

The role of primary healthcare commissioning in the performance of primary healthcare units and healthcare equity in Portugal

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The role of primary healthcare commissioning in the performance of primary healthcare units and healthcare equity in Portugal

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THESIS OUTLINE

This thesis is structured as follows:

The Abstract section provides a summary of the thesis.

Chapter 1 (Rationale) explains the motivations behind conducting this thesis and the relevance of studying the effectiveness of commissioning in improving quality, equity, and access to primary healthcare.

Chapter 2 defines the aims of this thesis.

Chapter 3 (Background) includes a literature review followed by an explanation of the evolution of the commissioning process in Portugal.

In Chapter 4, the first study is presented with the objective of clarifying the effect of commissioning on the results obtained by primary healthcare units in Portugal.

Chapter 5 presents the second study, which discusses the association between socioeconomic factors and the results of primary healthcare commissioning indicators.

Chapter 6 provides the general conclusions of this thesis, along with recommendations and suggestions for future research.

LIST OF PUBLICATIONS

CORE PAPERS

The 2 papers described below are the core structure of this Thesis. They are listed by order of appearance on the Thesis.

(Ao abrigo do Art.º 8º do Decreto-Lei n.º 388/70, fazem parte desta dissertação os seguintes trabalhos publicados ou em publicação)

da Luz Pereira, A., Ramalho, A., Viana, J., Pinto Hespanhol, A., Freitas, A., & Biscaia, A. (2021, June). *The effect of commissioning on Portuguese Primary Health Care units' performance: A four-year national analysis*. Health Policy, 125(6), 709–716. <https://doi.org/10.1016/j.healthpol.2021.02.008>

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In addition, during the duration of this Thesis conduction the Candidate was also a co-author:

- Biscaia, A., ... Pereira, A. (2019) Chapter 23. La via portoghese alla Primary Health Care in Maciocco, G. **Cure primarie e servizi territorial - Esperienze nazionali e internazionali**, ISBN 978-88-7466-796-3
- Biscaia, A., ... Pereira, A. **O Momento Actual da Reforma dos Cuidados de Saúde Primários em Portugal - As oito edições de 2009 a 2017** ISBN:978972891076
- Biscaia, A., ... Pereira, A. **7x7 Medidas para os Cuidados de Saúde Primários | Uma Equipa de Saúde Familiar para Todos**, USF-AN 2022/2024
- Jacinto, N., ... Pereira, A. **Um Novo Futuro para a MGF** ISBN: 978-972-96039-8-3
- Pereira, A. L. (2018). **Indicadores: o que são, o que não devem ser e o que poderão ser**. In Revista Portuguesa de Medicina Geral e Familiar (Vol. 34, Issue 3, pp. 124–126). Associação Portuguesa de Medicina Geral e Familiar.
<https://doi.org/10.32385/rpmgf.v34i3.12444>
- Simões, J., Magalhães, J. P. M., Biscaia, A., Pereira, A., Augusto, G. F., & Fronteira, I. (2021). **Organisation of the State, model of health system and COVID-19 health outcomes in six European countries, during the first months of the COVID-19 epidemic in 2020**. In The International Journal of Health Planning and Management (Vol. 36, Issue 5, pp. 1874–1886). Wiley. <https://doi.org/10.1002/hpm.3271>
- Magalhães, J. P., Pestana, J., Pereira, A., Biscaia, A. (2023). **Are avoidable hospitalizations associated with the primary healthcare governance model? a public health perspective**. Population Medicine, 5(Supplement), A910.
<https://doi.org/10.18332/popmed/164619>
- Magalhães, J. P., Pestana, J., Silva, R. L., Pereira, A., & Biscaia, A. (2023). **Avoidable hospital admissions depend on the primary healthcare governance model? A global health perspective from Europe countries**. In The American Journal of Economics and Sociology. Wiley.
<https://doi.org/10.1111/ajes.12523>

RESUMO

INTRODUÇÃO

Os Cuidados de Saúde Primários (CSP), são a base do Serviço Nacional de Saúde (SNS), oferecendo cuidados abrangentes e personalizados e sendo o primeiro ponto de contato dos utentes com o SNS. Em Portugal, os CSP ganharam um novo impulso com a reforma implementada em 2005, nomeadamente com a criação das Unidades de Saúde Familiar (USF) e com o desenvolvimento do processo de contratualização de serviços em CSP. Os indicadores da Saúde mostram uma evolução positiva nas últimas décadas com taxas de internamento hospitalar evitáveis, taxa de mortalidade padronizada por causas evitáveis e taxa de mortalidade por causa tratáveis, abaixo da média da Organização para a Cooperação e Desenvolvimento Económico (OCDE) tendo-se também verificado aumentos na esperança média de vida. O desenvolvimento do processo de contratualização com todas as unidades prestadoras de cuidados ao nível dos CSP e a possibilidade de escolha de indicadores ao nível regional e local permitiu um ambiente propício à investigação relativa à associação dos resultados dos indicadores das unidades de saúde com a contratualização e o contexto dessas unidades.

OBJECTIVOS

Este trabalho teve como objetivos analisar a associação da contratualização com os resultados da atividade das unidades de CSP em Portugal e a equidade em saúde. Para tal, foram realizados estudos para comparar o resultado de indicadores em unidades dos CSP que contratualizaram um dado indicador com unidades que não o contratualizaram. Foi, depois, estudada a associação entre os resultados de desempenho e as características do contexto populacional e organizacional das unidades dos CSP. A finalidade foi identificar recomendações para melhorar o desempenho das unidades de CSP e a equidade em saúde em Portugal.

MÉTODOS

Foram utilizados os resultados dos indicadores de desempenho dos CSP das unidades em Portugal continental publicados pela Administração Central do Sistema de Saúde (ACSS) de 2013 a 2016.

Os indicadores foram calculados para cada unidade tendo também sido assinalada a contratualização ou não desse indicador.

O modelo organizacional da unidade (UCSP - Unidade de Cuidados de Saúde Personalizados - correspondente ao modelo anterior à Reforma de 2005 dos CSP e ainda em vigor em algumas unidades, USF Modelo A ou USF Modelo B – os dois modelos implementados pela Reforma de 2005, com maior autonomia funcional sendo que o B tem associado um modelo remuneratório sensível ao desempenho) e determinantes socioeconómicos também foram usados para caracterizar as unidades. A percentagem de utentes idosos, a percentagem de utentes de nacionalidade portuguesa e a percentagem de utentes com insuficiência económica foram calculadas com base nos dados da ACSS para cada unidade. A taxa de desemprego, a densidade populacional e a taxa de abandono escolar antes da conclusão da educação obrigatória foram calculadas através de médias para a área geográfica onde a unidade está inserida.

Todas as unidades que encerraram ou mudaram de modelo organizacional durante o período do estudo foram excluídas da análise. De acordo com esse critério, das 1104 unidades de CSP iniciais, 378 foram excluídas. As 726 unidades restantes representavam 8,519,723 utentes de um total de 10,664,898 utentes do SNS (79.9%). Foi realizada uma análise descritiva para cada indicador por ano, por modelo e globalmente.

A análise fatorial exploratória foi utilizada para analisar a evolução dos resultados em diferentes contextos socioeconómicos antes e depois da contratualização. Foram criados índices de variáveis de contexto para identificar os fatores subjacentes ao contexto das unidades de CSP e esses fatores foram usados para dividir as unidades em grupos. Os grupos foram criados dividindo cada fator em tercis e o número de fatores foi definido pelo critério de Pearson ($\geq 80\%$).

Para analisar se a evolução dos indicadores contratualizados está relacionada com as variáveis de contexto socioeconómico das unidades de CSP, foi utilizado o modelo de equações de estimação generalizada (GEE - generalized estimating equations). Para analisar se existe uma atenuação das diferenças nos resultados em diferentes contextos socioeconómicos antes e depois da contratualização, foi utilizada a análise fatorial.

RESULTADOS

Quando analisamos a evolução dos resultados dos indicadores nas unidades que os contratualizaram, verificamos que a maioria melhorou, com exceção do indicador relacionado com a prescrições crónicas de mais de cinco medicamentos no idoso. Quando analisamos a evolução dos resultados dos indicadores nas unidades que não os contratualizaram verificamos que a maioria dos resultados também melhorou, com exceção dos indicadores relacionados com o rastreio do cancro da mama, do colo do útero e o indicador relacionado com a prescrições crónicas de mais de cinco medicamentos no idoso. Em geral, os valores dos resultados dos indicadores foram melhores em 2016 em comparação com 2013 e nas unidades Modelo B em comparação com os outros modelos. A comparação entre o grupo de unidades que contratualizaram e não contratualizaram determinado indicador mostrou diferenças significativas em 10 dos 13 indicadores. As equações de regressão linear indicaram que a contratualização está associada a uma melhoria dos resultados dos indicadores em todos os modelos organizativos, sendo essa melhoria maior nas USF Modelo A, seguindo-se, por ordem decrescente, as USF Modelo B e, finalmente, as UCSP.

Quando analisamos os fatores de contexto, verificamos que os fatores analisados apresentam uma relação estatisticamente significativa com a evolução dos resultados dos indicadores. Verificou-se que o modelo organizacional das unidades, a percentagem de utentes com nacionalidade portuguesa, a taxa de desemprego, a percentagem de idosos e a densidade populacional foram os fatores associados a um maior número de indicadores. Quando analisamos os indicadores, verificamos que os indicadores relacionados com o controlo da hipertensão, com o registo de hábitos tabágicos e o acompanhamento adequado em planeamento familiar foram os que apresentaram associação significativa com um maior número de variáveis de contexto. A análise baseada no modelo organizacional das unidades mostrou que as USF, e dentro destas as USF Modelo B, obtiveram melhores resultados e menores custos em medicamentos e exames diagnósticos em comparação com as UCSP.

CONCLUSÕES

Ao avaliar dados nacionais ao longo de quatro anos, o estudo mostrou que houve melhoria nos resultados da generalidade dos indicadores, sendo mais marcada nos indicadores contratualizados em comparação com a melhoria verificada nos indicadores não contratualizados. Foi também possível demonstrar que características do contexto, como o modelo organizacional da unidade e a nacionalidade dos utentes, estão associados a diferenças nos resultados, apresentando as USF-B e as unidades com uma maior percentagem de utentes de nacionalidade portuguesa melhores resultados. As USF com um esquema remuneratório sensível ao desempenho (USF modelo B) apresentaram, igualmente, melhores resultados. Não foi encontrada evidência que as melhorias nos indicadores contratualizados foram alcançadas com prejuízo do resultado dos indicadores não contratualizados. A contratualização parece ser útil na redução de discrepâncias relacionadas com o contexto, nomeadamente analisamos fatores de contexto como a taxa de desemprego e percentagem população idosa. No entanto, a adaptação aos cuidados a utentes não-portugueses e em áreas de baixa densidade populacional ainda é um desafio. As políticas de desenvolvimento de sistemas de informação em saúde, contratualização e de incentivos financeiros parecem ter sido bem-sucedidas nos CSP em Portugal.

ABSTRACT

RATIONALE

Primary healthcare (PHC) is the foundation of the national health service ('Serviço Nacional de Saúde' or the SNS), with it offering comprehensive and personalized care and serving as the first point of contact for patients with the SNS. In Portugal, PHC gained new momentum with the reform implemented in 2005, particularly with the creation of family health units ('Unidades de Saúde Familiar' or USFs) and the development of the healthcare commissioning process. Portuguese health indicators have shown a positive evolution in recent decades, with rates of avoidable hospitalizations, the standardized mortality rate from preventable causes, and the mortality rate from treatable causes below the OECD average. There have also been increases in life expectancy. The development of the commissioning process with all units providing personalized care at the PHC level, and the possibility of choosing regional and local indicators, has created an environment conducive to investigating the association between commissioning and the units' performance and its relationship with its context.

AIMS

This study aimed to analyze the association between commissioning and the outcomes of PHC units in Portugal and to investigate the association between commissioning processes and healthcare equity. To achieve this, studies were conducted to compare the results of indicators in PHC units that had undergone commissioning with those that had not. The association between the performance results and the characteristics of the population and organizational context of the PHC units was also studied. The ultimate goal was to identify recommendations to improve the performance of PHC units and health equity in Portugal.

METHODS

The PHC units' performance indicator results in mainland Portugal published by the Central Administration of the Health System (ACSS) from 2013 to 2016 were used.

Indicators were calculated for each unit, also taking into account the commissioning status of each indicator.

The organizational model of the unit (UCSP—corresponding to the model prior to the 2005 reform of PHC and still in effect in some units—and USF Model A or USF Model B—the two models implemented by the 2005 reform, with greater functional autonomy—with Model B having a performance-based remuneration model associated with it) and socioeconomic determinants were also used to characterize the units. The unemployment rate, population density, and school dropout rate before completing mandatory education were also analyzed using the averages for the area where the unit is situated.

All units that ceased to function or changed their organizational model during the study period were excluded from the analysis. According to this criterion, out of the initial 1104 PHC units, 378 were excluded. The remaining 726 units represented 8,519,723 users out of a total of 10,664,898 SNS users (79.9%).

A descriptive analysis was conducted for each indicator by year, by model, and globally. Exploratory factor analysis was used to examine the evolution of the results in different socioeconomic contexts before and after commissioning. Context variable indices were created to identify underlying factors of the PHC units' context, and these factors were used to divide the units into groups. The groups were formed by dividing each factor into terciles, and the number of factors was determined by the Pearson criterion ($\geq 80\%$).

To analyze whether the evolution of commissioning indicators is related to the socioeconomic context variables of the PHC units, a generalized estimating equation (GEE) model was used. To analyze whether there is an attenuation of differences in the results within different socioeconomic contexts before and after commissioning, factor analysis was used.

RESULTS

When we analyze the evolution of the indicator results in the units that had commissioned them, we found that most of them had improved, except for the indicator related to chronic prescriptions of more than five medications in the elderly. When we analyzed the evolution of the indicator results in the units that did not commission them, we also found that most of the results improved, except for the indicators related to breast and cervical cancer screening and the indicator related to chronic prescriptions of more than five medications in the elderly. In general, the values of the indicator results were higher in 2016 compared to 2013, with the Model B units showing the highest values. The comparison between the group of units that had commissioned and had not commissioned a specific indicator showed significant differences in 10 out of 13 indicators. Linear regression equations indicated that commissioning is associated with an improvement in indicator results across all organizational models, with a greater improvement observed in USF Model A, followed by USF Model B, and finally, UCSP, in descending order.

When analyzing the context factors, we found that the analyzed factors have a statistically significant relationship with the evolution of the indicator results. The organizational model of the units, the percentage of users of Portuguese nationality, the unemployment rate, the percentage of elderly individuals, and the population density were factors associated with a larger number of indicators. When analyzing the indicators, we found that the indicators related to hypertension control, recorded smoking habits, and appropriate family planning support were the ones significantly associated with a larger number of context variables. The analysis based on the organizational model of the units showed that USFs achieved better results and lower costs in terms of medication and diagnostic tests when compared to other models.

