

CLINICAL STUDY

The influence of gender differences on the illness perception and women's point of view on COPD

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ABSTRACT

OBJECTIVES: Chronic obstructive pulmonary disease (COPD) is an irreversible disease and has influence on patients' quality of life. The aim is to investigate the influence of gender on the illness perception in COPD patients.

MATERIALS AND METHODS: This prospective study enrolled 151 COPD patients. For the evaluation of illness perception, we used Brief Illness Perception Questionnaire (BIPQ).

RESULTS: Average FEV1 values were significantly different ($p = 0.007$) in favor of woman compared to men. There was a higher proportion of GOLD stage 3 and less stage 4 in women. We found a significant difference in total BIPQ scores between female and male patients ($p = 0.008$). Women gave a significantly higher score on question 6 and 8 ($p = 0.003$). We found a significant difference in total BIPQ scores between female and male patients. Women perceive COPD as a significantly more threatening disease and accept chronic course and long-term treatment.

CONCLUSION: COPD is no longer a disease that predominantly affects men. BIPQ is a convenient tool for fast assessment of illness perception for COPD. Patients' perceptions of COPD is in correlation with gender and GOLD stadium. The results of this study have potential benefits in terms of health promotion and improvement of the quality of life and outcome (*Fig. 4, Ref. 21*). Text in PDF www.elis.sk

KEY WORDS: brief illness perception questionnaire, chronic obstructive pulmonary disease, gender, woman, smoking.

Introduction

Chronic obstructive pulmonary disease (COPD) is a progressive irreversible pulmonary disease characterized by persistent respiratory symptoms, airflow limitation and parenchymal destruction (1). All of them have an important influence on patients' everyday activities and quality of life. COPD is a major cause of chronic morbidity and mortality all over the world (1, 2). The most common cause of the development of this disease is smoking (active or passive in smoking environment) but also other causes such as exposure to toxic particles (sometimes in professional working place) can be a reason for development of COPD (3). Many systematic reviews showed that the prevalence of COPD is higher in smokers and ex-smokers compared to non-smokers (4, 5).

According to the World Health Organization, the prevalence of COPD is about 4–10 % (1, 2). Prevalence of COPD for men is 11.8 % and for women is 8.5 % globally (5, 6). In Serbia, accord-

ing to Institute of Public Health of Serbia, Dr Milan Jovanovic Batut" (2019.) prevalence of COPD is 3.5 %, and 31.9 % are active smokers. Almost half of the Serbian population (48.9 %) were exposed to tobacco smoke indoors, and 49.1 % non-smokers were concerned about the adverse effects on their health from exposure to tobacco smoke (7). Further progression of the disease is influenced also by the patient's malnutrition, inadequate use of inhalation therapy, physical inactivity and comorbidities. COPD is a preventable and treatable chronic disease, but misdiagnosis leads to patients receiving no treatment. Reasons can be in patients such as denial of disease or symptoms, because of fear of confirming that they are ill, or poor education of patients. Our job is to provide them with information about their disease, to advise them how to prevent exacerbations, emphasize the importance of a correct daily use of bronchodilator therapy. If necessary, we provide them with psychological counseling in order to prevent depression due to the progression of the disease and the limitation of activities that they used to perform without fatigue and discomfort. Research on the perception of the disease can reveal differences between the view of the disease, understanding and reactions of the patient, and therefore on the further course of the disease, treatment and outcome.

Numerous studies have examined the frequency of COPD between the sexes. Nowadays there are contradictory data. Previously, it was thought that it is more common in men. Now, accord-

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ing to data from the literature, it is almost equal (8). The question is- what makes the difference in gender representation? Is it the smoking status, acceptance of the disease and persistence in the long-term application of therapy, emotional reaction on illness or something else? How does all this affect the perception and acceptance of the disease itself?

The aim of this study was to investigate the influence of gender (sex difference) on the perception of the illness in patients with COPD.

Materials and methods

This prospective study was performed at a Pulmonology department in the University Clinical Center of Serbia and enrolled 151 patients that were diagnosed with and treated for COPD. Diagnosis of COPD was made according to the American Thoracic Society/European Respiratory Society (ATS/ERS) criteria by spirometry testing according to GOLD guideline (1). Post-bronchodilator spirometry tests were recorded on a JAEGER® machine. Patients in all four GOLD stages were included in this study. GOLD stages are defined based on the forced expiratory volume in 1 s (FEV1) value (1). Gender, age, smoking status (defined as current/former/never), comorbidities, therapy for COPD of participants were presented.

