

Medicines Compliance and Reimbursement Level in Portugal

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Abstract

During a severe financial crisis, it is a priority to use scientific evidence to identify factors that enable therapeutic compliance by patients. This study aimed to evaluate a possible association between the number of patients who attended a medical appointment and had medicine prescribed and the number of these same patients who purchased the prescribed medicine and whether the level of reimbursement was a deciding factor. We perform a correlation analysis at primary care centers in Portugal, between 2010 and 2012 ($n = 96$). We found a moderate to high positive association, which is statistically significant, between the number of the patients with medicines dispensing and medicines reimbursement levels. The correlation coefficient varies from .5 to .63 ($P < .01$). The compliance increases along with the increase in the reimbursement levels.

Keywords

access to care, community health centers, efficiency, health economics, primary care

Introduction

During a severe financial crisis, it is a priority to use scientific evidence to identify factors that enable therapeutic compliance, based on the following main drivers: information to the patients about their illness, motivation, and behavioral skills.^{1,2} Among the latter is the ability to comply with a medical prescription when prescribed medicines are purchased by the patients. Economic factors can be a threat to medicines accessibility, the reimbursement systems being part of the solution.

This study aimed to evaluate reimbursement impact as an economic driver of therapeutic compliance. It considers a possible association between the number of patients who attended a medical appointment, and had medicine prescribed, and the number of these same patients who purchased the prescribed medicine and whether reimbursement level was a deciding compliance-related factor. Several studies have shown that therapeutic compliance increases health benefits,³⁻⁵ following which a decrease in health care-related expenditure is expected.

In order to support medication compliance, health care systems monitoring programs can be implemented. They should involve all of the stakeholders—patients, medical doctors, and pharmacists—to ensure that health outcomes actually follow prescribed therapeutic regimens, as pointed out by the World Health Organization.⁶

A Conceptual Perspective

On an individual basis, “adherence to medical therapy (the extent to which recommendations are followed as defined) is a complex and dynamic behavioural process that is strongly influenced by the patient, his or her support environment, practices of healthcare providers, and the characteristics of care delivery systems”, pp.47.²

Reimbursement systems can alleviate patients from the financial burden of diseases and promote therapeutic compliance. However, adverse side effects should be avoided, mainly for lower income individuals, patients requiring polytherapy, and those with chronic diseases and sustained medical expenditures. Indeed, “healthcare expenditure is a very important factor for patients with chronic diseases because the treatment could be life-long so the cost of therapy would constitute a large portion of their disposable income”, pp.282.⁷

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Therefore, it is critical to define copayment according to the expected therapeutic benefits in specific groups of patients, by decreasing therapeutical costs and fostering health outcomes.⁸

The reimbursement system in Portugal is established according to disease severity, and the acute or chronic condition of diseases. The lower levels of copayment are applied to mild severity and acute diseases, being the highest ones related to severe and chronic conditions.

There are 4 levels of reimbursement: level D, at 15%, is the lowest one and includes medicines in a transitory situation in which the price evaluation is still ongoing in terms of reimbursement; level C, at 37%, is for transitory and mild conditions; level B, at 69%, includes medicines for moderate chronic diseases; and level A, at 95%, is for medicines prescribed for severe chronic diseases. Insulin is a special case in level A, benefitting from a 100% reimbursement. The prescription of medicines at public health care centers relies on national therapeutic guidelines published by the Department of Quality in Health (Departamento da Qualidade na Saúde) of the Health Directorate (Direção Geral de Saúde).

An Empirical Perspective

A review of the literature shows 50% therapeutic compliance in patients having chronic diseases in developed countries.⁶ However, these generic data do not identify the specific variations in different pharmacotherapeutic groups and their associated health outcomes.

When there is full compliance for hypertension, the risk of cardiac ischemic disease decreases by 3 or 4-fold.⁹ Regarding patients who experience a first myocardial infarction, those who had statin compliance lower than 80% had a more than 4-fold increase in risk of recurrent myocardial infarction and a more than 2-fold higher risk of all cause mortality when compared to those who experienced an adherence equaled or higher than 80%.² For antidyslipidemic drugs 12 months after therapy initiation, a study reported adherence of 84% to 89%, but another study reported only 50%.^{10,11} For diabetes, it was found that only 28% of the patients in Europe achieved adequate glycemic control.¹² Similar results were found in patients with asthma using prophylactic therapy, while for patients using maintenance therapy, the number reaches 30% to 70%.^{13,14} Financial factors are the most important reason for these results, followed by the number of different medicines prescribed for the patient.¹⁵ Low levels of compliance reinforce the economic burden related to the most common diseases.²

