The Indonesian Journal of Occupational Safety and Health
2023, 12 (3): 436-448
p ISSN: 2301 8046, e ISSN: 2540 7872
http://doi.org10.20473/ijosh.v12i3.2023.436-448

REVIEW ARTICLE

Navigating the Path to Recovery: A Scoping Review of Return to Work Program for Manufacture Workers After Occupational Injury

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ABSTRACT

Introduction: Workplace accidents in the manufacturing industry may significantly affect both a worker's capacity to return to work and their general well-being. Effective return-to-work programs may help disabled workers rehabilitate. The present scoping review endeavors to scrutinize the extant body of literature pertaining to Return to Work programs tailored specifically for individuals employed in the manufacturing industry who have experienced occupational injuries. **Methods:** A comprehensive exploration was conducted across various scholarly databases, including PubMed, Scopus, and Web of Science. The search technique includes return-to-work, occupational injury, and manufacturing keywords. Inclusion criteria were used to screen studies. **Results:** A total of 5 studies were included in the final analysis, representing a range of program types, implementation strategies, and evaluation methods. The results of this review suggest that return-to-work programs can be effective in facilitating workers' return to work after occupational injury and promoting positive health outcomes. Key program components identified as contributing to program effectiveness included workplace accommodations, early return-to-work programs, and rehabilitation services. **Conclusion:** This scoping review emphasizes the necessity of return-to-work programs for wounded manufacturing employees. The findings of this comprehensive review indicate that return-to-work programs when meticulously crafted and effectively executed, possess the capacity to assume a pivotal function in facilitating the reintegration of injured workers into the workforce, while concurrently enhancing their holistic health outcomes. Additional investigation is warranted to enhance comprehension of the precise constituents of a program that contribute to its triumph and to delve into the efficacy of diverse implementation methodologies.

Keywords: manufacture, occupation injury, return to work, scoping review

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INTRODUCTION

The manufacturing sector, a pivotal component of the global economy, plays a significant role in generating gainful employment for a vast multitude of individuals across the globe (Diana *et al*., 2022; Kshitij *et al*., 2022; Wei and Lahiri, 2022; Wang and Wu, 2023). Despite the remarkable progress in technological innovations and the implementation of safety protocols, it is regrettably evident that occupational injuries persist and engender enduring ramifications on the physical and psychological welfare of laborers. Injuries have the potential to give rise to a myriad of deleterious consequences encompassing both physical and mental health afflictions, as well as the forfeiture of valuable work hours and a subsequent decline in overall productivity. These ramifications, in turn, exert a profound impact not only on the injured individual but also on their employer. The profound ramifications of occupational injuries on the reintegration of workers into the workforce are undeniably noteworthy (Birtanov, 2016; Anderson, McLennan and Randall, 2022). In numerous instances, it is observed that individuals who have sustained injuries while engaged in occupational activities may encounter difficulties in resuming their previous employment or may find themselves incapacitated to engage in any form of work, thereby leading to a decline in both financial resources and overall well-being. This phenomenon may also engender deleterious consequences for employers, as

Cite this as: *Kurnianto, A. A., Zsolt, N. and Ágoston, I.* (2023) '*Navigating the Path to Recovery: A Scoping Review of Return to Work Program for Manufacture Workers After Occupational Injury'*, *The Indonesian Journal of Occupational Safety and Health*, 12(3), pp. 436-448.

 doi:10.20473/ijosh.v12i3.2023.436-448. Received February 12, 2023; 1st revision October 24, 2023; 2nd revision November 01, 2023; Accepted November 24, 2023; Published: December 2023. Published by Universitas Airlangga.

they may encounter escalated expenditures linked to the recruitment and onboarding of fresh personnel.

