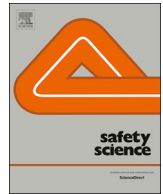




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# Use of social media platforms for promoting healthy employee lifestyles and occupational health and safety prevention: A systematic review



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## ABSTRACT

This systematic review assesses the feasibility and efficacy of social networking or enterprise social networking for promoting healthy lifestyles or for occupational health and safety (OHS) prevention. Literature searches were conducted in several indexed databases in order to retrieve studies whose main objective was the promotion of healthy lifestyles or the prevention of occupational injuries by means of social media or enterprise social networking alone or in combination with others promotional or preventive interventions. Ten studies were included. Results suggest that social media may be considered a possible means of communication for the promotion of healthy lifestyle habits in organizations, however further study into this technology has been recommended by several authors to judge the incremental impacts of social media on the promotion of healthy lifestyles. Similar conclusions were drawn from studies that included the use of a social media platform for OHS prevention. Based on current evidence, an organization's use of social media to promote a healthy lifestyle or OHS among its employees can constitute an innovative and promising means of intervention. It is important to mention that due to the scarcity and poor methodological quality of existing evidence, it is difficult at this time to draw firm conclusions regarding its effectiveness and relevance.

## 1. Introduction

To improve performance and optimize human resource management, organizations are still looking for new ways to reach employees and to make progress in the application of best practices. Despite the fact that occupational health and safety (OHS) researchers are active in the transfer of their research knowledge (Laroche and Amara, 2011), OHS is a part of organizational functions that needs improvement in the application of interventions so as to prevent injuries among workers (Faurie et al., 2013).

According to the World Health Organization, members of the workforce represent half of the world's population and constitute the major contributors to the economic and social development of many countries (World Health Organization, 2007). Traditionally, OHS prevention programs have primarily concentrated their efforts on ensuring that the workplace is safe and that workers are protected from the harms that can arise from the work itself (NIOSH, 2016). However, since the early 2000s, the definition of worker health has evolved to include the concepts of total worker health and well-being (NIOSH, 2016). It is recognized that better employee health is correlated with better organizational productivity, effectiveness, employee satisfaction

and retention. Worker health is determined by various factors such as workplace hazards, social and individual factors, as well as access to health services (Shamian and El-Jardali, 2007; World Health Organization, 2007). To this end, organizations have developed programs to promote total worker health which integrate activities focused on protection from work-related safety and health hazards with activities that focus on the promotion of general health and well-being. Conceptual models such as the hierarchy of controls applied to NIOSH Total Worker Health™ focus on interventions at the organizational level to protect the safety, health and well-being of workers (Tamers et al., 2019). This model emphasizes the importance of eliminating working conditions that cause or contribute to employee illness and injury, or that negatively affect well-being, and redefines the work environment for improved employee safety, health and well-being, while increasing employee awareness of health and safety, and promoting personal change to improve the health and well-being (Tamers et al., 2019) of workers themselves. Individual-level approaches, such as communication and education, despite being less effective and protective, are an important part of this conceptual model and can lead to organizational changes and the improvement of OHS culture. This is an essential and current means of ensuring the success of OHS prevention and

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stimulating the interest of workers and managers in prevention and promote learning and the adoption of safe work practices. These new programs developed by organizations must also include implementation processes and communication channels which are adapted to the targeted audience (ASSTSAS, 2018; Lortie et al., 2012).

Given the increasing use of social media by many members of the workforce, its use may be considered a judicious way to promote healthy lifestyles or health information (Moorhead et al., 2013) and share knowledge (Leonardi et al., 2013). These exchange and interaction platforms have the potential to increase the number of interactions and are therefore equipped with more available, shared and adapted information (Moorhead et al., 2013). This seems to be a major advantage since it can improve the accessibility of health information to various population groups—regardless of age, education, race or ethnicity, and locality to health information—compared to traditional communication methods (Chou et al., 2009; Kontos et al., 2010; Moorhead et al., 2013; Roch and Mosconi, 2016; Scansfeld et al., 2010). It can also provide valuable social and emotional support to users (Moorhead et al., 2013). In addition, in 2019, social media platforms had around 3 billion users worldwide, making this mean a relevant channel to reach people inside and outside of organizations (Statista, 2020). However, many limitations have been identified with regards to health communication on social media. These include unreliability, information quality issues, lack of user confidentiality and privacy, risks of communicating harmful or incorrect advice due to social or information overload (Scansfeld et al., 2010). The development of a more targeted or local social network could be a valuable way to increase the accuracy and relevance of health information for a given population. A good example of a locally developed social network is enterprise social network or enterprise social media. Enterprise social media is defined as the use of a “web-based platform that allow workers to (1) communicate messages with specific coworkers or broadcast messages to everyone in the organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partners; (3) post, edit, and sort text and files linked to themselves or others; and (4) view the messages, connections, text, and files communicated, posted, edited and sorted by anyone else in the organization at any time of their choosing” (Leonardi et al., 2013: p. 2). This information exchange also ensures that the original message is not modified as it propagates (Leonardi et al., 2013). Enterprise social media platform can also be useful for the transfer of instrumental knowledge (i.e., how to do something) and metaknowledge (i.e., what people do in the enterprise) (Leonardi et al., 2013). Given these benefits and the potential offered by these social platforms, this paper aims to investigate if social media or enterprise social media could be used to communicate information regarding healthy lifestyles and OHS prevention to workers. Accordingly, this systematic review aims to assess the feasibility and efficacy of social media or enterprise social networking for promoting healthy lifestyles and for OHS prevention.

## 2. Methods

This review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (PRISMA) statement (Moher et al., 2009). Details for this checklist are presented in Appendix 1.

