Anxiety in Thai Adult Patients with respiratory diseases Prior to Perform Pulmonary Function Test Procedure in Ramathibodi Hospital Faculty of Medicine, Mahidol University

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Background: Lung function tests can indicate deterioration of lung function before clinical manifestations begin to appear. Assessing lung function abnormalities useful for diagnosis follow up with treatment for respiratory diseases. Because lungs are complex organs, so there are many kinds of pulmonary function tests to interpret each of its particular function. Often the complex function test is not successful. Sometimes lung function testing requires a longer time to complete and needs cooperation by patients. Most new patients have never known and familiar with the procedures of lung function testings, for example, the patients have to close the nose, blow the air out through the mouthpiece. Some patients are afraid of suffocation. The illness itself may cause anxiety affect awareness, cooperation of patients in the implementation of pulmonary function examination procedures causing obstacles to follow up. The SAI is a self-reported Likert scale consisting of 20 statements that assess the degree to which a person feels anxious at the present time. The response for each statement includes 4 choices; “not at all”, “somewhat”, “moderately so”, and “very much so”. The total score of the SAI ranges from 20 to 80, where higher scores reflect higher state anxiety, and scores less than 30 mean the person is free of anxiety.

Study design: A cross-sectional study.

Objective:The purpose of this study was to study anxiety and its factors while conducting pulmonary function test procedures in Thai adult with respiratory disease. And the outcome may help to find ways to develop, improve the services’ efficiency.

Method:A sample was composed of 580 patients who had performed pulmonary function test (PFT) Procedure(s) in Ramathibodi Hospital, Faculty of Medicine, Mahidol University during May – September 2016. There are 3 questionnaires in this research 1) demographic characteristics, 2) State anxiety inventory for adult (SAI), The SAI is a self-reported Likert scale consisting of 20 statements that assess the degree to which a person feels anxious at the present time. The response for each statement includes 4 choices; “not at all”, “somewhat”, “moderately so”, and “very much so”. The total score of the SAI ranges from 20 to 80, where higher scores reflect higher state anxiety, and scores less than 30 mean the person is free of anxiety and 3) Borg dyspnea scale range from 0-10. The data was analyzed by using percentile, mean and standard deviation.

Results: Three hundred and sixty four patients (62.8%) were female, average age of 56.8 year-old (SD = 15.4), There was 369 patients (63.6%) who have had experiences in lung function tests procedures. The most commonly used procedures for PFT were spirometry , lung volumes, and diffusing capacity (DLCO) which were conducted upon standard international guidelines . The study indicated that patients had performed PFT with an average anxiety score of 38.4 ± 8.85. Patients were analyzed through different kinds of factors such as Gender (male, female), Age (18-45 year,46-94 year), Status (single, married, divorce), Education (primary, vocational, diploma, gradulated bachelor's degree or postgraduate). Occupation (not working, housewife, husband, employed, private business , farmer, official, state enterprise, student, priest) , Groups of disease classification (chronic lung diseases, operative evaluation, evaluate PFT before bone marrow transplant and other disease conditions (OSA, obesity, chronic cough) , types of PFT needed to perform, experiences on PFT, attempts and time until received the PFT result, duration between previous and current PFT test. Base on the data from our study, factors found to be associated with higher anxiety score, which had statistical significant difference, were lower degree of education than the bachelor , patients who were not working, patients who performed PFT for pre-operative evaluation, patients who never to the PFT procedure, patients who have duration from the previous to current PFT by never to done lung function procedure, patients with high borg dyspnea scale were found to have the difference was significant (P Value < 0.005)

Conclusion: Most patients who performed PFT had mild to moderate degree of anxiety. Some of the factors from demographic data, borg score can be identified to have significant higher level of anxiety, in which the technician may have more concern in these subgroups of patients and may find the way to lower the anxiety, i.e. provide more information about the test before the scheduled date, spend more lap time between the attempts or any possible intervention, aim to improve stress during the lung function testing.

Recommendation: From this study is that nurses and personnel providing lung function tests should take role in assessing the anxiety, that will help guide the effective nursing care.

Table 1 Demographical Lung Function of populations categorized by Groups of disease classification (n =580)

