

A Qualitative Exploration of Knowledge and Attitude Towards Chest Physiotherapy in Bronchiectasis among Medicine and Allied Postgraduate Trainee Doctors of a Tertiary Care Hospital in Bangladesh

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BACKGROUND

Background: Bronchiectasis is a progressive and chronic disease which requires long-term and multimodal intervention. Chest physiotherapy is an essential clearance tool airway clearance tool for bronchiectasis patients, which is recommended in all the existing guidelines. The present study explored the existing knowledge and attitude of post-graduate trainee doctors regarding chest physiotherapy in bronchiectasis. **Objectives:** The aim of the study is to evaluate a qualitative exploration of knowledge and attitude towards chest physiotherapy in bronchiectasis among medicine and allied postgraduate trainee doctors of a tertiary care hospital in Bangladesh. **Methods:** This hospital based mixed-method study was conducted at the Department of Medicine in Dhaka Medical College Hospital (DMCH), for a period of six months period following approval of this protocol. A total of 384 post-graduate trainee doctors were included in this study according to inclusion and exclusion criteria. Following informed written consent, quantitative data were collected through a semi-structured questionnaire. For quantitative analysis, index interview was conducted. Collected data were analyzed by the SPSS 23.

Results: Only 26.3% of the trainee doctors enrolled in this study received hand-on training on chest physiotherapy of bronchiectasis patients. About 41.7% agreed that regular chest physiotherapy was helpful for the control of bronchiectasis and 72% stated that it only promotes the airway clearance while 43% agreed that chest physiotherapy is comprised of airway clearance technique, pulmonary rehabilitation, and inspiratory muscle training. About 57.6% agreed that chest physiotherapy should be demonstrated by a team comprised of physician, physiotherapists and other concerned personnel.

Conclusion: In this study, more than two-thirds of the trainee doctors were responded as they have knowledge regarding chest physiotherapy along with the techniques and adjuncts as a management option for bronchiectasis. However, a multicentered study should be done to understand the existing knowledge and attitude and proper needful steps should be taken accordingly.

Keywords: Bronchiectasis, Chronic disease, Physiotherapy,

I. INTRODUCTION

Bronchiectasis is defined as an irreversible dilatation and destruction of one or more bronchi, with a reduction in clearance of secretions and in the expiratory airflow. This disease can lead to recurrent lower respiratory tract infections, worsening pulmonary functions, respiratory failure, and pulmonary hypertension, resulting in deterioration in quality of life, with increased morbidity and premature mortality. [1-3] The incidence and prevalence of bronchiectasis are generally not well known and are underestimated in developing countries. [4] Although the prevalence once declined over the past years in societies with high socioeconomic status, probably due to the development of preventive medicine, especially childhood immunizations, and improvement of living conditions and widespread use of antibiotics, bronchiectasis has been recognized more frequently, mainly due to the frequent use of high-resolution computerized tomography (HRCT). [5] Compared to developed countries, its prevalence was suggested to be higher in developing countries, especially in patients

with less access to healthcare; however, it is probably underestimated. [6]The etiology of bronchiectasis varies between different populations. Immune deficiency syndromes and metabolic and ultrastructural defects are the predominant etiologic factors in developed countries, while bacterial and viral infections continue to be major causes of the disease in developing countries. [7] On the other hand, despite using advanced immunological and genetic diagnostic techniques, up to 40% of patients' etiology remains undetermined. [8]