CONCLUSIONS

By evaluating national data over four years, the study showed that there were improvements in the results of most indicators, with them being more marked in the commissioning indicators compared to the improvement verified in the non-commissioning indicators. It was also possible to demonstrate that the context, such as the organizational model of the unit and the nationality of the patients, is associated with the results, with USF-B and units with a higher percentage of Portuguese patients showing better indicators. USFs with a performance-based payment system (Model B USF) showed better results. There was no evidence to suggest that the improvements in the commissioned indicators came at the expense of the non-commissioned indicators. Commissioning appears to be effective in reducing context-related disparities, particularly when analyzing contextual factors such as the unemployment rate and the percentage of the elderly population. However, adapting to the care of non-Portuguese users and addressing areas of low population density remains a challenge. Policies regarding the development of health information systems, commissioning, and financial incentives have proven successful in Portugal's PHC.

ACRONYMS AND ABBREVIATIONS

ACES - Health Centre Clusters / Agrupamentos de Centros de Saúde

ACSS - Central Health System Administration / Administração Central do Sistema de Saúde

ARS - Regional Health Authority / Administração Regional de Saúde

GEE - Generalized Estimating Equation

GP - General Practitioners

NHP - National Health Plan

OECD - Organisation for Economic Co-operation and Development

PHC - Primary Healthcare

QOF - Quality and Outcomes Framework

SNS - National Health Service / Serviço Nacional de Saúde

UCSP - Personalised Care Unit / Unidade de Cuidados de Saúde Personalizados

UK - United Kingdom

USF - Family Health Units / Unidade de Saúde Familiar

WHO - World Health Organization

CHAPTER 1: RATIONALE

Primary healthcare (PHC) is the cornerstone of healthcare in Portugal, as is the case in numerous other countries. It is at the frontline as the first-contact form of care when needed and as a comprehensive form of care throughout people's lives (Starfield et al., 2005).

PHC can be defined as integrated, accessible healthcare services provided by clinicians who are responsible for addressing a large number of personal healthcare needs, developing a sustained partnership with patients, and practicing in the context of family and community (Vanselow et al., 1995). As Starfield B et al. stated, "the evidence also shows that quality in primary care is associated with a more equitable distribution of health in populations" (Starfield et al., 2005).

In Portugal, PHC gained new momentum with a policy reform implemented in 2005, which led to the reorganization of primary care and the establishment of family health units ("Decreto-Lei n.º 28/2008, de 22 de Fevereiro," 2008). According to Organisation for Economic Co-operation and Development (OECD) outcome indicators, Portuguese PHC appears to perform well. Avoidable hospital admission rates for chronic conditions—an indirect measure of the quality of primary care—are well below the OECD average (OECD, 2015). Furthermore, age–sex standardized hospital admission rates fell between 2006 and 2011 in relation to asthma, chronic obstructive pulmonary disease, and diabetes, pointing to consistently good performance by PHC (OECD, 2015).

Portugal showed one of the greatest improvements among countries where the difference between observed life expectancy and expected life expectancy was greater than five years between 2000 and 2016 (Wang et al., 2017). Taking this into consideration, an editor of *The Lancet* suggested that the policies and leadership strategies of Portugal should be studied in more depth to ascertain whether recommendations relevant to other countries could be identified (Wang et al., 2017).

The reform in Portugal focused on the implementation of a new type of proximity care unit, namely, USFs, and restructured all PHC services as health center clusters ('Agrupamentos de Centros de Saúde' or ACES)(Biscaia et al., 2019; Dimitrovová et al., 2020; Rosa Biscaia & Correia Valente Heleno, 2017).

USFs' governance structure is driven by five high-level aims: the adequacy of resources; technical and clinical governance differentiation; coordination of various functional units; the development and implementation of internal commissioning; and identifying and effectively responding to diagnostic needs (MCSP, 2006).

Parallel to the creation of USF and ACES, a commissioning model of care in PHC was developed, resulting from experiments and pilot models previously operated in PHC (Biscaia A., 2008).

PHC commissioning can be defined as the “process of assessing the needs of a local population and putting in place services to meet those needs” (DoH, 2010).

Overall, commissioning is a process in which an agent “acts on behalf of a population to decide which health services to buy, using funds allocated by the government according to a formula based on health needs”. It involves decision-making regarding needs assessment, resource allocation, service purchasing, monitoring, and review (Smith, 2010). It is a process with a strategic and an operational dimension which takes place at various levels and whose main objective is to optimize the way services are provided.

Commissioning in Portuguese PHC is directed toward a set of general goals:

- Reducing the gap between the population’s current and desired health status by improving diagnostic processes, addressing the specific needs of the population, health planning, and proximity response to local needs;
- Intensifying health promotion and disease prevention efforts, focusing on reducing the burden of disease and warranting the long-term sustainability of the health system;
- Rewarding ACES and teams with best-performance in healthcare provision, as well as in economic and financial aspects, through the allocation of incentives (ACSS, 2014).

The indicators for commissioning between USF or UCSP (Personalised Care Unit - Unidade de Cuidados de Saúde Personalizados) and ACES (for the period 2014-2016) include (ACSS, 2014):

- Twelve national indicators: Common indicators for all units, set every three years by the ACSS (Central Health System Administration - Administração Central do Sistema de Saúde), according to health policy priorities (set by the National Health Plan—NHP—and priority health programs) set for the period considered, in the areas of access, care delivery performance, user satisfaction, and efficiency;
- Four regional indicators: Indicators selected every three years by the ARS (Regional Health Authority—Administração Regional de Saúde), common to all USFs/UCSPs in that health region in terms of access and/or care delivery performance, according to the priorities defined in the NHP and priority health programs at the regional level;
- Six local indicators: Two indicators selected every three years by ACES, specific to each of their USFs/UCSPs, in the areas of access and/or care delivery performance, and

four indicators proposed by USFs/UCSPs for the period, in the areas of access and/or delivery performance.

Therefore, during 2014–2016, commissioning processes were carried out based on a national set of indicators that were monitored throughout the country, and as some indicators were commissioned in some regions but not in others, a natural experimental setting to observe the impact of commissioning on the results by comparing the performance of the commissioned versus non-commissioned indicators emerged.

Commissioning is an important element of health sector reforms and provides a tool to improve performance regarding the NHP through incentives and an accountability scheme for results. As a strategic health policy instrument, it promotes management through objectives and alignment with the goals of the health system.

However, commissioning processes may also generate a conflict between the goals of efficiency and equity, such that more cost-effective services are procured, jeopardizing the services required by vulnerable populations (Henderson et al., 2017).

Equity in health is understood as the absence of avoidable and unfair differences, likely to change the health status of population groups from different social, geographic, or demographic contexts (Marmot & Commission on Social Determinants of, 2007; Marmot et al., 2008; WHO, 2010).

Equity and adequate access to healthcare result in health gains, ensure cohesion and social justice, and promote countries' development.

Access to healthcare is defined as the capacity to obtain necessary and timely quality care at the right place and at the right time (MSPS, 2010).

Adequate access depends on the services offered and on their utilization by the population. For an adequate provision of care, health services must be organized in a proportional, necessary, and sufficient way according to the population's health needs (Saúde, 2012).

Portugal has marked socioeconomic inequalities, with the country having one of the most unequal income distributions in Europe (Arnold & Farinha Rodrigues, 2015), and health inequalities are strongly linked to social determinants (Marmot & Commission on Social Determinants of, 2007): socioeconomic and educational status, lifestyle, and access to healthcare. There is a social gradient in health status, in which the lower the individuals' position in the social hierarchy, the lower the probability of achieving their full individual health potential (MS, 2015). Health inequalities particularly impact vulnerable groups according to the socioeconomic situation, individual constraints, or age group.

Although equity is one of the strategic axes of the NHP, performance indicators used in the commissioning process seem to overlook this dimension. The current model of commissioning in PHC is not without its limitations. Studies show that healthcare with incentives schemes can place a much stronger emphasis on areas incentivized through commissioning while loosening their grip on the other non-incentivized areas (Guthrie & Morales, 2014). Nonetheless, the extent to which these processes contribute to health equity is controversial. The results of one study demonstrate that practices with more vulnerable populations tend to have lower achievement rates for the clinical indicators (Doran et al., 2012). Another study revealed a decrease in variation between practices and a narrowing of the quality gap between practices serving socioeconomically deprived and affluent communities. (Doran et al., 2008).

Despite some shortcomings in the process, PHC commissioning in Portugal is currently seen as a critical tool for achieving health results and sustainability of the health system. At this point, research on the role of commissioning in health access and equity is a key point for balancing the benefits and drawbacks for the Portuguese population and for promoting innovative measures that may lead to global health gains.

CHAPTER 2: AIMS

The main objective of this study was to analyze the role of PHC commissioning on the performance of PHC units and healthcare equity in Portugal.

Based on this overarching goal, the following specific objectives were defined:

- Explore the association between PHC commissioning and PHC units' performance in Portugal.
- Explore the association between PHC commissioning and healthcare equity in Portuguese PHC units.

The purpose of this study was to identify recommendations for implementing effective commissioning processes that can enhance the performance and healthcare equity of PHC units in Portugal.

To answer the research aims, the following studies were undertaken:

1. The Effect of Commissioning on Portuguese Primary Health Care Units' Performance: A Four-Year National Analysis

Specific Objectives:

To compare the evolution of the results of indicator sets used in the PHC commissioning process with the results of indicator sets not used in that process.

To investigate the association between PHC commissioning and PHC units' performance in Portugal.

2. Healthcare Equity and Commissioning: A Four-Year National Analysis of Portuguese Primary Healthcare Units

Specific Objectives:

To investigate the association between the performance of the PHC units and the sociodemographic characteristics of the population served and the functional unit model of the PHC units.

To investigate whether the evolution of PHC quality indicators is associated with the specific socioeconomic context in which the PHC units are inserted.

To investigate whether the introduction of commissioning processes was associated with the attenuation of disparities in outcomes between PHC units in the most and least deprived contexts.

CHAPTER 3: BACKGROUND

Commissioning in healthcare services is a widely discussed and controversial topic. There are arguments both in favor of and against this practice, leading to ongoing debates. On the one hand, proponents of commissioning argue that it can bring benefits, particularly in improving the quality of services provided. On the other hand, critics raise concerns about the potential excessive focus on indicators.

Equity, on the other hand, is another current issue as it represents a central objective in any healthcare system. The pursuit of equal access to good quality services, regardless of individuals' socioeconomic or geographical conditions, is crucial to ensure a healthy and fair society.

Despite the scientific and technological advancements observed in recent years, the issue of healthcare equity is far from being solved. Studies demonstrate significant disparities in access to healthcare among different population groups, both in Portugal and around the world.

In this chapter, we will explore the existing evidence on commissioning in healthcare services, aiming to establish a connection with the reality seen in Portugal. We will analyze studies and research that explore the impacts of this practice on healthcare system equity, taking into consideration the peculiarities of our society and healthcare system. Through this analysis, we will highlight the available evidence that serves as the foundation of this thesis.

3.1 Commissioning

Although the term “commissioning” has only been in use since the 1990s (Thorncroft, 1994), the functions it refers to have been present, in one form or another, since the inception of health services. It has always been necessary to determine the health needs of the population and to design services accordingly, taking into account the resources available.

PHC commissioning can be defined as the process of assessing the needs of a local population and instituting services to meet those needs (DoH, 2010).

It involves decision-making about needs assessment, resource allocation, service purchasing, monitoring, and reviewing (Smith, 2010). It is a process that has strategic

and operational dimensions, which occur at various levels. The main objective of the process is to optimize the way in which services are provided.

Commissioning is viewed as a means of driving improvement throughout the health system via demand mechanisms that generate more explicit priority-setting processes (Robinson et al., 2016) and goal-oriented management. Measuring and monitoring healthcare quality is a necessary precondition to draw healthcare providers' attention to patients' needs and to determine potential areas for improvement (Huber et al., 2020). Over the last few years, an increasing number of developed and developing countries have turned to commissioning as a means of improving the performance of their health systems (Evans, 2006).

Overall, the evidence for the effectiveness of commissioning in improving quality, equity, and adequate access to healthcare in primary care is contradictory. Some studies suggest that the introduction of commissioning processes significantly improved the recorded quality of diabetes care, although the gains seem to diminish over time and the schemes tend to become expensive (Kontopantelis et al., 2013).

Financial incentives for providers through the commissioning process may be used to change the behavior of physicians towards improving the quality of care (Lehtovuori et al., 2015), and they seem to have the potential to make a substantial contribution to reducing health inequalities (Doran et al., 2008).

In another study, small but significant differences were observed after the introduction of commissioning, favoring less deprived groups, primarily due to variations at the practice level. This suggests that while the quality and outcomes framework (QOF) may not exhibit social selectivity at first glance, this does not mean the QOF does not contribute to the inverse care law, as these residual differences highlight the potential for unequal healthcare access and outcomes (Boeckxstaens et al., 2011).

Another study showed minimal improvement in the quality of diabetes care at the population and patient levels (Kiran et al., 2012).

A study in the United Kingdom (UK) that analyzed all indicators between 2001 and 2007 concluded that improvements associated with financial incentives seem to have been achieved at the expense of small detrimental effects on areas of care that were not incentivized; however, it was noted that the specific context of the QOF, including factors such as the size of incentives and the appearance of incentive-related prompts on clinical computing systems during consultations, may have contributed to these findings (Doran et al., 2011).

Lastly, in one Canadian study, a limited impact on care processes among patients with hypertension following incentive introduction was observed, and the study found no increase in primary care visits or continuity and no consistent evidence of reduced hospitalizations or costs (Lavergne et al., 2018).

A Cochrane review concluded that there is insufficient evidence to support or oppose the use of financial incentives to improve the quality of PHC (Scott et al., 2011).

One limitation that makes sufficient evaluation problematic is the many different schemes that incentivize different areas of care, in different ways and in different settings (Allen et al., 2014).

Portuguese commissioning processes have unique characteristics that make this a unique scenario in which to undertake this research.

3.2 The Primary Healthcare Reform and Commissioning process in Portugal

The year 2005 marked the launch of a PHC reform in Portugal. The reform focused on the implementation of a new type of proximity care unit, namely, USF, and restructured all PHC services as ACES (Biscaia et al., 2019; Dimitrovová et al., 2020; Rosa Biscaia & Correia Valente Heleno, 2017). Additionally, it implemented commissioning processes in all SNS units (Monteiro et al., 2017; OECD, 2016).

USFs are public PHC units comprising three to ten general practitioners (GP) and a similar number of family nurses and administrative staff who form voluntary, self-selected, and self-managed units that deliver primary care to a defined population. USFs work alongside UCSPs, the model which existed before the reform. The main purpose of the implementation of the new USF models is to create more autonomous and multidisciplinary teams in primary care and incentives for better performance (e.g., better follow-up of patients, particularly for chronic patients; better pre- and post-natal care; and more cost-effective use of medicines) (Economic et al., 2019).

