

Resisting Heat-Related Illness in a Changing Florida Climate

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March 20, 2020

Overview

- Challenges to heat-related illness (HRI) prevention in Florida agriculture
- Identifying workplace cues that shape safety behaviors among citrus harvesters
- Perceptions regarding HRI, constraints to self-protection, and opportunities for improved safety in citrus groves
- Implications for promotion of agricultural safety

Introduction

- What is heat-related illness (HRI)?
 - An overpowering of the body's autonomic dissipation mechanisms for combating heat stress

- Heat stress

- Exposure to excess heat
 - » Metabolic (internal) and/or
 - » Environmental (external)

High rate of exertion
Harsh conditions

Combination
increases potential
for developing HRI

- Heat strain

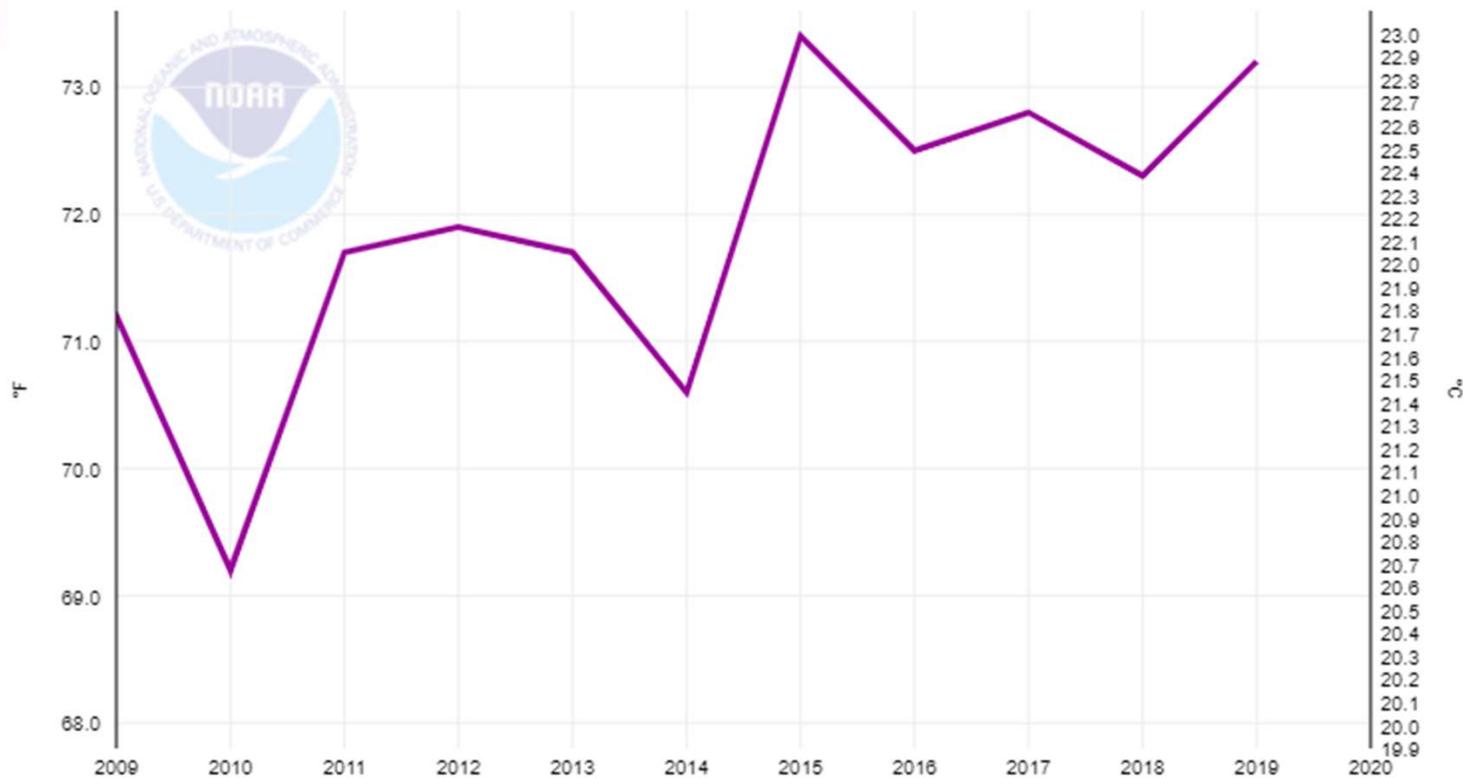
- Physiological response to dissipate heat and maintain core temperature of 98.6°F

Dehydration can overwhelm
thermoregulation

(Jackson & Rosenberg, 2010)

Challenges to HRI Prevention

Florida, Average Temperature, January-December



(NOAA NCEI, 2020)

Challenges to HRI Prevention

Fatal occupational injuries in the *Agriculture, Forestry, Fishing and Hunting* industry by exposure to harmful substances or environments, U.S., FL

