Studying the impact of Family Health Units (USF) in the primary care network in Portugal

Health Systems Course - MSc Biomedical Engineering 2019/2020

Group 17

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Abstract

Primary care is an important area of focus in the health sector, as it is responsible for providing preventative care mostly centered around the permanent accompaniment of the population and is important to avoid the overload of secondary care. In 2005, with the goal of increasing the population's access to primary care as well as its quality and efficiency while at the same time increasing the satisfaction of healthcare professionals, the Portuguese National Health System underwent a reform, which led to the creation of new primary care units, the Family Health Units. In the present study, the impact of the implementation of these new units is assessed in both quantitative and qualitative ways. In quantitative terms, analysis of the evolution of health indicators in Portugal has shown a general improvement in mortality and habits encompassed in health education programs; and an economic analysis concluded that primary care has macroeconomic benefits and USFs are an asset, as they generally save the public money on average despite the increase in costs for human resources. Finally, in qualitative terms, there is a general consensus among users and workers that the quality of services provided in USFs is superior when compared to UCSPs, both in public data from 2017 and in data collected through a questionnaire between the 12th and the 20th of March, 2020. However, there are some limitations to this study, as it is a very complex area and the definition of health and quality of primary care remains subjective and debatable.

Keywords: USF (Family Health Unit), UCSP (Personalized Health Care Unit), SNS (Portugal's National Health Service), Primary Healthcare

O SNS prosseguirá o seu caminho, porque só é vencido quem desiste de lutar.
– António Arnaut, pai do SNS

1 Introduction

Healthcare is a human right that every citizen should have access to, regardless of their socioeconomic status or where they live.

In the last century there has been a significant improvement in health indicators among the general population. In Portugal, particularly in the past 25 years, this improvement was substantial.

In order to assess the impact that Family Health Units (USFs) have had on the Portuguese primary healthcare network, the historical context behind Portugal's National Health Service (SNS) and the creation of these units should be kept in mind, so that this analysis is substantiated and unbiased.

1.1 Brief history of the Portuguese SNS

It's unequivocal that Portugal has, in the past 60 years, exhibited a striking improvement in major health indicators within its population, such as life expectancy at birth and at 65 years of age [1].

This improvement in quality of life, as it pertains to the health of the Portuguese population was intimately related with the health sector reforms started in 1945 after the second world war and lasted several years: the creation of directorates-general of health and administration, health delegations and the first public hospitals in the capital and in Coimbra [2]. Portugal started adopting a healthcare system focused on preventative, palliative, curative and constitutive assistance, centered in the biggest public health problems of the time: tuberculosis and maternal health [3].

However, only in 1971 the first few first-generation health centers appear, targeting preventative assistance. In 1973, the Ministry of Health is established, and after the revolution of 1974, the social and political circumstances arise for the creation of an outline for the National Health Service, which would be implemented 5 years later, on September the 15th 1979. This date marks the reinvention of the Portuguese health sector, largely inspired by the British NHS [1]. This transition assured, over the years, full integration and complementarity among the various levels of healthcare, primary, secondary, continuous and palliative.

The SNS guaranteed, for the first time in the nation's history, universal and predominantly free coverage, being primarily funded by taxes and dedicated to the public provision of care.

1.2 Primary Healthcare

Portugal was one of the first countries to support the adoption and reinforcement of primary healthcare, as a way to lower the rates of unnecessary use of secondary healthcare. The goal was to turn people away from hospital emergency rooms, that with the increase in information and general concern for well-being, had become overcrowded [4].

The establishment of the General and Family Medicine practice [2] supported the formation of a second-generation health center network centered in the provision of preventive and curative primary healthcare.

The primary care provided in health centers is responsible for dealing with the foremost health problems in the community, such as, among others, the promotion of adequate nutrition, neonatal and maternal care, family planning, vaccination, and treatment of common diseases and injuries [5]. Thus, this level of care is centered in the permanent accompaniment of the population, hence being the central junction for the avoidance of preventable ER visits and the overburdening of providers of other types of care that necessitate further urgency and are sporadic in nature.

1.3 Emergence of the first Family Health Units (USF)

In mid 1985, the Portuguese Association of General Practitioners emerged. In 1991 it published a document entitled "Um futuro para a medicina de família em Portugal" (A future for family medicine in Portugal), which would be the foundation of the biggest primary care reform since its insertion in the SNS in Portugal: the creation of Family Health Units (Unidades de Saúde Familiar – USF).

This "reform", as its designated by many authors, occurred in 2005, in a favorable social and political environment, associated with the conception of a task-force called "Mission for primary healthcare" (Missão para os Cuidados de Saúde Primários – MCSP). Consequently, in 2006, the first Portuguese

USFs started to appear.

Although at first these were difficult to implement due to organizational challenges and a shortage of workers specializing in family medicine, the number of USFs has been steadily increasing since 2006, and in 2019 there were 563 registered USFs (Figure 1). But what characterizes this new concept, dubbed a "pioneer" of good primary care practices by several countries and the WHO?

The main goals of this reform were simple and idealistic: to improve the population's access to primary care, and its efficiency, quality and continuity, while at the same time increasing the satisfaction of healthcare professionals.

1.4 Characterization of family Health Units (USF)

A USF is "a small multi-professional, voluntary, self-organized team, with technical, functional and organizational autonomy" (*Pisco, L. 2011*). A recently assembled team may apply for this status, if they follow the adequate procedures [7].

What sets them apart, however, is a mixed payment system, with a fixed salary but at the same time capitation and financial incentives based on objectives and performance indicators.

These units are present in groupings of health centers (Agrupamentos de Centros de Saúde – AceS), present across all regions: North, Center, Lisboa e Vale do Tejo (LVT), Alentejo and Algarve. Beyond just the USFs, ACeS also encompass, in the context of family medicine [8] Personalized Healthcare Units (Unidades de Cuidados de Saúde Personalizados - UCSPs), where the usual primary care is provided by individual healthcare professionals.

USFs can be divided in three types of models, depending on their degree of organizational autonomy, remunerative model and the performance indicators they will have to accomplish [7]:

- **Model A**: learning and improvement phase of the teamwork. It's an important transitional stage from individual work with distinct hierarchies, with performance evaluations regarding workers' technical-scientific performance in family health.

- **Model B**: the most suitable model for teams with greater organizational maturity, however, they are associated with more demanding performances, accompanied by a monetary return adjusted to these responsibilities. All functions and obligations associated with model A must also be fulfilled by model B.

- **Model C**: a merely idealized and experimental model, aiming to supplement possible shortcomings demonstrated by the SNS, thus enabling cooperation with teams from the private, cooperative or social sectors.

Each USF model is associated with different indicators and objectives, which aim at the continuity of primary care in various aspects, whether preventive, palliative or curative, as well as efficiency and permanent monitoring of all users on a basis of proximity and complicity with health professionals. New performance indicators are regularly reviewed and implemented. Of these indicators, each USF should agree on a certain number and type, depending on the needs of its population and the capacity and model of the USF, *i.e.* if a certain region in Portugal, covered by a certain USF, has an older population, one of the objectives can go by vaccinating X patients for influenza, being this number higher or lower depending on the number of health care professionals and the model of that specific USF. All documents are, however, general and public, in order to achieve a more rigorous, responsible and transparent management technique. As an example, Table 1 shows some indicators present in the *Identity Card of the Primary Health Care Contracting Indicators of 2017*.

