

7

Occupational Safety, Health, and Well-Being Programs in Small Midwest Enterprises

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Many researchers now recognize that aspects of the workplace (scheduling, shift work, physically demanding work, chemical exposures) not only increase the risk of injury and illness but also impact health behaviors (smoking, physical activity) and health outcomes (sleep disorders and fatigue, obesity, musculoskeletal disorders; Zhang, Flum, West, & Punnett, 2015). In turn, ill health and chronic conditions can impact performance at work, increasing risk for injury, absenteeism, and reduced productivity (Goetzel et al., 2004). Programs that expand the traditional occupational safety and health focus of protecting workers from work-specific safety and health hazards to include the promotion of health and well-being have been shown to be more effective than programs addressing these separately (Anger et al., 2015; Sorensen et al., 2013). The National Institute for Occupational Safety and Health's (NIOSH's) *Total Worker Health*[®] approach, defined as policies, programs, and practices that integrate protection from work-related safety and health hazards with promotion of injury and illness prevention efforts to advance worker well-being, specifically meets this need (NIOSH, n.d.). Understanding employers' safety and health prevention practices is a necessary step to prioritize interventions. This chapter reports on a survey of employers' current practices in the Midwest and compares the results to a

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single state survey conducted several years before that also examined workplace programs to determine changes in the adoption of programs, policies, and practices.

WORKFORCE HEALTH STATUS IN THE U.S. MIDWESTERN STATES

There is a critical need for *Total Worker Health* (TWH) programs in the Midwest. The states in this region (Federal Region VII: Iowa, Kansas, Nebraska, and Missouri) suffer disproportionately from higher burdens of occupational injury and illness, as well as high rates of unhealthy behaviors compared to other regions of the country. Together, these four states consistently show alarmingly high rates of occupational fatalities (ranging from 4.2 to 6.0 per 100,000 workers), well exceeding the national rate of 3.8 per 100,000 workers in 2014 (United Health Foundation, 2015). Major occupations within the region include construction and agriculture, two of the most hazardous employment sectors. These industries also include many small employers.

In addition, smoking, binge drinking, and obesity are at higher rates than national averages (Hymel et al., 2011; United Health Foundation, 2015). Missouri is one of 10 states with the highest tobacco use. Iowa and Nebraska both have adult binge drinking rates exceeding 20% (Centers for Disease Control and Prevention [CDC], 2015), fewer than 20% of adults in this region meet physical activity guidelines, and all four states have higher-than-national-average obesity rates (CDC, 2014). Moreover, this region is predominantly rural, based on U.S. Department of Agriculture classifications. Rural populations have significant health disparities, including increasing gaps in life expectancy (Singh & Siahpush, 2014). For example, a survey conducted of Iowa workers in 2010 found that self-reported general health status for rural employees was poorer than their urban counterparts (Merchant, Kelly, Burmeister, & Lozier, 2014). At the same time, out-of-pocket expenses and employee contributions to monthly health care premiums are higher for rural employees compared with urban employees (Merchant et al., 2014). Employers in the Midwest need these TWH programs, practices, and policies to address the health and safety needs of the region.

Injuries and illnesses, along with chronic diseases, exert an enormous burden on society in terms of human suffering, disability, and years of life lost, as well as financial cost. Leigh (2011) estimated that in 2007 the total medical costs from all fatal and nonfatal occupational injuries and illnesses in the United States were \$250 billion in both direct and indirect costs. Furthermore, injured workers have lower income and wages than they would if the injury had not occurred (Seabury et al., 2014). Occupational injuries and illnesses remain a public health threat to the workforce and a major threat to the economy (Bureau of Labor Statistics, 2015). The high rates of injury, unhealthy behavior, and financial costs indicate that there is a significant burden in the region and a need to develop, evaluate, and implement TWH programs to reduce these burdens.

