

ORIGINAL RESEARCH**Knowledge and Attitudes towards Chest Physiotherapy among Patients with Respiratory Complications in Semi-Urban Bangladesh: A Cross-Sectional Study**

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ABSTRACT

Background: Chest physiotherapy is the most frequent approach used for managing the patients with respiratory complications. The purpose of the study was to ascertain the patients' knowledge, attitudes, and practices about chest physical therapy among those with respiratory difficulties in Bangladesh.

Materials and Methods: The study employed a quantitative, descriptive cross sectional design on the patients with respiratory complications who were admitted at the Centre for the Rehabilitation of the Paralysed (CRP) and the National Institute of Diseases of the Chest and Hospital (NIDCH) in Bangladesh. A total of 154 participants attended conventionally for this study. Data was collected by a semi-structured questionnaire and analyzed by Mann-Whitney (U) and Kruskal-Wallis (T), tested by using SPSS 25 version used for the analysis of the data.

Results: Among 154 participants, the most of them attended from 26-35 age group 36.4% (n = 56). The majority of the participants were male 72.7% and 37.0% were from semi-urban area. The most of the occupation of participants were service holder and housewife. The family incomes were low, but most of them involved smoking 42.9%. The maximum participants were suffering from sleep disorder (26.6%) and dyspnea (37.7%). There was a significant result in knowledge about chest physiotherapy with age group (P = 0.020) and gender (P = 0.011). There was a significant association found in attitude about chest physiotherapy with every socio-demographic character.

Conclusion: The study highlighted that the majority of the participants had adequate knowledge and positive attitudes regarding chest physiotherapy for managing respiratory issues.

INTRODUCTION

Respiratory complications commonly manifest symptoms such as shortness of breath, cough, sweats, fatigue, and drowsiness, affecting up to 30% of the patients [1]. Postoperative pulmonary or respiratory complications are particularly concerning as they increase hospital morbidity, prolong hospital stay, and contribute to additional healthcare costs. Respiratory complications are commonly associated with the disruption of the normal respiratory muscles function [2]. The risk of pulmonary problems is heightened by several factors, including postoperative discomfort, anesthesia-induced diaphragmatic dysfunction, extended supine posture, poor mucociliary clearance, and disturbances of normal respiratory function with shallow breathing patterns [3].

Spinal cord injury (SCI) further complicates the physiology of the respiratory system, leading to increased risk of several conditions, including pneumonia, atelectasis, bronchitis, and sleep disorders. Following SCI, respiratory ailments, especially pneumonia continue to be the primary cause of death, accounting for around 24% of all deaths [3]. The depth and severity of neurological causes or injuries correlate with the severity of respiratory dysfunction, with the worst cervical and thoracic traumas offering the greatest risk. Respiratory dysfunction associated with SCI is a major cause of morbidity, death, and financial burden [4]. More than 40% of people with cervical SCI meet the criteria for respiratory failure according to established organ dysfunction assessments, accounting for over 85% of cases of respiratory dysfunction [5].

Chest physiotherapy rehabilitation goes beyond mere exercise training for patients suffering from cardiopulmonary issues. It encompasses a comprehensive approach focused on the prevention of disease complications [6]. Chest physiotherapy broadly refers to treatments for patients with SCI or respiratory problems. It includes postural drainage, percussion, coughing, shaking the chest, and puffing. A few of the most recent advancements in physiotherapy include positive expiratory pressure, osteopathic manipulative treatment, and the active cycle of breathing techniques (ACBT) [7]. For patients with SCI, chest physiotherapy remains the most effective treatment for managing respiratory issues. Patients with SCI have improved respiratory function after receiving chest physiotherapy. This series of physical activities helps to relax the respiratory muscles, facilitate the clearance of heavy lung secretions, open the lungs, and strengthen the muscles involved in breathing [8]. While numerous studies have examined the effectiveness of chest physiotherapy, none have examined the knowledge and attitude of chest physiotherapy among the patients suffering from respiratory complications who have suffered various respiratory conditions. Therefore, the aim of this study was to determine the patients' knowledge and attitudes regarding chest physical therapy among those experiencing respiratory difficulties in Bangladesh.

MATERIAL AND METHODS

This is a quantitative study that followed the cross-sectional approach. The population of the study refers to the spinal cord injury unit at the Centre for the Rehabilitation of the Paralysed (CRP), Savar, Dhaka-1343, Bangladesh and the National Institute of Diseases of the Chest and Hospital (NIDCH), Mohakhali, Dhaka-1212, Bangladesh. The research was carried out between March 2022 and May 2022. Data were obtained from 154 samples selected using convenience sampling techniques. In this study, the researcher also considered eligibility criteria, which helped the researcher select suitable and appropriate participants for this study.

