atwork

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Developing a contextual understanding of systematic review findings in OHS

Researchers from IWH and Memorial University develop a process to help users of workplace health and safety evidence answer the question, 'Will it work here?'

To take effective action to prevent workplace injuries and illnesses, people who design and implement occupational health and safety (OHS) interventions can look to the latest research evidence on what works.

A growing body of systematic reviews is now available to help decision-makers—policy-makers, health and safety professionals, employers, worker representatives, and more—tap into this evidence without having to stay up to date on what studies have been published and sort through sometimes contradictory findings.

Systematic reviews use explicit and reproducible methods to synthesize findings from all available studies on a given question that meet a certain standard of quality. Users of evidence can have confidence that the findings or recommendations produced at the end of the process represent what's known in the body of research up to a point in time.

But how to act on systematic review findings can be a challenge. Review recommendations may or may not suit local needs and resources. The service delivery systems may or may not have the competencies and infrastructure to easily carry out the recommendations. The values and culture of the local population may also be at odds with the options set out.

That's why researchers at the Institute for Work & Health (IWH) teamed up with Memorial University's Newfoundland and Labrador Centre for Applied Health Research (NLCAHR) to develop and test a method for contextualizing systematic review recommendations in workplace injury and illness prevention.

"When you synthesize evidence, you don't get the luxury of just synthesizing research findings from studies conducted within your jurisdiction or sector," says Emma Irvin, IWH director of research operations and lead of the Institute's systematic review program.

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IWH updates

Safety climate, leadership in high-hazard sectors the focus of 2017 Nachemson lecture

The construction sector has some of the highest work-related injury and fatality rates in the United States and Canada. Improving safety climate, safety culture and safety leadership can be critical in the efforts to reduce hazards in construction and other high-hazard sectors. This year's Alf Nachemson Memorial Lecture features **Dr. Linda Goldenhar**, director of research and evaluation at CPWR—The Center for Construction Research and Training in Silver Spring, Md. Goldenhar will talk about the research that led her team to develop materials, resources and tools that stakeholders in construction and beyond can use and learn from to strengthen safety culture and climate. The annual Institute for Work & Health lecture, a premier networking event in Ontario for researchers, practitioners and policy-makers in occupational work and health, will be held Wednesday, November 1, in downtown Toronto. For more information and to sign up, go to: **www.iwh.on.ca/nachemson-lecture**.

What Researchers Mean By.... columns now in one collection

Since 2005, the Institute has published a regular column called, "What researchers mean by…" in this newsletter, *At Work*. The column is designed to help readers better understand what researchers do and the language they use when reporting their findings. These columns have been pulled together into one book, providing easy-to-understand definitions of over 35 common research terms used in the health and social sciences. The book is available for download at: **www.iwh.on.ca/what-researchers-mean-by-collection**. Bulk orders of printed copies of the book are also available upon request. To order print copies, please e-mail: info@iwh.on.ca

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factor analysis

Factor analysis is a technique that helps researchers study a concept that cannot easily be measured

Very often, research involves examining concepts that are not easy to measure. How do you measure quality of life, mental health, or social support if you do research in psychology, for example? Or if you're an economist, how would you measure entrepreneurialism, risk aversion or corporate social responsibility?

To conduct research on something you *can't* measure directly, you might need a statistical technique called **factor analysis**. This technique is used when you have a **latent variable**—a concept/idea that's not easy to measure directly—and you're trying to understand it by measuring **observed variables**. Let's look at an example.

Suppose that you are on a research team looking to understand stress among students at a college campus. To carry out the research, you need to come up with some way of measuring what you're studying. What questions would you ask or what data would you gather to measure the stress experienced by college students? The list of variables could be very long.

You could ask students for information about the demands of their academic program, such as course load and difficulty level. You could get information from students about their volunteering, their commute and their job commitments. You could also ask them about their physical exercise, their diet, their sleep patterns and the number of days they're off sick. You could ask questions about their emotional states and psychological outlooks, such as questions about worry, optimism amd social connectedness.

