians working in private practices)[44]. These health subsystems are financed through employee and state contributions[44]. Regarding co-payments, in Portugal this type of financing represented 32% in the year 2012, according to OECD report on Portugal, 2015[44].

Every year, the Government, via the ministry of finance defines the budget for health; then the ministry of health allocates funds to the several health institutions.

Primary health care is financed through health care regions, as well as special programmes, whereas public hospitals are financed through the DGRs scheme, or in the other hand, through capitation – depending on whether it belongs to a Local Health Unit (ULS) or not.[13]

Table 3 – Health care expenditure, Portugal[22]

Year	2000	2005	2008	2010	2011	2012	2013	Δt
Total health expenditure as % of GDP	8,3%	9,4%	9,3%	9,8%	9,5%	9,2%	8,9%	+0,6% (7,22%)
Public expenditure on health as % of total health expenditure	71,2%	71,8%	69%	70%	67,8%	65,4%	66%	-5,2% (7,3%)
Private expenditure on health as % of total health expenditure	28,8%	28,2%	31%	30%	32,2%	34,6%	34%	+5,2% (18,1%)
Government health spending as % of GDP	4,1%	5,9%	5,2%	5,4%	5,2%	6,1%	5%	+0,5% (22%)
Familiar private expense as % of total health expenditure	24,7%	23,3%	25,8%	24,8%	26,7%	28,5%	28%	+3,3% (13,4%)

Legend: Δt - variation between the first year and the last year available

Total health expenditure has been growing since 1975, reflecting major improvements in health outcomes since then. In Portugal, the total health expenditure as % of Gross Domestic Product increased from the year 2000, from 8,3%, to 9,8% in 2010. From 2010 until the latest year available an opposite trend set in, matching the beginning of the economic crisis. The decrease in % of public expenditure on health, associated with a compensating increase in private expenditure on health, may also be a reflection of the economical crisis.

Government spending in health also shrank, with a difference of 1,1% between 2012 and 2013. This puts a greater economical pressure on family budgets, as it is shown by the increase of family private expenses as % of the total health expenditure.

Despite considerable investment in health care, the budget allocated to the Ministry of Health is often insufficient to cover the expenses, having required waves of budget reinforcements several times over the last 20 years.

Hospital Beds

The number of hospital beds is a measurement of a physical input to a health care system; it is the indicator of the availability of health care services and its capacity for responding to the general population.[5]

Table 4 – Hospital beds, per 1000 population[23]

	Year	Portugal	Slovenia
Total number of beds, per 1000 population	2000	3,71	5,4
	2005	3,56	4,83
	2008	3,39	4,74
	2010	3,37	4,57
	2011	3,37	4,62
	2012	3,38^e	4,54
	Δt	-0,33 (8,9%)	-0,86 (15,9%)
Beds in publicly owned hospitals, per 1000 population	2000	2,89	n.a.
	2005	2,68	n.a.
	2008	2,5	n.a.
	2010	2,46	4,52
	2011	2,45	4,57
	2012	2,44^e	4,5
	Δt	-0,45 (15,6%)	-0,2 (4,4%)
Beds in not for-profit privately owned hospitals, per 1000 population	2000	0,63	n.a
	2005	0,66	n.a
	2008	0,62	n.a
	2010	0,62	0
	2011	0,67	0
	2012	0,66^e	0
	Δt	+0,03 (4,8%)	0 (0%)
Beds in for-profit privately owned hospitals, per 1000 population	2000	0,19	n.a.
	2005	0,21	n.a.
	2008	0,27	n.a.
	2010	0,29	0,05
	2011	0,26	0,05
	2012	0,28^e	0,05
	Δt	+0,09 (47,3%)	0 (0%)

Legend: n.a.- Data not available; e – estimated; Δt - variation between the first year and the last year available

The hospital beds available in Slovenia and Portugal have been decreasing throughout the years. Portugal reduced the number of beds per 1000 population by 8,9%, whereas Slovenia reduced this asset by 15,9%, considering the interval from 2000 to 2012. Nevertheless, Slovenia presents as the country with more hospital beds per a 1000 population in total – 4,54 in Slovenia against 3,38[e] in Portugal for 2012.

In Slovenia, of the 4,54 hospital beds per a 1000 population, 4,5 beds are in publicly owned hospitals, and have been very stable in number throughout the years; only a very small share of this physical asset exists for-profit privately owned hospitals – 0,05 per 1000 population. None exists in not-for-profit hospitals.

In Portugal, there is a relatively larger share of beds in for-profit privately owned hospitals, and increasing since 2000 – more 47,3% in 2012 when compared to 2000. The number of beds in not-for-profit privately owned hospitals (for example; Misericórdias) has been stable throughout the years with 0,66[e], in 2012. Besides this, the data points out opposite trends regarding beds in publicly owned and in for-profit privately owned hospitals; in the first situation, beds are decreasing in number, with the inverse registered in the second case.

Health Care Facilities

Hospitals are very often taken as being the prototype of a health service, mainly due to the fact that during the XX century these facilities became the nucleus of medical technological innovation[5]. Although this is true, there is evidence that the primary health care has a strong influence in health promotion, with a major role preventing illness and therefore death. Besides this, primary health care is associated with a more equitable distribution of health care resources when compared to specialized care.[24]

 The location and distribution of both hospitals and primary care health centres are very important for the task of health management, therefore their availability and capacity to cover the target population is crucial, and always important when it comes to patient satisfaction.

Currently, Slovenia has 65 primary care health centres, and 30 hospitals 3 of them being private (data gathered through personal contact with Dr. Rade Pribakovic from the National Institute of Public Health, via e-mail on March 2015), whereas in Portugal, in 2012, there were 387[25] (provisory value) primary care health centres with 1199[25] health extensions in 2011, and 226[26] hospitals in 2013.

Table 5 – Number of hospitals, per million population[23]

	Year	Portugal	Slovenia
Number of hospitals, per million population	2000	21,87	13,58
	2005	21,14	14,5
	2008	21,12	14,35
	2010	21,85	14,16
	2011	21,41	14,13
	2012	20,35[e]	14,1
	2013	n.a.	13,91
	Δt	-1,52 (6,95%)	+0,33 (2,43%)
Number of publicly owned hospitals	2000	12,63	n.a.
	2005	12,28	n.a.
	2008	11,84	n.a.
	2010	12,2	12,69
	2011	11,65	12,67
	2012	10,46[e]	12,64
	2013	n.a.	12,4
	Δt	-2,17 (17,18%)	-0,29 (2,29%)
Number of not-for-profit privately owned hospitals	2000	5,05	n.a.
	2005	5,05	n.a.
	2008	4,55	n.a.
	2010	4,73	0
	2011	5,21	0
	2012	5,04[e]	0
	Δt	-0,01 (0,19%)	0 (0%)
Number of for-profit privately owned hospitals	2000	4,18	n.a.
	2005	3,81	n.a.
	2008	4,74	n.a.
	2010	4,92	1,46
	2011	4,55	1,46
	2012	4,85[e]	1,46
	2013	n.a.	1,44
	Δt	+0,67 (16,03%)	-0,02 (1,37%)

Legend: n.a.- Data not available; e – estimated; Δt - variation between the first year and the last year available

Portugal has a higher number of hospitals (per million population) than Slovenia (20,35[e] and 13,91 – respectively – latest year available). The trends in this indicator differ in both countries: since the year 2000 until the latest available in the OECD database[23], the number of Portuguese hospitals diminished 1,52, whereas in Slovenia it increased 0,33.

On the publicly owned hospitals subject: about 89,1% of the Slovenian hospitals are public (12,4 per million population), with the rest belonging in the private sector. In Portugal, only 51,4% of the hospitals are publicly owned (value decreasing since the year 2000), a much smaller share than in the Slavic country; 24,8% are not-for-profit privately owned hospitals; 23,8% are for-profit privately owned hospitals, increasing since the year 2000 – more 16,03% in 2012 than in 2000.

In Slovenia, the majority of the hospitals belong to the public sector with a trend to continue as such. On the other hand, in Portugal, the number of for-profit privately owned hospitals has been increasing, accompanied by a steadily decrease in the number of publicly owned hospitals.

Process

Appointments with Doctors

Appointments with doctors refer to the patient contact with a doctor in the most variable settings (clinics, private offices, hospitals, primary care health centers, patient own home…). Nevertheless, the data collect from the OECD database[23] regarding Portugal excludes the appointments in the private sector.[5]

This indicator reflects the use of health care resources/services in some extent, even though it has some limitations. Between different countries it is expected to encounter different results, which might be due to different factors, such as cultural factors or health care providing systems intrinsic characteristics.

For instance, poor and less educated people usually possess less knowledge about the health care pathways creating an informational barrier. It is also important to consider the organizational/structural characteristics of each country; the existence of General Practitioners acting as gatekeepers tend to facilitate access of general population, even though waiting time list to get an appointment in this setting may be dissuader. One other factor worth mentioning is the direct cost of care to individuals.[27]

Table 6 – Appointments with doctors for all specialities, per capita[23]

	Portugal	Slovenia
2006	3,9	6,6
2007	4,1	6,7
2008	4,5	6,7
2009	4,1	6,6
2010	4,1	6,4
2011	4,2	6,5
2012	4,4[e]	6,3
Δt	+0,5 (12,8%)	-0,3 (4,5%)

Legend: e – estimated; Δt - variation between the first year and the last year available

Slovenia is the country with more appointments with doctors *per capita*, registering in the latest year available more 1,9 than Portugal.

From 2006 to 2012, the number of this indicator has increased in Portugal (from 3,9 to 4,4[e]), and the opposite trend was verified, in the same time period, in Slovenia (from 6,6 to 6,3).

Hospital Discharges

Hospital discharge rates measure the number of patients who leave a hospital after staying at least one night. This is an important indicator of hospital activities. *Per se*, hospital activities might be influenced by the demand for hospital services, the capacity of the primary care sector to prevent avoidable hospital admissions, the actual capacity to treat patients and their conditions, and for instance the availability of rehabilitation or long-term care facilities[5].

Table 7 – Number of hospital discharges all diagnosis, per 100000 population[23]

	Portugal	Slovenia
2000	8568,6	15669,9
2005	9105,9	15971,4
2008	10891,8	16901,2
2009	11315,6	17365,4
2010	n.a.	17132,1
2011	n.a.	17448,7
2012	n.a.	17106,8
Δt	+2747 (32,1%)	+1436,9 (9,17%)

Legend: n.a. – Data not available; Δt - variation between the first year and the last year available

From the year 2000 on, both countries improved their hospital discharges indicator. Portugal went from 8568,6 to 11315,6 number of hospital discharges, for all causes, in the latest year available, meaning a reduction of 32,1%.

On the other hand, Slovenia improved from 15669,9 to 17106,8 in the latest year available; increasing 9,17% between the year 2000 and 2012.

The year 2009 is the latest year available with data for both countries; in this year, there is a difference of 6049,8 hospital discharges, with Slovenia leading.

