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A Comparison of Perceptions of Exercise Behaviors in Firefighters From Two Midwest Fire Departments

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Introduction

- Firefighters frequently experience rapid and sudden initiation of on-duty tasks that increase physiological demands on the cardiovascular system, leading to higher risk of adverse cardiac events.¹
- Additionally, an increased prevalence of physical inactivity and obesity result in higher rates of sudden cardiac death.²
- There is a lack of research suggesting why firefighters are inactive when occupational performance relies heavily on their fitness levels. This may be influenced by whether a fire department has a wellness initiative.

Purpose

- To compare perceptions of exercise behaviors using constructs from the Health Belief Model (HBM) in two Midwest Fire Departments.

Methods

- Two independent fire departments from the Midwest participated in the study. Fire department one, in a mid-sized city, (FD1) has a wellness initiative while fire department two (FD2), in a rural small town, does not.
- Data were collected through an electronic Qualtrics survey which was sent to the fire chiefs at each department and disseminated to firefighters within their department.
- Participants self-reported sex, height, body mass, age, years of service, current exercise habits, and perceptions of exercise via the Health Belief Model Scale for Exercise (HBMS-E).
- The HBMS-E assessed primary model constructs using 18, 5-point Likert Scale questions. Scores were then averaged into the six sub-categories to define each construct within the HBM.

Methods

- Separate one-way ANOVAs (significance level $p < 0.05$) were conducted to compare demographics and HBM constructs between the two fire departments.

Results

Participants	Age (year)	BMI (kg·m ⁻²)	Years of Service	Sex
All Participants (n=36)	38.0 ± 9.0	30.8 ± 5.7	12.2 ± 9.0	M = 33 F = 3
FD1 (n=18)	38.1 ± 7.3	29.7 ± 3.6	11.4 ± 9.0	M = 17 F = 1
FD2 (n= 18)	37.3 ± 10.7	31.8 ± 7.2	13.0 ± 9.3	M = 16 F = 2

Table 1. Participant Characteristics.

Constructs	FD1	FD2	Cohen's d
Perceived Benefits	4.7 ± 0.4*	4.1 ± 0.7*	1.05
Objective Barriers	2.5 ± 0.7*	3.0 ± 0.6*	0.77
Subjective Barriers	1.7 ± 0.8*	2.7 ± 1.1*	1.04
Self-Efficacy	3.8 ± 0.9	3.4 ± 0.8	0.50
Perceived Severity	4.8 ± 0.4*	4.0 ± 1.0*	1.05
Cues to Action	2.2 ± 0.8	2.4 ± 0.9	0.23

Mean ± SD. Questions based on a 5-point Likert Scale. *Significant difference between groups ($p < 0.05$). Cohen's d: < 0.39 = small, $0.4-0.69$ = moderate, and > 0.70 = large.

Table 2. ANOVA results of Health Belief Model Scale for Exercise constructs between fire departments.

Results

- There were no significant differences between BMI, age, years of service, and current exercise habits ($p > 0.05$).
- There were significant differences in perceived benefits ($F(1,34)=9.32, p=.004$), objective barriers ($F(1,34)=6.64, p=0.014$), subjective barriers ($F(1,34)=12.0, p=0.001$), and severity ($F(1,34)=0.76, p=.005$) found between FD1 and FD2.
- There were no significant differences ($p > 0.05$) in self-efficacy and cues to action for the HBMS-E constructs.

Conclusion

- The data demonstrates that the department with a wellness initiative (FD1) has less subjective (i.e., lack of motivation) and objective barriers (i.e., lack of suitable venues) toward exercise.
- Additionally, FD1 had an increased understanding of severity (i.e., lack of exercise may increase weight and chronic diseases) to exercise, and were more likely to understand the benefits of exercise compared to FD2.

Practical Application

- Wellness initiatives may effectively enhance firefighter comprehension of how and why exercise is beneficial for weight management and prevention of chronic disease.
- Additionally, wellness initiatives may be more effective when focusing on assisting firefighters to overcome subjective and objective barriers to exercise.

References

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