

## **A Real-Life Observational Study on a Quality of Life in Patients with Acute Respiratory Infection Supplemented with Combination of N-Acetyl Cysteine and Propolis**

**Jelica Videnovic Ivanov<sup>1\*</sup>, Mihailovic Vucinic V<sup>1</sup>, Filipovic Stepic S<sup>1</sup> and Agic A<sup>2</sup>**

<sup>1</sup>*Clinic for Pulmonology, Clinical Centre of Serbia, Belgrade, Serbia*

<sup>2</sup>*Abela Pharm d.o.o., Belgrade, Serbia*

**\*Corresponding Author:** Jelica Videnovic Ivanov, Clinic for Pulmonology, Clinical Centre of Serbia, Koste Todorovica, Belgrade, Serbia.

**Received:** May 06, 2020; **Published:** May 27, 2020

### **Abstract**

**Introduction:** Nowadays modern way of living leads to the increase in the prevalence of respiratory infection. Despite a great availability of treatment mostly symptomatic, those conditions can be very disturbing and take patients from their working places for at least 7 - 10 days. One of the most studied mixture for respiratory infection treatment contains 600 mg of NAC and 80 mg of propolis in sachets, once daily (PropoMucil® 600, sachets, manufacturer AbelaPharm, Serbia) may play a significant role in treatment of inflammatory conditions of respiratory system.

**Objective:** The aim of this paper is to determinate the impact of NAS and propolis combination on the quality of life in patients treated for acute respiratory infection.

**Materials and Methods:** A real life observational single-centre study was conducted in the Clinic for Lung diseases Clinical Centre of Serbia in the period February 2017 - July 2017 and included patients with symptoms of acute respiratory infection who were treated with 600 mg of N-acetylcysteine and 80 mg of propolis, once a day for 10 days.

**Results:** Treatment was performed with antibiotic therapy and combination of 600 mg of N-acetylcysteine and 80 mg of propolis, once a day for 10 days in 71 patients with a mean age of  $60.7 \pm 14.9$  years. Beside clinical and laboratory improvement our results showed a significant quality of life improvement studied by a specialized questionnaire.

**Conclusion:** The results from the study confirmed an achievement of a very good quality of life in those patients who were supplemented with the combination of 600 mg of NAC and 80 mg of propolis in sachets, once daily (PropoMucil® 600, sachets, manufacturer AbelaPharm, Serbia) even after the cessation of the standard treatment.

**Keywords:** *Acute Respiratory Infection; Quality of Life; N-Acetylcysteine; Propolis*

### **Introduction**

Nowadays modern way of living leads to the increase in the prevalence of respiratory infection [1,2]. Spending more and more time inside the houses, at work in the offices or during the free time in shopping centers promote an ideal conditions for spreading the viral and bacterial agents. Despite a great availability of treatment mostly symptomatic, those conditions can be very disturbing and take patients from their working places for at least 7 - 10 days. The costs of those respiratory infection in that sense are not only for the health care service and treatment but also leads to [3] to the absence from work [2]. Herbal treatments are known for years to be a very effective

in respiratory infections treatment. There are many available products and mixtures at the market. One of the most studied mixture for respiratory infection treatment contains 600 mg of NAC and 80 mg of propolis in sachets, once daily (PropoMucil® 600, sachets, manufacturer AbelaPharm, Serbia) may play a significant role in treatment of inflammatory conditions of respiratory system. It may disrupt cellular conductivity between ciliary and epithelial cells and bacteria [3]. Furthermore, it reduces adhesion of *H. influenzae*, *S. pneumoniae* to the oropharyngeal epithelial tissue and inhibits their colonization and growth [4]. It also inhibits replication process of the viruses via reducing H<sub>2</sub>O<sub>2</sub> and cell's sulfhydryl levels and by stopping expression of adhesive molecules [5]. Quality of life, or more precisely, health-based quality of life, indicates the physical, psychological or social dimensions of health, seen as distinct areas that are influenced by experience, belief. There are 4 areas identified to be important in the overall definition of the quality of life of people: a. physical and work ability b. psychological status c. social status d. somatic sensation [6]. The World Health Organization has also pointed to a description of the quality of life that takes into account both the individual's observations and their relationship to the environment in which they are located.