Factor analysis is an important tool to help sort out which of these variables are more important for measuring a latent variable. It's a very complicated technique that requires a good foundation of statistics to understand. But in essence, the technique is about examining the data you've got to see whether scores of certain measured variables tend to move in the same pattern.

In the above example, a factor analysis might show that answers related to commute, paid work and extracurricular activities tend to share a pattern—in other words, they are correlated to one another. That observation leads you to the recognition that those questions all get at an underlying concept of time pressure or time availability. Likewise, from the results of your factor analysis you might learn that the answers you get for questions about diet, sleep, exercise and sick days also share a similar pattern. In effect, these measures of diet, sleep and exercise are observable variables that together help you measure the latent concept of physical health.

It's possible you also learn from the factor analysis that some questions you've asked do not share a pattern in their responses to any other variable—that is, they are not correlated to any of the other questions. This might help you understand how you could shorten your survey.

As this example demonstrates, sometimes you're working with more than one latent variable at a time. The main focus of your study—stress experienced by college students—is itself a latent variable. But it can be understood as a composite of other latent variables—academic demands, time pressure, physical health and mental health.

There are two types of factor analyses. One is called **exploratory factor analysis**, where the analysis helps you discover the underlying structure of your data—that is, which variables group together. The other type of factor analysis is called **confirmatory factor analysis**. That's what you would use when you already have a good theory or hypothesis about how observed variables relate to the latent factors, and all you need is to run a test to see if the data support your theory.

In sum, factor analysis has many uses. It helps you identify factors you can measure that underlie the variables you are interested in. It helps you see groupings of similar variables so you can choose one variable to represent many. With a reduced number of variables, you can more easily create measurement tools such as questionnaires.

IWH study examines effect of Ontario's mandatory OHS training on awareness

Ontario's mandatory OHS training linked to improved uptake and awareness among workers who participated in the training

Approximately 62 per cent of Ontario workers reported participating in a mandatory occupational health and safety (OHS) awareness training initiative that was introduced by the province in July 2014. And workers who reported receiving this training were found to have higher levels of awareness of OHS rights and responsibilities compared to workers who had not received training.

However, when compared to workers in B.C., which did not undergo a change in its training requirements, the mandatory awareness training initiative in Ontario was not associated with greater levels of self-reported OHS awareness or OHS empowerment among workers in the province, according to a study by the Institute for Work & Health (IWH).

Led by IWH Senior Scientist Dr. Peter Smith, the study involved three surveys conducted at about the same time in both Ontario and B.C. The first survey took place between one and two months before the mandatory training legislation took effect in Ontario on July 1, 2014. The other two surveys took place about eight and 15 months after Ontario's legislation took effect. During that time, there was no change in OHS training requirements in B.C., where mandatory training of new and young workers has been a requirement since 2007.

"The inclusion of a control province—British Columbia—is a strength of our study," says Smith, who presented his findings at an IWH plenary in April (see: www.iwh.on.ca/plenaries/2017-apr-11). "In Ontario, we observed a rise in OHS awareness and OHS empowerment scores in the second survey after the mandatory training was introduced. However, we also saw a similar rise in British Columbia, where no new program was introduced."

That said, the Ontario program itself appears to be effective in that higher percentages of respondents in Ontario than B.C. said they were aware of an OHS

KEY MESSAGES

- The mandatory OHS awareness training initiative in Ontario appeared to increase participation in training about health and safety rights and responsibilities.
- Passive modes of training (online or using workbooks) were associated with important increases in OHS awareness, but were not as effective as more active modes of training such as workshops.
- The mandatory training requirement in Ontario did not result in greater improvements in self-reported OHS awareness compared to a sample of workers in British Columbia (where there was no change in regulatory training requirements).
- Planning for formal evaluation of effectiveness should be a part of major OHS interventions.

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training requirement and had completed OHS awareness training, says Smith.

Timing and opportunity

In the spring before the mandatory training took effect in Ontario, Smith's team at the Institute was conducting research in both Ontario and B.C. to test the validity of a measure of OHS vulnerability (read about this study in the Winter 2017 issue of *At Work*).