Average Length of Stay

Together with Hospital discharges, average length of stay is an important indicator of hospital activities[5], and the principal indicator of hospital management[49]. This indicator is a statistical calculation often used for health planning purposes and benchmarking. Several factors affect the average length of stay; for instance, types of payment for health care services influence this indicator (prospective payment methods tend to reduce the days spend in hospital)[5]. Furthermore, this indicator has established relations with nosocomial infections, adverse reactions and pressure ulcers[49].

Table 8 – Hospital average length of stay for all diagnosis, in days[23]

	Portugal	Slovenia
2000	7,3	7,3
2005	6,7	7,7
2008	5,9	7,5
2010	n.a.	7,3
2011	n.a.	7,2
2012	n.a.	7,4
Δt	-1,4 (19,2%)	+0,1 (1,4%)

Legend: n.a. – Data not available; Δt - variation between the first year and the last year available

The data available shows a reduction in hospital average length of stay, for all causes, in Portugal – less 19,2% days in 2008 (5,9), when compared to 2000 (7,3). On the other hand, in the year 2000, Slovenia shared the same days of stay, with Portugal, but unlike it, the number of days kept around the same, only with smooth variations (with 7,4, 2012).

In the Portuguese Report on Hospital Reforms[49], average length of stay, in day, ranges from 7,47 (in 2007) to 7,69 (in 2010), representing an increase of 2,69%.

Waiting Times for Elective Surgery

Waiting times for elective surgery is a good process indicator reflecting whether the system is corresponding, or not, to the population's needs. This particular indicator is determined by many factors: demand by the population affects the inflow to waiting time list; supply factors affect the outflow, as well as financial incentives. The balance between both play a major role in determining how many days a patient is on the list waiting for surgery.[5]

Of course, the time a patient has to wait for surgery has effects on his/her health status. For instance, a lengthy wait for surgery may cause worsening of the symptoms, poorer quality of life, or even death. On the other hand, in some cases, the patient may improve his/her health status and no longer require surgery, even though this is uncommon.[28]

Regarding this indicator, data might be collected differently between countries: waiting time for elective surgery of patients on the list, and waiting time for elective surgery from specialist assessment to treatment, are distinct although similar methods of collecting this kind of data. This is the first difference between Portugal and Slovenia: in the first country the information collected refers to waiting time from specialist assessment to treatment, whereas the second country gathers information on the waiting times through the other method[23].

Table 9 – Waiting time for elective surgery from specialist assessment to treatment, in average number of days

	2008	2010	2012	Δt
Cataract surgery	132,9	71,1	92,1	-40,8 (30,8%)
Hip replacement	126,6	102,3	121,3	-5,3 (4,2%)
Knee replacement	197,7	155,4	186	-11,7 (5,9%)

Legend: Δt - variation between the first year and the last year available; Portugal[5]

Table 10 – Waiting time for elective surgery for patients in the waiting list, in average number of days; Slovenia

	2011	2012	2013	Δt
Cataract surgery	63,3	107,8	122,7	+59,4 (93,8%)
Hip replacement	354,4	345,3	407,2	+52,8 (14,9%)
Knee replacement	512	503,5	481,4	-30,6 (6%)

Legend: Δt - variation between the first year and the last year available; Data gathered through personal contact with Dr. Pulgdrovac from the National Institute of Public Health via email on March 2015

Even though data is collected differently, some considerations can be taken about the waiting time lists, as long as the methodology for collecting data is stable throughout the years, which is the case; the trends can always be compared.

Overall, Slovenia has longer waiting time lists for the three categories considered, looking at the absolute number of days. Nevertheless, the trends are different; in Slovenia, the average number of days required to get a cataract surgery raised from 63,3 in 2011, to 122,7 days, in 2013, representing an increase of 93,8%. On the other hand, Portugal reduced the number of days from specialist assessment to cataract surgery by 40,8 days, between 2008 and 2012.

Hip replacement surgery follows the same pattern that cataract surgery: Portugal managed to reduce the number of days waiting for surgery, even though just slightly; Slovenia increased the number of days on the waiting by 52,8, more 14,9% than registered in 2011.

Considering Knee replacement surgery, both countries registered reductions of days waiting for surgery. Between 2008 and 2012, Portugal reduced by 11,7 days from specialist assessment to treatment, whereas Slovenia reduced the number of days on the waiting list by 30,6, between 2011 and 2013. Even though the absolute number are different they represent about 6% reduction, for the period of time considered for each one.

Outcome

Life Expectancy at Birth

Measures such as total mortality, life expectancy, infant mortality, fertility rates, potential years of life lost, are able to capture generic information on the population health[11].

The life expectancy at birth indicator is available for virtually every country and the data is usually reliable. Furthermore, it is easy to evaluate, analyse and compare. According the World Health Organization the indicator under scrutiny reflects the overall mortality level of a given population, besides summarizing the mortality pattern that prevails across all age groups[45].

Table 11 – Life expectancy at birth for both sexes, in years[23]

	Portugal	Slovenia
2000	76,9	76,1
2005	78,2	77,4
2008	79,5	79,1
2010	80	79,8
2011	80,6	80,1
2012	80,5	80,2
Δt	+3,6 (4,7%)	+4,1 (5,4%)

Legend: Δt - variation between the first year and the last year available

Life expectancy at birth improved in both countries, since the year 2000. In 2012, Portugal registered 80,5 years, for both sexes, just 0,3 years more than Slovenia, with 80,2 years of life expectancy at birth.

Infant Mortality

Infant Mortality rates remain an important indicator of health for whole populations, reflecting the intuition that structural factors affecting the health of entire populations have an impact on the mortality rate of infants. [29]

This indicator measures the rate at which children with less than one-year-old die. Economical and social conditions affect the health status of mothers and newborns, rendering this indicator a good reflection of these factors[5]. Besides, it also reflects the effectiveness of health systems[5].

Infant mortality might be due to several conditions/diseases. According Health at a Glance 2014, conditions arising during pregnancy such as birth defects, prematurity and other, are the principal factors contributing to neonatal mortality, which accounts for two-thirds of the deaths that occur in the first year of life.[5]

Table 12 – Number of deaths, per 1000 live births[23]

	Portugal	Slovenia
2000	5,5	4,9
2005	3,5	4,1
2008	3,3	2,4
2010	2,5	2,5
2011	3,1	2,9
2012	3,4	1,6
Δt	-2,1 (38,2%)	-3,3 (67,3%)

Legend: Δt - variation between the first year and the last year available

The number of deaths in children with less than one-year-old decreased in both countries. This tendency in more praiseworthy in Slovenia, with 4,9 deaths per 1000 live births, in 2000, and only 1,6 in 2012. Portugal, in turn, registered in the year 2000, 5,5 deaths, value that decreased to 2,5 deaths in 2010, to increase slightly to 3,4 in 2012.

The World Bank database has data for the year 2013 on infant mortality rates: Portugal registered 3 deaths per 1000 live births (same value as the year before); Slovenia had 2 infant deaths (same value as the year before). The trends in this source highlight improvements in this indicator, between 2010 and 2014.[48]

Potential Years of Life Lost

Potential Years of Life Lost (PYLL) is a summary indicator capable of measuring premature mortality. The major advantage of these summary indicators is their ability to combine key elements of adverse health outcomes, namely, mortality, morbidity and disability, as mentioned in Health System Performance Comparison[11].

The indicator taken into account is often used to help quantify social and economic loss owing to premature death, and therefore it may have and important role helping policy makers defining priorities regarding prevention of premature deaths[5].

Table 13 – Number of years lost for all diagnosis, population aged 0-69 years old, per 100000 population[23]

	Portugal	Slovenia
2000	5225,6	5091
2005	n.a.	4353
2008	3748,8	3713,7
2010	3492,1	3406,7
2011	3398,4	n.a.
2012	3286,2	n.a.
Δt	-1939,4 (37,1%)	-1684,3 (33,1%)

Legend: n.a. – Data not available; Δt - variation between the first year and the last year available

Portuguese and Slovenian data on Potential Years of Life Lost overlap. For the year 2000, Slovenia registered 5091 PYLL, whereas its counterpart recorded 5225,6 PYLL, only 134,6 more. Both followed the same trend for improving this indicator and in 2010, latest year available for both countries, the Iberian country cumulated 3492,1 PYLL, and the Slavic one 3406,7 PYLL.

For the following years, Portugal maintained the positive trend registered so far.

Mortality

Number of deaths and standardized death rates are generic indicators of nations welfare, such as life expectancy, for instance. Data usually exists for every country and is easily comparable. As an indicator, *per se*, it is commonly used to compare the level of mortality across countries over time, since they take into account the differences in age structure of populations[5].

Table 14 – Number of deaths for all causes, per 100000 population[23]

	Portugal			Slovenia		
	Woman	Men	Total	Woman	Men	Total
2000	857	1361,5	1072,8	870,6	1490,9	1112
2005	n.a.	n.a.	n.a.	824,2	1362,6	1034,5
2008	699,8	1131,4	883,1	702,6	1174,6	894,1
2010	667,4	1090,3	846,3	667,2	1120,1	851,7
2011	625,3	1027,3	795,9	n.a.	n.a.	n.a.
2012	641,3	1047,9	813	n.a.	n.a.	n.a.
Δt	-215,7 (25,2%)	-313,6 (23%)	-259,8 (24,2%)	-203,4 (23,4%)	-370,8 (24,9%)	-260,3 (23,4%)

Legend: n.a. – Data not available; Δt - variation between the first year and the last year available

Mortality, when all causes considered, follows the same pattern as Potential Years of Life Lost with both countries somehow overlapping.

The table has Slovenian data from the year 2000 until 2010. In the period of time under scrutiny, the values registered decreased. Males are responsible for a greater number of deaths, with 1120,1, per 100000 population, whereas woman accounted with 667,2 deaths, in the year 2010. The total number for both sexes was 851,7. Again, in 2010, the Iberian counterpart registered a total of 846,3 deaths, for both sexes, a very similar number for both nations. In Portugal, the separation between genders is also similar: for woman 667,4, and for men 1090,3 deaths per a 100000 population.

From 2010 onwards, the Iberian country continued reducing the number of deaths.

Mortality from Selected Causes

According to WHO, Ischemic heart disease, stroke, chronic obstructive pulmonary disease, malignant neoplasms of the trachea, bronchus and lungs, diabetes mellitus and road injuries, featured among the ten main causes of death, from 2000 to 2012.[30]

Cardiovascular disease remains the main cause of death in Europe, responsible for 47% of all deaths[31]. A long list of risk factors, such as smoking, obesity, dietary habits, physical activity, etc., play an important role in the development of the disease, and compose important areas of intervention[31].

Stroke, much like ischemic heart disease, carries a heavy mortality burden, having the same risk factors[5].

