



10th IOHA International
Scientific Conference

Validation of the ATS respiratory questionnaire for lung function assessment among an occupational group of textile workers

Dr. Tanzil Jamali

Department of Community Health Sciences
Aga Khan University, Karachi Pakistan

Roadmap



- Background
- Situation in Pakistan
- Objectives
- Methods
- Results
- Conclusion



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Background



- Textile industry is associated with exposure to cotton dust
 - Lead to development of obstructive respiratory conditions
- Spirometry is an essential tool for health surveillance of workers
- Validated questionnaire for respiratory symptoms can improve the efficiency of diagnosis in occupational settings where spirometry is difficult



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Situation in Pakistan



- Pakistan is the 4th largest producer of cotton with the third largest spinning capacity in Asia
- This sector contributes 8.5% to the GDP and provides employment to about 15 million people
- There are 1,221 ginning units, 442 spinning units, 124 large spinning units and 425 small units which produce textile products

[Government of Pakistan, Ministry of Commerce and Textile Industry, 2013]



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Rationale



- There is a dearth of resources in health care system
- A lack of spirometry equipment and expertise to use in primary health care settings
- Lack of research has resulted in unavailability of validated research tools;
 - Particularly for the screening of respiratory illness and symptoms among industrial workers



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Objectives



- To determine the correlation of spirometric lung pattern with respiratory symptoms
- To validate the American Thoracic Society (ATS-DLD-78A) respiratory questionnaire for lung function assessment among an occupational group of textile workers in Karachi, Pakistan



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Methods

- Secondary data analysis
- Study design: cross sectional survey
- Study setting: textile mills of Karachi (2009-2010)
- Sample size: 372
- Study tools: ATS-DLD-78A respiratory questionnaire and portable spirometer



Results



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Table 5: Association of chronic respiratory symptoms with different combinations on lung function among textile workers (n=372)

Chronic symptoms	%predicted FVC		% predicted FEV ₁		% predicted FEV ₁ /FVC	
	aOR	95% CI	aOR	95% CI	aOR	95% CI
Cough + phlegm	0.47	0.17, 2.23	1.66	0.74, 3.69	2.88	0.94, 8.83
Cough + wheeze	0.97	0.41, 2.32	2.08	1.05, 4.10	1.98	0.73, 5.35
Cough + SOB	2.23	0.94, 5.29	2.47	1.18, 5.18	1.02	0.31, 3.28
Phlegm + wheeze	0.81	0.32, 2.03	0.63	0.32, 1.25	3.10	1.13, 8.48
Phlegm + SOB	2.12	0.87, 5.16	2.59	1.23, 5.43	2.04	0.68, 6.12
Wheeze + SOB	2.61	1.09, 6.24	0.26	0.12, 0.56	1.99	0.70, 5.66
Phlegm + Wheeze + SOB	2.23	0.84, 5.89	0.26	0.11, 0.63	3.52	1.04, 11.96
Cough + wheeze + SOB	2.37	0.95, 5.94	4.64	1.97, 10.93	1.52	0.46, 4.95
Cough + phlegm + SOB	1.92	0.75, 4.94	0.37	0.17, 0.81	1.52	0.42, 5.39
Cough + phlegm + wheeze	0.74	0.28, 1.92	1.65	0.81, 3.35	2.64	0.87, 7.95
Cough + phlegm + wheeze+ SOB	2.17	0.80, 5.86	4.18	1.68, 10.37	1.98	0.51, 7.66

Adjusted for; age, ethnicity, weight, height smoking, section of mill, duration of work

