

Migrant Farmworker Stress: Mental Health Implications

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ABSTRACT: *Context:* The number of Latinos in rural regions of the United States is increasing. Little is known about factors that undermine the mental health of this segment of the rural population. *Purpose:* The goal of this study is to determine which stressors inherent in farmwork and the farmworker lifestyle contribute to poor mental health. *Methods:* An interview containing the Migrant Farmworker Stress Inventory (MFWSI) and 3 mental health scales (the PAI [anxiety], CES-D [depression], and CAGE/4M [alcohol abuse]) was administered to a sample of 125 male migrant farmworkers. Factor analysis differentiated discrete domains of stressors in the MFWSI. Regression models identified associations of the MFWSI stressor domains with mental health outcomes. *Findings:* Thirty-eight percent of participants had significant levels of stress as determined by the MFWSI. The MFWSI reduced to 5 stressor domains: legality and logistics, social isolation, work conditions, family, and substance abuse by others. Some 18.4% of participants had impairing levels of anxiety, 41.6% met caseness for depression, and 37.6% answered yes to 2 or more questions on the CAGE. Social isolation and working conditions were associated with both anxiety and depressive symptoms. However, social isolation was more strongly associated with anxiety, and working conditions were more strongly linked to depression. *Conclusions:* Specific categories of stressors (social isolation, working conditions) inherent in farmwork and the farmworker lifestyle are associated with mental health among immigrant farmworkers. Isolating specific categories of stressors helps in designing programs and practice for the prevention and management of mental health disorders in the immigrant, farmworker population.

concern,² as factors related to mental health problems among Latinos may differ from those of indigenous rural populations.

A significant portion of Latino immigrants in some rural areas are farmworkers. Although an accurate count is difficult to establish, estimates suggest that over 4 million farmworkers,³ most of whom are Latino, live and work in rural areas of 42 of the 50 states.⁴ Unfortunately, while farmworkers are at risk for developing mental health problems, little systematic research on this population has been undertaken.⁵ Documenting specific factors contributing to poor mental health in this population is an essential first step in equipping rural health care delivery systems to meet farmworkers' mental health needs.⁶

Stressors inherent in farmwork and the farmworker lifestyle have long been believed to undermine mental health.^{5,7,8} Vega and colleagues^{7,8} early research, for example, argued that environmental stressors, such as limited social mobility and discrimination, as well as hazardous working conditions, pose significant risks to farmworker mental health. More recently, Hovey and colleagues^{9,11} have found that acculturative stress, poor family functioning, and the lack of social supports are associated with greater symptoms of depression and anxiety among farmworkers working in the Midwest.

Monitoring and treating mental health in rural areas is challenging, and this is exacerbated by a lack of understanding of the factors underlying mental health in rural areas.¹ The substantial and growing number of immigrant Latinos residing in rural areas adds to this

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The research reported in this paper was supported by grant R25 OH07611 from the National Institute for Occupational Safety and Health. For further information, contact: Ann E. Hiott, MD, Department of Family and Community Medicine, Wake Forest University School of Medicine, Medical Center Boulevard, Winston-Salem, NC 27157-1084; e-mail ahiott@wfubmc.edu.

Other evidence suggests that social marginalization and separation from family may undermine the mental health of farmworkers.^{12,13} Although valuable, a limitation of this body of research is that researchers do not evaluate in the same study a range of stressors unique to farmwork. Simultaneously, evaluating several stressors is necessary for identifying those elements of farmwork and the farmworker lifestyle that pose the greatest risk to mental health.

