

# ANALYSIS OF FACTORS AFFECTING ADHERENCE TO THERAPY IN PATIENTS WITH CHRONIC DISEASES

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## ABSTRACT

**INTRODUCTION:** Treatment of chronic diseases is a long-lasting and ongoing process that requires continuous pharmacotherapy. Adherence indicates the extent to which patient behaviour (in terms of medicine intake, diet compliance and change of life) corresponds to the advice received by a medical professional.

**AIM:** The aim of this article is to study and analyse the opinion of pharmacists, working in hospital and community pharmacies, on patients' level of adherence to the prescribed drug therapy and to identify the leading socioeconomic, pharmacotherapeutic and pharmaco-economic factors affecting adherence in patients with chronic diseases.

**MATERIALS AND METHODS:** This national study was conducted in May 2020. Anonymous individual questionnaires were distributed to Masters of Pharmacy and assistant pharmacists. The survey was conducted online by a sociological method, using a Google form. Data was processed through software included in the Google forms. Charts were created with MS Excel and MS Word.

**RESULTS:** The results confirm the European and global tendency towards a low level of patient adherence to drug therapies—84.7% of pharmacists responded that only half of the patients adhered to the therapy. Respondents reported the high price and low reimbursement rate of medicines as objective reasons for non-purchasing medicinal products (79.8%). Our survey results indicate that adherence to therapy in patients with chronic diseases in Bulgaria remains a significant issue due to various socioeconomic and pharmacotherapeutic factors.

**CONCLUSION:** Adherence to the prescribed pharmacotherapy is crucial for achieving the therapeutic results.

**Keyword:** *patient adherence, chronic diseases, drug therapies, socioeconomic and pharmacotherapeutic factors*

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## INTRODUCTION

Treatment of chronic diseases is a long-lasting and ongoing process that requires continuous pharmacotherapy. Adherence is a key issue for the proper management while non-adherence to the prescribed regimen increases morbidity and mortality. Despite that, long-term adherence to prescribed therapy has been found hard to achieve (1).

Adherence indicates the extent to which patient behaviour (in terms of medicine intake, diet compliance and change of life) corresponds to the advice received by a medical professional. The patient is the one who decides how much to adhere to the prescribed therapy (2).

A report of the World Health Organisation (WHO) indicates that adherence to therapy by chronically ill patients is about 50% in developed countries, whereas adherence in developing countries is lower (3). These are patients with properly prescribed medicines who take them but not in compliance with the regimen/plan given by the doctor or who do not take them at all, which has a negative impact on the therapeutic efficacy.

Studies by Coyle and Lee indicate that only 1/3 of patients take their medicines as prescribed and from the rest, 1/3 sometimes adhere, and 1/3 never adhere to the prescription (4). Furthermore, there are difficulties with such patients who create their own regimen probably based on incorrect understanding of the drug therapy. In such cases it is very likely to overdose a medicine for “a faster effect and recovery” or to combine it with alternative methods to “augment” its effect (4).

A review of statistical data from the American Heart Association (AHA) has found that almost 50% of patients with cardiovascular diseases who are on a long-term therapy take their drugs in compliance with the prescribed treatment plan, 22% skip intake or take lower doses, which reduces the benefits of the therapy (5).

It has been estimated that approximately 125 000 deaths per year in the USA are due to non-adherence to therapy. Patients not adhering to their therapy use more healthcare resources compared to those who strictly perform the prescribed treatment. In the USA non-adherence costs an additional \$100 billion to the healthcare system annually (5).

According to different studies worldwide, adherence to therapy in asthma varies from 30% to 80%. In the USA adherence in asthma patients is estimated to be over 40%, in France, Germany and Italy it is between 60% and 70% (6). The level of adherence in patients with chronic obstructive pulmonary disease (COPD) is lower than other chronic diseases

despite the severity of this disease. Data shows adherence between 10% and 40% (7).

A factor influencing adherence to therapy in children is related to dependence on their parents to provide and apply the therapy (8).

In 2015, a study by Todorova and Tsvetkova related to therapy adherence in children with bronchial asthma has analysed the role of parents as main actors responsible for daily adherence to the treatment regimen. Results have shown that the majority of parents (68%) of children aged 6 to 12 report strict adherence to the prescribed treatment line while in the age between 13 and 16, adherence is 54%. Study data indicates insufficient parent compliance mostly due to lack of understanding of the therapy goals and fear of treatment-related side effects. It indicates that all medical professionals who participate in the different stages of treatment and follow-up should be involved in additional training of parents so they can understand their responsibility in achieving optimal management of paediatric bronchial asthma (9).