The manufacturing sector is widely acknowledged as one of the most perilous industries on a global scale, particularly in certain nations (Rodriguez Diez-Caballero *et al*., 2020; Varshavsky and Dubinina, 2020). The field of study under consideration is renowned for its propensity to exhibit a significantly elevated incidence of both physical harm and mortalities. In the context of the United States, it is noteworthy to observe that the incidence of injuries exhibits a higher prevalence when juxtaposed against the average observed across diverse industries. Furthermore, the magnitude of fatal injuries per 100,000 employees assumes a considerable magnitude, warranting attention and analysis. Within the European context, it is noteworthy to observe that the incidence of occupational injuries within the manufacturing sector surpasses the prevailing average (Li *et al*., 2020). Furthermore, it is imperative to underscore the notable significance of elucidating that this particular sector manifests the second most elevated mortality rate in correlation to occupational occurrences (Rehman *et al*., 2018; Dodoo and Al-Samarraie, 2019; Shafique and Rafiq, 2019). The prevalence of significant injuries resulting in considerable work absenteeism or long-lasting impairment is similarly widespread within the industry.

Return To Work (RTW) programs have emerged as a pivotal strategy in the realm of occupational injury management within the manufacturing sector. Moreover, RTW program is comprehensive rehabilitation designed to cater to workers who have incurred disabilities as a result of occupational accidents. This program serves as an development of the social security program, thereby amplifying the scope of benefits provided (Kurnianto *et al*., 2023). This program play a crucial role in alleviating the adverse consequences associated with such injuries (Woods and Matthewson, 2021). The primary objective of these programs is to provide comprehensive assistance to individuals as they progress through the process of recuperation, ultimately enabling them to reintegrate into the workforce safely and effectively. In order to attain these objectives, return-to-work programs may implement a diverse range of strategies including workplace accommodations, rehabilitation services, and early return-to-work programs. Notwithstanding the potential advantages of return-to-work programs, the existing body of research on their efficacy remains limited. The existing body of literature exhibits limitations regarding the diversity of program typologies, implementation approaches, and assessment methodologies. Consequently, the task of discerning the optimal methodologies to facilitate the rehabilitation and reintegration of injured workers into the workforce poses a considerable challenge. The dearth of comprehension in this context is particularly disconcerting, considering the profound ramifications that occupational injuries can exert on the holistic welfare of workers and their capacity to reintegrate into the workforce.

The occurrence of occupational injuries may have significant effects on the physical health, economic security, and holistic well-being of workers (OIT, 2012). Individuals who are afflicted with work-related injuries may encounter a diverse array of physiological, psychological, and economic obstacles. Time-loss injuries have been observed to exhibit a significant correlation with suboptimal mental and physical well-being. Furthermore, these injuries have been found to exert considerable strain on interpersonal and spousal relationships, primarily attributed to heightened financial burdens and alterations in familial roles and obligations. Moreover, the onus of enduring prolonged work incapacity can engender significant economic ramifications, constituting a substantial portion of expenses related to workers' compensation and the depletion of productivity. The present scoping review endeavors to bridge this void in the scientific literature by thoroughly investigating the extant body of evidence pertaining to RTW programs specifically designed for individuals employed in the manufacturing sector who have experienced occupational injuries. The review encompasses an exhaustive exploration of pertinent databases and a methodical evaluation of qualifying studies. The findings of this comprehensive analysis yielded significant insights regarding the efficacy of RTW programs. These insights further serve as a foundation for the formulation and refinement of forthcoming programs designed to facilitate the recuperation process of injured individuals within the workforce.

METHODS

A scoping review, as a form of preliminary investigation, endeavors to comprehend the extant body of literature pertaining to a particular subject matter. This comprehensive analysis encompasses

a wide range of evidence, without confining itself to any specific study design. Instead, it aims to identify and include all pertinent literature within the framework of a systematic review. The primary aim of a scoping review is to discern and delineate fundamental concepts, areas of limited understanding, and the various forms of the existing empirical substantiation within a specific domain (Pollock *et al*., 2021)

The Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) protocol was meticulously adhered to in our study. This protocol serves as a comprehensive framework of guidelines specifically designed for the accurate and transparent reporting of systematic reviews and meta-analyses. The primary objective of this program was to enhance the clarity and comprehensiveness of documentation, while also guaranteeing the inclusion of crucial details (Peters *et al*., 2020). The methodology employed in scoping reviews is predicated upon a meticulously structured framework that delineates the sequential procedures and intricacies entailed in executing a comprehensive review. The framework has garnered considerable utilization within the realm of scoping reviews and affords a comprehensive delineation for the execution of a scoping review (McMeekin *et al*., 2020; Ashraf, Ng and Goh, 2021).

