Correlations between Outcome Scores

"Firefighter Hearing Health"

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- Participants from fire departments in CA, IL, & IN

- Omaha System Partnership for Knowledge Discovery and Health Care Quality

Introduction

- Noise-induced Hearing Loss (NIHL):

  One of most prevalent occupational injuries among firefighters in the U.S.

- Need in measurement of outcomes of hearing loss prevention programs

- "Omaha System Problem Rating Scale for Outcomes":

  Standardized language represent health outcomes relative to hearing problem

Modeling Relationships

- It is difficult to understand relationships between educational interventions, behavior changes, and health outcomes.

- Omaha System Knowledge, Behavior and Status framework enables investigation of associations between hearing health outcomes

Purpose

- **"Correlations" between standardized hearing health variables**

    : KBS variables by definitions of Omaha System rating
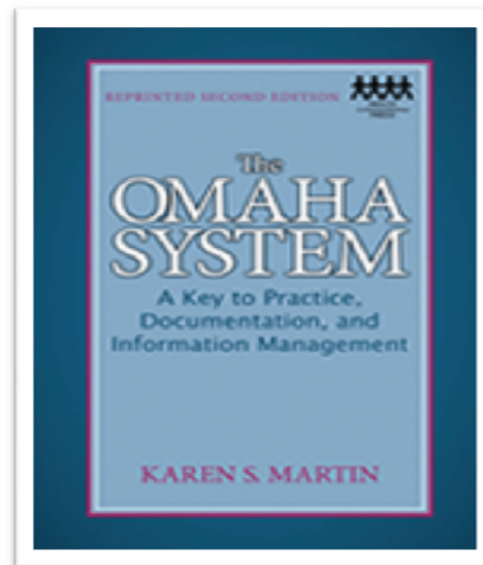
Knowledge

Behavior
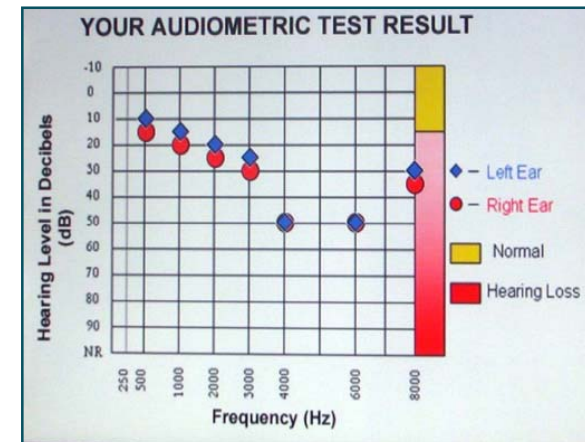
Status

Method

- **Secondary analysis from**

Internet-based survey

Hearing assessment

Knowledge   **B**ehavior   **S**tatus

(*) S.I.R.E.N. (Safety Instruction to Reduce Exposure to Noise and Hearing Loss)

Participants

- *346 firefighters from CA, IL, and IN*

Characteristics	Mean
Age (Years)	45
Years of work in fire service	17
Characteristics	**%**
Ethnicity (Caucasian or White)	81
Gender (Male)	94
Loud noise exposure at job site (daily/weekly)	84

Standardized Outcomes	Omaha System Rating	SIREN Data	Mean
KNOWLEDGE	**Ability of the client to remember & interpret information** 1=no knowledge 5=superior knowledge	Four questionnaire items on Noise-induced hearing loss and its prevention 1=no correct answers 5=4 correct answers	**3.7**
BEHAVIOR	**Observable responses, actions, or activities of the client fitting the occasion or purpose** 1=not appropriate behavior 5=consistently appropriate behavior	% of time of Use of hearing protection device(HPD) 1= 0 to 20% 5=81 to 100%	**2.2**
STATUS	**Condition of the client in relation to objective and subjective defining characteristics** 1= extreme signs/symptoms 5=no signs/symptoms	Objective hearing status 1=above 80dB 5=less than 25dB	**4.4**

Data Analysis

- **SPSS 18.0**

- **Descriptive statistics**

- **Nonparametric analysis**

  - "KBS" variables are categorical variables with skewed distributions

  - Spearman's rho correlations

Correlations between "KBS"

The level of statistical significance: *p*<.05

SCALE	Knowledge	Behavior	Status
Knowledge	1	-	-
Behavior	0.13 (*p*=0.01)	1	-
Status	-0.07 (*p*=0.19)	0.12 (*p*=0.02)	1

→ **Significant correlation: knowledge-Behavior & Behavior-Status**

Conclusion

- **Firefighters having higher-level knowledge on NIHL used HPDs more frequently.**

- **Firefighters frequently used HPDs showed better hearing status.**

- **Future studies**

  - Comparison between the baseline and the current hearing assessments of firefighters

  - Compare between the "KBS" scores to other populations of interest for the hearing problem

(*) NIHL: Noise-induced hearing loss,   HPD: hearing protection device

Implications

- **Standardizing health data will create opportunities**

  - further analysis of the way in which knowledge-behavior-status changes occur.

  - enable data exchange across occupational health and other care settings.

- **Data exchange will support population-based hearing health assessments and outcomes.**

Thank you! & Questions!

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