In Portugal, a study aimed at identifying the determinants for therapeutic compliance showed that the main reason for nonadherence was forgetfulness followed by “lack of economic resources/being more expensive,” with the latter being the second most stated reason. The third reason was not wanting to take the medicines or not liking the medication. However, the third factor remains the same as previously mentioned that of cost. This study also showed that about 33% of patients with chronic conditions ceased taking the prescribed medication for economic reasons.¹⁶ Further studies have shown a decrease in the intake of

prescribed medication as the cost of that medication increases. In these cases, discontinuation of either the ongoing or the beginning of therapeutic medication negatively affected health outcomes.^{17,18}

Methods

Portuguese patients attending a medical appointment between 2010 and the first half of 2012 at 64 public health care centers (Continental Portugal ACES) were identified. The sample includes patients with diagnosis related to the most prevailing diseases in Portugal, which represent the highest percentage of public health costs: diabetes, hypertension, cerebrovascular diseases, asthma, and ulcer disease, as displayed at Table 1.

The number of patients with prescriptions has been collected from the Health System Central Office (Administração Central do Sistema de Saúde). Data concerning the number of patients with purchased prescribed medicines were obtained from the Invoice Checking Centre (Central de Conferência de Faturas). The percentage of variation between the number of patients with prescriptions and the number who actually had their medicines dispensed provides a measure of therapeutic compliance in terms of prescribed medicines purchased.

A conservative approach was taken with respect to the missing data of patients who had had prescriptions and medicine dispensed during the second semester of 2012. We elected to apply the same profiles as the previous years. The annual data came to a total of 96 observations, a total of 32 observations collected per year during the 3 years. They concern each one of the disease segments related to the 16 International Classification of Primary Care codes of diseases. Following a descriptive longitudinal and retrospective analysis, we pursue with an estimation of the normality presuppositions in order to conduct a correlation analysis.

Results

A major asymmetry was observed concerning the number of patients in each of the identified segments, with patients having arterial hypertension being the most numerous. Average numbers of 3 475 016 (standard deviation [SD] = 323,481) patients with medical prescriptions and 3 191 672 (SD = 186,209) patients with prescribed medicines dispensed by pharmacies were observed.

Between 2010 and 2012, the average number of patients in the diabetes segment of the pharmacotherapeutic groups with medical prescriptions was 831 410 (SD = 315 413), which decreased to an average of 749 078 (SD = 264 796) patients who purchased their prescribed medicines in the pharmacy. For those taking antiplatelet, antiulcer, and antiasthmatic therapies, the average number of patients with medical prescriptions was 73 418 (SD = 79,563), 174 396 (SD = 90,730), and 100 660 (SD = 73,055), respectively. For the same segments, the average number of patients with prescriptions who purchased the prescribed medicines from a pharmacy was 76 990 (SD = 92 135), 127 024 (SD = 66 510), and 86 386 (SD = 65 429), respectively (Table 2).

Table 1. Norms Issued by Health Directorate, code ICPC, Pharmacotherapeutic Group (PTG), and Associated Reimbursement Levels.

Norm		ICPC		PTG		Reimbursement Level
Code	Description	Code	Description	Code	Description	
001/2011	Type 2 diabetes mellitus therapy: metformin	T90	Non-insulin dependent diabetes	8.4.1	Insulins	A
		T82	Obesity	8.4.2	Oral antidiabetics	
		T83	Overweight			
003/2010	Hypertension therapy: diuretics	K86	Hypertension without complications	3.4.	Antihypertensors	B
				3.4.1.	Thiazides and similars	
				3.4.1.6.	Association of diuretics	
014/2011	Use and selection of antiplatelet drugs	K74	Ischemic heart disease with angina	4.3.1.4	Antiplatelet drugs	C
		K75	Acute myocardial infarction			
		K76	Ischemic heart disease with angina			
		K89	Transient cerebral ischemic			
		K90	Stroke			
		K91	Cerebrovascular disease			
		K92	Atherosclerosis/Peripheral vascular disease			
016/2011	Asthma control	R96	Asthma	5.1.1.	Adrenergic agonists β	C
				5.1.2.	Cholinergic antagonists	
		R97	Allergic rhinitis	5.1.3.	Anti-inflammatories	
				5.1.4.	Xanthins	
				5.1.5.	Prophylactic antiasthmatics	
036/2011	Acid suppression: use of proton-pump inhibitors and therapeutic alternatives	D84	Esophagus disease	6.2.2.2	H2 receptor antagonists	
		D86	Peptic Ulcer, other	6.2.2.3	Proton-pump inhibitors	
		D87	Altered stomach functions			

Abbreviations: ICPC, International classification of primary care; PTG, Pharmacotherapeutic group, as established by Decree law 924-A/2010, September 17.