Table 1: Examples of Health Indicators applicable to USF, taken from the *Primary Health Care Contracting Indicators Identity Card of 2017* [9]

ID	Description
14	Proportion of newborns with at least one doctor's appointment of monitoring conducted up to 28 days of life
30	Proportion of users with diabetes, chronic respiratory disease, chronic heart disease or over 65 years of age with influenza vaccine prescribed or administered in the past 12 months
98	Proportion of users aged 25 or over who have an up-to-date tetanus vaccine
294	Rate of nursing consultations at home per 1,000 elderly registrants
365	Rate of preventable hospitalizations in the adult population (adjusted for a standard population)

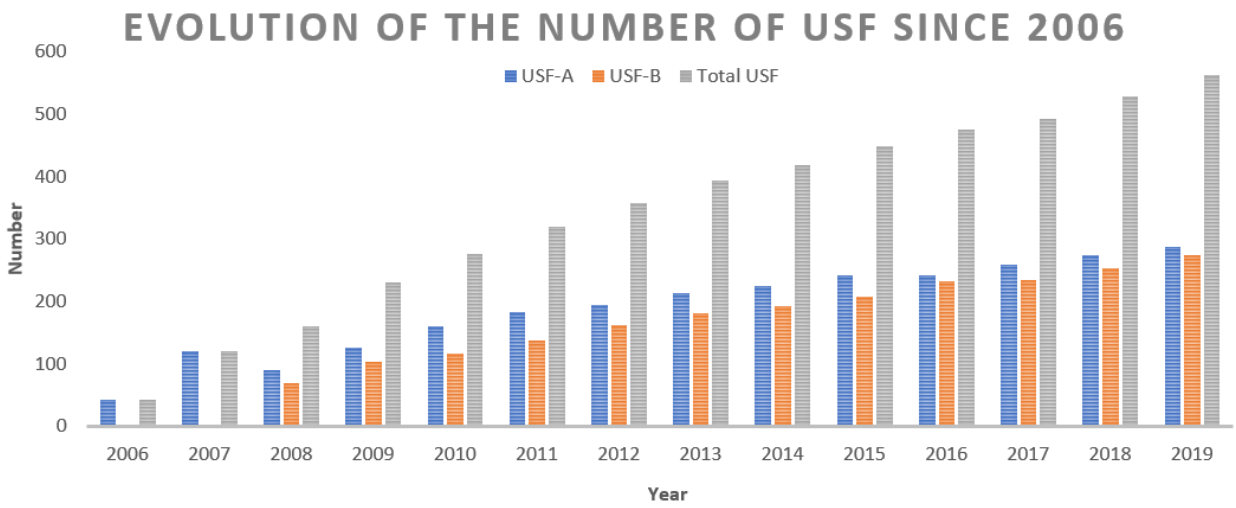

Figure 1: Evolution of the number of USFs in Portugal since 2006, cumulative. Numbers relative to the end of each year, retreived from *Relatório Candidaturas e Constituição de USF e UCC e BI-CSP* [6]

In the same way, each USF must also comply with several other parameters, such as working hours, establishment of periodic meetings, among others, in order to keep its model, otherwise it can be downgraded (USF B to USF A, and USF A to UCSP).

Utopically, the USFs would only be of benefit to the population, health professionals and the Portuguese government: the former because they will have continuous care and close monitoring of their health problems, depending on the characteristics of the population; the second group, because, despite the greater professional effort, they will be justly monetarily rewarded and with the attribution of status; the latter because of the decrease in costs associated with evolving states of illness associated with poor care, and the improvement of the population in general.

1.5 Importance of USFs and the goal of the present study

One the one hand, there is the main objective of creating USFs: better accessibility and quality of care, adapted to the target population, speed, monitoring of health status and closeness with health professionals, in addition to the main objectives of primary health care. On the other hand, there is the continuous improvement of the main health indicators of the Portuguese population, mainly in the reduction of the infant mortality rate and mortality after the age of 65. This will undoubtedly be related to the improvement of primary health care, including vaccination, nutrition and chronic diseases. However, is the implementation of USFs closely related to this evolution?

The objective of this study will be to assess, in a qualitative and quantitative manner, the evolution of these indicators since the implementation of USF in the Portuguese SNS, the economic benefits, as well as the general satisfaction of health professionals and population to whom this implementation concerns, and the limitations for this to happen.

2 Methodology

In order to study the impact that the creation of USF's had on primary healthcare in Portugal, a mixed methodology was used, in order to complement the literature and evidence already existing in this field with current data.

Firstly, preliminary research on primary healthcare reform was carried out on *pubmed* and *web of science* platforms, searching for *"primary health care"*, *"Portugal"*, *"reform"*, *"family health units"*, *"satisfaction"* and *"challenges"*. The selection criteria were the number of citations per article, the most recent date, as well as their relevance to the study in question.

A review study was then carried out, focusing on the quantitative evolution of indicators between 2000 and 2017. The selection criterion for health indicators was their global character, *i.e.* being repeatedly analyzed by various international organizations such as the WHO, OECD, European Commission and EOHSP in their annual reports. The indicators

used were global mortality, average life expectancy at birth and for both sexes, average life expectancy at 65 years of age globally and for both sexes, total infant mortality and total maternal mortality. The most common causes of mortality in Portugal, such as cardiovascular diseases, pneumonia and diabetes were also included in the analysis, associating them with their respective most prevalent risk factors such as smoking, sedentary lifestyle and malnutrition, as these are behavioral risk factors, in which primary healthcare has particular relevance, both by health education and promotion of programs directly aimed at each of these risk factors. Once the indicators had been selected, research was carried out in several databases, such as the OECD Health Data, European Health for All Database, EUROSTAT Public Health Database, National Institute of Health Statistics and the DGS Mortality Platform, and in case of disparity between the different databases, the data from OECD Health Data took precedence. The type of chosen analysis was mainly exploratory, in order to overview its evolution over the years.

Furthermore, an analysis of the economic impacts of primary care, specifically as it pertains to USFs, was carried out, with the purpose of ascertaining whether the investment in primary care and in the USF model was economically desirable. Initially, the macroeconomic merits of prioritization of primary care were evaluated. Various scientific articles were consulted, including a number of studies cited in a WHO report about the economic benefits of primary care. Subsequently, two Portuguese studies concerning USFs were examined further in depth. These, conducted by the Portuguese Association of Health Economy (APES) and the National Coordination for the Reform of Primary Healthcare (CNCSP) respectively, concerned the benefits of the remunerative system present in USFs, and a cost comparison between USFs and UCSPs. These two studies were chosen due to their relevance to the subject matter, their dates (one is recent, the other is 14 years old), the reputable status of the organizations that conducted them, and the amount of useful information present in these reports.

In order to qualitatively complement these studies, a study on the satisfaction of health professionals and target population regarding the improvement of primary healthcare through the insertion of USFs in the SNS has also been carried out. The Center for Health Studies and Research of the University of Coimbra (CEISUC) has proved to be an asset due to its extensive research in the area, namely as part of the MCSP, with most reports made available by this organization. Among other studies available in Portuguese scientific journals, only those that applied to a relevant geographical area or relevant number of health units were selected. The analysis was conducted based on averages of satisfaction indicators found in these reports, in order to understand their evolution throughout the implementation and growth of USFs, and thus inquire about their beneficial or harmful effect on the satisfaction of both users and professionals.

Finally, it was decided to complement these studies with a brief questionnaire, designed by the authors and inspired by the study "Successes and problems of Family Health Units – A qualitative study" published in February 2008 by the MCSP, with the aim of assessing the temporal evolution of the main problems and advantages of the primary healthcare reform from the point of view of health professionals in this area, focusing on the main problems identified in the first phase of this work. This questionnaire was addressed only to health professionals in the Lisboa and Vale do Tejo region, who exercise their professional activity in a USF or UCSP, due to time and circumstantial limitations such as the COVID-19 pandemic. This questionnaire was sent by e-mail to the various LVT USFs, UCSPs and ACeS between the 12th and the 20th of March, and the analysis of its results was mainly qualitative and comparative, focused on highlighting the still prevalent problems and overall satisfaction.

3 Study Analysis

In order to characterize and analyze the Portuguese Primary Healthcare network, a study of quantitative evaluation of health indicators, through out the years of the reform, was made and preliminary economic evaluation of the impact and benefits of this reform was included. With this in mind, a qualitative evolution of the primary healthcare network regarding the levels of satisfaction of the general population as well as primary healthcare workers regarding the reform was performed.

3.1 Quantitative evolution of the health profile

3.1.1 Health Indicators

The health indicators chosen were overall mortality rate, life expectancy at birth for males and females, life expectancy at 65 for males and females, infant mortality rate and maternal mortality rate. These indicators were chosen because of their recurrent use in international reports on health system profiles and comparisons between different health systems. Other health indicators such as leading causes of death were added to further describe the Portuguese health system and its primary healthcare network, in particular the chronic diseases with higher prevalence and the main behavioural risk factors within the Portuguese population, since these are central to primary healthcare from a preventive point of view.