Cancers are a growing concern in the XXI century. Mortality rates are worrying throughout the entire globe. Nowadays, investigators devote a significant amount of efforts in trying to discover a cure for these conditions, yet without a cure. Trachea, bronchus and lung cancer represent the major cause of death from cancer[23].

Type 2 Diabetes Mellitus is a metabolic disorder also growing in prevalence worldwide, being considered an epidemic in some countries. A lot of factors may have a role in determining the resistance to insulin, but the exact molecular processes are yet to be found. The increasing number in incidence and prevalence of diabetes mellitus type 2, increases the burden for health care providers, and therefore to their health systems and countries, in last analysis.[32]

Road injury is responsible for almost 3400 deaths everyday, throughout the world, according to the World Health Organization; furthermore it is a cause of premature deaths.[33]

Suicide does not feature in the ten main causes of death, by the WHO; nevertheless, financial hardship is significantly related to suicidal ideation[6]. The current economical

situation of both countries is of a deep economical crisis, rendering this indicator one of some interest.

Table 15 – Number of deaths from selected cases, per 100000 population; Portugal[23]

	2008	2009	2010	2011	2012	Δt
				Portugal		
1.	64,9	61,5	59	53	51,7	-13,2 (20,3%)
2.	122,5	116,5	113,1	99,9	99,4	-23,1 (18,9%)
3.	20,4	21,8	20	18,5	19,8	-0,6 (2,9%)
4.	27,3	28,2	29,1	29,2	28,5	+1,2 (4,4%)
5.	34,9	36,8	36,6	34	35,5	+0,6 (1,7%)
6.	9,8	9,7	9	8,7	6,5	-3,3 (33,7%)
7.	9	8,9	9,3	8,6	9	0 (0%)

Legend: Δt - variation between the first year and the last year available

1. Ischaemic hearth disease, deaths per 100000 population, standardized death rate

2. Cerebrovascular diseases, deaths per 100000 population, standardized death rate

3. CODP, deaths per 100000 population, standardized death rate

4. Malignant neoplasms of trachea, bronchus and lung, deaths per 100000 population, standardized death rate

5. Diabetes mellitus, deaths per 100000 population, standardized death rate

6. Transport accidents, deaths per 100000 population, standardized death rate

7. Self-inflicted injury, death per 100000 population, standardized death rate

In Portugal, cerebrovascular disease represents the major cause of death between those in table 15. Second is ischemic heart disease, followed by: diabetes mellitus; trachea, bronchus and lung neoplasm's; COPD; suicides and road injuries.

Overall, for the selected causes, the evolution verified throughout the years is to decrease, namely deaths caused by Ischemic heart disease and cerebrovascular disease.

Malignant neoplasms (trachea, bronchus and lungs) and diabetes mellitus are exceptions. The oncology cases increased from 27,3, in 2008, to 29,2 in 2011; nevertheless, in the following year, the number of deaths per 100000 population, was 28,5. Diabetes mellitus caused, in 2008, 34,9 deaths per 100000 population, number that increased to 35,5 in 2012. For the same period of time, standardized death rate from suicide is the same, 9; with only small variations.

Table 16 – Number of deaths from selected cases, per 100000 population; Slovenia[23]

	2008	2009	2010	Δt
		Slovenia		
1.	97,2	93,9	93,9	-3,3 (3,4%)
2.	97,8	104,8	91,6	-6,2 (6,3%)
3.	19,3	18,8	18	-1,3 (6,7%)

4.	49,1	45	48,3	-0,8 (1,6%)
5.	12,9	10,6	11,2	-1,7 (13,2%)
6.	11,8	10	7,9	-3,9 (33%)
7.	18,6	20	18,6	0 (0%)

Legend: n.a. – Data not available; ∆t - variation between the first year and the last year available

1. Ischaemic hearth disease, deaths per 100000 population, standardized death rate

2. Cerebrovascular diseases, deaths per 100000 population, standardized death rate

3. CODP, deaths per 100000 population, standardized death rate

4. Malignant neoplasms of trachea, bronchus and lung, deaths per 100000 population, standardized death rate

5. Diabetes mellitus, deaths per 100000 population, standardized death rate

6. Transport accidents, deaths per 100000 population, standardized death rate

7. Self-inflicted injury, death per 100000 population, standardized death rate

The leading cause of mortality, in Slovenia, is Ischemic heart disease, followed closely by cerebrovascular disease; in third place, is malignant neoplasm's of the trachea, bronchus and lugs, followed by suicides, chronic obstructive pulmonary disease, diabetes mellitus, and finally road injuries.

The time window available for Slovenia is shorter; nevertheless, the number of deaths caused by the selected causes decreased, with suicide as exception. In this last case, the number of deaths per 100000 population is the same in both ends, even though there is a slight increase in 2009 (from 18,6 deaths to 20 deaths).

When considering the latest year available for both countries, 2010, Slovenia leads in deaths, caused by Ischemic heart disease, with almost two-fold more, malignant neoplasm's and suicides. Regarding this last cause of death, the first country registered, 18,6 deaths per a 100000 population, twice more than Portugal.

Portugal registered a higher number of deaths caused by diabetes mellitus with, 25,4 more deaths; three-fold more than Slovenia.

Regarding cerebrovascular disease, COPD and road injuries, the numbers between countries are similar.

Mortality following AMI and Stroke

The evolution of medical techniques allowed the reduction of death caused either by Acute Myocardial Infarction (AMI), or Stroke (Ischemic or hemorrhagic), particularly for AMI.

AMI is considered a medical emergency and is a condition that threatens human life, if not treated immediately.[34]

Stroke is a cerebrovascular disease capable of producing death or disability if treatment isn't initiated as soon as possible, and can be either ischemic or hemorrhagic. Depending on the stroke's cause, the treatment will be different.[34] According to the American Heart association, 87% of all stroke cases are Ischemic[36].

Thirty-day mortality rate in-hospital for AMI and Stroke are good quality indicators, evaluating the process itself, seeing that it is directly influenced by the care provided in hospitals[5].

To collect data regarding in-hospital mortality for AMI, two different methods may be considered: an admission-based method and a patient-based. The first situation considers only 30-day in hospital mortality for patients that stayed in the same facility, not considering, for instance, transfers between hospitals. The second situation, takes into account the patient, regardless of being, or not, transferred. This last method is more accurate; nevertheless in a large number of countries there isn't a single patient identifier, common to every health-care providing facilities, capable of tracking every step of a patient[5]. Because of this methodological barrier, admission-based methodology was considered.

Table 17 – Admission-based AMI, 30 day in-hospital number of deaths; age standardized rate, per 100 hospital discharges, 45 years old and over[23]

	2007	2008	2009	2010	2011	Δt
Portugal	10,9	10,1	n.a.	n.a.	8,4	-2,5 (22,9%)
Slovenia	n.a.	n.a.	7,4	6,6	7	-0,4 (5,4%)

Legend: n.a – Data not available; Δt - variation between the first year and the last year available

Table 18 – Admission-based Hemorrhagic Stroke, 30 day in-hospital number of deaths; age standardized rate, per 100 hospital discharges, 45 years old and over[23]

	2007	2008	2009	2010	2011	Δt
Portugal	26	25,7	n.a.	n.a.	23,8	-2,2 (8,5%)
Slovenia	n.a.	n.a.	33	29,3	28,7	-4,3 (13%)

Legend: n.a. – Data not available; Δt - variation between the first year and the last year available

Table 19 – Admission-based Ischemic Stroke, 30 day in-hospital number of deaths; age standardized rate, per 100 hospital discharges, 45 years old and over[23]

	2007	2008	2009	2010	2011	Δt
Portugal	11,3	10,9	n.a.	n.a.	10,5	-0,8 (7,1%)
Slovenia	n.a.	n.a.	15,6	13,7	12,8	-2,8 (17,9%)

Legend: n.a. – Data not available; Δt - variation between the first year and the last year available

Although the time window available in the OECD database for Slovenia is only of three years, it seems that trends support the literature.

Considering AMI, Portugal has a rate of 8,4 deaths per 100 hospital discharges versus a 7 deaths for Slovenia, for 2011; nevertheless between 2007 and 2011, Portugal managed a reduction of 22,9%.

Regarding Stroke, Slovenia presents more deaths, nonetheless more praiseworthy improvements.

When considering the three conditions, hemorrhagic stroke is responsible for more deaths in both countries than ischemic stroke and AMI added.

Perceived Health Status

Perceived health status reflects the subjective insight about population own health. According to Health at a glance 2014, indicators of perceived health status have been found to be a good predictor of people health care use and mortality[5].

Nevertheless, it is considered difficult to interpret because responses may reflect cultural and social biases. This requires caution while comparing countries, once their background may directly affect the assessment of people own health.[5]

Besides this, elderly tend to report their health status as poorer, than younger people; so the structure of the age pyramid of each nation has direct effects in the perceived welfare.[5]

Furthermore, the way a population perceives their health may also be influenced by the availability of health care providers, and how easily people can access care.[5]

Table 20 – Perceived health status

	Portugal			Slovenia		
Description	1.	2.	3.	1.	2.	3.
2005	45,8	33,6	20,6	53,6	30,3	16,2
2008	48,3	32,1	19,6	58,8	27	14,2
2010	49,1	30,5	20,3	59,6	27,1	13,3
2011	49,7	32,2	18	60,4	26,3	13,2
2012	48,1	33,8	18,2	63,1	24,4	12,4
Δt	+2,3 (5%)	+0,2 (0,6%)	-2,4 (11,7%)	+9,5 (17,7%)	-5,9 (19,5%)	-3,8 (23,5%)

Legend - percentage of population reporting their health status as:

1.Good/very good health, total aged 15+

2. Fair (not good/not bad) health, total aged 15+

3. Bad/very bad health, total aged 15+[23]

Δt - variation between the first year and the last year available

Overall, Slovenian citizens perceive their health status as being better than Portuguese citizens. In 2012, in Slovenia, 63,1% of its population reported their health status as good/very good, 24,4% as fair, and 12,4% as bad/very bad. In the most south-western country of Europe, 48,1% reported their health status as good/very good, 33,8% as fair, and 18,2 as bad/very bad.

Throughout the years, this health subjective indicator improved, being more pronounced in Slovenia. For the period of time considered, Portuguese citizens, as already mentioned, improved how they perceive their wellbeing, although in the transition from 2011 to 2012, the percentage of people reporting their health as good/very good decreased from 49,7% to 48,1%.

Personal Experience with the Portuguese HCS

As a medical student, I have been given the opportunity to be in close contact with the Portuguese health care system. Furthermore, the curriculum of medicine comprises themes such as leadership and management in health care, among others, that provided a good theoretical background. Besides this, as a Portuguese citizen, I have developed an opinion on the Portuguese health care system, shaped by experiences, contacts with the system itself, users and providers.

The validity of this section in only attributed to my insight and relative knowledge of the system.