USFs have a basic service portfolio, a set of essential healthcare services that include preventive healthcare, medical and nursing consultations, maternal and child health services, family planning, health screenings, vaccination, treatment of acute and chronic diseases, and palliative care, among others. The purpose of this basic service portfolio is to guarantee a minimum set of healthcare services to the population covered by USFs,

promoting accessibility, quality, and continuity of PHC ("Portaria n.º 1368/2007 de 18 de Outubro do Ministério da Saúde," 2007).

Before PHC reform, the predominant model was the classical management model of control with professionals' modest involvement, based on a bureaucratic model with a hierarchical structure (Kruse et al., 2020). With the creation of USFs, a participatory management model is proposed that extensively involves all professionals (general practitioners, nurses, and administrative staff) and has more organizational autonomy with the purpose of motivating the group to achieve common and commissioned goals (Santana & Almendra, 2018). Total quality management (Donabedian, 1978) and clinical governance (Macfarlane, 2019) also contribute to the organizational model of USFs, with it involving several professionals in the pursuit of better quality. The three organizational models that currently coexist in Portugal have different degrees of organizational maturation: UCSP is an organizational model with less autonomy that is closer to the existing model before the reform; the USF A model is an autonomous model in an early stage of organizational maturation (a model of learning and preparation) and a fixed salary calculated based on the professional category and career level; and the USF B model has the same degree of autonomy as model A but is more mature and has a payment scheme sensitive to workload and performance.

Depending on the unit's performance, and after receiving hierarchical approval, a Model A USF might be upgraded to a Model B USF (Dimitrovová et al., 2020). The latter has a pay-for-performance system designed to reward accessibility and quality of care (de Almeida Simoes et al., 2017).

The PHC reform is also associated with the relaunching of the commissioning processes as instruments to induce greater accountability and demand in order to achieve better health results, with greater efficiency, transparency, fairness, and suitability of the healthcare provision process, while also ensuring that health professionals and the SNS are involved in the process (Monteiro et al., 2017).

In 2006, the ACSS published a document identifying a total of 49 indicators to be used in the commissioning process, largely focused on clinical processes, accessibility, clinical performance, users' perceived quality, and efficiency.

An extensive pre-existing information infrastructure (OECD, 2016) with electronic patient records that covered almost the whole healthcare system (OECD, 2015) provided the basis for developing a systematized collection of a large number of indicator results.

The commissioning process for PHC units began in 2007 using 20 indicators from the basic services portfolio and one indicator for each activity conducted within the scope of the additional services portfolio (Monteiro et al., 2017). From 2008, the indicator set for commissioning evolved to 13 indicators that were common to all USFs and 2 selected by each of them among the indicators validated by the ACSS (Monteiro et al., 2017).

In 2011, target values were defined based on consensus between ARS and the ACSS for each indicator, considering the objectives of each unit's health plan and its history over the last three years.

The number of available indicators increased from 49 in 2007 to 100 in 2013 (ACSS, 2014) and began to include a wider range of pathologies, such as those related to respiratory diseases, osteoarticular diseases, or depression, and performance impact indicators (namely PHC potentially avoidable hospitalizations). The increase in the available indicators was also related to an effort to monitor a wide range of activities of PHC services in greater detail.

Real-time monitoring of metrics was made possible by connecting health registries to reporting systems that provide results for a patient list with detailed status for each indicator. These reports supported the improvements in the quality of care and guaranteed data quality, providing all professionals with the opportunity to review their performance.

From 2014 to 2016, 22 indicators were selected to integrate the PHC commissioning processes countrywide (details are provided in chapters 4 and 5). These indicators covered four domains: access, clinical performance, efficiency, and perceived quality of care. A total of 12 of the 22 indicators were chosen as national indicators, in alignment with the NHP.

Additionally, each ARS selected four indicators to respond to regional programs or regional priorities that remained unaddressed by the national axis indicators. This selection also considered the national reference value, historical results, context, and

available resources in order to reduce the inequalities in the results observed across ARSs.

Each ACES was allowed to select two indicators for a particular PHC unit. In turn, individual PHC units proposed four additional indicators according to their own quality improvement plans. The indicators categorized under the clinical performance categories were a mix of clinical processes and intermediate outcome measures.

Therefore, during 2014–2016, commissioning processes were conducted based on a national set of indicators that were monitored throughout the country. As some indicators were commissioned in some regions but not in others, a natural experimental setting to observe the impact of commissioning on the results by comparing the performance of commissioned versus non-commissioned indicators emerged.

3.3 Equity

The pursuit of health equity is one of the most important objectives of contemporary health systems (Furtado & Pereira, 2010), and the way this concept is defined and measured may have important implications for practice. Building on previous approaches to health equity, Braveman (2006) proposed that health equity is about pursuing the elimination of health inequalities/disparities, which are “potentially avoidable differences in health (or in health risks that policy can influence) between groups of people who are more and less advantaged socially”, noting that these differences arise systematically rather than randomly or occasionally (Braveman, 2006). This definition implies that health inequalities are unjust and a result of (or lack thereof) appropriate policies. It also recognizes the persistent, systematic way in which inequalities affect already socially disadvantaged groups, reaffirming the importance of eliminating them.

At a practical level, it is important to distinguish between equity in healthcare and equity in health. Equity in healthcare relates to the access, utilization, distribution, and outcomes of services (Culyer & Wagstaff, 1993) in a way that people with equal need receive equal treatment—horizontal equity—and that people with different needs should receive proportional treatment—vertical equity (Mooney, 1983). Equity in health points toward a more comprehensive notion of achieving equity in health outcomes/status by giving people fair opportunities to attain their full health potential (Braveman, 2006;

Whitehead, 1992). Thus, health equity is not only affected by healthcare equity but also by structural determinants of health. The relationship between these concepts can be understood through the social determinants of health (Figure 1). This tool proposes that social, economic, and political mechanisms generate a set of socioeconomic positions, in which populations become stratified by factors such as income, education, and occupation (World Health, 2010). In turn, these socioeconomic positions influence the “intermediary determinants of health”: access to adequate living and working conditions, individual behavior, psychosocial determinants, and access to health services (World Health, 2010). Although health services do not have a direct impact on the structural determinants of health, they can provide a strong platform to coordinate actions towards an interdisciplinary approach to health inequalities (Furtado & Pereira, 2010). Furthermore, by targeting the provision of care to disadvantaged groups, they can play a crucial role in pursuing health equity (Starfield et al., 2012).

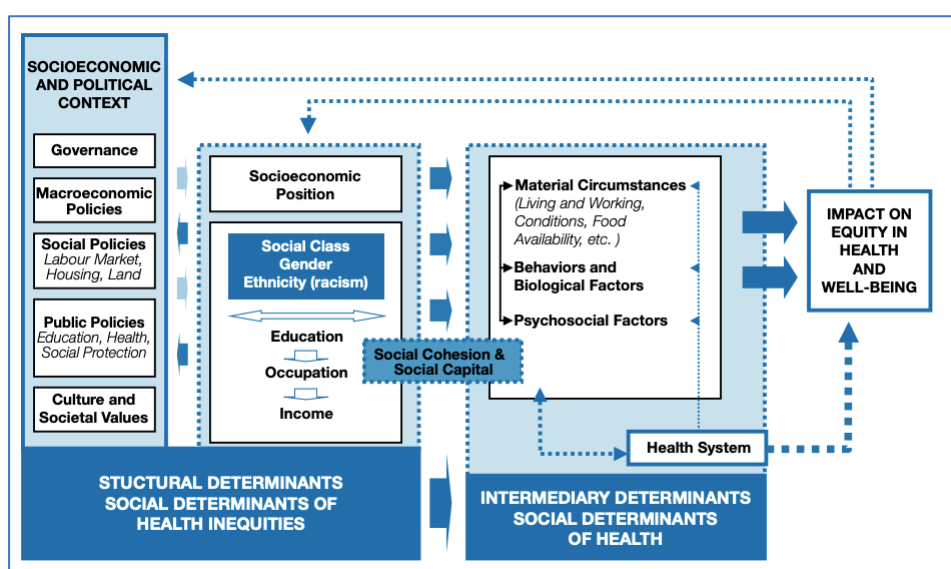


Figure 2 - Diagram of the Social Determinants of Health Framework. Source: WHO Commission on the Social Determinants of Health.

Inequalities in Primary Care

A significant amount of evidence confirms the relationship between the social determinants of health and access to good primary care services. On a general level, several studies demonstrate that patient populations with multiple combined social and economic disadvantages may have poorer access to primary care (Ford et al., 2016; Landi et al., 2018; Nunes et al., 2014; Simonsen et al., 2020) and are more likely to

experience lower quality services (Ashworth & Armstrong, 2006; Katz et al., 2018; Mercer & Watt, 2007).

Immigration status or nationality are parameters commonly included in multidimensional socioeconomic disadvantage indexes to understand the causes of inequalities in access to good quality PHC services. In many high-income countries with comprehensive health systems, immigrants' use of primary care services is significantly lower than that of native users (Calderon-Larranaga et al., 2011; Gimeno-Feliu et al., 2013; Tran et al., 2016; Uiters et al., 2009). Foreign nationality is also associated with experiencing lower quality of preventive care (Martin et al., 2014), for example, lower quality indicators for diabetes management (Buja et al., 2013; Gray et al., 2007; Shani et al., 2010) and lower rates of cancer screening (Lofters et al., 2018; Moen et al., 2017; Vahabi et al., 2016).

Educational attainment is another factor that might influence appropriate access to and use of PHC. Some studies have found consistent educational inequalities in favor of higher education levels for PHC services use (Baron et al., 2015; Mulyanto et al., 2019). A study examining several European countries found this trend to be inverted in countries such as Portugal, Ireland, and Lithuania; however, the trend remained in favor of the more highly educated for most countries in the study (Fjaer et al., 2017). This latter pattern is similar to that observed by a study in Ontario, Canada, which found that higher education was not only inversely associated with frequent PHC visits but directly associated with frequent specialist visits (Glazier et al., 2009). A possible explanation for this is that persons with a higher educational level might perceive that it is more appropriate to consult directly with a specialist who possess knowledge in a specific area (Fjaer et al., 2017).

Elderly status may also influence the quality of care received. Elderly status has been linked to worse outcomes in specific PHC indicators such as diabetes control (Shani et al., 2010) and appropriate medication prescription (Ashworth et al., 2007; Brekke et al., 2008).

The Portuguese Context

Portugal has marked socioeconomic inequalities, with one of the most unequal income distributions in Europe (Arnold & Farinha Rodrigues, 2015). The Portuguese Constitution

outlines that the state should “ensure all citizens have access to preventative, curative, and rehabilitative healthcare services, independently of their socioeconomic condition” (Crisóstomo, 2016), and this commitment was strengthened by the 1990 Health Act, which declares that ensuring equity in the distribution of resources and the use of services is a fundamental goal of the country’s health system (“Lei de Bases da Saúde - Lei n.º 48/90, de 24 de agosto,” 1990). Despite this, socioeconomic disparities are often translated into worrying health inequalities. Determinants such as low income, occupation, lower educational attainment, female gender, and migrant status have been linked to worse health outcomes in conditions such as obesity (Bingham et al., 2013; Camoes et al., 2010; Nogueira, Ferrao, et al., 2013; Nogueira, Gama, et al., 2013), mental health (Carvalho et al., 2014; Neto, 2009), and cardiovascular disease (Bettencourt et al., 2013; Ferreira-Pinto et al., 2012). There are also persistent inequalities in access to healthcare. Portugal currently has poor–rich disparities in access to both specialist and primary care consults (Bago d’Uva et al., 2009; Van Doorslaer & Masseria, 2004). Socioeconomic disparities are also prevalent in ambulatory care sensitive conditions, suggesting troublesome inequalities in access to early and high-quality primary care (Dimitrovová et al., 2020).

Health equity was mainstreamed into national health policy in the Portuguese 2015–2020 NHP (MS, 2015) following a World Health Organization (WHO) evaluation which identified a concerning policy gap in the area of health inequalities in previous plans (Organization, 2010). The 2015–2020 plan centers around equitable and adequate access to healthcare as one of the four cornerstones of national health policy, proposing, among other strategies, the articulation of national and local health policy through commissioning processes (MS, 2015).

The Relationship Between Commissioning and Equity

Commissioning is a process of procuring health services based on the assessment of the population’s needs (Management, 2015). At a practical level, it creates a separation between the provider and purchaser of services (Checkland et al., 2012), which enables improved priority setting and service integration for groups in need (Robinson et al., 2016), thus optimizing the way services are delivered and contributing to health equity (Escoval, 2010). However, there are some limitations to the association between commissioning and equity. First, there can be a conflict between the goals of efficiency

and equity, so that more cost-effective services are awarded, thus putting the services required by vulnerable populations at risk (Horta, 2019). Second, commissioning may lead to the fragmentation of services and competition for resources (Hudson, 2011), which can undermine healthcare delivery in contexts with regional asymmetries (Henderson et al., 2017). Finally, it is pertinent to question the overall impact of commissioning in health equity, since this process often focuses solely on equity of access and use as an outcome measure and ignores possible inequities in the structural determinants of health (Wenzl et al., 2015).

The amount of available evidence regarding commissioning has increased over the last few years, as more countries implement these processes. Still, it is often difficult to ascertain the real extent to which these processes contribute to health equity. A review of 27 studies on the effect of the UK's commissioning scheme, the QOF, concluded that the scheme overall beneficial overall to the improvement of equity in treatment and intermediate treatment outcomes, but the extent to which different patient groups benefited from this improvement depended highly on the quality indicators and service users under study (Boeckxstaens et al., 2011). Whereas some of the studies included demonstrate a clear reduction in the attainment gap between socially deprived and advantaged groups in areas such as blood pressure monitoring (Ashworth et al., 2008), others highlight how some groups of patients remain at a disadvantage despite improvements in other groups (McGovern et al., 2008). Another study assessing the general achievements of 7637 UK PHC practices' quality indicators found that the introduction of commissioning led to a significant decrease in disparities in the delivery of PHC services related to area deprivation over a period of 3 years (Doran et al., 2008). Similarly, a recent study from Brazil also concluded that the introduction of a pilot quality improvement commissioning process in over 13934 health teams successfully eliminated income inequalities in the delivery of PHC services (Kovacs et al., 2021).

CHAPTER 4: THE EFFECT OF COMMISSIONING ON PORTUGUESE PRIMARY HEALTHCARE UNITS' PERFORMANCE

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The effect of commissioning on Portuguese Primary Health Care units' performance: A four-year national analysis



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ABSTRACT

Background: Portugal underwent a paradigmatic Primary Health Care (PHC) reform in 2005. The reform implemented better health information systems, goal-oriented management, pay-for-performance schemes, functional autonomy for the front-line units, and the general adoption of commissioning processes.