### **Objective of the Study**

The aim of this paper is to determinate the impact of NAS and propolis combination on the quality of life in patients treated for acute respiratory infection.

### **Materials and Methods**

A real life observational single-centre study was conducted in the Clinic for Lung diseases Clinical Centre of Serbia in the period February 2017 - July 2017. The protocol was approved by the Ethical Committee of the hospital. Informed consent was obtained from of the participants. The study group consisted of patients suffering from symptoms of acute respiratory infection treated in the named period. Inclusion criteria implied age over 18, presence of acute respiratory inflammation or exacerbation of acute respiratory infection symptoms. Exclusion criteria implied presence of asthma exacerbation and hypersensitivity on NAC or propolis. The study was supported by a questionnaire that included: the type of cough, look of the sputum, duration of symptoms. Spirometry testing was also performed at the beginning of the follow up period as well as radiographic imaging (chest X ray). We performed also whole blood count with erythrocytes sedimentation rate (ESR), CRP and fibrinogen at the beginning and at the end of follow up period. In additional patients were asked about life style including smoking habits and physical activity. Besides clinical evaluation a specialized quality of life questionnaire has been used (Appendix 1). Data on comorbidities were taken from medical records of included patients. Additional to standardized antibiotic treatment, patients were treated with supplement formulation containing 600 mg of NAC and 80 mg of propolis in sachets, once daily (PropoMucil® 600, sachets, manufacturer AbelaPharm, Serbia). Therapy was administered for 10 day followed by reassessment of the presence of clinical symptoms and signs and biochemical analyses.

### **Statistical analysis**

The sample size was calculated with the software package G power. Descriptive and analytical statistical methods were used. The following descriptive variables were described: measures of central tendency (mean, median), measure of dispersion (standard deviation, interval of variation). Analytical statistical methods were used to test differences, parametric and nonparametric variables. Student's t test and analysis of variance of repeated measurements were used. Chi square test, McNemar test, Mann-Whitney test, Wilcoxon test, Friedman test were also included. All data were analyzed in SPSS 15.0 software package. (SPSS Inc., Chicago, Illinois, USA).

### **Results**

71 patients were included in the study table 1 reports demographics of the patients included. Median age of the patients included was 60.7 ± 14.9, ranging from 29 to 87 (Table 1). Study included 35 (49.3%) males and 36 (50.7%) females. Table 2 reports the lifestyle habits of the patients included. Among the included, 73.2% were smokers while 57.7% did not practice more than 30 minutes of physical activity daily (Table 2). As it is presented in the figure 1. The majority of included patients experienced an improvement of respiratory symptoms just several days after the beginning of the treatment.

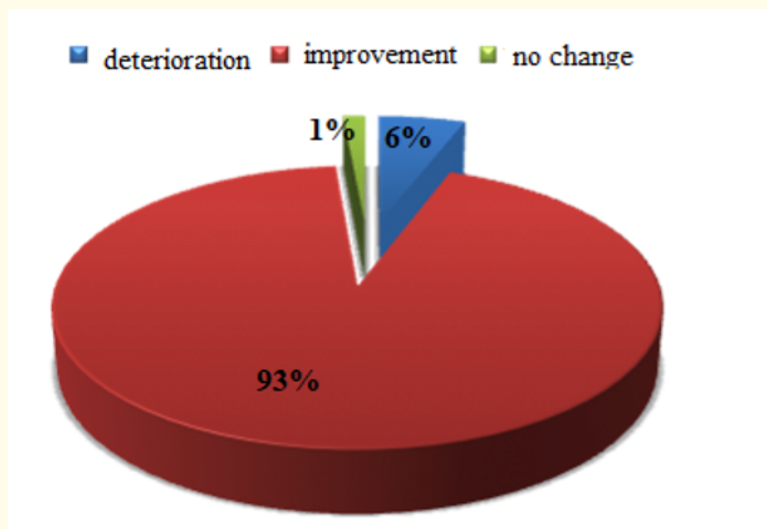
Demographic characteristics of respondents	n (%)
<b>Gender</b>	
Male	35 (49.3)
Female	36 (50.7)
<b>Age</b>	
X ± SD; Med (min-max)	60.7 ± 14.7 (29 - 87)

**Table 1:** Demographics of 71 patients included in the study.

n: Number of Respondents; %: Percentage of Respondents; X: Mean; SD: Standard Deviation; min: Minimum; max: Maximum.