Bronchiectasis mechanistically results from chronic inflammatory microenvironments that trigger airway tissue breakdown. In both CF and non-CF bronchiectasis, the complex interplay between infection and inflammation feeds a pro-inflammatory vicious circle that progressively drives the generation of bronchiectasis and the destruction of the pulmonary architecture. [9]The basic clinical management of bronchiectasis includes tailored antimicrobial therapy and airway clearance techniques. The latter include mucolytics, such as hypertonic saline and rhDNA, as well as chest physiotherapy and vigorous physical sporting activities. Chest physiotherapy aims to mobilize secretions and facilitate effective expectoration, providing control of cough and improving airway clearance. It is widely advocated as a mainstay of management for this chronic disease. [10] Current international guidelines recommend airway clearance techniques as part of routine management of patients with bronchiectasis. [11] Since impaired muco-ciliary clearance and sputum retention are core elements in the pathophysiology of bronchiectasis, the rationale for the use of nonpharmacological interventions that facilitate the removal of sputum appears reasonable. A wide variety of airway clearance techniques are available. These include postural drainage, manual techniques (percussion or clapping), breathing strategies (active cycle of breathing or autogenic drainage), positive expiratory pressure (PEP) devices and airway oscillating devices. [12]The principal effect obtained by ACTs is an increase in sputum volume and a reduced impact of cough on quality of life. [13] Interestingly, but still preliminary data, show reduced peripheral airway obstruction, fewer inflammatory cells in sputum and improved exercise capacity after ACTs. [14]Knowledge and attitudes about chest physiotherapy by physicians regarding bronchiectasis are of paramount importance for its management. Only a few of this type of study has been done yet, and this study might help to assess the knowledge and attitude of medicine and allied postgraduate trainee doctors about chest physiotherapy in bronchiectasis.

II. METHODOLOGY

This Mixed-method was carried out in the Department of Medicine in Dhaka Medical College Hospital (DMCH), during September 2018 to February 2019. A total of 384 patients were participated in the study. Among them 39.3 were female and 60.7 were male. After taking consent and matching eligibility criteria, data were collected from patients on variables of interest using the predesigned structured questionnaire by interview, observation. Statistical analyses of the results were obtained by using window-based Microsoft Excel and Statistical Packages for Social Sciences (SPSS-24).

III. RESULTS

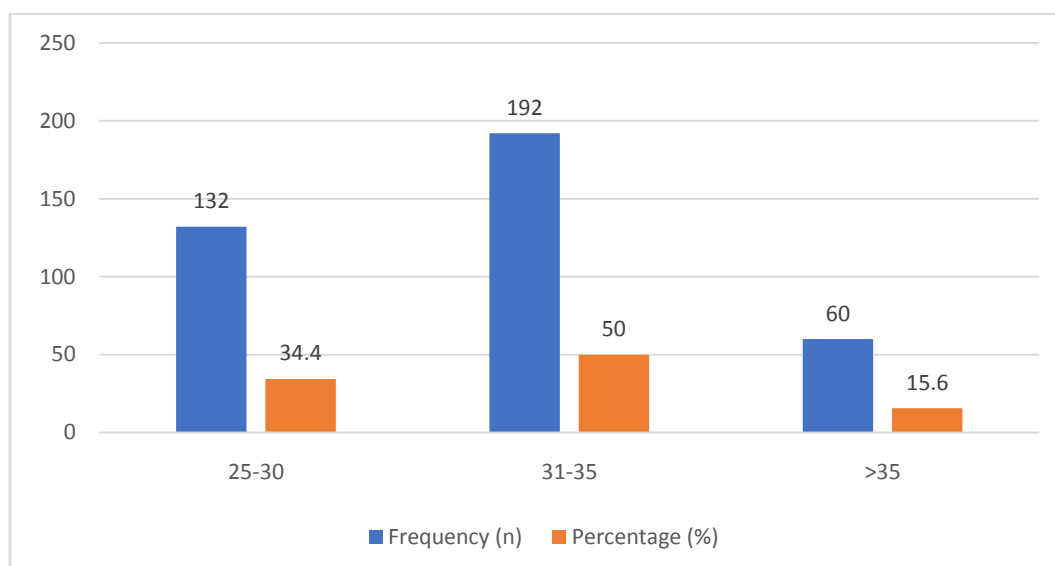


Figure 1: Distribution of the respondents according to age.

Figure 1 shows distribution of the study patients by their age in years. Here, in age group 25-30 the frequency and percentage were 132 and 34.4; in age group 31-35 the frequency and percentage were 192 and 50 and in age group >35 the frequency and percentage were 132 and 34.4.