Mortality Rate

Over the last 40 years Portugal has made significant progress in reducing the overall mortality rate, as well as increasing life expectancy at birth [10].

Between 2000 and 2015 life expectancy at birth has increased by almost 4 years, from 76,8 years in 2000 to 81,3 in 2015. It was almost a year higher than the average of EU members, 81,3 years in Portugal compared to the EU average of 80,6 years (Figure 2) [11].

There was a big difference, however, between males and females, as Portuguese women were expected to live 6,4 years longer than males according to 2014 figures, higher than the EU average of 5,5 years [10].

Most of these gains in life expectancy are due to higher life expectancy after the age of 65: by 2015, 65 year old women were expected live on average another 21,7 years and the same aged men were expected to live another 18 years, compared to 2000 when life expectancy after 65 was 19,1 years women 15,4 years for men (Figure 3) [11].

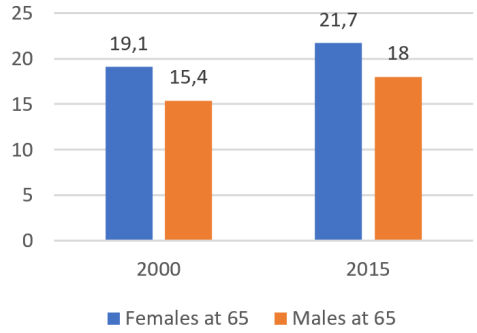

Figure 3: Female and Male life expectancy at 65 in 2000 and 2015 – Source OECD Health Data, accessed 27 March 2020 [12]

This tendency has been the same since 2015 with small improvements on the previously mentioned health indicators from 2015 to 2017 as presented by the latest report on the Portuguese Health Profile in 2019 made by the OECD and the European Observatory on Health Systems and Policies, in cooperation with the European Commission [13].

Infant and Maternal Mortality Rates

Other health indicators that improved remarkably in Portugal in the last few decades were the infant mortality rate, as well as maternal mortality rate. Infant mortality rate (per 1000 live births) decreased from 5,5 in 2000 to 2,9 in 2014, as well as maternal mortality rate (per 100000 live births) which decreased from 8,8 in 2000 to 5,6 in 2014 [10].

These two improvements are due several causes, mainly the introduction of a universal immunization program in 1965 and the expansion of healthcare services, especially after the creation of the SNS in 1979 [10], and both of them were enhanced by the recent reform on Primary Healthcare service in the last two decades.

Leading Causes of Death

Analyzing the Top 10 leading causes of death in 2014 [11] and looking at the percentage of each of them on the total causes of death, there is a pattern that is consistent:

- Cardiovascular diseases, as well as other heart diseases and particularly ischemic heart disease occupied the first 3 places.
- These were followed by Pneumonia in 4^{th} place
- Followed by Diabetes in 5^{th} place

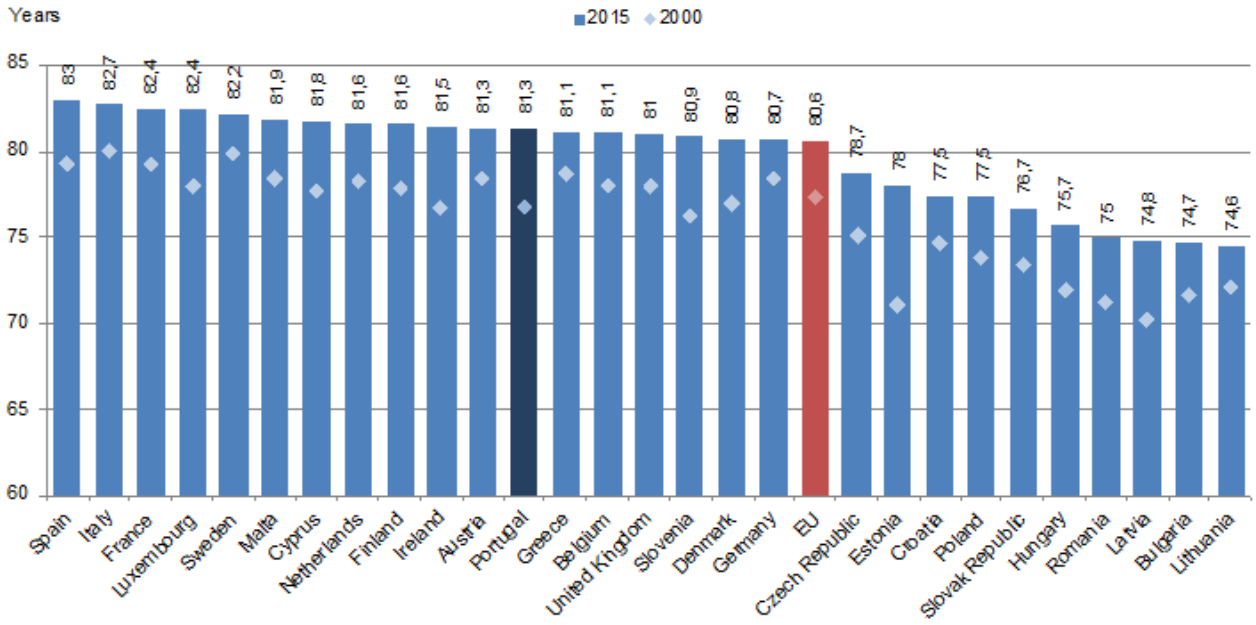

Figure 2: Life expectancy at birth in EU member states in 2000 and 2015 [11]

All of these causes of death are preventable, as they can be explained by behavioral risk factors such as smoking, alcohol use, dietary problems and physical inactivity. These risk factors were reported to contribute to a fourth of Portugal's disease burden, with smoking and dietary factors contributing the most [11]. When looking at the latest report from 2019 it can be observed that things are slowly improving but behavioral risk factors still contribute to a third of all causes of death. Although smoking rates have decreased since beginning of the century, 17% of adults are still regular smokers. The same pattern appears to be observed regarding alcohol consumption, which has decreased over the last decades, but is currently still higher than the EU average (10,7 Liters per person in Portugal compared to 9,9 L per person in the EU). Dietary problems and physical inactivity are still higher than the EU average but have been slowly and consistently improving through the years [13]. These small improvements can be associated with the primary healthcare reform, since the latest data confirms that Portugal has one of the EU's lowest avoidable hospitalisation rates, suggesting an effective primary care system [13]. This effectiveness probably also translates into better prevention and health education provided to the population by the primary healthcare system, although change in population behaviour is a slow and difficult process, hence the small yet consistent improvement.

National Health Plan

In 2015 the DGS considered it a priority to tackle these behavioral risk factors, thereby making the National Health Plan 2020, and creating four main goals that include reducing tobacco consumption in the population older than 15 years old and eliminating the environmental smoke exposure, as well as controlling the incidence and prevalence of overweight and obesity in the young population [14].

The recent reform in Primary Health Care could be a positive measure to achieve both these goals, since a multidisciplinary team with higher management autonomy is much more capable of devising a plan to substantiate these national priorities. However this remains to be seen since the program is still ongoing and the results have not been publicly announced yet, although the most recent reports already show a small improvement in behavioral changes and prevalence of the diseases associated to such behaviours [13]. Regarding this recent reform, the creation of USFs, primary care units with the autonomy to devise specific plans to tackle the diseases that have higher incidence on their specific population, should be viewed as a positive and beneficial way to mitigate the main Health problems of the Portuguese population, since these units can create and adapt their health plans to the population they cover and focus their attention on the peculiar and distinct characteristics of each population that depend on each USFs primary healthcare.

3.1.2 Economic benefits

Various studies have been elaborated with the goal of evaluating the economic and public health benefits of prioritization and investment in primary healthcare. A significant improvement in health indicators such as general and infant mortality, unnecessary hospitalizations and ER visits and health inequalities was universally observed in these reports [15–17]. Evidence shows that investment in primary care reduces the need to resort to secondary care, potentially saving money. However, depending on the methodology of the study, there has been evidence towards both an increase [17] and a decrease [18] in public health expenditure when there is a prioritization of primary healthcare.