Inclusion criteria were: both male and female with an age range of between 16 and 65 years, included respiratory complications patients [9]. Exclusion criteria were: patients with mental or psychological disorders [10], patients who discharged from CRP and NIDCH. Data was collected by using a semi-structural type questionnaire that was developed by the investigators and validated by a jury of experts involved in chest physiotherapy practice for respiratory complications patients admitted to the NIDCH and SCI unit in CRP. The questionnaire sought

information on 24 identification demographic information and respiratory complications related questions, neurological-related questions, and cardio-respiratory related questions. There was a questionnaire for acquiring the participant's demographic information, including age, sex, marital status, educational status, occupation, chest physiotherapy related information such as SCI patients related information, and respiratory complications patients. The researcher collected data through an individual interviewing process in a calm environment.

The data was analyzed using quantitative statistics. Statistical Package for Social Science (SPSS) version 25.0 and Microsoft Office Excel 2013 were used to analyze the data. The variables were identified in a list, and the researcher created a computer-based data definition record file that included an ordered list of variables. The result of this study consisted of quantitative data. Data analyzed by Mann-Whitney (U) and Kruskal-Wallis (T) tests. The study was approved by the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) (CRP/BHPI/IRB/03/2022/565), the academic institute of CRP, Dhaka, Bangladesh.

RESULTS

A total of 154 participants completed the questionnaire. Approximately 36.4% of the participants were between the ages of 26 and 35 years, and only 9.7% were between the ages of 56 and 65 years. The majority of the participants that completed the questionnaire were male (72.7%), whereas 70.1% of all the participants were married. Secondary education was the educational level attainment with the highest percentage among the respondents (26.6%) and the percentage was lowest in the post-graduation degree, which was only 6.5%. Most participants were housewife and worked in the private sector (21.4%). The residential area of the participants was semi-urban (37%), showing that most of the participants. Participants had a previous history of personal habits, which was followed by smoking (42.9%), bettle leaf (20.1%), jorda (12.3%), both bettle leaf and jorda (10.4%), and the others (14.3%). The data showed that most of the participants had smoking habits (42.9%). A synopsis of the participant attributes is shown in Table 1.

The study represented the complications-related characteristics, where it showed that more than half of the participants were suffering from sleep disorder (26.6%) and dyspnea (37.7%). As a result of traumatic injury (43.5%) participants had faced various types of re-

TABLE 1 Socio-demographical characteristics of the participants (n=154)

Demographic	%(n)	Demographic	%(n)	Demographic	%(n)
<i>Age</i>		<i>Occupation</i>		<i>Educational level</i>	
16-25 years	24% (37)	Service	21.4% (33)	Illiterate	16.2% (25)
26-35 years	36.4% (56)	Businessman	18.2% (28)	Primary	17.5% (27)
36-45 years	15.6% (24)	Retired	4.5% (7)	Secondary	26.6% (41)
46-55 years	14.3% (22)	Housewife	21.4% (33)	Higher secondary	20.8% (32)
56-65 years	9.7% (15)	Students	13.6% (21)	Graduation	12.3% (19)
<i>Gender</i>		Others	20.8% (32)	Post-graduation	6.5% (10)
Male	72.7% (112)	<i>Personal habits</i>		<i>Marital status</i>	
Female	27.3% (42)	Smoking	42.9% (66)	Unmarried	22.7% (35)
<i>Residential area</i>		Bettle leaf	20.1% (31)	Married	70.1% (108)
Urban	27.9% (43)	Jorda	12.3% (19)	Divorced	3.5% (5)
Semi-urban	37.0% (57)	Both 2 and 3	10.4% (16)	Widow	3.9% (6)
Rural	31.1% (54)	Others	14.3% (22)		

-spiratory issues, which were the leading cause of respiratory complications. Besides respiratory complications, there were also associated problems of the participants, of which HTN (27.9%) was one of them. The majority (65.6%) of the family members had no respiratory complications, while 65.6% were not taking any medicine for those who had respiratory complications.

From intragroup analysis, there was a significant association found in knowledge about chest physiotherapy with age group ($P = 0.020$) and gender and knowledge about chest physiotherapy ($P = 0.011$), whereas the other socio-demographic parts occupation and educational qualifications were not significant with knowledge about chest physiotherapy ($P > 0.05$). Male participants had better knowledge on both chest physiotherapy rehabilitation and WHO guidelines Table 2.

In Table 3, a significant result was found in attitude about chest physiotherapy with every socio-demographic part, where age group and attitude about chest physiotherapy ($P = 0.025$), gender and attitude about chest physiotherapy ($P = 0.005$), occupation and attitude about chest physiotherapy ($P = 0.007$), educational qualifications and attitude about chest physiotherapy ($P = 0.030$). The participants felt that chest physical therapy improved lung function and enhanced the quality of life.