This scoping review process includes a series of essential stages, starting with the establishment of the systematic search, followed by the identification of pertinent literature sources by developing the eligibility criteria, the discernment of suitable studies in the study selection phase, and culminating in the integration of the acquired data by extraction and synthesis. The procedural undertaking of conducting this scoping review is meticulously and comprehensively structured, thereby guaranteeing the incorporation of pertinent scholarly works within the review. In addition, we have effectively utilized a multitude of artificial intelligence systems in our research endeavors. The findings of a scoping review offer a comprehensive and all-encompassing synopsis of the extant body of literature pertaining to a particular subject matter. These findings possess the potential to serve as a valuable resource for guiding subsequent investigations and facilitating informed decision-making processes.

Systematic Search

The systematic search conducted in our study exemplified a meticulous and exhaustive methodology employed to identify pertinent scholarly literature pertaining to the reintegration of workers into the workforce subsequent to occupational incidents within the manufacturing domain. This particular modality of inquiry entails the implementation of a sequence of standardized methodologies aimed at identifying, selecting, and critically evaluating pertinent studies.

Concurrently, we have undertaken a Perplexity AI-facilitated inquiry, wherein we have refined the search outcomes to encompass solely pertinent references derived from esteemed scientific journals. Furthermore, we have diligently verified that these outcomes are duly acknowledged within the databases we have employed. By employing electronic databases such as PubMed, Scopus, and Web of Science, an extensive corpus of scholarly articles published within the preceding decade was

Table 1. Criteria for Study Selection and Search Strategy

Component	Inclusion Criteria	Search Strategy
Population	Manufacturing workers	(manufactur* OR factory* OR industrial*) AND (worker* OR employee*)
Intervention	The Return to Work (RTW) Program is a comprehensive programs aimed at facilitating the reintegration of workers into the labor market after a period of absence due to illness or injury. This program is designed as rehabilitation to address the particular requirements and obstacles faced by people seeking within the framework of resume their professional.	(("return to work program"[MeSH Terms] OR “rehabilitation” OR "return to work program") OR ("RTW program"[MeSH Terms] OR "RTW program"))
Comparison	Not applicable	N/A
Outcomes	Impact of RTW or Rehabilitation Programs	("Effectiveness" OR "Impact" OR "Outcome") AND ("Return to Work" OR "Rehabilitation program") [MeSH Term]
Context	Occupational injuries	("occupational injuries" OR "workplace accidents" OR "work-related injuries")

successfully retrieved. The diligent research team meticulously formulated the preliminary search terms by discerning pivotal keywords from studies pertaining to RTW and disability management, alongside occupational and manufacturing injuries and accidents. This facilitated the assurance that the obtained search outcomes were pertinent to our research.

Eligibility Criteria

The establishment of eligibility criteria was imperative in order to ascertain the inclusion of solely pertinent articles within the purview of our study. Utilizing the Rayyan AI, an artificial intelligence system, we employed a method to facilitate the curation of references obtained from a comprehensive database. These references were subsequently subjected to a meticulous filtration process, guided by predetermined eligibility criteria where studies included in the identification process are studies published in the range of the last 10 years. The selection criteria were formulated in accordance with the research inquiry, with the objective of identifying scholarly articles that delve into the examination of conceivable impediments or catalysts to the process of RTW within the manufacturing industry subsequent to a work-related injury. The comprehensive content of each article was meticulously scrutinized to ascertain its adherence to the aforementioned criteria. This particular step held significant importance as our primary objective was to gain a comprehensive understanding of the distinct challenges and opportunities pertaining to the RTW process within the manufacturing sector. This step played a crucial role in guaranteeing that our study maintained a concentrated and pertinent approach.

