



WELDING FUME EXPOSURE ON THE VENTILATORY FUNCTION IN WELDERS



Han-NI, Hein-Min-LATT, Aye-Aye-THEIN, Nwe-Nwe-YEE

Department of Physiology, University of Medicine-Mandalay, Mandalay, Myanmar

Introduction

Welding is one of the professional jobs in Myanmar. The process of welding produces a cloud of welding fume which is a complex mixture of solid particles originated from welding consumables and the base metal. Inhalation of welding fume would have an effect on the ventilatory function of the welders.



Objective

To study the effects of welding fume exposure on the ventilatory function in welders

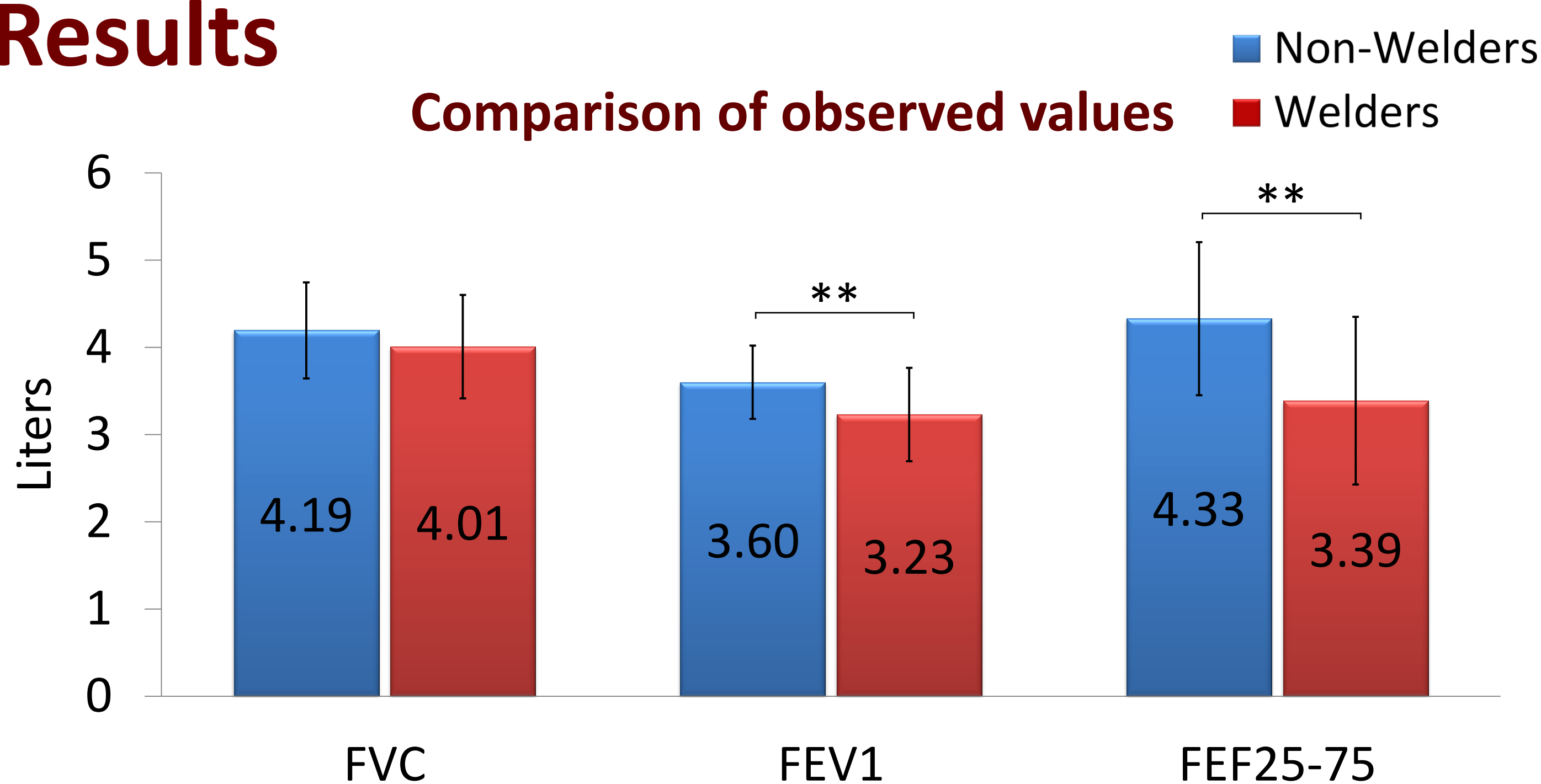
Materials & Methods

Twenty-two welders and twenty-two non-welders from construction sites in Mandalay participated in this cross-sectional analytic study. All the subjects were 25 - 50 years of age, males, non-smokers, and had more than 5 years of employment. Non-welders were electricians and plumbers.

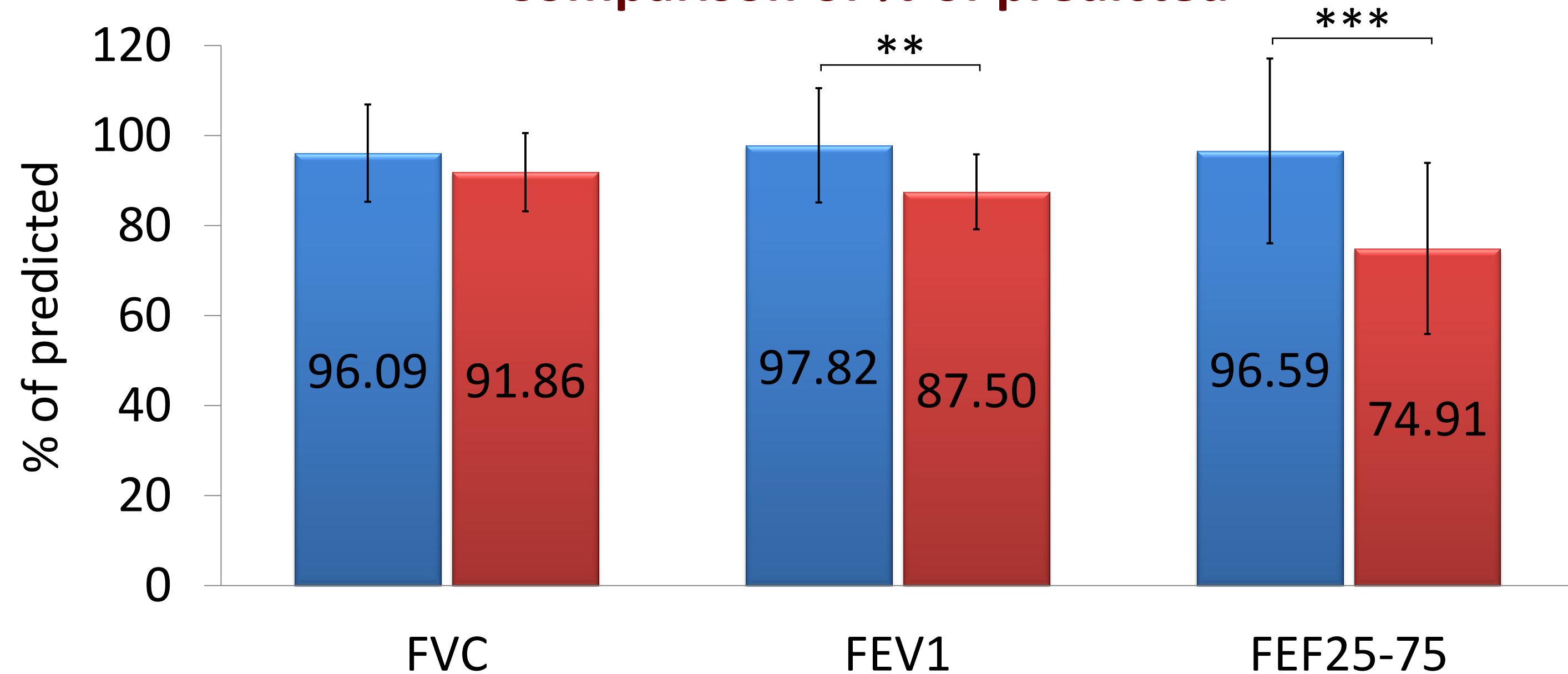
Ventilatory parameters were measured by a computerized spirometer. Respiratory symptoms were documented by using the questionnaire adopted from the American Thoracic Society questionnaire.