Diagnosis	(mean ± SD)
Chronic Lung disease	
pre- FVC (L), n=504	(2.50 ± 0.71)
pre- FVC (% predicted) , n=504	(80.0 ± 15.8)
pre- FEV1 (L) , n=504	(1.82± 0.59)
pre- FEV1 (% predicted) , n=504	(71.1 ± 17.0)
pre- FEV1 / FVC, n=504	(73.1 ± 13.1)
pre- TLC (% predicted) ,n=158	(81.8 ± 17.3)
pre- DLCO (% predicted) , n=124	(68.9 ± 22.8)
pre-operative evaluation	
pre- FVC (L), n=27	(2.05 ± 0.71)
pre- FVC (% predicted) , n=27	(77.7 ± 14.1)
pre- FEV1 (L) , n=27	(1.89 ± 0.50)
pre- FEV1 (% predicted) , n=27	(72.1± 16.3)
pre- FEV1 / FVC, n=27	(76.1 ± 10.2)
pre- TLC (% predicted), n=6	(79.6 ± 14.5)
pre- DLCO (% predicted), n=7	(74.7 ± 16.8)
Bone marrow transplant ;BMT	
pre- FVC (L), n=31	(2.82 ± 0.65)
pre- FVC (% predicted) , n=31	(89.0 ± 12.8)
pre- FEV1 (L) , n=31	(2.35 ± 0.63)
pre- FEV1 (% predicted) , n=31	(85.7 ± 14.3)
pre- FEV1 / FVC, n=31	(83.0 ± 7.54)
pre- TLC (% predicted), n=26	(87.6 ± 11.2)
pre- DLCO (% predicted), n=29	(79.2 ± 20.7)
Other disease	
pre- FVC (L), n=18	(2.84 ± 0.78)
pre- FVC (% predicted) , n=18	(83.5 ± 16.0)
pre- FEV1 (L) , n=18	(2.21 ± 0.56)
pre- FEV1 (% predicted) , n=18	(78.8 ± 12.2)
pre- FEV1 / FVC, n=18	(78.6 ± 6.25)
pre- TLC (% predicted), n=3	(79.3 ± 11.9)
pre- DLCO (% predicted), n=0	no

Table 2 Comparison of anxiety scores among patients who received lung function tests procedure and various factors.

Variable	*N (%)*	*Anxiety score* mean ± SD	*P* - Value*
Gender			
- Male	216 (37.2)	38.3 ± 8.72	0.770
- Female	364 (62.8)	38.5 ± 8.94	
Age			
- Age 18 – 45 year	122 (21.0)	37.2 ± 9.26	0.106
- Age 46 – 94 year	458 (79.0)	38.7 ± 8.72	
Status			
- Single	134 (23.1)	38.5 ± 9.67	0.850
- Married	387 (66.7)	38.2 ± 8.66	
- Divorce	59 (10.2)	38.9 ± 8.85	
Education			
- Primary / Vocational / Diploma	321 (55.3)	39.1 ± 8.81	0.031*
- Bachelor's degree / Postgraduate	259 (44.7)	37.5 ± 8.73	
Occupation			
- Not working / Housewife / Husband	281 (48.5)	39.3 ± 8.81	0.026*
- Employed / Private business / Farmer	177 (30.5)	38.1 ± 8.95	
- Official / State enterprise / Student / priest	122 (21.0)	36.8 ± 8.59	
Treatment rights			
- Pay cash	105 (18.1)	38.6 ± 8.81	0.189
- Health insurance / Social security	177 (30.5)	39.2 ± 9.25	
- Civil servant	298 (51.4)	37.7 ± 8.59	
Disease			
- Chronic Lung disease	504 (86.9)	38.6 ± 8.74	0.008*
- pre-operative evaluation	27 (4.7)	40.6 ± 9.21	
- Bone marrow transplant; BMT	31 (5.3)	33.7 ±8.66	
- Other (OSA, Obesity, Chronic cough)	18 (3.1)	36.3 ± 9.45	
Experience in lung function testing			
- Never to test of Lung function	369 (63.6)	40.1 ± 8.94	0.000*
- Previously performed lung function tests	211 (36.4)	37.4 ± 8.66	
Duration of pulmonary function test procedures (Month)			
- Never	210 (36.2)	40.1 ± 8.94	0.004*
- Last 1-6 month	104 (17.9)	37.1 ± 9.17	
- Last 7-12 month	112 (9.3)	37.9 ± 7.92	
- More than 12 month	154 (26.6)	37.1 ± 8.82	
Type of lung function test procedure			
- Spirometry	373 (64.3)	37.9 ± 8.77	0.526
- Spirometry and Lung volume	45 (7.8)	39.3 ± 10.0	
- Spirometry and DLCO	11 (1.9)	38.7 ± 9.29	
- Spirometry, Lung volume and DLCO	151 (26)	39.1 ± 8.65	
The number of test by completed the procedure of lung function Pre-BD Spirometry, (n=580)			
- blowing 3-5 times	443 (76.4)	38.6 ± 8.91	0.121
- blowing 6-8 times	128 (22.1)	39.4 ± 8.23	
- blowing more 8 times	9 (1.6)	42.2 ± 12.8	
Lung Volume (body plethysmography technique), (n=196)			
- blowing 3-4 times	163 (28.1)	39.3 ± 8.64	0.225
- blowing 5-6 times	28 (4.8)	37.2 ± 11.1	
- blowing 7-8 times	5 (0.9)	44.2 ± 3.11	
Diffusion capacity of carbon monoxide (DLCO technique), (n=162)			
- blowing 2 times	114 (19.7)	39.7 ± 8.63	0.275
- blowing 3 times	38 (6.6)	38.2 ± 8.86	
- blowing 4 times	8 (1.4)	36.1 ± 8.18	
- blowing 5 times	2 (0.3)	30.5 ± 4.95	
Borg dyspnea scale, (n=390)			
- Borg score 0-3	268 (46.2)	36.7 ± 8.54	0.000*
- Borg score 4-6	113 (19.5)	40.4 ± 8.44	
- Borg score 7-10	9 (1.6)	48.6 ± 13.9	

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