However, higher health expenditures as a percentage of GDP don't always necessarily yield negative macroeconomic impacts, due to the fact that this investment nearly always leads to better overall health outcomes, which translate into a healthier, more active population, a more productive labor force, higher labor force participation and higher consumption of goods and services. This is conducive to a higher overall economic growth and GDP [19]. Nevertheless, it is essential to optimize the cost-benefit relation in all public expenditure, especially when it comes to healthcare. The vast majority of analyses and studies carried out in this area indicate that through the improvement of health system efficiency, health equity and health outcomes, the benefits of investing in primary care outweigh the costs [16].

As was mentioned previously, Portugal was one of the first countries to truly strengthen and invest in primary healthcare, in order to stop overloading emergency rooms and improve health outcomes, and a pioneer in the creation of family health units (USFs). These produced better health outcomes than ordinary primary care facilities (UCSPs) in almost every health indicator, and yet studies conducted in 2006 [20] and 2018 [21] regarding the costs in 2006 and 2015 respectively, showed a substantial reduction in costs associated with this type of unit.

The 2006 study, conducted by the Portuguese Association of Health Economy (APES), aimed to compare the costs associated with the experimental remunerative system (RRE) present in USFs with the costs present in a typical health center. It concluded that the average cost per user was 93€ lower in an RRE facility. When controlled for other factors, this number was 104€ per user, and 59€ when only physician and nurse pay was considered, with drugs and complementary diagnostic means and therapeutics accounted for.

Furthermore, this cost reduction didn't come at the expense of better care, in fact there were more consultations per user, and the cost per consultation was lower. On the other hand, health professionals in USF's were on average more competent, perhaps because better health professionals were more likely to be less professionally risk-averse and willing to participate in this different method. Even accounting to this auto selection using previous results, the study concluded that there were still cost reductions associated solely with the remunerative method. This study estimates the overall cost reduction in 2005 from these units was €8.9 million.

The 2018 study, conducted by the National Coordination for the Reform of Primary Healthcare (CNCSP), was aimed at comparing the costs associated with USF and UCSP facilities. Firstly, it concluded that the ratio of users per health professional was substantially higher in USF B units, which allowed more efficient allocation of human resources.

It also concluded that cost per user and cost per registered user was lower in USF type B facilities, even when accounted for overtime pay in UCSPs and intern costs, as shown in figure 4.

	USF B	UCSP	UCSP var.	
Cost / Registree	265 €	289 €	24 €	9%
Cost / User	362 €	429 €	67 €	19%

Figure 4: Cost per registered user and cost per user without overtime pay costs of UCSP workers and including intern costs [21]

Considering various scenarios, it determined that the global cost was always lower in a USF type B standard functional unit than in a UCSP equivalent. It also concluded that for a standard functional unit, all health indicators were higher for type B USFs, and all costs except human resources were lower, specifically regarding pharmaceuticals, diagnostic tools and therapeutics, emergency room visits and avoidable admissions, because USF users were less likely to require being admitted or visiting the ER.

In summation, according to this study, USFs lead to better short, medium and long-term health outcomes, and are more efficient than their UCSP coun-

terparts, since they have a lower global cost. Moreover, if the entire population was registered in type B USFs, there could be a significant improvement in all health indicators as well as savings of over €100 million, or roughly 1,2% of the total government spending in 2019, rendering these units not only economically viable but also desirable.

3.2 Qualitative evolution of the health profile

Since the implementation of this new system, there have been different studies with the intent of evaluating the satisfaction of users and workers in primary healthcare. One of the purposes of the system's implementation was to provide better healthcare to the population while at the same time valuing the importance of workers in the area. Qualitative studies allow to perceive the evolution of the system toward its goals.

3.2.1 Satisfaction of general population

Even before these policies were implemented, there was already some attention to the needs and wants of users in primary care, and the belief that these would lead to the benefit of the healthcare sector in general [23]. A study conducted in 2001 [24], which aimed to assess the satisfaction of primary care users in the LVT region, showed that 75% of inquired users would recommend their primary healthcare unit to friends and family and 78% see no reason to change to another family doctor, which seems to be a positive indicator for the functioning of primary care at that time. The questionnaire handed out in the study had 5 dimensions of focus: (1) Relation and communication; (2) Medical care; (3) Information and support; (4) Continuity and cooperation; (5) Service organization. The dimensions which showed better evaluations were (1) and (2) with around 40% of users considering medical care as excellent (excellent being the top score in a scale of 5). These positive results are mostly due to the interpersonal relation provided by the family doctor. The results turned out much worse when it came to dimensions related to organizational and management aspects, the most mentioned problems being accessibility, availability and overall organization. Analysis of comments given by users demonstrated a common dissatisfaction with administrative workers and a low visibility of nurses, as they are practically not mentioned.

The creation of USFs should have, according to its goals, helped solve some of the problems identified. Due to the more independent profile of USFs these were believed to be able to efficiently tackle organizational issues, and the small composition of its team should improve the interpersonal relationship between worker and user.

After the implementation of the reform, the satisfaction of users was once again assessed in 2015 [22] as part of the MCSP. This study was conducted at a larger scale, providing results of a representative sample of primary care users in Continental Portugal, inquiring users of USFs, both of model A and model B, and UCSPs. In general terms, the satisfaction index of users in the study had an average of 77,8% with almost half the users placing in the top quintile. The organizational dimension shows lowest average value, yet still has a positive value with 71% average of satisfaction index, as can be seen in Figure 5. When seen only in the LVT region [25],

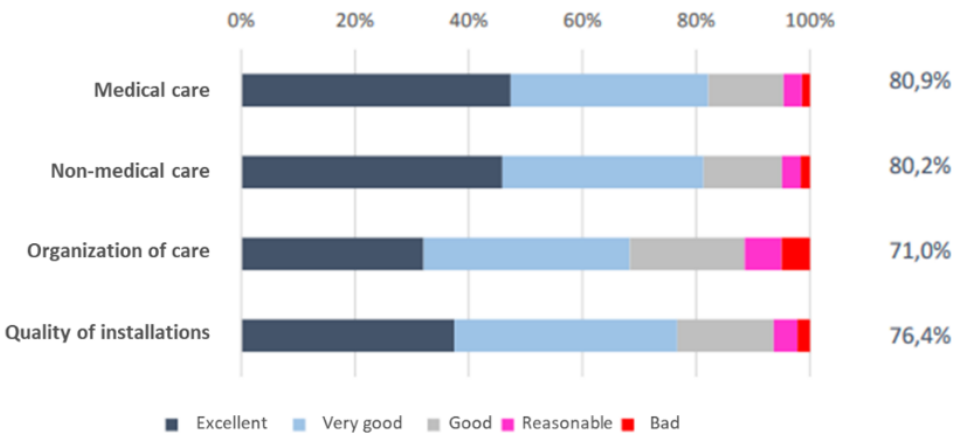

Figure 5: Distribution of the results obtained for user satisfaction in each dimension [22]: Medical care; Non-medical care; Organization of care; Quality of installations.

for comparative purposes, the satisfaction average of the organization of care was 69,6% in this last study, showing a positive change from 2001. Within this dimension, accessibility seems to have the worst average, making it a still exiting problem even with the aforementioned evolution.

As predicted, since it pertained to medical care, the interpersonal component received very positive results. An important development as it is a greatly valued component in primary healthcare.

A new dimension which has arisen is non-medical care. Within this dimension, two important components can be analyzed, nursing and clinical secretary (analogous to administrative workers). Both got positive results, yet users seem to be more satisfied with nursing when compared to clinical secretaries. The creation of the nursing component and user satisfaction shows the change in importance of this position, which seemed to be much lower before.