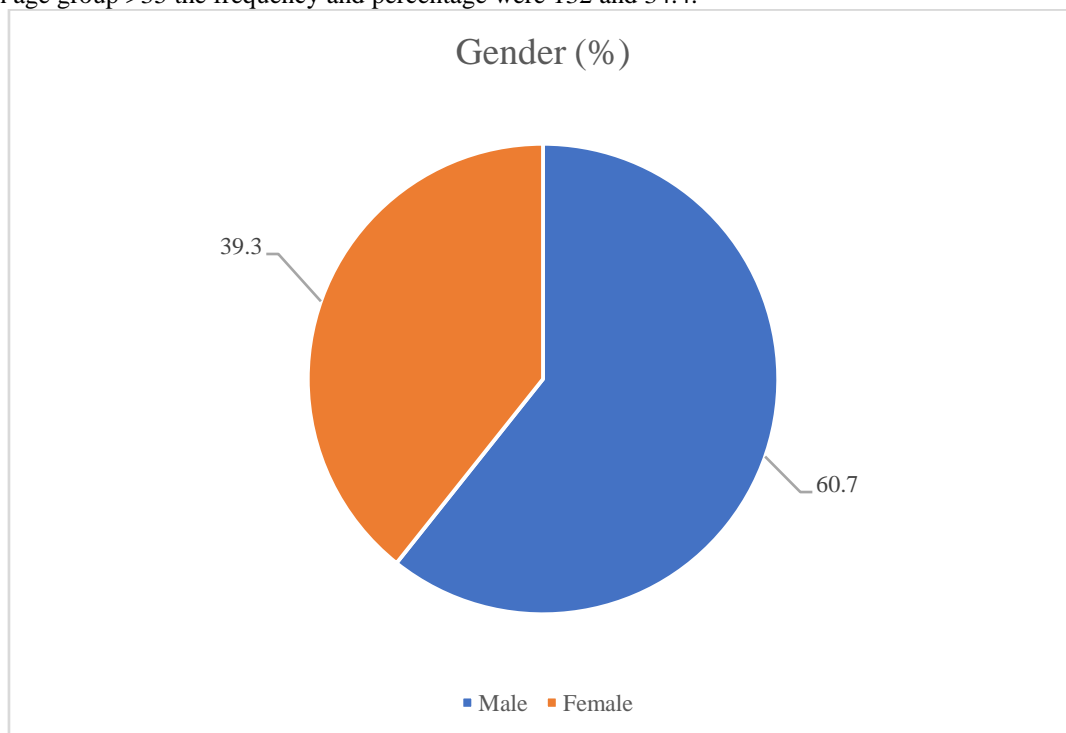


Figure 2: Distribution of the respondents according to gender.

Figure 2 shows distribution of the study patients according to gender. Here 60.7% were male and 39.3% were female.