Generally speaking, Portugal has a robust health care system with some years of history. The primary health care network is a cornerstone of this system. Nevertheless, there are some opportunities for improvement. Portugal is a 90000 km^2 country, however in rural areas, healthcare human resources are scarce. For instance, some of these areas have a GP only once a week. Besides this almost geographical issue, it is easy to spot lack of motivation of some health professionals. The reforms introduced in 2006 appear to be changing this issue towards a good direction.

Emergency departments overuse is another issue. Usually EDs are crowded with patients cueing for hours. This can mean difficult access to the primary health care as a result of long waiting times to get an appointment with the GP or, on the other hand, a poor service provided. Nevertheless, EDs often gather consultations and exams (such as blood analyses, x-ray, among others), presenting as a good alternative for patients. In this situation, the problem is essentially cultural with patients circling around the system.

Secondary and tertiary cares are also scarce in some areas of the mainland. Being born in the interior part of Portugal, it is usual to see patients travel long distances to obtain specialized care. Furthermore, lack of specialists exists as well as other health care providing personnel.

Usually, health care professionals, namely doctors, are committed and devoted to their work. On the other hand, nowadays, most of them are unhappy with some reforms applied to health care, particularly after 2008. Salary cuts have been recurrent year after year.

At last, users usually complaint about the health care system, which might be related to cultural factors. For instance, if we consider "fado", the typical Portuguese musical style, it is easy to spot sadness and moans. However, the majority of complaints are related to long waiting times to get appointments.

Personal Experience with the Slovenian HCS

My experience with the Slovenian health care system is much more limited, having spent only approximately three weeks in direct contact with it.

Again, the validity of this section is only attributed to my opinion.

During the stay in Slovenia, I had the opportunity to met formally and informally with Professor Tit Albreth and also Professor Matic Meglic. Formal meetings occurred twice a week with Professor T. Albreth. Firstly, the aim of these meetings where to discuss the approach on the Slovenian health care system, and afterwards to guide me through the health care system itself. Professor M. Meglic met formally with me once a week, to discuss the same points. The result of these reflects in the work itself.

Overall, Slovenia also appears to have a good HCS, sharing the existence of a good primary health care network with Portugal. Slovenia is a very small country making access to health care facilities easier. Geographical characteristics of this country also play an important role in facilitating access to the secondary and tertiary care, as well.

Besides this, I also met with a working clinician, more precisely a Plastic Surgeon. The purpose was to collect the opinion of professionals outside National Institute of Public Health of Slovenia. In this occasion it was easy to understand discontentment with some characteristics of the system, namely the restriction set by HIIS in celebrating new contracts with health care providers.

Users opinions are, curiously, very similar to those presented by Portuguese users, although usually they don't refer difficulties in accessing health care facilities.

Discussion

The discuss will focus on each item, according to the adopted framework, followed by common and different aspects. Table 21 features the main characteristics of each approached item.

Table 21 – Main aspects of the health care system from each country

	Portugal	Slovenia
Health Policies	National Health Plan	Resolution on National Health Care Plan
Main Public health programs	-National Program for Diabetes; -National Program for HIV/AIDS; -National Program for Prevention and Control of Tobacco; -National Program for Healthy Dietary Habits Promotion; -National Program for Mental Health; -National Program for Oncology Diseases; -National Program for Respiratory Diseases; -National Program for Cerebrovascular and Cardiovascular Diseases; -National Program for Infections and Antibiotics Resistance Control.	-National Program for Quality and Safety in Health Care 2010-2015; -National Cancer Control Program 2010-2015; -National Diabetes Program 2010-2020; -National Palliative Care Program from 2010; -National Program on Nutrition and Physical Activity for Health 2015 – 2025.
Primary care	First point of contact with the health care system; Public and private providers; Personal physician concept, working as gatekeeper (referral system)	
	PHCUs and FHUs; Less outpatient contacts; Provided mainly by GPs; GP: average 1900 patients	Health care centres and stations; More outpatient contacts; Provided mainly by: GPs, and other specialists; GP: average 1800 patients
1ª health care quality indicators	Great improvements in avoidable hospital admissions: COPD – 30,2%	Smaller improvements in avoidable hospital admissions: COPD – 8,05%
Secondary and tertiary care	Public and private providers; Care in emergent situations; Specialized care (provided by specialists)	
	Provided mainly in public hospitals	Provided mainly in hospitals, spas and specialized institutes
Emergency Care	Similar organizational and layout characteristics	
	Greater number of patient visits to EDs	Smaller number of patient visits to EDs

Financing the health care system	General taxation; Health subsystems; Voluntary health insurance; OOP payments/co-payments. Budget attributed annually attributed. Trends: -Increase in total health expenditure as % of the GDP – (+)7,22%; -Decrease in % of funds from public sources – (-)7,3% -Increase in funds from private sources – (+)18,1%	Compulsory health insurance; State revenue; Voluntary health insurance; OOP payments. Trends: -Increase in total health expenditure as % of the GDP – (+)6%; -Decrease in % of funds from public sources – (-)2,83% -Increase in funds from private sources – (+)8,08%
Hospital beds	Trends in beds: -Total: decrease of 8,9%; less beds -Publicly owned: decrease of 15,6%; less beds -For-profit privately owned: increase of 47,3%; more beds	Trends in beds: -Total: decrease of 15,9%; more beds -Publicly owned: decrease of 4,4%; more beds -For-profit privately owned: stable; less beds
Health care providing facilities	226 hospitals; 387 PHCCs; Trends in hospitals: -Total: decrease of 6,95%; -For-profit privately owned: increase of 16,03%. More hospitals	30 hospitals; 65 PHCCs Trends in hospitals: -Total: decrease of 2,43%; Less hospitals
Appointments with doctors	Trends in appointments: -Total: increase of 12,8% Fewer appointments. No information on private appointments.	Trends in appointments: -Total: decrease of 4,5% More appointments.
Hospital discharges	Trends in discharges: -Increase of 32,1% Fewer discharges	Trends in discharges: -Increase of 9,17% More discharges
Average length of stay	Trends in length of stay: -Decrease of 19,2% Shorter average length of stay	Trends in length of stay: -Stable Longer average length of stay
Waiting time for elective surgery	Trends in waiting times: -Cataract: decrease of 30,8%; -Knee: decrease of 5,9%; -Hip: decrease of 4,2%. Shorter waiting times	Trends in waiting times: -Cataract: increase of 93,8%; -Knee: decrease of 6%; -Hip: increase of 14,8%. Longer waiting times
Life expectancy	Similar life expectancy and similar improvements	
Infant mortality	Similar infant mortality	
	Trends in infant mortality: -Decrease of 38,2% More infant deaths	Trends in infant mortality: -Decrease of 67,3% Fewer infant deaths
PYLL	Similar PYLL and similar improvements	
All –cause mortality	Similar mortality and similar improvements	
Mortality from selected causes	1-Cerebrovascular disease; 2-Ischemic heart disease; 3-Diabetes mellitus; 4-Malignant neoplasm's of trachea, bronchus and lungs; 5-COPD; 6-Self inflicted injury; 7-Transports accidents. Decrease in causes of mortality except: malignant neoplasms of trachea, bronchus and lungs and diabetes.	1-Ischemic heart disease; 2-Cerebrovascular disease; 3-Malignant neoplasm's of trachea, bronchus and lungs; 4-Self inflicted injury; 5-COPD; 6-Diabetes mellitus; 7-Transports accidents. Decrease in all caused of death.

Mortality following AMI and Stroke	Similar mortality and similar improvements	
Perceived health status	Perceive own health status poorly	Perceive own health status greatly
	Improvements in own perception of health	

Comparing Countries

Health Policies

Both countries developed and implemented strategic health documents. The main difference regarding these programs is in the fact that Slovenian government usually don't consider the plan approved and implemented by the former.

Besides this, countries also share the existence of priority health programmes. The creation and implementation of such programs is dependant of the public health status of each. However, the existence of these programs does not mean, other programs, such as those related to vaccination of pregnancy care, are inexistent. Rather, the reflected main concerns regarding public health.

Data regarding Slovenia translated into English in difficult to find. Due to this, the information present in the results concerning health policies was collected through personal contact.

Primary Health Care and Quality Indicators

The medicine of the XXI century includes primary health care, which plays a very important role, namely: in the structure/organization of the health care providing systems and activities, in population satisfaction, and in determining an easy and equal assess to health care providing services and facilities for every citizen.

Both Slovenia and Portugal included the primary health care network as a priority in their health systems.

According to the OECD report on Portugal, published in 2015, this country generally performs well on the available indicators in the OECD Database, achieving that with relatively low levels of health spending and with some examples of excellence and innovation[44]. The approval of the FHUs, in 2006, is an example of innovation, setting an illustration to follow. Portuguese Government strong investment in primary health care is a very important policy, seeing that, in a near future, population ageing and increasing burden of chronic diseases, will be best fought through health prevention, mainly carried in the primary setting of care[44].

Slovenian's primary health care network quality indicators point out that bigger investments should be done.

Portugal has been pursuing some quite innovative work around dissemination of best practice and using clinical care pathways[44], an important reform, yet to be fully evaluated, through the development of a national guideline network called NOCs (Normas de Orientação Clínica – Clinical Orientation Guidelines). These Clinical guidelines are mandatory, and were created in 2011[44]. As mentioned, full evaluation of the impact of National Guidelines is underway, but preliminary data suggests long-term savings, as well as better compliance in hospitals when compared to primary health care facilities, with 58% against 32%, respectively[44].

The ranges of care provided in this particular setting are very similar in both countries, with most of them overlapping, generally comprising medical care for adults, children and pregnant woman, first aids, and preventive services. Although the services provided to the population are similar, Portugal does not include dental care in the list of services provided in PHCC. Generally, General Practitioners are the health professionals assuming the personal physician role. This concept exists and acts the same way in the compared countries. Furthermore, GPs also act as gatekeepers, controlling assess to specialized care, by means of a referral whenever he finds it necessary[4,13].

However, in Slovenia, the primary care setting provides some specialized care through specialist working in Primary health care centres; in Portugal, although this used to happen in some centres, presently it is very uncommon.[4,13] Portugal might benefit, in the future, with the implementation of specialized care in the Primary Care setting.

As mentioned in the results, Portugal has a small number of outpatient contacts in the primary care setting, when compared to Slovenia. Usually people bypass the primary care by visiting EDs in hospitals, where they are able to get appointments with specialists, as well as access complementary methods of diagnosis. Besides, the existing health subsystems allow people covered by them to visit a private office (for a consultation with a GP or with a specialist), without greater costs when compared to the public health facilities, through reimbursement methods.

Overall, the primary health care activity works similarly in both countries.

Secondary and Tertiary Care

Secondary and tertiary care is organized in the same fashion in both countries. Hospitals are responsible for the majority of specialized and emergency care provided; although, Slovenia included a broader range of facilities where secondary and tertiary care is provided (such as spas).[4,13]

In both cases, public and private providers can be found: in Portugal, the private providers usually are contracted by the NHS, or financed through health subsystems, meaning no additional costs to patients; in Slovenia, providers establish contracts with the HIIS, with no expenses to patients, other than co-payments[4].