The OHS Vulnerability Measure scores several dimensions of OHS, including exposure to hazards, OHS policies and procedures, worker awareness of OHS rights and responsibilities, and worker sense of empowerment.

Questions about OHS awareness ask respondents whether they understand their employers' rights and responsibilities, whether they know how to do their work safely, whether they know who to go to with concerns about hazards, for example.

OHS empowerment is measured with questions about whether respondents feel free to voice concerns about OHS hazards, whether they have time to work safely and

whether they can refuse to do work that they feel is unsafe, and so on.

After receiving additional funding from the Canadian Institutes of Health Research and the Ministry of Labour's Research Opportunity Program, Smith and his team were able to conduct an additional two surveys in both provinces.

The research question now was to see if Ontario's mandatory awareness training resulted in changed scores on the vulnerability measure, using B.C. as a control. One of the surveys was conducted in February and March 2015 and the other in September and October that same year. In these surveys, respondents were asked to complete the OHS Vulnerability Measure, and also asked whether they were aware of their province's mandatory training requirements, whether they had taken OHS awareness training in the previous 12 months, and what type of training they completed.

"It was a matter of good timing and opportunity that a pre-training survey had taken place in both provinces to provide a baseline measure of worker awareness and empowerment for the training evaluation research," says Smith.

Two theories

Comparing results in the two provinces across three surveys, the researchers found no differences in trends when it came to self-reported awareness and empowerment scores in Ontario and B.C., despite Ontario having introduced its mandatory awareness training.

It's in the timing of the first survey that an explanation for a lack of effect may be found, Smith suggests. The mandatory training program was announced in Ontario in November 2013. By the time the first survey was conducted in April and May 2014, forward-thinking employers in the province may have already provided awareness training to their workers, ahead of the legislation coming into effect.

Adapting evidence for a local context

"Often you have to synthesize evidence from studies conducted in other jurisdictions or other sectors, which users then have to struggle to adapt to their context. This project is about going beyond asking, 'Will it work?' to asking, 'Will it work here?'"

The team recently produced a handbook written for OHS decision-makers about how to carry out contextualized reviews, as well as a report providing an example of contextualization. For this contextualization example, the team worked with stakeholders to update a systematic review on workplace interventions to help manage depression, and then tailored the findings for the province of Manitoba (see article on page 5).

"The systematic reviews that IWH does are tremendous," says Bruce Cielen, manager of the Workers Compensation Board of Manitoba's Research and Workplace Innovation Program, which funded the project. "But there's always one additional question that I have in my mind: How might this work in Manitoba's health-care sector? Or how might this work in Thompson, Manitoba, for Vale Mining?"

As a result of this project, "not only do you have a step-by-step process on how to go through and do a review of the available evidence in research, you now can look at how the research would fit into the local context," he adds. "And that's a nice thing to have. That's why I believe it has potential for great uptake."

Method adapted for work and health

The project team drew on a method for contextualizing systematic review findings first developed by Memorial University's NLCAHR, through its Contextualized Health Research Synthesis Program (CHRSP). The team first piloted the CHRSP method by selecting two IWH systematic reviews already completed and contextualizing them for Newfoundland and Labrador. Based on this experience, the team developed a handbook on contextualizing OHS evidence, which in turn guided the process for the synthesis

on workplace depression management for Manitoba. Both the handbook and the sample contextualization can be found at: www.iwh.on.ca/systematic-reviews.

The contextualizing process, though not strictly an IWH innovation, hews closely to a process for engaging stakeholders in systematic reviews that IWH has developed and honed over the years.

In IWH's approach, stakeholders play an active role in the design, implementation and dissemination of systematic reviews. Their participation helps ensure that the research question chosen is relevant and useful to decision-makers and practitioners; that the scope and objective of the review are modified if the research literature cannot directly answer the research question; that the messages conveying key findings use language that would be meaningful for the target audience; and that the findings reported also take into account practices that have yet to be studied by scientists.

