

A qualitative analysis of decision making and research utilization among firefighters

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Background

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Firefighters undergo significant occupational health burdens, such as **physical exertion, emotional trauma, and sleep deficiency**, all impacting firefighters and their families.

During off hours, firefighters reconcile physical and emotional recovery with family and home responsibilities.

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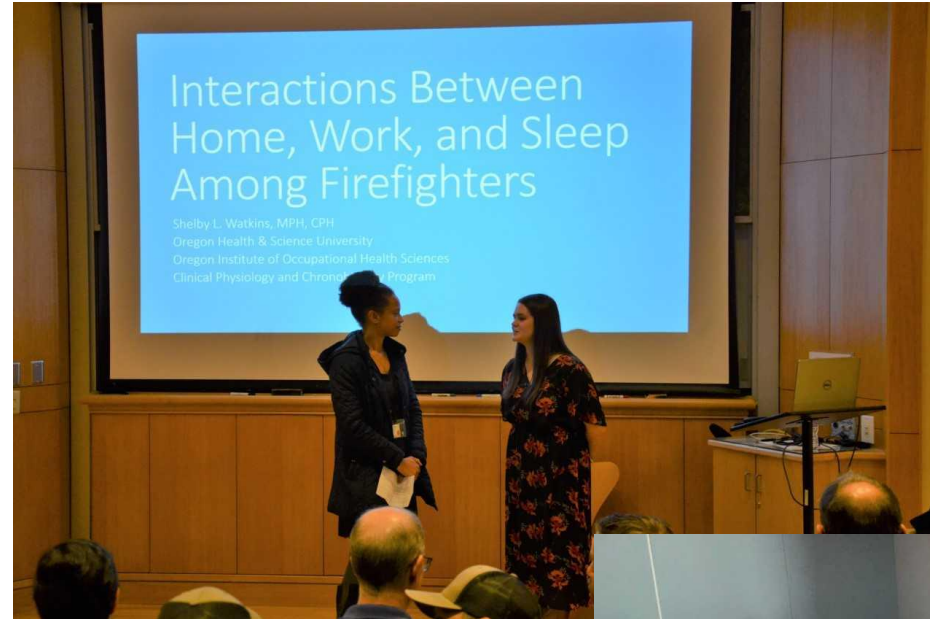
- Traditional work schedule: 24-hours on/48-hours off schedule (24/48) (Portland, OR)
- New alternative schedule: 24-hours on/72-hours off/48-hours on/72-hours off shift schedule (1/3/2/3) (Eugene, OR)
 - Suggested as a better schedule due to increased consecutive days off

Example Shift Schedules for 24/48 and 1/3/2/3

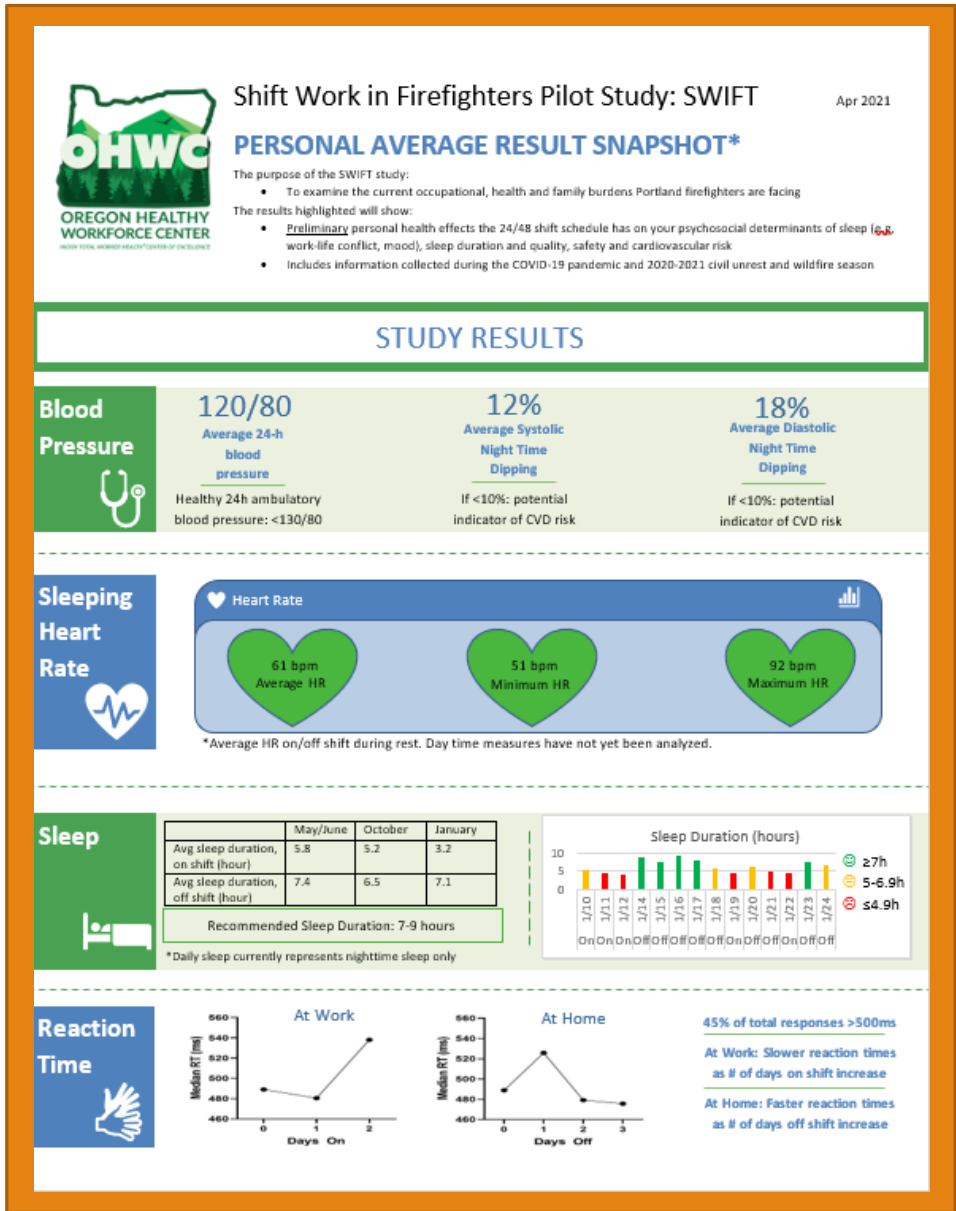
		24/48	1/3/2/3
Day	D 1	24h	24h
	D 2		
	D 3		
	D 4	24h	
	D 5		24h
	D 6		24h
	D 7	24h	
	D 8		
	D 9		
	D 10	24h	24h
	D 11		
	D 12		
	D 13	24h	
	D 14		24h