### 2.1. Search strategy and selection criteria

#### 2.1.1. Search strategy

The literature search was conducted using MEDLINE (Pubmed), Embase, the Cochrane Library, the Centre for Research and Dissemination, the Web of Science, CINAHL, ABI/INFORM Global and EBSCO from the inception of the database to March 25, 2020. Evidence searches into grey literature were also conducted in order to identify relevant publications. The database and website search strategies

**Table 1**  
Selection criteria and search limits.

Population	Employees working in an organization
<b>Intervention</b>	Using enterprise social networking (or collaborative platforms) or other types of social media for: <ul style="list-style-type: none"> <li>- promoting healthy employee lifestyles</li> <li>- promoting occupational health and safety programs</li> <li>- exchanging information and good practices in OHS</li> </ul>
<b>Study type</b>	Qualitative and/or quantitative methods
<b>Comparator</b>	No comparator
<b>Outcomes of interest</b>	<ul style="list-style-type: none"> <li>● Feasibility of the use of enterprise social media or other social media: <ul style="list-style-type: none"> <li>- Reduction in accidents or occupational injuries</li> <li>- Improvement of healthy employee lifestyles</li> <li>- Definition of the enterprise social networks studied (if present)</li> <li>- Employee satisfaction with the use of enterprise social networks or other social media</li> </ul> </li> <li>● Experiment with the use of enterprise social networks or other social media for: <ul style="list-style-type: none"> <li>- Promotion of good preventive practices</li> <li>- Promotion of a healthy lifestyle</li> <li>- Facilitating knowledge translation to employee</li> </ul> </li> </ul>
<b>Exclusion criteria</b>	Conference abstractsTypes of scientific publications such as commentaries, editorials, narrative analyses, etc.

consulted for the grey literature search are presented in Appendix 2. Since the concept of enterprise social media or social media network is relatively new, we decided to expand our literature search to common social media platforms such as Twitter, Facebook, Microsoft Sharepoint, MySpace, LinkedIn and Instagram. The eligibility criteria, search limits and indicators used to select the evidence are presented in Table 1. The same eligibility criteria were applied whether the evidence was identified in indexed databases or in the grey literature. No language restrictions were used during the selection process. Scientific articles published in a language other than English or French were translated to assess their eligibility. The bibliographies of included studies were also reviewed to identify additional references of interest. Study identification was performed by two independent reviewers, and all inconsistencies were resolved by discussion or by consulting with a third reviewer if needed.

#### 2.1.2. Selection and eligibility assessment

The literature search aimed to identify practice guidelines, systematic reviews or primary studies (qualitative and/or quantitative) whose main objective was the promotion of healthy lifestyles or the prevention of occupational injuries using social media or an enterprise social network alone, or in combination with another promotional or preventive activities. Since there may be several different definitions of enterprise social networking and given the novelty of the concept, we decided to use a large and inclusive definition of activities and to define it as a platform within the organization where employees can share information, interact and exchange with each other, for promoting healthy employee lifestyles or for occupational health and safety prevention. The selection of studies was performed by two researchers according to the inclusion criteria and limits specified in Table 1. In the case of disagreement, the opinion of a third researcher was sought to reach a consensus. A list of excluded studies and the reason for their exclusion is presented in Appendix 3.

#### 2.1.3. Methodological quality assessment, data extraction and analysis

Judging the methodological quality and data extraction of the included studies was performed by one researcher and validated by a second researcher. The methodological quality was assessed with specific grids according to the type of study (guidelines: AGREE-II (Brouwers et al., 2010); systematic reviews: R-AMSTAR (Kung et al., 2010); randomized clinical trials, observational studies and qualitative studies: Critical Appraisal Skills Program (CASP) Checklists (CASP,

2018a, 2018b, 2018c)). In order to perform data extraction, a standardized form was developed to extract the following data: author, date, number and characteristics of included subjects, definition of intervention tested (including the author's definition of enterprise social networking), definition of comparator (if present) and main findings. Primary outcomes include the description of the experiment and the feasibility of using social media to promote healthy employee lifestyles and OHS programs and good practices. The marked heterogeneity in study design and outcome measures prevented the statistical pooling of results for meta-analysis, hence a descriptive summary of the findings is provided. No formal evaluation of publication bias was performed. However, methodological measures such as literature searches in several indexed databases, grey literature searches and the lack of search limits (i.e., limits for a specific language, study types or publication years) were used to reduce the risk of publication bias.

### 3. Results

A total of 4589 abstracts were retrieved during the initial search. After the selection process and elimination of duplicates, 69 articles were eligible for full text selection, of which 10 studies were eligible for inclusion. Seven of these studies aim to assess an organization's use of

social media to promote a healthy lifestyle among its employees (Bopp et al., 2018; Mackenzie et al., 2015; Miller et al., 2019; Ruck et al., 2017; Sendall et al., 2018; Torquati et al., 2018; Woo et al., 2020), one study centers on the use of social media by an organization to promote an OHS program (Hudson and Hall, 2013) and two studies focus on the use of a platform to share information and good practices in OHS (Douyère, 2011; Rhebergen et al., 2010). No practice guidelines or systematic reviews were found on these topics. The study selection process is illustrated in Fig. 1.