Since the implementation of the reform, the same set of indicators have been monitored nationally every year. However, from 2014–2016, the five Regional Health Administrations could individually select part of set of indicators to be commissioned.

As the same some indicators were used commissioned in some regions, but not in others, a natural experimental setting to observe the impact of commissioning on the results by comparing the performance of commissioned versus non-commissioned indicators emerged and the effects of commissioning on PHC performance could be evaluated.

Aim: Our article aims to clarify the effect of commissioning on the results achieved by PHC units in Portugal following the implementation of the reform.

Results: In general, the indicator values improved with time in the three types of units that existed after the reform. However, Model B Family Health Units ('Unidades de Saúde Familiar' or USFs that use pay-for-performance and are more mature) obtained the highest absolute indicator values, followed by Model A USFs (newer units with a fixed salary) and Personalised Health Care Units ('Unidades de Cuidados de Saúde Personalizados' that were created under the model before the reform and offer a fixed salary), respectively.

Conclusion: The results show a general increase in indicators in all PHC units. However, the indicators used in the commissioning processes exhibited a greater increase. There was no evidence that the better results exhibited by the commissioned indicators were achieved at the expense of a detrimental effect on non-commissioned indicators.

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1. Background

According to the Organisation for Economic Co-operation and Development (OECD), the Portuguese Primary Healthcare system performs efficiently and offers some examples of excellence and

innovation [1]. For example, the rates of avoidable hospitalisation of Portugal are among the best in the OECD for asthma, chronic obstructive pulmonary disease (COPD) [1], diabetes, and congestive heart failure (CHF) [2].

Portugal showed one of the largest improvements among countries where the difference between observed life expectancy and expected life expectancy was greater than five years between 2000 and 2016 [3]. Taking this into consideration, an editor of *The Lancet* suggested that the policies and leadership strategies of Portugal should be studied in more depth to check whether recommendations relevant to other countries could be identified [3].

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1.1. The Primary Health Care Reform in Portugal

The year 2005 marked the launch of a Primary Health Care (PHC) Reform in Portugal. The reform focused on the implementation of a new type of proximity care unit, namely, Family Health Units ('Unidades de Saúde Familiar' or USF) and restructured all PHC services as Health Centre Clusters ('Agrupamentos de Centros de Saúde' or ACES) (Fig. 1) [4–6]. Additionally, it implemented the commissioning processes in all National Health Service ('Serviço Nacional de Saúde' or SNS) services [7,8]. USFs are public PHC units comprising three to eight general practitioners (GP) and a similar number of family nurses and administrative staff who form voluntary, self-selected, and self-managed units that deliver primary care to a defined population. USFs work alongside Personalised Health Care Units ('Unidades de Cuidados de Saúde Personalizados' or UCSP), the model which existed before the reform and continues to be adopted by some PHC services today. The latter are more hierarchical and less autonomous public units where GPs, nurses, and administrative staff are paid a fixed salary to provide care to their patient lists [1,7,9,10].

There are two operational models within USFs — Models A and B. Both models have functional and technical autonomy and the same organisational structure, but different pay systems [6,7]. At its inception, every USF starts as Model A, with the same payment system as the pre-reform one: a fixed salary calculated based on the professional category and tenure. However, depending on the unit's performance, and after receiving hierarchical approval, a Model A USF might be upgraded to a Model B USF [6]. The latter has a pay-for-performance system designed to reward accessibility and quality of care [9].

The number of units and population enrolled by type of unit in PHC in December 2016 can be found in the supplemental Appendix A.

The main purpose of the implementation of the new USF models is to create more autonomous and multidisciplinary teams in primary care and incentives for better performance (e.g. better follow-up of patients, particularly for chronic patients; better pre- and post-natal care; more cost-effective use of medicines) [11].

The PHC Reform is also associated with the relaunching of the commissioning processes as instruments to induce greater accountability and demand, in order to achieve better health results, with greater efficiency, transparency, fairness, and suitability of the health care provision process, while also ensuring that health professionals and SNS are involved in the process [8].

Nowadays, USF and UCSP models are assessed by the same sets of commissioning indicators [9].

1.2. Commissioning in Portuguese Primary Health Care

PHC commissioning can be defined as the process of assessing the needs of a local population and instituting services to meet those needs [12].

It involves decision-making about needs assessment, resource allocation, service purchasing, monitoring, and reviewing [13]. It is a process that has strategic and operational dimensions, which occur at various levels. The main objective of the process is to optimise the way in which services are provided.

In 2006, the Central Administration of the Health System ('Administração Central do Sistema de Saúde' or ACSS) published a document identifying a total of 49 indicators to be used in the commissioning process, largely focused on clinical processes, accessibility, clinical performance, perceived quality, and efficiency.

An extensive pre-existing information infrastructure [7] with electronic patient records that covered almost the whole health

care system [1] provided the basis for developing a systematised collection of a large number of indicator results.

The commissioning process for PHC units began in 2007 using 20 indicators from the Basic Services Portfolio and one indicator for each activity conducted within the scope of the Additional Services Portfolio [8]. From 2008, the indicator set for commissioning evolved to 13 indicators that were common to all USFs, and 2 selected by each of them among indicators validated by the ACSS [8].

In 2011, target values were defined based on consensus between Regional Health Administrations ('Administração Regional de Saúde' or ARS) and the ACSS for each indicator, considering the objectives of each unit's health plan and its history over the last three years.

The number of available indicators increased from 49 in 2007 to 100 in 2013 [14], and began to include a wider range of pathologies such as those related to respiratory diseases, osteoarticular diseases or depression, and performance impact indicators (namely PHC potentially avoidable hospitalisations). The increase in the available indicators was also related to an effort to monitor a wide range of activities of PHC services in greater detail.

Real-time monitoring of metrics was made possible by connecting health registries to reporting systems that provide results for a patient list with detailed status for each indicator. These reports supported the improvements in quality of care and guaranteed data quality, providing all professionals the opportunity to review their performance.

From 2014 to 2016, 22 indicators were selected to integrate the PHC commissioning processes nationally. These indicators covered four domains: access, clinical performance, efficiency, and perceived quality of care. A total of 12 of the 22 indicators were chosen as national indicators, in alignment with the National Health Plan.

Additionally, each ARS selected four indicators to respond to regional programs or regional priorities that remained unaddressed by the national axis indicators. This selection also took into account the national reference value, historical results, context, and available resources in order to reduce the inequalities in the results observed across ARSs.

Each Health Centre Cluster was allowed to select two indicators for a particular PHC unit. In turn, individual PHC units proposed four additional indicators according to their own quality improvement plans. The indicators categorised under the clinical performance categories were a mix of clinical processes and intermediate outcome measures.

The national set of indicators common to all PHC units from 2014 to 2016 [13] is presented in Appendix (Table B1), and the regional indicators, selected by each ARS, are displayed in Table 1.

During 2014–2016, commissioning processes were conducted based on a national set of indicators that were monitored throughout the country. As some indicators were commissioned in some regions, but not in others, a natural experimental setting to observe the impact of commissioning on the results by comparing the performance of commissioned versus non-commissioned indicators emerged.

The purpose of our study is to evaluate, globally and according to the organisational model (Model A USF, Model B USF or UCSP) the impact of commissioning on indicator results. To achieve this, we compared groups of units based on whether or not a specific regional set of indicators was selected for commissioning, over a period of four years.

1.3. Research and evidence for commissioning

Commissioning is viewed as a means of driving improvement throughout the health system via demand mechanisms that generate more explicit priority-setting processes [15]; in other

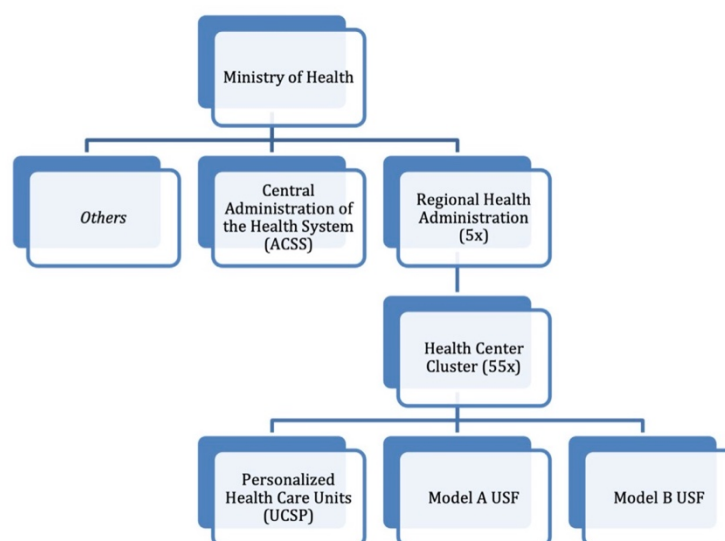


Fig. 1. PHC structure within the Portuguese health system, with more detail in reference [5,9].

words, commissioning is understood as goal-oriented management.

From the mid-1990s, an increasing number of countries, both high income countries and low and middle income countries, have adopted commissioning as a means of improving the performance of their health systems [16]. Nevertheless, the evidence for the effectiveness of commissioning in improving quality, equity, and adequate access to healthcare in primary care remains contradictory [17–19].

Some studies suggest that the introduction of commissioning processes have significantly improved the recorded quality of diabetes care, although the gains diminish over time and the schemes become expensive [20].

Financial incentives for providers integrated in the commissioning process may be utilised to change their behaviour towards improving the quality of care (but, sustainability of these interventions may diminish after ceasing this type of financial incentive) [21], as such incentives appear to have the potential to make a substantial contribution to the reduction of health inequalities [22].

One study observed small but significant residual differences after the introduction of commissioning, favouring less deprived groups, yet this does not mean QOF does not contribute to the inverse care law [23]. Another study found that improvements in the quality of care for chronic diseases were modest, and the impact on costs, professional behaviour, and patient experience was uncertain [24]. A third study showed minimal improvement in the quality of diabetes care at the population and patient level [25].

An UK study that analysed all indicators between 2001 and 2007 concluded that improvements associated with financial incentives seem to have been achieved at the expense of small detrimental effects on aspects of care that were not incentivised, but conclusion may have been exacerbated on its impact by UK Quality and Outcomes Framework setting (such as the large size of the incentives and the appearance of incentive related prompts on clinical computing systems during consultations [26].

Lastly, was observed a limited impact on care processes among patients with hypertension following incentive introduction and found no increase in primary care visits or continuity and no consistent evidence of reduced hospitalizations or costs in a Canadian study [27].

A Cochrane review concluded that there is insufficient evidence to support or not support the use of financial incentives to improve the quality of PHC [17].

One limitation that makes evaluation problematic is the existence of several different schemes that incentivise different aspects of care in different ways and different settings [18]. Synthesis of the reviewed evidence on commissioning is presented in Table 2.

2. Materials and methods

This study used the results of PHC indicators from the regional set in all Portugal mainland PHC Units published by the Portuguese Central Administration of the Health System for the 2013 to 2016 period. This includes data from the period where the indicators varied according to region (2014–2016) and the year prior to this change.

Indicators were categorised by unit and by whether they were commissioned or not at the regional level.

Each unit was also characterised according to the organisational model as UCSP, USF Model A, or USF Model B.

The regional set of indicators included 15 different indicators. Two indicators were excluded because they changed during the study period. Of the remaining 13 indicators included in this study, 10 were commissioned only in one ARS, 2 were commissioned in 2 ARSs, and 1 indicator was commissioned in 3 ARSs (Table 1).

All units that ceased to function or changed organisational model during the study period were excluded from the analysis. According to this criterion, of the initial 1104 PHC units, 378 were excluded. The remaining 726 units accounted for 8,519,723 users out of a total of 10,664,898 SNS users (79.9 %).

Descriptive analysis was performed for each indicator by year, by model, and globally.

Table 1

Regionally selected indicators by the different Regional Health Administrations (ARs) in grey. The arrows show the comparison with the national value (↑ indicates higher than the national result; ↓ indicates lower than the national result; = indicates equal to the national result).

Indicator	Alentejo	Algarve	Centre	Lisbon and Tagus Valley	North
Adequate follow up index in Hypertension	↓	↓	↓	↓	↑
Proportion of infants who are 2 years old with adequate follow up	↓	↓	↑	↓	↑
Adequate follow up index in diabetes	=	↓	↓	↓	↑
Proportion of women aged 25–60 who have been screened for cervical cancer within the past three years	=	↓	↓	↓	↑
Proportion of infants who are 2 years old with vaccinal program coverage	↑	↓	↑	↓	↑
Proportion of nurse appointments made by own family nurse	↓	↓	↓	↓	↑
Proportion of diabetic patients who have been screened for diabetic foot in the last year	↓	↓	↓	↓	↑
Proportion of hypertensive patients with cardiovascular disease risk assessment (score) in the last 3 years	↓	↓	↓	↓	↑
Proportion of hypertensive patients without diabetes with prescription of angiotensin receptor blocker (the lower, the better)	↑	↓	=	↓	↑
Proportion of women aged 50–70 who have been screened for breast cancer within the past two years	↑	↓	↑	↓	↑
Proportion of obese patients who are more than 13 years old with vigilance medical appointment in the last 2 years.	↓	↑	↓	↑	↑
Proportion of patients aged 50–75 who have been screened for colorectal cancer.	↓	↓	↓	↓	↑
Proportion of seniors with chronic prescriptions for less than 5 drugs	↓	↑	↓	↑	↓

The average value of each indicator was calculated according to model and commissioning status, and the different groups were compared using the student's t test.

Linear regression was performed with the average results of the difference between 2016 and 2013 by the indicator in each group.

SPSS 24 software was used for data analysis.

This article was the result of a research protocol approved by the North ARS Ethics Committee (CES 4/2017).

The data used were provided by the Portuguese Central Administration of the Health System.

3. Results

3.1. Indicator results in units that did not commission them

In the units that did not commission the indicators under analysis, the average result of 10 out of 13 indicators improved (Table 3,

detailed results are available in an online appendix C), ranging from 0.18 percentage points in 'Proportion of infants who are 2 years old with vaccinal program coverage' (from 93.69 to 93.87) to 43.65 percentage points in 'Proportion of hypertensive patients with cardiovascular disease risk assessment (score) in the last 3 years' (from 24.62 to 68.27). An overall average improvement of 10.65 percentage points was also found.

The following were noted:

- 'Proportion of women aged 50–70 who have been screened for breast cancer within the past two years' decreased by 7.36 percentage points (from 64.26 to 56.90),
- 'Proportion of women aged 25–60 who have been screened for cervical cancer within the past three years' decreased by 0.026 percentage points (59.03–59.01), and
- 'Proportion of seniors with chronic prescriptions for less than 5 drugs' decreased by 3.26 percentage points (53.80 to 50.54).

Table 2
 Synthesis of the reviewed evidence on commissioning.