DISCUSSION

The objective of the cross-sectional study was to appraise knowledge and attitude towards chest physiotherapy rehabilitation among patients suffering from pulmonary complications. Results have shown that a significant proportion of the participants had good knowledge of chest physiotherapy for improving lung function and health-related quality of life. Among 154 participants, most of them were from the 26-35 age group 36.4% ($n = 56$). According to the other study, the majority of participants (28.67%) were between the ages of 30-39 years, while 23.33% were between the ages of 20 and 29 years [11]. Men represented 72.7% ($n=112$) of the study's participants, while women comprised 27.3% ($n=42$). Another study from Bangladesh in 2018 found about 90% of the respondents were male among the 135 respondents [11]. The residential area of the participants was semi-urban 37.0% ($n=57$), rural 35.1% ($n=54$), and urban 27.9% ($n=43$), hence the data showed that most of the participants lived in semi-urban areas. A similar study showed that the majority of the participants were from rural area (65%) followed by urban (23%), and semi-urban (11%) of the residential area of the SCI patients with respiratory complications [12].

Most of the occupations of participants were service holders and housewife, while the majority educational level was secondary. The family income was low, and most of them has a habit of smoking 42.9% ($n=66$). Most participants were suffering from dyspnea (37.7%) and sleep disorder (26.6%). One related study found ventilatory failure (23%), pneumonia (28%), as well as

TABLE 2 Distribution with chest physiotherapy knowledge about health-related and sociodemographic factors through Mann-Whitney (U) test and Kruskal-Wallis (T) test

Variables	Knowledge about chest physiotherapy of the participants			Knowledge about WHO guideline of the participants		
	Mean	Median	P value	Mean	Median	P value
Age						
16-25 years	74.16	26	(a) 0.020*	66.77	27	0.084
26-35 years	88.49	36		86.46	27	
36-45 years	65.9	22		69.65	17	
46-55 years	66.95	20		73.77	14	
56-65 years	78.73	13		88.53	7	
Gender (b)						
Male	82.74	1	0.011*	84.44	1	0.000*
Female	63.54			59		
Occupation						
Service holder	90	21	(a) 0.112	85.14	16	0.000*
Businessman	84.63	21		100.73	9	
Retired	98.36	5		115.14	1	
Housewife	58.29	31		53.32	30	
Students	70.5	15		67.93	15	
Others	78.22	24		72.28	21	
Education						
Illiterate	75.18	20	(a) 0.722	77.72	15	0.373
Primary	59.39	23		68.72	19	
Secondary	86.04	30		73.94	26	
Higher secondary	83.3	22		81.28	18	
Graduation	79.05	15		78.08	11	
Post-graduation	75.7	7		102.05	3	

(* p<0.05, level of significance; (a) = Kruskal-Wallis (T) test, (b) = Mann-Whitney (U) test)

atelectasis (34%), were the most common complications [13]. The most frequent types of severe and moderate complications were respiratory failure 60%, pneumonia 2.5%, acute respiratory distress 12.5%, and cardiac arrest 25% [14].

There was a significant correlation between knowledge about chest physiotherapy and age group ($P=0.020$), as well as gender ($P=0.011$), whereas the other socio-demographic parts, such as occupation and educational qualifications were not significantly associated with knowledge about chest physiotherapy ($P > 0.05$). Information on personal habits such as smoking also did not play a significant role in the patient's attitude towards treatment. However while smoking habits were highlighted in this study, other lifestyle factors such as diet, physical activity, and exposure to environmental

pollutants were not extensively explored. These factors can significantly influence respiratory health and the effectiveness of chest physiotherapy which can affect a patient's perception towards the treatment. For instance, a poor diet and sedentary lifestyle can exacerbate respiratory conditions and reduce the efficacy of physiotherapy interventions, hence could lead to patients' disbelief in the treatment. Additionally, co-morbidities like cardiovascular disease, diabetes, and obesity, which are prevalent in the Bangladeshi population, could further complicate respiratory health and should be considered in future studies. Understanding the full spectrum of lifestyle factors and co-morbidities will enable more tailored and effective interventions, possibly improving patient's attitudes towards chest physiotherapy. To contextualize the findings within a broader framework, it is beneficial to

TABLE 3 Distribution with chest physiotherapy attitude about health-related and sociodemographic factors through Mann-Whitney (U) test and Kruskal-Wallis (T) test