Habits for own health	n (%)
<b>Smoking</b>	
da/yes	52 (73.2)
ne/no	19 (26.8)
<b>Daily physical activity *more than half an hour*</b>	
da/yes	30 (42.2)
ne/no	41 (57.7)

**Table 2:** Lifestyle habits of 71 patients included in the study.



**Figure 1:** Improvement in the overall health condition after 10 days of treatment in 71 patients included in the study.

It is also a very interesting to point out that a little bit more than 2/3 of the participants are treated ambulatory whereas only 27% were admitted to the hospital settings. All those ambulatory patients were treated with a combination of NAC and propolis in addition to antibiotics and symptomatic treatment (Figure 2). By examining the quality of life before and after the administration of the PropoMucil® dietary supplement, a statistically significant difference was found in terms of improvement in all the variables examined. Table 3a and 3b in the Appendix.

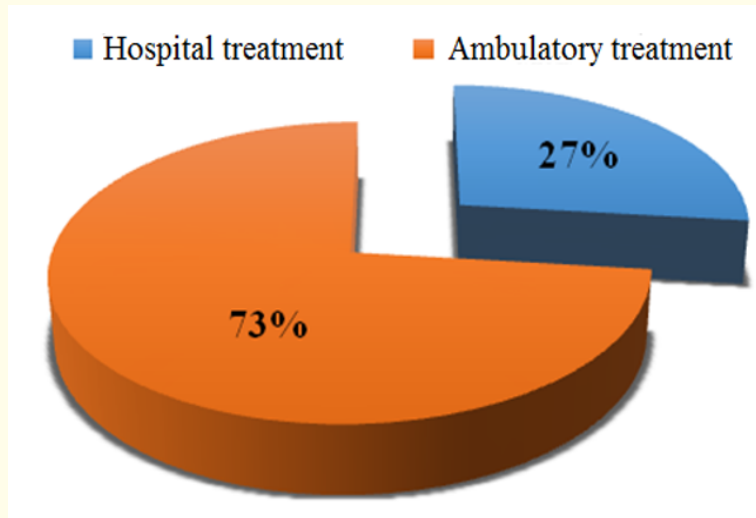


Figure 2: Distribution of treatment settings among 71 patients included in the study.

	Always (%)	Usually (%)	Frequent (%)	Often (%)	Sometimes (%)	Rare (%)	No answer (%)
Have you been disturbed with mucus during coughing in the last 24h?	6 (8,5)	41 (57.7)	14 (19.7)	7 (9.9)	1 (1.4)	0 (0)	2 (2.8)
Have you been tired due to cough in the last 24 hours?	6 (8,5)	32 (45.1)	25 (35.2)	6 (8.5)	0 (0)	0 (0)	2 (2.8)
How many times have you felt disturbed due to cough in the last 24 hours?	7 (9.9)	35 (49.3)	20 (28.2)	7 (9.9)	0 (0)	2 (2.8)	0 (0)
How many times cough disturbed you at work or during a daily activities in the last 24 hours	8 (11.3)	31 (43.7)	24 (33.8)	5 (7)	1 (1.4)	0 (0)	2 (2.8)
In the last two weeks exposure to artificial colors or paints cause coughing?	2 (2.8)	30 (42.3)	18 (25.4)	15 (21.1)	2 (2.8)	0 (0)	0 (0)
Was your sleep disturbed by cough in the last 24 hours?	16 (22.5)	20 (28.2)	11 (15.5)	0 (0)	0 (0)	24 (33.8)	0 (0)
How frequent do you have episodes of cough in the last 24 hours?	11 (15.5)	14 (19.7)	11 (15.5)	27 (38)	5 (7)	1 (1.4)	2 (2.8)
Have you been worried that your cough can cause serious diseases in the last 24 hours?	0 (0)	0 (0)	9 (12.7)	28 (39.4)	10 (14.1)	0 (0)	24 (33.8)
Have you been worried that people might tough that you are not ok due to cough?	14 (19.7)	23 (32.4)	10 (14.1)	0 (0)	24 (33.4)	0 (0)	0 (0)