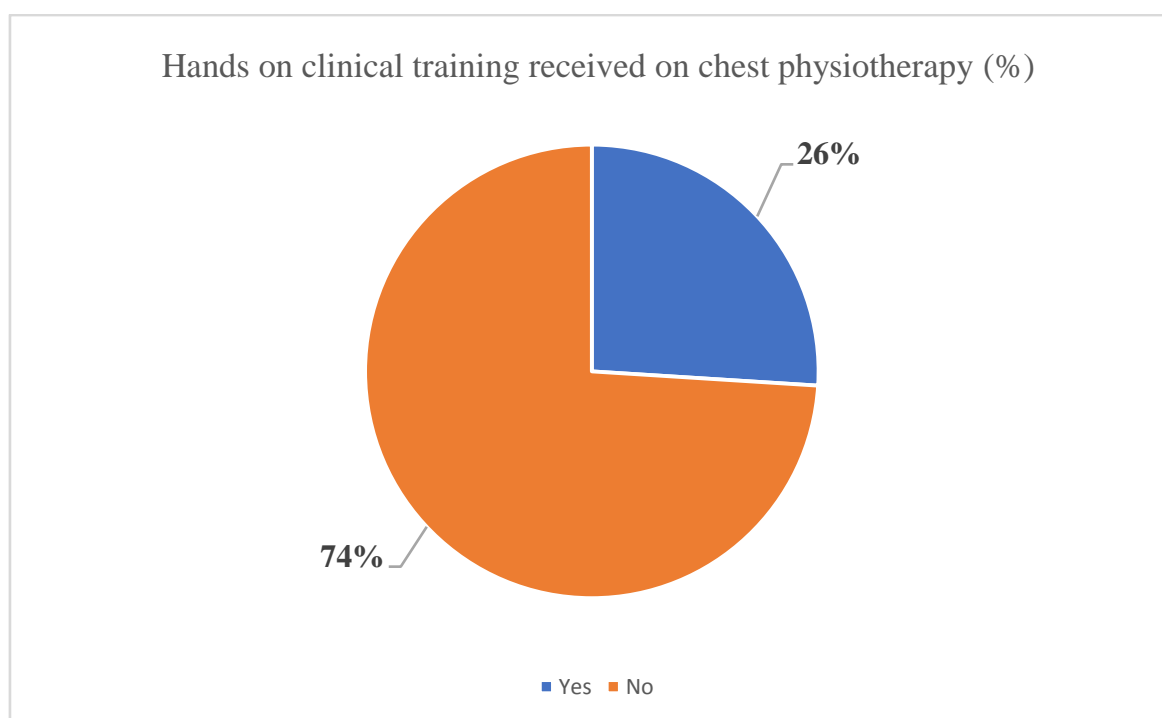


Figure 3: Distribution of the respondents by hands-on training on chest physiotherapy in bronchiectasis (n=384).

Figure 3 shows distribution of the study patients according to hands-on training on chest physiotherapy in bronchiectasis. Here 26% were positive and 74% were negative.

Table 1: Distribution of the respondents by knowledge regarding the role of chest physiotherapy in bronchiectasis (n=384)

Knowledge	n=384	%
Is regular chest physiotherapy in bronchiectasis helpful for the control of the disease?		
Yes	160	41.7
No	112	29.2
May be	82	21.4
Not sure	30	7.8
How does chest physiotherapy help in bronchiectasis?		
Airway clearance	276	71.9
Reduce Lung Inflammation.	0	0.0
Reduce risk of infection.	0	0.0
a+b	0	0.0
a+b+c	108	28.1
What comprises of chest physiotherapy?		
Airway clearance technique	88	22.9
Pulmonary rehabilitation	22	5.7
Inspiratory muscle training	0	0.0
a+b	110	28.6
a+b+c	164	42.7
Airway clearance techniques are-		
Useful for patients with chronic sputum production	165	43.0
Useful for patients with CT evidence of mucus plugging	44	11.5
Less useful in patients with nonproductive cough	0	0.0
a+b	99	25.8
a+b+c	76	19.8
Who should demonstrate the technique of chest physiotherapy?		
Doctors	27	7.0
Nurses	12	3.1
Physiotherapist	55	14.3
a+c	221	57.6
a+b+c	69	18.0
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How frequently airway clearance techniques should be practiced by patients?		
Once to twice daily	111	28.9
Once every alternate day	34	8.9
Three times daily	121	31.5
Frequency should be changed weekly	99	25.8
Not sure	19	4.9
What should be done during infective exacerbation of bronchiectasis?		