Elderly patients are more prone to adverse drug reactions and they also experience fear of drug interactions, which reduces the level of adherence (8). According to Gaude's studies between 25% and 50% of patients do not or cannot take the prescribed medicinal products correctly. Factors that should be considered are poor vision (20% of patients aged over 85) and hearing; strength and motor coordination; cognitive abilities; depression and social isolation; comorbidities; polypharmacy and others (1,8).

## AIM

The aim of this article is to study and analyse the opinion of pharmacists, working in hospital and community pharmacies, on patients' level of adherence to the prescribed drug therapy and to identify the leading socioeconomic, pharmacotherapeutic and pharmaco-economic factors affecting adherence in patients with chronic diseases.

## MATERIALS AND METHODS

This national study was conducted in May 2020. Anonymous individual questionnaires were distributed to Masters of Pharmacy and assistant pharmacists. The questionnaire included 15 questions and collected information on the following aspects:

- ◆ pharmacists' career profiles (education, work experience, geographic location);
- ◆ level of patients' adherence to the recommended treatment;
- ◆ factors influencing adherence to therapy.

The survey was conducted online by a sociological method, using a Google form. Data was processed through software included in the Google forms. Charts were created with MS Excel and MS Word.

## RESULTS

A total of 124 pharmacists participated in the survey of whom 74 (59.7%) assistant pharmacists and 50 (40.3%) Masters of Pharmacy.

The majority of respondents, 96%, worked in community pharmacies and only 4% worked in hospital pharmacies.

Pharmacists' work experience is shown in Table 1.

Table 1. Respondents' work experience

Work Experience	Number	%
Less than 10 years	100	80.6
11–20 years	11	8.9
21–30 years	10	8.1
over 31 years	3	2.4

Most of the pharmacists had less than 10 years of work experience, which indicated that young professionals were more willing to take part in an on-

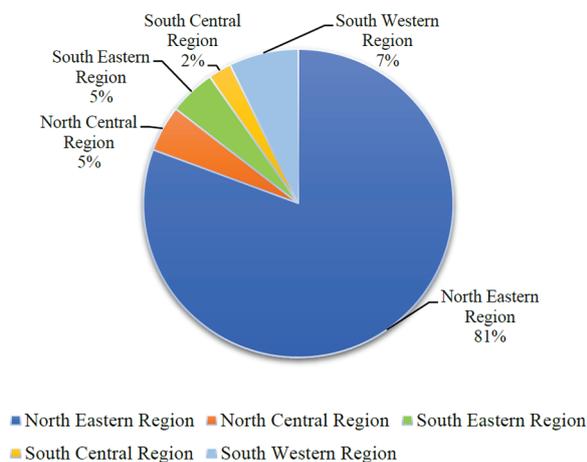


Fig. 1. Distribution of respondents by region

line survey compared to their colleagues with longer work experience. Distribution by territorial units is presented on Fig. 1. Five of the six regions in Bulgaria were covered. Pharmacists from the North Eastern Region in Bulgaria represented the biggest group in the survey (81%).

To the question if patients adhere to the drug therapy prescribed by doctors, 84.7% of pharmacists responded that only half of the patients adhered to the therapy (Fig. 2).

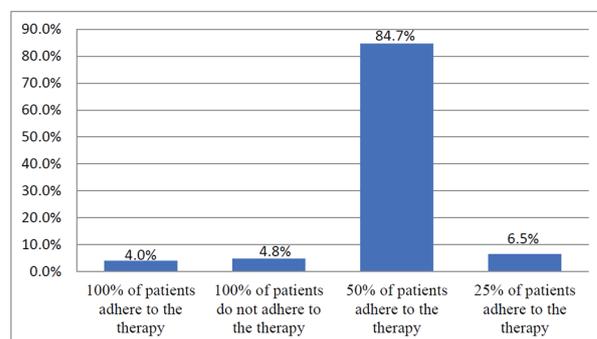


Fig. 2. Patient adherence to the drug therapy

Data on Fig. 3 shows that price is the crucial factor when deciding whether to buy a medicinal product. Respondents reported the high price and low reimbursement rate of medicines as objective reasons for non-purchasing medicinal products (79.8%).

