

ORIGINAL ARTICLE

Frequency of Musculoskeletal Disorders in Non-Cystic Fibrosis Bronchiectasis Patients: Cross Sectional Study

ABDUL MATEEN¹, ALISHBA MUSTANSAR¹, SAJJID MAHMOOD², WAQAS LATIF³, TALHA LAIQUE⁴*¹Department of Physio-Therapy, UOL, Lahore-Pakistan²Department of Physio-Therapy, UHS, Lahore-Pakistan³Department of Biostatistics & Epidemiology, UHS, Lahore-Pakistan⁴Department of Pharmacology, Allama Iqbal Medical College, Lahore-PakistanCorrespondence to Dr. Talha Laique, Email: talhalaique51@gmail.com Tel:+92-331-0346682.**ABSTRACT****Background:** Non-cystic fibrosis bronchiectasis (non-CF BE) is a common chronic lung disease thus causing high morbidity among adults.**Aim:** To investigate the frequency of musculoskeletal disorders in non-cystic fibrosis bronchiectasis among patients.**Study Design:** Cross sectional study.**Methodology:** Patients having non-cystic fibrosis bronchiectasis were included in present study through non-probability, convenient sampling technique. Nordic musculoskeletal questionnaire (NMQ) was used to study prevalence of Musculoskeletal Disorders. Patients of both sexes having age (18-40 yrs) were included. Patients having any disease like cystic fibrosis bronchiectasis, active neurological disorder, mental disorders and significant scoliosis or kyphosis were excluded. Data analyzed by SPSS 25.0v.**Results:** There are 37(24.3%) male and 115(75.7%) females in the present study. Almost 38.8% patients changed their profession while 88.2% were prevented from working due to musculoskeletal disorder during last 1 year. Around 83.6% patients had pain in lower back with knee pain, 27.6% had ankle pain, 34.2% had hip pain, while 57.2% had upper back pain during last 1 year.**Conclusion:** This study concluded that non-cystic fibrosis bronchiectasis patients had a high frequency of reported musculoskeletal disorders like 83.6% have lower back pain with knee pain. Thus frequency was high for low back pain as musculoskeletal disorder among enrolled subjects.**Keywords:** Frequency, Musculoskeletal Disorders and Bronchiectasis.**INTRODUCTION**

Non-cystic fibrosis bronchiectasis (non-CF BE) is a common chronic lung disease thus causing high morbidity among adults.¹ Its patho-physiology included inflammation-induced damage to airways thus ultimately causing abnormal, permanently dilated bronchi that are prone to get infected with chronic bacterial infection.² Its clinical presentation is variable that included chronic cough, purulent sputum with frequent respiratory tract infections.³

As it's a lung disease so there is a progressive decline in lung function characterized by decrease in forced expiratory volume in 1s (FEV1) due to mild to moderate airflow obstruction as revealed by literature review.⁴ Recommended pharmacological treatments included antibiotics and bronchodilators (BD).⁵ Literature review revealed that its patients usually receive inhaled antibiotic therapy like low-dose macrolides for their anti-inflammatory and immunoregulatory properties.⁶ However, these treatments fail to target the underlying molecular mechanisms of tissue destruction causing airways dilatation.

Dominant cell type in the inflammatory process associated with non-CF BE include neutrophils as documented previously.⁷ Proteolytic enzymes and oxygen free radicals that neutrophils release also add to its pathogenesis. Particularly, human neutrophil Elastase (HNE) is a key mediator for lung destruction and inflammation.⁸ As excessive HNE activity has been noticed in various inflammatory lung diseases, including bronchiectasis (BE), thus this protein is a target for new drug development.⁹ According to one previous study, patients suffering from bronchiectasis who received reversible HNE inhibitor AZD9668 improved their lung functions with significant reductions in sputum inflammatory markers that were measured.¹⁰

A diagnosis of any underlying condition thus causing bronchiectasis can be made in approximately 50% of cases.¹¹ Distinction is usually made between cystic fibrosis (CF) or non-CF bronchiectasis. As cystic fibrosis is caused by mutations in the Cystic fibrotic Trans-membrane Conductance Regulator (CFTR gene).¹² Limited data is available regarding effectiveness of exercise and physical activity interventions among non-CF bronchiectasis patients. Hallmark feature of CF is exercise intolerance. Various tests like field tests as well as full cardiopulmonary exercise tests evaluate lung performance.¹³

The objective of the study was to investigate the frequency of musculoskeletal disorders in non-cystic fibrosis bronchiectasis among patients.

METHODOLOGY

Patients (n=152) having non-cystic fibrosis bronchiectasis were included in present study through non-probability, convenient sampling technique. Nordic musculoskeletal questionnaire (NMQ) was used to study prevalence of

Musculoskeletal Disorders. Patients of both sexes having age (18-40 yrs) were included. Patients having any disease like cystic fibrosis bronchiectasis, active neurological disorder, mental disorders and significant scoliosis or kyphosis were excluded. The data was summarized and analyzed on SPSS version 25.0. Qualitative data was presented as frequency and a percentage while bar charts was formed for quantitative data. However, mean \pm standard deviation was analyzed, and the histogram was used.

RESULTS

General distribution of parameters among subjects in present study was presented as frequency and percentage (%) as well as mean \pm SD in Table-1. Patients mean age was 22 \pm 2 years with a maximum age of 40 and minimum of 18 years. Patients mean height was 64 \pm 3 cm with a minimum height of 57cm and maximum of 74cm. Patients mean weight was 58.87 \pm 12kg with a minimum weight of 37kg and maximum of 100kg. Out of 152 patients, 2(1.3%) were very severely underweight, 5(3.3%) were severely underweight, 39(25.7%) were underweight, 81(53.3%) were normal, 21(13.8%) were overweight and 4(2.6%) were obese. Almost, 59(38.8%) patients have changed their profession due to musculoskeletal disorder pain and 93(61.2%) have not changed their profession.