As mentioned, the personal physician is the gatekeeper of the health system, having the duty of referring a patient according to its needs. This referral system is the connection that exists between the different levels of care. This somehow reflects the lack of communication that exists. Nevertheless, in more recent years, Portugal started to develop applications accessible in all public health facilities (in all levels of care) that allow a more effective and diverse interaction. One of these applications is the Health Portal (PDS – Portal da Saúde). PDS gathers the following type of information: medical, nursing and social service evaluation; assessments by other professionals (rehabilitation, psychologists…); pressure ulcer risk evaluation; falls risk evaluation; health care associated infections; pain evaluation; discharge abstracts; diabetes assessment; adverse drug reaction notification; and acute exacerbation notification[44]. Regarding information systems, Portugal might present as an example to Slovenia, seeing that, even though recent, reforms are already in place to facilitate and promote better medical recordings and data exchange on patients.

The Iberian Country, although small when compared to other countries in Europe, is considerably bigger than Slovenia. This has effects in the distribution of health care resources and facilities. Portugal has shortage of specialized medical staff and health care facilities, throughout the mainland. Lisbon and Oporto (and the coastline between them) has no problems regarding this matter, but regions other than these, struggle for specialists and resources[13]. In the smaller Slovenia, the resources are distributed more evenly[4].

Emergency Care

Effective communication and a good care network at the primary care level, usually are associated with less use of EDs[51].

Emergency medical care in Portugal is characterized by a large number of visits to EDs, that might be related with difficulties in getting appointments in the primary care setting, impossibility of granting appointments with specialists for every patient, or due to cultural factors, meaning, patients neither in urgent or emergent situations also visit EDs[51]. Patient

Individuals can access EDs with a small cost, resulting in long times spent in the waiting rooms; furthermore patients usually visiting EDs, don't require urgent or emergent treatment[51]. This situation might compromise care providing for patients in need. In terms of convenience, EDs allow patients to get specialized care, as well as, complementary exams, shortening waiting times. Nevertheless, the basic coverage of the Portuguese National Health System does not aim to cover premium attendance for non-emergent or urgent situations in

EDs. To overcome this situation, patients should be allowed to get specialized care, and complementary exams without the wait, at the exchange of higher premiums, after the implementation of tracks with that aim.

Effective communication between primary and emergency care can help decreasing the number of visits to EDs.

EDs in Slovenia, is a complex network, with variation in layout, characteristics and capabilities[52]. Slovenian EDs appear to have a less amount of visits; nevertheless, non-hospital-based EDs are short on technological resources in one side, but on the other, usually are closer to the population maintaining a higher throughput and remain at capacity or at good balance. Furthermore, hospital- and non-hospital-based EDs are interlinked, meaning patients can be transferred to higher levels of medical care if the clinical situation requires[52].

Portugal and Slovenia are quite similar when considering the number of EDs. Nonetheless, the number of inhabitants in both countries is very different, with Slovenia having around 20% of the Portuguese population. Slovenian patients, through a questionnaire, classified their EDs as being at good balance or capacity, in 76% of the cases[52].

Financing Health Care Systems

Portugal and Slovenia finance their health system based on different models, both having public and private sources of revenue.

Slovenia finances its health system mainly through the sole compulsory health insurance; a national pooled health insurance, mandatory for every citizen living in the mainland. Besides this, state revenue, VHI and OOP payments also finance the health system. On the other hand, the Portuguese main source of financing the health system is state revenue collected through general taxation. Health subsystems, VHI and OOP payments are the other sources for funding. Although both countries rely on state revenue, in Slovenia, these funds are used only for facility maintenance of Primary Health Care Centres, which are owned by municipalities.[4,13]

Other difference regards the aim of Voluntary Health insurances: in Slovenia, its purpose is to cover co-payments, whereas the Portuguese voluntary insurance covers a percentage (depending on the health insurance) of the medical costs in private facilities.[4,13]

According to health at a glance 2014, between 2009 and 2012, money invested in health care fell in half the European countries, and slowed in the rest[5]. This, of course, was due to the economical crisis, resulting in increased co-payments. Total health expenditure, as % of the GDP, is similar when both compared, even though Portugal is just ahead. The main difference regards the private expenditure on health, where Portugal, again, has a larger share, carrying a heavier burden to family budgets.

Hospital Beds

Slovenia has more hospital beds than Portugal.

Throughout the years it is clear that both countries reduced the number of hospital beds, following a trend verified in most European countries[5]. Reduction in this physical asset is possible due to technological and medical knowledge improvements, allowing health care staff to work more effectively. According to Professor Martin Mckem, to reduce the number of hospital beds, stakeholders must enhance population overall health, coordinate disease management programs, direct patients to more appropriate facilities, shift from inpatient to ambulatory care, and facilitate earlier discharges. When reducing beds in hospitals it is very important to consider the impact it might have on health care staff, needing an extensive analysis of the workload.[37]

Portugal and Slovenia are also separated when the number of beds existing in privately for-profit owned hospitals is considered; Portugal has an increasing number of this asset in the private setting. This might be a consequence of increased demand caused by the reduction in those that used to exist in publicly owned hospitals, staff shortage or, on the other hand, related to an increased use of private medical care.

Health Care Facilities

Overall, Slovenia has less hospitals than Portugal.

Portugal presents an increase in for-profit privately owned hospitals (more 16,03% in 2012, when compared to 2000), whereas Slovenia has a very small number of these facilities. Contracts established with health subsystems and private insurance companies might provide the incentive for the growing numbers. Furthermore, Portuguese citizens usually complaint about the waiting times to get appointments with doctors within the national service, whereas private doctors usually grant appointments within less days[49]. Another aspect worth mentioning is the distribution of specialized care: inner regions of the mainland are often deprived of hospitals with a broader range of specialists[49], being able to get specialized appointments in private practices.

As mentioned in the previous section, the country with more hospital beds is Slovenia; nevertheless, it counts with fewer hospitals per 1 000 000 population. This might indicate that hospitals tend to be bigger and with a broader range of specialized care. Slovenian geographic characteristics allow this distribution of resources.

Appointments with Doctors

Portugal registers a very small number of appointments with doctors per capita, when opposed to Slovenia. It is important to understand that the information relative to Portugal does not contemplate appointments with doctors in the private sector, caused by different methodologies used in the different countries[23].

As stated earlier in various occasions, the Portuguese private sector is growing in importance, perhaps due to the existence of health subsystems that covers a great part of the expenses, and also, in some particular cases, due to waiting lists[13]. With this in mind, the actual number of appointments per capita might not be accurate.

Besides this, the number of appointments might reflect issues regarding access to PHCC caused by long waiting lists to get an appointment, particularly in remote areas with lack of health care staff; direct cost of health care on individuals, as well as educational and cultural barriers.[5]

The trends registered in both countries are opposite: in Portugal, the number of appointments has been slowly increasing, whereas in Slovenia a small decrease is already appreciable. People's awareness on their health status results in an increase in the number of appointments, as well as, incentives, such as, screening programs.

Hospital Discharges and Average Length of Stay

For the latest year available for both countries, Slovenia presented in the OECD database a much higher number of hospital discharges, for all causes (per 100000 population), than Portugal; 17365,4 and 11315,6 respectively. Both increased the number of hospital discharges, following most of the European countries.

In this section, again, data collected from Portugal does not contemplate information about private hospitals. Nevertheless a gap exists between both countries. According to Health at a Glance 2014, countries with a higher number of hospital beds tend to have higher number of hospital discharges[5], which is compatible with the already explored information. Furthermore, population age and health status, as well as adoption of new medical technology, and cutting-edge equipment and procedures, tend to shorten the average length of stay and therefore increase the amount of hospital discharges[5].

In general terms, an increase in hospital discharges, associated with a decrease in average length of stay is expected to produce a positive effect in the population health status; on the other hand, shorter stays in hospitals tend to be more expensive and more service intensive[5].

When considering average length of stay, Portugal registered a tendency for reduction, whereas Slovenia maintained a fairly stable value throughout the years. Despite the verified trend, Portugal has a smaller average length of stay (all-cause of death), considering OECD

Database[23]. On the other hand, data present on another sources[49], indicates otherwise. Between 2007 and 2010, average length of stay improved 2,69%, reaching 7,69 days in the latest year, matching Slovenia, with 7,4 days.

Average length of stay is a very important indicator. Furthermore, longer stays are associated with increased risk of acquiring a hospital infection, which, in turn, prolongs the stay, risk of pressure ulcers and risk of adverse reactions[49]. One, in every five, hospitalized patients for more than a week, acquires an infection during the stay. Besides the mortality and morbidity increases, this also improves expenses for health care systems[49]. Reductions in average length of stay and move towards ambulatory care, represent important initiatives to face this situation.

This health indicator is affected by many factors: clinical needs of patients, different clinical pathways and different payment methods (a great amount of beds may encourage to hold patients for longer periods; on the other hand, prospective payment methods – DRGs – adopted in both countries tend to decrease the average length of stay).[5]

Most OECD countries, according to the OECD database[23], are reducing the average time a patient spends in the hospital, while maintaining or improving quality of care. To fulfil this objective, policy makers have to continue reducing the number of beds and implement alongside community services[5].

Waiting Times for Elective Surgery

Regarding waiting times for elective surgery, it is clear that Slovenia possesses longer lists particularly considering knee and hip replacement, and that the trend verified for cataract surgery is opposite. Furthermore, it is concerning that the waiting times have not decreased in the period of time being considered, in Slovenia.

Demand factors influence this indicator, producing longer waiting periods until surgery; in turn, demand is influenced by population age, health status, and the presence of some risk factors. Factors related with supply, also influence waiting lists for elective surgery, suggesting that more facilities and more specialized staff will shorten the list. Finally, financial incentives also play a role; when present they will improve the outflow of patients, such as prospective payment methods[5,28].

Life Expectancy at Birth, Infant Mortality and Mortality from all Causes

Life expectancy at birth, infant mortality and mortality are indicators that reflect populations health status.

According to EUROSTAT, in the last 50 years, life expectancy increased around 10 years, for both sexes, in Europe. Portugal and Slovenia were no exceptions, presenting progress during the years under evaluation[38].

Life expectancy reflects the overall mortality of a population, summarizing mortality across all age groups. The increase in life expectancy at birth, as stated in Raising Standards OECD Report, on Portugal, is manly due to expanded health coverage, investment in care, improved living standards[44] and also, healthier lifestyles and better education, according to Health at a Glance 2014[5].

Infant mortality is influenced by economical and social conditions, and effectiveness of the health system, reflecting whether the socio-economical conditions are good, or not[39]. The countries being compared possess infant mortality rates bellow 4 deaths per 1000 live births (for the latest year available). Portugal registered the lowest infant mortality rate in 2010, of 2,5 deaths per 1000 live births, to increase until 3,4 in the following couple years. In the World Bank database Slovenia registered less infant deaths than Portugal[48]. In general, Portugal often refers as having one of the lowest infant mortality rates; nevertheless, Slovenia is ahead, presenting as a case study for Portugal.

