

# PULMONARY FUNCTION AMONG LATINO THOROUGHbred WORKERS

## - A PILOT STUDY

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### Background

Latino agricultural workers are a vulnerable worker group with a high rate of occupational illness and injury. Thoroughbred breeding may be particularly dangerous for Latinos, yet little research addresses the occupational health and safety of this worker group. Workers may be exposed to a variety of respiratory toxins in the organic dust found encountered in the horse barn, including beta glucans, endotoxins, horse hair and dander, hydrogen sulfide, and ammonia. One previous study with this worker group suggests that horse barn work is associated with a high prevalence of self-reported respiratory symptoms, yet no studies to date have obtained objective measures of pulmonary function, such as spirometry. In this study we examined two questions regarding Latino thoroughbred workers: **1) What is the prevalence of abnormal pulmonary function and self-reported respiratory symptoms?; and 2) What occupational and demographic factors are associated with pulmonary function and self-reported respiratory symptoms?**

### Methods

Participants were recruited via a community-based, purposive sampling strategy and participated in an interview-administered survey and spirometer test. Surveys, which assessed occupational and demographic risk factors potentially impacting respiratory health, and spirometry tests were administered to 80 participants by two trained native Spanish-speaking lay health promoters (*Promotoras*) in July-September 2014. Pulmonary function was classified as abnormal (restrictive/obstructive) or normal by a pulmonologist (DM). Demographic and occupational factors were assessed for associations with respiratory outcomes through bi-variate  $\chi^2$  analyses and multivariable logistic regression. Participants were given a \$15 Wal-Mart gift certificate for participation. This study was conducted with approval from the University of Kentucky Institutional Review Board.

### Acknowledgments

This work was supported by the Southeast Center for Agricultural Health and Injury Prevention, University of Kentucky College of Public Health, under CDC/NIOSH Cooperative Agreement 5U54OH007547-14. The contents of this poster are solely the responsibility of the authors and do not necessarily represent the official views of CDC/NIOSH.

Demographic/Non-Occupational Factors	Mean/ %	N
<b>Age</b>	<b>37.7</b>	<b>80</b>
<b>Race (White)</b>	<b>98.8</b>	<b>80</b>
<b>Gender (Male)</b>	<b>73.8</b>	<b>80</b>
<b>Nationality</b>		
Mexican	76.3	80
Mexican-American	16.3	80
Guatemalan	5.0	80
Honduran	2.5	80
<b>Years living in the U.S.</b>	<b>16.7</b>	<b>80</b>
<b>Current Smoker (yes)</b>	<b>21.3</b>	<b>80</b>
<b>Former smoker (yes)</b>	<b>17.5</b>	<b>80</b>
<b>Never smoker (yes)</b>	<b>61.3</b>	<b>80</b>
<b>High educational attainment (≥high school)</b>	<b>42.5</b>	<b>80</b>
<b>Low educational attainment (&lt;high school)</b>	<b>57.5</b>	<b>80</b>
<b>Job Related Risk Factors</b>		
Hours per week breathing dust or dirt	22.4	80
Hours per week working in the barn	21.0	77
Years working at current farm	5.4	80
Work in barn (yes)	96.3	77
Wear dust mask in barn (yes)	28.6	77
Never/Seldom/Sometimes use dust mask	93.5	77
Often/Always use dust mask	6.5	77

<b>79% reported upper and/or lower respiratory symptoms</b>
<b>51% reported upper respiratory symptoms</b>
• 30% nasal irritation
• 30% throat trouble
• 19% sinus trouble
<b>69% reported lower respiratory symptoms</b>
• 56% cough
• 24% wheezing
• 24% chest tightness
• 30% shortness of breath
• 19% difficulty breathing
<b>18% prevalence of physician/nurse diagnosed asthma</b>
<b>27% prevalence of abnormal pulmonary function</b>
• 2% obstructive, 25% restrictive