#### 3.1. Use of social media by an organization to promote healthy employee lifestyles

Seven studies included the use of social media (i.e., Facebook, Twitter) as part of a broad intervention focused on implementing good healthy workplace habits (Bopp et al., 2018; Mackenzie et al., 2015; Miller et al., 2019; Ruck et al., 2017; Sendall et al., 2018; Torquati et al., 2018; Woo et al., 2020). These studies involved between 17 and 1562 participants and investigated the promotion of a healthy lifestyle in different settings, such as the transportation industry (Sendall et al., 2018), health care (Miller et al., 2019; Ruck et al., 2017; Torquati et al., 2018; Woo et al., 2020) and education (Bopp et al., 2018; Mackenzie

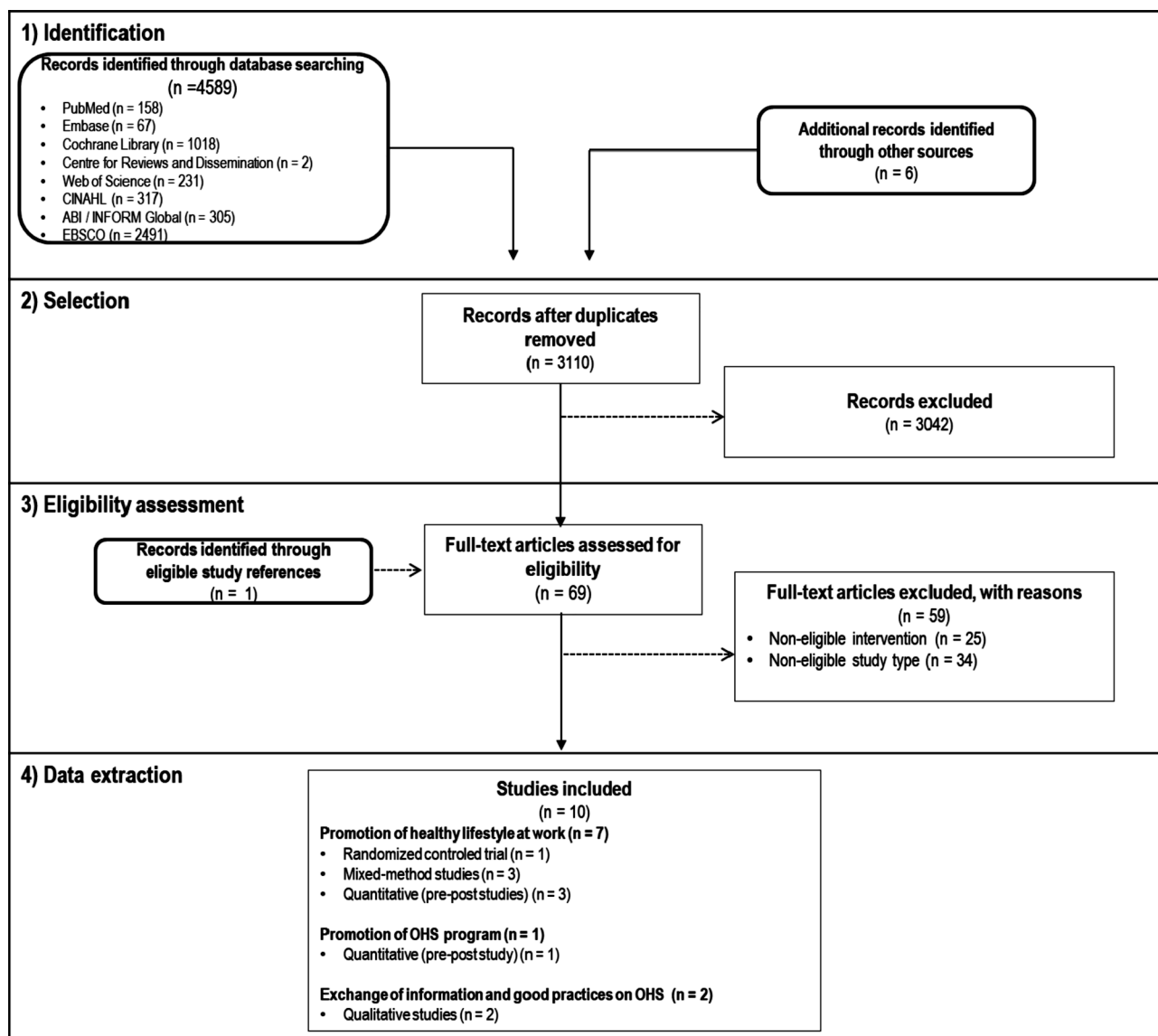


Fig. 1. Evidence selection flow chart.

et al., 2015). The main characteristics of these studies are presented in Table 2. Given their clinical and methodological heterogeneity, these research findings cannot be aggregated and have been analyzed separately.

### 3.1.1. Transportation sector

Sendall et al. (2018) analyzed the opinion, engagement and satisfaction of truck drivers and workplace managers regarding the use of a private Facebook group for health promotion. This Facebook page (namely *Truckin' Healthy*), was created to improve the health knowledge and behavior of drivers and was promoted by seven workplaces in Australia for a total of three months. At the end of the intervention period, the webpage was liked by 29 truck drivers. All participating truckers were male and ranged in age from 22 to 67 years (average age: 43 years old). A total of 46% (n = 10/22) reported that they were aware that their workplace was promoting the Facebook page. Of these, six reported being satisfied or very satisfied with this web page. Semi-structured interviews with a focus group of 10 truck drivers were conducted to understand the low-level engagement. Different themes emerged from these interviews. These include the belief that they were not of the right age and lacked the necessary skills to use this technology, the high cost of the smartphone required to use this web page during road transport, and their use of social media primarily for non-professional purposes. Finally, they raised the issue of compliance with the labor policy on the use of social media that prohibits access to this webpage. Considering these results, Sendall et al. (2018) concluded that the use of social media as a workplace health promotion intervention in the transportation industry had potential. However, they found that workplaces need to develop strategies to improve worker engagement. They proposed that the worker's profile (age, familiarity with the use of social media), work, the workplace itself and the worker's family context should be taken into consideration when developing local strategies.

