Research papers

Impact of the financial crisis on adherence to treatment of a rural population in Crete, Greece

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ABSTRACT

Background The global economic crisis has affected Greece. Data on patients' adherence to medications for chronic diseases are missing. The objective of this study was to identify to what extent the financial crisis and the repeated pharmacists strike have influenced patients adherence to therapy.

Methods

Design A quantitative and qualitative study in rural Crete was designed and implemented in February 2013 with the use of a pretested questionnaire with opened and closed questions.

Setting Rural practices in a well-defined geographical area of Crete.

Subject The questionnaire was addressed in all patients that visited the rural practices with chronic or acute diseases for two consecutive weeks.

Main Outcome(s) and Measure(s) Age, annual income, adherence to therapy, patient's views and feelings.

Results 288 patients participated. The mean age was 68±6.87. The majority of the patients have lowered the doses of several medications by themselves as they weren't able to afford the cost ie; all patients receiving insulin had lowered the dosages; 46.42% of patients with COPD or asthma had stopped their medications completely, decreased dosages or used similar medications that had in the past; patients with dislipidemia received their medications as suggested only in 51.8%. Patients with cardiovascular diseases received their medications as suggested in 75.6% while the rest have dismissed or skipped dosages. Most common emotions reported were those of sadness, fear, stress, anxiety and isolation.

Conclusions The economic crisis has influenced patients' adherence to therapy in rural areas as well as their psychological and emotional status. There is an urgent need for action within the context of primary care.

Keywords: adherence, financial crisis

Introduction

The global economic crisis has affected many European Countries, especially Greece that suffered a meltdown with major threats for health. The health effects of the financial crisis in Greece have been described in the literature as "omens of a Greek tragedy', while a denialism to accept the burden has also been reported[1,2]. Greece's health sector faces several problems as commonly used medications are in short supply, access to health care is limited, and medication compliance has declined[3-6]. It is well known that fragmented health care systems create barriers to medication adherence by limiting the health care coordination and the patients' access to care[7]. Greece experienced a significantly larger increase in the odds of reporting poor health after the crisis and there was an increase in rates of poor self-rated health and unmet care[1,8].

The pharmacist's role has been underlined in the literature as physicians and pharmacists seem to provide medicines to a large number of patients often as a result of social pressure[9]. In times of austerity the pharmacists' role is also crucial in terms of mediation management and adherence. Therefore the repeated pharmacist strikes in 2012 and January 2013 forced patients to pay for their medications with money out of their own pockets and then wait for several months for reimbursement from their social security[3]. Pharmacists repeated strikes triggered problems with the country's drug supply, causing shortages of hundreds of medicines. Even when the drugstores opened they were out of stock[3].

The impact of the financial restrictions in rural population's health where the majority of farmers have a low annual income received little attention in the literature[10]. Rural residents are more vulnerable since they face many barriers as ie; the long travelling distances and the cost/lack of transportation when accessing health care services, more visible in remote areas[11-13] and quite recently 16 rural GPs expressed their concern based on empirical experiences for an urgent need for change that will reestablish access to healthcare, quality of care and health equity in rural areas under the current financial restrictions[14].

In addition, although there are several studies exploring the impact of the financial restrictions on the health care sector in Greece, few studies explore its influence on medication compliance (the act of taking medication as prescribed) in rural areas, while it is known that among the most important socioeconomic related factors that lead to poor medication adherence and compliance are the economic situation and the medication cost[15-18]. This seems to be more visible to the rural areas where the majority of people are pensioners or farmers of low annual family income. The current austerity in Greece made these people even poorer struggling to manage their lives. Although there ar no published data regarding the cost-related medication non-adherence in Greece several studies from other countries showed that this has significant consequences in terms of quality and safety of ordinary people15-18. Drug costs and co-payments contribute to poor medication adherence[18].

Meeting the complex needs of patients with chronic illness or impairment is the single greatest challenge facing organized medical practice. In the chronic care model; delivery of care, resources and policies holds a crucial position in order to be able to improve outcomes[19]. However, in times of austerity this model seems to be out of operation and a radical improvement is needed to be able to provide patients a comprehensive approach outside hospitals[20].

