UC San Diego

Herbert Wertheim School of Public Health and Human Longevity Science

Objective

To investigate potential associations between pesticide exposure and respiratory health status among field crop workers in California's Central Valley

Background

- **Respiratory problems** are prevalent in agricultural settings, with diagnosed asthma being the most common condition reported among **California farmworkers**¹
- Asthma is an obstructive lung disease, and many cases are triggered by airborne irritants and debris, and can greatly restrict one's abilities to contribute labor²
- California agricultural workforce show higher rates of both lifetime and recent asthma compared to Midwestern counterparts³
- In 2021, approximately **127 million pounds of pesticides** were applied throughout the Central Valley, specifically the counties of Fresno, Kern & Tulare, with pesticide use strongly associated with asthma prevalence⁴
- Despite comprising less than 1% of U.S. farmland, California's Central Valley produces approximately **25%** of the nation's crops and employs half of all U.S. farmworkers⁵
- Limited and old studies have specifically examined the relationship between insecticide exposure and respiratory health status among field crop workers in the Central Valley, specifically in Kern County¹⁻²

Methods

- **Methods**: Cross-sectional study using a 20-question Google Form offered in Spanish & English from April to May 2025 among Kern County field workers (N=88)
- Survey: Demographics, pesticide exposure awareness and PPE use, and self-reported health outcomes including asthma and respiratory symptoms since 2024
- **Distribution**: Purposive sampling and recruitment at UCSD La Raza Center, Kern County Farm Bureau, and direct community outreach
- **Data Analysis (SPSS v29)**: Descriptive statistics, binary logistic regression (asthma prediction by work years), fisher's exact test (pesticide groups vs. health status), and one-way ANOVA (pesticide groups vs. perceived health)

Fields of Risk: Pesticide Exposure and Respiratory Health in California's Agricultural Core Maai Lozano, Lily Rose Ponsa, Katie Brewster







Table 1. Sociodemographics (N=88) Total

18-25 years old	8 (9.
26-39 years old	33 (37
40-59 years old	41 (41
60-69 years old	6 (6.
Race/Ethnicity	Tot
Hispanic	81 (92
White	4 (4.
Hispanic/White Mixed	1 (1.
Native American	1 (1.
Asian	1 (1.
Insurance Type	Tot
Medicaid	48 (54
No Insurance	1 1 1 1
	14 (15
Medicare	14 (15
Medicare Private Insurance	14 (15 12 (13 11 (12
Medicare Private Insurance Other*	14 (15 12 (13 11 (12 3 (3.
Medicare Private Insurance Other* Total	14 (15 12 (13 11 (12 3 (3. 88 (10
Medicare Private Insurance Other* Total Number of Hours Worked Per Week	14 (15 12 (13 11 (12 3 (3. 88 (10 Tot

*(Moda Health & Kern Family Healthcare)

The study population was predominantly Hispanic (92%), mostly covered by public insurance (68.18%), with participants aged 40-59 representing the largest age group.

- of workers (40-59), prolonged pesticide exposure may progressively worsen their health status over time
- and lack of financial stability
- minimal training on proper safety practices
- indirect pesticide exposure

Limitations:

Results



• While no clear asthma pattern was detected, it was more notable than other respiratory diseases. There was a higher proportion of asthma diagnoses among workers not using PPE, potentially due to lack of protection, expensive medical bills,

• Inadequate safety training contributes to these health risks, as workers receive only

• These findings contrast with existing research on pesticide exposure and respiratory risk among agricultural workers^{1,3-4}, but offer new insights into health impacts of

Due to time constraints and recruitment challenges, a smaller size resulted in limited statistical power, and non-response bias may have affected results due to online survey modality. All health and exposure information was self-reported without clinical verification or environmental monitoring, which could introduce potential recall bias

Providing protective equipment (PPE), teaching proper use and maintenance, and offering training by health & safety experts in multiple languages

Work with local health organizations to bring in mobile health clinics for screenings, where healthcare providers directly go to job sites for free services to check field workers

Hold educational sessions about potential breathing problems and health risks



S			
	Outcome	p value	
ation	Hoalth Status*	0.008	

Outcome	Odds Ratio	Confidence interval	p value
Asthma Status	0.962	95% [0.892, 1.038]	0.318

us					
	Outcome	F statistic	p value		
ation	Health Status*	0.101	0.904		
ificant difference among workplace pesticide exposure groups and reported health statu					

field crop workers in the Central Valley

Health Management – HHS

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