Atención Primaria

SCIENTIFIC ARTICLE

Patients' beliefs about medicines and adherence to medication in ischemic heart disease

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Abstract

Introduction: The phenomenon of adherence to treatment is a motive of worry from the scientific community, since it is considered as a worldwide problem of high magnitude. The implications are of great relevance in morbidity, mortality, in the significant increase in the consumption of health care and in the costs to the health system, particularly in patients with ischemic heart disease. We intend to evaluate adherence to treatment and relate beliefs about medicines with adherence to treatment.

Material and methods: This study is descriptive-correlational and cross-sectional. It was performed on 254 patients with ischemic heart disease who were in follow-up consultation in the hospital at the time of the questionnaire application. Data collection was performed through a self-administered questionnaire, integrating the following scales: Measure Adherence to Treatment and Beliefs about Medicines Questionnaire.

Results: The patients had a mean age of 66.94 years (SD = 11.62), 74% were male, 73.2% were married, 69.3% had education up to the "4th grade", 57.1% lived in the village, 70.1% were retired and 49.6% had an income below "one minimum wage". We found that 50.4% of patients did not adhere to treatment. Women had a strong belief in the specific needs of the prescribed medication, while men expressed greater belief in relation to long-term side effects ($P > .05$). Patients who expressed a low belief about the harmful potential of medicines revealed predictors of adherence to medication.

Conclusion: The results are consistent with previous studies in which individuals with lower beliefs in specific concerns reported higher rates of adherence to medication.

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Introduction

Cardiovascular disease (CVD) in Portugal, like in other developed countries, are the main cause of death (40% of global mortality and are one of the main causes of hospitalization and physical inability).[1]

Nowadays a significant percentage of the world population is faced with the need to take medication and adopt measures to control and treat acute and chronic conditions. In chronic disease, the medication is often the first choice in the treatment of disease, being the most common health intervention.[2]

Despite the advances in patients' treatment with ischemic heart disease, treatment regimens are beneficial only if patients adhere. Thus, low adherence to cardiovascular medication led to considerable morbidity, mortality and preventable health costs.[2-4]

The cardioprotective medication (antiplatelet agents, β-blockers, statins and/or angiotensin-converting enzyme inhibitors (ACEI)) was associated with the reduction of relative risk of mortality by acute coronary syndrome (ACS) in 80% compared to the treatment with placebo. In the United States of America, it is estimated that secondary prevention contributed to a 11% decrease in the number of deaths by ACS.[2]

In Portugal, the full adherence to medical prescriptions is about one third of the patients population undergoing treatment. However, 88% of the participants in this study responded that they follow the treatment properly.[5]

It is estimated that about 125,000 deaths per year in the United States of America are due to non-adherence to medication and between 33% and 69% of hospitalizations were due to low adherence.[2]

The non-adherence becomes an issue to be considered when we want quality of health care as well as cost containment and greater effectiveness of resources. Studies of secondary prevention of ACS showed a cost reduction around 10.1% to 17.8% among adherent and non-adherent patients, corresponding to 294 and 868 dolars per patient.[6]

The concept of adherence has been changing over time. Initially, this dimension was associated with prescription compliance, regarding the adoption of conducts coincident with medical indication in terms of medication and healthy behaviour. It has a connotation of obedience and an attitude of passivity, in which the responsibility of treatment failure falls on the person.

Nowadays, the concept of adherence is more comprehensive and less reductionist. It implies an active involvement by the person with the chronic condition, in a not imposed way, but mutually accepted, regarding planning, implementation and execution of a therapeutic regimen. There are several factors that interfere with adherence and that makes the responsibility is shared by the person (that act on), by health professionals (that enable and facilitate the action) and by the social context (in which the action unfolds).

