THE ROLE OF EVIDENCE
in Safety & Health Decision-Making

By Ruth Frankish

Safety professionals plan and execute interventions to ensure that workers return home free from harm every day. But the information available to help them choose optimal interventions exists in a complex and often fragmented evidence ecosystem.

This complexity, combined with the fact that some of the best evidence is inaccessible to decision-makers, leads to under-use of evidence in some OSH decision-making. These are among the conclusions of a landmark study that explores the way evidence underpins safety and health professionals' work and the challenges they face in using it (Stockwell et al., 2022).

The study from research institute RAND Europe was commissioned in 2022 by Lloyd's Register Foundation, a U.K.-based charity with a mission to engineer a safer world, and the U.S.-based National Safety Council. It was intended to address a gap in insight about how safety practitioners access and use evidence from both inside and outside their organizations to support their choice of initiatives and organizational focus in worker protection. This article reviews the study's findings and implications for OSH professionals in the way they use evidence to support their work and inform their choices.

The researchers carried out a rapid evidence assessment including a systematic literature search that yielded 28 relevant articles. This literature review was augmented by qualitative data from analysis of 240 interviews with safety and health leads and human resources directors who were mostly from U.K. organizations and an online survey of 85 OSH stakeholders, more than half of whom were OSH practitioners, in 29 countries during May and June 2022. The last stage was in-depth interviews with 13 OSH researchers, practitioners, regulators or policymakers, and representatives of membership bodies.

The researchers examined both the supply of evidence, including who produces the evidence and how, and the demand, including how OSH-related decisions are made and the use of evidence in making them. Specifically, they set out to answer four questions:

- What types of evidence are used in OSH?
- Who is using evidence and for what purpose?
- How much are OSH decisions informed by evidence?
- Which stakeholders are involved in producing, translating and sharing the evidence?