The Migrant Farmworker Stress Inventory (MFWSI)^{5,10,11} offers a tool for evaluating the potential mental health effects of distinct stressors inherent to farmwork. The MFWSI assesses exposure and appraisal of a wide variety of stressors such as documentation status, separation from family, discrimination, and exploitation. The tool has been used to assess the inherent stressors of migrant farmwork,^{6,14} and higher scores on the MFWSI are associated with greater anxiety, depression, and suicidality.⁵ Unfortunately, although the MFWSI was designed to measure exposure to different stressors, researchers tend to aggregate across the different types of stressors. While this strategy is appropriate for characterizing overall levels of farmworker stress, the use of total scores assumes that all stressors have equal effects on mental health outcomes, an assumption that requires verification. Further, the use of total scores undermines the ability to translate research to practice because researchers cannot identify specific elements of farmwork or the farmworker lifestyle that, if intervened upon, may contribute to better mental health.

The goal of this study is to determine which stressors inherent in farmwork and farmworker lifestyle contribute to poor mental health. To achieve this goal, we: (1) determine if distinct and coherent types of stressors can be obtained from the MFWSI, and (2) identify which farmworker stressors are associated with and have the greatest potential impact on depression, anxiety, and alcohol abuse.

Methods

This study was 1 part of a larger project, *Casa y Campo*, a community-based participatory research and education project. *Casa y Campo* was a 4-year effort funded by the National Institute for Occupational Safety and Health that brought together environmental health scientists, health care providers, and farmworkers to reduce pesticide exposure and adverse health effects of pesticide exposure among farmworkers and their families, and to address other health issues of concern to the farmworker community. One goal of *Casa y Campo* was to conduct research on health problems identified by community members. Stress and

mental health were concerns identified by the community.

Participant Recruitment and Data Collection.

Participants were 125 male migrant farmworkers recruited during June and July 2003 in Harnett, Johnston, Sampson, and Wake Counties in east central North Carolina. This region has the state's greatest concentration of migrant and seasonal farmworkers, estimated by the North Carolina Employment Security Commission in 2003 at 14,075 workers.¹⁵ The farmworkers in this region are predominantly male and from Mexico and Central America. Many are undocumented. Most come directly to work in specific areas and crops and do not follow crops, and most come unaccompanied by a spouse or child.

Inclusion criteria were currently employed as a farmworker, age 18 years or older, resident in one of the study counties, born in Mexico or Central America, and being male. Workers were located and recruited with the assistance of the North Carolina Farmworkers' Project, a non-profit agency that provides health education and other services to farmworkers. Sampling and recruitment was adapted to the nature of the population, and has been described in detail elsewhere.¹² Farmworkers constitute a hard-to-reach population that makes locating and recruiting participants extremely difficult. There is no list of farmworkers from which to select a sample. Farmworkers live in small groups that are scattered over large areas, often in camps that are located on unpaved roads miles from main roads. Many farmworkers do not want to be found, and are hesitant to participate in any activity that appears to be official, as they do not have immigration documents. A site-based approach was used¹⁶ to overcome these obstacles. Such an approach reasons that every farmworker is a member of at least 1 group, or "site." Sites can include a variety of residential sites. If sites that vary across characteristics of the community (eg, grower-provided vs rental housing) are chosen and respondents are selected from a variety of sites, the resulting sample should reflect the variability in the community. Because farmworkers within sites are often similar (eg, related, from the same community, working for the same grower), the focus in recruitment was to spread recruitment across as many sites as possible. Project staff compiled a list of sites in the study counties. Respondents were recruited at 26 sites, including farm labor camps, trailer parks, and rooming houses.

Three bilingual interviewers who were native Spanish speakers and had farmworker backgrounds conducted face-to-face interviews with participants. Interviewers completed a 1-day training session

directed by the principal investigator (TAA) that covered issues of confidentiality, recruitment, and questionnaire administration. Interview questionnaires included items on participant personal characteristics, the MFWSI, and scales to measure anxiety, depression, and alcohol. Existing, validated Spanish language versions of the stress, anxiety, depression, and alcohol scales were used (see description of Dependent Variables). The remainder of the interview questionnaire and the consent form were translated into Spanish by a professional translator familiar with Mexican Spanish and with the farmworker population in North Carolina. The questionnaire was pretested with Spanish-speaking farmworkers and revised. All interviews were interviewer-administered and conducted in the preferred language of the participant, which was Spanish in all cases. To obtain informed consent, interviewers explained the purpose of the study, the study procedures, and the risks and benefits of the study. Participants were provided information sheets in Spanish with the information that had been reviewed verbally. Participants were given a small gift (baseball cap with study logo) at the end of the interview. The study protocol was approved by the Wake Forest University School of Medicine Institutional Review Board.