Stop physiotherapy temporarily	106	43.2
Increase the frequency of physiotherapy	55	14.3
Start new techniques of airway clearance	132	34.4
b+c	11	2.9
Not sure	20	5.2
Which one is true regarding postural drainage?		
Most effective technique of airway clearance	241	62.8
Head-down tilt position is required for mid and basal zone drainage	33	8.6
Head-down tilt position may be problematic for GERD and breathless patients	101	26.3
a+b	9	2.3
a+b+c	0	0.0
Airway clearance technique include_		
Postural drainage	34	8.9
Expiratory flow modification	0	0.0
Manual and instrumental technique	0	0.0
a+c	132	34.4
All of the above	218	56.8
Expiratory flow modification includes-		
Autogenic drainage	0	0.0
Total slow expiration with open glottis and infralateral position	22	5.7
Active cycle of breathing technique	0	0.0
b+c	134	34.9
Which one is true regarding instrumental technique of airway clearance technique-		
Positive expiratory pressure can be generated by mask and flutter device	198	51.6
Acapella is more effective than mask and flutter device	0	0.0
High frequency chest wall oscillation works by generating positive expiratory pressure	0	0.0
a+c	99	25.8
a+b	87	22.7
Which one is true regarding manual technique of airway clearance technique-		
Practiced routinely	23	6.0
Most useful during acute exacerbation and in fatigued patients	231	60.2
Helps to increase sputum production	55	14.3
a+c	22	5.7
b+c	53	13.8
Manual techniques of airway clearance include-		
Chest wall percussion	23	6.0
Thoracic cage compression with shaking	0	0.0
Chest wall vibration	0	0.0
a+c	89	23.2
a+b+c	272	70.8
Which one is true regarding active cycle of breathing technique-		
Most commonly used airway clearance technique	56	14.6
It is more comfortable when combined with postural drainage	88	22.9
It is a type of manual technique	121	31.5
a+b	110	28.6
Not sure	9	2.3
Followings are adjuncts to airway clearance technique		
Nebulised hypertonic saline	170	44.3
Nebulized Beta-2 agonists	4	1.0
Nebulized sterile water	30	7.8
abs	81	21.1
a+b+c	99	25.8

Table 2: Distribution of the respondents by attitudes toward chest physiotherapy in bronchiectasis (n=384)

Attitudes	n=384	%
Who should be trained for chest physiotherapy?		
Doctors	16	4.2
Physiotherapists	102	26.6
Patients	39	10.2
All of the above	127	59.1
Do you think that chest physiotherapy should be a part of medicine and allied postgraduation training course?		
Yes	211	54.9
No	110	28.6
May be	42	10.9
Not sure	21	5.5
Do you feel the need of workshop on chest physiotherapy?		
Yes	184	47.9

No	96	25.0
May be	53	13.8
Not sure	51	13.3
Do you feel the need of counseling of bronchiectasis patients about chest-physiotherapy?		
Yes	220	57.3
No	106	27.6
May be	23	6.0
Not sure	35	9.1
Do you feel the need of chest physiotherapy technique demonstrations to bronchiectasis patient?		
Yes	198	51.6
No	99	25.8
May be	55	14.3
Not sure	32	8.3
Do you feel the need of importance of assessment of compliance of bronchiectasis patients to chest physiotherapy technique?		
Yes	231	60.2
No	66	17.2
May be	66	17.2
Not sure	21	5.4

IV. DISCUSSION

Bronchiectasis is a chronic respiratory disease of airway dilatation in which patients typically suffer from respiratory infection, fatigue, sputum, cough, dyspnea, and poor quality of life. [35] In bronchiectasis, there is abnormal permanent dilatation of the airways, and the normal mucociliary clearance mechanism is impaired. [15] It is a common respiratory condition encountered in inpatient and outpatient departments. It is a progressive condition that requires timely intervention for a long time. Chest physiotherapy has long been practiced as one of the most important airway clearance tools. Nevertheless, the area of bronchiectasis care that has received the least attention is airway clearance and exercise. [16] The evidence base for chest physiotherapy has not advanced at the same pace as other aspects of bronchiectasis.

In this study, we explored knowledge and attitudes about chest physiotherapy in bronchiectasis among trainee doctors. Our findings suggest good knowledge about chest physiotherapy, its definition, its techniques, and adjuncts of chest physiotherapy. However, a fixed guideline was absent for giving chest physiotherapy in bronchiectasis patients. Half of the participants were between 31-35 years of age, and 34.4% were between 25-30 years of age, with a mean age of 32.20 ± 3.59 (SD) years. As in Bangladesh to complete the MBBS course, everyone requires a minimum of 6 years, and the undergraduate level started at the age of 18/19. Therefore, it is normal to start a postgraduate training period between 31-35 years of age, and most of our participants were between this range. Only 15.6% were more than 35 years of age. A similar study was performed by Ouedraogo AR et al., among trainee doctors in urban Africa. Most of the doctors were between 28-33 years of age. [17] In this study, sixty percent of the participants were male. Forty-three percent of the participants were FCPS trainee doctors. In addition, 29.4% were in MD course, 27.6% were in Diploma. During the study, the respondents were asked about their knowledge regarding the role of chest physiotherapy in bronchiectasis. The majority of the respondents (41.7%) agreed that regular chest physiotherapy was helpful for the control of bronchiectasis, but 7.8% were not sure about the role of chest physiotherapy in bronchiectasis. Seventy-two percent of the study population said that chest physiotherapy helps in bronchiectasis by only airway clearance. However, 28.1% said that in addition to airway clearance, chest physiotherapy helps to reduce inflammation and infection in bronchiectasis.