When comparing results by type of institution (Figure 6), it is possible to see that satisfaction indexes seem to be larger in model B USFs, when compared to model A USFs which have a better index than UCSPs. These results indicate that the implementation of these new units, especially those with a capitation model, is beneficial for user satisfaction. Another interesting result is the relation between satisfaction index and unit dimension, which seems to be inversely proportional, that is, smaller units get better indexes. In bigger units, there seems to be a worse satisfaction with the quality of installations and with the organization of care, with a special incidence on accessibility, as a bigger unit will cover a larger geographical area.

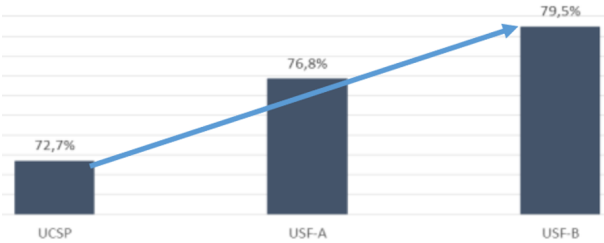

Figure 6: Relation of population's satisfaction index with unit type [22].

In the previous study, a comparison with results obtained in 2009 by the same organization is done, allowing the analysis of satisfaction evolution during this interval. In these you can see a positive evolution of average satisfaction index in all regions, which indicates a success in the system's implementation (Figure 7).

3.2.2 Satisfaction of healthcare workers

The implementation of the USFs also aimed to value the position of healthcare workers, by adding a capitation system. This system was believed to increase workers motivation and efficiency, which would be beneficial for the health status of the country.

Studies aiming to measure healthcare workers' satisfaction are less general and more geographically focused (most of them study only a sub-region or even just one healthcare unit), which makes the analysis of this field more difficult.

In 2008 [26], the MCSP analyzed the successes and problems of USFs identified by primary care workers. Although there was high variability in answers both by type of work and by region, some consistencies were found and can be considered significant.

A very consistent problem was the lack of human resources, pointed out especially by nurses and administrative workers, which can be due to the rigidity of the organizational model of the public sector and budget restrictions. Other identified problems are the low formation of workers with regards to the new organizational system, the difficulties in communication between different sectors, lack of necessary material and inadequate installations. Besides these, another problem that has caught the author's attention is the undefined data about the incentives program. Yet, with the growth of model B units, the capitation system and the objectives to follow are now better defined, so healthcare workers opinion on this topic should have improved over the years.

When it comes to successes, most healthcare workers see a growth in patients' accessibility to their health unit since the implementation of USFs. This can be attributed to the increase in number of these facilities, as they have a smaller size and cover a smaller geographical area. Autonomy, teamwork and worker motivation are also identified as successes and seem to be correlated with each other leading to a better work environment. A curious result is the appearance of the computer information systems as both a consistent problem and a success. This means this system is viewed as flawed yet as an important part of the implemented system.

Presented in the same study are the problems and successes identified by region, with the ones for the LVT region present in Table 2 and were used in our survey for comparison with the present situation.

A study conducted in the Central Region [27]

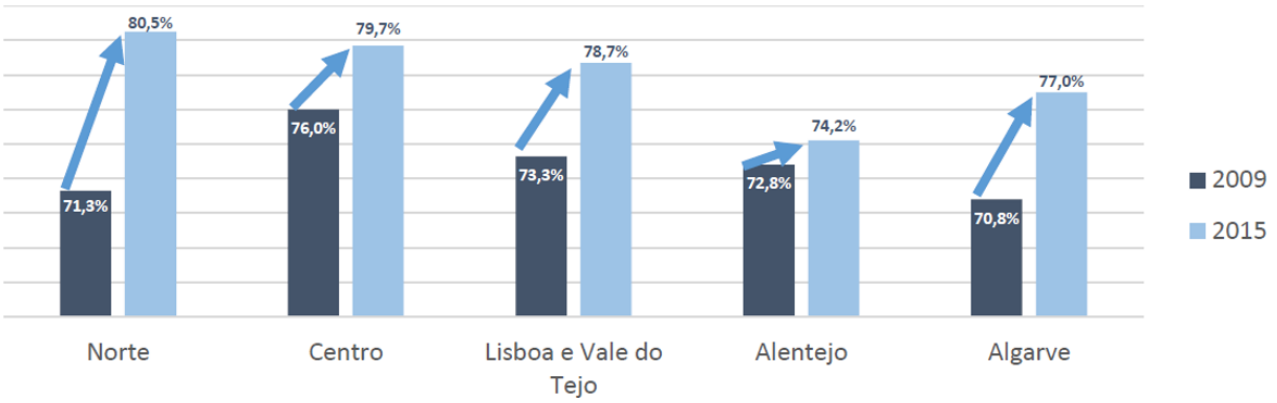

Figure 7: Evolution of population's satisfaction index between 2009 and 2015 by region [22].

shows that workers in model B USFs have higher satisfaction indexes in different areas, being the one with the higher gap related to salary. The creation of an incentive-based program leads to workers feeling more rewarded for their actions, explaining the different values obtained. In terms of care improvement and the current quality of provided care, workers seem to agree that it has improved when model B is implemented.

In general terms, the areas with least satisfaction from healthcare workers of USFs of the central region in 2016 were remuneration, equipment and installations and management bodies. Yet, when it comes to the improvement of care, the results are very positive with an average satisfaction index of 80,7%. When comparing types of workers, there are no major changes, with the exception of nurses which seem to be the least content with remuneration and technological and financial resources when compared to doctors and administrative staff. As it pertains to equipment, doctors seem to be more satisfied, perhaps due to the different equipment used by each worker.

Table 2: Ten most identified problems and successes by healthcare workers in the LVT region, divided by type of worker (Administrative, Doctors and Nurses) [26]

	Administrative	Doctors	Nurses
Problems	1. Human Resources 2. Autonomy 3. Equipment 4. Remuneration 5. Professional development 6. Teamwork 7. Computer 8. Information Systems 9. Installations 10. Work organization 11. Communication and articulation	1. Work Organization 2. Information Systems 3. Legislation 4. Indicators 5. Autonomy 6. Installations 7. Human Recourses 8. Accessibility 9. Professional development	1. Communication and articulation 2. Human Resources 3. Equipment 4. Work organization 5. Autonomy 6. Professional development
Successes	1. Accessibility and user satisfaction 2. Teamwork 3. Professional satisfaction 4. Work organization 5. Communication and articulation 6. Equipment 7. Computer Information Systems 8. External Image of Unit	1. Teamwork 2. Accessibility and user satisfaction 3. Work organization 4. Professional development 5. Community Intervention 6. Autonomy 7. Professional satisfaction 8. Communication and articulation 9. Computer Information Systems 10. Human Resources	1. Accessibility and user satisfaction 2. Work organization 3. Teamwork 4. Autonomy 5. Community Intervention 6. Family Nurse statute 7. Computer Information Systems 8. Fulfillment of Indicators

4 Questionnaire

With the objective of obtaining an up-to-date quantitative outlook on the workplace satisfaction of healthcare workers in USFs and UCSPs, a short questionnaire was prepared and mailed to various USFs and ACeS in the Lisboa e Vale do Tejo region. The questionnaire consisted of two main parts: the first one for primary healthcare workers in general, and the second one for USF workers. It contained multiple choice questions and some open questions, in order to have both statistically relevant and informative results.

Although this allowed us to somewhat quantify our interpretations of the studies that were explored, the analysis of the responses must be prefaced with a caveat: because only 26 answers were obtained, it cannot be considered entirely representative, and serves mostly as a way for us to analyze up-to-date real world data and examine whether it is consistent with our previous knowledge and assumptions.

The questionnaire was made available via email to all ACeS, USFs and UCSPs in the Lisboa e Vale do Tejo region through the following link, where responses were monitored over the course of two weeks: `https://forms.gle/E2h2SyphkiTaM2uF8`.

Data from 13 nurses, 6 administrators and 7 doctors, with wide-ranging levels of experience, and from different types and models of health facilities was obtained, as is shown in Figure 8.

First, it was inquired about how healthcare workers rated the quality of their workplace regarding three categories, namely infrastructures, equipment and human resources. The results that were obtained are presented in the graph in Figure 9.

It can be noted that, generally, workers rated their workplace as relatively average, as all three distributions are very similar and resemble a normal distribution.