Thus, we decided to use the repeated pharmacists strikes to study further the adherence to medications with the aim to identify to what extent the financial crisis and the repeated strikes have influenced patients adherence to the therapy of long illness conditions. Moreover with this study we tried to underline patient's opinions on how the financial crisis influenced their emotional status and the health care access.

Methods

The study setting included five remote rural primary health care practices in the county of Heraklion, as well as an urban academic primary care unit located in the city of Heraklion. The practices represented different geographical districts in the prefecture of Heraklion, Crete Greece. All the participated practices were members of a primary care practice based research network which operates the Clinic of Social and Family Medicine, Faculty of Medicine, University of Crete.

Patients that visited the primary care services for two consecutive weeks in February 2013 completed a pretested questionnaire. The pretested questionnaire (17 items) included opened and closed questions. The questionnaire included patients' demographic and socioeconomic data, and information regarding the medications that GPs prescribed to them, their adherence to the therapy and reasons for noncompliance (first, quantitative part of the study). Patients' views on how the pharmacists' strike and the current financial restrictions affected their general health status and their adherence to medications were recorded (second, qualitative part of the study). The quantitative part included 7 questions on sociodemographic factors (gender, age, nationality, annual family income, education, employment and marital status) and five questions on medications adherence during the pharmacist strikes period. For each chronic disease the patient had to answer in the following questions: Which medication do you take and in what dosages? Do you take these medications in dosages as they are prescribed by your doctor? Did you alter the dosages and if yes in what way? In case the patient answered that he has cut or dismissed dosages the patient was asked if he uses cheaper medications now and if he uses medications he had in storage (used in the past).

In an additional part open and closed questions about the way the pharmacists strike and the current austerity influenced their health in general have been asked in an interval scale (a 7-point Likkert scale answer ranged between strongly agree to strongly disagree), while decision making-related questions in an open-ended format (qualitative part) have been addressed as follows:

-If they made the decision to stop or lower the dosages of some medications who helped them in that decision (patients had to select between: friends, relatives, neighbours, pharmacists, general practitioner, other doctors, by himself, other/ specify which).

-During the pharmacist strike how did they took their medication (patients had to select between: they paid and they expect money to be refunded from their insurance, they used medication they had in storage, they borrowed medications, they received cheaper, they used social services, they used similar medications they had in the past, other/specify how).

-What did they do when they had an acute problem, and if the financial crisis influenced their decision to visit the health care services in cases of an acute problem (open question/ interview). In the open questions part patients were free and motivated through the interview to express vocally their opinion.

Table 1: Patients' sociodemographic characteristics.

Mean (sd)	68 (6.87)
Gender	
Females	64.93% (n=178)
Males	38% (n=110)
Nationality	
Greek	98.6% (n=284)
Albanian	1.04% (n=3)
Bulgarian	0.34% (n=1)
Annual family income in euros	
<7000	27.43% (n=79)
7.000-10.000	43.5% (n=124)
10.000-20.000	14.2% (n=41)
>20.000	9.72% (n=28)
I don't want to answer	5.55% (n=16)
Education	
None [1]	28.81% (n=83)
Elementary	53.47% (n=154)
High School	14.58% (n=42)
University	3.12% (n=9)
Occupation	
Unemployed	2.77% (n=8)
Farmers	35.06% (n=101)
Pensioners	43.75% (n=126)
Housewives[2]	12.84% (n=37)
Others	5.55% (n=16)

n=number of patient, [1]=patients that have been only for one class in the elementary school were considered as not having any education [2]=as most of the ladies worked both as farmers and housewives; housewives were considered ladies that they worked less than half of the year days in agriculture the rest were considered as farmers.

Ethical approval was obtained from the Venizeleion Hospital and all patients gave their written consent.

Statistics

Descriptive statistics were used to analyze the quantitative data. The continuous variables were expressed as mean ±SD, while the categorical data was expressed as frequencies and percentages.Regarding the qualitative data notes of the patients' answers to the open questions that doctors addressed them were taken. Consequently responses were thematically analyzed and organized.