Table-1: General distribution of parameters among subjects (n=152)

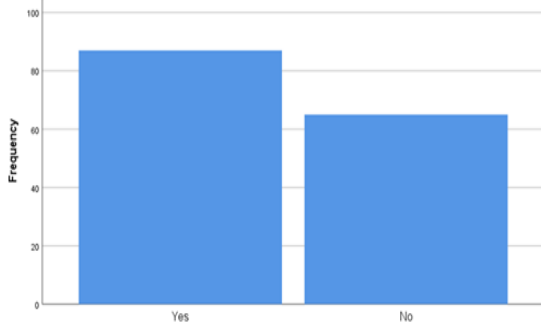
	Categories	Frequency	%age
Gender	Male	37	24.3
	Female	115	75.7
Weight (kgs)	Severely underweight	07	4.6
	Underweight	39	25.7
	Normal	81	53.3
	Overweight	21	13.8
	Obese	4	2.6
	Mean \pm SD	58.87 \pm 12	
Age (years)	Mean \pm SD	22 \pm 2	
Height (cm)	Mean \pm SD	64 \pm 3	
Changed profession	Yes	59	38.8
	No	93	61.2

134(88.2%) have been prevented from working due to musculoskeletal disorder during last 1 year and 18(11.8%) have not been prevented from working. 80(52.6%) patients have visited doctor because of MSD during last 1 year while 72(47.4%) did not visited. 134(88.2%) medicated for MSK during the last 1 year and 18(11.8%) did not medicated for MSK. 102(67.1%) patients have neck pain in last 1 year while 50(32.9%) have not neck pain. 117(77%) patients have shoulder pain in last 1yr while 35(23.0%) do not have shoulder pain. 87(57.2%) patients have upper back pain in last 1 year while 65(42.8%) patients do not have upper back pain (fig-1).

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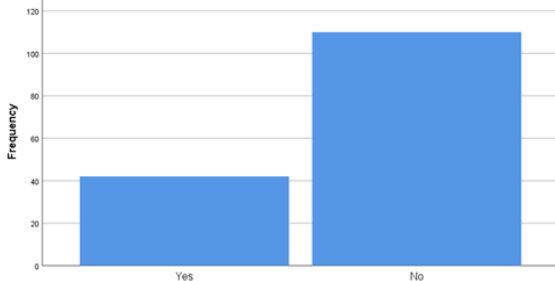
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Fig-1: Depicting Frequency of Upper Back Pain



42(27.6%) patients have wrist pain in last 1 year and 110(72.4%) do not have wrist pain (fig-2). 127(83.6%) have pain in lower back in last 1 year and 25(16.4%) do not have lower back pain. 52(34.2%) patients have any hip pain in last 1 year and 100(65.8%) patients do not have any hip pain. 127(83.6%) patients have knee pain in last 1 year and 25(16.4%) do not have knee pain. 42(27.6%) patients have ankle pain in last 1 year while 110(72.4%) do not have any ankle pain.

Fig-2: Depicting Frequency of Wrist Pain



DISCUSSION

In Current study, out of total 152, 37(24.3%) were males and 115(75.7%) were females. Patients mean age was 22±2 years with a maximum age of 40 and minimum of 18 years Patients mean height was 64±3 cm with a minimum height of 57cm and maximum of 74cm. Patients mean weight was 58.87±12kg with a minimum weight of 37kg and maximum of 100kg. Out of 152 patients, 2(1.3%) were very severely underweight, 5(3.3%) were severely underweight, 39(25.7%) were underweight, 81(53.3%) were normal, 21(13.8%) were overweight and 4(2.6%) were obese. 59(38.8%) patients have changed their profession due to musculoskeletal disorder pain and 93(61.2%) have not changed their profession.

In one previous study, researchers found a high frequency of MSDs among the manual workers in Calcutta's central market. They evaluated that around 95% subjects experienced MSD symptoms in involving body parts like lower back, neck, knee, and shoulder. Its high incidence is attributed by regular lifting of heavy loads. Datta et al. concluded that overhead carrying load overhead permissible for an eastern Indian male worker was no more than 30 kg¹⁴. However, we found that male workers carry around 100 kg overhead for a distance of about 800 meters in our society. National Institute of Occupational Safety and Health (NIOSH) concluded that low back disorders are mainly due to forceful heavy weight lifting which cause pain/discomfort thus interfering with their work¹³.

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patients have neck pain in last 1 year while 50(32.9%) have not neck pain. 117(77%) patients have shoulder pain in last 1yr while 35(23.0%) do not have shoulder pain. 87(57.2%) patients have upper back pain in last 1 year while 65(42.8%) patients do not have upper back pain. 57(37.5%) patients have elbow pain in last 1 year and 95(62.5%) do not have elbow pain. 42(27.6%) patients have wrist pain in last 1 year and 110(72.4%) do not have wrist pain. 127(83.6%) have pain in lower back in last 1 year and 25(16.4%) do not have lower back pain. 52(34.2%) patients have any hip pain in last 1 year and 100(65.8%) patients do not have any hip pain.

CONCLUSION

This study concluded that non-cystic fibrosis bronchiectasis patients had a high frequency of reported musculoskeletal disorders like 83.6% have lower back pain with knee pain. Thus frequency was high for low back pain as musculoskeletal disorder among enrolled subjects.

Limitations: Our limitations included time with financial constraints and limited resources. No genetic workup was done for enrolled subjects. No other interventional investigation done.

Conflict of interest: **None**

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