TWH NEEDS IN SMALL BUSINESSES

Most workers are employed in small businesses (Bowen, Morara, & Mureithi, 2009). These organizations typically do not have programs addressing worker health promotion (Pronk, 2013). In addition, occupational injury and illness rates are higher among small businesses (Cunningham, Sinclair, & Schulte, 2014). Although smaller employers are typically cognizant of the traditional hazards in the workplace that put workers at risk of injury or illness (e.g., chemical exposure, repetitive motion, machinery), they often fail to consider the impact of the work environment or organization on long-term health outcomes or lifestyle behaviors (e.g., obesity, cardiovascular disease, loss of sleep; Linnan et al., 2008). In addition, small firms are more financially precarious (Antonsson, 1997; Lamm, 1997) and have owners with multiple responsibilities, including the safety and health of employees, despite a lack of expertise (Cahalin et al., 2015; Champoux & Brun, 2003). As a result, smaller employers may use less effective methods of hazard control (Antonsson, 1997; Gardner, Cross, Fonteyn, Carlopio, & Sbidar, 1999) and have fewer occupational safety and health programs compared to their larger counterparts (Linnan et al., 2008). In addition, employees working for small enterprises in the Midwest pay more for health care than employees who work for larger enterprises. Their employers respond to premium increases by raising deductible levels and copays, therefore increasing the burden on the workforce (Merchant et al., 2014). Finally, even though evidence supports the benefits of integrated programs, very little evidence exists for its benefits to small employers (Pronk, 2013).

Integration of safety and health activities in small enterprises may actually be quite different from integration of safety and health activities in larger enterprises. For example, the safety and health activities of microbusinesses (i.e., fewer than 10 employees) are likely to be integrated by default because an individual employee is likely to have several roles and often these roles are overlapping with other employees. The CEO of a small business may also be the safety officer, as well as manage employee benefits and offer wellness programs. Consequently, current measures of integration that specifically ask about people working together on committees or pooling resources (Sorensen et al., 2013; Williams et al., 2016) may not be appropriate in a smaller setting, where integration may occur by default and without any intention to improve safety and health outcomes.

IOWA STATEWIDE SURVEY AND CASE STUDIES OF SMALL EMPLOYERS

Historically, Iowa's occupational fatality rates have exceeded national averages (U.S. Department of Labor, Bureau of Labor Statistics, 2016), demonstrating a need to investigate the health and safety programs among Iowa employers. The current study builds upon work previously conducted by the Healthier Workforce Center of the Midwest. Statewide surveys and focus groups of Iowa

employers (Merchant et al., 2014; Merchant, Lind, Kelly, & Hall, 2013) identified the health and safety practices and needs of workplaces and examined their burden on employers and employees and the corresponding impact on rising health care costs; productivity; and, most important, worker health and well-being.

These surveys and focus groups were based on the Institute of Medicine's (IOM's) employee total health management model (henceforth IOM model), which describes the components of a comprehensive approach to employee health, making the case that organizational safety and health programs, policies, and practices must be integrated to be effective and sustainable. The IOM model includes components such as occupational and environmental health, disease and case management, absence management, behavioral health, health advocacy, primary care centers, health insurance, and wellness (IOM, 2005). In 2013, Merchant et al. translated the IOM model into a 12-item questionnaire to conduct a statewide survey among employers of all sizes and to provide estimates of the adoption of IOM components among these employers. Data were collected from 1,206 employers through web-based questionnaires with a telephone follow-up. Of these employers, 1,115 employed up to 250 employees, representing all major employment sectors. More than half were located in rural counties, and 55% of companies had nine or fewer employees. Many more components were adopted by employers with 50 or more employees.

The most common components adopted by employers included workers' compensation insurance, an occupational safety and health program, and the provision of health or medical information at the worksite. It is not surprising that workers' compensation was most frequently implemented, because Iowa requires employers to purchase workers' compensation insurance unless they are self-insured or receive an exemption. Fewer employers offer additional health promotion initiatives, including chronic disease management, behavioral health or wellness programs, and health screenings/health risk assessments. In addition, the smaller the business, the less likely they will offer these components.