The contextualization process developed by the IWH-NLCAHR team extends the IWH approach to include an examination of how users' contexts may help or hinder the uptake of review findings. The factors to consider and questions to ask when contextualizing findings differ depending on the review topic, as does the membership of the group being consulted. And while consultation in the original CHRSP approach takes place via one-on-one interviews, the new process reflects the IWH approach of bringing stakeholders together for a more dynamic back-and-forth discussion.

"There are pros and cons to each method, but we didn't get the impression that people were holding back in their comments because of the presence of other groups in the room," says Irvin. "There was an incredible honesty. The energy was very much focused on the problem."

The IWH systematic review group will continue to evaluate this method in different contexts, says Irvin. She adds that stakeholders have long been asking for a method to contextualize evidence—and

CONTEXTUAL FACTORS TO CONSIDER

Many different factors can affect the implementation or effectiveness of occupational health and safety interventions recommended in systematic reviews. Which factors to take into account will vary, depending on both the intervention and the context. Below are a few factors to consider:

Geography: density and spread of workforce/workplaces; environmental conditions of workplaces (i.e. cold, remote, sheltered, urban, rural)

Industry/workplace type: type of industry (e.g. fisheries, oil and gas, mining); type of workplaces (e.g. large, small, local, national); level within the organization being targeted

Legislative/political environment: legislated health and safety requirements; enforcement; policy context/history; media scrutiny; relevance to partisan/electoral politics; collective bargaining issues

Safety culture: attitudes, beliefs, perceptions and values that employees share in relation to safety

Worker population: characteristics of the workforce; staffing; retention/turnover; training; benefits and incentives

Infrastructure/services: existing infrastructure and/or services; technological/logistical requirements; support/follow-up services; requisite inputs and supplies; appropriate academic and research environments

Economic factors: fiscal constraints/opportunities; state of the provincial and regional economy; profitability of a firm or sector

often not just at the sectoral or regional level, but also at the workplace level.

"This method holds a lot of promise, as it's about bringing people together to solve a problem and identify how evidence-based recommendations can be tailored to the situation," she says. ◼

Therapy can help manage depression, but in Manitoba, access to therapists is a concern

Although review recommends cognitive behavioural therapy for depression at work, contextualization process highlights challenges in offering treatment

At some point during their lifetime, nearly three million Canadians will experience depression—most during their prime working years. As a result, workplaces are increasingly asking for strategies and interventions to help workers manage depression and minimize the effects of the condition.

According to a new systematic review update by the Institute for Work & Health (IWH), workplaces should consider offering:
- cognitive behavioural therapy (CBT) or problem-solving therapy to help workers with depression stay at work; and/or
- CBT with a specific focus on addressing work issues, called "work-based CBT,"

to help people with depression return to work.

But systematic review recommendations aren't always easy to implement everywhere. For decision-makers, whether at a systems or workplace level,

Emma Irvin

the question 'What works?' is often followed by 'Will it work here?'

That's why the systematic review group at IWH, with colleagues at Memorial University, developed a method for working with stakeholders to tailor review recommendations for specific contexts (see cover story). To test the method, the team led by Emma Irvin, IWH director of research operations and head of the systematic review group, worked with stakeholders to highlight important contextual factors to consider for the province of Manitoba, funder of the project.

The process involved assembling a group of about 20 advisors from Manitoba. They included clinicians, occupational health and safety (OHS) professionals, disability managers and representatives of employee assistance programs (EAPs), employers, labour groups and decision-makers from SafeWork Manitoba.