Dependent Variables. Anxiety was measured with the anxiety scale of the Personality Assessment Inventory (PAI).¹⁷ The total scale consists of 24 items rated on a 4-point scale ("false, not at all true" to "very true"). Higher scores indicate higher anxiety levels. Raw scores for subscales and the total scale are transformed to T-scores (with a mean of 50 and standard deviation of 10) based on a standardization sample of 1,000 community-dwelling adults matched to 1995 census projections. The PAI Anxiety scale has been translated into Spanish and found to have adequate internal consistency reliability (.80-.90), test-retest reliability (.85-.88), and construct validity among general, farmworker, and Mexican-American samples.^{9,17-19} The Cronbach's alpha for the present study was 0.87.

Depression was assessed with the CES-D.²⁰ The CES-D assesses level of depressive symptoms within the previous week and consists of 20 items rated on a 4-point scale of 0 to 3, from "rarely or none of the time" to "most or all of the time." Possible scores range from 0 to 60. Higher scores indicate higher symptoms of depression. The translated, Spanish version of the CES-D has adequate internal consistency reliability (.81-.90) and construct validity among Mexican-American samples and migrant farmworker

samples.^{8,21-23} The Cronbach's alpha for the present study was .87.

Alcohol dependence was measured using the CAGE, a short screening instrument widely used in clinical settings to identify alcohol abuse and dependence as defined by the DSM-IV. It consists of 4 questions, which form the basis of the acronym. The existing Spanish translation, known as 4M, has been found to be valid in Latino populations in the United States.^{24,25}

Independent Variables. Personal characteristics included age, education, years in the United States, marital status, whether spouse in the United States if married, number of children, children in the United States, currently employed in nonfarm work, and years worked in agriculture (Table 1). Stressors were measured with the MFWSI, a 39-item self-report instrument that assesses exposure to and the severity of stressors inherent in migrant farmwork for adults.¹⁴ Respondents are asked to rate how stressful they find the experience described in each statement. Items tap a variety of aspects of migrant farmwork, such as perceived discrimination, acculturative stress, poor working conditions, and physically demanding work. Hovey constructed the items based on data obtained from in-depth interviews conducted in Spanish.¹⁴ Items were constructed in English, translated into Spanish and compared to original comments and themes identified in in-depth interviews, and back-translated into English. Respondents rate each item that they have experienced on a 5-point scale ("Have Not Experienced" to "Extremely Stressful"). The total MFWSI score is obtained by summing the scores for all 39 items. Possible MFWSI scores range from 0 to 156, with higher scores indicating a greater degree of stress related to the migrant farmworker lifestyle. Scores of greater than 80 are reported to be indicative of stress levels that pose significant risk to immigrant mental health.²⁶ The Cronbach's alpha for the present study was 0.88.

Statistical Analysis. SPSS version 14.0 (SPSS Inc., Chicago, Ill) was used to analyze all data. Descriptive statistics were computed for personal characteristics. A principal-components factor analysis with varimax rotation was used to determine if the 39 items from the MFWSI could be reduced to meaningful latent scores reflecting different types of stressors inherent to farmwork. Discrete factors were determined using the scree plot, eigenvalue greater than 1 criterion, and substantive evaluation of items loading on a common factor.²⁷ The later criterion involved evaluating whether

Table 1. Personal Characteristics of Farmworker Study Participants, Eastern North Carolina, 2003 (N = 125)