Results

Sociodemographic characteristics

Information was collected from 288 patients. Median age was 68 (min:18, max:93). 65% were females. 98.6% (284) were of Greek nationality. 70% had an annual income of less than 10.000 euros; while more than 90% were retired, farmers or housewives. More details on socioeconomic data are depicted in **Table 1**.

Main chronic diseases that patient's dismissed completely or skipped some medication dosages during the pharmacist's strike

Patients with hypertension 57% (n=164) reported that they have received medications as suggested in 82.9% (n=136), the rest dismissed their medications completely or skipped some dosages. In patients with cardiovascular diseases 14.2% (n=41) the 75.6% (n=31) received their medications as suggested, while patients with dislipidemia 19.44% (n=56), received their medication as suggested only in 51.8% (n=29). More details are depicted in **Table 2**.

Forty-six patients had diabetes type II and from them all patients receiving insulin (8 patients) had themselves lowered the dosages because as they said insulin was very expensive to be purchased from the individuals' own money during the pharmacists strike period. Thirty eight patients had non insulin dependent diabetes. From them all patients receiving only metformin and/or soulphonylourias (30 patients) continued their treatment as before (cost of 28-30 pills in Greece ranges from 2-6 euros). Patients receiving other antidiabetes medication like gliptins changed their medications by themselves to medications used in the past or skipped dosages (5 out of 8 patients).

In patients with diseases such as hyperuricemia, benign prostate hyperplasia, urinary incontinence, osteoporosis, depression, and dementia no major differences were observed in the adherence to medication either because the prices were

Table 2: Main chronic diseases that patients dismissed completely or skipped some dosages during the pharmacist's strike.

Disease	N (%) with diagnosis	N (%) that took their medication as suggested	Dismissed their medications completely	Skipped some dosages
Hypertension	164 (57%)	136 (82.9%)	9 (5.48%)	19 (11.58%)
Cardiovascular disease	41 (14.2%)	31 (75.6%)	3 (7.13%)	7 (17.07%)
Dyslipidemia	56 (19.44%)	29 (51.78%)	15 (26.78%)	12 (21.42%)
COPD/asthma[x]	28 (9.72%)	15 (53.57%)	6 (21.42%)	5 (17.85%)

[x]= two of them used other inhalers that had in storage from past prescriptions

affordable or, they exchanged medications with neighbors, or they had similar medications at home that had been used in the past. Twenty seven patients were using proton-pump inhibitors for various reasons (ie; gastroprotection-gastritis-dyspepsia). Ten of them dismissed or skipped dosages, six chose to buy ranitidine that it was cheaper and seven borrowed from neighbours. Four patients suffered from psychosis and half of them stopped or dismissed their medications.

However, patients with COPD or asthma (28 in total) had stopped their medications completely, decreased dosages, or used similar medications that had in the past in 46.42% (n=13).

Economic crisis/pharmacists strike and health status influence

Ninety one patients (31.59%) answered with a 7 in a 7 point -Likert scale 'strongly agreeing' that the economic crisis has negatively influenced their health status. Seventy two patients (25%) answered with a 7 in a 7 point Likert scale 'strongly agreeing' that the pharmacists' strike has negatively influenced their health status.

How did they took the decision to skip or stop their medications

From the patients that skipped or stopped their medications, only three made this decision after consulting their doctors. Forty one patients made this decision by themselves based on what they thought it was important, while thirteen discussed it with neighbours, relatives or friends.

What the patients did in the case of an acute problem

In case of an acute problem during the last 6 months the majority 79 (68,1%) visited a health care center or a rural primary care practice, while 26 patients (22.22%) reported that they did not use any services since they were afraid of the cost. The rest visited other providers such as hospitals, social services, private clinics.

Qualitative interview

The most common emotions reported were those of sadness, fear, stress and anxiety for their families' future, childrens' unemployment and shortages in medications in the market.