Results

Comparison of observed values



Comparison of % of predicted



Data : Mean ± SD

* : p < 0.05

** : p < 0.01

*** : p < 0.001

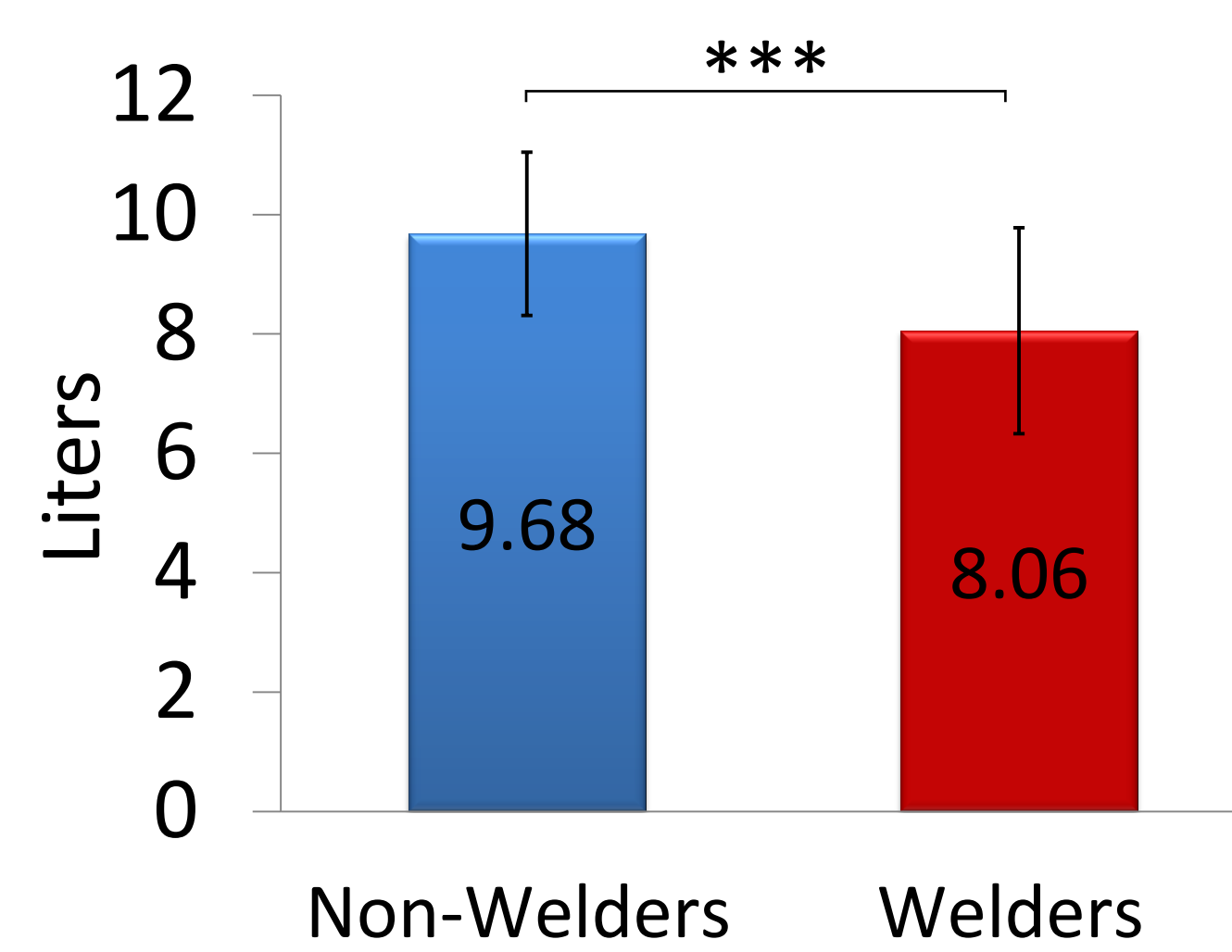