For the evaluation of illness perception, we used the Brief Illness Perception Questionnaire (BIPQ). After linguistic validation, BIPQ was offered to the patients in Serbian language. The interview was performed by two doctors, with more than 8 years of experience working in a Pulmonology Department. This questionnaire is easy to perform, in a few minutes. BIPQ has eight items and an additional nine open question where they can write their own opinion for 3 main causes for their disease. Every question was graded from 0 to 10. The questions are: consequences (question 1), timeline (question 2), personal control (question 3), treatment control (question 4), identity (question 5), concern (question 6), illness coherence (question 7) and emotions (question 8). A higher score reflects that a person feels more threatened by the illness (9).

Descriptive and analytical statistical methods were use in this study. From the descriptive methods were used: central tendency, measures of variability and relative numbers for all study variables of interest. The results were presented as mean values with standard deviation and percentage. The choice of the analytical statistical methods depended on the type of data and the distribution. Graphical and mathematical procedures were used to test the normality of distribution. Numerical data were compared with Student T test for independent samples. Nominal data were compared using Chi square test. A Mann–Whitney U test was conducted for samples without normal distribution to estimate the statistical significance between groups. For statistical analysis we used SPSS Statistics 22.0 software. The statistical significance was set at $p < 0.05$.

Results

One hundred fifty-one patients (100 male and 51 female) with COPD who were treated at the Clinic for Pulmonology, University

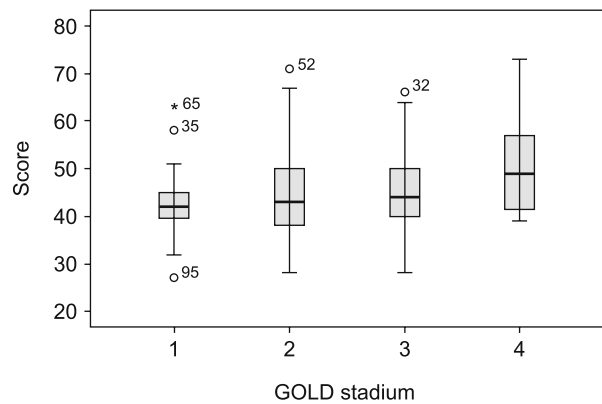


Fig. 1. The median BIPQ score by GOLD stage.

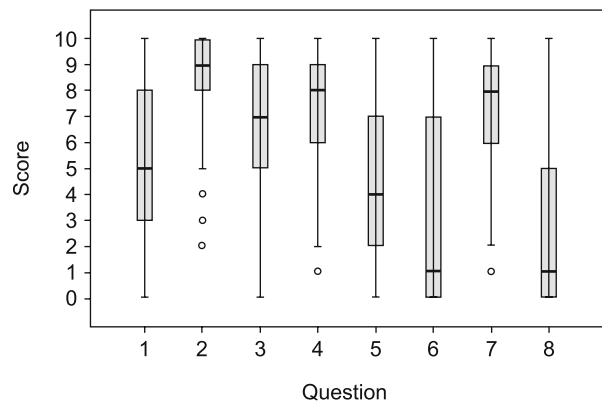


Fig. 2. Score distributions by questions.

Clinical Center of Serbia in the period from 2021 to 2022, were included in this research. The mean age of the patients was 65.8 ± 9.60 years (range 43–88 years). For men mean age was 66.8 and for woman 64 years, there was not significant difference between the two sexes. The majority of patients were smokers (52 patients) and ex-smokers (92 patients) and the rest of the patients had never smoked. Also, there was not significant difference between men and woman in smoking habits (both genders smokers and ex-smokers was near 97 %).

Sixty-eight percent of all patients had at least one comorbidity. Most common were arterial hypertension, diabetes, hypothyroidism, atrial fibrillation or myocardial infarction in the past.

In all 151 patients, spirometry test was performed, on that way the GOLD stage was determined according to post bronchodilator FEV1 values. Distribution by GOLD stages was- 19 patients (12.6 %) in the GOLD 1, 72 patients (47.7 %) in the GOLD 2, 45 patients (29.8 %) in the GOLD 3 and 15 (9.9 %) in the GOLD 4. All spirometry findings were performed technically correctly. No patient was excluded from the study because of incorrect test.

Average FEV1 values were significantly different ($p = 0.007$) in favor of woman (FEV1 58.7 %) compared to men (FEV1 51.5 %). If we analyze only those patients with severe COPD who

had FEV1 less than 50 % (GOLD 3 and 4 stage) there was not significant difference between genders. There was a higher proportion of GOLD stage 3 and less stage 4 in women compared to men.

The BIPQ scores with range, between COPD patients in all four GOLD stages, are presented in Figure 1. Median BIPQ scores by GOLD stages were for GOLD 1 it was 42, for GOLD 2 it was 43, for GOLD 3 it was 44 and for GOLD 4 it was 49. The results showed statistically significant differences between GOLD 1 and 4 ($p = 0.035$).

