

# at work

Information on workplace research from the **Institute for Work & Health**

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**Research Excellence  
Advancing Employee Health**

## Scientist makes the case for ethical leadership in workplace health and safety

**D**o company owners and chief executive officers have a moral and ethical responsibility to protect the health and well-being of their workers?

Institute Visiting Scientist Dr. Dov Zohar believes this question is worth discussing despite the seemingly obvious answer. In fact, the idea of “ethical leadership” as it affects health and safety is the focus of his latest research.

“My interest started when I saw how much effort has been spent with making a ‘good business’ case for safety in the workplace,” Zohar says. “This is the idea that if workplaces promote safer operations, fewer workers will take time off because of injury or illness, which will result in fewer lost-days claims, more reliable processes, and higher productivity.”

He still thinks a “business case” can be made for more proactive health and safety practices. But exploring the role of ethical responsibility is timely, he adds, particularly in the wake of Enron and other high-profile corporate scandals.

Although researchers have been studying leadership for several decades, the concept of “ethical leadership” is relatively new. It typically comes up in discussions of corporate business ethics—being responsible to fair accounting, environmental, and consumer-safety practices.

Zohar, who is an Associate Professor at the Technion-Israel Institute of Technology, is among the first to explore



ethical leadership in the context of workplace health and safety.

“Most people are familiar with high-intensity moral dilemmas around health and safety—for example, when someone blows the whistle on a toxic or grossly unsafe work environment,” explains Zohar, who has a background in industrial and organizational psychology. “However, these situations are relatively rare and offer limited opportunity for identifying ethical leadership.”

He says he is far more interested in the daily, low-intensity moral dilemmas that occur whenever workplace leaders choose between productivity and safety considerations. (He emphasizes that owners and CEOs are not the only leaders in workplaces—supervisors, middle managers and workers themselves often assume leadership roles.)

Zohar’s research has shown that in every organization, some supervisory leaders in middle- or lower-level management positions exhibit greater moral sensitivity than others. Even within a

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The Institute for Work & Health is an independent, not-for-profit organization whose mission is to conduct and share research with workers, labour, employers, clinicians and policy-makers to promote, protect and improve the health of working people.

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## What Researchers Mean By...

### “STATISTICAL SIGNIFICANCE”

It's easy for non-scientists to misunderstand the term significant when they come across it in an article. In everyday English, the word means “important.” But when researchers say the findings of a study were “statistically significant,” they do not necessarily mean the findings are important.

Statistical significance refers to whether any differences observed between groups being studied are “real” or whether they are simply due to chance. These can be groups of workers who took part in a workplace health and safety intervention or groups of patients participating in a clinical trial.

Let's consider a study evaluating a new weight loss drug. Group A received the drug and lost an average of four kilograms (kg) in seven weeks. Group B didn't receive the drug but still lost an average of one kg over the same period. Did the drug produce this three-kg difference in weight loss? Or could it be that Group A lost more weight simply by chance?

Statistical testing starts off by assuming something impossible: that the two groups of people were exactly alike from the start. This means the average starting weight in each group was the same, and so were the proportions of lighter and heavier people.

Mathematical procedures are then used to examine differences in outcomes (weight loss) between the groups. The goal is to determine how likely it is that the observed difference—in this case, the three-kg difference in average weight loss—might have occurred by chance alone.

Now here's where it gets complicated. Scientists use the term “p” to describe the probability of observing such a large difference purely by chance in two groups of exactly-the-same people. In scientific studies, this is known as the “p-value.”

If it is unlikely enough that the difference in outcomes occurred by chance alone, the difference is pronounced “statistically significant.”

Mathematical probabilities like p-values range from 0 (no chance) to 1 (absolute certainty). So 0.5 means a 50 per cent chance and 0.05 means a 5 per cent chance.

In most sciences, results yielding a p-value of .05 are considered on the borderline of statistical significance. If the p-value is under .01, results are considered statistically significant and if it's below .005 they are considered highly statistically significant.