Some research suggests that severe economical crisis might influence this indicator mainly due to deteriorating condition of mothers and consequently newborns[39]. Unemployment caused by economical crisis is a good example of deteriorating conditions. Crisis might also cause worsening of the pre-natal and post-natal care. Data in Health at a Glance 2014, suggests that Portugal increased its Infant mortality rate following an economical crisis[5].

Standardized death rates are generic indicators of the health status of a population. Both countries have progressed regarding this last indicator, reducing the number of deaths for all causes. Furthermore, the values in mortality rates can be related with the same factors mentioned for life expectancy, and therefore, have already been explained.

Potential Years of Life Lost

Portugal and Slovenia lost more years of life in the year 2000 than in 2012 and 2010, respectively. PYLL regards the amount of years of life lost caused by premature death. One purpose of this indicator is to help policy makers and define priorities to prevent premature death[40], by deciding where to allocate investments (when considering PYLL for different causes).

When considering PYLL for all causes, both registered a decrease in years of life lost. More education, an effective network of preventive care, more advanced medicine, healthier lifestyles, and improving living standards contributed to this improvement, having similar effects in both cases.[5]

Mortality from Selected Causes

Hypertension, tobacco, alcohol misuse, obesity and low physical activity are the leading risk factors for illness and disability in western Europe[44].

Ischemic heart disease and cerebrovascular disease carry approximately the same burden in Slovenia, being the main leading causes of death between those presented. In Portugal, cerebrovascular disease is more important as cause of death than Ischemic heart disease. In turn, Ischemic heart disease kills approximately the same that in Slovenia. The differences might be related to exposure to risk factors, unhealthy lifestyles and clinical care.

Genetic factors, diet rich in calories and fat, smoking and sedentary lifestyles, are considered risk factors to the development of Ischemic heart disease. Furthermore, the rising prevalence of resistance to insulin and Diabetes Mellitus, and obesity also predispose to this illness.[34]

According to Special Barometer 385, "Attitudes of Europeans towards tobacco", Slovenia has more smokers than Portugal (28% and 23%, respectively - the number refers to the percentage of people that answered that they were smokers, in a questionnaire[41]), in 2012. Regarding overweight, in the OECD database, Portugal had 51,6%[23] of population self-reporting overweight or obesity (in 2006), whereas Slovenian population self-reported 56,9%[23] (in 2012). The differences in the prevalence of these risk factors might influence the greater mortality in Slovenia caused by Ischemic heart disease. Furthermore, clinical care in both might also be at stake, seeing that the reduction of death by this acute/chronic condition in the last years is mainly attributed to treatment and to risk factors modification, equally.[34]

Ischemic stroke, beyond the enumerated risk factors for Ischemic heart disease, is also related to hypertension, diabetes mellitus, cardiac disease, carotid stenosis, oral contraception/pos-menopause hormone therapy, alcohol intake, and hyperhomocisteinemia[34]. Hemorrhagic stroke is predisposed by hypertension, cerebral amiloidosis, coagulopathies, anticoagulant and thrombolytic therapies, arterial-venous malformation[34], etc... The greater incidence of these diseases as causes of mortality in both countries is related to exposure to the mentioned risk factors and perhaps genetic conditions. Number of deaths by cerebrovascular disease is similar between countries and the main cause of death in Portugal.

Diabetes mellitus is becoming more prevalent (13,09% in Portugal – estimated value for 2014 – and 10% in Slovenia)[42]. Portugal country has a greater number of deaths caused by DM, which might be related to an also bigger prevalence.

Chronic Obstructive Pulmonary Disease (COPD) and transport accidents mortality rates have approximately the same weight in both countries. Clear responsibilities, accountability and effective law enforcements, and coordination among stakeholders are characteristics present in countries that are considered as best performing regarding road safety[5]. Measures,

such as laws and infrastructures aimed to protect pedestrians or development of an effective public transport network, are effective ways of reducing deaths caused by traffic accidents[33].

Mortality Following AMI and Stroke

Data on both countries is dispersed and with gaps, what makes discussion more difficult. These are indicators aimed to evaluate hospital performance and are usually used for benchmarking[5]. An European project exists with the purpose of comparing countries and hospitals regarding AMI[19].

Portugal performed better for hemorrhagic and Ischemic stroke, whereas Slovenia has a smaller number of deaths causes by AMI. Nevertheless, differences are very small, reflecting a good spreading of medical knowledge in Europe, as well as similar clinical care, techniques and specialized equipment.

Although the existing data points out these conclusions, methodological bias exists: information is collected in an admission-based system, meaning deaths are only registered if a patient remains in the same hospital through the care process. Absence of an integrating information system accessible in all health care facilities throughout the mainland makes impossible to collect data using other methodology. Portugal is geographically bigger than Slovenia, meaning that not every hospital has the required equipment to perform medical procedures needed for treatment of these diseases; so patient transfers might be more common in Portugal, underestimating the number of casualties.

Nevertheless, the number of fatalities from these diagnoses, in Portugal, might reflect that patients do not systematically receive recommended care and advise for these conditions[44]. Seeing that Slovenia presents with the same numbers, the same thing can be said for this country.

Perceived Health Status

Perceived health status is considered a good health care indicator seeing that it is a good predictor of people health care use, as well as mortality[5]. Nevertheless, it is very important to discuss this indicator very carefully seeing that it is influenced by several factors, such as: cultural and social backgrounds, populations size of age groups (elderly people tend to report their health status as worse), and medical care providing techniques and facilities; besides, access to health care might also influence.

Slovenian citizens perceive their health status more positively than Portuguese, reporting their health status as good or very good (approximately more 15%, than Portuguese citizens).

When considering Portugal, perceived health as good or very good, decreased from 2011 to 2012. In Slovenia there was no such decrease, instead this indicator continued rising. Probably, such value (Portugal) reflects the profound economical crisis.

The number of physician contacts per year is inversely associated with perceived health status[5]. This said, Portugal appears to follow this trend considering the improvements in number of appointments per capita, already explained. Furthermore, this might support a considerable number of appointments with doctors occurring in the private sector.

This indicator also seems to have relation with the prevalence of disease in the population[43] meaning Portugal would have a heavier burden of disease. Although some relations appear to exist, this still remains a question, mainly because there is a list of other influencing factors mentioned above.

Common and Different Aspects

Portuguese and Slovenian health care systems share some aspects and, on the other hand, diverge in some others. Each of these countries is characterized by a distinct culture and history, which exercises its influences in the working of the health care systems. This reflects in shared and unshared aspects of structure, process and outcome nature.

Table 22 – Common vs. Different aspects of the Portuguese and Slovenian health care system

Common aspects	-Health policies; -Primary health care; -Secondary and tertiary health care; -Life expectancy; -Infant mortality; -Potential years of life lost; -Mortality from all causes; -Mortality following AMI and Stroke.
Different aspects	-Financing of the health care system; -Primary health care quality indicators; -Hospital beds; -Health care facilities; -Appointments with doctors; -Hospital discharges; -Average length of stay; -Waiting time for elective surgery; -Mortality from selected causes; -Perceived health status; -Emergency care.

Some aspects mentioned differ only in the absolute numbers; nevertheless, the trends associated might be the same. For instance, considering hospital beds, Slovenia has a bigger number than Portugal, however both decreased their total number of beds over the last few years. Furthermore, Portugal presented a bigger increased regarding beds in for-profit privately owned hospitals.

Table 22 presents generic information, already mentioned and explored in the previous section, where each topic was discussed.

When comparing health care systems in two different countries it is plausible to identify positive and negative aspects of each one. Table 23 enumerates the strong and the weak points, when opposed.

Table 23 – Positive vs. Negative aspects; some compared items are not listed, not being considered as positive or negative when comparing both countries.

	Portugal	Slovenia
Positive aspects	-Health Policies; -Primary health care; -Primary health care indicators; -Average length of stay; -Waiting time fro elective surgery; -Life expectancy at birth; -Infant mortality.	-Health policies; -Primary health care; -Health care providing facilities; -Appointments with doctors; -Hospital discharges; -Life expectancy at birth; -Infant mortality; -Perceived health status; -Emergency care.
Negative aspects	-Emergency care (secondary and tertiary care); -Health care providing facilities; -Appointments with doctors; -Hospital discharges; -Mortality from selected causes; -Perceived health status; -Emergency care.	-Average length of stay; -Primary health care indicators; -Waiting times for elective surgery; -Mortality from selected causes.

The table aims to define positive and negative aspects in the Portuguese and Slovenian health care systems when compared.

Health policies exist in both countries, reflecting major concerns regarding the population health, and therefore different between Portugal and Slovenia.

Primary health care network is a common positive point in both countries, presenting as the first door for patients, allowing the management of chronic patients and referral of those in need of specialized care. This avoids increased pressure in the secondary and tertiary levels of care. Furthermore, PHCCs are more numerous and closer to populations than hospitals. Also, of capital importance is the relationship established between patients and personal physicians.

Portugal presents robust primary health care quality indicators. On the other hand, even though with improvements registered, Slovenia needs to apply more efforts to further improve these indicators.

Average length of stay is a positive aspect for Portugal, with less number of days. Furthermore improvements have been achieved.

Slovenia presents long waiting times for elective surgery, meaning the system in not corresponding to the population needs as good as Portugal. Even though data is collected differently, the trends support the previous statement.

Both life expectancy at birth and infant mortality are positive aspects of the health care systems. These are important indicators, once they summarize causes of death and effectiveness of systems.

A negative aspect of the Portuguese health care system is emergency care, namely its overuse. As mentioned in the discussion, several factors can influence the use of EDs; nevertheless this results in long waiting times and therefore dissatisfaction. Furthermore, Slovenia incorporated emergency medical care as a speciality, therefore improving the care provided in EDs.

Geographic and demographic characteristics of countries influence the layout of health care facilities. Slovenia, smaller in area and population, appears to have a better distribution of these, when compared with Portugal.

Regarding appointments with doctors, Portuguese presents smaller numbers than Slovenian ones. The number of this indicator might reflect access to health care, meaning that in Portugal is more difficult to get an appointment. Private consultation might also play a role.

A positive point favouring Slovenia is the absolute number in hospital discharges. Being an indicator of hospital activities, Slovenian hospitals are ahead of the Portuguese ones. On the other hand, there is also some correlation with hospital avoidable admissions.

Perceived health status is also a positive aspect for Slovenia. Slovenian citizens tend to perceive their own health better than the Portuguese.

When considering mortality from selected causes in both countries, they are considered as negatives aspects. The causes of death listed have well established risk factors. These risks should be a target for health policy makers and providers, aiming to further improve these indicators.