Personal Characteristics	N	%
Age group		
Less than 25 years	35	28.7
25-34 years	53	43.4
35 years and older	34	27.9
Education		
Primary	69	55.2
Secondary	42	33.6
Above secondary	14	11.2
Country of origin		
Mexico	119	95.2
Guatemala	4	3.2
Honduras	2	1.6
Years in the United States		
Less than 1	70	56.5
1-3	23	18.5
4-6	17	13.7
7 or more	14	11.3
Marital status		
Married or living as married	85	68.0
Not currently married	40	32.0
Spouse in the United States		
No	100	80.0
Yes	25	20.0
Number of children		
None	36	28.8
1	19	15.2
2	34	27.2
3	21	16.8
4 or more	15	12.0
Children in the United States		
None	97	77.6
1 or more	28	22.4
Currently employed in other work		
No	103	82.4
Yes	22	17.6
Years worked in agriculture		
Less than 1	25	20.3
1-3	48	39.0
4-6	29	23.6
7 or more	21	17.1

items loading on a single factor tapped a coherent construct, and by ensuring that an item had a factor loading of $\geq .55$ on the primary factor and $< .40$ on all other factors. For each factor deemed to reflect a distinct and coherent form of stress, we evaluated the internal consistency by computing Cronbach's alphas, and then factor scores were computed to create variables reflecting each form of stress.

Regression models were specified whereby each of the mental health outcomes (ie, depression, anxiety, and alcohol abuse) was regressed on factor scores reflecting distinct types of farmworker stress and relevant

covariates (years lived in the United States, education, spouse in the United States, child in the United States). Ordinary least squares regression models were fit for the depression and anxiety outcomes, but a logistic regression model was used for the alcohol dependency scale because it is a binary variable.

Results

Sample Description. The majority of participants (72.1%) were less than 35 years of age (mean = 30 years, SD = 7.8) (Table 1). Over half the sample (55.2%) had a primary education. Most participants (57%) reported living in the United States less than 1 year; 11% reported being in the United States for 7 or more years. All participants were immigrants; the majority of participants were from Mexico (95.2%), with a few from Guatemala (3.2%) and Honduras (1.6%). Although two thirds of the men reported being married or living as married, 20.0% had partners in the United States, and 22.4% had a child in the United States. Twenty percent of participants had worked in agriculture less than 1 year; 40.7% had been engaged in farmwork for 4 or more years.

The mental health of this population was poor. Depression scores on the CES-D ranged from 0 to 53 with a median of 13. Nearly half of the participants (41.6%) had scores of greater than or equal to 16 on the CES-D, which is frequently used as a guide for potential caseness for depression. Scores on the PAI ranged from 37 to 84, with a median of 51. Twenty-three farmworkers (18.4%) reported levels of anxiety that were above the PAI threshold of 60, suggestive of levels of anxiety that could impair functioning. Greater than one third (37.6%) of farmworkers met potential caseness for alcohol dependence on the CAGE as indicated by affirmative responses to 2 or more items.

Types of Stressors in Farmwork. Participant scores on the MFWSI showed that 48 participants (38%) reported significant levels of stress, as indicated by scores of 80 or higher on the complete MFWSI. Principal components analysis of the MFWSI produced a 5-factor solution (Table 2) grouping 19 of the 39 questions. The first factor, "Legality and Logistics," contained 5 items reflecting hardships confronted by immigrants in working and living in this country (Cronbach's alpha (α) = 0.83). The second factor, "Social Isolation," included 4 items reflecting feelings of isolation and stress resulting from being separated from friends and family (α = 0.72). "Work Conditions" consisted of 4 items having to do with both practical work problems and feelings of discrimination and lack of respect (α = 0.73). The "Family" factor included 4 items reflecting