Some examples of answers are:

Patient 94 said *"I can't survive here anymore. I am thinking about returning to my country but my children are in a Greek school'*. Patient 108 said *"I am 65 years old and this is the first time that I am so scared. I fear that I will not be able to pay all these taxes. I had to ask for money from my brother to pay for my medications."* Patient 121 said *"I am having a lot of stress, and anxiety. It's rare for me to sleep the whole night without waking up with stress'*. Patient 179 said "*During the pharmacists' strike I realised my symptoms got worst, but I couldn't buy my inhalers so in the end I had an asthma attack."* Patient 183 said *"I didn't have the money to buy the medications for my hypertension and diabetes and this made me even more stressed."* Patient 246 said *"I couldn't buy my medications, and I felt my old depression reappear."'* Patient 283 said *'I often have the dilemma do I pay the taxes and the electricity bills or do I pay for medications. I know I will suffer no matter what I decide. "* Patient 286 said *" Doctor I really can't afford the medication costs anymore, my bank account is close to zero, and if this continues for long I will have to ask you to select for me the most important ones to continue."* Patient 288 said *'I feel so depressed; it's not only that I am struggling to buy my medications; I have changed my whole life. For example, I used to drink coffee with fellow villagers everyday and now it's impossible as I can't offer them a coffee. So I only stay at home or go out to the fields, and can't speak with friends anymore, and feel so blue about it."* This patient option shows clearly his sadness. Comment by the author: This is a usual habit in rural areas. It is unusual that everyone pay separately for their coffee; the first one that enters in the traditional cafeteria usually also pays for the rest that join later. This is a habit that shows filoxenia that everybody practices. The social life of men is within the traditional cafeterias and of women by exchanging home visits'.

Discussion

Our study showed that the financial crisis has influenced patients' compliance to therapy in rural areas with patients abandoning or skipping dosages of many medications used for the treatment of chronic conditions. It was obvious that the financial crisis influenced patients' psychological and emotional status with most common emotions expressed those of sadness, fear, anxiety and isolation. The access to healthcare has been also influenced by the current austerity while patient's felt a meltdown in their self-rated health care due to austerity. The presented data report on the patients' voice and add to the existing evidence on the impact of economic crisis on health in Greece.

Our study showed that patients had poor medication adherence due to financial reasons. Although it was not in the objectives of this study it is well known that poor adherence to medication leads to increased morbidity and mortality as well as indirect cost[21,22]. Adherence is a crucial point in daily clinical practice particularly for chronic conditions, with up to two thirds of medication related hospitalizations being the result of poor medication adherence[21,22]. In a USA study one third of respondents reported that they delayed filling a prescription and another third that they split or cut pills or took fewer than prescribed to make the prescription last longer due to financial hardships similarly with our study [18]. In the same study patients with multiple illnesses experience increased cost-related adherence problems, both due to the increased burden of financial pressures and possibly the increased importance of medication use given their health status[18], remarks underlined also in our study.

The WHO suggests that improved medication adherence for hypertension, dislipidemia and diabetes will result in significant health and economic benefits[23]. The influence of the socioeconomic factors and the lack of a 'system in place' is also underlined by the WHO[23]. In our study patients lowered or dismissed completely antidiabetes, antihypertensive, and lipid-lowering therapies. However all these therapies are the cornerstones of ischemic heart disease prevention and according to the WHO the most important cause of failure to achieve hypertension control is the lack of adherence[23]. Medrano et al in an ecological study across 28 years and 671.5

million person-years of observation concluded that the decline in coronary disease in Spain was associated with the increase in the pharmacological treatment of vascular risk in equal measure with the decline in active smoking[24]. In this study consumption of statins and antihypertensive, and antidiabetic drugs, individually and jointly considered, displayed an inverse and significant dose-response relationship with incident ischemic heart disease hospitalisation rates in models adjusted for age, sex, smoking obesity. A Greek study that explored the trends in cardiovascular risk factors in Greece before and after the financial crisis showed that the economic crisis has unequally impact cardiovascular risk factors among different socio-economic groups[25]. In this study a statistically significant increase in the proportion of high risk individuals was observed only in the low socioeconomic level (SES) ($p<0.001$). However this study didn't assess other important cardiovascular risk factors as hypercholesterolaemia, hypertension and diabetes mellitus[25]. The role however of the low SES has been underlined similarly to our study.