Lastly, to provide an overview of the comparisons, figure 7 and 8, illustrate the trends observed during the time windows available for the health care indicators.
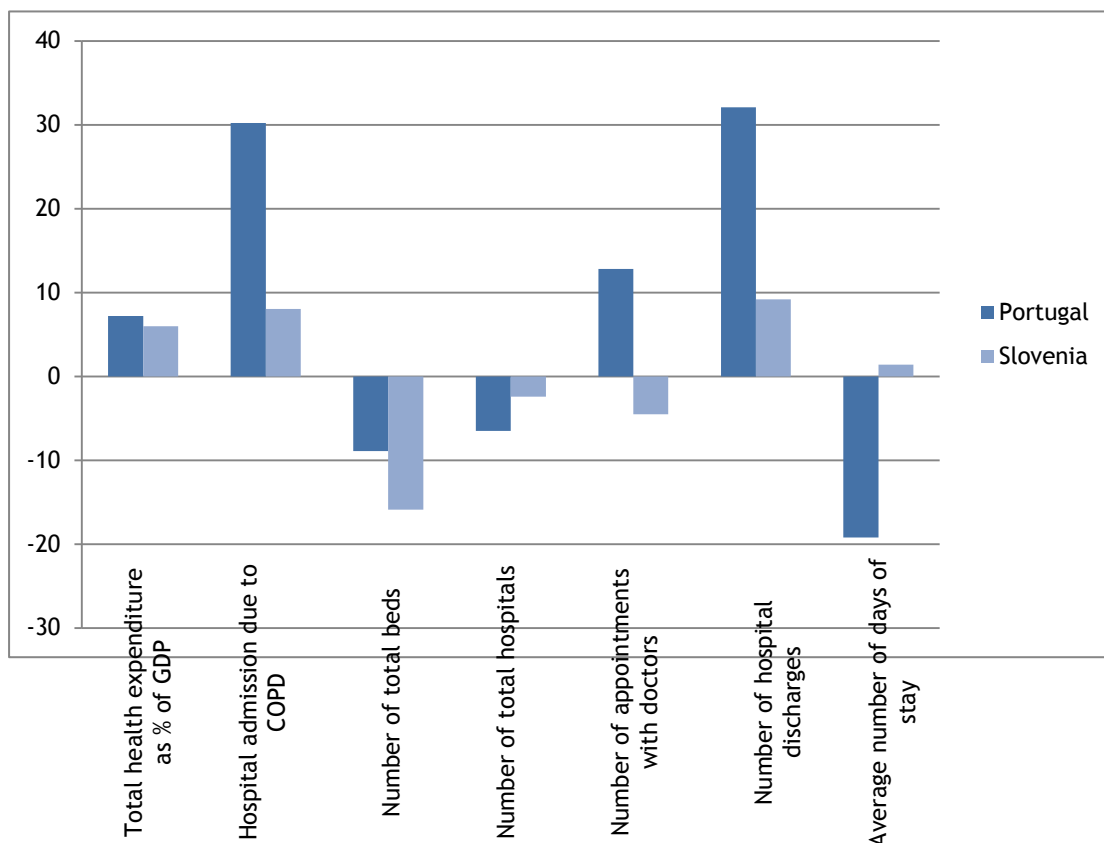
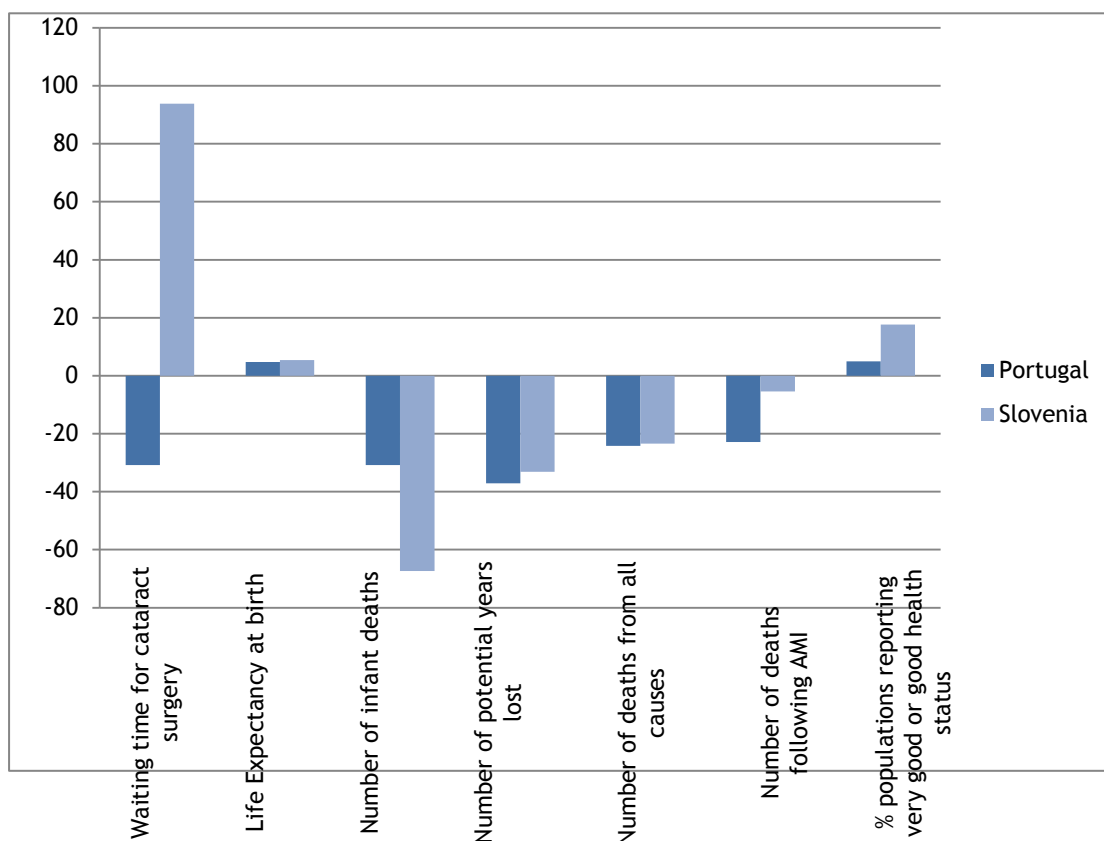Figure 8 – Trends registered during the period of study

Figure 9 – Trends registered during the period of study (continuation)

Other Studies

The study object of this work is shared with other mentioned papers. To perform comparisons between health care systems, several frameworks can be used. The chosen framework for comparing Portugal and Slovenia isn't shared with the mentioned papers; furthermore, these use frameworks developed by the authors.

Between the different papers there are common comparative points, but also different ones. The comparison between the United States, Germany and Canada[54] focus mainly in health expenditure, exploring several indicators related to this; besides, it also mentions two generic indicators, namely life expectancy at birth and infant mortality rate. The present dissertation also evaluated these types of indicators, besides description of health care systems and overview of recent reforms. While comparing health care systems it is important to look at other structural indicators, such as health care policies, process aspects and outcomes. Life expectancy and infant mortality are good outcome indicators; nevertheless they fail to achieve a good granularity.

The work developed by Anell A. and Willis M.[55] mentions 10 indicators, some of them shared with this work. Nonetheless, this comparison work focuses mainly on resources and monetary expenditures, not summarizing the structure of the health care systems or health outcomes. So it looks at the systems, but does not evaluate how they are performing.

The work developed by Hussey PS. et al[56] focuses mainly in outcome indicators, comparing 21. Outcome indicators allow comparing the health care result in terms of health quality. Nevertheless, this paper does look at the health care systems structural differences than might be able to explain the outcomes. However it compares in some screening programs. The present dissertation aimed to compare screening tests, but Portuguese data is scarce.

While studying health care systems, emergency departments constitute a must-compare aspect, seeing that they are the point of entrance in urgent and emergent situations. In the three mentioned studies, emergency departments are never mentioned and therefore never compared. Besides emergency medical care, primary health care nowadays constitutes a cornerstone of health care system, playing a very important role in avoidable hospital admissions, expressed in hospital admissions reduction. The comparison performed between Portugal and Slovenia mentions this level of care it some detail, explaining its importance.

Study Limitations

Literature providing data allowing country comparisons already exists, but publications considering Portugal and Slovenia, or any other two specific countries are infrequent. What exist are reports comparing European countries and OECD countries; however, usually these documents do not necessarily provide data with extent or granularity needed for this type of

dissertation. Avedis Donabedian's framework is known worldwide and allows some adjustments regarding the information to collect. As an example, Health System Performance Comparison features several of these frameworks.

Data on both countries was collected using mainly databases such as OECD, EUROSTAT, and WHO. The main advantage is that the information present in such sources is suitable for comparison and it is available worldwide; nevertheless, most of the time it isn't updated or it is scattered through the years making it difficult to evaluate trends or even to compare countries. Besides large databases, national sources were also used. The main issue while using them is the way information is gathered. In some cases, Portugal and Slovenia employ different methodology for data collection. For instance, when considering waiting times for elective surgery, information on Portugal came from OECD database, but from Slovenia came from the National Department of Public Health. The information used was also send to OECD secretariat, but because of the methodology employed it does not feature in their database.

The information about some health topics is very hard to find. For instance, initially the dissertation aimed to compare national screening programs, but information on the results of the Portuguese screening programs is scarce and old.

As the aim of this work is to perform a general comparison of both countries health system, it is clear that a lot of information is required. A health system is a complex institution with thousands of smaller compartments. It is easy to comprehend that the study object is a vast entity, making it hard to find a suitable and general approach. A more considerable amount of time is needed to fully compare countries.

Slovenia and Portugal are geographically separated by 2500 kilometres, or a 3 hours flight. Distance between countries was also an issue. With the condition of student it was impossible to spend longer abroad, getting to know how the health care system's working in more specific terms. Furthermore, the spoken language in Slovenia was a barrier as well. Information on Slovenia is mainly written in Slovenian; only a very limited amount of literature is available in English. This barrier was somehow surpassed with the help of amazing Slovenian colleagues working in the National Institute of Public Health.

Conclusions

Portuguese and Slovenian Primary care setting are well structured, both presenting as the first door for patients in need of non-emergency situations.

According to the OECD, the Portuguese primary care appears to be performing well, based on the indicators in their database[44]. As mentioned in the results, Portugal presents as an example of innovation and good performance, when considering this level of care[44]. It appears that Slovenia also has a good network of primary health care, providing a good coverage and care for their patients; nevertheless, further investments need consideration, aiming to improve primary health care indicators. Both countries share the gatekeeping system through GPs, responsible for the referral of patients to specialized care, mainly provided in hospitals.

Another important matter to be minded is the availability of specialized care in this level; Slovenian primary health care facilities have specialists, allowing a better and faster response to the patients needs and concerns.

Secondary and tertiary levels of care share a lot of aspects between countries. These levels are responsible for providing the majority of the specialized and emergency care. The referral system and visits to the emergency department are the possible ways of entrance.

