

Body composition abnormalities in chronic respiratory disease

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Impact section

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The aim of this section is to provide a reflection on the scientific and social impact of the results of the research described in the thesis for a wide target group. In summary, this can be accomplished by answering four questions: 1. What is the main objective of the research described in the thesis and what are the most important results and conclusions? 2. What is the (potential) contribution of the results from this research to science and social sectors? 3. To whom and why are the research results relevant? 4. How can these target groups be involved in and informed about the research results, so that the knowledge gained can be used in the future?

Main objective, most important results and conclusions

Researchers have been investigating not only how chronic diseases affect life expectancy, but also how it may affect the condition of individuals to perform physical activity. Moreover, the impact of chronic diseases on the deterioration of the quality of life of individuals is a relevant topic among the scientific community. CRDs are examples of chronic diseases that are diagnosed mainly through tests that evaluate the function and the structure of the lungs and airways. Interestingly, people with CRDs frequently present problems in other tissues and organs. The main aim of this thesis was to study the proportion of patients with CRDs who usually present abnormalities in their body composition. In addition, we aimed to explore the associations between body composition, lung and physical function, intensity of symptoms, systemic inflammation and quality of life in this population. Four studies of this thesis included patients with COPD, which is the most prevalent CRD. This thesis demonstrates that worse lung function, exercise limitation and muscle weakness are frequently observed in groups of individuals with COPD characterized by low muscle mass. On the other hand, the COPD groups with higher amount of fat mass showed more severe limitations in activities of daily living due to symptoms of dyspnea, worse health-related quality of life and higher levels of systemic inflammation. The other two studies included patients with asthma and IPF referred for pulmonary rehabilitation. At the time of referral, one in every five asthma patients and one in every four IPF patients demonstrated abnormally low markers of muscle mass. Our main conclusion is that a great proportion of individuals with CRDs do not present adequate amounts of markers of muscle mass and/or fat mass, these irregularities are associated with negative clinical characteristics.

Potential contribution of the results to science and to social sectors

This PhD thesis present novel findings that support the relevance of screening for body composition abnormalities in individuals with CRDs. The social and scientific impact of this thesis is illustrated by our contribution to the understanding of the influence of the chosen cut-off values for the detection of body composition abnormalities. We hope that our results stimulate the scientific community and health care professionals to adapt the methodology when investigating the occurrence of low muscle mass in individuals with CRDs who are overweight or obese. In addition, our explanation about the limitations of using BMI to classify patients with CRDs in different weight groups can be highlighted as another element of the impact of this thesis on science and society. Based on our results, health care professionals and researchers should not rule out the possibility of a patient with CRD with normal BMI having an abnormal body composition. Researchers and clinicians can use the current findings to anticipate what is expected in terms of physical functioning and patient reported outcomes from patients with CRDs according to their body composition.

To whom and why are the research results relevant?

The results of this thesis are relevant for patients with CRDs, healthcare professionals and future researchers. The patients with CRDs will benefit from a better understanding of how and to what extent body composition abnormalities are associated with physical function and patients reported outcomes. Early education towards the need for monitoring and maintaining adequate levels of muscle and fat mass may be beneficial for these patients. Moreover, health care professionals also benefit from our results since they are increasingly required to base their clinical decisions on the available evidence in combination with clinical expertise and patient values. The studies from this thesis might be useful for them as an introductory guidance on how to detect body composition abnormalities in patients with CRDs. Healthcare professionals should pay particular attention to patients with body composition abnormalities since they may present associated negative characteristics. On the other hand, strategies may be used to maintain adequate levels of muscle and fat mass in those patients with normal body composition. Finally, our results are also relevant for other researchers. We contributed by adding information to previous research questions regarding the frequency, potential causes and functional consequences of abnormal body composition in patients with CRDs. In addition, we provided clear directions for future studies in the light of our results.

Using the acquired knowledge in the future

The studies described in the different chapters of this thesis were or will be published in scientific journals and presented in scientific congresses. These are traditional dissemination strategies which can be used to effectively let other researchers and health care professionals know about our novel findings. Consequently, the acquired knowledge can be used in the future in clinical or research settings. Since education is one of the major features of pulmonary rehabilitation, the acquired knowledge will reach patients with CRDs through health professionals who participate in the patient education process. Moreover, the acquired knowledge can be used in the future to help researchers to select sub-groups of patients and to explore the most successful interventions/strategies to treat patients with CRD according to their body composition.