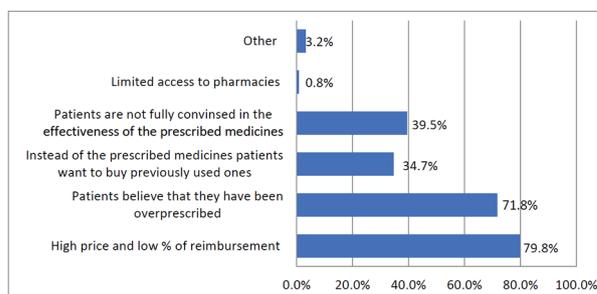


Fig. 3. Reasons why patients do not purchase the prescribed medicinal products

The second most common reason for non-purchasing was patients' opinion that more medicines have been prescribed than they needed (71.8%). A third reason was patients' distrust in the efficacy of the prescribed medicinal products (39.5%). Another reason indicated by respondents was that, instead of

the prescribed medicines, the patients wanted to purchase medicines they were previously using (34.7%), which is an example of poor compliance.

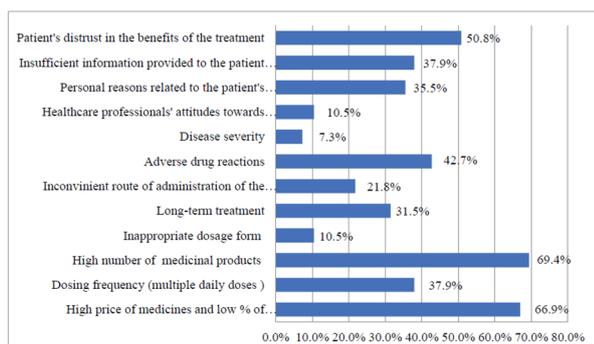


Fig. 4. Reasons leading to low level of adherence to the treatment in patients with chronic diseases

The primary reasons for low level of adherence to the treatment among patients with chronic diseases identified by respondents were the high number of medicinal products (69.4%) as well as the high price of medicines and low percentage of reimbursement (66.9%) (Fig.4).

Another reason was patients' distrust in the benefits of the treatment (50.8%).

Respondents placed adverse drug reactions next (42.7%), followed by causes that had similar percentages:

- ◆ insufficient information about the disease and treatment (37.9%);
- ◆ dosing frequency of the medicine (37.9%);

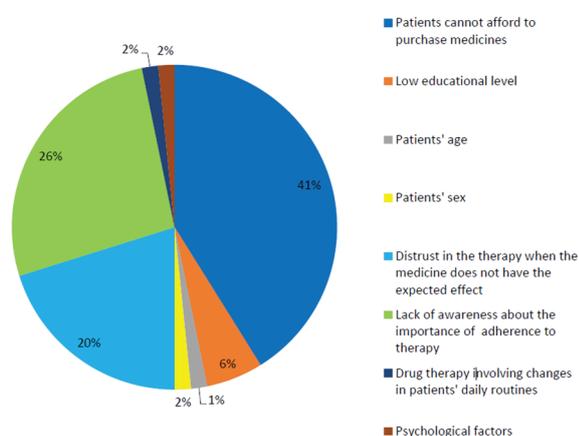


Fig. 5. Patient-related factors leading to non-adherence

- ◆ patients' personal reasons (35.5%);
- ◆ long-term treatment (31.5%).

Finally, respondents indicated inconvenient route of administration (21.8%), inappropriate dosage form and healthcare professionals' attitude towards the patient (10.5%), as well as disease severity (7.3%).

The sum total is more than 100% as respondents provided more than one answer.

Fig. 5 shows responses to the question: 'Which is the key patient-related factor affecting non-adherence to treatment?' A total of 41.1% of respondents answered that the main cause for patients' non-adherence was that medicines were unaffordable; 27.6% of pharmacists expressed the opinion that patients were unaware of the importance of adherence to the regimen, while 20.2% reported a distrust in the therapy when the medicine did not have the expected effect. Low educational level, age, sex, psychological factors and regimen leading to changes in patients' daily routines were also identified as factors affecting adherence, but they were less significant according to the respondents.

The respondents were given six statements and asked to indicate their degree of agreement. Fig. 6 presents the results.

Regarding the first statement pharmacists completely agreed (31.5%) or mostly agreed (47.6%) that the high number of prescribed medicines reduced the likelihood that all of them would be taken. Less than 3% of respondents (2.4%) expressed slight disagreement. A treatment regimen, which includes a small number of medicinal products, will promote a better adherence.