The discussion, guided by a list of contextual factors to consider, addressed a range of topics. Some of these were:
- **Population and demographics:** Seventy per cent of the population in Manitoba is urban, and nearly all of that population is concentrated in Winnipeg. Stakeholders talked about the need to consider many cultural sensitivities, as well as the high proportion of temporary workers.
- **Access to services:** Wait times can be 12 to 18 months long, partly due to the number of psychologists and psychiatrists leaving the province, and partly due to the fact that psychological and psychiatric services can only be accessed with a doctor's prescription. EAPs in the province do not alleviate wait times, as there are delays and gaps in service within the EAP system as well. As for rural areas, stakeholders spoke not of delays or limited access, but about a total lack of services available.
- **Service organization and delivery:** Potential challenges exist with delivery options meant to lessen the service gap, such as telephone counselling and peer support. In small communities, these options could result in a worker receiving the service from a neighbour or family member, raising concerns about privacy and stigma. In some communities, English is a second language for large proportions of workers, so services in different languages may be necessary.
- **Technology:** Web, telephone and mobile app options may help cover the large geographical area, but concerns were raised about the effectiveness of these services when they originate in another province (e.g. EAP services located mostly in Ontario).

Identifying barriers

So, will the review recommendations work in Manitoba? Pulling together the themes and concerns raised around the table, the team zeroed in on access to care as a major barrier in the province.

"Access was seen to be restricted primarily because of geography (remote areas, long distance to reach services), and because of a lack of psychologists and psychiatrists in the province. Currently, there are no specific provincial programs in Manitoba to address depression in the workplace," states the team's report.

"A strategy that includes improved access to early care delivered in a variety of ways (e.g. telephone, web-based and in-person, such as peer-to-peer) would be welcome. The evidence regarding various treatment delivery methods is still emerging, but appears promising."

The report adds, however, that in-person treatment by trained clinicians remains an important aspect of an effective strategy to manage depression in the workplace and, as such, investments still need to be made to improve infrastructure, programming, professional expertise and peer support in the province.

Despite their various perspectives, the advisors in the room had engaged and respectful conversations about the topic, says Bruce Cielen, manager of the Workers Compensation Board of Manitoba's Research and Workplace Innovation Program.

"The people who were approached and agreed to participate—their passion came through," Cielen says. "Like anything, if you give people an opportunity to participate in the creation of something, you are likely to get a better outcome and potentially have better usage of the material. And what this committee did was create champions to roll this out with as far a reach as possible." ◼

Bridging program helps foreign-trained researcher tap into Canadian job market

IWH joins Access Alliance and McMaster University to create fellowship for researcher in work and health

As holder of the new Immigrant Insight Scholar fellowship, Momtaz Begum (right) receives mentoring and networking opportunities from project leads, including IWH Scientist Dr. Agnieszka Kosny (left)

When Momtaz Begum first started looking for work in the research field in Canada, she felt confident about her job prospects.

After all, she has not only a master's degree in public health from Melbourne, Australia, but also a broad range of qualitative research experience in both Australia and Bangladesh, her home country. In Melbourne, she trained hospital nurses to talk to clients about female genital mutilation and evaluated this knowledge-based intervention. In Bangladesh, one of her projects involved using qualitative methods to investigate the cultural factors behind infectious disease outbreaks.

But after immigrating to Canada, Begum found herself frustrated with her job search. "I saw all these job postings that I had all the qualifications for," says Begum. "But nobody contacted me for interviews."

A familiar plight

Newcomers to Canada often face tremendous difficulties finding work in their fields—despite the professional training and work experience that they bring. While the failure to recognize

credentials in professions such as medicine, engineering and nursing has received publicity in recent years, scant attention has been paid to this issue in the research world.

At Access Alliance, a Toronto multicultural community health service agency, Senior Research Scientist Yogendra Shakya has seen many cases similar to that of Begum's. As part of the agency's community-based participatory research program, Shakya and his colleagues routinely reach out to vulnerable members from newcomer and racialized communities to be peer researchers on projects about health access and the social determinants of health. Peer researchers are not required to have previous research experience because Access Alliance offers them robust research training.

"Every time we post these peer researcher opportunities, we get applications from literally hundreds of internationally educated researchers, analysts and evaluation experts with very solid track records and qualifications, who are struggling to find good jobs in their fields," says Shakya. "These are people with more than 10 years

of experience, some with two or three postgraduate degrees, including degrees from Western universities."