But how does this help us understand the meaning of statistical significance in a particular study? Let's go back to our weight loss study. If the results yield a p-value of .05, here is what the scientists are saying: “Assuming the two groups of people being compared were exactly the same from the start, there's a very good chance—95 per cent—that the three-kg difference in weight loss would NOT be observed if the weight loss drug had no benefit whatsoever.” From this finding, scientists would infer that the weight loss drug is indeed effective.

If you notice the p-value of a finding is .01 but prefer it expressed differently, just subtract the p-value from the number 1 (1 minus .01 equals .99). Thus a p-value of .01 means there is an excellent chance—99 percent—that the difference in outcomes would NOT be observed if the intervention had no benefit whatsoever.

Not all statistical testing is used to determine the effectiveness of interventions. Studies that seek associations—for example, whether new employees are more vulnerable to injury than experienced workers—also rely on mathematical testing to determine if an observation meets the standard for statistical significance. ▲▲

*In the Summer 2005 issue of At Work, we will look at the key concept of “confounding variables.”*



## NEW REVIEW FINDS SOME EVIDENCE IN FAVOUR OF ERGONOMICS INTERVENTIONS

There is some evidence that “participatory ergonomics” interventions in the workplace have a positive impact on reducing musculoskeletal symptoms among workers. Such interventions can reduce injuries and sick days, and also decrease workers’ compensation claims, according to a new systematic review of the scientific literature conducted by the Institute for Work & Health.

“While we found partial evidence in favour of participatory ergonomics interventions, the size of the impact on these outcomes varied,” explains IWH Scientist Dr. Donald Cole, who led the study. The review team also included Irina Rivilis, Dwayne Van Eerd, Kimberley Cullen, Jonathan Tyson, Emma Irvin and Dee Kramer.

The literature on workplace ergonomic interventions has grown substantially over the past 15 years, says Cole. “But we believe this is the first systematic review of the evidence on the effectiveness of these interventions with regard to workers’ health outcomes.”

There is considerable evidence that poorly designed workplaces and work processes contribute to common work-related musculoskeletal disorders (MSDs) including tendonitis, neck and shoulder pain and some back pain.

By improving ergonomic aspects of work and workplaces, it should be possible to prevent or reduce these disorders and increase productivity. But the theory of participatory ergonomics (PE) suggests that ergonomic change carried out by consultants without involvement of workplace parties is less effective than change that involves the participation of workers.



Ideally PE can be described as: “The involvement of people in planning and controlling a significant amount of their own work activities, with sufficient knowledge and power to influence both processes and outcomes in order to achieve desirable goals.”

Most workplace PE interventions involve forming an ergonomics “team” which guides the intervention process. This group usually includes employees, managers, ergonomists, health and safety personnel and research experts.

In looking at the evidence about the effectiveness of PE interventions, the reviewers searched six electronic databases for relevant studies. They identified a total of 442 papers published in this area, but most—419—were discarded because they did not meet certain criteria. The 23 remaining studies were then examined for methodological quality. In the end, the findings from ten studies were carefully combined and analyzed.

“Combining the evidence from the ten studies was challenging, since they differed considerably,” says IWH

Research Associate and reviewer Irina Rivilis. “The nature of interventions differed, as did the workplaces involved, the type of participants, the risk factors that were measured and the health outcomes that were assessed.”

Cole and his team found a wide spectrum of health outcome measures in the ten studies. They described a variety of ergonomic changes that were identi-

*“The generally positive findings which emerged from our systematic review support the use of PE interventions.”*

*—Dr. Donald Cole, IWH Senior Scientist*

fied and implemented as a result of the PE intervention. Most focused on improving the physical design of equipment and workplaces. Some involved changing job tasks, job teams or how work was organized. Others involved formulating new policies or specific health and safety training.