Respondents completely agreed (35.5%) or mostly agreed (40.3%) with the statement that the more frequent the dosing, the less likely it was that all doses would be taken, whereas 8% disagreed with that. Often, patients subject to stress at work skip some of the doses, especially if the dose is divided into several intakes during the day. A dosage regimen consisting of fewer doses a day is characterised by higher adherence to the treatment and patients usually prefer once-daily dosing.

Respondents unanimously agreed with the statements that good communication and trust in the doctor as well as providing pharmaceutical care

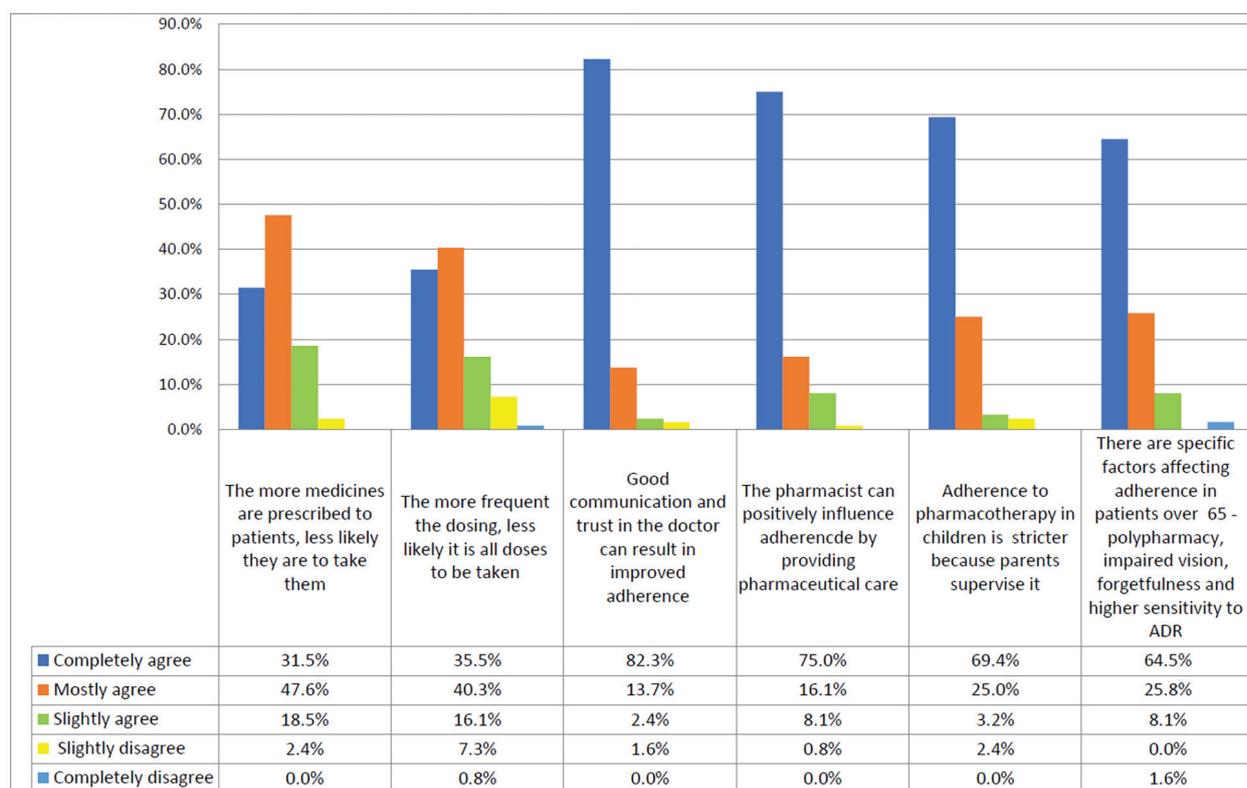


Fig. 6. Pharmacists' perception of factors influencing adherence

influenced adherence positively and could result in improved adherence.

Survey results regarding adherence in children and in patients over 65 were similar. Around 65% completely agreed and 25% mostly agreed with the suggested statements. Pharmacotherapy in children is characterised with a higher degree of adherence as parents are more concerned with their children's health and more strictly adhere to the prescribed regimen. In people over 65 there are specific factors influencing adherence, such as polypharmacy, impaired vision, forgetfulness as well as higher sensitivity to ADR, etc.