Ref	Countries	Number studies/ Size Sample	Type	Conclusion
[17]	USA, UK and Germany	7 studies	Systematic Review	There is insufficient evidence to support or not support the use of financial incentives to improve the quality of primary health care.
[18]	UK	–	Review/ Case Study	Overall, the evidence for the effectiveness of P4P for improving quality of care in primary care is mixed.
[20]	UK	23,920 diabetes patients	Cohort Study	The introduction of financial incentives was associated with improvements in the recorded quality of diabetes care in the first year. Improvements in subsequent years were more modest. Variation in care between population groups diminished under the incentives but remained substantial in some cases.
[21]	Finland (Espoo)	230,000 patients	Retrospective quasi-experimental study	Group bonuses may provide a method to alter clinical practices in primary care. However, sustainability of these interventions may diminish after ceasing this type of financial incentive.
[22]	UK	49 000 000 patients	Cohort Study	Financial incentive schemes have the potential to make a substantial contribution to the reduction of inequalities in the delivery of clinical care related to area deprivation. Although QOF seems not to be socially selective at first glance, this does not mean QOF does not contribute to the inverse care law.
[23]	UK	27 studies	Systematic Review	Observed improvements in quality of care for chronic diseases in the framework were modest, and the impact on costs, professional behavior, and patient experience remains uncertain.
[24]	UK	94 studies	Systematic Review	The diabetes incentive code led to minimal improvement in quality of diabetes care at the population and patient level.
[25]	Canada (Ontário)	757,928 patients	Cohort Study	There were substantial improvements in quality for all indicators between 2001 and 2007. Improvements associated with financial incentives seem to have been achieved at the expense of small detrimental effects on aspects of care that were not incentivised.
[26]	UK	653,500 patients	Cohort Study	We observed limited impact on care processes among patients with hypertension following incentive introduction.
[27]	Canada (British Columbia)	189,583 patients with diabetes, 507,030 patients with hypertension, and 82,497 patients with COPD	Cohort Study	We found no increase in primary care visits or continuity and no consistent evidence of reduced hospitalizations or costs.

3.1.1. UCSPs

In UCSPs that did not commission the analysed indicators, the average result of 8 out of 13 indicators improved (Table 3). The following were noted:

- 'Proportion of nurse appointments made by own family nurse' decreased by 4.69 percentage points (from 51.18 to 46.49),
- 'Proportion of infants who are 2 years old with vaccinal program coverage' decreased by 0.19 percentage points (89.63 to 89.45),
- 'Proportion of obese patients who are more than 13 years old with vigilance medical appointment in the last 2 years' decreased by 1.49 percentage points (from 43.87 to 42.38),
- 'Proportion of women aged 50–70 who have been screened for breast cancer within the past two years' decreased by 4.05 percentage points (from 52.04 to 47.99), and
- 'Proportion of seniors with chronic prescriptions for less than 5 drugs' decreased by 3.88 percentage points (from 61.99 to 58.11).

3.1.2. Model A USFs

In Model A USFs that did not commission the analysed indicators, the average result of 11 out of 13 indicators improved (Table 3). The following were noted:

- 'Proportion of women aged 50–70 who have been screened for breast cancer within the past two years' decreased by 6.41 percentage points (from 66.94 to 60.53), and

- 'Proportion of seniors with chronic prescriptions for less than 5 drugs' decreased by 3.83 percentage points (50.55 to 46.73).

3.1.3. Model B USFs

In Model B USFs that did not commission the analysed indicators, the average result of 10 out of 13 indicators improved (Table 3). The following were noted:

- 'Proportion of women aged 50–70 who have been screened for breast cancer within the past two years' decreased by 10.72 percentage points (from 71.40–60.68),
- 'Proportion of women aged 25–60 who have been screened for cervical cancer within the past three years' decreased by 3.54 percentage points (71.24–67.70), and
- 'Proportion of seniors with chronic prescriptions for less than 5 drugs' decreased by 1.61 percentage points (45.72 to 44.11).

3.2. Indicator results in units that commissioned them

In the units that commissioned the analysed indicators, only 'Proportion of seniors with chronic prescriptions for less than 5 drugs' exhibited a decrease in the average indicator results from 50.32–49.36 (–0.98 percentage points). In the remaining 12 indicators, the average result improvement ranged from 0.87 percentage points ('Proportion of women aged 50–70 who have been screened for breast cancer within the past two years') to 54.87 percentage points ('Proportion of hypertensive patients with cardiovascular

Table 3

Indicators results (↑ indicates increase; ↓ indicates decrease; = indicates remained the same) in 2016 compared with 2013 by commissioning or not and organisational model. Detailed results are available in an online appendix C.* - the value correspond to the number of appointments and not to the number of users.

Indicator	Users analysed	Commissioned	Trends for 2013–2016			
			UCSP	USF-A	USF-B	Global
Adequate follow up index in diabetes	300 246	No	↑	↑	↑	↑
	330 778	Yes	↑	↑	↑	↑
Adequate follow up index in hypertension	1 539 129	No	↑	↑	↑	↑
	243 385	Yes	↑	↑	↑	↑
Proportion of diabetic patients who have been screened for diabetic foot in the last year	628 722	No	↑	↑	↑	↑
	28 002	Yes	↑	↑	↑	↑
Proportion of hypertensive patients with cardiovascular disease risk assessment (score) in the last 3 years	900 296	No	↑	↑	↑	↑
	234 823	Yes	↑	↑	↑	↑
Proportion of hypertensive patients without diabetes with prescription of angiotensin receptor blocker	1 287 697	No	↑	↑	↑	↑
	59 834	Yes	↑	↑	↑	↑
Proportion of infants who are 2 years old with adequate follow up	42 245	No	↑	↑	↑	↑
	22 318	Yes	↑	↑	↑	↑
Proportion of infants who are 2 years old with vaccinal program coverage	65 711	No	↓	↑	↑	↑
	3 635	Yes	↑	↑	↑	↑
Proportion of nurse appointments made by own family nurse	5 294 587*	No	↓	↑	↑	↑
	5 700 039*	Yes	↑	↑	↑	↑
Proportion of obese patients who are more than 13 years old with vigilance medical appointment in the last 2 years.	636 879	No	↓	↑	↑	↑
	43 082	Yes	↑	↑	↑	↑
Proportion of patients aged 50–75 who have been screened for colorectal cancer.	1 646 208	No	↑	↑	↑	↑
	1 019 255	Yes	↑	↑	↑	↑
Proportion of women aged 25–60 who have been screened for cervical cancer within the past three years	1 091 889	No	↑	↑	↓	=
	1 058 979	Yes	↑	↑	↑	↑
Proportion of women aged 50–70 who have been screened for breast cancer within the past two years	731 650	No	↓	↓	↓	↓
	456 718	Yes	↑	↓	↑	↑
Proportion of seniors with chronic prescriptions for less than 5 drugs	617 567	No	↓	↓	↓	↓
	301 569	Yes	↓	↓	↑	↓

disease risk assessment (score) in the last 3 years'). The overall average improvement was 13.86 percentage points.

3.2.1. UCSPs

In the UCSPs that commissioned the analysed indicators, the average result of 12 out of the 13 indicators improved (Table 3). 'Proportion of seniors with chronic prescriptions for less than 5 drugs' exhibited a decrease of 3.82 percentage points (from 58.73 to 54.91).

3.2.2. Model A USFs

In Model A USFs that commissioned the analysed indicators, the average result of 11 out of 13 indicators improved (Table 3). 'Proportion of women aged 50–70 who have been screened for breast cancer within the past two years' exhibited a decrease of 0.36 percentage points (from 59.68 to 59.32), and 'Proportion of seniors with chronic prescribing of less than 5 drugs' exhibited a decrease of 0.55 percentage points (from 48.35 to 47.81).

3.3. Model B USFs

In Model B USFs that commissioned the analysed indicators, the average result of all the 13 indicators improved (Table 3).

3.4. Comparative results

Generally, upon comparing the different indicator results by year, the values obtained in 2016 were higher than those in 2013. The exceptions were the indicators related to cervical cancer screening, breast cancer screening, and seniors with chronic prescribing of less than five drugs. Model B USFs obtained the highest

absolute indicator values, followed by Model A USFs. UCSPs showed the lowest values.

When comparing the group of units that commissioned the indicators with those that did not, there was a statistically significant difference (favouring the commissioned group) in 10 out of 13 indicators. Statistically significant differences were not found only in 'Proportion of infants who are 2 years old with vaccinal program coverage' ($p = 0.1587$), 'Proportion of infants who are 2 years old with adequate follow up' ($p = 0.2412$), and 'Adequate follow up index in hypertension' ($p = 0.0699$).

Linear regression (online Appendix D) was performed with the average results of the difference between 2016 and 2013 by the indicator in each group.

When all the models were analysed together, the following equation was obtained:

$$y = 0.8071x - 2.8376 \text{ with } R^2 = 0.8786.$$

In UCSPs, the following equation was obtained:

$$y = 0.8318x - 2.5277 \text{ with } R^2 = 0.7931.$$

In Model A USFs, the following equation was obtained:

$$y = 0.5879x - 0.8079 \text{ with } R^2 = 0.6373.$$

In Model B USFs, the following equation was obtained:

$$y = 0.6644x - 2.6339 \text{ with } R^2 = 0.8569.$$

Thus, the slope is less steep (favouring commissioning impact) in Model A USFs, followed by Model B USFs and UCSPs, respectively; however, it is always lower than 1, indicating the advantages of commissioning over non-commissioning.

4. Discussion

The development of health information systems, management by objectives, pay-for-performance schemes, functional autonomy, and implementation of commissioning processes were all features

of the 2005 PHC Reform in Portugal. This article aimed to clarify the effect of commissioning on the results achieved by PHC units in Portugal.

During the period under study (2013–2016), a wide range of indicators were nationally monitored to assess the performance of PHC units. Data were collected from indicators that were used in the commissioning processes and those that were not used. The used indicators included a national set from all the country units' commissioning processes and five regional sets that varied among ARSs according to their specific objectives. This allowed for the assessment of the impact of commissioning on PHC units' performance, by comparing the evolution of indicator sets that were used with those that were not used in the process.

The average value of most analysed indicators increased between 2013 and 2016, either in the group in which they were commissioned or in the one in which they were not commissioned.

Higher absolute values were achieved by the Model B USFs, followed by Model A USFs and UCSPs, respectively, suggesting that the organisational model and payment system may have an impact on performance [28]. Self-selected groups with higher functional autonomy (the USFs) and, within these, those with a pay-for-performance system (Model B USFs) appear to perform better than others, reinforcing the need for further investigating the relationship between financial incentives and quality of care [29].

Between 2013 and 2016, the lowest number of improved indicators (8 out of 13) was observed in UCSPs that did not commission them. Contrastingly, in the indicators commissioned by these same UCSP-type units, there was an improvement in 12 out of 13 indicators. In Model A USFs, only one indicator did not improve ('Proportion of women aged 50–70 who have been screened for breast cancer within the past two years') in both the commissioned and non-commissioned groups. In the Model B USFs that commissioned the analysed indicators, the average result of all the indicators improved.

These results are in line with the expectations: commissioned indicators improved more than non-commissioned indicators, and PHC units with a pay-for-performance system performed better than those without it. In fact, UCSPs offer no financial benefit for their staff unlike Model A USFs, which by meeting commissioned targets, have access to incentives for the improvement of amenities and training. In Model B USFs, in addition to the institutional incentives, their staff may also have financial incentives added to their salary, depending on their team's performance.

The fact that non-commissioned indicators also mostly improved (8 out of 13 in UCSPs and 11 out of 13 in Model A USFs) is not consistent with the findings of Doran et al., which conclude that there is a small detrimental effect on the aspects of care that were not incentivised [26]. This seems to result in positive spill-over effects [30,31] on non-incentivised indicators that can be explained through motivation [32], primarily in Model A USFs that are working to upgrade to Model B USFs [28]. It is important to note that the present study included all units of mainland Portugal that were active during the study period (726 units, accounting for 8,519,723 users out of a total of 10,664,898 SNS users or 79.9%) and their actual results, instead of a sample of the universal set. This is in contrast with the above-mentioned study, which included a sample of 148 units (653,500 patients) and evaluated achievement rates projected from trends in the pre-incentive period.

In the linear regression by model, the slope of the line also meets the expectations. UCSPs' linear regression shows a less steep slope than that of Model A USFs' line, as the impact of the PHC unit model on commissioning is smaller. The results of Model A USFs improved faster than those of the other two models, as these are newer units, and thus have more potential for progress. In addition, because of having experienced team-building and a structural re-

organisation process more recently, Model A USFs' teams may have more enthusiasm and willingness to improve. Furthermore, most Model A USFs aspire to become Model B USFs, and they are aware that they need to improve their performance to achieve this. Model B USFs are more mature units with higher initial results and thus show a slower improvement rate. Systematic reviews also have reported a greater impact of commissioning on outcomes in units that have more room for improvement [27].

Some aspects of the indicators should be further discussed. The indicator 'Proportion of hypertensive patients with cardiovascular disease risk assessment (score) in the last 3 years' had a higher improvement rate; however, it should be noted that this indicator's performance was measured using a new recording method and was implemented only in 2013. Therefore, naturally, a marked improvement was evident in the units that commissioned this indicator, but also in those that did not commission it.

The indicator 'Proportion of seniors with chronic prescriptions for less than 5 drugs' also decreased, which may be explained by the adequacy of currently used medication for chronic disease control and the population's increasing longevity and multimorbidity. It should be noted that this indicator was discontinued in 2016 due to a lack of evidence and scientific validity.

It is also important to take into account limitations, including information bias. Given that most indicator results are collected from family health team records, there may be some over-registration of commissioned indicators and an under-registration of non-commissioned indicators (due to lack of interest in registering parameters concerned with areas that are not related to incentives).

A further potential limitation comes from the nature of the information measured. The indicators analyzed consist of recorded processes and outputs, such that it is not possible to determine if records correspond to activities performed to the appropriate standard or if that activity was relevant to that particular patient. Moreover, most of the indicators analyzed refer to processes, leaving more room to question the possible discrepancy between a recorded process and a good outcome.

Nevertheless, there is evidence that the rates of avoidable hospitalisation in Portugal (2015–16) are among the best in the OECD for asthma, COPD [1], diabetes, and CHF [2], which further confirm that these improvements actually occurred.

Whilst indicators measuring the impact of procedures on patient outcomes would be preferable to assess the effects of commissioning on PHC services, such indicators might take a several years to yield results, making them unsuitable for yearly commissioning processes. For this reason, commissioning analysis mostly uses indicators that allow for a more regular and frequent monitoring of changes over relatively short periods of time. Perhaps this helps to explain why, despite the voluminous literature on the topic, there is still no consensus on the effects of commissioning in healthcare outcomes.