“The generally positive findings which emerged from our systematic review support the use of PE interventions,” Cole says. “Given the evidence linking workplace exposures to the burden of MSD in working populations, we should continue to practice methods proven to reduce this burden.” ▲▲

To read a summary of “Effectiveness of Participatory Ergonomic Interventions: A Systematic Review” go to: [http://www.iwh.on.ca/products/part\\_erg.php](http://www.iwh.on.ca/products/part_erg.php).



# DIFFERENCES IN JOB SAFETY ATTITUDES AMONG YOUNG MEN AND WOMEN FOCUS OF NEW PROJECT ON TEEN WORKERS

Do young male workers experience their jobs differently than young females? Is there evidence that young workers' attitudes towards job-related health and safety vary according to their gender?

These are important questions, says Institute Scientist Dr. Curtis Breslin, especially in light of the fact that the rate of workplace injury among young male workers is approximately twice that of young females.

Over the next year, he and his colleagues will conduct about a dozen focus groups, each involving an equal number of young male and female workers aged 15 to 19. The participants will be mainly part-time and temporary workers, and most will have experience working in the service industry.

"The focus groups are designed to find out how these young men and women feel about their jobs," he explains. "We also want to hear their thoughts and experiences regarding health and safety, and understand how their temporary, low-skill jobs may influence their expectations about safety."

It isn't too difficult to see how traditional gender roles might play into young workers' attitudes and behaviours, Breslin says.



"On the one hand, young men are raised with the idea that mastering physical risks—lifting heavy objects, climbing ladders—is admired and even encouraged. But as soon as they are hired for summer or part-time jobs, they may be admonished to be careful, to be safe. Such mixed messages can be confusing."

As for young female workers, part of the traditional feminine gender role is for women to place other people's needs before their own. "This could lead to overwork or other behaviours which negatively affect physical or mental health," Breslin suggests.

He thinks differences in how we define workplace injury may explain, at least in part, why male injury rates are so

much higher than rates among young females. Males are more likely to work in settings where obvious hazards exist—like forklifts and ladders—and can lead to falls or broken bones. These are clearly defined and counted as workplace injuries.

Young women are more likely to work in office jobs or as cashiers, where they are exposed to more repetitive motion and static postures, a known risk factor for musculoskeletal injuries. But these may not be defined and counted as injuries by employers and compensation systems because they are outside the traditional "acute injury" category, Breslin explains.

"The results of this project may help us develop more youth-friendly surveys and measures to carry out future research," he says. "Right now health-and-safety materials aimed at protecting young workers do not deal with these gender issues. What we learn from the focus groups could help produce more precise and therefore more effective targeting of health and safety messages aimed at the potentially different experiences of young male and female workers." ▲▲

*The project "Work injuries among adolescents: towards a gendered conceptual framework" is being supported by a one-year award from the Canadian Institutes of Health Research (CIHR).*

*Scientist makes the case for ethical leadership in workplace health and safety (continued from page 1)*

single company, some supervisors are much more likely than others to promote safe worker behaviours.

"My theory is that these leaders are more morally sensitive than their colleagues and manage to balance a moral responsibility to workers' well-being with their company's bottom line," he says. "We are already measuring the safety climate in workplaces and making a direct link to either the presence or absence of ethical leadership."

Zohar is currently involved in a workplace intervention project in Nova Scotia which includes on-the-job leadership training. The goal is to help supervisors do a better job of managing the tension between productivity and workers' health and safety.

He has recently presented his theories on ethical leadership to students and faculty at a variety of Canadian and American business schools.

"One major advantage of this approach is that it allows us to introduce

health and safety into the discourse of business schools, where there is generally little interest in these topics," Zohar says.

The idea that safety is a sensitive indicator of moral conduct appears to strike a chord with MBA students, who are, after all, the CEOs of tomorrow, he adds. "I believe that making the moral case for safety offers no lesser potential than making the business case for it," he concludes. ▲▲



# NATIONAL SURVEY TO FOCUS ON HEALTH AND WORKING CONDITIONS OF CANADIAN NURSES

As nurses cope with sicker patients, increased workloads, erratic schedules and long hours, it's no wonder their rates of absenteeism are among the highest in Canada. According to a Health Canada report, 7.4 per cent of all publicly employed nurses are absent from work in any given week because of illness or injury.