Table 2. Factor Structure of the Migrant Farmworker Stress Inventory (MFWSI)*

Factor Description	Factor Loading	Rotated Eigenvalue	% of Variance	Cronbach's Alpha
Factor 1. Legality and Logistics				
Sometimes I have difficulty finding a place to live.	.797	3.79	9.71	.83
Migrating to this country was difficult.	.790			
Sometimes I have difficulty finding a job.	.742			
I worry about not having a permit to work in this country.	.688			
I worry about being deported.	.687			
Factor 2. Social Isolation				
It is difficult to be away from my friends.	.729	3.29	8.43	.72
It is difficult to be away from family members.	.670			
Because I feel isolated, I find it hard to meet people.	.639			
I find it difficult to talk about my feelings to other people.	.558			
Factor 3. Work Conditions				
There is not enough water to drink when I am working.	.804	3.04	7.78	.73
I have been taken advantage of by my employer, supervisor, or landlord.	.735			
I have experienced discrimination in this country.	.676			
I do not get enough credit from other family members for the work I do.	.586			
Factor 4. Family				
My life has become more difficult because my partner is no longer with me.	.824	2.99	7.66	.82
I worry about my relationship with my partner.	.794			
I worry about who my children are spending time with.	.732			
I worry about my children's education.	.714			
Factor 5. Substance Abuse by Others				
It bothers me that other people use drugs.	.811	2.37	6.07	.64
It bothers me that other people drink too much alcohol.	.626			
Total variance explained			39.66	

*Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 23 iterations.

concerns the farmworkers have for family members, particularly spouses and children ($\alpha = 0.82$). The fifth factor, "Substance Abuse by Others," consists of 2 items assessing how others' use of alcohol and drugs affects the individual ($\alpha = 0.64$). The amount of variance accounted for by these factors ranged from 6% to 10%, and together accounted for 40% of the variance in the Migrant Farmworker Stress Inventory.

Stressors in Farmwork and Mental Health.

Regression results indicate that only some of the distinct types of stressors in farmwork are associated with mental health (Table 3). Greater social isolation was associated with greater anxiety scores ($\beta = .297$ $P = .002$) and depression symptoms ($\beta = .217$ $P = .022$). Likewise, more stressful working conditions were associated with greater anxiety scores ($\beta = .247$ $P = .005$) and depression symptoms ($\beta = .325$ $P = .000$). Based on the 95% confidence intervals around the parameter estimates in each model, these results indicate that social isolation has the strongest potential effect on farmworker anxiety, whereas stressful

working conditions have the strongest potential effect on depressive symptoms. The only significant demographic variable to surface showed that higher education was related to increased depression. Alcohol dependence was not related to any factor scores or demographic variables in this multivariate analysis.

Discussion

Addressing mental health in rural communities is often challenging, and it is being made more difficult by an increasing Latino population and a lack of understanding of the factors that undermine their mental health. The goal of this study was to determine which stressors inherent in farmwork and the farmworker lifestyle contribute to poor mental health. To achieve this goal, we sought to determine if distinct and coherent types of stressors could be obtained from the MFWSI, and identify which farmworker stressors were associated with and had the greatest potential impact on symptoms of depression, anxiety, and alcohol abuse. Our analysis produced 2 main findings. First, we found that the MFWSI reduced to 5 discrete

Table 3. Regressions Predicting Psychological Measures From the Migrant Farmworker Stress Inventory Factor Scores and Selected Demographic Variables (N = 125)

Predictors	Psychological Measure					
	Anxiety-PAI (Multiple Regression)		Depression-CESD (Multiple Regression)		Alcohol Dependence-CAGE† (Logistic Regression)	
	β	<i>P</i>	β	<i>P</i>	Exp (B)	<i>P</i>
Factor 1. Legality and Logistics	.116	.324	.131	.263	.988	.965
Factor 2. Social Isolation	.297	.002*	.217	.022*	1.321	.210
Factor 3. Work Conditions	.247	.005*	.325	.000*	1.104	.615
Factor 4. Family	-.089	.296	.001	.991	1.308	.172
Factor 5. Substance Abuse by Others	-.113	.185	-.127	.138	.899	.589
Years lived in the United States	-.169	.124	-.158	.152	1.705	.315
Education	.141	.139	.205	.032*	1.919	.145
Spouse in the United States	.299	.218	.241	.319	.515	.636
Child in the United States	-.179	.460	-.150	.536	1.762	.671

*Significant *P* values.