The main strength of the analysis is that it included almost the entire population of mainland Portugal in a four-year time frame, as only the data from the population served by units that were discontinued or established during the study was withdrawn. It should also be noted that this study makes it possible to estimate the commissioning gain compared to units that did not commission such indicators (similar to a case-control study). This gain may even be underestimated because UCSPs were included despite not having incentives. Although we must consider that the incentives received by the teams or professionals may have led to an increase in record-keeping, this does not explain improvement in UCSP-type units, which don't receive incentives. Their improvement may be partly explained by a positive spillover effect of increased adherence to good practices following the commissioning process.

5. Conclusions

The main conclusion of this study is that there were improvements in the results of both the group that commissioned the analysed indicators and the one that did not commission them. This improvement was most evident in the group that commissioned the indicators, with a statistically significant difference in 10 out of the 13 analysed indicators. However, given that the data set used was based in all units of the country, all differences, even if small, should be taken into account.

Given that differences between the organisational models are more patent in the non-commissioned group than in the commissioned group, it can be concluded that commissioning may also play a role in mitigating differences between organisational models.

There is no evidence that better results in commissioned indicators are achieved at the expense of a detrimental effect on non-commissioned indicators.

This commissioning process may be adopted in territories with regional asymmetries, as commissioning different indicators appears to result in faster improvement in deficit areas, without evidence for negatively affecting results in non-commissioned indicators.

The emphasis on the development of health information systems and commissioning processes, the implementation of pay for performance, and the enhancement of units' functional autonomy appear to have been successful policies for PHC in Portugal.

This investigation does not address the cost of improvement of indicators in the different PHC models. Future studies could focus on evaluating this aspect.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:<https://doi.org/10.1016/j.healthpol.2021.02.008>.

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CHAPTER 5: HEALTHCARE EQUITY AND COMMISSIONING



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Article

Healthcare Equity and Commissioning: A Four-Year National Analysis of Portuguese Primary Healthcare Units

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Abstract: Equal and adequate access to healthcare is one of the pillars of Portuguese health policy. Despite the controversy over commissioning processes' contribution to equity in health, this article aims to clarify the relationship between socio-economic factors and the results of primary healthcare (PHC) commissioning indicators through an analysis of four years of data from all PHC units in Portugal. The factor that presents a statistically significant relationship with a greater number of indicators is the organizational model. Since the reform of PHC services in 2005, a new type of unit was introduced: the family health unit (USF). At the time of the study, these units covered 58.1% of the population and achieved better indicator results. In most cases, the evolution of the results achieved by commissioning seems to be similar in different analyzed contexts. Nevertheless, the percentage of patients of a non-Portuguese nationality and the population density were analyzed, and a widening of discrepancies was observed in 23.3% of the cases. The commissioning indicators were statistically related to the studied context factors, and some of these, such as the nurse home visits indicator, are more sensitive to context than others. There is no evidence that the best results were achieved at the expense of worse healthcare being offered to vulnerable populations, and there was no association with a reduction in inequalities in healthcare. It would be valuable if the Portuguese Government could stimulate the increase in the number of working USFs, especially in low-density areas, considering that they can achieve better results with lower costs for medicines and diagnostic tests.

Keywords: primary healthcare; health equity; commissioning; family health units; community health; health policy; socio-economic factors; community-based health financing; community health services

1. Introduction

1.1. Health Equity in the Portuguese Context

Portugal has marked socio-economic inequalities, having one of the most unequal income distributions in Europe [1]. The Portuguese Constitution (1976) outlines that the state should, “ensure all citizens have access to preventive, curative and rehabilitative healthcare services, regardless of their socio-economic condition” [2], and this commitment is strengthened by the 1990 Health Act, which declares that ensuring equity in the distribution of resources and the use of services is a fundamental goal of the country’s health system [3]. Despite this, socio-economic disparities continuously translate into health inequalities. Determinants such as low income, lower educational attainment, female gender and migrant status have been linked to worse health outcomes in conditions such as obesity [4–7], mental health problems [8,9] and cardiovascular disease [10,11]. In addition, Portugal presents disparities between the rich and the poor in the ability to access both specialist and primary healthcare consultations [12,13]. These disparities are also seen in ambulatory care-sensitive conditions, suggesting worrisome inequalities in the access to early and high-quality primary healthcare [14].

The concept of health equity was brought into the mainstream of national health policy through the 2015–2020 National Health Plan [15], following a WHO evaluation that identified a concerning policy gap in the area of health inequalities in previous plans [16]. The 2015–2020 plan defines equitable and adequate access of healthcare as one of the four cornerstones of the national health policy, proposing, among other strategies, the articulation of national and local health policy through commissioning processes in primary healthcare (PHC) [15].

1.2. The Portuguese Primary Healthcare System

In 2005, the Portuguese Government launched a country-wide reform of primary healthcare services, introducing a new type of PHC unit, the family health unit (“USFs” — Unidades de Saúde Familiar). USFs are public, self-managed primary healthcare units formed by a self-selected group of general practitioners (GPs), PHC nurses and administrative staff, with functional and technical autonomy to organize the delivery of health services [17]. All USFs can access the government’s PHC incentive scheme, which rewards good practices with grants that may be used to fund training and research activities for the PHC teams. USFs are further divided into two organizational models, A and B, where model B USFs have an additional pay-for-performance scheme to financially reward individual professionals according to workload and their team’s performance, a design that rewards quality of care and promotes teamwork [18].

The PHC reforms in Portugal can be also analyzed within their organizational framework. Before PHC reform, the predominant model was the classical management model of control with the modest involvement of professionals, based on a bureaucratic model with a hierarchical structure [19]. With the creation of the USF, a participatory management model is proposed that extensively involves all professionals (general practitioners, nurses and administrative staff) and has more organizational autonomy with the purpose of motivating the group to achieve common and commissioned goals [20]. Total quality management [21] and clinical governance [22] also contribute to the organizational model of the USF, involving several professionals in the pursuit for better quality. The three organizational models that currently coexist in Portugal (Table 1: Cf organizational models/type of unit) have different degrees of organizational maturation: UCSP is an organizational model with less autonomy that is closer to the existing model before the reform; the USF A model is an autonomous model in an early stage of organizational maturation (a model of learning and preparation) and a fixed salary; and the USF B model has the same degree of autonomy as model A, but is more mature and has a payment scheme sensitive to workload and performance.

Table 1. Description of commissioning indicators for Portuguese PHC units (2014–2016), socio-economic determinants analyzed and Portuguese PHC type of units.

Commissioning Indicators for Portuguese PHC Units (2014–2016)	Description
Medication expenditure per patient	Average total cost of subsidized medicines prescribed by PHC doctors per patient registered at the PHC unit.
Diagnostic test expenditure per patient	Average total cost of diagnostic test ordered by PHC doctors per patient registered at the PHC unit.
Proportion of users with DM2 with a last HbA1c recorded less than or equal to 8%	Proportion of DM patients whose last HbA1c measure was less than 8% (64 mmol/mol).
Proportion of hypertensive patients under 65 years of age with blood pressure below 150/90 mmHg	Proportion of hypertensive patients aged 65 years or above whose last blood pressure measurement was less than 150/90 mmHg.
Proportion of elderly patients not on any antianxiety, sedative or hypnotic medications	Proportion of patients aged 65 or older who were not prescribed antianxiety, sedative or hypnotic medications during the period of analysis in the past year.
Proportion of patients aged 14 or older with regular registered smoking habits	Proportion of patients aged 14 or older with regular smoking habits registered over the past 36 months.
Proportion of nurse-led home visits	Number of home visits carried out by PHC nurses per 1000 patients registered at the practice.
Proportion of patients with appropriate maternal health follow-up	Index accounting for the number of medical and nurse follow-up appointments, mandatory screening tests and diagnostic tests.
Proportion of pediatric patients with appropriate follow-up during the first year of life	Index accounting for the number of medical and nurse follow-up appointments, mandatory screening tests and completion of the national vaccination schedule in the first year of life.
Proportion of child-bearing-age women with appropriate family planning support	Index accounting for medical and nurse family planning appointments, as well as appropriate cervical cancer screening.
Socio-economic Determinants	
Percentage of elderly patients	Proportion of patients aged 65 years and older.
Percentage of users holding Portuguese nationality	Percentage of users with Portuguese nationality.
Percentage of users in economic deprivation	Households in which average monthly income, divided by the number of people responsible for the household, does not exceed 1.5 times the value of the indexing of social support (which, in 2019, was EUR 653.64).
Population density	The intensity of settlement expressed as the ratio between (total) population and surface (land) area (usually expressed as the number of inhabitants per square kilometer).
Unemployment rate	Rate that defines the relationship between the unemployed population and the labor force.
School dropout rate before mandatory education completed	Population aged between 10 and 15 years who dropped out of school without completing 9th grade—compulsory schooling.
Organizational Models/Type of Unit	
USF Model B	Self-organized group of professionals, with a practice's financial incentives schemes linked to overall team achievement plus pay-for-group performance for each doctor, nurse and administrative staff group.
USF Model A	Self-organized group of professionals, with a practice's financial incentive schemes linked to overall team achievement.

USCP	Traditional model without financial incentive schemes or pay-for-performance scheme.
USF Model C	Experimental model regulated by a special law that is not yet implemented, but is meant to complement eventual shortcomings in the National Health Service. Model C comprises USFs from the social, cooperative and private sectors in conjunction with the health center, but with no hierarchic dependency. Their activity is based on a contract signed with the regional health administration.

In December 2016, 41.9% of the Portuguese population were enrolled in UCSP, 27% in USF model A and 31.1% in USF model B [23].

The 2005 reform also relaunched the commissioning processes, which are used to plan and deliver services for all types of units in the country. Our analysis of all PHC units in Portugal during the period of 2013–2016 found that, after the 2005 PHC reform, the quality indicators included in the commissioning process improved. This improvement was not associated with a detrimental effect on noncommissioned indicators and there was a general improvement in the quality of PHC services [17].

1.3. Commissioning and Equity: Theory and Evidence

Commissioning is formally defined as a process of procuring health services based on the assessment of the population's needs [24]. On a practical level, it creates a separation between the provider and purchaser of services [25], which improves priority settings and service integration for population groups in need [26], thus optimizing the way services are delivered and contributing to health equity [27]. However, commissioning processes may also generate a conflict between the goals of efficiency and equity, such that more cost-effective services are procured, jeopardizing the services required by vulnerable populations [28].

The available evidence on commissioning has increased in recent years, as more countries implement such processes. Nonetheless, the extent to which these processes contribute to health equity is controversial. A review of 27 studies on the effect of the UK's commissioning scheme, the Quality of Outcomes Framework (QOF), concluded that the scheme is overall beneficial to the improvement of equity in treatment access and intermediate treatment outcomes, but that the extent to which different patient groups benefit from this improvement highly depends on the quality indicators and service users under study [29]. Although some of the studies included in the review demonstrated a clear reduction in the attainment gap between socially deprived and advantaged groups in areas such as blood pressure monitoring [30], others highlighted how some groups of patients remain at a disadvantage despite improvements in other groups [31]. Another study assessing the general achievement of quality indicators for 7637 UK primary healthcare practices and found that the introduction of financial incentive schemes led to a significant decrease in disparities in the delivery of PHC services related to area deprivation over a period of 3 years [32]. Similarly, a recent study from Brazil also concluded that the introduction of a pilot quality improvement commissioning process in over 13,934 health teams successfully eliminated income inequalities in the delivery of PHC services [33].

The present study aims to explore the relationship between the commissioning processes and health equity in Portuguese primary healthcare services, with two main objectives: (1) to understand whether the evolution in primary healthcare quality indicators is associated with specific socio-economic context factors in which PHC units are inserted; and (2) to understand if the introduction of commissioning processes leads to an attenuation in the outcome disparities between primary healthcare units in the most and least deprived contexts.

2. Materials and Methods

This study used the results of PHC performance indicators from units across mainland Portugal published by the Portuguese Central Administration of the Health System (ACSS—Administração Central do Sistema de Saúde) from 2013 to 2016. This includes data from the period where the indicators were used as targets in the commissioning process (2014–2016) and the year prior to this change (Table 1: commissioning indicators for Portuguese PHC units (2014–2016)).

Indicators were determined for every PHC unit, and each unit was characterized according to its organizational model as UCSP, USF Model A, or USF Model B.

Six socio-economic determinants (Table 1: socio-economic determinants) were also used to characterize the PHC units' populations. The percentage of elderly patients, percentage of users with Portuguese nationality and percentage of users in economic deprivation were calculated based on the ACSS per unit considering the information of each user enrolled in this unit. The unemployment rate, population density and school dropout rate before completing mandatory education are averages for the area in which the PHC unit is inserted [34].

All units that ceased to function or changed their organizational models during the study period were excluded from the analysis. According to this criterion, of the initial 1104 PHC units, 378 were excluded. The remaining 726 units accounted for 8,519,723 users out of a total of 10,664,898 SNS users (79.9%).

A descriptive analysis was performed for each indicator by year, by model and globally.

The exploratory factor analysis (EFA) technique [35] was used to analyze the evolution of the results in different socio-economic contexts before and after commissioning. The study, for the analysis of the adequacy of the factors, used the Kaiser–Meyer–Olkin (KMO) test, whose value should be greater than 0.5, and Bartlett's sphericity test, which indicates the adequacy of the data for a factor analysis. These tests analyzed the total variance explained by the results.

Indexes of context variables were created to identify the factors underlying the context of the functional units, and these factors were used to divide the units into groups. The groups were created by dividing each factor into terciles and the number of factors were defined by Pearson's criterion ($\geq 80\%$). Bartlett's sphericity test and the KMO test were applied.

To analyze whether the evolution of commissioning indicators is related to the PHC units' socio-economic context variables, the generalized estimating equation model was used. Using the quasi-likelihood under the independence model criterion (QIC) and corrected quasi-likelihood under the independence model criterion (QICC) analysis, a two-point analysis (2013 and 2016) was chosen. To analyze whether there is an attenuation of differences in the results in different socio-economic contexts before and after commissioning, a factor analysis was used.

The SPSS 26 (IBM Corp. Armonk, NY, USA) software was used for data analysis.

This article was the result of a research protocol approved by the North ARS Ethics Committee (CES 4/2017).

3. Results

3.1. Relationship between Context Factors and Evolution of the PHC Indicator Results (Table 2)

The context factors that showed a statistically significant association with the evolution of the results of a larger number of indicators were:

- The organizational model of the units (all indicators);
- The percentage of users with Portuguese nationality (eight indicators);
- The unemployment rate, percentage of elderly and population density (six indicators).

Those with a statistically significant association with the results of a smaller number of indicators were:

- The school dropout rate before mandatory education is completed and the percentage of users in economic deprivation (four indicators).

The indicators with an evolution that showed a statistically significant association with a greater number of context variables were:

- The proportion of hypertensive patients under 65 years of age and with blood pressure below 150/90 (five context variables);
- The proportion of patients aged 14 or older with regular smoking habits registered (five context variables);
- The proportion of child-bearing age women with appropriate family planning support (five context variables).