FIGURE 1
STRUCTURE OF THE EVIDENCE ECOSYSTEM

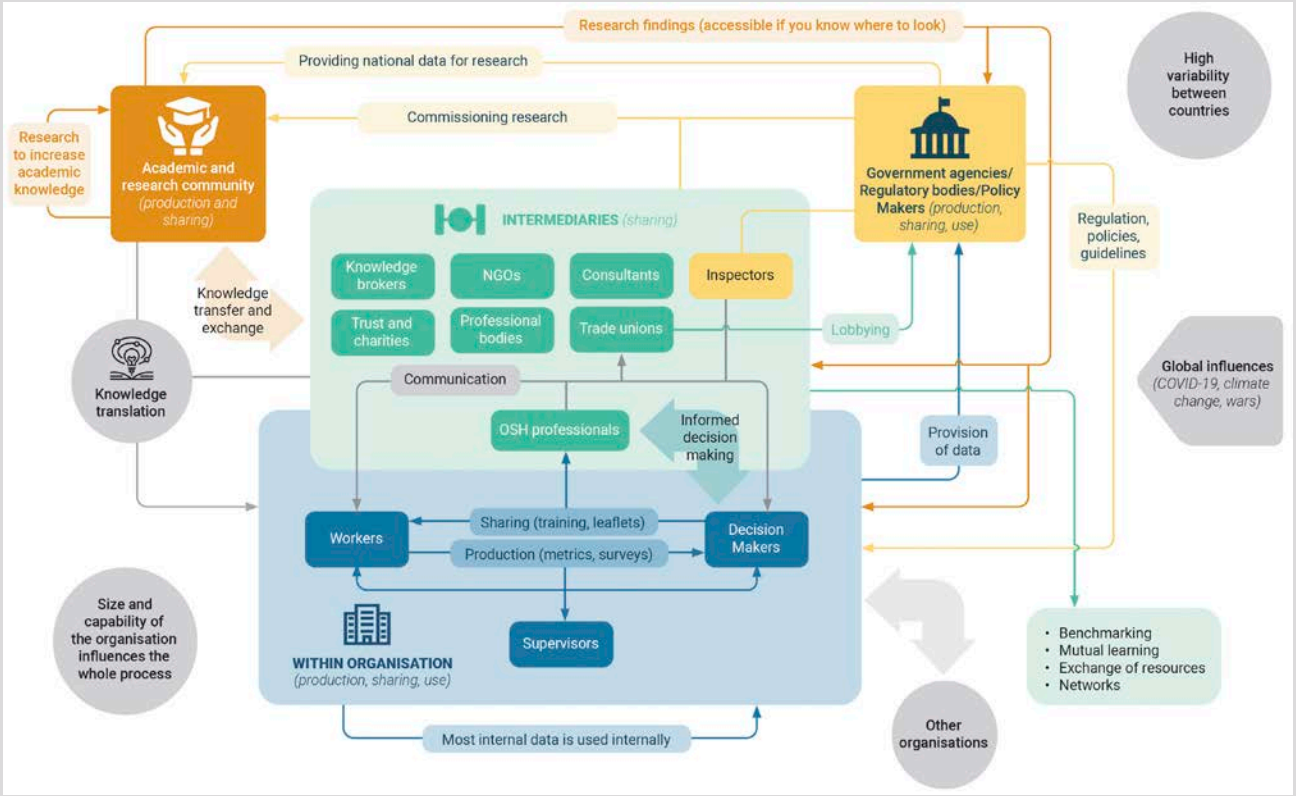

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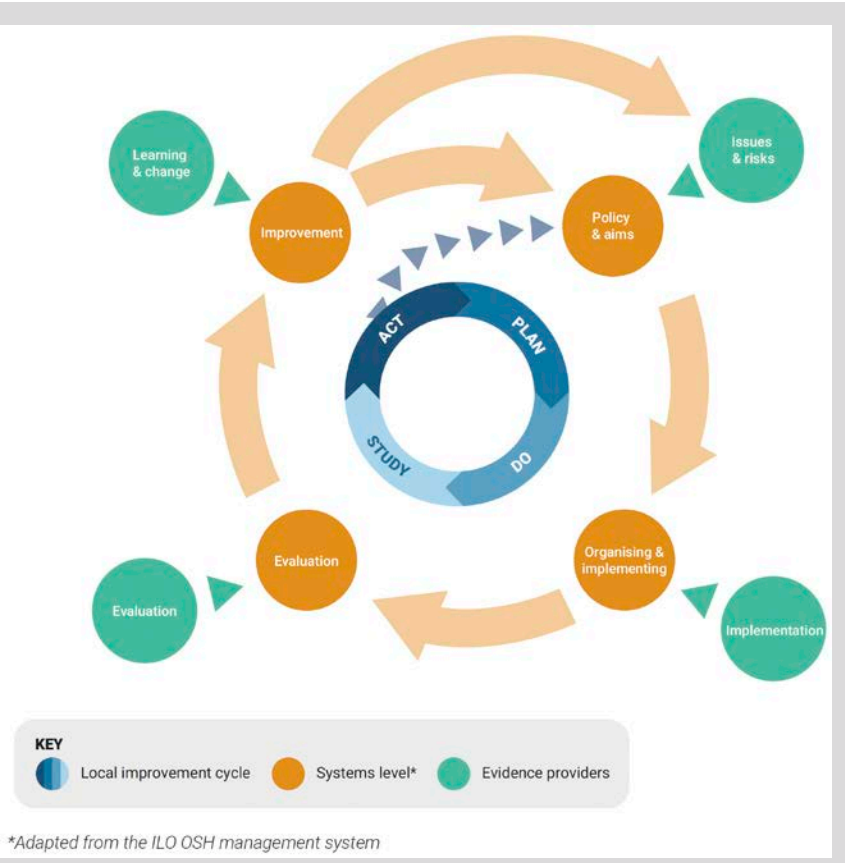
FIGURE 2
RELATIONSHIPS RELATED TO EVIDENCE



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Defining Evidence

The most prominent factor reported by the respondents to the survey stage of the research when considering the quality of evidence was its source, given primacy by 69 of the 85 participants. But the research team found no common definition among stakeholders of what constituted evidence in OSH, stating that this is "one of the most striking findings of this work."

The researchers identified 24 evidence types, ranging from academic research, OSH legislation and government guidance to organization-specific examples such as audit reports and incident investigations, biomarker data, and the results of workforce consultation exercises. In between were sources that might draw on data from several organizations, such as benchmarking exercises and guidance issued by professional and sectoral bodies.

The most popular channels for disseminating evidence were face-to-face discussions, policy documents, stakeholder briefings, circulation of material in the workplace, professional conferences, training sessions and webinars. Podcasts and blogs were used by relatively few respondents.