Study Selection

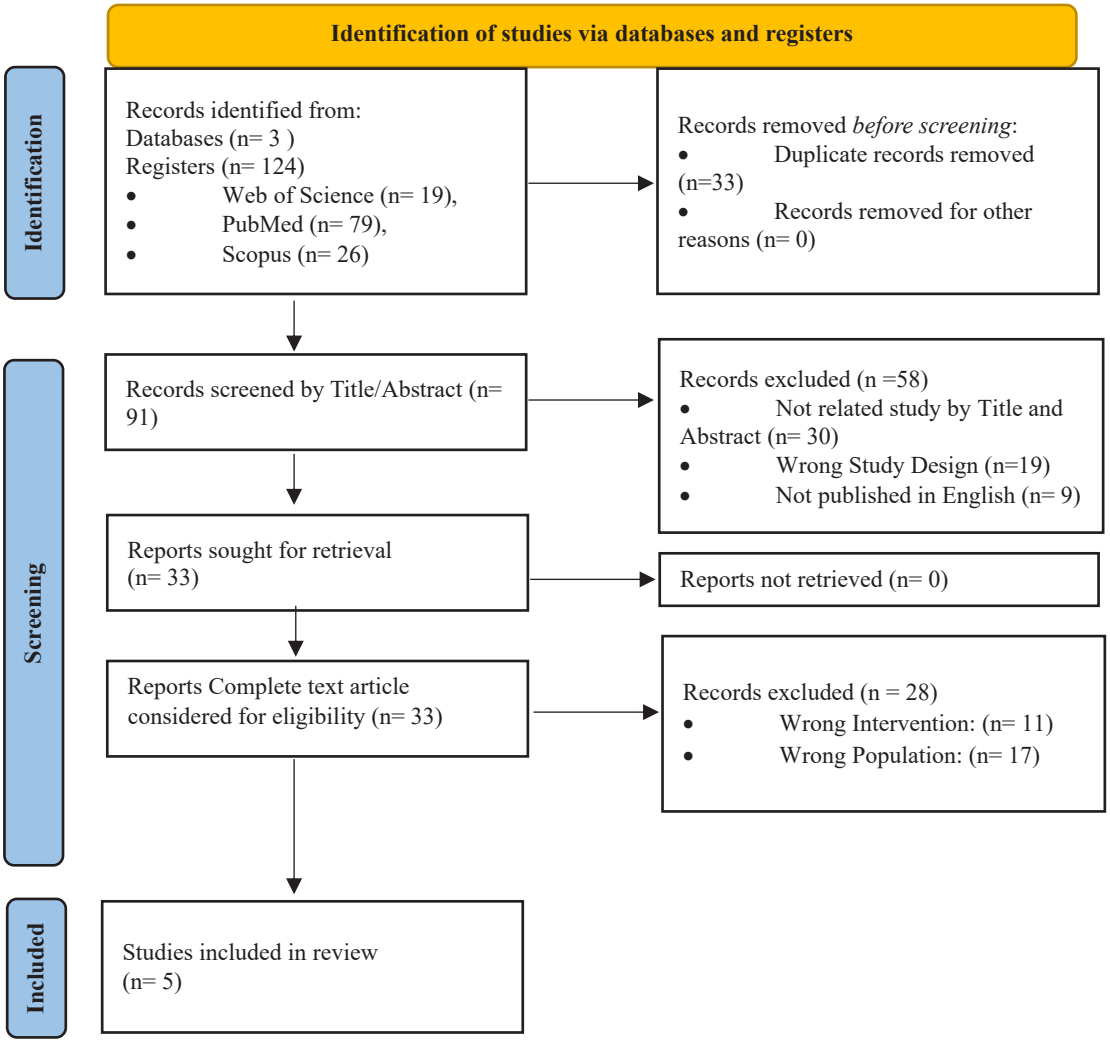

Figure 1. Visual methodology based on PRISMA

The process of study selection included thorough screening of the retrieved search results to ascertain their alignment with the predetermined eligibility criteria. The criteria for inclusion covered articles or studies concerning manufacturing workers, specifically those employed in factory or industrial settings. The focus of these articles or studies had to revolve around return-to-work programs or comparable rehabilitation programs aimed at enabling the reintegration of occupationally injured workers into the labor market. In addition, the eligibility of the articles or studies was based on having been published in English, the language comprehensible to the researchers. Articles that did not meet the eligibility requirements were excluded throughout the screening phase, which was crucial since it reduced the possibility of bias and kept the study's attention on the appropriate areas. Excluded from the analysis were studies that failed to specifically investigate occupational injuries or did not explicitly delineate the occurrence of the injury within the context of the respective work environment. Furthermore, it is imperative to note that scholarly articles that merely assert the correlation between employment in the manufacturing sector and return to work (RTW) without delineating the specific obstacles or facilitators involved were deemed unsuitable for incorporation into the present investigation. Consequently, we have incorporated empirical articles that employ qualitative, quantitative, or hybrid methodologies. However, it is imperative to note that various forms of literature, including but not limited to reviews, comments, editorials, and case reports, were excluded from the scope of this study.