Background: Parent Study

- Cross-sectional CBPR pilot study evaluating sleep, health, and safety among full-time firefighters
 - 24/48 and 1/3/2/3 firefighters
- Three 2-week study periods every ~3 months (May 2020-March 2021)
- Measured:
 - Heart rate and BP
 - Stress markers
 - Sleep
 - Alertness
 - Mood
 - Caffeine & Fluid Intake
 - Recovery
 - Family dynamics



Personalized Result Snapshots



Project Aims

1. Gather participant insights regarding effectiveness of dissemination deliverables
2. Transfer the role of dissemination from the researcher to end-users

Qualitative Methods

- 14 individual interviews (~30 min-1h)
 - 88% of 24/48 participants
- Conducted via WebEx (video conferencing)
 - Recorded with Audacity
 - Transcribed by Rev
- Analyzed using:
 - Grounded Theory
 - NVivo12+

Results

Aim 1: Results

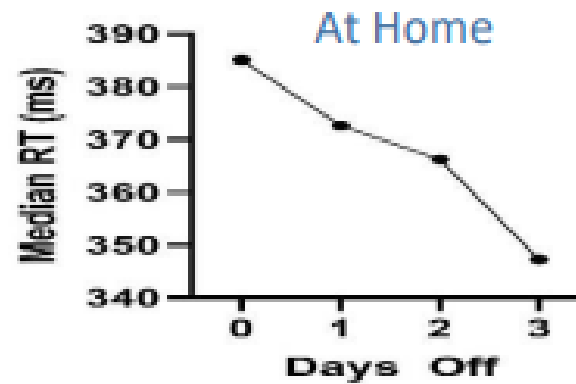
Interview Results

Relevant Themes	# of References
<u>Streamlined and visual results key for firefighter research deliverables</u>	40
<ul style="list-style-type: none">• Use of colloquial language and consolidation of pertinent results	19
<ul style="list-style-type: none">• Concise result interpretations needed to understand direction of health results	17
<ul style="list-style-type: none">• Visual confirmation leads to increased urgency for health behavior and organizational change	7
<u>Increased focus on sleep quantity at home and work</u>	32
<ul style="list-style-type: none">• Improved personal and collective action to improve sleep quantity at the fire station	21
<ul style="list-style-type: none">• Improved focus on increasing sleep opportunities and quantity at home	11
<u>Increased awareness to implement policies to improve firefighter health and wellness</u>	22
<ul style="list-style-type: none">• Policies to reduce call volume	11
<ul style="list-style-type: none">• Increased interest in alternative shift schedules	8
<ul style="list-style-type: none">• Additional organizational programs/policies focused on prioritizing mental and physical health	3

Streamlined and visual results key for firefighter research deliverables

“I think the two things we were comparing the most was our amount of sleep of course, and our reaction time. It was interesting to see how it correlated with how many hours you worked. It was like the more you worked, the slower you got, and it's easy to say that, but it's good to see that like oh, okay, here's the data, here its shown me that I'm getting slower and slower reactions the more I work.”

Reaction Time



77% of total responses >355ms

At Work: Slower reaction times as # of days on shift increase

At Home: Faster reaction times as # of days off shift increase

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Increased focus on sleep quantity at home and work

At home:

“Yeah. I'm always tired. I mean, [my significant other] knows that I only sleep in four hour chunks. So to kind of see it visually, and see that my best day was like five hours, we're trying to figure out how to stretch that four hours and I don't want to sleep with ear plugs in, because I want to be able to hear things around the house. So we're kind of toying with what to do there, how to lengthen my sleep cycle.”