The idea came to him and Access Alliance Executive Director Axelle Janczur to create a career-bridging program for internationally educated researchers such as epidemiologists, statisticians and evaluation experts. Such a program would offer these professionals mentored and paid fellowship opportunities designed to use and strengthen their research skills, as well as build the local networks and local work histories they need to achieve successful careers as researchers and analysts in Canada.

This idea began to grow when Dr. Stephanie Premji at McMaster University and Dr. Agnieszka Kosny at the Institute for Work & Health (IWH) heard about it, says Shakya. Both are investigators and collaborators on projects focused on the work experiences of Canada's newcomers. Both had just set aside money from their grants to pay for help interpreting, recruiting study participants and conducting interviews.

"We decided to pool this money together to fund a full-time, paid position for someone to be involved in our research projects, from start to finish, and not just one part of them," says Kosny.

Other health and community organizations also signed on to the idea of a career-bridging program, resulting in funding for two other research positions—one in refugee maternal health and the other in health equity. With these three fellowships in place, a new pilot program called the Immigrant Insight Scholars initiative was created.

'Not just a job'

As an Immigrant Insight Scholar focused on work and health, Begum has been involved in many different aspects of the two research projects. She brainstorms ways to reach out and recruit study participants, codes qualitative data, conducts thematic analyses, gives presentations about the research, and more.

Proving mental illness diagnosis, duration a challenge for income support programs

Policy design study finds common obstacles for Ontario's ODSP and Australia's equivalent

Policy-makers face important challenges when designing income support policies for people with mental illnesses. Many of these difficulties—such as those of proving the illness and verifying its duration—stem from the invisible and fluctuating nature of mental illnesses.

These challenges appear intractable, but the need to address them is growing as other income replacement programs such as workers' compensation are moving toward expanding coverage for mental illnesses, according to Dr. Ashley McAllister, a post-doctoral fellow at the Karolinksa Institute in Sweden.

And if they go unaddressed, these challenges can result in further conflicts over medical evidence, added McAllister, who recently presented her research at a plenary hosted by the Institute for Work & Health (IWH), where she was a visiting researcher for three months earlier this year.

"It's important that policy design supports benefit administrators in determining who needs these benefits and who does not," said McAllister, noting that many mental illnesses have an early onset, first appearing in the late teens or early 20s. As a result, being approved or rejected for benefits can have lifelong ramifications.

"Income support programs for people with mental illnesses can be very expensive, costing billions of dollars a year," she said. "But there's also the indirect cost of denying people the benefits they need." These include the legal costs of adjudication and appeals, as well as the broader costs to society if the illnesses worsen and lead to hospitalization and homelessness, she added.

A policy researcher, McAllister set out to examine the challenges of designing income support policy for mental illnesses in Australia and Ontario, from the perspectives of the people involved in the process.

The programs she focused on were Australia's Disability Support Pension and the Ontario Disability Support Program (ODSP). Her research involved interviews with 45 informants, including government officials, ministers, ministers' advisors, doctors, legal representatives, advocates and academics.

Five themes

From the interviews, five main challenges emerged. These were:

Verifying the duration: As mental illness is a recurring, episodic condition, it's difficult to evaluate how long claimants should be off work. Income support policies aren't designed to allow for people with an illness to go on and off benefits as symptoms come and go. As one informant said: "One day there might be no chance in the world of (someone) turning up to work, yet another day they might be fine."

This is an important component of disability income support policy design, McAllister noted. "It's what separates disability income support from a short-term sickness absence program," she said. "You want to make sure that, in six weeks' time, this person is still going to have the same impairment. That's difficult given the fluctuating and episodic nature of mental illness."

Proving an illness: The people interviewed spoke of the difficulty diagnosing mental illnesses—especially when symptoms are moderate. As one doctor said, "What [ODSP adjudicators] are really looking for is almost a killer blow to your ability to do anything."

In the absence of gold-standard diagnostic tests, proxy markers such as hospital stays or drugs prescribed are sometimes used, said McAllister. However, these markers may not capture cases where symptoms are not severe but can cumulatively result in work disability, she added.