### 3.1.2. The health care sector

The randomised control trial (RCT) published by Woo et al. (2020) evaluated the effectiveness of a Social Network Service (SNS)-based lifestyle-modification program for hospital workers at risk of developing cardiovascular disease (Woo et al., 2020). A total of 68 workers were divided into three groups at random: the SNS intervention group (n = 23), the conventional education-only intervention group (n = 19), and the non-intervention group (n = 26). Based on the Health Belief Model, the SNS intervention consisted of a program that included basic education, general counseling, goal setting, regular physical counseling, and education on nutritional management of health. This program was available on a private social network services (SNS) (Facebook and KakaoTalk). The primary outcomes measured included cardiovascular risk factors, health beliefs, health promotion behavior and self-efficacy at 6 and 12 weeks in all three groups. Compared to the conventional education group and the non-intervention group, the results of this study indicate that workers in the SNS intervention group had a statistical improvement in their abdominal circumference, BMI, total cholesterol and LDL cholesterol at 6 and 12 weeks. Health promotion behaviors and self-efficacy were also significantly improved in this group after 12 weeks. The authors concluded that the SNS-based lifestyle-modification program improved the self-efficacy and health behaviors of workers, which ultimately improved their cardiovascular risk factors.

Miller et al. (2019) published a mixed-method analysis evaluating the efficacy of a quality improvement project focusing on the physical activity readiness of front-line employees caring for adults with disabilities (Miller et al., 2019). The research was done in two phases. In Phase 1 the authors made an assessment of barriers to, and readiness for, participation in an employee wellness program using a focus group. In phase 2 the authors investigated the improvement of worker readiness for participation in the program by using a private employee

Facebook group and a postintervention physical activity readiness survey. A total of thirty-seven Direct Support Persons (DSP), aged from 18 to 65 years old participated in the Facebook group. The Facebook content was designed to improve the target population's wellness through motivational messages, focusing on consciousness raising, self-liberation, short-term goals, helping relationships, and stimulus control. The authors observed that three months after the beginning of the intervention, the mean views per theory-based message was 12.2 (range = 0–27) and the average total new views per theory-based message was 2.9 (range = 0–11). They also found that 75% of participants of the Facebook group enjoyed receiving information about general health.

Torquati et al. (2018) and Ruck et al. (2017) both studied a campaign integrating the use of social media to promote a healthy lifestyle in health care workplaces. In the study by Torquati et al. (2018), key factors related to the successful implementation of a workplace intervention to promote healthy eating and physical activity among hospital nurses were assessed (Torquati et al., 2018). During a 3-month workplace pilot test, nurses participating in the study (n = 47) were required to wear an accelerometer and pedometer for at least seven consecutive days. The participants were also asked to access to a mobile application and a private Facebook group for sharing experiences and to receive group support. Anthropometrical measures and information on diet and physical activity levels were collected before and after the study. Three months into the study, researchers observed that vegetable consumption increased significantly ( $p = 0.04$ ) among nurses and that their physical activity decreased ( $p = 0.01$ ). Participants reported that changing two behaviors at the same time was difficult. The nurses stated that it was easier to change one's diet first and then modify physical activity. The authors of the study had four main objectives in the creation of the private Facebook group. The first was to share success stories or tips for improving nutrition or physical activity, help identify a colleague with whom to exercise, identify workplace champions and finally, to post inspiring and motivating quotes to stay active and healthy. Only the last objective was achieved. While the researchers were active on Facebook, only one participant posted original content. The authors observed that social support among participants was lower than expected, resulting in minimal coworker support and behavior change. However, the authors noted that participants found that the content on the Facebook page was motivating. In view of these results, the authors highlighted the importance of understanding the context in which the intervention takes place in order to make conclusions on the feasibility and effectiveness of the intervention. The authors did not add any specific comments or advice regarding the use of social media in this context.

Also in the healthcare sector, Ruck et al. (2017) evaluated the effectiveness of different internal communication channels for engaging and improving healthcare workers as part of a communication program to improve their personal health (Ruck et al., 2017). The studied promotional campaign included website information that provided tips, motivational and health information, SMS messages, emails and social media messages (Twitter). The study used mixed method research methodology that included a short participant survey and semi-structured post-intervention interviews. A total of 349 participants were included. The results suggest that the communication program had a significant impact on workers' lifestyles. Indeed, 35.3% of participants reported improvements in their overall health and 33% reported improvements in their mental state. The survey of participant preference for the method of communication revealed that e-mail information sessions, website information and SMS messages were the most useful methods of communication. During the campaign, 192 employees responded to a motivational text message by sending a feedback message. According to study participants, the usefulness of social media (Twitter, website forums) was relatively low. Semi-structured interviews with participants 9–12 months after the study began suggested that social media use such as Twitter or Facebook may have the potential to



**Table 2**  
 Characteristics and main findings of included studies that use social media to promote a healthy lifestyle among employees.