†Alcohol dependence Indicator (1) indicates has alcohol dependency.

domains of stressors confronted by migrant workers: legality and logistics, social isolation, work conditions, family, and substance abuse by others. Second, we found that discrete types of stressors had differential effects on anxiety and depression symptoms. Specifically, although greater social isolation and more stressful working conditions were each associated with greater anxiety scores and depression symptoms, the magnitude of these associations differed. Social isolation had the strongest potential effect on farmworker anxiety, whereas more stressful working conditions had the strongest potential effect on depressive symptoms.

The results of this study complement and extend research on immigrant mental health conducted in rural areas. Like Kim-Goodwin and Bechtel,⁶ we find substantial variability in the types of stressors confronted by immigrant farmworkers in North Carolina. Our research extends this earlier research by demonstrating that individual MFWSI items can be combined to better measure domains of stress and by linking these domains to mental health outcomes. Our results are consistent with earlier research indicating that stressors inherent in farmwork are associated with poor mental health^{5,9-13}; but our results suggest that some types of stressors may have mental health consequences while others do not, and that discrete types of stressors may act on specific mental health outcomes. For example, social isolation may have greater potential effect on anxiety symptoms, and stressful work conditions may have greater potential effect on depressive symptoms.

Although immigration presumably selects for a healthy population, stress significantly impacts daily living for individuals and the community.²⁸⁻³¹ Over 40% of participants reached the threshold for potential clinically significant depression, while over 20% reached the threshold for potential anxiety, and over 30% screened positively for alcohol dependence. Although 30% had a positive screen for alcohol dependence, the clinical implication is the provider's need to explore the diagnosis of alcohol dependence in this population. There was no relation between these individuals or those who did not have a positive screen and the stress category of "substance abuse by others." Additional conclusions cannot be made from this study. This high incidence of depressive and anxiety symptoms and alcohol use may result from these immigrants having moved to a region that does not have an established Latino community to facilitate and aid the transition.³² Since the majority of this population are recent immigrants, perhaps the stress level is unusually and temporarily high.

These findings have several practical implications. Some stressful situations can be improved either by the farmworker, the working environment, or the community. The stress of work conditions could easily be improved by having drinking water available and improving field sanitation as required by current regulations. The stress of social isolation presumably would lessen with a larger immigrant community and network. Also, as we note in another analysis,¹² providing access to telephones in residential camps so farmworkers can call family members can relieve social

isolation. Facilitating interaction and community through activities such as faith groups (attending worship, church, singing) or athletic teams (eg, soccer, volleyball) may have a positive effect on stress and reduce symptoms of depression and anxiety. These implications are in keeping with the concept of “coherent communities” and “responsive communities” from the Rural Mental Health Research Agenda.^{33,34}

There are clinical implications as well. Screening for anxiety, depression, and alcohol dependence is warranted in this population. Health care providers can be aware of the impact of social isolation and work conditions on their patient’s mental health. Questions related to these 2 categories may be a focus for screening questions and therapeutic suggestions either in anticipatory guidance or treatment strategies.

Strengths of this study include further development of the MFWSI by identifying key domains and areas of stress that impact potential depression and anxiety. Additionally, this study focuses on the East Coast migrant stream where relatively little mental health research has been conducted. This study uses validated instruments and sampling techniques that provide a representative sample where random selection is not possible. This study is limited by the use of self-reported and cross-sectional data. Cause and effect associations between the categorized stressors and the diagnoses of anxiety and depression cannot be made since the mental health scales for depression and anxiety are not used to make clinical diagnoses.

Limitations notwithstanding, the results of this study contribute to the literature in several ways. This study further documents the poor mental health in Latino immigrants and relates it to stress characteristics of migrant farmworker lifestyle. These findings can be used for prevention and management of mental health disorders in the immigrant and migrant farmworker population.

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