However, if this data is broken down by the type of medical facility (figure 10), it becomes apparent that there is a difference in how medical proffessionals from USFs and UCSPs rated the quality of their facility. In all three categories, USF workers rated their workplace better than their UCSP counterparts, especially as it pertains to human resources. This is more likely due to the poor rating of human resources among UCSP workers, due to the lack of human resources in general in the national health service. This seems mitigated in USFs, likely because working as a team probably improves respondents' views on the quality of human resources.

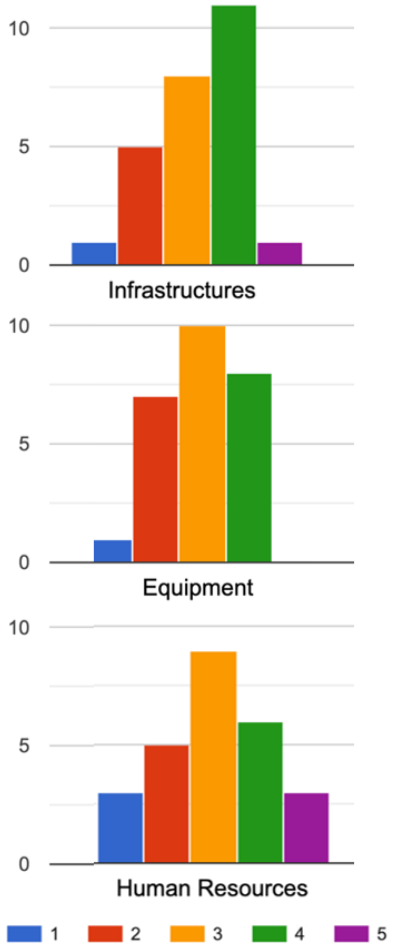

Figure 9: Respondents' rating of the quality of their workplace, on a scale of 1 (Bad) to 5 (Excellent), in the categories of Infrastructures, Equipment and Human Resources

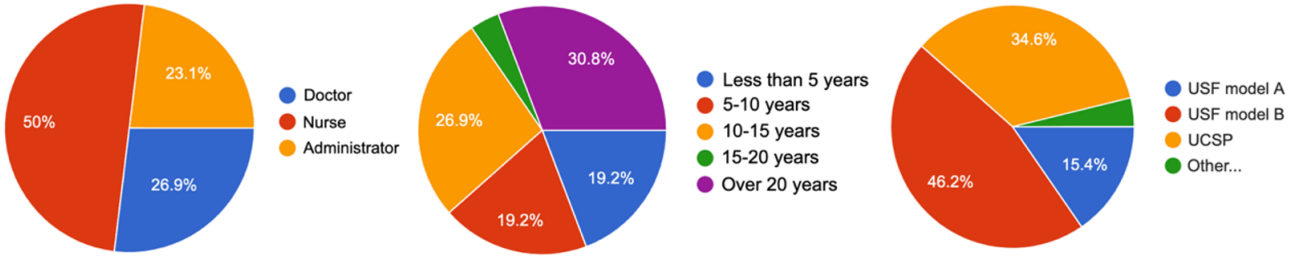

Figure 8: Breakdown of respondents by profession, experience and type and model of health unit or facility

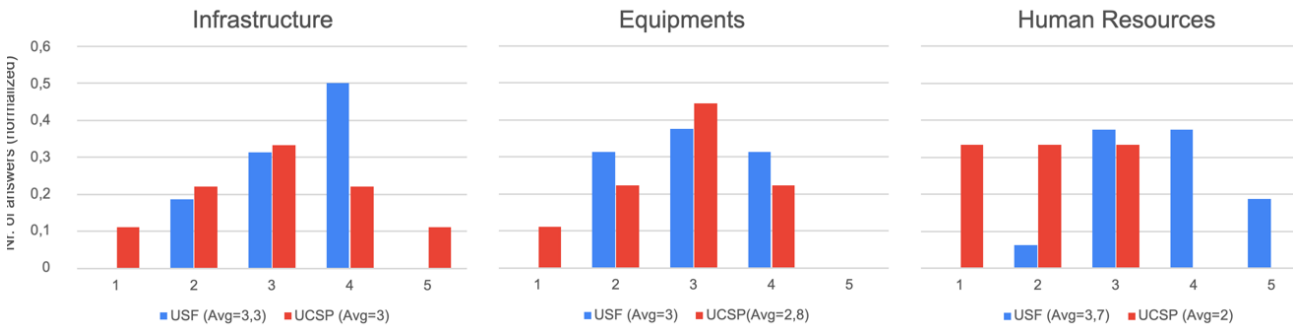

Figure 10: Respondents' rating of the quality of their workplace, on a scale of 1 (Bad) to 5 (Excellent), in the categories of Infrastructures, Equipment and Human Resources, broken down by type of facility (USF vs. UCSP)

When asked about the standard of care that patients receive at the respondents' facilities, the following results were obtained, as shown in figure 11.

There seems to be a general satisfaction with the quality of care being provided among the respondents of this questionnaire.

However, there is again a substantial difference in the degree of the healthcare workers' satisfaction in regard to this metric, as shown in figure 12, with the USF workers rating the quality of care markedly higher than the UCSP workers. Notably, the average answer for a USF worker is 4,6, and there was no lower rating than 4 out of a possible 5. This is consistent with the data that suggests that USFs perform better than UCSPs in regard to their users' health indicators.

Subsequently the respondents were asked about their personal satisfaction with 4 categories: individual autonomy, teamwork, articulation with other bodies (ARS, ACeS, etc.), and remuneration. Most of these indicators are rated generally positively, perhaps with the exception of remuneration. This data is shown in figure 13.

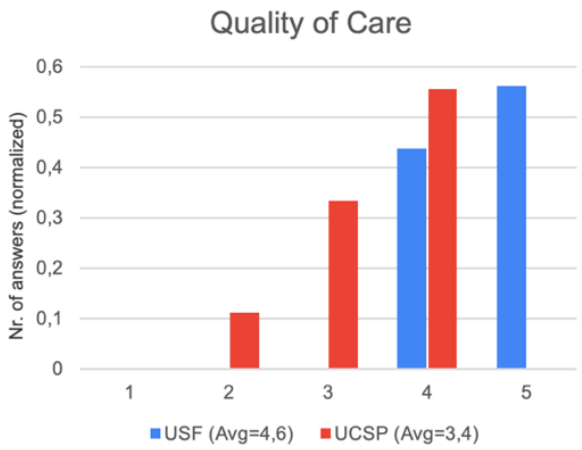

Figure 12: Respondents' rating of the quality of care, on a scale of 1 (Bad) to 5 (Excellent), regarding the quality of care that their facility's users receive, broken down by type of facility (USF vs. UCSP)

As it pertains to the breakdown by type of facility, depicted in figure 14, it is apparent that the same is true as in previous questions, namely that USF workers show higher degrees of personal satisfaction among all categories, especially as it pertains

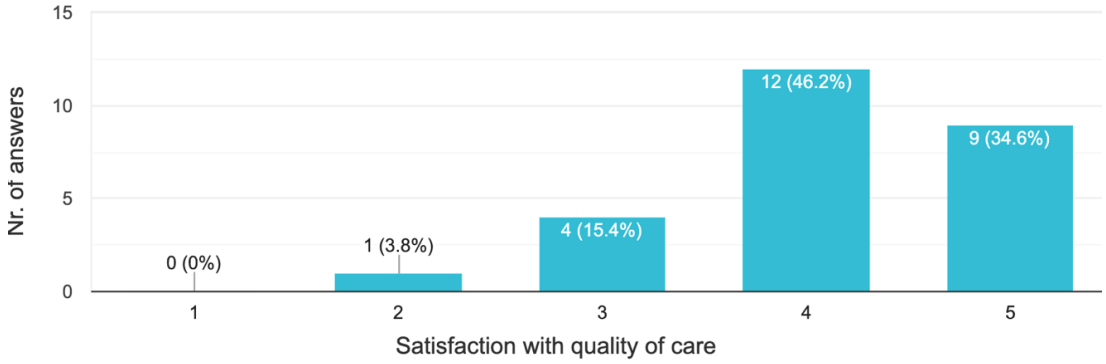

Figure 11: Respondents' rating of the quality of their workplace, on a scale of 1 (Bad) to 5 (Excellent), regarding the quality of care that their facility's users receive