The WHO presented a report about adherence values in various medical conditions and concluded that the adherence to long-term treatment in the general population is about 50%, being much lower in the developing countries than in Western society.[7]

The medicines are the main tools used to effectively prevent and manage chronic disease. It is estimated that the cardioprotective medication is responsible for 50% reduction in mortality for ACS in the last 20 years.[2-4]

Several studies showed that beliefs about medicines can be a barrier to adherence.[8] Thus, patients have their own perspectives on the use of medication and make decisions based on their beliefs and experiences. They weigh the risks and benefits relating to medication and they conclude their judgments, taking into account the perceived effectiveness, safety and value in terms of outcomes for their health.[9-11]

The beliefs about the behaviour are as important as the beliefs about the disease in predicting various behaviours related to health. This suggests the possibility that the interventions of change behaviour with groups of patient would be more effective, targeting beliefs about the behaviour, instead of the beliefs about the disease. However, several authors referred that prospective studies about the impact of perceptions of the disease and adherence to secondary prevention in patients with CVD are scarce.[12] Thus, we intend to evaluate adherence to treatment and relate the influence of beliefs about medicines on adherence to treatment.

Material and methods

This is a descriptive-correlational and cross-sectional study. We selected 254 patients with ischemic heart disease who were in follow-up consultation in the hospital at the time of the questionnaire application. The inclusion criteria were: *a)* older than 18 years; *b)* physician diagnosis of acute myocardial infarction (AMI) or unstable angina for at least six months; and *c)* agree to participate in the study, expressed in the consent form.

Patients with a diagnosis of psychiatric disorder and institutionalized patients were excluded.

Data collection was performed through a self-administered questionnaire, integrating:

— Sociodemographic variables (sex, age, marital status, residential area, education level, employment status and monthly household income);
— Scale of Measure Treatment Adherence (MTA)[13] used to evaluate adherence to treatment. The items 1 to 4 were adapted from Morisky Medication Adherence Scale. The questions were answered in six-point Likert scale (ranging from always = 1 to never = 6). The level of adherence is obtained through the mean. Higher values mean higher adherence level. In order to classify patients that showed adherence or not to treatment with medicines, this scale was dichotomized based on the cut-off point at the median.
— Beliefs about Medicines Questionnaire (BMQ)[14] that evaluates patients' beliefs about medication. We used BMQ-Specific that assesses the cognitive representations that individuals make in relation to medicines for their specific health problem. The questionnaire consists of two scales: one assessing necessity of prescribed medications and other assessing concerns about potential adverse consequences of taking the medications.

We made the psychometric study of MTA and BMQ-Specific. The reliability was verified by the Cronbach's alpha and coefficient of bipartition (split-half). To validate the construct

we used the factor analysis of the items, preceded by the Kaiser-Meyer-Olkin test.

With the descriptive statistic we determined frequencies and percentages, means, standard deviation and chi-square. The Mann-Whitney U test was used instead of student's t-test when the groups are not similar in size.[15] We also used multiple linear regression by stepwise method.

In the statistical analysis, we used SPSS (Statistical Package for the Social Sciences) version 20.0 for Windows.

The research protocol was evaluated and approved by the Ethic Committee and the informed consent statement was obtained from all the participants.

Results

The patients had a mean age of 66.94 years (SD = 11.62), 74% were male, 73.2% were married, 69.3% had education up to the "4th grade", 57.1% lived in the village, 70.1% were retired, 49.6% had an income below "one minimum wage" and 51.6% reported having some economic difficulties (Table 1).

The majority of patients (50,4%) did not adhere to treatment and men adhered less than women (53.2% vs. 57.6%; $P = .132$).

We have found that the value relative to patients' beliefs about the specific needs of the prescribed medication varies between 15 and 25, corresponding to a mean of 20.78 (SD = 2.31). The specific concerns dimension evaluates the beliefs related to the dangers of dependence and toxicity or long-term side effects. This ranged between 5 and 24, which corresponds to a mean of 14.37 (SD = 3.42).

Women had a strong belief in the specific needs of the prescribed medication, while men expressed greater belief in concerns, but without statistical significance

To check the effect of beliefs about medicines in adherence to treatment, we found a very low correlation in the specific needs ($r = -0.014$; $P = .830$) and moderate in specific concerns ($r = -0.367$; $P = .000$). Moreover, we noted that the beliefs establish inverse relationships, being only significant for the specific concerns dimension.