To address growing concerns over the health and working conditions of Canadian nurses, the Canadian Institute for Health Information (CIHI), in collaboration with Statistics Canada and Health Canada, will be carrying out a national telephone survey of 17,000 regulated nurses later this year. The survey will be aimed at registered nurses (RNs), licensed practical nurses (LPNs) and registered psychiatric nurses (RPNs) across the country.

The goal of the survey is to obtain an accurate and current "snapshot" of nurses' health and working conditions, including job satisfaction. This "baseline information" will be useful to researchers who study nurses' health now and in the future.

Nurses will be asked about issues known to affect absenteeism, such as job satisfaction, work stress, exposure to risk, overtime, chronic health conditions and pain severity. "Ideally, the results help identify relationships between selected health outcomes, the work environment and work-life experiences," explains Rummy Dhoot, a CIHI consultant who is leading the nurses' survey project.

The questionnaire was designed so that data from the survey can be compared with other related surveys and projects, including the Nursing Sector Study and the Canadian Community Health Survey administered by Statistics Canada in 2001.

The framework for the nurses' survey is partly based on a conceptual model developed by Institute Scientist Dr. Michael Kerr and Adjunct Scientist Dr. Heather Laschinger. Their model captures how nurses' physical and mental health, and their sense of well-being and job satisfaction are dependent on a variety of factors such as staffing, workload intensity and work-life balance (see the December 2002 *At Work* or [www.nursehealth.org](http://www.nursehealth.org)). During its devel-

*"This survey will be a landmark event in support of evidence-based strategies that can optimize the quality of work-life and health of nurses in Canada..."*

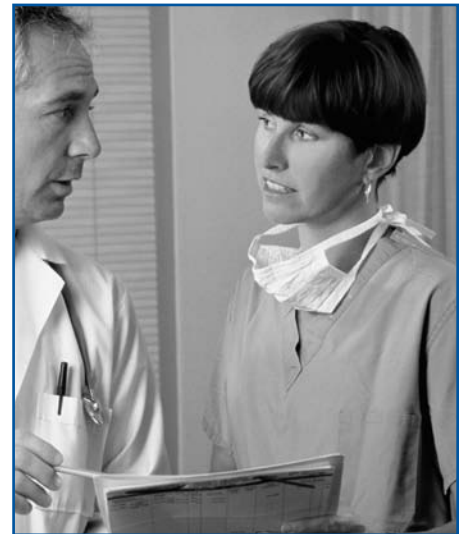
*-Dr. Mickey Kerr*

opment phase, the survey project also relied on a health of nursing personnel study by former Institute Adjunct Scientist Dr. Mieke Koehoorn and former President Dr. Terrance Sullivan.

"This survey will be a landmark event in support of evidence-based strategies that can optimize the quality of work-life and health of nurses in Canada," says Kerr. "It will generate an unprecedented research database that will undoubtedly be of enormous value to the Canadian health care system for the foreseeable future."

The survey was developed in collaboration with key stakeholders, including guidance from a national Advisory Group with expertise in nursing policy, research and quality workplace environments.

The Institute has played an integral role in the national survey since discussions began in 2000. The Advisory



Group includes Kerr, Laschinger and IWH Adjunct Scientist Dr. Benjamin Amick III. The Institute also hosted a forum last year to help researchers evaluate the survey questions and provide feedback to project organizers. Institute Adjunct Scientist Dr. Judith Shamian also serves as the current Chair of the Advisory Group.

In 2004 a draft version of the survey underwent qualitative testing with focus groups in Halifax, Montreal, Toronto, Saskatoon and Ottawa. The final phase of pilot testing is scheduled for April, 2005 before the survey is carried out this fall.