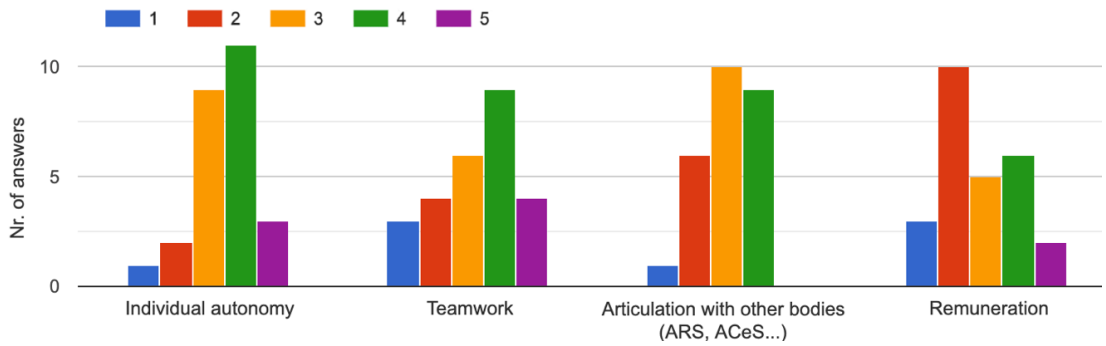

Figure 13: Respondents' rating of their personal satisfaction from a scale of 1 (Bad) to 5 (Excellent) in 4 categories: Individual Autonomy, Teamwork, Articulation with other bodies (ARS, ACeS...) and Remuneration

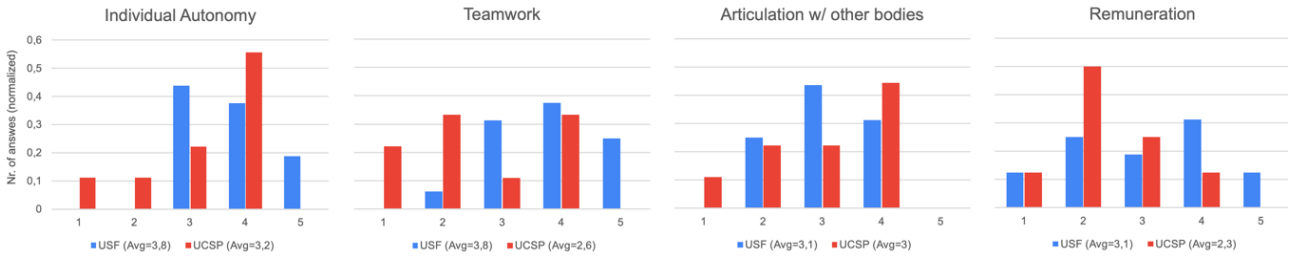

Figure 14: Respondents' rating of their personal satisfaction on a scale of 1 (Bad) to 5 (Excellent) in 4 categories: Individual Autonomy, Teamwork, Articulation with other bodies (ARS, ACeS...) and Remuneration; broken down by type of facility (USF vs. UCSP)

to teamwork and remuneration, where as opposed to what can be observed in the previous graph, these workers rated their satisfaction with this metric positively. This is consistent with the presented studies that showed significant satisfaction among medical professionals in USFs as it pertains to these metrics. The USFs' unique remunerative system seems to mitigate concerns with remuneration, that seem to be prevalent among UCSP workers.

The second part of the questionnaire consisted of questions only directed at the USF workers. Initially, respondents were asked whether they felt that their work was valued from a standpoint of remuneration when compared with other health professionals. The responses that were obtained are illustrated in figure 15.

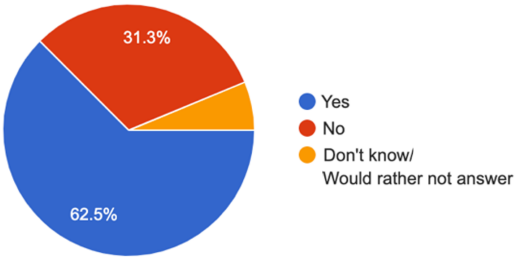

Figure 15: Breakdown of respondent's answers on whether they felt their work was valued from a remunerative standpoint

A 2-1 majority of the respondents who chose to answer this question said they felt that their work was well paid when compared to other health professionals, which indicates that the objective-oriented method of payment benefits these workers financially in comparison to how other healthcare workers are remunerated, which as mentioned previously is consistent with publicly available data.

It was also asked whether the respondents felt that the action plan that is elaborated within the team results in better patient care. The results are depicted in figure 16.

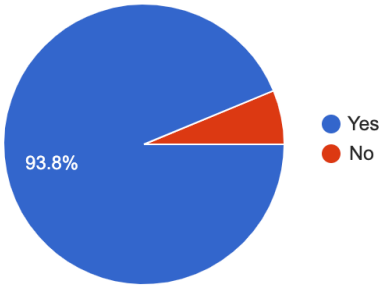

Figure 16: Breakdown of respondents' answers on whether they felt the action plan contributed to better quality of patient care

A vast majority of respondents, 93.8%, thought that this action plan resulted in a higher quality of care. It was included a follow-up question, which

inquired about why respondents answered the way they did. Among those who answered in the affirmative, some of the provided justifications for why the action plan improves the quality of care are the following:

- It's elaborated based on some deficit detected by the team
- It's elaborated as a team
- Improves organization and effort directed at the users
- Helps workers focus on the bigger goals
- Covers both prevention and treatment of disease
- Promotes consultation of relevant information in different areas according to needs, population etc.

There was also a justification given for a negative answer, namely that the indicators aren't always conducive to better health outcomes.

Lastly, it was inquired about the areas that respondents thought presented problems or successes in their facility. Respondents were asked to choose a maximum of 6 areas each. The results were as follows (shown in figure 17), for success and problem areas ordered by how many answers each area got in each question.

It can be noted that the majority of respondents chose teamwork, user accessibility and work organization as areas of success. These were also consistently shown as areas of success in the studies that were previously analyzed.

Equipment and work materials and information systems were mentioned as problem areas. Although issues with information systems were prevalent in the studies that were previously presented, it's notable that equipment was considered by such an overwhelming majority of users as a problem area, as this was not particularly the case in those studies.

It was also asked if there were more problem or success areas that had not been mentioned. Although there weren't any suggestions of additional success areas, the following problems were put forward:

- Aged vehicle, insufficient for various activities
- Sterilization circuit and cleaning company with flaws
- Recurring lack of equipment stocks, PC's, and office spaces
- Some professionals don't strictly adhere to team procedures and decisions
- Slow information systems in the registration of clinical records
- Lack of support from managers/administrators

These two graphs where then combined and displayed according to the percentage of respondents that chose a certain area and ordered according to (number of positive answers - number of negative answers) for each area, as shown in figure 18.

Teamwork, user accessibility, work organization and professional autonomy rank the highest, and legislation, equipment and work materials, and information systems rank the lowest.