Authors (Year) Country Methodological quality	Type of study	Study population (number of participants included)	Types of social media	Interventions tested	Study duration	Main findings on social media usage
<b>The Transportation Sector</b> Sendall et al. (2018) Australia Quality: LOW	Mixed-method (semi-structured interviews) (focus groups) (descriptive analysis of oral questionnaire)	Truck drivers (n = 22) Workplace managers (n = 4)	Private Facebook group	Facebook content intended to improve truck drivers' health knowledge and behavior	6 months	Truck drivers: - 46% aware that their workplace promotes the Facebook page; o Of those aware (n = 10), 60% were very satisfied or satisfied with the Facebook page. - Very few drivers reported that they "liked" the page to add it on their Facebook feed; - The Facebook page has no impact on where drivers get health information; Workplace managers: - 75% promote the Facebook page in their workplace; o Among those who promote the page (n = 3), 100% are satisfied with the content. - 50% reported that they "liked" the page to add it to their Facebook feed; - The intervention displayed on the Facebook page did not result in driver engagement.
<b>The Health Care Sector</b> Woo et al. (2020) South Korea Quality: LOW	Randomised control trial (RCT)	Hospital workers, aged 25 to 60 years who had more than two metabolic syndrome risk factors or risk factors for cardiovascular disease (n = 68)	Private social network services (SNS) (Facebook and KakaoTalk)	The program include basic education, general counseling, goal setting, regular physical counseling, and education on nutritional management (based on the Health Belief Model)	3 months	- 3 groups: SNS (n = 23), conventional education (n = 19), no intervention (n = 26) - At 6 weeks (1.5 months): statistical improvement of abdominal circumference, BMI, total cholesterol and LDL cholesterol in SNS group compared to other groups - At 12 weeks (3 months): significant difference in abdominal circumference, BMI, Total cholesterol, LDL cholesterol, health promotion behaviors, and self-efficacy compared to other groups - 37 DSP participated in the Facebook group o Mean views per theory-based message: 12.2 (range = 0–27) o Average total new views per theory-based message: 2.9 (range = 0–11). - 75% of people that participated to the Facebook group enjoyed getting information about general health
*Miller et al. (2019) United States Quality: LOW	Mixed-method (focus groups) (descriptive analysis questionnaire)	Direct Support Person (DSP), aged from 18 to 65 years old, who provided care to adults with disabilities	Employee Facebook group	Facebook content designed to improve the target population's SOC using the processes of change and motivational messages, focusing on consciousness raising, self-liberation, short-term goals, helping relationships, and stimulus control.	3 months	- 75% of people that participated to the Facebook group enjoyed getting information about general health

(continued on next page)

**Table 2 (continued)**

Authors (year) Country Methodological quality	Type of study	Study population (number of participants included)	Types of social media	Interventions tested	Study duration	Main findings on social media usage
Torquati et al. (2018) Australia Quality: MODERATE	Quantitative (pre-post study)	Hospital nurses (n = 47)	Private Facebook group	Interventions to improve food quality and increase physical activity by giving workers access to a private Facebook group, an application and a pedometer.	9 months	<ul style="list-style-type: none"> <li>- Poor overall reach (9.4% of potential enrolled in the study);</li> <li>- 47.4% of participants logged into the Facebook group at least once a week;</li> <li>- The behavioral outcome for the Facebook intervention was not achieved;</li> <li>- Very few participants use or interact with the Facebook page as expected;</li> <li>- Participants reported that Facebook content was good motivation.</li> </ul>
Ruck et al. (2017) United Kingdom Quality: LOW	Mixed-method (pre-post study) (semi-structured interviews)	Health workers (n = 349)	Website forum, social media microblog (Twitter), text messages and emails	Campaign using multiple communication channels aiming to improve workers' personal health	9–12 months	<ul style="list-style-type: none"> <li>- Usefulness of social media was rated relatively low (Twitter: 1.89, SD = 1.27; forum discussion: 1.87 SD = 1.04);</li> <li>- Workers found that email briefings (2.84 SD = 1.24), information on the website (2.79, SD = 1.07) and text message (2.53, SD = 1.40) were the three most useful communication channels for the campaign;</li> <li>- 55% responded to motivational text messages by sending text messages back;</li> <li>- Website information and email information sessions were significantly correlated with better overall health outcomes (<math>p &lt; 0.01</math>).</li> </ul>
<b>The Education Sector</b> Bopp et al. (2018) United States Quality: MODERATE	Quantitative (pre-post study)	University students (n = 563) University faculty and staff (n = 999)	Public Facebook and Twitter pages	A large-scale campaign using multiple communication channels, including social media, to promote active transportation (AT) to/from and on campus for students and employees.	1 year	<ul style="list-style-type: none"> <li>- There is no significant difference in the use of AT by employees after the study period;</li> <li>- Overall (employees and students), the social media campaign has attracted 177 Facebook and 103 Twitter followers;</li> <li>- Engagement with social media was strongest in the case educational and interactive messages.</li> </ul>
Mackenzie et al. (2015) United Kingdom Quality: MODERATE	Quantitative (pre-post study)	University department employees (n = 17)	Social media microblog (Twitter)	Campaign involving motivational initiatives, local champions and social media to promote interventions to reduce workplace sitting time.	1 month	<ul style="list-style-type: none"> <li>- No significant statistical impact on sitting time was observed during the study period;</li> <li>- Participants felt that the overall intervention had a positive impact on workplace sitting time;</li> <li>- Lack of knowledge of Twitter content may explain the feeling shared by some participants that the social media component of the intervention was considered unnecessary.</li> </ul>

improve exchanges between individuals or groups through peer support. In light of the results, [Ruck et al. \(2017\)](#) found that the communication channel chosen during the health promotion campaign is an important factor in its success. However, participants seem to have their own personal preferences. The authors suggested that participants should be able to customize communication channels and content. Nevertheless, the authors concluded that internal communication programs based primarily on electronic and social media can be effective in promoting a healthy lifestyle in this context.

### 3.1.3. The education sector

Finally, two studies assessed the effectiveness of a campaign to promote healthy lifestyles in schools ([Bopp et al., 2018](#); [Mackenzie et al., 2015](#)). [Bopp et al. \(2018\)](#) reported on the development, implementation and evaluation of an intervention (*Active Lions*) to promote active transportation on a large university campus ([Bopp et al., 2018](#)). This intervention included the use of a smartphone application and the implementation of social marketing and social media components. The social media campaign used Facebook and Twitter as a communications channel. The social media part of the promotional campaign was designed to target participants' beliefs and attitudes towards active transportation and to provide motivational messages to encourage the adoption and maintenance of active transportation. A total of 1562 participants, including 999 university employees, were included in the study. The results indicate that the promotional campaign did not have a significant impact on employees' use of active transportation. A post-campaign survey revealed that only 18.3% of employees had heard of this campaign. Analysis of social media usage showed that, overall, the campaign generated 177 Facebook and 103 Twitter followers during the study period. Educational and interactive posting were the most consulted information on social media. The authors did not provide any further analysis of the usefulness of social media in promoting active transportation.