After giving informed consent, patients completed the BIPQ questionnaire translated into Serbian language. The mean BIPQ score for the whole study group was 45.5 ± 2.08 . The highest single question score was for question 2 (illness duration perception; median 9) while the lowest were for questions 6 (concern; median 1) and question 8 (emotions; median 1) (Fig. 2).

We found a significant difference in total BIPQ scores between female and male patients ($p = 0.008$) (Fig. 3).

We found a statistically significant difference in the median scores for questions 6 and 8 when patient gender subpopulations were analyzed.

The Mann-Whitney Test showed that women gave a significantly higher score on question 8 ($p = 0.003$) (Fig. 4).

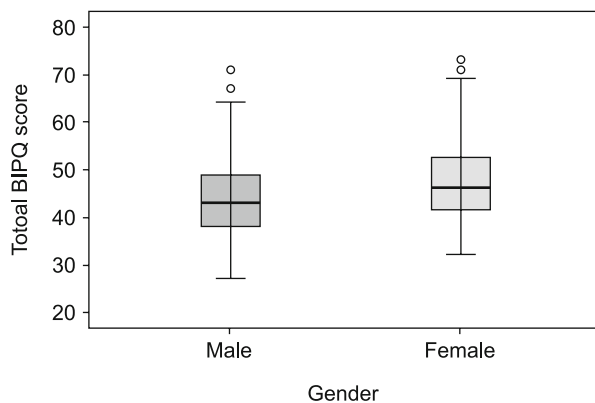


Fig. 3. Gender-related mean value of the total BIPQ score in patients with COPD.

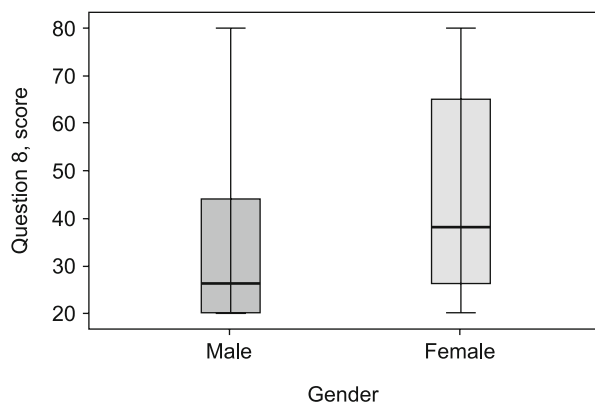


Fig. 4. Question 8 score by gender.

The main cause of COPD for both sexes was smoking in more than half of respondents. Other causes with less than 15 % were work exposure, environmental exposure, stress, genetic predisposition and infections.

Discussion

This study has a purpose to raise awareness of the disease perception and clinical differences by gender in COPD patients. We wanted to prove that COPD is not an isolated respiratory disorder, but that its course also depends on acceptance of the disease and treatment. Also, we want to see how well patients understand their illness and patients' emotional response to the COPD and whether woman reaction on COPD different.

Chronic obstructive pulmonary disease is a respiratory disease that was thought to predominantly affect men. Maybe the reasons were certain circumstances such as work environmental factors, lifestyle (smoking was predominant in men), physical activity, education or socialization. In the past women with COPD were likely to be of lower socioeconomic status than men, but men were more likely exposed to risks from working in industries (10). Smoking started among the upper classes, and then spread to working-class men and smoking among women was viewed negatively. Women began to consume cigarettes after their status changed in the 20th century (11). The increase in the number of women who consume cigarettes nowadays in the world and in our country is worrying. Now there are numerous studies on the topic of the frequency of COPD in women, the increase in the number of women with the different COPD phenotypes disease and women smokers. The prevalence of smoking tobacco products in world is about 31.9 % (7). According to data of Institute of public health of Serbia in 2019 a percentage of smokers of tobacco products in both genders was now similar, due to the increased consumption frequency in women. Among men is 33.9 % and among women is 30.1 %. Our research results (35 % men smoking and 33.3 % woman) are consistent with the research in our country and WHO data. Tobacco control and indoor smoking bans have led to a decrease in incidence of smoking in many countries, but despite this, one in five still smoke in the world (21 %) adult resident (12). Tobacco use is associated with increased risk of getting sick and dying from respiratory diseases, cardiovascular and malignant diseases (13).

The last question in BIPQ is patients' opinion about main three reasons for development of COPD. Smoking was a main cause for 54.6 % patients, equally dominant in both genders. Other causes with less than 15 % were work exposure, environmental exposure, stress, genetic predisposition and infections. Besides pharmacological inhalation treatment for COPD, equal importance is non-pharmacological measures and on first place is smoking cessation (14). Women who smoke have faster decline in FEV1, but conversely obtain greater benefit in pulmonary function from smoking cessation and on that way can reduce the disease progression (11). Because of those literature data, in daily clinical practice, we advise our patients with COPD to stop smoking. Prevention is important. First, we need to fight with risk factors and then treat consequences.

