REVIEW

On a dissertation
"Rehabilitation of patients with lung diseases in conditions of a pandemic caused by the SARS-Cov-2 coronavirus"

For the acquisition of the scientific and educational degree MD in the field of higher education 7. Healthcare and sports, professional direction 7.1. Medicine, scientific specialty "Physiotherapy, resourt therapy and rehabilitation"

To Dr. Dafina Velinova Bacheva-Chausheva
By Prof. Dr. Krasimira Kisyova, Dr.Med.Sc.

Dr. Dafina Bacheva-Chausheva was born on 22.09.1979.

From 1993 and 1998 she studied in the 4th Language school "Frederic Julio-Curie" Varna; from 1998 to 2004 she studied at the Medical University – city of Sofia, majoring in medicine. From 2005 to 2009 she studied at the Physiotherapy and Rehabilitation Clinic at MPHAT "St. Marina". In 2009 she acquired specialty in "***Physical and Rehabilitation Medicine***". In 2011 she worked as a doctor-specialist in the Physiotherapy and Rehabilitation Clinic at MPHAT "St. Marina"; from April 2011 to November 2011 Dr. Dafina Bacheva -Chausheva worked as a doctor in the "St. St. Constantine and Elena" resort. Since April 2015, she has been an assistant in the Department of ***Physiotherapy, Rehabilitation, Thalassotherapy and Occupational Diseases*** and teaches students of Medicine; Rehabilitators; Nurses; Midwives; rehabilitation for patients with lung diseases in pandemic conditions caused by ***the Corona virus.***

From 2016 to 2023 Dr. Dafina Bacheva-Chausheva has been preparing for doctoral studies in the scientific specialty ***of Physical and Rehabilitation Medicine*** at the Department of ***Physiotherapy, Rehabilitation, Thalassotherapy and Occupational Diseases***

Specializations in Bulgaria and abroad:

- Course in ***Laser Therapy,*** MU – Sofia;

- Course in ***Neural Therapy***, MU – Varna;

- Course in ***manual therapy*** - MU – Varna;

- Course in ***pulmonary rehabilitation*** at the European Respiratory Society – Athens;

Dr. Dafina Bacheva – Chausheva is a member of several scientific organizations:

- ***Association of Physical and Rehabilitation Medicine***;

- Bulgarian ***Society of Pulmonary Diseases***;

- European ***Respiratory Society of Pulmonology***.

She speaks three languages: Bulgarian; Spanish and English.

The dissertation work of Dr. Dafina Bacheva-Chausheva is dedicated to an extremely topical problem – the Covid - 19 Virus), which arose in a small town in China in December 2019, instilling fear and terror in the world, spreading with great speed, causing severe acute respiratory syndrome and a number of other organ damage. WHO announced the pandemic on 11.03.2019 and according to its data as of September 2022 the Corona virus infection has caused the death of over 6,500,000 people worldwide and of over 37,000 people in Bulgaria. The course of the disease is non-specific and varied from asymptomatic to severe pneumonia, ARDS and death. Furthermore, randomized trials have found that 3-6 months after discharge, one-third (32%) of hospitalized patients still had impaired physical activity.

Respiratory rehabilitation is a multidisciplinary and comprehensive approach that aims to improve the self-control ability of patients suffering from respiratory diseases.

The choice of the topic of the dissertation work, with a multidisciplinary sound, does honor to the dissertation student and her scientific supervisors.

The dissertation is properly structured, contains 187 standard pages and is illustrated with 32 tables, 23 figures, contains 6 appendices. 360 literary sources are cited, of which 7 are in Cyrillic and 353 are in Latin.

The goal and tasks are clearly formulated, 124 patients with imaging-confirmed bilateral pneumonia and respiratory failure caused by SARS-COV-2 were included, divided into two groups: main - 62 patients who, along with standard treatment, were undergoing respiratory rehabilitation and other 62 patients (control group) with standard treatment without RR.