Through multiple linear regression by stepwise method, we identified a prediction model in which only the specific

Table 1 Socio-demographic characteristics

	Male (n = 188)		Female (n = 66)		Total (n = 254)		χ^2 (P)
	N	%	N	%	N	%	
Age group							
≤ 55 old	40	21.3	10	15.2	50	19.7	$\chi^2 = 19.120$
56-65 old	50	26.6	4	6.1	54	21.3	$P = .000^a$
66-75 old	54	28.7	22	33.3	76	29.9	
≥ 76 old	44	23.4	30	45.5	74	29.1	
Marital status							
Single/widowed/divorced	40	21.3	28	42.4	68	26.8	$\chi^2 = 11.144$
Married	148	78.7	38	57.6	186	73.2	$P = .001^a$
Education level							
≤ 4 old	124	66	52	78.8	176	69.3	$\chi^2 = 5.810$
5 a 12 old	50	26.6	8	12.1	58	22.8	$P = .055$ ns[b]
> 12 old	14	7.4	6	9.1	20	7.9	
Employment status							
Employee	52	27.7	6	9.1	58	22.8	$\chi^2 = 12.3484$
Unemployed	12	6.4	2	3	14	5.5	$P = .006^a$
Sick leave	2	1.1	2	2	4	1.6	
Retired	122	64.9	56	84.8	178	70.1	
Monthly household income							
≤ 1 minimum wage	82	43.6	44	66.7	126	49.6	$\chi^2 = 13.407$
Between 1 a 2 minimum wages	60	31.9	14	21.2	74	29.1	$P = .004^a$
> 2 minimum wages	38	20.2	4	6.1	42	16.5	
Financial status							
Comfortable	26	13.8	6	9.1	32	12.6	$\chi^2 = 4.754$
Have enough for the needs	40	21.3	16	24.2	56	22.0	$P = .191$ ns[b]
Has some difficulties	100	53.2	30	45.5	130	51.6	
It is very problematic	22	11.7	14	21.2	36	14.2	

[a] $P < .05$.
[b] $P > .05$.

Table 2 Multiple regression between treatment adherence and beliefs about medicines

	Coefficients		F (P)	t	P	R (R^2)
	B	β				
Constant	5.329			57.582	.000	
Specific concerns	−0.039	−0.367	39.274 (.000)	−6.267	.000*	0.367 (0.135)

*p < .05.

concerns dimension emerged as a significant predictor of adherence to treatment (t = −6.267; P = .000). This model explains a variation of 13.5% (Table 2).

Discussion

Define and evaluate adherence to medicines remains a persistent challenge in research without actual consent.[16] Low adherence to cardioprotective medication is common in clinical practice and is associated to a wide range of adverse outcomes.[6,17,18] In our study, only 49.6% of people with ischemic heart disease adhere to the prescribed medication.

Several studies using Morisky Medication Adherence Scale showed similar results to ours with 56% of participants classified as adherents.[18] Others studies reported slightly higher rates of adherence (66%).[17] And still others studies had low rates, varying between 31-58% in adherence to prescribed cardioprotective medication (statins, β-blockers) with prevalence decline over time.[18]

In a randomized controlled study "Post-Myocardial Infarction Free Rx Event and Economic Evaluation (MI FREEE)" conducted with 5855 patients with AMI, the rates of adherence to cardioprotective medication were low, ranging from 36% to 49%, being 35.9% for ACEI, 45% for β-blockers, 49% for statins, and 38.9% for this three medicines together.[19]

Another randomized multicentre study "Future Revascularization Evaluation in Patients with Diabetes Mellitus: Optimal Management of Multivessel Disease (FREEDOM)", recently presented at the American Heart Association congress in 2012, which included 2000 patients with multivessel disease and diabetes mellitus, concluded that only 20% of patients were taking the prescribed medication. These results have been replicated in other studies, particularly Bypass Angioplasty Revascularization Investigation (BARI-2D).[20]

In our investigation, patients' beliefs about the specific needs of the prescribed medication obtained a mean score of 20.78 (SD = 2.31) and in relation to the beliefs related to concerns, the mean was 14.37 (SD = 3.24). Only the specific concerns emerged as a significant predictor of adherence to treatment. Thus, the lower the patients' belief about the concerns, the greater is the adherence to medicines.