The indicators with an evolution that showed a statistically significant association with a smaller number of context variables were:

- The proportion of users with DM2 with the last HbA1c recorded less than or equal to 8% (three context variables);
- The proportion of elderly patients not on any antianxiety, sedative or hypnotic medications (two context variables).

Table 2. Relationship between context factors and evolution of the PHC indicator results (*p*-value).

	Type of Unit	Population Density (Average)	School Dropout Rate before Mandatory Education Completed (Average)	Unemployment Rate (Average)	Percentage of Elderly Patients (Average)	Percentage of Users in Economic Deprivation (Average)	Percentage of Users Holding Portuguese Nationality (Average)
Medication expenditure per patient	<0.01	0.52	0.78	0.01	<0.01	0.55	0.01
Diagnostic test expenditure per patient	<0.01	0.02	0.01	0.20	<0.01	0.88	0.20
Proportion of users with DM2 with a last HbA1c recorded less than or equal to 8%	<0.01	<0.01	0.27	0.29	0.68	0.85	<0.01
Proportion of hypertensive patients under 65 years of age with blood pressure below 150/90	<0.01	0.03	0.37	0.21	0.06	0.00	<0.01
Proportion of elderly patients not on any antianxiety, sedative or hypnotic medications	<0.01	0.24	0.96	0.00	0.33	0.93	<0.01
Proportion of patients aged 14 or older with regular registered smoking habits	<0.01	<0.01	0.09	0.01	0.96	0.00	<0.01
Proportion of nurse-led home visits	<0.01	<0.01	0.05	0.04	<0.01	0.01	<0.01
Proportion of patients with appropriate maternal health follow-up	<0.01	0.09	<0.01	0.02	<0.01	0.06	0.08
Proportion of pediatric patients with appropriate follow-up during the first year of life	<0.01	0.06	<0.01	<0.01	0.08	0.06	<0.01
Proportion of child-bearing-age women with appropriate family planning support	<0.01	0.02	0.67	0.92	0.01	0.01	<0.01

3.2. Differences in Results in Distinct Socio-Economic Contexts before and after Commissioning

The results of the Kaiser–Meyer–Olkin (KMO) test (KMO measure of sampling adequacy = 0.6) and Bartlett’s sphericity test ($\chi^2 = 6206.926$, $p < 0.001$) indicated that the data were suitable for factor analysis.

The study of communalities presents values higher than 0.728, indicating that all variables contained in the study are explained by the extracted components and the percentage of the total explained variance was 82%.

After factorial analysis, three factors were obtained, and each factor can be mainly explained by two variables (Figure 1):

- Factor 1: correlated with the variables of unemployment rate (positive) and percentage of elderly patients (negative);
- Factor 2: correlated with the variables of school dropout rate before mandatory education completed (positive) and percentage of users in economic deprivation (positive);
- Factor 3: correlated with the variables of population density (negative) and percentage of users with Portuguese nationality (positive).

	USCP			USF-A			USF-B		
	F1	F2	F3	F1	F2	F3	F1	F2	F3
Medication expenditure per patient	<>	=	<>	<>	=	<>	<>	=	=
Diagnostic test expenditure per patient	<>	<>	=	=	=	=	=	=	=
Proportion of users with DM2 with a last HbA1c recorded less than or equal to 8%	<>	<>	<>	=	=	↑	<>	<>	<>
Proportion of hypertensive patients under 65 years of age and blood pressure below 150/90	=	<>	<>	↓	<>	↑	<>	<>	<>
Proportion of elderly patients not on any anti-anxiety, sedative, or hypnotic medications	=	=	<>	=	↑	<>	<>	↑	=
Proportion of patients aged 14 or older with regular smoking habits registered	=	↑	↑	↓	↑	↓	<>	↑	↑
Proportion of nurse-lead home visits	<>	<>	<>	=	<>	↑	↑	<>	=
Proportion of patients with appropriate maternal health follow-up	=	↓	<>	=	=	↑	<>	<>	<>
Proportion of paediatric patients with appropriate follow-up during the first year of life	<>	<>	<>	=	=	<>	<>	<>	<>
Proportion of child-bearing age women with appropriate family planning support	=	<>	<>	<>	<>	=	<>	<>	↑

Figure 1. Summary of differences in results in distinct socio-economic contexts before and after commissioning by factors and indicators. Legend: <> differences before commissioning remain equal; = the absence of differences before commissioning remains; ↓ differences before commissioning decrease; ↑ differences before commissioning increase.

Analyzing the cluster that grouped the context characteristics of “unemployment rate” and “percentage of elderly patients” (F1), the discrepancies in the results were attenuated in the “proportion of hypertensive patients under 65 years of age and blood pressure below 150/90” and “proportion of patients aged 14 or older with regular smoking habits registered” following the commissioning of these indicators in USF-A-type units (change from $p > 0.05$ in 2013 to $p < 0.05$ in 2016).

In the cluster that grouped “school dropout rate before mandatory education completed” and “percentage of users in economic deprivation” (F2), the discrepancies in the results were attenuated for the “proportion of patients with appropriate maternal health follow-up” indicator after it was commissioned, but this was only verified in USCP-type units (change from $p > 0.05$ in 2013 to $p < 0.05$ in 2016).

In the cluster that grouped “population density” and “percentage of users holding Portuguese nationality” (F3), the discrepancies in results were attenuated for the “proportion of patients aged 14 or older with regular smoking habits registered” indicator after it was commissioned, but this was only verified in USF-A-type units.

3.3. Analysis Based on Organizational Model

We found that, in general, USFs are implemented in places with a higher average population density, a lower rate of school dropout before the end of compulsory education, a higher unemployment rate, fewer elderly people, fewer users in economic deprivation and fewer non-Portuguese users (Table 3).

Table 3. Results of context factors by PHC unit type (averages).

Type of Unit	Population Density	School Dropout Rate before Mandatory Education Completed	Unemployment Rate	Percentage of Elderly Patients	Percentage of Users in Economic Deprivation	Percentage of Users Holding Portuguese Nationality
UCSP	864.78	57.96	6.71	25.26	52.48	96.74
USF-A	1621.71	51.15	7.54	21.49	51.39	97.76
USF-B	1559.54	49.72	8.04	19.45	50.83	98.59
Average	1250.63	53.80	7.33	22.52	51.70	97.57

In 2016, the USFs had better results in all analyzed health indicators and had a lower average cost of expenses for medicines and diagnostic tests (Table 4).

Table 4. Indicator results (2016) by PHC unit type.

2016 Results	UCSP	USF-A	USF-B	Average
Medication expenditure per patient	195.07	162.72	137.54	168.94
Diagnostic test expenditure per patient	64.77	55.27	48.69	57.38
Proportion of users with DM2 with a last HbA1c recorded less than or equal to 8%	48.19	67.51	76.88	61.83
Proportion of hypertensive patients under 65 years of age with blood pressure below 150/90	37.55	58.43	72.51	53.66
Proportion of elderly patients not on any antianxiety, sedative or hypnotic medications	65.04	64.26	63.55	64.37
Proportion of patients aged 14 or older with regular registered smoking habits	47.18	69.75	77.61	62.05
Proportion of nurse-led home visits	155.7	134.17	146.82	148.49
Proportion of patients with appropriate maternal health follow-up	0.56	0.75	0.86	0.7
Proportion of pediatric patients with appropriate follow-up during the first year of life	0.73	0.86	0.93	0.83
Proportion of child-bearing-age women with appropriate family planning support	0.51	0.69	0.79	0.64

4. Discussion

Previous studies showed the relationship between health outcomes and population context [36], and the 2015–2020 Portuguese National Health Plan defines equitable and adequate access to healthcare as one of its four cornerstones, proposing, among other strategies, the articulation of national and local health policy via commissioning processes in primary healthcare. However, commissioning processes may also generate a conflict between the goals of efficiency and equity, such that more cost-effective services may jeopardize the services required by vulnerable populations [37–40].

This article aims to clarify the relationship between the context and the results of commissioning indicators in PHC units in Portugal.

The results of this study show that the evolution observed in the results of the commissioning indicators is statistically related to the studied context factors, and that some PHC performance indicators are more sensitive to context than others. Furthermore, the organizational model of the unit is the factor that presents a statistically significant association with a greater number of indicators (9 out of 10 indicators). Additionally, better results were achieved by the Model B USFs, followed by Model A USFs, and then, UCSPs.

This suggests that the organizational model and payment system [41,42] may have an impact on performance. Self-selected groups with higher functional autonomy (the USFs) and, within these, those with a pay-for-performance system (Model B USFs) appear to perform better than others, reinforcing the need for further investigating the link between financial incentives and quality of care. This also highlights the importance of increasing the number of working USFs.

In the factorial analysis, three factors were obtained. Factor (F) 1 could be linked to the active population and employment as it is positively correlated with the variables “unemployment rate” and negatively correlated with the “percentage of the elderly population”. F2 relates to the poverty cycle as it is positively correlated with the variables “school dropout rate before mandatory education completed” and “percentage of users in economic deprivation”. F3 is linked to territorial attractiveness, as it is negatively correlated with the variables “Population density” and positively with the “percentage of users holding Portuguese nationality”.

Overall, the differences or similarities existing before commissioning remain unchanged in more than 80% of cases, but it is important to note that, in F1, the absence of an association between the commissioning process and the results obtained by the PHC units is observed in 90% of cases; in F2, this value reaches 80%, and in F3, it is 63.3%. This means that commissioning may have a greater impact on (both improving and worsening) the performance of PHC quality indicators in contexts with a higher percentage of patients of non-Portuguese nationality and a lower population density.

The implementation of commissioning processes was demonstrated to attenuate context-related discrepancies in 6.7% of the cases in cluster F1 and 3.3% in clusters F2 and F3. However, there is a widening of the discrepancies after commissioning in 3.3% of the cases in cluster F1, 16.7% in cluster F2, and 23.3% in cluster F3. These results show that the influence of the commissioning process on the results of the activity of PHC units could differ with different context characteristics [31].

Commissioning seems to be an important tool to attenuate context-related discrepancies in PHC performance results when these are related to “active population and employment” (F1 cluster) characteristics, but it is less effective when the discrepancies are related to nationality and population density. This suggests PHC teams can improve in adapting their care to patients of non-Portuguese nationality and work towards delivering culturally sensitive care [42]. However, it is also pertinent to note that there are fewer USFs in areas with a greater non-Portuguese population and in areas with a lower population density partly because, under the conditions at the time of the study, to implement an USF there was only required for a minimum number of users, making this more difficult to achieve in low-density population areas. This may also contribute to this result, as we know that commissioning is more effective in USF-type units (compared to the traditional USCP models). Nonetheless, primary healthcare services may be improved by, for example, embedding meaningful co-production approaches [43] into the commissioning process and involving patients of non-Portuguese nationality in the needs assessment and service planning and delivery stages of commissioning [44].

The evolution of the results of the nurse home visits indicator is statistically related to all the context factors analyzed. We emphasize the fact that it is an indicator in which health services meet people in a domestic setting. Therefore, this may reveal the way that they live, reducing social and cultural barriers and improving their health-related outcomes or care needs [45,46].

The indicators related to expenses of medicines and diagnostic tests, as well as the indicator of appropriate follow-up during the first year of life, did not show any increase in the differences in the results related to the context. This could mean that family doctors were not conditioned by commissioning in their prescriptions, regardless of the context in which they worked.

When analyzing cluster F3, which is related to nationality and population density, we see that there was an increase in discrepancies for the “proportion of patients with

appropriate maternal health follow-up” in USF-A units. This may be due to the fact that many pregnant women of non-Portuguese nationality live abroad and only move to Portugal at a late stage of pregnancy [47]. In contrast, “appropriate follow-up in the first year of life”, which refers to child surveillance, shows no context-related discrepancies, which might be because there is already an established contact between the mother and the health unit, and teams are able to proactively invite newborn children to the Child Health Program consults.

5. Limitations and Suggestions for Future Research and Actions

This study has a few limitations that should be highlighted for the benefit of future research. The same target (control or number of consultations) was used for all patients, when health needs may often be different. It would also be relevant to analyze satisfaction and impact indicators.

The results of the KMO test show that it may be useful to deepen the investigation by including more variables.

The analysis is based on the results of indicators and deserves to be re-evaluated, taking into account its limitations [48].

For future studies and actions, we recommend exploring data per user regarding their use of services and health outcomes.

6. Conclusions

The trends observed in the results of the commissioning indicators are statistically related to the studied context factors, and the PHC unit organizational model is the most significant context factor in this regard. Therefore, it is important to encourage the implementation of a greater number of USFs, especially in low-density areas. Furthermore, regardless of the context, USFs have better results with lower costs for medicines and diagnostic tests.

The results for PHC indicators used in the commissioning processes were improved [17], and there was no evidence that the better results exhibited were achieved at the expense of a detrimental healthcare offered to vulnerable populations, but this was not associated with a reduction in healthcare inequalities. The differences in performance among PHC units in different contexts remained the same after the implementation of the commissioning process in 80% of the cases.

Commissioning processes should be adapted to better satisfy the needs of patients without Portuguese nationality and those living in low-density population areas. Further research could focus on understanding the challenges of delivering care among these populations.

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CHAPTER 6: CONCLUSIONS AND FUTURE RESEARCH

This research comprises two papers that aim to explore the association between PHC commissioning and the results achieved by PHC units in Portugal following the implementation of the 2005 PHC reform. Additionally, the studies examine the association between PHC commissioning and healthcare equity.

The first paper investigates the association between PHC commissioning and the performance of PHC units in Portugal by analyzing national data over a four-year period.

The second paper focuses on the association between performance results and the characteristics of the population and organizational context of the PHC units. This analysis encompasses a four-year study of data from all PHC units in Portugal.

Both studies were designed with the goal of providing insights to improve policymaking and enhance healthcare delivery and equity.

Main Conclusions

The main conclusions from the research expressed in the papers included in this thesis can be summarized as follows:

1. There were improvements in the results of both the group that commissioned the analyzed indicators and the one that did not. This improvement, however, was most evident in the former.
2. Commissioning may also play a role in mitigating differences of the results obtained between professionals working under different organizational models, as differences between the organizational models were more patent in the non-commissioned group than in the commissioned group.
3. The progression of the results through commissioning appeared consistent across various contexts. However, significant correlations were found between the commissioning indicators and contextual factors such as the percentage of users of Portuguese nationality, the unemployment rate, the percentage of the elderly population, the population density, the school dropout rate, and the

percentage of economically deprived users. Among these factors, the organizational model of the PHC unit stood out as particularly influential.