At work:

“I've been trying to go to bed earlier at work and maximize the sleep that I can get and drink less on my off days so that my sleep is better on my off days. I would say that in conjunction with everything else that I've been experiencing in life, this [pilot study results] was just another encouragement to try to prioritize getting more sleep, certainly. I wouldn't say that it was what started the whole thing but it definitely helped. Helped to motivate me down that path.”

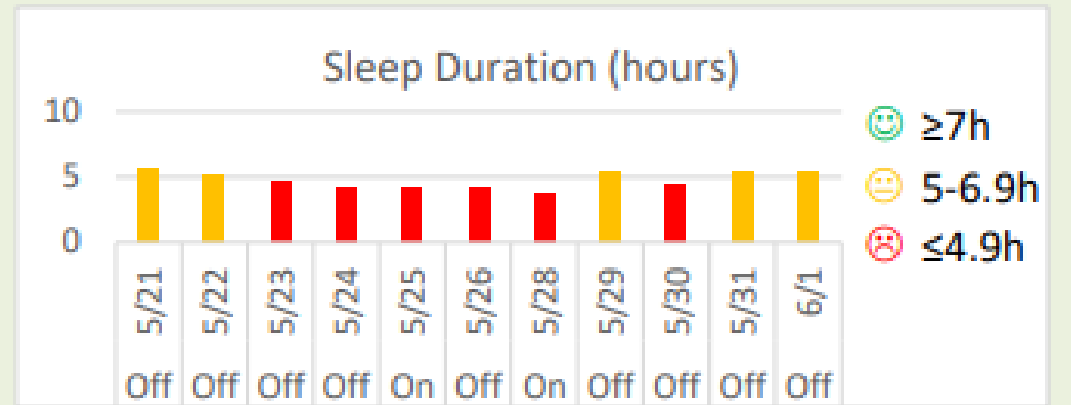
Sleep



	May/June	October	January
Avg sleep duration, on shift (hour)	4.0	4.4	5.9
Avg sleep duration, off shift (hour)	4.9	4.4	5.7

Recommended Sleep Duration: 7-9 hours

*Daily sleep currently represents nighttime sleep only



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Increased awareness to implement policies to improve firefighter health and wellness

“Because their [fire department’s] fix to everything is, well just don't work there [at a busy station]. But, everybody who works there wants to be busy and wants to be there. So it would just be nice if they would just add some policy after looking at this data and address, maybe we need to add a second rig or maybe we need to give guys an extra mental health day every month. But have the city, really look at the data that you're getting and see we've got guys that are super tired, they're working day in, day out, and there's not enough recovery time. The downtime at work isn't enough.”

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Streamlined, visual health results can positively impact firefighter sleep behaviors and overall awareness of general health behaviors and occupational health policies

Preliminary Conclusions

These initial findings increase our understanding of how firefighters utilize research outcomes and the deliverables that are most impactful for their understanding of their health and wellness

Aim 2: Results

Dissemination Champions Committee

- Committee made up of:
 - 12 full-time firefighters/paramedics
 - Includes line firefighters, lieutenants, and station captains
- Work in conjunction with:
 - Portland Fire & Rescue Management
 - Portland Fire & Rescue Health and Wellness Coordinator
 - IAFF Local 43 Health and Wellness Committee



Dissemination Champions Committee

Areas of Focus

- Evaluate/develop dissemination strategies and action plans for firefighters
- Facilitate distribution of information on shift schedules and health information
- Support recruitment/research efforts of future health and wellness studies

Next Steps

- Increase interview sample size!
 - Interview 1/3/2/3 firefighters on dissemination deliverables and research utilization
- Increase spread of pilot results and recruitment efforts for upcoming study
 - Podcasts:
 - IAFF Local 43
 - Oregon Healthy Workforce Center

Next Steps:
Research
Utilization and
Dissemination
Survey for
PF&R

- 5 random fire stations will participate 1-month post final podcast
- Survey will touch on:
 - Barriers, facilitators, and feasibility pertinent to the podcasts
 - Reflection on how the study's results and the upcoming shift change may impact:
 - Health, safety, and well-being
 - Preferences for specific shift schedules

Acknowledgments

PARTNERS

- Portland Fire & Rescue
- Portland Fire Fighters Association
- Eugene-Springfield Fire Department
- Dr. Nicole Bowles (Primary Mentor)
- Dr. Anjali Rameshbabu (Secondary Mentor)
- Dr. Andrew McHill
- Dr. David Hurtado
- Dr. Steven Shea
- Oregon Healthy Workforce Center

FUNDING

- Oregon Healthy Workforce Center-Oregon Institute of Occupational Health Sciences-Oregon Health and Science University: NIOSHU190H010154
- Professional Training Opportunities Program - Northwest Center for Occupational Health and Safety-University of Washington: 2 T42OH008433-16-00