

Now Hear This . . .



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The Fall Issue of “Now Hear This...” highlighted Lee D. Hager’s presentation at the March 2001 Annual MSHA Conference. This issue highlights Lisa Murray-Johnson’s presentation, “Preventing Noise-Induced Hearing Loss with Coal Miners.” Lisa Murray-Johnson, as part of her graduate work in the Department of Communication at Michigan State University, presented some preliminary results of work that her department was conducting as part of a grant funded by the National Institute for Occupational Safety and Health (NIOSH).

At the time that she presented the coal miner study at the MSHA Annual Conference, Lisa Murray-Johnson was a doctoral candidate at Michigan State University; she is now a professor at the Ohio State University in Columbus, Ohio. Dr. Murray-Johnson’s primary areas of interest include the design and delivery of health communication messages as they relate to occupational safety. She holds numerous awards for her teaching and writing abilities. Dr. Murray-Johnson also has several publications and book chapters to her credit. The research she presented at the March 2001 MSHA Conference was the beginning of a two-year initiative to enhance the wearing of hearing protection among coal miners in Appalachia.

Preventing Noise-Induced Hearing Loss with Coal Miners

Dr. Murray-Johnson began her presentation with some facts about the hearing health of coal miners:

- by age 25, coal miners have the hearing capacity of persons age 55
- by retirement, more than 90% of coal miners will have significant hearing loss

Dr. Murray-Johnson then described the ways that health messages can be developed in order to motivate behavioral changes among target populations, in this case, coal miners. The model she presented was developed by Dr. Kim Witte, who is a professor in the Department of Communication at MSU. Dr. Witte developed a model in 1992 called the Extended Parallel Process Model (EPPM). Essentially, an individual must perceive a level of susceptibility and severity about a behavior in order to have a perceived threat about the consequences of that behavior. If the perceived threat is too great, the individual will exhibit fear control response. That is, the individual will go into a defensive mode and the health communication message will be rejected. However, if the perceived threat is accompanied by a perceived ability to protect oneself, the individual will exhibit danger control behavior and accept the health communication message.

Dr. Murray-Johnson provided some examples of EPPM messages. For example:

- **Threat Appraisal of Health Message**
 - Severity: “Hearing loss is serious.”
 - Susceptibility: “I can lose my hearing.”

- **Efficacy Appraisal of Health Message**
 - Response Efficacy: “Hearing protection works.”
 - Self- Efficacy: “I can wear hearing protection.”

In this example, there is a health threat yet the individual perceives that something can be done to protect them from that threat.

In order to determine how the coal miners in Appalachia perceive hearing loss and what could be done toward its prevention, Dr. Murray-Johnson and colleagues held several focus group sessions. Questions addressed during these focus group sessions included: severity, susceptibility, self-efficacy and response efficacy, social norms, hearing protection device barriers, information channels, message sources and preferences. Coal miners from two mines participated in the focus groups. The average age of the participants was 37 years, representing both men and women. The participants had generally been coal miners a long time, ranging from 15 to 30 years.

The following highlights some of the key findings from the focus groups:

- **Perceived Susceptibility:** All miners agreed that hearing loss was scary and frightening. Among the miners with hearing loss, the hearing loss was perceived as significant and permanent. Some thought there could be no more damage to their hearing. Some did not believe they worked in a noisy environment.
- **Perceived Severity:** The miners agreed that noise-induced hearing loss (NIHL) was horrible, permanent and affected their quality of life. Many thought that noise was only a problem at the face of the mine. One third of the participants in the groups reported symptoms of hearing loss, including tinnitus, deafness or loss of high range frequencies. Most of the miners reported not having any hearing test or screening.
- **Response Efficacy (Perceived Usefulness of Practicing a Health Behavior):** In gen-

eral, the miners perceived hearing protection to be moderately effective. Some perceived the use of hearing protection made hearing worse.

- **Self Efficacy (Perceived Barriers):** Miners reported that hearing protection was not comfortable, that it was costly, that it was too warm to wear hearing protection, and that there were size constraints on the types of hearing protection available.

Based on the input learned through the focus groups, Dr. Murray-Johnson and colleagues outlined a series of recommendations for the development of an effective hearing loss awareness and protection intervention for coal miners in Appalachia. The recommendations are:

Beliefs that Need to be Changed:

- That there is a lack of types of hearing protection devices (HPDs) available.
- That there is a lack of hearing protection replacement parts available.
- That environmental noise is too great for hearing protection.
- That coal miners will lose their hearing while wearing hearing protection.