Among the study population, 31.5% said that the frequency of the airway clearance technique should be three times daily for a better outcome. Almost 29% said it should be once or twice daily, but 5% of the respondents were not sure about the frequency of airway clearance techniques. The majority of the respondents (43.2%) said that physiotherapy should be stopped temporarily in cases of infective exacerbation of bronchiectasis. Thirty-five percent said to start a new technique, and 3% gave a mixed response. However, 5.2% were not sure about what to do in case of infective exacerbation of bronchiectasis.

Knowledge about the importance of chest physiotherapy in bronchiectasis was similar among the respondents. The majority of them (41.7%) agreed that chest physiotherapy was helpful in bronchiectasis. However, 7.8% were not sure about the role of chest physiotherapy in bronchiectasis. Most of the respondents (71.9%) said that chest physiotherapy helps in bronchiectasis by airway clearance. Airway clearance exercises are a mainstay of bronchiectasis treatment in international guidelines. [18] However, the airway clearance technique shows a short-term improvement in quality of life, cough-related measures, and sputum volume expectoration. [19] In this study, 31.5% of the respondents stated that the patients should practice airway clearance exercise three times daily for a better outcome. Almost 29% said patients should practice airway clearance once or two times daily. A recent randomized controlled trial by Munoz G et al., found that, 44 patients demonstrated a significant reduction in exacerbations with airway clearance exercise twice daily. [20]

One-third of the respondents in this study suggested manual and instrumental techniques of airway clearance in bronchiectasis. The majority of the respondents (70.8%) explained that the manual airway clearance technique included chest wall percussion and thoracic cage compression with shaking. More than half (51.6%) of all the participants said that mask and flutter devices were used to generate positive expiratory pressure in instrumental airway clearance exercises. As both manual and instrumental techniques are inexpensive and can be performed independently with a minimum apparatus, airway clearance exercise is a very feasible management option in LMICs such as Bangladesh. [19] If there are any signs of infective exacerbation present at the time of chest physiotherapy, physiotherapy should be stopped temporarily or the new technique of physiotherapy should be started with antibiotic treatment. [21] In this study, two-thirds of our respondents said to stop physiotherapy temporarily in case of an infective exacerbation. However, 34.4% of respondents said to start a new technique of physiotherapy with antibiotic coverage.

Limitations of the study

The present study was conducted in a very short period due to time constraints and funding limitations. The small sample size was also a limitation of the present study.

V. CONCLUSION

In this study, more than two-thirds of the trainee doctors responded because they have knowledge regarding chest physiotherapy along with the techniques and adjuncts as a management option for bronchiectasis. However, chest radiography should be known and practiced by all graduate physicians to ensure a better quality of life for bronchiectasis patients. All fresher physicians should be trained properly during their internship.

VI. RECOMMENDATION

This study can serve as a pilot to much larger research involving multiple centers that can provide a nationwide picture, validate regression models proposed in this study for future use and emphasize points to ensure better management and adherence.

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The wide range of disciplines involved in A Qualitative Exploration of Knowledge and Attitude Towards Chest Physiotherapy in Bronchiectasis among Medicine and Allied Postgraduate Trainee Doctors of a Tertiary Care Hospital in Bangladesh research means that an editor needs much assistance from referees in the evaluation of papers submitted for publication. I am very grateful to my colleagues for their helpful and prompt response to requests for their opinion and advice.

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