Several researches have shown that patients with stronger beliefs in the specific concerns recorded a lower rate of adherence to treatment, particularly in chronic diseases,[21] in heart failure,[22] in diabetes,[23] in hyperlipidemia,[24,25] in asthma,[26] and in primary healthcare.[27]

A randomized prospective study showed similar results in that the non-adherent patients reported higher concern about their antihypertensive medicines than adherent patients. On the other hand, the negative beliefs about needs of the prescribed medication may contribute to an apathetic attitude leading to intended non-adherence.[28]

A longitudinal study, carried out in 309 elderly patients with high morbidity, concluded that beliefs about the specific needs of the prescribed medication predicted adherence to treatment (regardless of the intentionality to adhere or not).[29]

The explanation may be linked to individual beliefs about the specific needs of medication that enhances the adherence and the specific concerns about medication appear to play a minor role. However, several authors have pointed out that individual perceptions about the effectiveness of medicines are crucial for understanding the adherence. This is even more emphasized by the fact that these beliefs are particularly important in elderly patients with multiple diseases, polymedicated and with complex medication schemes.[26]

The relative importance of cognitions about the specific needs suggests that patients improve adherence behaviour, if they are told that the medication suits their needs and allows them to control the course of their illness.

Another aspect reports to the patient profile regarding previous behaviours face to adherence to medication. A study performed on 1433 patients with CVD revealed that among health beliefs, the most related factor to the statins adherence was behavioural intention.[25]

Another study reinforces the evidence that the decision of diabetic patients to selectively renounce some medicines because of the cost, is not influenced by economic factors, but by other factors such as beliefs and satisfaction with the information related to the medication.[30]

Low adherence to medication has been reported to be prevalent in populations with CVD. However it should be noted that there is a variability in the evaluation methods (self-report, data of acquiring medication from the pharmacy and pill counts), which prevents the comparisons between studies and between different cardiovascular conditions.[16,18] Also the cultural differences, age, chronic condition and the origin of the studied population are some of the factors which may determine the variation between the rates of non-adherence.

Future research should respond to important factors such as quality of life, coping mechanisms, self-efficacy, intervention programs at multidimensional level, analysis of their cost-benefit and others that were not studied in this investigation.

Adherence is characterized as a process of rational decision-making, which is driven by the beliefs and experiences of patients related to treatment and the disease. Several studies showed that the decision to adhere is exclusive to each medicine, and is driven by three factors, also known as the 3Cs - commitment, concerns and costs: *a)* the perception of the needs for medication (related to the understanding of disease and treatment); *b)* the perception relating to the concerns about medication (related to side effects and safety); and *c)* the perception of accessibility to medicines.[10,11]

The adherence results from a balance between the perception of the need to take medication and concerns about their adverse effects.

Improve adherence to medication is a highly effective strategy for better health outcomes, thereby obtaining better benefits in quality of life, than to invest in new medicines.[19] In the cost-benefit analysis of adherence to medication, the estimates indicate that for every additional dollar spent on adherence the costs would decrease by 7 dollars in diabetics, 5.10 in patients with hyperlipidemia and 3.98 in patients with hypertension.[2,7]

The nurses because of their intervention, the intensity of the relationship with the patient and their families, the informality that characterizes their interactions, which is highly valued by them, have a privileged space for intervention in the context of multidisciplinary performance.

Thus, the behaviour changes in health require a number of strategies that depend on the level of knowledge of people regarding their health, their beliefs, their behaviours, their confidence levels, the strength of their social support networks, their levels of motivation and environmental factors.

Funding

What we know about the theme

— In chronic disease, the medication is often the first choice in the treatment of disease, being the most common health intervention
— Define and evaluate adherence to medicines remains a persistent challenge in research without actual consent

What we get out the study

— The decision to adhere is exclusive to each medicine, and is driven by three factors, also known as the 3Cs - commitment, concerns and costs
— The individual perceptions about the effectiveness of medicines are crucial for understanding the adherence

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Conflicts of interest

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