Extraction and Synthesis

The data collection and synthesis procedure included the gathering of information from the chosen publications, followed by the synthesis of this data to discern prevalent themes and patterns. The inclusion of this stage was of utmost importance as it facilitated our comprehension of the RTW program within the manufacturing industry subsequent to a workplace accident, while also enabling the identification of pivotal aspects that may potentially influence the RTW process. The data was meticulously gathered and subjected to analysis, resulting in the synthesis of results that provide a thorough portrayal of the present understanding of return-to-work (RTW) in the manufacturing sector subsequent to a work-related accident.

RESULT

Feature Research Characteristic

After conducting a thorough search of academic databases, we were able to locate studies that addressed possible hurdles or facilitators to RTW after an occupational accident in the manufacturing sector. The search technique yielded a total of 124 articles, including three databases: Web of Science, PubMed, and Scopus. The selection of these databases was predicated on its considered being in disseminating research papers. The first stage of the inclusion process was the elimination of redundant entries, leading to the removal of a total of 33 duplicate data. This measure protected the integrity of the data by eliminating duplication of the same research, so mitigating any biases. Subsequently, the titles and abstracts of the remaining 91 records were subjected to screening. The screening procedure facilitated the identification of papers that were deemed irrelevant to the research subject, had an inappropriate study design, or were not published in the English language. Following the completion of this procedure, a total of 58 records were eliminated based on the aforementioned grounds.

Literature Search and Inclusion

For purposes of determining eligibility, the 33 remaining studies were retrieved and their whole text was examined. The research examined manufacturing RTW hurdles and enablers following job injuries to determine eligibility. In this case, the eligibility criteria helped narrow the study's focus and exclude irrelevant content.

Based on the full text, 28 entries were removed because they lacked proper intervention (n=11) or population (n=17). This stage constituted an additional measure inside the refining process, aimed at guaranteeing the relevance and alignment of the data with the study topic. In the final analysis, a total of five papers were included into the evaluation, since they were determined to satisfy the predetermined criteria for inclusion.

In summary, the attentive approach employed in this investigation encompassed a comprehensive examination of the existing literatures and the establishment of specific inclusion criteria. As a

result, a total of 5 pertinent studies were successfully identified, shedding light on the various factors that may impede or enhance the process of returning to work (RTW) within the manufacturing industry subsequent to a work-related injury. The screening and inclusion procedures were conducted with attention to detail and rigor, thereby ensuring the data's precision and applicability to the research inquiry. The implemented procedure additionally facilitated the mitigation of bias and thereby ensured the attainment of precise and reliable outcomes (Refer to Figure 1).

The scoping review comprised five studies that identified important aspects, modifiable variables, existing practices, environmental and personal factors, and time to RTW. These studies provide evidence on the RTW process for people with restricted mobility and may inspire future research and treatments to improve RTW outcomes using different study designs, locations, and interventions. The study designs included focus group discussions (Jakobsen and Svendsen, 2013), retrospective cohort (Sears *et al*., 2021, Tamene *et al*., 2022), cross-sectional (James *et al*., 2018), and qualitative study (interviews) (Hoefsmit, Houkes, and Nijhuis, 2014). The locations of the studies were Norway (Jakobsen and Svendsen, 2013), the USA (Sears *et al*., 2021, Tamene *et al*., 2022), and Australia (James *et al*., 2018), and the Netherlands (Hoefsmit, Houkes, and Nijhuis, 2014) (See Table 2).