The selected methods are modern and presentable

Exclusion criteria are also listed.
Methods used:
- Physical examination,
- Questionnaire survey,
- Test for evaluation of physical capacity – 30SCT
- Assessment of the degree of breath shortness at physical exertion with the modified Borg scale
- HADS psychoemotional disturbances.

Physiotherapy treatment methods

The respiratory rehabilitation (RR) plan includes position changes of the body, which optimize ventilation and improve gas exchange, passing through lateral, half lying position and prone position. The RR plan also includes active breathing cycle breathing techniques, for control of breath shortness, techniques for slow exhalation for patients who do not develop desaturation, techniques, which decrease the respiratory rate.

Each phase of RR is performed under the supervision of a medical

team in order to gradually achieve the level of independence during exercise.

Based on the studies conducted, a kinesitherapy program was implemented for the patients included in the study.

Results

The results are presented in detail: demographic data of the researched; (gender, age) **comorbidity**; analysis **of blood gas** parameters in both groups, analyzed by gender and age; in patients with severe pneumonia. A good impression makes the comparison between patients from the RR pneumonia group and the control group; with oxygen therapy and without the need for oxygen therapy. The comparative analysis of the functional state of CVS and RS and the tolerance to physical activity in patients during rehabilitation in hospital conditions contribute to the scientific conclusions. An assessment has been made on the quality of life, connected with health as measured by the EQ-5D-3L. Self-assessment of patients with COVID-19, acted on in-patient treatment in the Department of Thoracic Surgery - Covid-19 at MPHAT "St. Marina" – city of Varna (pulmonology).

The prescription of rehabilitation (type of duration, frequency of applied exercises) must be tailored to the individual condition of the patient, the severity of the disease and the presence of accompanying diseases.

An algorithm was applied for the rehabilitation of patients with Covid 19 pneumonia in the acute phase of the disease.

Examination of the patient

- Medical history: complaints of the type on cough, shortness of breath, tiredness, painful symptoms, restriction in the everyday activities; accompanying and past diseases, allergies, etc.
- Somatic status
- Research – laboratory tests (blood count, blood gas analysis, C-reactive protein, D-dimer), imaging tests (X-ray, CT).
- Functional condition:

- Determination of the physical capacity through 30STS
- Determination of symptoms: degree of shortness of breath using the modified Borg scale during physical exertion. It is performed after conducting 30STS.

• Quality on life and psycho-emotional condition:

- determination of the quality of life through EQ-5D- 5L;
- determination of the psycho-emotional condition through Hospital Anxiety and Depression Scale (HADS).

The conclusions fully cover the assigned tasks, it turns out that the program proposed by the doctoral candidate is safe, effective and easy to implement for patients in the acute phase of Covid- 19.

The contributions are also important, with which I fully agree, especially the need for early rehabilitation of patients with moderate and severe course of the Covid 19 disease.

A structured program was introduced for rehabilitation of these patients. The created algorithm for the rehabilitation of patients in the acute phase of Covid 19 is appreciated.

The publications in connection with the dissertation are 2 (out of a total of 4).

CONCLUSION

The presented dissertation shows the erudition, the hard work, the opportunity to participate in a multidisciplinary team and the desire of Dr. Dafina Bacheva-Chausheva to shed light on this little-known problem of Covid 19 with one, unfortunately rarely used method: physical rehabilitation, improving the quality of life.

Congratulations for recognizing the importance of comorbidity, especially AH, endocrine disorders, etc. I would like to wish her, with the same persistence and consistency, to continue her research in patients with post- Covid syndrome. This would be a valuable guideline for regulatory authorities concerned with this medico-social problem.

I believe that Dr. Dafina Velinova Bacheva-Chausheva, whom I admire, fully meets the requirements of ***the law for the development of the academic staff of the RB and MU Varna.*** I strongly recommend the members of the esteemed jury to award Dr. Dafina Velinova

Bacheva-Chausheva the scientific educational degree **MD.**

Reviewer:

Prof. Dr. Krasimira Kisiova, MD