These findings were echoed during a series of case studies subsequently conducted with small Midwest employers (Rohlman, Campo, Hall, Robinson, & Kelly, 2018). Qualitative findings indicated that small employers, although emotionally invested in the health and safety of their workers, are limited by small budgets, time, and expertise to implement a TWH program. For the TWH approach to be adopted in an organization, NIOSH identified four key areas needed. The NIOSH (2008) Essential Elements of Effective Workplace Programs and Policies for Improving Worker Health and Wellbeing (henceforth Essential Elements) include four overarching categories: organizational culture and leadership, program design, program implementation and resources, and program evaluation. In small businesses, the inclusion of the Essential Elements categories may be a good indicator of the adoption of TWH approach. In spite of these limitations, employers that had adopted integrated programs, policies,

and practices addressed all of the Essential Elements overarching TWH categories (NIOSH, 2008). Program adoption in all of these cases included overwhelming support from upper-level management.

Both the surveys and case studies had limitations, suggesting the need for more research. Although the survey used a large, random statewide sample of predominantly small employers for which little research is available, the generalizability of these results is limited because the focus was on a single state at one specific point in time. Furthermore, the measurement of adoption (“Do you currently offer”) or planned adoption (“Do you plan to offer in the next 12 months”) for each IOM model component does not capture the full range of adoption stages an employer may be experiencing. The stages of change model provides a broader spectrum of behaviors that are more reflective of the change process (Prochaska & DiClemente, 1983). This widely used model of behavior change suggests that change is a process and not instantaneous in most cases (Prochaska & DiClemente, 1983). The model suggests that individuals and organizations move through five stages in their decision making about whether to adopt a new behavior or program: precontemplation, contemplation, preparation, action, and maintenance. In precontemplation, there is no thought given to and no intention to make any changes. In contemplation, thought and motivation for change grow, and there may be an action taken in the next 6 months. In preparation, there is an intention to make a change in the next 30 days, and steps are being taken to implement changes. In action, change has occurred but has yet to become part of regular activities and culture. In maintenance, changes that typically takes 6 months or more have become routinized. The progression is not always linear; as barriers are encountered, the stage may regress. Depending on the stage of change, different messages and information need to be provided (Slater, 1999). For example, an organization in precontemplation would have to learn what the TWH approach is and why they should implement a TWH program or activity, whereas an organization in preparation would need low-cost solutions and easy implementation ideas to facilitate action. There is a difference between an organization that is considering change but is unable to implement because of limited resources and an organization that is actively preparing to implement a change.

In addition, integration of safety and health activities is a focus of the TWH definition and program, and moreover, it is important to explicitly evaluate the degree to which small employers implement the NIOSH (2008) Essential Elements. No effort to date has explicitly asked if employers have heard of the concept of TWH and, if so, how they would define it in order to benchmark the awareness of NIOSH’s branding efforts. Finally, the earlier surveys were conducted prior to the implementation of the 2010 Patient Protection and Affordable Care Act (ACA) that has specific provisions for employers to encourage them to more directly address the prevention of illness and injury (U.S. Centers for Medicare & Medicaid Services, 2017), which may have impacted adoption of safety and health programs, policies, and practices in the last several years.

SURVEY OF SMALL EMPLOYERS IN THE MIDWEST

To address the limitations of the previous studies, a regional survey was conducted to assess current levels of adoption and integration among small employers in Federal Region VII (Iowa, Kansas, Missouri, and Nebraska). The aims of the 72-item survey that was designed to expand and replicate the Merchant et al. (2013) survey were as follows:

- Ascertain the degree to which employers are aware of the TWH concept.
- Describe *leadership commitment* to programs addressing safety and wellness (Essential Element Category 1). “Wellness” was used because it is the term used in the IOM and the 2011 TWH definition. Furthermore, it is the term that employers are familiar with and was the term used in the prior Iowa survey (Merchant et al., 2013).
- Evaluate if there is involvement across departments and level of the organization in *designing* safety and wellness policies and programs (Essential Element Category 2).
- Characterize the degree of adoption and/or *implementation* (Stage of Change from precontemplation to maintenance) of safety and wellness programs (Essential Element Category 3).
- Estimate the prevalence of *evaluation* practices across safety and wellness programs (Essential Element Category 4).