Beliefs that Need to be Introduced:

- That hearing protection does not drown out roof talk.
- That hearing screenings should be conducted yearly.
- That hearing protection must be worn regularly to be of benefit.
- That hearing protection must be worn continuously, even when the team is not immediately mining.

Beliefs that Need to be Reinforced:

- That hearing protection protects against noise hazards.
- That miners should wear hearing protection regardless of what other miners do.
- That wearing hearing protection is easy to do.
- That wearing hearing protection minimizes the severity of damage to hearing.
- That using hearing protection is low-cost.

Improvements Needed in Self-Efficacy:

- Develop “cooler” HPD to wear in mines.
- Learn how to keep HPDs clean.
- Learn to communicate while wearing HPDs.
- Find HPDs that fit well for continuous wear.

Channel Preferences for How To Obtain Information:

- Direct mail.
- Helmet stickers.
- UMWA Newsletter (United Mine Workers’ Association).
- Local mining office flyers and bulletins.
- Post cards.
- Pamphlets and brochures in mining offices.

Preferences for Source of Information:

- Doctor/health care provider.
- MSHA (Mine Safety and Health Association) representative.
- UMWA representative.
- Local safety administrator at plant.
- Coal miner with current hearing loss.
- NOT wife or family.

Information Needed to be Included:

- Personally relevant text.
- Humorous text.
- Types of hearing protection available.
- Current statistics on hearing loss.
- Where hearing screenings are available.
- Address hearing loss as a quality of life issue.
- Developing a habit of wearing hearing protection.

Dr. Murray-Johnson discussed that the project would next work to develop and test health communication messages for the Appalachian coal miners.

The principles identified by Dr. Murray-Johnson are applicable to the health education you do in your office during a clinical encounter. Health care provider was the preferred source of information and despite busy schedules, we need to make that extra effort to educate our patients about noise, hearing loss and how to prevent it.

We have developed a fact sheet to hand out to your patients when you think that exposure to noise at work has been a significant contributor to the patient’s hearing loss.

If you are interested in receiving copies of the fact sheet for distribution in your practice, please call us at 1-800-446-7805 or email us at Rosenman @msu.edu.

Stop by the Project SENSOR Educational Display Booth at the up-coming

**2002 MSHA Annual Conference
March 15, 2002
Mount Pleasant, Michigan**

We look forward to answering any questions about the on-going occupational NIHL surveillance efforts in Michigan.

**Spring 2002
Third in Three Part Series:
Best Practices for Hearing Loss Prevention:
Issues and Criteria**

Mark R. Stephenson, Ph.D., from the National Institute for Occupational Safety and Health (NIOSH) outlines the rationale and development of the NIOSH criteria document on preventing occupational hearing loss.



In Memoriam

Terrorism took a large and horrifying toll on human lives this past year. Most of these deaths occurred among individuals at work; not only emergency responders but the office workers at the World Trade Center and the Pentagon, and airline personnel and business travelers on the planes.

In a “normal” year, approximately 6,000 workers die in the United States from an acute work-related traumatic fatality. For the year 2001, the statistics on the number of work-related deaths increased by over 50%. We wish to remember all those who lost their life at work last year and dedicate increased efforts to prevent such tragedies from occurring in the future.

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Now Hear This...

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In this issue:

Second in Three Part Series:
Preventing NIHL with Coal Miners

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Michigan Law Requires the Reporting of Known or Suspected Occupational NIHL

Reporting can be done by:
FAX (517) 432-3606
Telephone 1-800-446-7805
E-Mail ODREPORT@ht.msu.edu
Web www.chm.msu.edu/oem
Mail MDCIS Div. of Occ. Health
P.O. Box 30649
Lansing, MI 48909-8149

Suggested Criteria for Reporting Occupational NIHL

1. A history of significant exposure to noise at works; AND
2. A STS of 10dB or more in either ear at an average of 2000, 3000 & 4000 Hz. OR
3. A fixed loss.*

*Suggested definitions: a 25 dB or greater loss in either ear at an average of: 500, 1000 & 2000 Hz; or 1000, 2000 & 3000 Hz; or 3000, 4000 & 6000 Hz; or a 15 dB or greater loss in either ear at an average of 3000 & 4000 Hz.