4. Regardless of the context, USFs have better indicator results with lower costs for medicine and diagnostic tests.
5. The findings suggest that better outcomes in the commissioned indicators were not achieved at the expense of detrimental effects on the non-commissioned indicators. The performance of the PHC indicators used in the commissioning processes demonstrated improvement without compromising healthcare for vulnerable populations. However, it is important to note that this improvement did not lead to a reduction in healthcare inequalities. Moreover, in 80% of the cases, the similarities and differences in the results of the indicators between the most and least deprived population groups remained the same before and after the implementation of the commissioning process.
6. The implementation of the commissioning processes attenuate context-related discrepancies particularly when analyzing contextual factors such as the unemployment rate and the percentage of the elderly population. However, when analyzing contextual factors such as non-Portuguese users or areas with a low population density, there is widening of the discrepancies after commissioning.

Analysis of main conclusions

Each of the articles included in this thesis contains a detailed discussion of its respective findings. This closing discussion consolidates all of the findings to be considered, thus giving rise to new perspectives and implications for practice, policymakers, and research.

It is important to highlight that this study encompassed nearly the entire population of mainland Portugal over a four-year period, which is a significant strength of the research.

The results of this investigation show that there were improvements in the results of both the group that commissioned the analyzed indicators and the one that did not commission them. This improvement was most evident in the group that commissioned the indicators.

This research has also shown that the evolution observed in the results of the commissioning indicators is statistically related to the studied context factors and that some PHC performance indicators are more sensitive to the context than others. Furthermore, the organizational model of the unit is the factor that presents a statistically

significant association with a greater number of indicators followed by the percentage of users with Portuguese nationality, the unemployment rate, the percentage of the elderly, and the population density. The school dropout rate before mandatory education was determined, and the percentage of users in economic deprivation (four indicators) presents a statistically significant association with the results of a smaller number of indicators.

Given the complex interaction between the commissioning process and the context factors, factorial analysis was used to examine the evolution of the results in different socioeconomic contexts before and after commissioning. Context variable indices were created to identify underlying factors of the PHC units' context, and these factors were used to divide the units into groups.

After factorial analysis, three factors were obtained, and each factor can be mainly explained by two variables.

Factor 1 was correlated with the variables of unemployment rate (positive) and percentage of elderly patients (negative). Economic challenges and limited resources resulting from unemployment contribute to reduced healthcare outcomes. A higher percentage of the elderly population is negatively correlated, suggesting that areas with a larger elderly population tend to have poorer healthcare outcomes. The specific healthcare needs and complexities associated with aging, such as chronic conditions and increased healthcare utilization, may have contributed to this relationship.

Factor 2 was correlated with the variables of school dropout rate before mandatory education being completed (positive) and the percentage of users in economic deprivation (positive). Higher dropout rates indicate socioeconomic challenges, which have a detrimental impact on healthcare outcomes. Individuals with lower educational attainment may have limited health literacy, leading to disparities in health outcomes. A higher percentage of users facing economic deprivation is associated with poorer healthcare outcomes. Economic constraints limit individuals' ability to access healthy living conditions and healthy lifestyle habits, leading to adverse health outcomes.

Factor 3 was correlated with the variables of population density (negative) and the percent- age of users with Portuguese nationality (positive).

Higher population density is associated with more favorable healthcare outcomes. Areas with higher population density typically have greater availability of and access to healthcare services, a larger healthcare workforce, and increased allocation of resources to meet the healthcare needs of the population. A higher percentage of users who are

Portuguese nationals was associated with better healthcare outcomes. This suggests that commissioning processes may be associated with improving healthcare outcomes for the native population, possibly due to factors such as language proficiency, cultural familiarity, and easier access to healthcare services.

The indicators with an evolution that showed a statistically significant association with a greater number of context variables were the ones related with hypertension control in the working age population, recorded smoking habits, and family planning support for women of child-bearing age. On the other hand, there are indicator results with a smaller association with the context variables, such as the control of diabetes and the prescription of anti-anxiety, sedative, or hypnotic medication for elderly patients.

As discussed above, the commissioned indicators improved more than non-commissioned indicators, and the PHC units with a pay-for-performance system performed better than those without one.

Thus, better results were achieved by the Model B USFs, followed by the Model A USFs and then the UCSPs. However, differences between the organizational models are more evident in the non-commissioned group than in the commissioned group; thus, it can be concluded that commissioning may also play a role in mitigating differences between organizational models.

In fact, UCSPs offer no financial benefits for their staff unlike Model A USFs, who, by meeting commissioned targets, have access to incentives for the improvement of amenities and training. In Model B USFs, in addition to the institutional incentives, their staff may also have financial incentives added to their salary, depending on their team's performance.

This suggests that the organizational model and payment system (Millett et al., 2009; Muggah et al., 2012) may have an impact on performance. Self-selected groups with higher functional autonomy (the USFs) and, within these, those with a pay-for-performance system (Model B USFs) appear to perform better than others, reinforcing the need for further investigation into the link between financial incentives and quality of care. This also highlights the importance of increasing the number of working USFs.

This study has shown that there is no evidence that better results in the commissioned indicators were achieved at the expense of a detrimental effect on the non-commissioned indicators. The fact that the non-commissioned indicators also mostly improved is not consistent with the findings of Doran et al., who conclude that there is a small detrimental effect on the aspects of care that were not incentivized (Doran et al., 2011). This seems to result in positive spill-over effects (Perelman et al., 2020; Sutton et al., 2010) on the non-incentivized indicators that can be explained through motivation (Bresnen & Marshall, 2000), primarily in the Model A USFs that are working to upgrade to Model B USFs (Miraldo, 2017).

Another significant aspect is that there was no evidence that the better results exhibited were achieved at the expense of detrimental healthcare offered to vulnerable populations; however, this was not associated with a reduction in healthcare inequalities. The differences in performance among PHC units in different contexts remained the same after the implementation of the commissioning process in 80% of cases.

Commissioning seems to be an important tool to attenuate context-related discrepancies in PHC performance results when these are related to “active population and employment” characteristics, but it is less effective when the discrepancies are related to nationality and population density. This suggests that PHC teams can improve in adapting their care to patients of non-Portuguese nationality and work towards delivering culturally sensitive care (Muggah et al., 2012). However, it is also pertinent to note that, in general, there are fewer USFs in areas with a greater non-Portuguese population and in areas with a lower population density. This may also contribute to this result, as we know that commissioning is more effective in USF-type units (compared to the traditional USCP models). Nonetheless, PHC services may be improved by, for example, embedding meaningful co-production approaches (Hart, 2022) into the commissioning process and involving patients of non-Portuguese nationality in the needs assessment and service planning and delivery stages of commissioning (Loeffler & Bovaird, 2019).

One of the more significant findings that emerged from this study is that commissioning processes should be adapted to better satisfy the needs of patients without Portuguese nationality and those living in low-density population areas. Further research could focus on understanding the challenges of delivering care among these populations.

Main limitations

The analysis of the results of this study was conditioned by some limitations. Firstly, it should be acknowledged that the incentives received by teams or professionals may have influenced an increase in record-keeping. However, this does not fully explain the improvements observed in the UCSP-type units, which do not receive incentives.

Additionally, since most indicator results are obtained from family health team records, there is a possibility of over-registration of commissioned indicators and under-registration of non-commissioned indicators. This could be due to a lack of interest in recording parameters that are not directly related to incentives.

Another potential limitation stems from the nature of the measured information. The analyzed indicators mainly consist of recorded processes and outputs. Therefore, it is not possible to determine whether the recorded activities were performed to the appropriate standards or if they were relevant to the specific needs of each patient.

A notable limitation of this study was the non-utilization of indicators related to ambulatory care sensitive conditions. The inclusion of such indicators could have provided a more comprehensive assessment of the overall performance of the health system and allowed for a more balanced evaluation of the impact of commissioning processes on PHC. To address this limitation, it is important to establish correlations with other published works (Dimitrovová et al., 2020; OECD & Union, 2022; Ramalho et al., 2021) that have analyzed indicators related to avoidable hospitalizations.

Furthermore, the majority of the analyzed indicators focused on processes, which leaves room for questioning the potential discrepancy between a recorded process and a positive patient outcome. While indicators measuring the impact of procedures on patient outcomes would be preferable for assessing the effects of commissioning on PHC services, such indicators often require several years of study to yield results, making them unsuitable for annual commissioning processes. As a result, commissioning analyses typically rely on indicators that allow for more regular and frequent monitoring of changes over relatively short periods of time. This may partly explain why, despite a substantial volume of literature on the topic, there is still no consensus on the effects of commissioning on healthcare outcomes.

Implications for Policymakers

In countries with regional disparities, it may be beneficial to adopt a national set of indicators that are common to all PHC units, while allowing for regional or local selection of indicators to address specific priorities. This approach has shown that commissioning different indicators leads to faster improvements in underserved areas, to achieve faster improvements and reduce inequalities, without negatively impacting non-commissioned indicators.

It is necessary to focus on vulnerable populations, namely in adapting commissioning processes to better meet the needs of patients without Portuguese nationality and those living in low-density population areas. It is vital to develop strategies to ensure equitable access to healthcare services for these populations, considering language barriers, cultural sensitivities, and geographical constraints.

Reinforcing the importance of the USF is also crucial, encouraging the creation of a greater number of USFs, especially in the areas where they are most needed. USFs have shown better results with lower costs for medicine and diagnostic tests, making them a valuable model for enhancing PHC performance.

Future Research

The present study does not explore the cost implications of improving indicators in various PHC models, leaving room for future research to explore this aspect.

Additionally, as highlighted earlier, there is a need to adapt commissioning processes to better meet the needs of patients without Portuguese nationality and those residing in low-density population areas. Further investigation in these areas could shed light on the challenges faced in delivering care to these populations and help to identify strategies to overcome them.

Final Remarks

Based on the findings of this investigation, it can be concluded that the emphasis placed on the development of health information systems and commissioning processes, as well as the implementation of pay for performance and the enhancement of units' functional autonomy, have been demonstrated to be successful policies for PHC in Portugal. These initiatives have delivered positive results and should be strengthened in order to continue improving PHC services in the country.

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ATTACHMENTS

ETHICAL PERMISSIONS

 **ARS NORTE**
Administração Regional
de Saúde do Norte, I.P.

☐ ☐ ☐ DATA : 8. fevereiro. 2017

INFORMAÇÃO Nº 007/2017 Nº <Processo> <Registo>

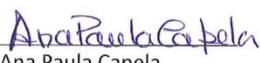
PARA: Conselho Diretivo da ARS Norte

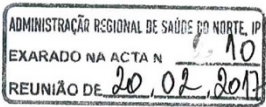
DE: Comissão de Ética para a Saúde da ARS Norte

ASSUNTO: Parecer nº 4/2017

Levo ao conhecimento desse Conselho Diretivo o Parecer nº 4/2017 sobre o Estudo "O papel da contratualização na equidade e acesso nos Cuidados de Saúde Primários em Portugal", aprovado na reunião de 7 de fevereiro de 2017, por unanimidade.

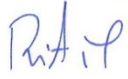
À consideração superior


Ana Paula Capela
(Assessoria CES/UIC)



DELIBERADO CONCORDAR
20.12.2017


Dr. Pimenta Marinho
Presidente do C.D.


Rita Moreira
Vice-Presidente do CD


Dr. Ponciano Oliveira
... Vogal C. D.





ARS NORTE
Administração Regional
de Saúde do Norte, I.P.

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Comissão de Ética para a Saúde
Administração Regional de Saúde do Norte, IP

PARECER Nº 4/2017

Sobre o estudo T642 - "O papel da contratualização na equidade e acesso nos Cuidados de Saúde Primários em Portugal"

A – RELATÓRIO

- A.1. A Comissão de Ética para a Saúde (CES) da Administração Regional de Saúde do Norte (ARSN) iniciou o Processo n.º T642, na sequência do pedido de parecer formulado pelo Dr. António da Luz Pereira, estudante de Doutoramento da Investigação Clínica e em Serviços de Saúde da Faculdade de Medicina da Universidade do Porto, orientado pelo Doutor André Rosa Biscaia, Professor Associado da Universidade Católica do Porto e co-orientado pelo Doutor Alberto Pinto Hespanhol, Professor Associado Convidado da Faculdade de Medicina da Universidade do Porto e pelo Doutor Alberto Freitas, professor auxiliar da Faculdade de Medicina da Universidade do Porto, sobre o estudo "O papel da contratualização na equidade e acesso nos Cuidados de Saúde Primários em Portugal", conducente à elaboração da sua tese de Doutoramento, com o objetivo de determinar qual a relação entre a contratualização de determinado indicador, comparativamente com a sua não contratualização, na equidade e acesso aos cuidados de saúde em Portugal.
- A.2. Trata-se de um estudo observacional transversal.
- A.3. A amostra será constituída pela totalidade das unidades de saúde dos Cuidados de Saúde Primários em Portugal.
- A.4. Serão estudados os indicadores de execução das unidades de Cuidados de Saúde Primários do serviço nacional de saúde entre 2009 e 2016, obtidos da ACSS, SPMS, e DGS, e analisados por tipologia de unidade de saúde (USF modelo A, USF modelo B e UCSP) e por ARS.
- A.5. A realização do estudo obteve o parecer favorável do Presidente do Conselho Diretivo da ARS-Norte, IP.

B – IDENTIFICAÇÃO DE QUESTÕES COM IMPLICAÇÃO ÉTICA

- B.1. Reconhece-se relevância ao estudo e interesse nos resultados esperados.
- B.2. Os dados recolhidos são adequados à dimensão em estudo.
- B.3. Trata-se de dados agregados sem menção de identificação nominal dos participantes sejam utentes, profissionais de saúde ou unidades de saúde envolvidas.
- B.4. Não é aplicável a obtenção de consentimento informado.
- B.5. Não haverá intervenção sobre os participantes. Não se vislumbra o risco de dano sobre os próprios ou terceiros envolvidos.
- B.6. Os recursos orçamentados são adequados aos objetivos da investigação.



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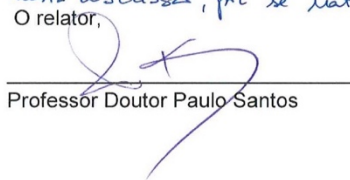
MINISTÉRIO DA SAÚDE

C – CONCLUSÃO

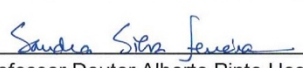
C.1. Face ao exposto, propõe-se que a CES dê parecer favorável à realização deste estudo sem restrições de natureza ética.

C.2. Não obstante, o investigador deverá obter autorização das Administrações Regionais de Saúde envolvidas no estudo.

Aprovado em reunião do dia 07 de fevereiro de 2017, por unanimidade dos membros votantes, dos quais se excluiu o Presidente da CES, o qual também não participou nesta discussão, por se tratar de co-orientador no projeto. O relator, _____


Professor Doutor Paulo Santos

Rel' O Presidente da Comissão de Ética para a Saúde da ARS Norte IP, na ausência do Presidente, a Vice-Presidente


(Professor Doutor Alberto Pinto Hespanhol)
(p/ Sandra Silva Ferreira)

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