Between November 2016 and March 2017, we conducted a mixed mode (web and telephone) survey of small businesses. The randomly stratified sample was selected from Dun & Bradstreet’s comprehensive database of employers in the four-state region. Businesses across all industries were eligible to participate. Business size (fewer than 250 employees) and location (state) were the only factors considered during sample selection. Recruitment letters were sent to small businesses inviting them to complete an online survey. Those who did not respond within 6 days were then contacted by telephone. Of the 3,456 businesses contacted by mail, 337 (9.7%) completed the online survey. Follow-up phone calls to nonrespondents resulted in 108 additional businesses agreeing to participate. An initial evaluation of these respondents revealed a number of employers who reported full-time employees in excess of 249, a combination of full-time and part-time or temporary employees fewer than 10, or no full-time employees. Removing those respondents from the sample resulted in 356 organizations (115 in Iowa, 82 in Kansas, 72 in Missouri, and 87 in Nebraska) that completed the survey (75.6% completed online). The number of full-time workers employed by these organizations ranged from two to 245, with a mean of 76.3 (\pm 54.6) employees, a median of 66, and a mode of 100. Of the respondents, 17% identified themselves as the owner or an executive officer of the business, 34% as a manager, 36% as human resources personnel, 2% as safety officers or personnel, and 11% other positions.

Employers' Awareness of the TWH Program

When asked directly if they had ever heard about the TWH concept, the overwhelming response was “no” (92%). Brand awareness varied a little by state, with the highest recognition in Iowa (9.6%) and Nebraska (8.0%) and the lowest in Kansas (7.3%) and Missouri (5.6%). These results strongly suggest that brand awareness for the TWH concept among small employers in the region remains low; they have never heard of the concept. It is important to note that the two states with the highest brand awareness have had a NIOSH TWH Center of Excellence (Healthier Workforce Center at the University of Iowa) since 2006 and that Nebraska has had a TWH Affiliate organization since 2016 (the Nebraska Safety Council). The centers and affiliates are selected by NIOSH, and part of their charge is to promote the TWH brand.

**Leadership Commitment to Safety and Wellness Programs
(Essential Element Category 1)**

Sixty-four percent of respondents indicated that top management was supportive of safety programs and of wellness programs. Respondents believed that top management was more supportive of safety programs (86.8%) than wellness programs (69.4%). Respondents from Nebraska were most likely to believe that they had leadership support for both wellness (71.3%) and safety (93.1%) programs. Lowest leadership support was reported in Missouri for wellness programs (67.1%) and in Kansas for safety programs (79.3%).

**Designing Safety and Wellness Policies and Programs
(Essential Element Category 2)**

Employee engagement across departments in the design of programs and policies is considered essential for TWH. Integration is demonstrated because about half or more of surveyed businesses include employees across departments and level of the organization in the design and development of safety and wellness programs and policies (see Table 7.1).

**Adoption and Implementation of Safety and Wellness Programs
(Essential Element Category 3)**

Overall, 82.8% of respondents have at least one safety program and 68.2% have at least one wellness program. Less than 10% report having neither a safety nor

TABLE 7.1. Employee Involvement Across Departments and Levels in Design of Programs and Policies

	Iowa %	Kansas %	Missouri %	Nebraska %
Safety programs	67.0	64.6	67.1	70.9
Safety policies	69.9	63.4	80.0	75.0
Wellness programs	44.5	45.7	52.9	55.3
Wellness policies	49.1	49.4	58.0	60.0

a wellness program. Approximately 56% have at least one safety and at least one wellness program (at least one of each). To have integrated programs, employers must have programs addressing both safety and wellness. This indicates that 44% of the small employers in the sample do not have the foundation on which to build a TWH program.

The stage of change of having safety and wellness programs was overwhelmingly bimodal (see Table 7.2). Nearly all employers either were not even thinking about safety or wellness programs or policies (precontemplation) or had been implementing safety or wellness programs and policies for more than 6 months (maintenance). Almost none were contemplating, preparing to adopt (within the next 30 days), or had recently adopted (within 6 months) these programs or policies. In terms of safety, worksite safety programs and disaster preparedness were the most likely to be in the maintenance stage, and ergonomics and industrial hygiene programs were the most likely to be in the precontemplation stage. Workplaces that reported having various safety programs also tended to report that these were required programs in their workplace, including worksite safety programs (61%), industrial hygiene (65%), environmental exposure control (73%), and disaster preparedness (61%). In terms of wellness, behavioral health programs were in the maintenance stage for about half of the respondents, whereas chronic disease programs hovered at about 20%. These results did not vary widely by state.