The primary aim of the research conducted by Jakobsen and Svendsen (Jakobsen and Svendsen, 2013)was to ascertain the fundamental components that contribute to a RTW for individuals experiencing diminished mobility, as perceived by employers. The research conducted by (Sears *et al*., 2021)sought to ascertain the modifiable organizational and psychosocial workplace factors that are correlated with interruptions in RTW and subsequent reinjury among individuals with permanent impairment. The research conducted by (James *et al*., 2018) sought to elucidate prevailing methodologies and protocols employed in the process of facilitating the RTW of nurses who have sustained injuries. The primary objective was to ascertain fundamental principles that contribute to the achievement of a successful RTW outcome. The primary objective of the investigation conducted by (Hoefsmit, Houkes and Nijhuis, 2014), was to discern the various environmental and personal factors that contribute to the facilitation of RTW. The investigation conducted by (Tamene *et al*., 2022) sought to examine the duration required for individuals to RTW.

Summary of Challenges and Supports

The studies presented in Figure 2 aim to understand various challenges and supports related to RTW program for workers after occupational injuries. The study designs include focus group discussions, retrospective cohort, cross-sectional, and qualitative interviews. The locations of the studies range from various countries Norway to the USA, Ethiopia and Australia. The interventions aim to identify key elements for successful RTW from the employers' perspective, modifiable workplace and psychosocial factors, current practices and principles for successful RTW, environmental and personal factors that support RTW, and time to RTW. These studies provide valuable insights into the complexities of RTW and help in developing strategis to support individuals in their RTW journey.

Table 2. Characteristic Included Studies

Authors	Study Design	Location	Intervention
(Jakobsen and Svendsen, 2013)	Focus Group Discussions	Norway	Identify key elements for successful return to work (RTW) for persons with reduced mobility from the employers' perspective
(Sears *et al*., 2021)	Retrospective cohort	USA	Identify modifiable organizational and psychosocial workplace factors associated with rtw interruption and reinjury among workers with permanent impairment
(James *et al*., 2018)	Cross-sectional	Australia	Identify current practices and processes used in the rtw of injured nurses and determine principles for successful RTW.
(Hoefsmit, Houkes and Nijhuis, 2014)	Qualitative study: interviews	Netherlands	Identify environmental and personal factors that support RTW
(Tamene *et al*., 2022)	Retrospective cohort	Ethiopia	Investigate time to RTW

Policies Regarding Disability at Workplace

Studies have been conducted to examine the factors that contribute to an RTW for individuals with reduced mobility. According to previous study (Jakobsen and Svendsen, 2013), good RTW depends on the communication abilities of leaders at workplace, workplace modifications, and public service coordination. Study (Sears *et al*., 2021) found that workplace factors such as lower levels of safety climate, supervisor support, and time off work for personal/family matters were significantly associated with RTW interruption and reinjury. In the study conducted previously (James *et al*., 2018), an observation obtained that the methodologies and procedures employed in the RTW of nurses who had sustained injuries exhibited a lack of consistency compared to the established seven principles that are known to facilitate successful RTW outcomes.

In a turning point, a comprehensive qualitative investigation was undertaken to elucidate the intricate interplay of environmental and personal factors that facilitate the process of RTW (Hoefsmit, Houkes and Nijhuis, 2014). We discovered that social support, the idea that work promotes health, effective teamwork, and employer communication abilities supported RTW. Personal factors, including a favorable perception of the working situation, were found to exert influence in the observed outcomes. In a retrospective cohort study (Tamene *et al*., 2022), an investigation was undertaken to explore the various factors influencing the return to work among metalworkers who experienced occupational accidents. The study revealed that several determinants played a role in this process, encompassing professional certification, occupation, presence of dependents in the household, and the specific cause of injury. The studies underscore the significance of various elements in guaranteeing a success RTW for individuals experiencing disabilities within the occupational setting. It is imperative for organizations to prioritize the implementation of a comprehensive approach that duly considers the interplay between environmental and personal factors to effectively facilitate the reintegration of their employees into the workforce.