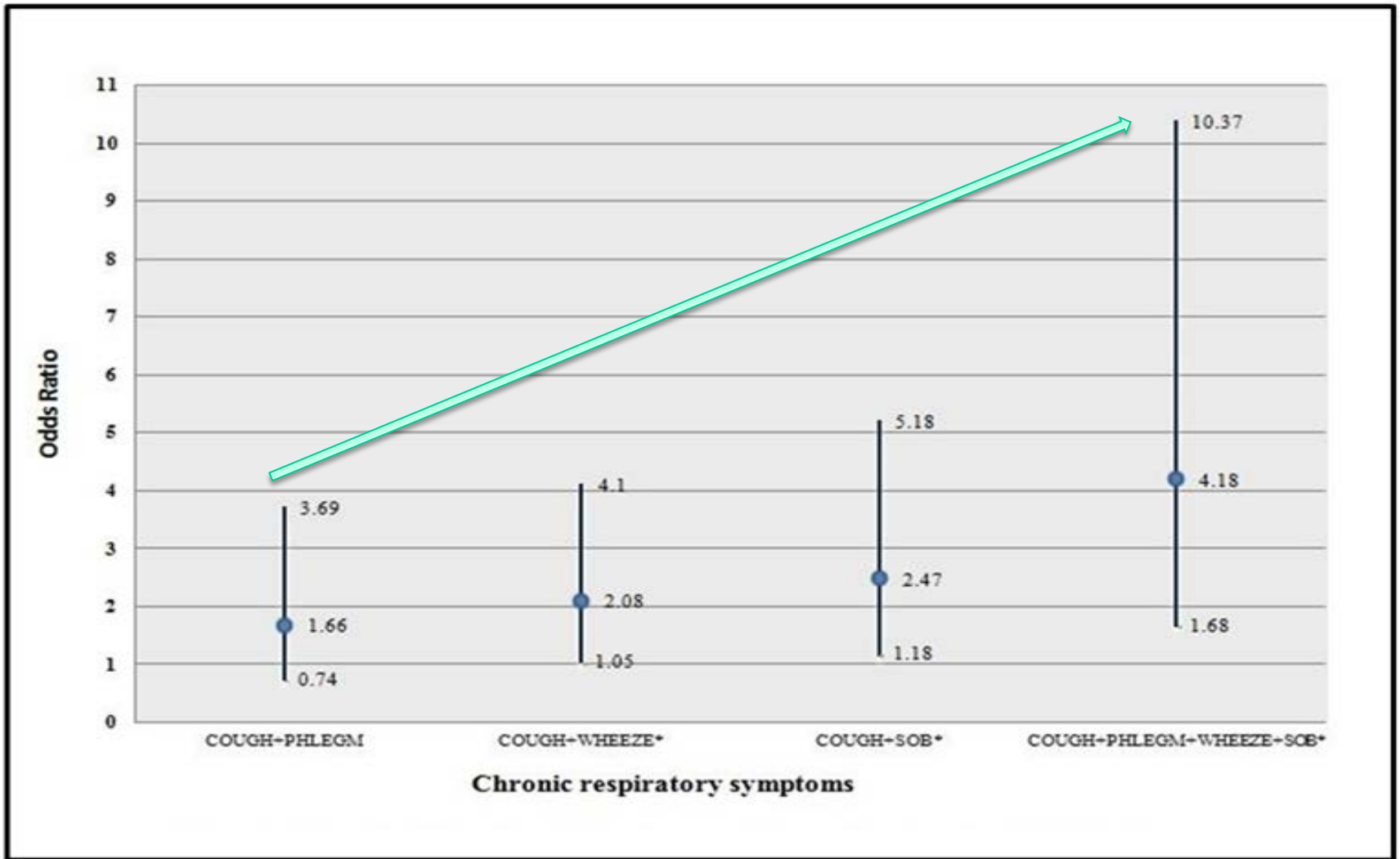


Figure : Odds ratio of %predicted FEV1 volumes with the combination of combined chronic symptoms
 SOB=shortness of breath grade 2, *p value<0.05