There were some significant changes in the reporting of safety and wellness program adoption in Iowa from surveys conducted in 2012 (Merchant et al.,

TABLE 7.2. Wellness and Safety Program Adoption by Stage of Change

	Precontemplation %	Contemplation %	Preparation %	Action %	Maintenance %
Wellness program	53.6	4.5	0.3	0	41.6
Behavioral health programs	46.1	1.1	0	2.5	50.3
Chronic disease program	80.7	0.6	0	0.6	18.1
Worksite safety program	21.1	0.9	0.6	9.3	68.1
Disaster preparedness program	25.4	1.4	0	0.3	72.9
Industrial hygiene programs	76.4	0.8	0.6	1.1	21.5
Environmental exposure control program	53.7	0.9	0	1.4	44.0
Ergonomics program	80.8	1.7	0.3	4.5	12.7

TABLE 7.3. Changes in Safety and Wellness Program Adoption in Iowa Between 2011 and 2017

	2012 Survey ^a : % Yes	2017 Survey Iowa Only: % Yes	<i>p</i>
Wellness programs	18.4	28.3	< .0136
Chronic disease management program	12.4	8.8	.2813
Behavioral health program	19.6	51.3	< .0001
Occupational safety program	49.3	81.6	< .0001

^aData from Merchant, Lind, Kelly, and Hall (2013).

2013) and 2017. These adjustments included significant increases in the rates of adoption in wellness programs, behavioral health programs, and occupational safety programs (see Table 7.3). These changes may be due to the implementation of the ACA between the two data collections. The ACA has specific provisions for employers to encourage them to more directly address the prevention of illness and injury (U.S. Centers for Medicare & Medicaid Services, 2017).

Evaluation Practices Across Safety and Wellness Programs (Essential Element Category 4)

Overall, we saw varying levels of the use of evaluation metrics, ranging from 23% to 69% (see Table 7.4). The two most frequently used metrics to evaluate wellness programs were health risk assessments (53.6%), which are not recommended for use in businesses with fewer than 50 employees due to confidentiality concerns, and program participation rates (51.9%). In terms of safety, not surprisingly, workplace injury rates were used by more than two thirds of employers. Injury rates may also not be as meaningful for smaller employers. For example, one workplace injury in a microbusiness with fewer than

TABLE 7.4. Evaluation Metrics Used in Safety and Wellness Programs

	Safety %	Wellness %
Formative		
Suggestion box	31.5	34.8
Process		
Participant satisfaction data	26.7	42.1
Program participation rates	28.9	51.9
Participation evaluation data (i.e., contacted, opted out, withdrew)	23.9	32.3
Formative, process, or outcome		
Health care utilization and cost data	29.4	48.1
Workplace injury rates	69.7	49.4
Sick day use and frequency	29.5	39.6
Health risk assessments	31.8	53.6

10 employees would have a very different impact on injury rates compared with a larger employer with 250 employees.

The TWH concept emphasizes the need for integration of safety, health, and well-being components, including the sharing and use of data across organizational units to develop and evaluate programming. We saw evidence of integration among survey respondents, for example, the use of health risk assessments to evaluate safety programs and the use of workplace injury rates to evaluate wellness programs. Considering safety data when designing health programs and health data when designing safety programs can be an indicator that businesses understand that safety, health, and well-being are linked.

DISCUSSION AND FUTURE DIRECTIONS

The current survey data indicate that small enterprises in the Midwest are engaging in some of the NIOSH (2008) Essential Elements categories but not all. In the area of management support, top managers are perceived as supporting both safety and health. However, the actual adoption of safety and health programs and variations among them indicate the need to continue to educate top management about the benefits of adopting new programs.