As was previously mentioned, this is generally consistent with previous reports, with the possible exception of equipment, which got a markedly lower mark in our questionnaire, and perhaps also physical spaces, which were rated rather positively among

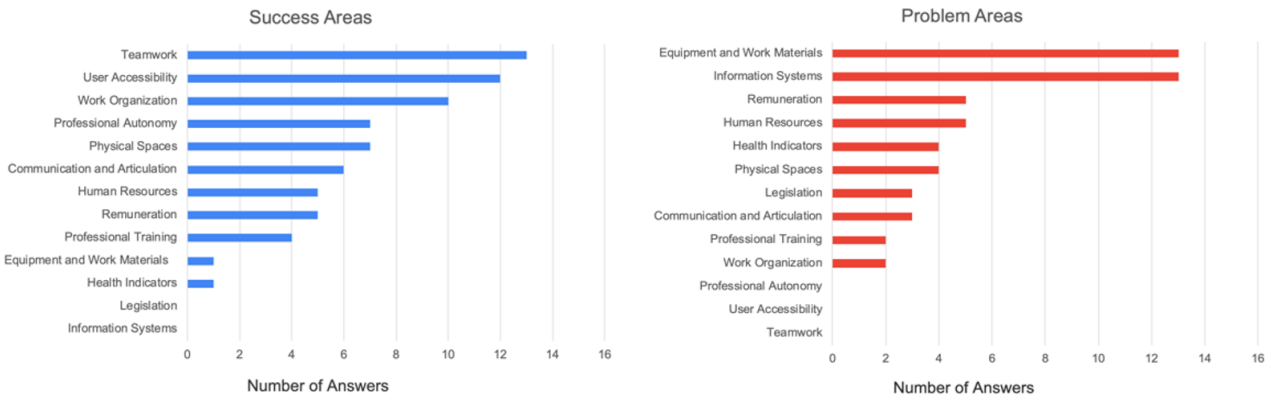

Figure 17: Number of respondents who felt a given area presented a problem or a success in their workplace

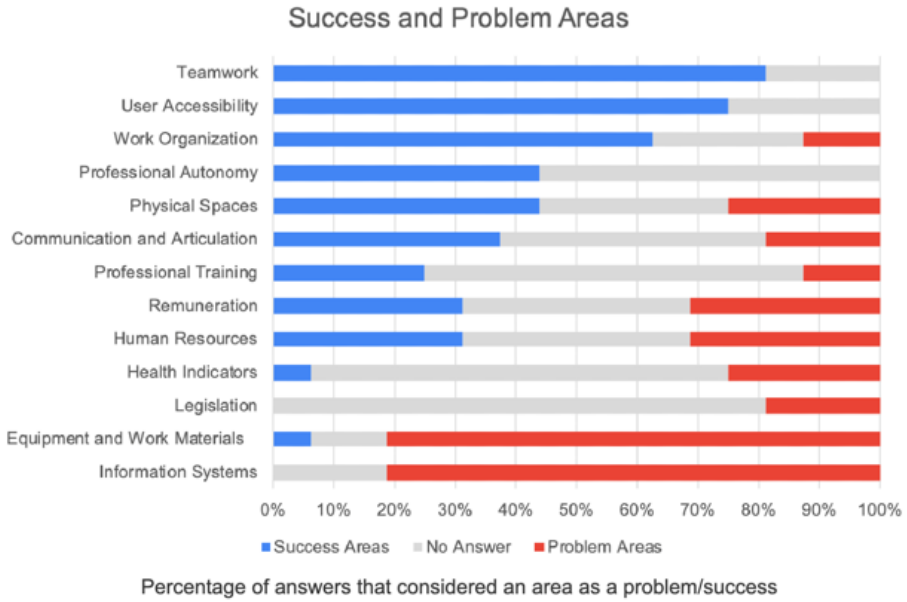

Figure 18: Number of respondents who felt a given area presented a problem or a success in their workplace, displayed according to the percentage of respondents that chose a certain area and ordered according to (nr. of positive answers – nr. of negative answers) for each area

our respondents, but largely considered a problem in previous studies.

Some areas got fewer answers, like legislation, health indicators and professional training, suggesting that perhaps they aren't very controversial or very important. Other areas had a lot of answers, namely teamwork, equipment and work materials, information systems and user accessibility, suggesting that they are front and center in the minds of these workers, either because they present pressing problems or areas of substantial success.

5 Conclusion and Limitations

In order to study the impacts of the creation of USFs in the Portuguese primary care network, a multimethodical strategy was chosen, in order to focus not only on qualitative points, such as quality of care, but also on quantitative points, with the evolution of health indicators and financial aspects regarding this change.

Analyzing the health indicators of the Portuguese health system it is possible to conclude that health in Portugal has improved over the last two decades concerning overall life expectancy, especially for those over 65 years old, although there's still a significant difference between both genders since women are expected to live almost 4 years longer than man. This improvement can be explained by better coverage of the Portuguese elderly although Portuguese men may attend less to primary care than Portuguese women. Infant mortality rate and maternal mortality rate have decreased substantially over the last two decades and this probably is due to a bigger and better surveillance of Portuguese pregnancies, especially in primary healthcare. When looking at the chronic diseases most prevalent in the Portuguese population and the main behavioral risk factors it is possible to conclude that they are closely correlated, and that changing behavior has an impact on the prevalence of such diseases.

The reform on the primary healthcare that is taking place since 2005 has had a significant impact on this behavioral change, mainly when looking at the number of Portuguese smokers as well as a reduction of dietary related diseases and health complications, both through the education of the population by primary care professionals and the screening and prevention of these diseases due to a better and more comprehensive coverage of primary health care. The ability of USFs to create and adapt their health plans to the population they cover and the autonomy to focus their attention on the peculiar and distinct characteristics of each population that depend on the USFs primary care, should be regarded as a possible cause for this behavioural change and for the

reduction of the prevalence of these chronic diseases. Supplementing the primary healthcare reform, the Portuguese government has also created a National Health Plan in 2015, to be implemented until the end of 2020, with four main goals that address these key health problems and that could lead to even better health outcomes in the coming years.

Some limitations of this analysis should be emphasized. Firstly, the absence of data concerning the years from 2017 until now, which can create an inaccurate idea of improvement that might not be applicable to those last years. Secondly, that it concerns only a few of the many health indicators possible for this kind of analysis. Another significant limitation is the absence of standardized health indicators concerning only primary health care which would enable an analysis focused only on this sector instead of focusing on the health system as a whole. Lastly, it is important to emphasize the fact that this analysis mainly covered conventional metrics regarding the length of life and not the actual quality of life, a problem that can create a false notion of health improvement and not actually translate the real sense of well being of the Portuguese population.

The economic analysis that was conducted arrived at the following conclusions:

- Prioritization of primary care is economically desirable, from a cost-benefit perspective, but also from a macroeconomic perspective. Although it is not clear whether investment in this area is more or less expensive, there is a clear benefit to public health, which yields macroeconomic benefits, *e.g.* as it pertains to labor force productivity and consumption;

- The innovative remunerative method used in USFs saves the government money per user, even when controlled for other factors;

- USFs, when compared to UCSPs, may lead to better health outcomes, be more efficient and have lower global costs, potentially enabling savings of over €100 Million if they were to fully replace USCPs.

This analysis has, however, some limitations, which concern the difficulty of comparing different countries' healthcare expenditures and investments, since they often have different systems, demographics and economic circumstances; and also the small number of available reports studying the economic impact of USFs, since they are a relatively recent addition to the SNS, one that is still being expanded and developed.

When doing a qualitative analysis, both the general population and healthcare workers show some improvement in satisfaction since the implementation of USFs. In terms of the general population, users of USFs have shown to be more satisfied with provided care. A result not only related to the relation with workers and doctors but also due to the small size of these units, as bigger sized units seem to have worse quality of installations and organization of care. In order to complement this analysis and support our findings with up-to-date real-world data, a short questionnaire was prepared. The answers that were received were, in general, consistent with what was concluded from research. It also allowed for a comparison of the job satisfaction of USF and UCSP workers, which in conjunction with questions regarding problem and success areas was helpful to more directly corroborate what had been found about the perceived benefits and drawbacks of USFs, namely that, according to USF workers, their facilities contribute to better remuneration of healthcare professionals, better teamwork and organizational capacity, better user accessibility and better quality of care, but issues with information systems, equipment, and human resources still pose problems. This analysis is limited by the fact that time constraints and the COVID-19 pandemic didn't enable us to conduct a very statistically representative study, only obtaining 26 responses from healthcare professionals in the LVT region.

Finally, although special attention was given as to not compare results from different geographical areas, in an effort to maintain research integrity, there is a big variability of samples in the different studies that were analyzed, presenting a limitation to the qualitative analysis.

6 Acknowledgements

A special thank you goes to the healthcare professionals of the LVT region, not only for their availability and kindness in answering our questionnaire, even when subjected to time and personal limitations due to the unusual overloading circumstances created by the current Covid-19 pandemic, but also for their extraordinary dedication and perseverance during these difficult times. This report is dedicated to them.

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