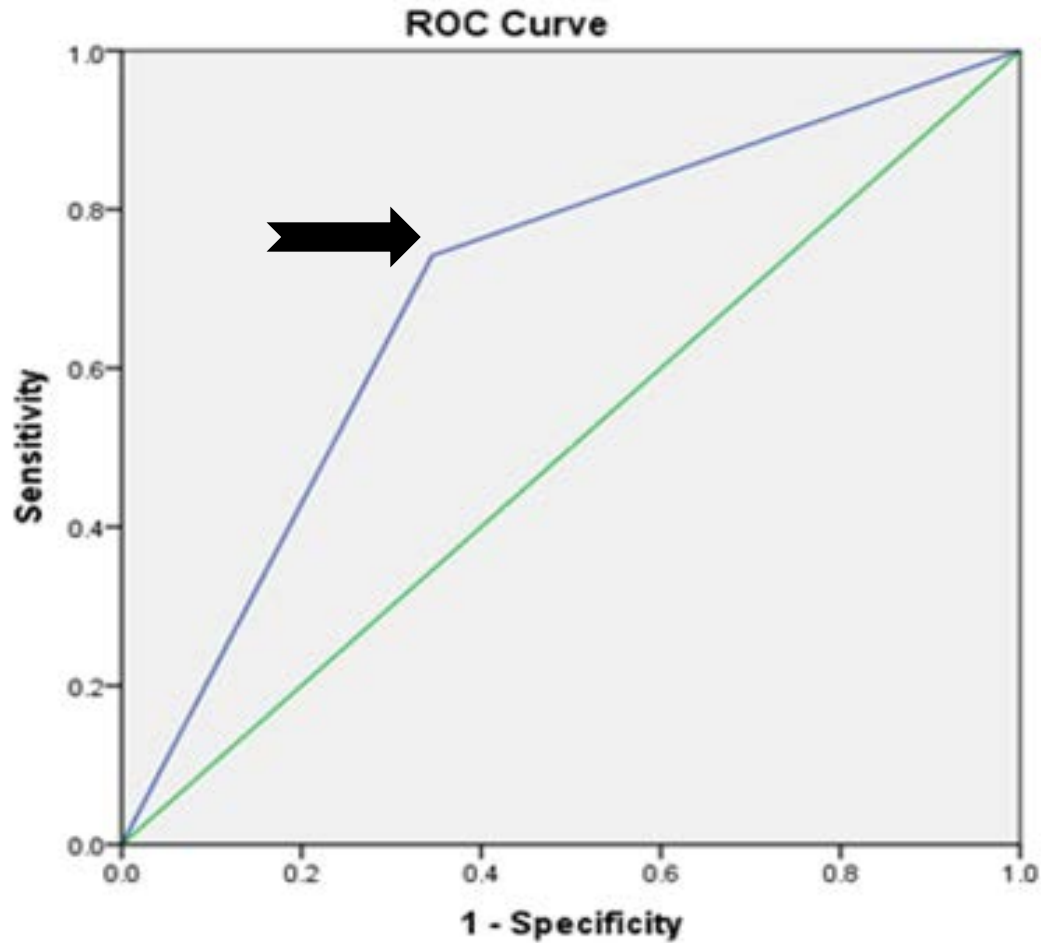
Table 7: Sensitivity, specificity and predictive values of respiratory symptoms according to obstructed^a pattern on spirometric interpretation among textile workers in Karachi (n=332)

Symptoms	Sensitivity (%)	Specificity (%)	Positive predictive value (%)	Negative predictive value (%)
Frequent cough	18	84	11.1	90.6
Chronic cough	14.2	93.1	17.3	91.5
Frequent phlegm	25	73.6	9.1	90.2
Chronic phlegm	23.3	85.7	15.9	90.6
Frequent wheeze	53.1	61.3	12.7	92.4
Chronic wheeze	44.8	75.4	17.8	92
SOB 1	56.2	55.6	11.9	92.2
SOB 2	38.8	57.8	11.1	87.5
Chest tight ever	50	68	14.2	92.7
Chest tight apart from cold	50	44.7	13.1	84.3
Combine chronic Symptoms*	62	63	14.9	94.3

^a Obstructed spirometry pattern include mild obstruction, moderate obstruction, severe obstruction,

Missing (N=40) included mild restriction, moderate restriction, severe restriction and mix obstructed restrictive patterns on spirometry

*Combine chronic Symptoms (n=176) = cough+phlegm+wheeze+shortness of breath grade 2
Adjusted for: age, height, section, SES, duration of exposure, smoking



ROC for % predicted FEV1 with combined respiratory symptoms.
AUC=0.69, Test variable=Chronic cough+ chronic phlegm + chronic wheeze + shortness of breath grade 2



Conclusion

- This finding has important public health implications for resource limited settings;
 - This study demonstrates high correlation of respiratory symptoms with decrements in lung function
 - Use of standardized questionnaires can serve as a cost saving tool in the screening of respiratory symptoms without need of additional resources
- Therefore; ATS - DLD - 78A questionnaire is a valid tool for the screening of respiratory symptoms among textile workers



Authors:

- Dr Tanzil Jamali
 - Fellowship trainee, Department of Community Health Sciences, Aga Khan University, Karachi
- Dr Asaad Ahmed Nafees
 - Assistant Professor, Department of Community Health Sciences, Aga Khan University, Karachi

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- Dr Zafar Fatmi
 - Associate Professor, Department of Community Health Sciences, Aga Khan University, Karachi



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