Table 3a: Questionnaire 10 days before.

	Always (%)	Usually (%)	Frequent (%)	Often (%)	Sometimes (%)	Rare (%)	No answer (%)
Have you been disturbed with mucus during coughing in the last 24h?	0 (0)	5 (7)	12 (16.9)	26 (36.6)	18 (25.4)	8 (11.3)	2 (2.8)
Have you been tired due to cough in the last 24 hours?	0 (0)	1 (1.4)	7 (9.9)	36 (50.7)	20 (28.2)	5 (7.0)	2 (2.8)
How many times have you felt disturbed due to cough in the last 24 hours?	0 (0)	3 (4.2)	11 (15.5)	37 (52.1)	18 (25.4)	2 (2.8)	0 (0)
How many times cough disturbed you at work or during a daily activities in the last 24 hours	0 (0)	1 (1.4)	17 (23.9)	34 (47.9)	12 (16.9)	5 (7)	2 (2.8)
In the last two weeks exposure to artificial colors or paints cause coughing?	0 (0)	3 (4.2)	15 (21.1)	27 (38)	14 (19.7)	1 (1.4)	2 (2.8)
Was your sleep disturbed by cough in the last 24 hours?	2 (2.8)	15 (21.1)	40 (56.3)	10 (14.1)	2 (2.8)	2 (2.8)	0 (0)
How frequent do you have episodes of cough in the last 24 hours?	0 (0)	2 (2.8)	7 (9.9)	8 (11.3)	41 (57.7)	11 (15.5)	2 (2.8)
Have you been worried that your cough can cause serious diseases in the last 24 hours?	2 (2.8)	5 (7)	41 (57.7)	21 (29.6)	2 (2.8)	0 (0)	24 (33.8)
Have you been worried that people might tough that you are not ok due to cough?	0 (0)	12 (16.9)	42 (59.2)	15 (21.1)	2 (2.8)	0 (0)	0 (0)

**Table 3b:** Questionnaire 10 days after.

**Discussion**

Quality of life is a personal perception of one’s lifestyle in the context of culture, value system, aspirations, future prospects, standards and interests [7]. There are many different approaches to measuring quality of life. The definition of the quality of life depends on how the quality of life is measured and the results obtained. Depending on the purpose of the research, the measurement of quality of life may be completely different. Types of assessment evolve depending on the methodological approaches of different disciplines in accordance with their objective and philosophical views. Key issues related to quality of life measurement are related to discussions of definitions of quality of life. There is a certain difference between the methods used to measure the quality of life in the general population and those used in measuring the quality of life of individuals exist. In both approaches, the dominant methodology can be based on quantitative methods. The quality of life associated with being healthy is assessed using a number of indicators such as smoking prevalence, alcohol and physical activity, overweight, high blood pressure, hypercholesterolemia, health self-reports. Dimensions of health, seen as distinct areas that are influenced by the experience, beliefs, expectations, and perceptions of the individual, are also present. Each of these domains can be measured in two dimensions: in the form of an objective assessment of functioning or health status, and in the form of subjective perceptions of health [8]. In the process of measuring the quality of life of patients with pneumonia, the question arises as to what type of questionnaire can be used. However, we have combined all respondents with one questionnaire [9]. Every individual has