"We hope the nurses' survey yields information which will assist policy-makers and decision-makers in implementing quality work environments for Canadian nurses," says Dhoot. "In turn, we hope this will lead to increased job satisfaction, improved health, improved organizational performance and improved quality of care." ▲

*"The Health of Nursing Personnel: A Summary of Research Findings to Inform the Development of a National Survey in Canada" was published as IWH Working Paper #172.*

*For further information about the survey, please visit the CIHI web site at [www.cihi.ca](http://www.cihi.ca).*

## Institute participates in IAPA Conference and Trade Show

Institute scientists will present their work at the 87th annual health and safety conference organized by the Industrial Accident Prevention Association (IAPA). *The Effective Results through Learning and Sharing Conference and Trade Show* runs from April 4 to 6 at the Metro Toronto Convention Centre.

This event, among the largest of its kind in North America, attracts thousands of delegates from across Canada, the U.S. and internationally. The program offers a multitude of sessions and workshops on workplace health and safety. There is also a major trade show featuring hundreds of exhibits, including the Institute's own corporate booth.

### Monday Session

Adjunct Scientist Dr. Richard Wells and Dr. Dee Kramer will lead an interactive workshop on the value and benefits of participative ergonomics. They will describe

what happens when researchers, ergonomists, consultants, worker clinics, unions, and workplaces join together to improve the health of workers. Their research has led to pilot studies in participative ergonomics within the manufacturing, automotive parts and electrical utilities sectors.

### Tuesday Session

Visiting Scientist Dr. Dov Zohar will talk about his research on ethical leadership and discuss whether workplace health and safety might serve as a marker of corporate ethics (see story on page 1).

Is job rotation a good idea? When should it be considered an option? When should it be avoided? Richard Wells and Dee Kramer will present findings on job rotation and whether it can be useful in preventing work-related musculoskeletal disorders.

Visit the IAPA's website at [www.iapa.on.ca](http://www.iapa.on.ca) for more information about the conference.

## IWH plays key role in two Networks of Centres of Excellence

There are now 21 Networks of Centres of Excellence across Canada. Funded by the federal government, these are unique partnerships among universities, industry, government and not-for-profit organizations. Their objective is to turn Canadian research and entrepreneurial talent into economic and social benefits for Canadians. The Institute is playing a leadership role in two of these programs:

### AllerGen

Occupational asthma is the focus of a new Network of Centres of Excellence. The Network will receive \$20 million in funding from Industry Canada.

AllerGen, which will be based at McMaster University in Hamilton, Ontario, will conduct research on allergy and asthma, with a special interest in asthma as a source of

workplace illness. Institute President Dr. Cameron Mustard is serving as a theme leader, sharing responsibility for coordinating research and knowledge transfer in the area of public health.

### The Canadian Arthritis Network

The Canadian Arthritis Network (CAN), which is already established as a Network of Centres of Excellence, will receive \$16 million over the next seven years. CAN is hosted by Toronto's Mount Sinai Hospital and is a leader in arthritis research and development in Canada.

Institute Scientist Dr. Claire Bombardier is an active senior member of CAN. She has encouraged the Network to focus on how arthritis is affecting productivity in the Canadian economy. CAN will also be increasing its knowledge transfer activities, based partly on the Institute's program model.

## "Check your pulse" NAOSH Week 2005

Ontario employers and employees are being encouraged to "check the pulse" of their workplace health and safety programs and policies. This advice comes during North American Occupational Safety and Health (NAOSH) week, which runs from May 1-7, 2005.

Each year during NAOSH Week, health and safety advocates and organizations across North America attempt to increase the awareness of workplace health and safety. This year's theme is *Equip, Educate, Empower*.

The Ontario NAOSH Network, a group representing many of the province's prevention partners, has developed a brief, ten-item checklist to help workplaces test their organization's health and safety "fitness." The checklist is intended to get workplaces thinking about basic requirements and workplace injury and illness issues. It also provides a list of useful resources for employers.

To learn more about NAOSH week and download resources, visit [www.naosh.ca](http://www.naosh.ca).



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