In Portugal, the number of appointments with doctors is bellow the Slovenian counterpart. This might indicate the use of private health providers (not considered in the OECD database). Furthermore, patients can bypass the primary care setting by going straight to the Emergency department, contributing for a large number of visits and, therefore, long waiting times. To deal with this situation, setting up fast-track systems to deal with non-emergency cases might present as a solution for this issue[44].

Other point worth mentioning is the information systems containing patient clinical information. The utility of these, nowadays, is unquestionable. Good information systems allow more security for patients and quality in health care providing activities[44]. Portugal is developing a good network of information systems, such as PDS, to interlink health care facilities and health professionals, setting up a good example for Slovenia. National guidelines implementation also presents as a good policy, with the aim of providing the best care.

Portugal is moving towards a more rationalized hospital system. It saw one of the fastest decreases in hospital spending among OECD countries, falling by 13% from 2000 to 2011[44]. Following the economical crisis that started in 2008, Portugal included numerous policies to cut costs whilst maintaining efforts to continuously improve health care quality.

Health care spending tends to increase through the years. Analyses undertaken by the OECD indicate that this increase is mainly due to the combined effect of technology prices and other exogenous factors, such as institutions and policies, more than pure demographics

and income[44]. Policies to help containing the natural increase in health care spending include: supply-side options such as reforms to provider and supplier payment methods, provider competition, and budget costs; demand-side policies include cost-sharing, and restrictions access to certain treatment options (via gatekeeping), as stated in the OECD latest report on Portugal[44].

OECD Health Statistics[23] shows that the Portuguese hospital care is characterized by shorter average length of stay, lower discharge rate and shorter waiting times for elective surgery. Portuguese numbers might indicate the heavy reliance in the hospital care[44]. On the other hand, Slovenia presents with higher hospital discharges but longer waiting time lists.

Overall, health care systems featuring in both countries present roughly the same results in the some health indicators, namely: life expectancy at birth, infant mortality, PYLL and mortality from all causes. Considering disease-specific mortality rates, Portugal made good progress reducing them[44]. The same appears to be true when considering Slovenia. Of course, differences exist between countries, which might be related with the presence of different risk factors. Control of theses factors should be an area of health investment.

In the years to come, population will age, creating inverted age pyramids which consequently result in increased burden of chronic diseases. These changes will put more pressure in the health care system, particularly on the primary care setting, seeing that it is responsible for the prevention activities and management of chronic patients[44]. This said, prevention should become a major concern for stakeholders that have the responsibility of assuring that this setting of care is equipped to cope with the growing burden of chronic diseases.

As mentioned earlier, investment in strong prevention programs carried out by the primary level of care might also present as a good solution to deal with the health challenges in the future, whilst containing costs.

Health indicators from both countries have not changed their trends after 2008, indicating that the health care systems coped well with the economic crisis. For the future, several policies should be implemented aiming to improve the quality of care throughout the years. Portugal is ahead of many OECD countries on the number of initiatives with this purpose[44]. The initiatives range from the introduction of a national accreditation system, the development of sophisticated tools to facilitate the circulation of information regarding patients, benchmarking hospital outcomes, and networks of compulsory guidelines.

These policies should be implemented to improve the health care system itself and not only to deal with situations of economical crisis.

Box 1 – Main conclusions and recommendations

Main Conclusions:
- Both systems have well structured primary health care networks;   - Portuguese primary health care systems appear to be performing well. Innovative and well-structured reforms already in place and presenting promising improvements;   - Both systems are moving towards a more rationalized health care system, even though they are different considering their funding systems;   - Portuguese hospital care is characterized by a higher number of hospital beds, higher number of health care providing facilities, fewer discharges and shorter average length of stay and waiting times for elective surgery, than surgery;   - The leading causes of death, of those considered, are different between countries, and might be related to the prevalence of diverse risk factors.

Recommendations for Policy makers:
1. Investment in primary health care, associated with the adoption of policies for measuring, assuring and improving quality in health; 2. Development of campaigns and health care promoting activities aiming to sensitize and reduce the prevalence of established risk factors; 3. Incentives for health care professionals, namely doctors and nurses, based on performance and results; 4. Development and implementation of information systems, allowing easier data collection, monitoring of the care provided, as well as, facilitate exchange of information for care provision; 5. Establishment of fast-track systems to deal with patients in non-emergency situations, in Emergency departments. GPs should be the attending physicians in this case; 6. Implementation of National guidelines networks; 7. Adoption of policies to maintain health care costs (demand-side and supply-side options); 8. Benchmarking hospital outcomes aiming to improve secondary and tertiary care, associated to internal and external audits to evaluate health care indicators evolution, previously established.

Recommendations for future work:
1. To study health care systems in more detail, fragmentation of the study object is needed. A Health care system is a complex entity with a vast number of braches and intricate relations, rendering the exploration of all of it an impossible task. 2. This particular dissertation approaches two different health care systems, and it would be interesting to continue this working by performing comparisons with others. To accomplish that, the development of a working framework, suitable in every health care system is considered a must have. 3. Information on some countries is scarce and dispersed throughout the years. Several factors account for this. Portugal and Slovenia are no exception, with some information unavailable. It is important to sensitize countries for the importance of data. It is also essential to create and train workforce responsible for the collection of data in each country. 4. Getting to know each country health care system is a crucial piece for assembling this puzzle. With this in mind, it is important to spend as long as possible in the field working out the pros and cons of each country.

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Annexes

Annex 1 – Methodological definitions

The methodological definitions were extracted from the OECD Database[23].

Hospital beds

Hospital beds are defined as all beds that are regularly maintained and staffed and are immediately available for use. They include beds in general hospitals, mental health and substance abuse hospitals, and other specialty hospitals. Beds in nursing and residential care facilities are excluded.

Hospitals

Hospitals comprise licensed establishments primarily engaged in providing medical, diagnostic and treatment services that include physician, nursing, and other health services to inpatients and the specialised accommodation services required by inpatients. Hospitals provide inpatient health services, many of which can be delivered only by using specialised facilities and professional knowledge as well as advanced medical technology and equipment, which form a significant and integral part of the provision process. Although the principal activity is the provision of inpatient medical care they may also provide day care, outpatient and home health care services as secondary activities. The tasks of hospitals may vary by country and are usually defined by legal requirements. In some countries, health care facilities need in addition a minimum size (such as number of beds and medical staff to guarantee 24-hour access) in order to be registered as a hospital.

Inclusion

- General hospitals

- Mental health hospitals

- Specialised hospitals (other than mental health hospitals)

Portugal: The Hospital Survey began in 1985. This survey covers the whole range of hospitals acting in Portugal: hospitals managed by the National Health Service (public hospitals with universal access), non-public state hospitals (military and prison) and private hospitals. - In 2012, the data series number of hospitals was redefined according to the concept of separate hospital establishments. For example, a hospital centre with three different establishment counts now as three hospitals.

Appointments with doctors

Appointments with doctors refer to the number of contacts with physicians, including both generalists and specialists. There are variations across countries in the coverage of different types of appointments, notably in outpatient departments of hospitals. The data come mainly from administrative sources. The data from Portugal excludes visits to private practitioners.

Hospital discharges

Discharge is defined as the release of a patient who has stayed at least one night in hospital. It includes deaths in hospital following inpatient care. Same-day separations are usually excluded. Data from Portugal relate only to public hospitals on the mainland.

Average length of stay

Average length of stay refers to the average number of days that patients spend in hospital. It is generally measured by dividing the total number of days stayed by all inpatients during a year by the number of admissions or discharges. Day cases are excluded. Portuguese data includes only institutions that belong to the National Health care System, and data from psychiatric hospitals is included from 2008 on. Slovenian data does not contemplate rehabilitation care is specialized centres.

Waiting time for elective surgery

Waiting times from specialist assessment to treatment includes the time elapsed for patients on the non-emergency (elective) surgery waiting list from the date they were added to the waiting list for the procedure (following specialist assessment) to the date they were admitted for treatment. All publicly-funded patients (including patients who have received the treatment either by publicly- or privately-owned providers) are included. The time elapsed from the date of the referral of the general practitioner to the date of specialist assessment (in some countries, this is referred to as 'outpatient waiting time') is excluded.

Waiting times of patients on the list includes the time elapsed for patients on the non-emergency (elective) surgery waiting list from the date they were added to the waiting list for the procedure (following specialist assessment) to a designated census date. The time elapsed from the date of the referral of the general practitioner to the date of specialist assessment (in some countries referred to as 'outpatient waiting time') is excluded.

Life expectancy at birth

Life expectancy at birth and at ages 40, 60, 65 and 80 years old is the average number of years that a person at that age can be expected to live, assuming that age-specific mortality levels remain constant.

Infant Mortality

The infant mortality rate is the number of deaths of children under one year of age in a given year, expressed per 1000 live births.

Potential years of life lost

Potential Years of Life Lost is a summary measure of premature mortality, which provides an explicit way of weighting deaths occurring at younger ages, which are, a priori, preventable. The calculation of PYLL involves summing up deaths occurring at each age and multiplying this with the number of remaining years to live up to a selected age limit.

Mortality

Age standardized death rates per 100000 population for selected causes are calculated by the OECD Secretariat, using the total OECD population for 2010 as the reference population.

Admission-based AMI

Patients older than 15 years old. Number of deaths in the same hospital that occurred within 30 days of hospital admission with primary diagnosis of acute myocardial infarction in a specified year.

Admission-based hemorrhagic stroke

Patients older than 15 years old. Number of deaths in the same hospital that occurred within 30 days of hospital admission with primary diagnosis of hemorrhagic stroke in a specified year.

Admission-based Ischemic stroke

Patients older than 15 years old. Number of deaths in the same hospital that occurred within 30 days of hospital admission with primary diagnosis of ischemic stroke in a specified year.

Potential Years of Life Lost

Percentage of the population, aged 15 old and over who report their health to be 'good/very good (or excellent) (all positive response categories), 'fair' (not good, not bad), 'bad/very bad (all negative response categories).

There is not yet full standardization of the measurement of perceived health status across OECD countries. In Europe, a standard health interview survey instrument has been recommended to measure this variable. The recommendation is described in the publication: "Health Interview Surveys: Towards International Harmonization of Methods and Instruments," WHO Regional Office for Europe, 1996, and is follows:

How is your health in general?

-Very good;

-Good;

-Fair;

-Bad;

-Very bad.

Asthma Hospital Admission

Population aged 15 and older; all non-maternal/non-neonatal hospital admissions with a principal diagnosis code of asthma in a specified year.

COPD Hospital Admission

Population aged 15 and older; all non-maternal/non-neonatal hospital admissions with a principal diagnosis code of Chronic Obstructive Pulmonary Disease in a specified year.

Uncontrolled Diabetes Hospital Admission

Population aged 15 and older; all non-maternal/non-neonatal hospital admissions with principal diagnosis code of uncontrolled diabetes, without mention of a short-term or long-term complication in a specified year.