Rehabilitation Services

The two studies conducted by Jakobsen and Svendsen, 2013; Sears *et al*. (2021) focused on the importance of the RTW process for individuals with disabilities or permanent impairments. An examination was also carried out (akobsen and Svendsen (2013) to identify the inclusion process from the employers' perspective and find that communication skills, necessary workplace adaptations, coordination of public services,

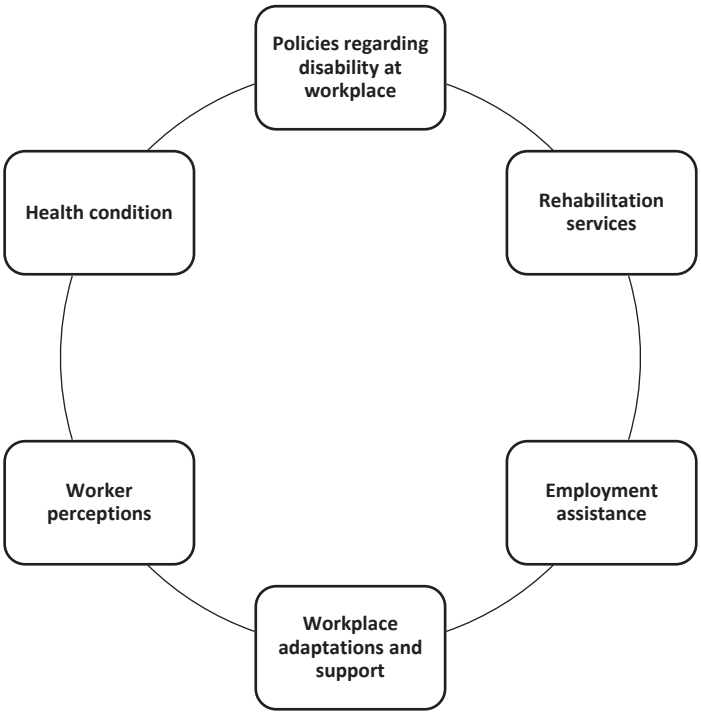

Figure 2. Key Factors of RTW Program in Manufacture Workers

and provider presentation of assistance are all crucial components for a positive return to work process. Another study (Sears *et al*., 2021) was also carried out, focusing on identifying modifiable organizational and psychosocial workplace factors associated with return to work interruption and reinjury among workers with permanent impairments. They found that factors such as supervisor support, safety climate, ability to take time off, and coworker support are all significant indicators of a successful return to work process.

The study by James *et al*. (2018) focused on the return to work process specifically for nurses who have sustained workplace injuries or illnesses. The study found that the four main areas of concern include commitment to health and safety, early and considerate employer contact, provision of modified work, and individual knowledge and involvement in the RTW process. The findings suggest that the active participation of both co-workers and supervisors plays a crucial role in facilitating a favorable outcome during the RTW process.

Employment Assistance

The quintet of studies pertaining to workplace support and assistance for individuals afflicted with disabilities or injuries effectively underscore the crucial function that workplace leaders, managers, coworkers, and occupational health professionals assume in expediting the successful return to work (RTW) endeavor. Research emphasized the need for an encouraging workplace culture, understanding, and helpful management, clear and frequent lines of communication, and thorough training and education for employers to facilitate a successful RTW for injured employees. Moreover, the aforementioned studies underscored the imperative nature of ensuring the availability of essential resources, cutting-edge technology, and state-of-the-art equipment. Furthermore, they emphasized the utmost importance of closing the existing disparity between prevailing methodologies and the principles governing optimal practices in the realm of RTW. The findings ultimately ascertain that allocating resources towards RTW program is imperative in order to uphold the physical and mental wellness of employees, as well as to mitigate the likelihood of interruptions in the RTW process and the occurrence of subsequent injuries.

Workplace Adaptations and Support

The studies also emphasized the value of occupational health professionals in easing the RTW process, as well as the importance of modifiable organizational and psychosocial workplace factors like safety climate, supervisor support, and the availability of leave time in facilitating a successful RTW for injured workers. The research conducted by Hoefsmit, Houkes and Nijhuis (2014) placed particular emphasis on the significant role that occupational health experts assume in facilitating the RTW process. The research conducted by James *et al*. (2018) drew attention to the lack of alignment between the existing methods and procedures used in the RTW process for injured nurses and the principles of best practice. This point of view demonstrates the imperative of delivering targeted educational and training programs to employers, with the aim of augmenting the outcomes of RTW program within the relevant sector.