A further study, using a multimodal intervention to promote the reduction of workplace sitting time in a university department was done by [Mackenzie et al. \(2015\)](#). The main components of this intervention included emails suggesting tips to reduce sitting time, a free reminder software installed on the employees' computers and social media postings to increase awareness of the intervention, a workplace champion and peer support. A convenience sample of 17 employees was included. The results of this study suggest that the intervention resulted in an average reduction in daily sitting time of 26 min. Participants felt that the intervention led to some positive changes. However, authors noted that some intervention elements such as reminders, the use of Twitter and posters were not useful. The authors believe that these observations may depend on participants personal preferences and awareness. No further analysis of the use of social media in this study was conducted.

### 3.2. Use of social media by an organization to promote an occupational health and safety program

Another study found in the literature search presents an organization that used social media to promote an OHS program ([Hudson and Hall, 2013](#)). In 2012, the U.S. National Institute for Occupational Safety and Health (NIOSH) used social media to promote its Total Worker Health™ (TWH) program ([Hudson and Hall, 2013](#)). The main objective of this promotional campaign was to use different means of communication to promote content that would generate interest among various audiences for the TWH program and to create a social network to share content, create dialogue and foster partnerships among professionals interested in the TWH program. Several social media platforms such as Facebook, LinkedIn, Twitter, Pinterest and the NIOSH Science Blog were used to promote the OHS program. Social media analytics tools were used to assess the effectiveness of NIOSH's social media strategies. The results suggest that during the first six months of the social media

campaign, the size of the TWH online community increased by 100%. However, NIOSH researchers observed that stakeholder and employer participation in social media posts was slow. Based on their observations, they concluded that social media was an effective way to broaden reach, generate interest and gather information on stakeholder awareness and perception of the TWH program. They also pointed out the need for further research to understand how organizations can use social media to encourage workers to adopt the OHS program. A summary of this study is presented in [Table 3](#).

### 3.3. Use of a platform by an organization to exchange OHS information and good practices

The literature search identified one qualitative study ([Rhebergen et al., 2010](#)) and one case study ([Douyère, 2011](#)) presenting the use of a platform by an organization to exchange OHS information and good practices. A summary of the main characteristics and results related to the use of an exchange platform in these studies is presented in [Table 3](#). In short, the study by [Rhebergen et al. \(2010\)](#) aimed to investigate the usability and applicability of a new online question and answer (Q&A) network (ArboAntwoord). This network linked workers and experts, focusing on OHS for workers with different levels of computer literacy and was used by an academic medical center in the Netherlands ([Rhebergen et al., 2010](#)). Twelve workers and eight OHS experts were included in this study. The Q&A network usability was assessed by workers and experts while performing a specific action on the website. For each action performed, participants were asked to assess the level of efficiency and satisfaction and express their opinions on the facilitating factors, the barriers and suggestions for potential improvements to the user-friendliness of the system. The usefulness of the Q&A platform was assessed by asking workers and experts their impressions on the applicability of the platform, the targeted audience and potential prerequisites that the system should implement.

The results of this study indicate that most participants effectively performed the various tasks required to assess the usability of the Q&A tool. However, participants felt that the effectiveness of these different tasks varied. Indeed, some actions such as recording or keyword searching were considered partially effective, while other tasks (e.g. asking a question or asking for help) were considered partially ineffective by participants. The OHS experts consulted in the study considered that registration in the tool and category search are partially ineffective. Nevertheless, most participants were satisfied with the different functionalities offered by the Q&A tool tested. Various improvements were proposed by study participants in order to increase the platform's usability. These included a better way to search for answers from OHS experts who are already classified and an improved registration process for OSH experts.

Interviews with workers and OHS experts suggested that the ArboAntwoord Q&A tool was useful for finding expert answers to OHS questions. While many participants indicated that they still preferred a face-to-face meeting with an OHS expert, they also indicated that this tool was relevant for finding expert answers in non-emergency situations. Based on this assessment, [Rhebergen et al. \(2010\)](#) concluded that this new OHS Q&A platform was a promising new strategy for providing enterprises with high-quality OHS information.

The case study published in 2011 by [Douyère](#) analyzed the transformation of the OHS system at Selenis, a French company offering multiple technical services ([Douyère, 2011](#)). A particular feature of this transformation is that it was based on a hybrid information system that allows knowledge sharing among members, better peer support, a new professional identity and the integration of new members. As a result of this transformation, this hybrid collaborative system includes a contributory intranet network (*Action-Prévention* network) and an OHS expert network. The author collected data from a variety of sources. He conducted 75 semi-structured interviews with different stakeholders involved in OHS, participated in formal and informal meetings and



**Table 3**  
 Characteristics and main outcomes of included studies that use social media or a platform to promote OHS programs or exchange information and good practices on OHS.