From our study adherence to statins was very poor and this is in accordance with other studies that showed a poor adherence to statins with up to 25% -75%of the patients discontinuing them[26-28]. In our study however the poor adherence was associated only with the medications cost and not with other patient or physician related factors.

Cost not medication adherence in patients with COPD and asthma was found in our study. Similarly Tsiligianni et al in a same area study reported that patients were unable to pay for their inhalers because of the high cost[29]. This non adherence could have significant long term consequences as inhalation treatment is fundamental for patients with respiratory diseases.

Many studies show that up to one-third of older adults take less medication than prescribed due to financial restrictions[15,16,18]. Patients with chronic diseases are particularly at-risk of cost-related medication non-adherence and poor health outcomes[18,30]. The medication cost, the lack of transportation and the pharmacy's long waiting lists have also being underlined in the literature as causes of poor adherence[31]. In our study the financial restrictions and the 'pharmacy's strike' similarly influenced the medication adherence.

The economic crisis since 2008 raised also various concerns about the health of ordinary people with obvious the presence of major depressive disorders in Greece[32]. Suicide rates have risen in Greece as well as in Spain[33]. Although this study did not utilise any validated tools to assess depression and anxiety most of our patients expressed feelings of sadness, fear and anxiety. The fear and the insecurity generated by the anticipation of unemployment as well as from the austerity of the latest years have been proved to be associated with poor mental health also in other studies[34-36]. In Spain the current austerity as compared with the pre-crisis period revealed significant increases in the proportions of patients with mood disorders (19.4% increase in major depression and 8.4% in generalised anxiety disorder)[36]. Independently of unemployment an elevated risk of major depression was associated with mortgage repayment difficulties; similarly patients in our study highlighted their bad emotional status due to taxes payment difficulties[36].

Our study showed that patients with a poor self-rated health often don't seek for medical help in cases of an emergency. Similarly, Kentikelenis et al showed that during austerity there was an increase in rates of poor self-rated health and unmet care in Greece[1]. Vandoros et al analysing data from the European Union Statistics on Income and Living Conditions (EU-SILC) for the years from 2006 to 2009 for Greece used a difference-in-differences approach[8]. They concluded that self-rated health in Greece has worsened as a result of the financial crisis and underlined the need for urgent health policy responses. Authors explain these results as a result of a possible reduced access to care, increase of risk behaviours and increased mental disorders.

Poor self rated health is most common in unemployed pensioners, elderly, housewives and those with chronic diseases. In our study similarly most of the patients were pensioners and elderly[37]. People prefer to treat only life-threatening problems and neglect those cost-expensive. In our study patients said that in a case of an emergency they avoided visited a health care unit because they were afraid of the cost. Pataka et al showed a decrease in the number of patients visiting and receiving treatment in a sleep clinic in Greece due to financial reasons[38]. Certain factors may interpret this finding and it is not known to what extent the low literature that it was the case in this study had an impact on their decision to do not seek help as in the Parikh et al study[39].

Last, another issue that is deserves some more attention in this study is the finding that patients shared their medications with friends, neighbours and relatives. It is well known from other studies that patients share their medications for financial or other reasons, a common practice often kept from physicians[10,21].

Methodological considerations and limitations

It is obvious that this observational study from Crete meets certain methodological considerations and presents certain limitations The sample is not population-based but includes only those who have visited the primary care services to seek care. Changes in insurance coverage were not assessed. Finally results reflect respondents; options for their medication-taking behavior therefore it is subject to reporting and recall biases. However this study is the only one we know that assessed cost-medication adherence in a rural population during the austerity period in Greece.

Future implications

This study conveys certain messages to both primary care providers and health policy makers. It shows that primary care physicians should take in consideration cost-related non adherence reasons during their usual consultations. Findings also stress the need for urgent health policy responses to the current economic collapse in Greece especially for certain population groups, with low socioeconomically level. Policy makers are expected to implement patient-centered approaches by taking in consideration the right to health and the obligation to grant access to essential medicines[40].

DISCLOSURE

An oral presentation of this study has been presented in the European Primary Care Cardiology Society conference in London, September 2013 and won the award for the best poster.

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