Variables	Believe that chest physiotherapy helps promote quality of life			Believe that chest physiotherapy increases lung function		
	Mean	Median	P value	Mean	Median	P value
Age						
16-25 years	86.54	34	(a) 0.025*	88.11	22	0.175
26-35 years	66.57	56		63.79	45	
36-45 years	78.06	24		83.96	15	
46-55 years	84.39	19		85.86	13	
56-65 years	85	15		79.93	10	
Gender						
Male	71.97		(b)	66.68		0.000*
Female	92.25	1	0.005*	106.36	1	
Occupation						
Service holder	62.64	33	(a) 0.007*	61.55	28	0.000*
Businessman	65.39	28		52	24	
Retired	64.21	7		55.29	6	
Housewife	98.32	33		111.55	10	
Students	83.95	20		81.24	15	
Others	80.63	27		83.56	22	
Education						
Illiterate	84.9	21	(a) 0.030*	92.78	12	0.000*
Primary	90.06	27		95.31	12	
Secondary	68.33	40		63.17	36	
Higher secondary	80.42	31		83.69	20	
Graduation	80.89	19		67.37	16	
Post-graduation	46.9	10		49.4	9	

(* p<0.05, level of significance; (a) = Kruskal-Wallis (T) test, (b) = Mann-Whitney (U) test)

compare the results of this study with similar research conducted in other regions.

One study identified that most of the participants had sufficient knowledge of chest exercise to enhance their respiratory health [6]. In contrast, other researchers have found low knowledge about respiratory rehabilitation among individuals with respiratory issues in China [15] and India [16]. There was a significant association found in attitude about chest physiotherapy with every socio-demographic character (age, gender, occupation, and educational qualifications). A similar study found that the respiratory patients had a poor perception and disbelief towards the need for chest exercise for pulmonary rehabilitation [15,16]. By comparing these results, it becomes evident that cultural, educational, and healthcare system differences play a significant role in shaping patients' understanding and acceptance of chest physiotherapy.

Such comparisons can help identify universal challenges and region-specific issues that need to be addressed to improve respiratory care globally.

The negative belief and attitude toward chest physiotherapy for pulmonary restoration ultimately led to bad practice towards exercise for respiratory rehabilitation. The researchers discovered significant association linking negative attitudes with bad practices of respiratory restoration in subjects with respiratory issues [17]. Subjects who belong to low socio-economic characters are more prone to insufficient knowledge, wrong beliefs and bad practices in chest physiotherapy, which may need attention from both clinicians and policymakers to minimize complications and mortality of respiratory issues. The findings underscore the need for targeted educational interventions to improve awareness of chest physiotherapy, particularly among older adults and those with lower educational backgrounds. Community-based programs tailored to these groups could be effective in disseminating

information about the benefits of chest physiotherapy. Additionally, healthcare providers should play a proactive role in educating patients, especially in underrepresented groups, to ensure that all individuals with respiratory complications receive appropriate guidance and support. This could include the development of educational materials and workshops aimed at enhancing knowledge and promoting positive attitudes towards chest physiotherapy [18]. This review highlights the importance of targeted educational interventions for patients with respiratory conditions.

Limitations:

The lack of proper typical standard measurement tool is one of the limitations of this research. The miniature sample size is also another drawback. Data was only gathered from two organizations, as such the result may not be generalized all over Bangladesh. Hence, it is highly advised to raise the number of samples through gathering data from more institutions, perhaps from other regions, in order to investigate whether the results obtained is consistent throughout Bangladesh. The study's findings may not be generalizable to the entire population of Bangladesh, particularly considering the gender and geographical biases.

This demographic skew limits the generalizability of the findings. Future research should aim to include a more balanced sample that reflects the diversity of the entire population, including a higher proportion of female participants and individuals from both urban and rural areas. This approach would provide a more comprehensive understanding of the knowledge and attitudes towards chest physiotherapy across different demographic groups. The cross-sectional design only allows for the identification of associations, not causality. Hence, recommend longitudinal studies as a follow-up to this research, which would provide a better understanding of how knowledge and attitudes towards chest physiotherapy evolve over time and influence actual health outcomes.

CONCLUSION

The findings concluded that the patients suffering from respiratory complications had good knowledge, a better attitude, and believed in chest physiotherapy for pulmonary rehabilitation. The participants believed that chest physiotherapy helped to promote quality of life and increased lung function. Chest physiotherapy and rehabilitation were the most frequent approaches used in the physiotherapy management of patients with respiratory complications.

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Author contributions

All authors have read, reviewed and agreed to the published version of the manuscript.

Institutional review board statement

The ethical clearance was obtained from the Institutional Review Board (IRB) of Bangladesh Health Professions Institute (BHPI) (CRP/BHPI/IRB/03/2022 /565), the academic institute of CRP, Dhaka, Bangladesh.

Data Availability Statement

Data is available from corresponding author on reasonable demand and requirements.

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