FVC : Forced vital capacity

FEF25-75 : Forced mid expiratory flow

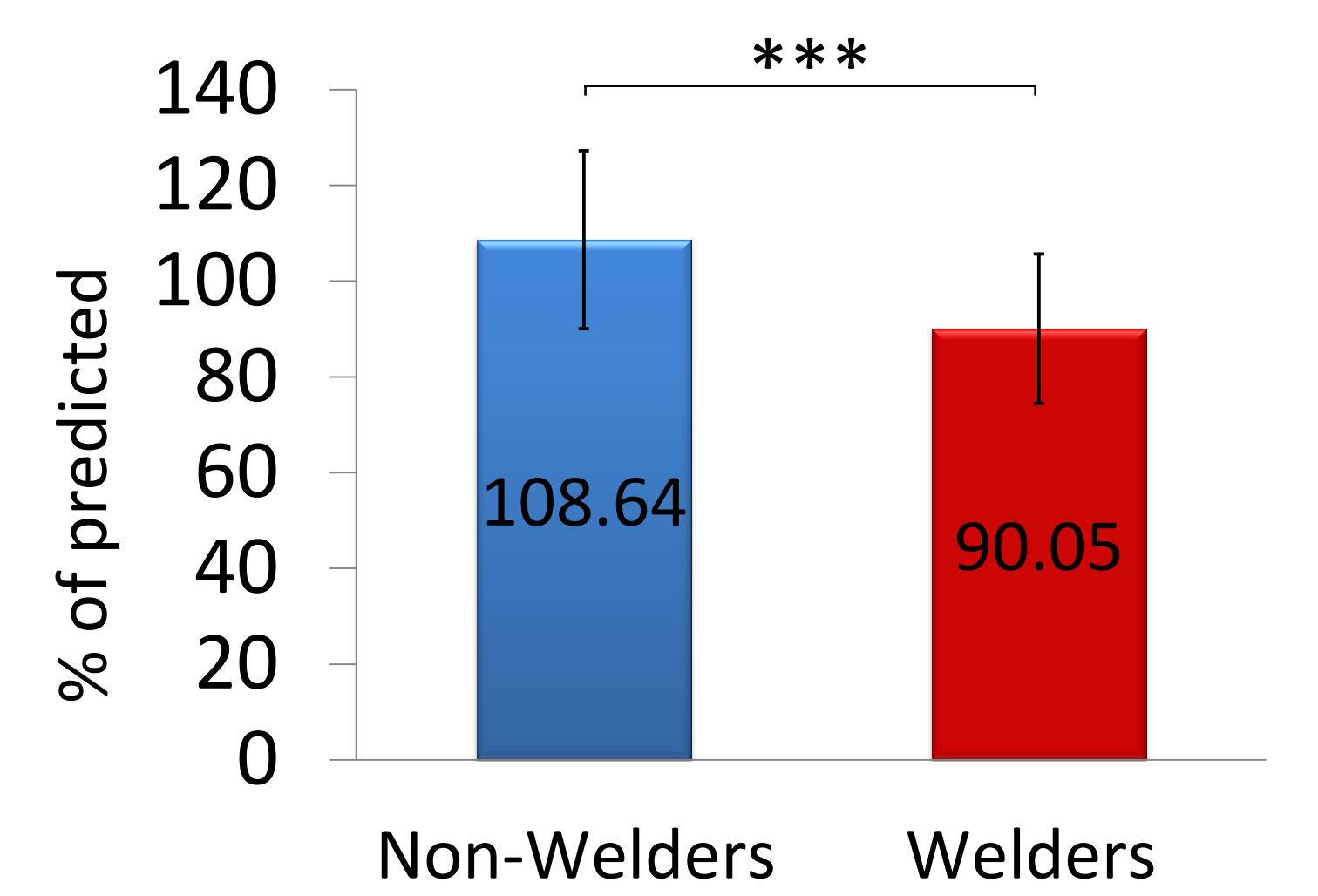
FEV1 : Forced expiratory volume in 1st second