If we analyze only those patients with severe COPD who had FEV1 less than 50 % (GOLD 3 and 4) there was not significant difference between genders. In our study group was a higher proportion of GOLD stage 3 and less stage 4 in women compared to men. Average FEV1 values were significantly different in favor of woman. Findings about therapy compliance in studies vary. Women with mild to moderate COPD were more compliant with bronchodilator treatment, while compliance in men was better with severe COPD (15). The explanation might be in that health is determined by individual characteristics of residents (gender, age) and factors of the external environment – social, economic and cultural and men often do not accept the disease because it is a shame because they are „the stronger gender“. Females generally tend to represent more of social competence, they are more sensitive and responsible. Maybe that is the explanation for the better compliance of the therapy. For example, there is a lower prevalence of hypertension in women compared to men with better adherence for therapy (16).

The highest single question score generally, was for illness duration perception, treatment control and illness coherence. Those high scores speak in favor of us as pulmonologists that we managed to bring the disease closer to patients and explain it properly. It also speaks in favor of the fact that patients are aware of the chronic course of this disease, that they understand the risk factors for worsening and the necessity of using therapy. Considering the very high score on treatment control question, patients believe in the therapeutic outcome and disease control with prescribed inhalation therapy. Patient-pulmonologist communication is central for good patient adherence. COPD adherence is multifactorial and depends on the characteristics of the patient (cognitive abilities, age, comorbidities, psychological profile, physicians characteristics (relation with patient, device training, follow-up) and device\ drug (method of administration, dosing regimen, side effects) (17). That is why an individual approach and personalized therapy for COPD is needed.

The lowest score were for concern question, emotions and identity. Low score for identity question shows that patients who do not know enough about their disease are unable to associate certain symptoms with the disease itself. They often deny the symptoms. Elderly patients for example, who live alone without family supervision, come to the doctor later due to complaints. In the early stage of COPD symptoms are mild and do not have significant impact on daily activities, so patients do not go to a doctor and get treatment in time. The consequence of that is the diagnostic delay with illness progression and deterioration of pulmonary function (18).

Psychological status can also affect the perception of illness and denial of symptoms. A high proportion of anxiety and depression could influence the under-diagnosis of COPD. According to literature data, every third patient with COPD had anxiety or depression, they have more exacerbations, and it is the strongest predictor of dyspnea as main symptom (19). Asthenia could mask dyspnea in women with depression. Dyspnea is strongly associated with depression in women. Several studies showed a higher frequency of depression in women and a greater impact on quality

of life (11, 20). This could be the answer to the difference in the score of questions about concern and emotions of women. Women react more emotionally to both happiness and sadness, they are more concerned about their health and visit doctors more often than men. There is a higher prevalence of affective disorders in women and some sex differences in reactions and course of illness (21). Men had a more positive self-image of health than women: men rated their general health condition as good more often than women (7). The future study of gender differences has the potential to shed light on the factors that contribute to reducing the risk and development of the disease, the way of responding and accepting it, and the final outcome.

When individuals are diagnosed with any disease, they usually develop different opinions about their own disease, some accept it and some deny it, some accept the doctor's suggestions, and some look for alternative methods. It is very important to bring the knowledge about the disease closer to the patient, because each individual will react differently emotionally, adapt to the new situation and, in the ultimately, decide on the treatment, which will have effect on the disease control and the outcome of the treatment. Perception is different from patient to patient, even with the same disease. Perception by gender is different. Women are more emotional. In our study group perception of COPD is better in women. We found a significant difference in total BIPQ scores between female and male patients. That means that women perceive COPD as a significantly more threatening disease and accept chronic course of the disease and long-term treatment. They even said in the last question in BIPQ that smoking is the main cause for the development of COPD, over 60 % are ex-smokers, which indicates that they are ready to change the course of the disease, if possible, by quitting smoking. As a result, this may be the reason that number of female patients with terminal stage COPD (GOLD 4 stage) is less than men. Women react more emotionally, they are more concerned about their health, that is why score for concern and emotions for COPD was higher in women.

Conclusion

Chronic obstructive pulmonary disease in last decade is no longer a respiratory disease that predominantly affects men. Gender-specific health care, prevention and treatment of many diseases need to be based on personal perception, because only in this way a better outcome is possible. We found that the BIPQ is a convenient tool for fast assessment of illness perception for COPD. Patients' perceptions of COPD is in correlation with gender and GOLD stadium. Women perceive COPD as a significantly more threatening disease. Since perceptions of illness can change, the results of our study have potential benefit in terms of health promotion and improvement of the quality of life and final outcome.

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