the right to a quality lifestyle. In that sense it is a particularly important to find a best way to improve the quality of life during the illness and to decrease absence from work [10]. Our results have showed that a combination of NAC and propolis improve the quality of life in patients with acute respiratory infections. In addition to a great impact on quality of life and efficacy, studies have also showed a good tolerability and safety profile of such a combination. Participants were supposed to fill in the attached questionnaire before and 10 days after the treatment. The improved quality of life was observed in all domains covered by the questionnaire. One of the possible reasons for such an almost uniform response is in relatively mild respiratory infections, given the relatively small number of hospitalized persons with pneumonia, while among those with infections during chronic bronchitis and bronchial asthma, there were no hospitalized persons and a relatively small percentage of patients with pneumonia who had obstruction on spirometry [14]. Respiratory infections represent a significant individual and society burden [11-13]. According to the data respiratory infection are much more common in those patients with chronic comorbidities. Cough is a main symptoms of the majority of acute respiratory symptoms. It is well known that cough either dry or productive can be a very disturbing and have an important impact on the quality of life [15]. It is also a very interesting to emphasis that there is no a clear correlation between physical, laboratory, radiographic findings and quality of life. There is a need for more study that will correlate all those findings.

## **Conclusion**

In this study we have analyzed patients with acute respiratory symptoms with or without comorbidities. The outpatients with pneumonia were also included in the study. The results from the study confirmed an achievement of a very good quality of life in those patients. Addition of NAS and propolis to standard treatment can explained the improvement the quality of life in patients with acute respiratory infection even after the cessation of the standard treatment.

## **Bibliography**

1. Institut za javno zdravlje Srbije Dr Milan Jovanović Batut. Zdravstveno-statistički godišnjak Republike Srbije (2015): 2217-3714.
2. Gibson J., *et al.* European Lung Book. The European Respiratory Society.
3. Restrepo MI., *et al.* "Long – term prognosis in community – acquired pneumonia". *Current Opinion in Infectious Diseases* 26.2 (2013): 151-158.
4. Fowdar K., *et al.* "The effect of N-acetylcysteine on exacerbations of chronic obstructive pulmonary disease: A meta-analysis and systematic review". *Heart Lung* 46.2 (2017): 120-128.
5. Schalock RL. "The Concept of Quality of Life: What We Know and Do Not Know". *The Journal of Intellectual Disability Research* 48.3 (2004): 203-216.
6. The World Health Organization. "Quality of life (WHOQOL)-BREF". Procedures Manual. Geneva: World Health Organization (2004): 7.
7. Schalock RL. "Three Decades of Quality of Life". *Focus on Autism and Other Developmental Disabilities* 15.2 (2000): 116-127.
8. Davern M and Cummins RA. "Is life dissatisfaction the opposite of life satisfaction?" *Australian Journal of Psychology* 58.1 (2006): 1-7.
9. Lim WS., *et al.* "Pneumonia Guidelines Committee of the BTS Standards of Care, Committee (2009). "BTS guidelines for the management of community ac-quired pneumonia in adults: update 2009". *Thorax* (2009): 1-55.
10. Scalera NM and Fil TM. "How long should we treat community – acquired pneumonia?" *Current Opinion in Infectious Diseases* (2007): 177-181.

11. File TM Jr and Marrie TJ. "Burden of community-acquired pneumonia in North American adults". *Postgraduate Medical Journal* 122.2 (2010): 130-141.
12. Ilić I, *et al.* "Procjena kvaliteta života-sadašnji pristupi". *Acta Medica Medianae* 49.4 (2010): 52-601.
13. Rakel D. "Integrative Medicine, 3<sup>rd</sup> edition". Saunders (2012).
14. Van Schayck CP. "Measurement of quality of life in patients with chronic obstructive pulmonary disease". In: Mallarkey G, editor. Quality of life assessment. Last advances in the measurement and application of quality of life in clinical studies. Chester: Adis International Limited (1998): 8792.
15. Guyatt GH, *et al.* "A measure of quality of life for clinical trials in chronic lung disease". *Thorax* 42.10 (1987): 7738.

**Volume 9 Issue 6 June 2020**

**©All rights reserved by Jelica Videnovic Ivanov, *et al.***