PEF : Peak expiratory flow

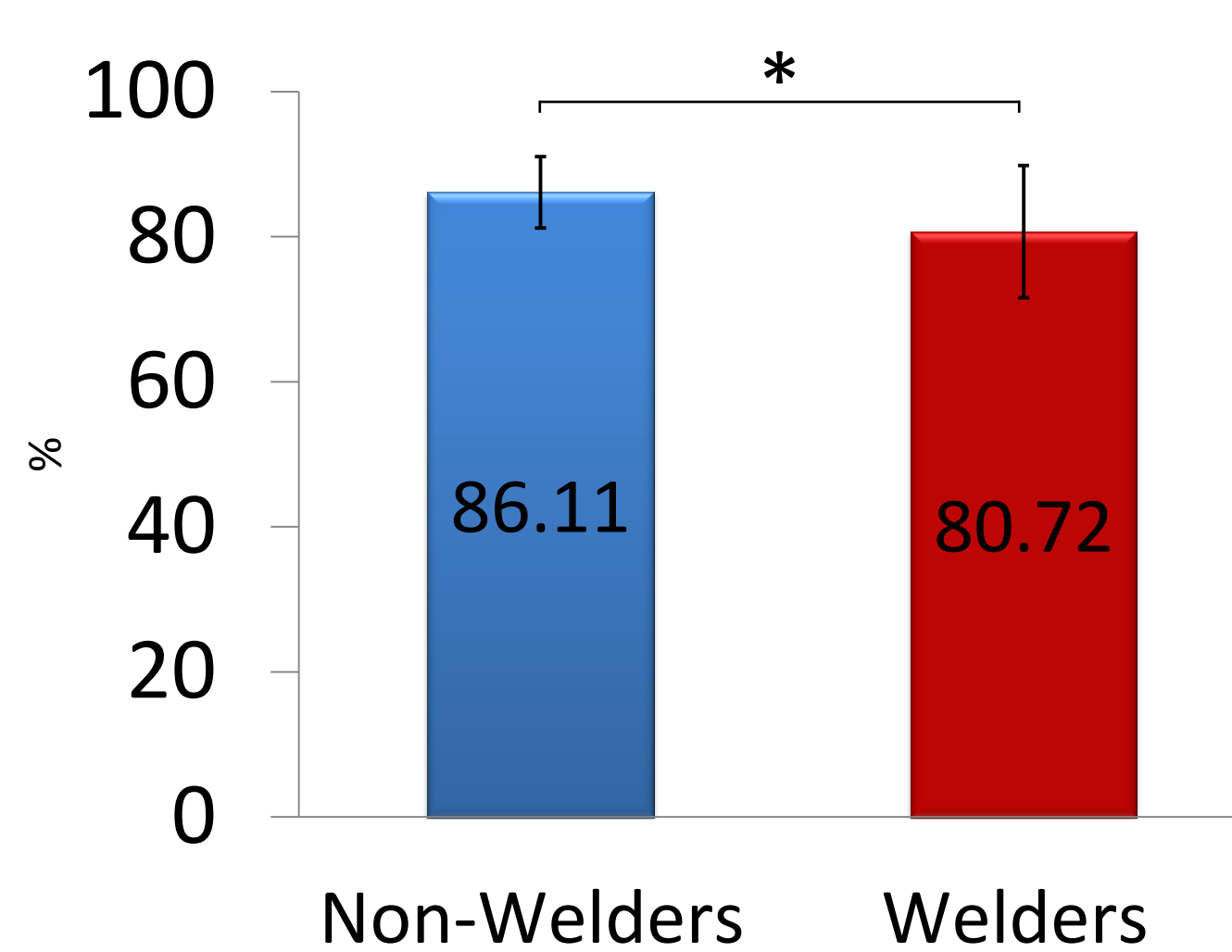
Observed values of PEF



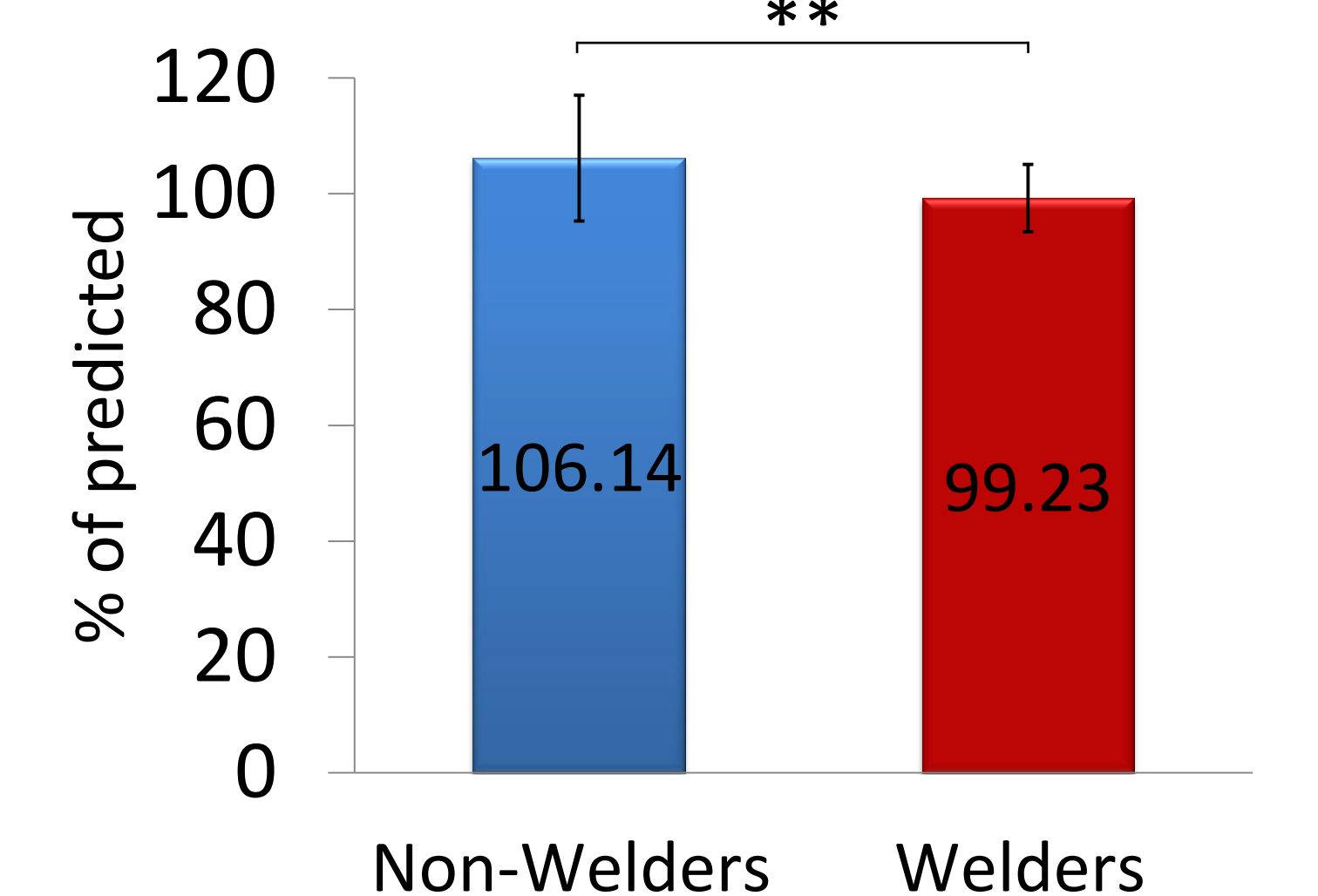
% of predicted of PEF



Observed values of FEV1/FVC



% of predicted of FEV1/FVC



Proportion of occurrence of the respiratory symptoms

| Symptom | Welders | Non-welders | Odds ratio | 95% CI | p |
|----------|------------|-------------|------------|--------------|-------|
| Cough | 9 (40.91%) | 2 (9.09%) | 6.92 | 1.28 - 37.28 | 0.02* |
| Phlegm | 11 (50%) | 3 (13.64%) | 6.33 | 1.44 - 27.73 | 0.01* |
| Wheezing | 5 (22.73%) | 2 (9.09%) | 2.94 | 0.50 - 17.14 | 0.23 |
| Dyspnea | 2 (9.09%) | 0 (0%) | Infinity | - | - |

Data: number (percentage of the total)

Conclusion

The results of the present study showed that welding fume exposure might decrease in the ventilatory function in welders compared to non-welders with increasing tendency to cause the obstructive pattern of ventilatory impairment.

Acknowledgements

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No conflict of interest