Differentiating illnesses: Mental illnesses are often spoken of as an umbrella category. Just as often, they're thought of in terms of a hierarchy, with schizophrenia and psychosis granted more legitimacy than mood disorders and addiction, the interviews suggested. Little in the impairment tables used by the two systems helps determine the level of severity within each of these types of illnesses, McAllister pointed out.

Managing illnesses: Some informants spoke of the expectation that mental illnesses, if severe enough to warrant benefits, should be treated by psychiatrists. This expectation does not take into account well-documented barriers to access to psychiatrists in both systems (i.e. cost in Australia and wait times in Ontario).

"It also ignores the trend towards collaborative care in mental health, in which mental health is managed by the general practitioner or the family physician," she said. "This illustrates a friction between what happens in the health world and what happens in policy."

Separating the illness from the person: The interviews also revealed different perspectives as to whether the programs should take into account the psychosocial context surrounding the illness. For example, should the programs focus on applicants' level of impairment, or should they also address issues such as education, job training, etc.?

Currently, in both jurisdictions, eight out of 10 disability income support applications (not just for mental illnesses) are rejected because of insufficient medical evidence. In Ontario, almost half are overturned on appeal, McAllister noted in a recent paper.

These findings point to a need for more research about the assessment process. Tools need to be developed to measure functioning among people with mental illnesses, concluded McAllister.

A slidecast is now available of McAllister's plenary. To see it, go to: www.iwh.on.ca/plenaries/2017-may-30. ◳

Survey timing may account for findings

"It's possible that the effects of the program had already occurred in Ontario by the time we were in the field," says Smith. "It may be that the catalyst for training was the announcement of the program and not the enforcement of it."

Another possible reason the mandatory training did not improve self-reported OHS awareness scores in Ontario any more than those in B.C. might have to do with the type of training taken, Smith suggests. According to the second and third surveys, online training was the most common type of training in Ontario. It was twice as prevalent among Ontario respondents as among B.C. respondents, for whom workshops were the top training method.

"The passive modes of training that were part of the mandatory training program were effective in increasing awareness, but not as effective as other more active modes of training such as workshops," says Smith.

"Empowerment is a different story. We didn't find strong relationships between either active or non-active training modes and empowerment—and this makes sense," he adds. "Increasing empowerment is not just about providing knowledge, but also about the culture of the workplace."

Referring to the limitations of the study—

Dr. Peter Smith

namely, the missing data on training received in the first survey and the timing of it—Smith says a key message from this project is the need for better integration of program evaluation when introducing large-scale interventions.

"The way we did this study was opportunistic and we were fortunate to obtain timely funding to conduct the study. But to most appropriately evaluate an intervention like this, we need to devote more resources to it, and plan the evaluation approach, while the intervention is being developed," says Smith. "If we did this, we could better contribute to an evidence base of what works and what doesn't to inform future interventions." ◼

Lack of Canadian experience a hurdle for foreign-trained researchers

To Kosny, Begum displays a resourcefulness and adaptability that have been honed by her varied career path. "She really sees it's not just a job, but an opportunity to develop, to learn, to be involved in different things," says Kosny. "She's taking every opportunity she can to be exposed to all different aspects of a research project."

Thanks to the initiative, Premji says she now has a deeper appreciation of the challenges that researchers from outside of Canada face when trying to establish a career here.

"The way that we do research, we tend to hire people who study with us, or we find work through our mentors," says Premji. "It works very much like other occupations, where it's who you know—and we don't challenge it enough." Premji adds that she now hopes similar bridging opportunities will be built into more research projects.

With this opportunity to sharpen her skills and build her professional network, Begum says she's now glad that she did not waver from her ambition to continue doing research. "I was unemployed for a long time," she says. "I could have chosen other ways to make money, but I was passionate about doing research and I did not want to be derailed."

Begum is very grateful to all those who believed in this initiative. "I don't think I will have the same challenges [finding research work] as before," she says. "If that's the case, this fellowship will have changed my life." ◼