Authors (year) Country Methodological quality	Type of study	Study population (number of participants included)	Types of social media	Interventions tested	Study duration	Main findings on social media usage
<p><b>Study on the use of social media to promote OHS program</b>                      Hudson and Hall (2013)                      USA                      Quality: N/A</p>	Quantitative (pre-post study)	-	Facebook, LinkedIn, Twitter, Pinterest and NIOSH Science Blog	Total Worker Health™ program	6 months	<ul style="list-style-type: none"> <li>- The size of the TWH online community increased by 100% during the first 6 months of social media promotion</li> <li>- Researchers observed that stakeholder and employer participation in social media was slow.</li> <li>- Social media was an effective way of broadening reach, generating interest and gathering information on stakeholder awareness and perception of the TWH program.</li> <li>- It was also suggested that further research should be conducted to understand how organizations can use social media to adopt an OHS program for workers</li> </ul>
<p><b>Studies using a platform for the exchange of information and best practices on OSH</b>                      Riebergen et al. (2010)                      Netherland                      Quality: LOW</p>	Qualitative (non-participant observation) (semi-structured interviews)	Employees of the Academic Medical Center in Amsterdam (n = 12) and OHS experts (n = 8) with various computer and Internet experiences	Local collaborative platform	Local Q&A platform (ArboAntwoord)	NR	<ul style="list-style-type: none"> <li>- The majority of the system components were deemed usable by employees and OHS experts</li> <li>- Users (employees/occupational health and safety experts) were generally satisfied with the platforms tested</li> <li>- Suggestions for improvement were made (asking questions, seeking answers by category, technical assistance by moderator/help function, registration as an expert)</li> <li>- Q&amp;A was regarded as an applicable information tool by a majority of employees. However, some employees still prefer to consult a familiar expert in person</li> <li>- The employee found this tool relevant to finding expert answers in non-emergency situations.</li> <li>- Intranet developed after a series of organizational transformation that redefined the OHS function in this enterprise</li> <li>- Provides frameworks and methods for understanding OHS risks and a list of possible ways to interpret and address OHS risks in the organization</li> <li>- Allows for better transfer of OHS knowledge and the creation of new knowledge by giving OHS experts the opportunity to interact with their colleagues.</li> </ul>
<p>Douyère D. (2011)                      France                      Quality: N/A</p>	Qualitative (case study) (documentary analysis) (participant and non-participant observations) (semi-structured interviews)	-	Local collaborative platform	Collaborative intranet platform (Action-Prévention)		

N/A: not applicable, NR; not reported, Q&A: Questions and Answers.

reviewed internal documents. Further, the author studied the channels historically used to disseminate and exchange OHS knowledge. Douyère (2011) found that while the number of OHS personnel decreased at Selenis in the early 2000s, OHS expertise and skills increased at the same time. The Action-Prévention intranet platform was developed to provide OHS experts with a framework and methods for understanding OHS risks and to list possible ways to interpret and address OHS risks. This internal network also allowed for better transfer of OHS knowledge and the creation of new knowledge by giving experts the opportunity to interact with their colleagues.

### 3.4. Methodological quality of evidence and evidence appraisal

According to CASP criteria, the methodological quality of the included evidence varies from low to moderate. Some studies have a well-defined population (Bopp et al., 2018; Mackenzie et al., 2015; Torquati et al., 2018) or well-defined outcomes of interest (Bopp et al., 2018; Mackenzie et al., 2015; Rhebergen et al., 2010; Torquati et al., 2018; Woo et al., 2020). However, the majority of the studies have a small sample size (Bopp et al., 2018; Mackenzie et al., 2015; Miller et al., 2019; Sendall et al., 2018; Torquati et al., 2018; Woo et al., 2020) that does not provide sufficient statistical power to determine a significant difference or to generalize the results to larger populations. The short duration of the studies (under a year) may also be insufficient to observe significant behavioral changes in the participants and may explain the small magnitude of the observed effect. All studies included focus groups, semi-structured interviews or a participant survey. Although these methods have proven their rigor and reliability (Grossoehme, 2014), they may be subject to methodological biases such as non-response, social desirability or recall bias (Safdar et al., 2016). In addition, since participation in studies is often voluntary, these studies may also be subject to selection bias. None of the included studies considered the effect of the various confounding factors in their analysis of the results. As a result, it may be difficult to determine the actual impact of the intervention. Moreover, a high degree of heterogeneity is observed among the included studies and the use of social media in these studies is often diluted in a series of interventions to promote healthy lifestyles or OSH among workers. The specific impact of social media, at least for much of the evidence analyzed, remains unresolved. Although the author does not directly analyze the effectiveness of social networks for promoting healthy lifestyles or OHS prevention, the report (Douyère, 2011) illustrates the feasibility of using enterprise social networking.

## 4. Discussion

The main objective of this systematic review is to understand the contribution of social media, in particular enterprise social networking, for promoting healthy employee lifestyles and OHS prevention. An analysis of the current data reveals three main findings.

First, few studies directly evaluated the effectiveness of social media in promoting healthy employee lifestyles. Indeed, the review of the scientific literature identified only seven studies that assess the effectiveness of this intervention (Bopp et al., 2018; Mackenzie et al., 2015; Miller et al., 2019; Ruck et al., 2017; Sendall et al., 2018; Torquati et al., 2018). Although very heterogeneous and generally of variable methodological quality, the results of these studies suggest that the use of social media could be a possible communications channel for organizations to promote the acquisition of healthy lifestyles by employees. In a majority of the studies surveyed, promotional content published on social media was considered a source of motivation for some employees to adopt healthy lifestyles. It is now well accepted in the human resources community that it is important to facilitate and encourage healthy behaviors among employees to prevent illness and promote health in order to reduce absenteeism, presenteeism and disability rates (Rantanen and Tuominen, 2011). The potential of social media as a

communications channel to promote the acquisition of healthy habits by the general population has been investigated by several authors (Chau et al., 2018; Rose et al., 2017; Stromme et al., 2014; Williams et al., 2014). For example, Chau et al. evaluated the impact of computer-based interventions that integrated social media on the nutritional knowledge and eating behaviors of adolescents and young adults (Chau et al., 2018) in a meta-analysis of previous research. Based on the analysis of 16 original studies, they found that the use of social networks was associated with better short-term nutritional outcomes. Similar conclusions were also drawn from a systematic review by Rose et al. on the impact of using digital media to improve adolescent nutrition and physical activity (Rose et al., 2017). Additionally, a systematic review by Williams et al. evaluating the use of social media to promote healthy eating and exercise in the general population (Williams et al., 2014), found similar positive results. While encouraging results were reported in these studies, the authors also concluded that further studies were needed to uncover the progressive contribution of social media in the development of healthy lifestyles. Based on the analysis of the aforementioned studies we have included, a similar observation can be made about the use of social media by an organization or professional work groups to promote a healthy lifestyle among employees. Indeed, the studies reviewed did not assess the effectiveness of the social media components on their outcomes of interest and did not differentiate the effectiveness of the social media component from other communication channels or interventions implemented. For these reasons, and in line with the findings of public health studies, further research is needed to elucidate the effectiveness of social media in promoting a healthy lifestyle among employees.