### DISCUSSION

The pharmacy is the main structural unit of the pharmacy system. It provides the population and the healthcare facilities with medicinal products, medical and sanitary materials, herbs, etc.

According to the *Medicinal Products in Human Medicine Act* there are 2 types of pharmacies in Bulgaria:

- ◆ community pharmacy—serves outpatients;

- ◆ hospital pharmacy—serves inpatients (10).

A pharmacist is the most accessible healthcare professional for patients. Chronically ill patients whose condition needs to be managed through drug therapy meet more often with the pharmacist than with any other healthcare professional. This provides pharmacists with the opportunity to assist in monitoring the condition and to advise patients to see a doctor if a change in treatment is needed (11).

The above results confirm the European and global tendency towards a low level of patient adherence to drug therapies. Poor adherence leads to serious consequences for people's health and quality of life and increased healthcare costs.

Factors causing poor adherence to therapy are numerous. According to Petkova and Popov (2015) five main factors influencing the process are related to: pharmacotherapy; patient's attitude and condition; healthcare system; social factors; economic factors (8). Our results confirm them.

In recent years overprescribing and the use of numerous medicinal products have led to polypharmacy, which is becoming a serious issue that causes

ADRs, interactions and non-adherence to the treatment (5).

The results of our study show that:

- ◆ Polypharmacy, high prices of medicinal products and the low reimbursement percentage reduce the adherence level.
- ◆ Non-adherence to the prescribed treatment can also be due to a deliberate decision taken by the patient.
- ◆ Communication with patients helps identify their attitude towards the prescribed medicines and enhances the likelihood of adherence to the treatment.
- ◆ Information and instructions for use which patients have difficulty understanding affect adherence so the factors that need to be considered are age, sex and education.
- ◆ Multiple daily doses and long-term use of a medicine are prerequisites for non-adherence to therapy.

Pharmaceutical prices are a fundamental issue for health care since they are the third most important component in the healthcare budgets of EU member states. According to a report of the European Parliament presenting the differences in costs of medicinal products in the EU, the costs for health care and medicines continue to rise as a percentage from the GDP across the EU. This creates problems regarding sustainability. There is also a constantly increasing need to limit growing healthcare costs, including those for medicines, and to efficiently spend insufficient resources. Prices of medicinal products differ in EU member states: for a basket of 150 medicines, average national prices vary by up to 25%. Primary factors leading to price differences include income levels, national, and sometimes regional, regulatory pricing policies and health technology assessment of medicinal products, regulatory approaches to wholesale and retail distribution and taxation on pharmaceuticals, in particular value-added tax (VAT) (12).

The selling price of medicinal products in Bulgaria is higher mostly due to the lower percentage of the price that is reimbursed by public resources.

Among the opportunities for cutting pharmaceutical prices is a more active pro-generics policy of the government, which would lead to a budget opti-

misation and cost reductions for the NHIF (National Health Insurance Fund). According to BGPHERMA (Bulgarian Generic Pharmaceutical Association) the price of generic medicinal products is between 20% and 90% lower than the price of patented medicines. Such a policy can contribute to improving population health, reducing the high co-payment rates for patients and enhancing access to new cost-effective drugs by saving public funds (13).

## CONCLUSION

Non-adherence to therapy is a worldwide problem. One of the key reasons for non-adherence in patients with chronic diseases is their lack of sufficient knowledge about the disease and need for treatment, which results in a poor disease control and increased economic burden due to the higher expenses. Therefore, adherence to the therapy should be a key aspect and priority in the treatment of chronic diseases, thus contributing to a better quality of life for patients and improving the long-term prognosis of the disease.

In conclusion, our survey results indicate that adherence to therapy in patients with chronic diseases in Bulgaria remains a significant issue due to various reasons. The leading factors, affecting adherence in patients with chronic diseases are socioeconomic (patients' personal reasons related to education and incomes), pharmacotherapeutic (high number of medicinal products), pharmacoeconomic (high price of medicines and low percentage of reimbursement).

Adherence to the prescribed pharmacotherapy is crucial for achieving the therapeutic results. Use of extended release dosage forms promotes better adherence due to reducing the need for a multiple intake during the day. Other opportunities we see for improving adherence are active generic policy, reduction of VAT on medicinal products (it is currently 20%, whereas the average VAT in Europe is 7.7% (EFPIA 2016)), improvement of communication skills of doctors and pharmacists, etc.

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