Year	U.S.	FL	FL/U.S.
2018	33	6	18%
2015	33	3	9%
2014	18	3	17%
2011	45	7	16%

(U.S. Bureau of Labor Statistics, 2019)

Challenges to HRI Prevention

- Structural
 - Lack of regulations
 - Heat, shade, and rest breaks
 - Compliance
 - Availability of facilities
- Economic
 - Piece rate payment system
- Social
 - Language and literacy barriers
 - Powerlessness and vulnerabilities

Purpose of Study

- To contextualize citrus harvesters' heat safety behaviors by providing an in-depth perspective on facets of their workplace culture that influence the prioritization of occupational safety.
- Focus group research explored norms, attitudes, risk conditions, perceived severity, barriers, and facilitators associated with HRI prevention practices.

Health Belief Model

- Postulates that health-related behavior depends on the desire to avoid illness and the belief that a specific health action will prevent it (Janz & Becker, 1984; Rosenstock, 1966).
- Consists of four main constructs:
 - perceived susceptibility
 - perceived severity
 - perceived benefits
 - perceived barriers
- *Self-efficacy* added to increase the explanatory power of more recent versions

Focus Group Guide

Influential factor	Focus group guide question
Subjective norms	What are some characteristics of a successful agricultural worker?
Safety attitudes	Are the most successful workers the ones who take greater or fewer risks? Can you give us an example?
Risk conditions	Have you ever sustained a heat-related injury (or experienced nausea, vomiting, muscle cramps, dizziness, etc.) while working? Describe what happened.
Perceived severity	Would you say heat-related injuries among workers are increasing or decreasing? Please explain.
Perceived and/or situational barriers	Is there anything that makes it difficult for you to implement HRI prevention measures?
Cues to action	What would make it easier for you to adopt heat safety practices?
Perceived benefits	What are some benefits of taking rest breaks?
Vulnerability and/or precariousness	How do you feel about expressing yourself at work, such as asking questions about safety?
Work safety climate	Do crew leaders and growers care about worker safety?
Baseline beliefs	Who is primarily responsible for worker safety?
Facilitators	What can companies do to improve safety in the fields?

Research Setting

- Florida citrus industry is the largest producer of juice oranges (USDA NASS, 2019)
- Ninety-five percent of harvest conducted by hand (Roka, 2009)
- Engaged more than 50,000 full- and part-time employees in 2016-2017 season (Court et al., 2018)
- Workers usually paid by piece-rate

Research Setting



(Tovar-Aguilar, 2014)

Sampling & Recruitment

- Recruitment
 - Worker association
 - University faculty and research staff
- Locations
 - Labor camps and university support facilities in Apopka, Fort Myers, and Immokalee, FL
- Method
 - Convenience sampling
- Participants
 - 51 citrus harvesters

Results

Number of focus group participants	51
Industry	Citrus harvest
Gender	Mostly male
Age	20 - 57
Types of workers	U.S. and H-2A
	(largely from Mexico)

Results

Domain	Theme	Illustrative Quote
Perceptions regarding HRI	Regular experience of symptoms	“Headaches and dizziness, yes, a bit.”
	Tolerance of symptoms as part of job	“The heat is normal...it’s part of the job.”
	Self-blame	“We don’t take rest breaks but sometimes one forces oneself.”
Familiarity with measures		“One sometimes works for hours—it’s one’s decision.”
	Hydration and rest for safety and productivity	“To sustain productivity, the body requires a certain amount of rest.”
		“I have my electrolyte-replacement powder, and when I’m feeling not at all well, very weak, I put it in my thermos.”
	Cultural concepts	“[Water] can’t be too cold or else it will give you cramps.”
Constraints to implementation	Lack of opportunities	“Supervisors don’t want to find anyone standing around—the moment one stops, one is reprimanded—so often times people don’t rest, don’t stop.”
	Employer-employee relations	“Sometimes, supervisors get annoyed if one goes around asking questions.”
Opportunities for improved safety	Building trust	“Put into practice what they have been informed of.”
		“Trust us so that we can trust them.”
	Better access to water and facilities	“In the same manner that a company demands production from us...we can’t lack the materials needed for production.”

Conclusions

- Citrus harvesters regularly experienced HRI symptoms while working yet rarely reported or sought treatment for their injuries.
- Implementation of safety practices hinged less on level of knowledge than on ease of access to water and rest breaks and the quality of workplace relations and exchanges.
- Trust was a determinant of workers' attitudes toward management that contributed to a harvesting operation's safety climate.

Acknowledgements

This research was conducted at the

- Southeastern Coastal Center for Agricultural Health and Safety

and was generously supported by the

- National Institute for Occupational Safety and Health.

Any opinions, findings, conclusions, or recommendations expressed in this presentation are those of the author(s) and do not necessarily reflect the view of the organizations or agencies that provided support.

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