Table 2. Descriptive Statistics Concerning the Number of Patients With Medicine Prescription and Dispensing for the Segments Associated According to the Pharmacotherapeutical Groups, for the Period Between 2010 and 2012.^a

Patients Segments According to Drug Therapy	Prescriptions					Dispensing				
	Mean	SD	Maximum	Minimum	No. of Patients	Mean	SD	Maximum	Minimum	No. of Patients
Antidiabetics	831 410	315 413	961 661	18 145	2 884 983	749 078	264 796	891 331	17 382	2 673 994
Antihypertensives	3 475 016	323 481	4 538 410	95 812	13 615 231	3 191 672	186 209	4 303 946	89 860	12 911 838
Antiasthmatics	100 660	73 055	104 959	606	629 756	86 386	65 429	88 593	496	531 560
Antiplatelets	73 418	79 563	218 239	7 176	654 716	76 990	92 135	199 228	5 575	597 684
Antiulcerous	174 396	90 730	205 680	567	617 039	127 024	66 510	140 164	373	420 491

Abbreviation: SD, standard deviation.

^aCalculation by the authors, based on data at Health System Central Office and Invoice Checking Centre. Data obtained in September 2012.

The percentage of variation observed between the average number of patients with a medical prescription and the average number of the same patients who effectively purchased the prescribed medicines between 2010 and 2012 decreased by 32% for the antiulcer and by 16%, 9%, 5%, and 7% for the antiasthmatic, antiplatelet, antihypertensive, and antidiabetic segments, respectively.

We found a positive correlation between the percentage of variation in the number of the same patients with prescriptions and with medicines dispensed belonging to the various pharmacotherapeutic groups and the reimbursement level associated with the pharmacotherapeutic groups (Table 3). The positive association between these 2 variables decreased from a high

Table 3. Spearman Correlation Coefficient Between the Percentage Variation Observed Between the Number of Patients With Prescription and Dispensing of Medicines Belonging to 5 Pharmacotherapeutic Groups and the Associated Reimbursement Level, Between 2010 and 2012.^a

Year	Spearman Coefficient
2010	.629 ^b
2011	.582 ^b
2012	.498 ^b

^aCalculation based on data from Health System Central Office and Invoice Checking Centre. Data obtained in September, 2012.

^bP value <.01.

correlation coefficient of .629 in 2010 to a moderate correlation coefficient of .498 in 2012, being statistically significant for the 3 correlations ($P < .01$).

Discussion

Therapy nonadherence by diabetic patients and those with cardiovascular diseases is a major concern considering the increase in morbidity and mortality in Portugal. This study has identified a shortcoming in the health service that leads to a medical appointment that eventually requires additional diagnostic examinations to identify the most suitable therapy and adequate regimen for the patient. The most appropriate treatment therapy could be concluded with the patient purchasing from a pharmacy and taking the medicine. This was the weakness in the health service that was observed in the study, in which purchasing of the medicine by the patient was not fully ensured.

The results showed that compliance was greater when the reimbursement level was higher, as the correlation coefficient showed a statistically significant moderate to high positive association. It is possible that these observations may be related to the diseases included in each reimbursement level that are defined according to their severity and chronicity. The higher levels of reimbursement include the pharmacotherapeutic groups associated with more severe and chronic diseases that demand long-term therapies, while the lower levels can be long-term or intermittent conditions, but the drug therapy is for mild and acute diseases. This may be the reason why chronic patients with diseases demanding more frequent medical surveillance are more aware of the need to comply with the prescribed therapeutic regimen compared to the others who are not subject to such frequent clinical surveillance.

This study has several limitations, as neither the number of competitors nor their respective prices were identified in each market segment. Another aspect is related to patients' socioeconomic status, which defines their ability to pay and is therefore directly related to medicine purchase in line with other basic and essential goods, potentially influencing medicine compliance. It is essential to ensure that medical appointment resources are efficiently used to promote public health.

Conclusion

The reimbursement level is a potentially modifying factor in patients' behavior in relation to the prescribed medicine purchases. Contributing to providing holistic medicine reimbursement systems will optimize the use of public resources in the health sector.

Declaration of Conflicting Interests

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