Survey respondents believed peer-reviewed or formally assessed evidence to be of higher quality than practitioner experience or anecdotal information. The latter source was still seen as valuable so long as anecdotal information did not consist of hearsay, which was not regarded as proper evidence.

Organizational Use of Evidence

Reviewing how safety and health evidence is used in business, the researchers found that it fed into policy development for 6 out of 10 organizations surveyed. It was most commonly gathered through benchmarking against similar organizations, contracting expert advice, workforce consultation exercises, and sourcing information from policy networks and workshops.

Five out of six survey respondents used OSH evidence to support planning and implementation of management systems, strategies and interventions such as risk identification and priorities for improvement. Types of evidence used included research on OSH intervention effectiveness, tools based on scientific measures such as occupational exposure limits, and official OSH statistics.

When asked what type of operational decisions they gathered evidence for, respondents most commonly cited the development of safety and health processes and procedures, determining which safety and health guidelines to follow, and changing or introducing new policies. For implementing policy at the operational level, organizations most often drew on evidence to support improvement of recording and monitoring systems (e.g., injury and illness absence rates), enhancing communication with leaders and members of OSH committees and strengthening safety cultures. Other uses included informing training development and provision, identifying priority focus areas and planning preventive measures.

The researchers found that the production and transmission of evidence was neither linear nor restricted to a few actors. They describe the life cycle of evidence, including its production, dissemination and use, in a conceptual model showing the relationships between the various participants (Figure 1, p. 37).

The model of this OSH evidence ecosystem shows that the operators within organizations including managers, supervisors and workers both receiving and providing information to safety and health professionals. But evidence that they receive to aid in decision-making is also influenced by other entities such as trade unions and consultants, shown in the green "intermediaries" section. Shown at the top of the model, strong influence is exerted from outside by regulators, both through the regulations themselves and through the work of their inspectors. Academics and researchers are similarly placed outside and their work feeds into the center via multiple paths, but most are filtered or caveated by the need for translation or interpretation. The model also restates one of the researchers' findings: that most OSH evidence generated within organizations is never shared externally.

Nick Fahy, director of RAND Europe's Health and Well-Being Research Group, says the study showed a complex and hard-to-grasp set of interactions between evidence producers and users. He says that the model of the evidence ecosystem was an attempt to synthesize those interactions into a formal structure.

How Evidence Influences Decisions

To visualize where evidence influences decision-making, the team produced a second conceptual model (Figure 2). This model identifies two levels at which evidence informs decisions: the local improvement cycle, which is within organizations, and the systemic cycle, which is at a national or supranational level. For the local cycle, they used the plan-do-study-act (also known as plan-do-check-act) continuous improvement model that was popularized by W. Edwards Deming and is commonly used across business. Encircling the local cycle is the systemic cycle, which the researchers based on the International Labor Organization's (ILO, 2011) OSH management system model. This four-stage iterative circuit is similar to the Deming cycle but substitutes institutional actions for the phase descriptions.

Different levels and different types of evidence are involved depending on the stage of the process. These evidence types are indicated by the green elements around the edges of the cycles feeding in at the relevant stages.

TAKEAWAYS FOR OSH PROFESSIONALS

This study provides several takeaways for safety professionals:

•Check the sources of studies that could be used to inform OSH decision-making. Do the authors have a track record in the field of research? Is the material peer reviewed?

•Cultivate a critical understanding of evidence. For example, check sample sizes in research and whether any control group evidence is cited to test the success of an initiative or program.

•For internal evidence-gathering studies and pilots, always obtain baseline data before commencement and/or choose a comparable control group so that can be measured.

•Try to find ways to share organizational safety and health data externally with trusted partners to help build the sum of evidence across sectors.

•Consider more training for frontline decision-makers such as supervisors in understanding the importance of a strong safety culture.

The researchers found that the flow of evidence around the system is not always smooth. They note that there is often a substantial lag between problems arising in OSH and evidence being available to help tackle them. According to John Dony, vice president of workplace strategy for NSC, this gap could be narrowed if more businesses were willing to share data about their own safety performance, but this would require assurance that data storage platforms are secure.