In Iowa, we saw a significant rise in the reporting of the adoption of programs addressing safety, wellness, and behavioral health in a 6-year period (2011–2017). However, continued change in Iowa and throughout the region is highly unlikely given that almost no employers reported being in the contemplation, preparation, or recent action stage for the adoption of any of the safety or wellness programs. The implication is that for those employers who have not already adopted and are not even considering it (precontemplation), interventions should start with convincing management of the vital need and the benefits of safety and wellness programs, policies, and practices in workplaces to protect worker health and safety and to promote worker well-being. Slater (1999) suggested that message strategies used to persuade audiences in the precontemplation stage need to increase the sense of severity, sense of susceptibility, efficacy of the recommended behavior (in this case, the adoption of the TWH concept), and to focus on the use of exemplars to influence audiences. Examples of this approach were developed by the Healthier Workforce Center of the Midwest in the form of short videos featuring small employers who have adopted integrated programs using the NIOSH (2008) Essential Elements (<http://www.hwcmw.org>).

For those enterprises that have already adopted programs for more than 6 months (maintenance), different interventions are needed. The TWH approach moves beyond mere adoption of both safety and wellness programs to emphasize the need to integrate these efforts. Some of our adopters may need interventions to encourage new or further integration. Although we found little brand awareness when we asked specifically about “TWH,” we did see evidence of integration among some of our respondents in the design, implementation, and evaluation of programs. For example, the use of injury data in the planning of wellness programs and the use of health risk assessment

data in the planning of safety programs may indicate that these organizations see the interrelationship of safety and health, which is a foundation of building TWH programs. It is unknown whether this evidence of integration was an intentional effort on the part of employers or an artifact of the size of the employer. Among smaller employers the same organizational members may need to take on responsibility for multiple, qualitatively different prevention activities and that the convergence of these activities within the same individual may account for the coordination among programs.

Although we see a disconnect between TWH awareness and behavior among small businesses, this may not matter. Past behavior is well known to be the largest contributor to future behavior. Among employers already implementing integrated safety and health programs, the focus should be on the reinforcement of continued behavior to ensure maintenance of these activities, particularly as businesses may grow in size and employee roles become more specialized (e.g., an employee's position becomes dedicated to safety). It is important to maintain the integration that has been established and the recognition that this integration is beneficial. For small enterprises, it may be particularly important to emphasize that they are already engaging in a TWH approach and that the TWH concept is not something new.

Recognizing the need for resources and tools for employers to facilitate the implementation of TWH programs, policies, and practices, the NIOSH (2008) Essential Elements were updated in the form of a workbook for employers, *Fundamentals of Total Worker Health® Approaches: Essential Elements for Advancing Worker Safety, Health, and Well-Being* (hereafter TWH Fundamentals; NIOSH, 2016). The TWH Fundamentals include five defining elements. The scope of the first essential element was broadened in the TWH Fundamentals to recognize that support for safety and health needs to occur at all levels, not just top management. The second TWH Fundamental, a new component, requires the need to eliminate or reduce safety or health hazards in the workplace rather than focusing on changing workers' behaviors. The third TWH Fundamental reinforces the need for worker engagement throughout design and implementation. The fourth TWH Fundamental component emphasizes the need to protect the confidentiality and privacy of workers. This is particularly challenging in small workplaces. The final TWH Fundamental component is integration. Unfortunately, although evaluation is discussed in sections of the document, the emphasis on the critical need for evaluation at all stages of implementation has been muted. There is still a need for more specific, quick, and easy-to-use tools for employers to conduct formative, process, and outcome evaluation. Future studies are also needed to assess the effectiveness of this new workbook among employers of all sizes.

CONCLUSION

Although the majority of employers in the United States and in our region consist of small businesses, they have received less attention from occupational safety and health and TWH practitioners. Characterized by higher injury rates;

limited financial resources; and expertise in health protection, health promotion, and worker well-being, these enterprises have greater needs than their larger counterparts. Although we saw evidence that many safety and wellness programs and policies had been adopted, there is clearly room for growth and a need to ascertain whether the adopted programs are effective.