### Results

	Abnormal Pulmonary Function (Presence)			
	%	N	$\chi^2$	Sig.
<b>Gender</b>		<b>80</b>	<b>0.05</b>	<b>0.51</b>
Male	25.9	58		
Female	26.6	21		
<b>Age</b>		<b>79</b>	<b>4.28</b>	<b>0.11</b>
≤30	26.3	19		
31-40	15.6	22		
>40	39.3	28		
<b>Smoking</b>		<b>78</b>	<b>1.77</b>	<b>0.41</b>
Current	13.3	15		
Former	33.3	18		
Never	26.7	45		
<b>Education</b>		<b>79</b>	<b>0.15</b>	<b>0.44</b>
<High School	28.3	46		
≥High School	24.2	33		
<b>Years in US</b>			<b>4.74</b>	<b>0.03</b>
≤10	43.5	23		
>10	19.6	56		

	Abnormal Pulmonary Function (Presence)			
	%	N	$\chi^2$	Sig.
<b>Years at current farm</b>		<b>79</b>	<b>4.3</b>	<b>0.04</b>
≤5	35.6	45		
>5	14.7	34		
<b>Barn work (Hours/week)</b>		<b>77</b>	<b>0.1</b>	<b>0.48</b>
≤20	25.0	44		
>20	28.1	32		
<b>Dust exposure (Hours/week)</b>		<b>79</b>	<b>0.12</b>	<b>0.45</b>
≤20	25	44		
>20	28.6	35		
<b>Wear dust mask in barn?</b>		<b>76</b>	<b>0.48</b>	<b>0.33</b>
Yes	24.1	54		
No	31.8	22		
<b>Dust mask</b>		<b>76</b>	<b>0.11</b>	<b>0.60</b>
Infrequent	26.8	71		
Frequent	20	5		

		Abnormal Pulmonary Function		
		OR (adj.)	95% C.I.	
			Lower	Upper
<b>Gender</b>	<b>Male</b>	<b>1</b>		
	<b>Female</b>	<b>2.76</b>	<b>0.62</b>	<b>12.32</b>
<b>Age</b>	<b>&gt;40 years</b>	<b>1</b>		
	<b>≤30 years</b>	<b>0.12</b>	<b>0.02</b>	<b>0.81</b>
	<b>31 – 40 years</b>	<b>0.10</b>	<b>0.02</b>	<b>0.56</b>
<b>Smoking status</b>	<b>Never</b>	<b>1</b>		
	<b>Current</b>	<b>1.64</b>	<b>0.27</b>	<b>10.05</b>
	<b>Former</b>	<b>2.18</b>	<b>0.49</b>	<b>9.67</b>
<b>Years in U.S.</b>	<b>&gt;10</b>	<b>1</b>		
	<b>≤10</b>	<b>5.16</b>	<b>1.29</b>	<b>20.64</b>
<b>Years on current farm</b>	<b>&gt;5</b>	<b>1</b>		
	<b>≤5</b>	<b>6.29</b>	<b>1.15</b>	<b>34.34</b>
<b>Dust exposure</b>	<b>≤20 hrs/wk</b>	<b>1</b>		
	<b>&gt;20 hrs/wk</b>	<b>1.63</b>	<b>0.46</b>	<b>5.74</b>
<b>Wear dust mask in barn</b>	<b>Yes</b>	<b>1</b>		
	<b>No</b>	<b>1.59</b>	<b>0.40</b>	<b>6.30</b>

### Conclusions

This is the first report of pulmonary function among Latino thoroughbred workers. Workers experienced a high prevalence of both self-reported respiratory symptoms and abnormal pulmonary function relative to the general Latino and Mexican-American population and other agricultural occupational groups. We found that workers who are both new to the U.S. and new to a current horse farm experienced the highest odds of abnormal pulmonary function. Although we were unable to identify specific occupational factors contributing to these findings, we hypothesize that these results may be due, in part, to newer workers taking on risky or dirtier job tasks, pre-existing respiratory conditions/exposures from country of origin, tolerance to respiratory toxins experienced by more tenured workers, or a healthy worker survivor population. Future research to elucidate occupational and demographic factors impacting the respiratory health of this worker group may benefit from dust sampling in horse barns and longitudinal cohort studies.

More information

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