Where research has been carried out, interviewees noted it may be hidden behind subscription barriers in academic databases or couched in inaccessible language, making it hard for OSH professionals to translate the findings into actionable messages. This is despite the mutually beneficial relationship between academics and employers, the latter of which often provide the practice base for academic research. In their report, the study authors write:

> Our research shows that while there is often at least some relevant evidence available, decision-makers might not know how to access it or distinguish between reliable and unreliable types, and/or may not have the time, capability, knowledge and/or resources to understand it. Research evidence is particularly underutilized at an organizational level (Stockwell et al., 2022, p. 37).

The authors offer recommendations for future work, noting that greater investment in knowledge translation is needed for those sharing evidence:

> As a starting point, academic literature must be translated into easy-to-digest formats such as infographics, videos and manuals for non-OSH-specialist audiences. Many organizations—particularly small and medium-sized enterprises in developing countries—need further support utilizing academic research evidence in decision-making and practice (Stockwell et al., 2022, p. 38).

Dony says this translator function is the role of organizations such as NSC whose research output tends to stand in the middle of the academic-to-practitioner pipeline, but that clearly more of this kind of interpretation is needed.

The Need for Centralized Sources

The report suggests that a single point of reference for OSH evidence could be beneficial. Lloyd's Register Foundation is working to establish a "what works" program, provisionally named the Global Safety Evidence Centre, to provide a focus point for developing evidence-based approaches to safety. Such centers were launched in the U.K. in 2013 to gather and generate evidence and make it available in the most accessible form to facilitate implementation and help those in public services (e.g., police chiefs, doctors, government ministers) to make evidence-informed decisions. An early U.K. government-funded evaluation concluded that the centers were "bringing a rich seam of practical empiricism to policy and practice" (What Works Network, 2014).

The findings from the RAND report, alongside other studies, were factors that highlighted a potential need for a center for safety evidence. Organizations such as the Institute for Work and Health in Canada already do work in synthesizing evidence, but there is room for a body looking more widely at the production, translation and implementation of evidence. Such a center would be more effective if its work was targeted to filtering and tailoring OSH evidence to business in specific countries or sectors rather than trying to serve the needs of the safety and health profession globally.

Dony says that in the U.S., NSC's Campbell Institute and various advisory councils, divisions and networks provide a hub of sorts in this space. Other U.S.-based bodies of knowledge and similar efforts exist at an industry level through organizations such as the Electric Power Research Institute and Construction Safety Research Alliance. Dony believes that these bodies could unite more closely on their agendas, strategies and resources.

These sources can be helpful to OSH professionals in the absence of an all-encompassing data hub, Dony says. But the profession must also cultivate a critical approach to the evidence sources upon which it draws. OSH professionals must pay attention to the research or evidence methodology presented within any work. Many organizations in the safety and health space perform research but do not always utilize sound methodological models, evaluate impact, or give any provisos or information about limitations to their work. This view is supported by the study authors, who observe, "people may over-rely on the credibility of the evidence's source to judge its quality rather than evaluate the evidence itself" (Stockwell et al., 2022, p. 35).

When gathering evidence in their own organizations, OSH specialists can learn from the discipline of academic researchers, such as ensuring that they have baseline data before they try to improve matters. Practitioners should consider monitoring and evaluation of any changes or new safety interventions before they are implemented to ensure that the organization has a good understanding of its present state and meaningful ways to measure the impact of the change.

In the report's conclusion, the researchers note that the leaders, managers and supervisors who often make safety decisions in organizations have limited OSH training. Since those decision-makers' values and priorities are linked to organizational safety culture, which affects safety performance, the researchers suggest that "decision-makers might benefit from specific training, improving overall performance and safety" (Stockwell et al., 2022, p. 3).

Dony believes that this research is a milestone in codifying the use of evidence in safety and health management. He says it can be used at the organizational level to improve evidence use as well as to steer the agenda for improvements in OSH evidence transmission at the sectoral and national level. **PSJ**

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Cite this article

Frankish, R. (2024, Oct.) The role of evidence in safety and health decision-making. *Professional Safety, 69*(10), 37-39.

Ruth Frankish has worked in library and information services within the U.K. National Health Service supporting the development of national guidance developed by using evidence-based methodology. Now, she is exploring how those approaches can be used to improve safety outcomes as part of the team at Lloyd's Register Foundation, where she is coleading the groundwork to establish a global safety evidence center.