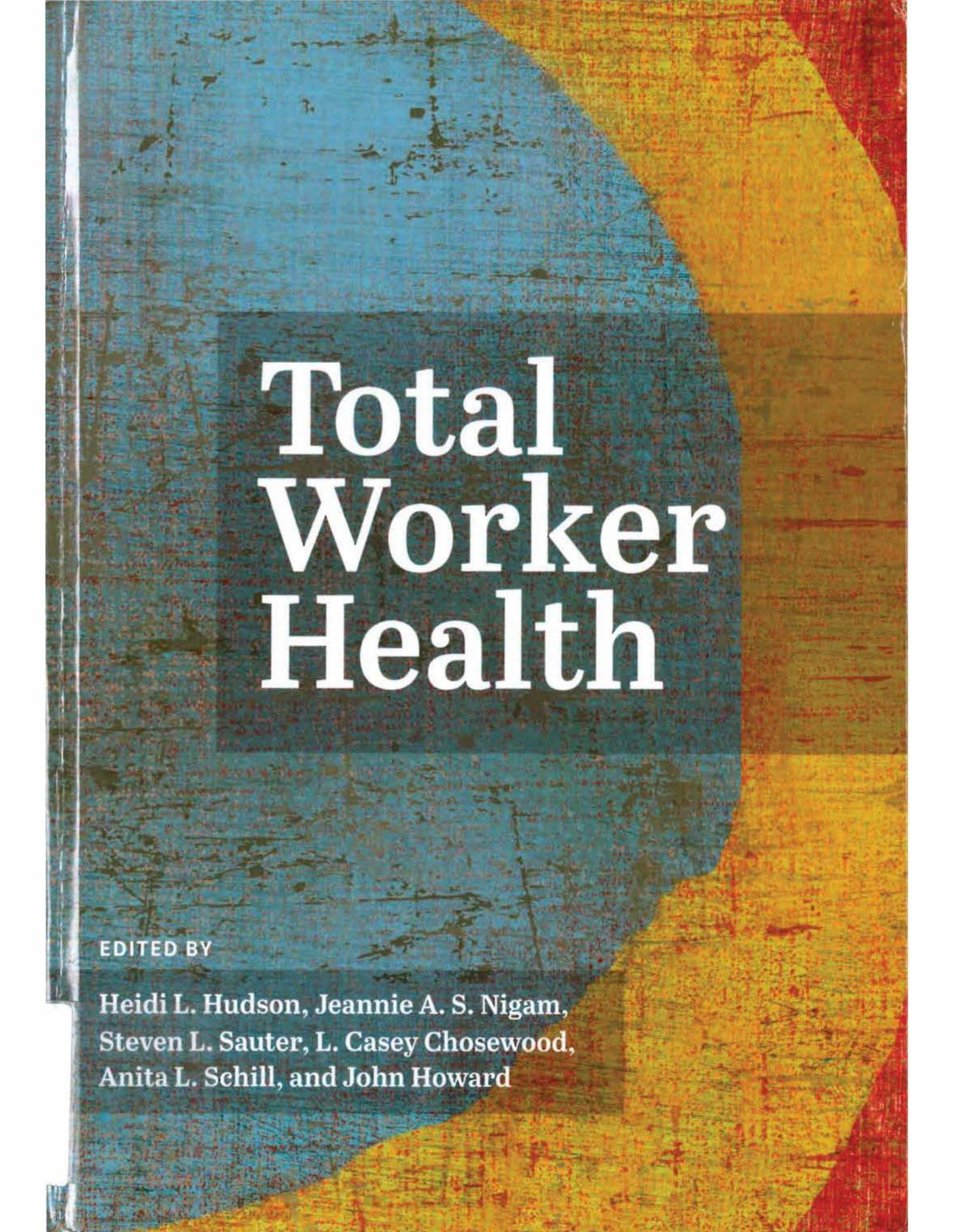
Conveying information to managers, particularly in small businesses, about evidence-based programs is an important component of the NIOSH TWH approach. Unfortunately, information products intended for managers are often merely abbreviated versions of scientific reports, materials developed for larger organizations, or suggestions requiring significant financial investment that leave small businesses at a loss as to how to improve their day-to-day operations and the safety and health of their valued workers. In addition, managers in small businesses are often inundated with information from wellness program vendors who claim to have the programs and expertise to improve employee health and well-being but lack evidence-based findings. This recent study indicates that some small employers are showing signs of adopting elements of the TWH approach but that there is clear need to continue to target this vital audience.

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