Furthermore, the existing data also does not permit drawing a conclusion on the effectiveness or value of using social media or another platform to promote OHS programs or to exchange information and good practices. The literature review identified only two qualitative studies (Douyère, 2011; Rhebergen et al., 2010) and one quantitative study (Hudson and Hall, 2013) on this topic. Although the results of these studies suggest that social media may be useful to promote OHS programs, various limitations such as low utilization rates and workers' preference for face-to-face meetings with OHS experts were reported. However, it is difficult to draw conclusions regarding the usefulness of social media by organizations in this context due to the scarcity of evidence in existing studies. Thus, as proposed by Hudson and Hall (2013), a high-quality study is needed to understand how organizations can use this social media to promote evidence-based OHS practices and the effectiveness of OHS interventions in order to recommend their use.

Finally, one of the main objectives of this review was to assess the effectiveness of enterprise social media for promoting OHS prevention or healthy employee lifestyles. Unfortunately, no specific studies on this topic were identified in the literature review even though enterprise social media platforms have been increasingly used in recent years. Leonardi et al. (2013) defined this communication technology as "A web-based platform that allows workers to (1) communicate messages with specific coworkers or broadcast message to everyone in organization; (2) explicitly indicate or implicitly reveal particular coworkers as communication partner; (3) post, edit and sort text and files linked to themselves or others; and (4) view messages, connections, text and files communicated, posted, edited and sorted by anyone else in the organization at any time of their choosing" (Leonardi et al., 2013). This type of social networking involves technologies such as social intranets and platforms which make it possible for enterprises to organize internal communications and collaboration, as well as improve their performance in operational and managerial activities (Caya and Mosconi, 2016). They are also recognized as being very similar in terms of functionality to traditional social media. One of the main characteristics of the enterprise social platform is the profile of users. Each user has a profile in which they add their skills, contact details, photos, hobbies and everything else that is relevant (Drahošová and Balco, 2016).

Many advantages have been associated with enterprise social

networking. In a published longitudinal study assessing individual usage patterns and the market value of an enterprise social media platform called Handshake, Holtzblatt et al. (2013) reported six main benefits of this type of sharing platform (Holtzblatt et al., 2013). These benefits are: 1) Supporting team-based collaboration, 2) Fostering collective intelligence, 3) Strengthening social connections, 4) Facilitating knowledge management, 5) Promoting situational awareness and 6) Enhancing measurable business value (Holtzblatt et al., 2013). They also found that the observed benefits of enterprise social networking may depend on the type of workers using the platform. For example, employees working in the Application support group primarily experienced benefits related to collective intelligence and measurable business value, while employees working in the Project group most often described benefitting from enterprise social networking in the context of team collaboration and situational awareness (Holtzblatt et al., 2013).

Similarly to Holtzblatt et al. (2013), Drahošová and Balco (2016) report that the three main benefits of enterprise social networking consist in the capacity to involve customers and employees, to create innovation through knowledge sharing and to contribute to the improvement of decision-making processes in the enterprise (Drahošová and Balco, 2016). However, risks associated with the use of enterprise social networking have also been identified (Mennie, 2015). In a publication that purports to explore the risks associated with the use of social media, Mennie stated that the main categories of risks associated with enterprise social networking include reputation, operational, regulatory, financial and security risks (Mennie, 2015).

Our systematic review has several strengths as well as limitations. In our view, this may be one of the first systematic reviews that attempts to assess the feasibility and efficacy of an organization's implementation of a social media intervention to promote healthy employee lifestyles or OHS prevention. However, since this organizational practice is relatively new, few studies have been identified and this situation limits potential conclusions regarding the use of these communication channels. The studies included are very heterogeneous in terms of population, type of social media, evaluated outcomes and methodological quality, which prevents the aggregation of results and their generalization to other contexts.

Another limitation of the studies include in this systematic review was the short duration of the time period under review. This could be a contributing factor in the low reach and engagement observed in some studies since the adoption of new technologies and changes in behavior often take time. Another limitation of our study, was that our systematic review was not able to identify studies that focus specifically on enterprise social networking for the promotion of healthy lifestyles or OHS prevention. Still in its infancy, this research field needs more well-designed studies to understand the original contributions these technologies can make.

Finally, it could be interesting to examine the use of social media or collaborative platforms by professional associations or unions, not just by enterprises. This interest is important specially in the context of an increasing number of organizations that are integrating emerging technologies to support and improve their activities and process, named digital transformation, making these social media platforms as part of day to day collaboration and communication. It will be important to investigate and collaborate with professional associations and unions to help organizations use this kind of technology to smooth disruption and improve well-being of workers. Perhaps, larger or more remote geographical groups could benefit from this technology, allowing for exchange, training or collaborative work between human resources. It became more relevant in the context of distance and home work as many organizations are experiencing during the Covid-19 pandemic.

## 5. Conclusion

The use of social media by an organization to promote a healthy

lifestyle among its employees or for OHS prevention can constitute an innovative and promising intervention. However, due to the scarcity and variable methodological quality of existing data, it is difficult, for the time being, to draw definitive conclusions on their effectiveness and relevance for these purposes. In order to be able to make recommendations on the use of these communication technologies for these specific purposes, well-designed studies are needed to understand the original contribution, feasibility and added value of the use of social media by organizations to promote a healthy lifestyle and for OHS prevention.

## Appendix A. Supplementary material

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ssci.2020.104931>.

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