Worker Perception

The aim of this scoping review provides a review of the many elements that influence the process of workers returning to work (RTW) after impairments or injuries sustained in the workplace. Occupational health experts' roles, employer attitudes and skills, changeable organizational and psychosocial workplace determinants, existing RTW practices and procedures, and interdisciplinary approaches are among these aspects. According to the research, RTW results may be improved by providing a supportive work environment that emphasizes worker health and well-being and focused education and training. Lower safety atmosphere, supervisor support, and capacity to take time off work for personal/family concerns were substantially linked with RTW interruption and reinjury (Sears *et al*., 2021). Workplace characteristics promote safe and sustained RTW for wounded employees, and the research suggests workplace measures to prevent occupational injury and sickness.

Health Condition

The second and fourth studies both delve into the impact of health conditions and injuries on the return-to-work (RTW) process for workers. A previous study (Sears *et al*., 2021) specifically

focused on the correlation between reinjury among workers with permanent impairments and modifiable organizational and psychosocial workplace factors. Meanwhile, another study (Hoefsmit, Houkes and Nijhuis, 2014) looked at workers with disabilities or chronic conditions and their role in RTW. These studies highlighted the importance of considering the effects of health conditions and injuries on the RTW process and the need to address any contributing factors in order to improve outcomes for workers.

DISCUSSION

Discussion the Key Outcomes

The concept of disability in the workplace policies encompasses a multitude of regulations and guidelines that dictate the manner in which individuals with disabilities are to be treated and integrated within the professional setting (Hoedeman, 2012; Laberon, 2014; Ndzwayiba and Ned, 2017). The findings derived from the topic analysis revealed that a significant proportion of organizations have established policies aimed at providing assistance to their workforce comprising individuals with disabilities. However, it is noteworthy that the successful execution and enforcement of said policies do not consistently materialize. There is also a shortage of education and training on how to administer these regulations, which may lead to misconceptions and prejudice, as is shown.

Rehabilitation services include a comprehensive set of resources and support systems that are judiciously allocated to individuals within the workforce who have been afflicted by disabilities, thereby facilitating their seamless reintegration into the context of productive employment subsequent to an injury or illness. The findings derived from the topic analysis revealed that numerous establishments have implemented rehabilitation programs; however, it is noteworthy to mention that these programs often lack comprehensiveness and accessibility. It is readily apparent that a significant proportion of individuals with disabilities employed lack awareness regarding the availability of rehabilitation services tailored to their needs. This lack of awareness can result in untimely reintegration into the workforce and exert an adverse influence on their holistic health and well-being (Aas *et al*., 2018; Skarpaas *et al*., 2019a, 2019b).

Workplace assistance comprises the provision of support and resources to individuals with disabilities within the professional setting, with the aim of facilitating their optimal performance of job-related tasks (Bastien and Corbière, 2019; Bonaccio *et al*., 2020). The findings of the topic analysis indicate a notable disparity in the delivery of workplace support, as several individuals with disabilities experience feelings of isolation and a lack of help within their professional roles. The presence of a clear need for increased allocation of resources towards technology and equipment to facilitate the productivity of employees with impairments, with a demand for enhanced training and education for managers and colleagues in order to effectively give support, is apparent.

The concept of workplace adaptations and disability management pertains to the implementation of adjustments and provisions within the work environment aimed at providing assistance to individuals with disabilities (Berglund *et al*., 1994). The results of the topic analysis indicate that many organizations are not fully aware of the importance of workplace adaptations, and that there is a need for greater education and training on the subject. It is also clear that many employees with disabilities are not comfortable discussing their needs with their managers, which can result in a lack of support and a negative impact on their job performance.

Attitudes in the workplace relate to the views and opinions held by workers and supervisors towards those in the workforce who are disabled (de Ramirez. *et al*., 2011). According to the issue analysis, disabled workers still face stigma and prejudice, which may hurt their job satisfaction and well-being. It is evident that there is a need for enhanced education and consciousness-raising among workers and management on the significance and value of inclusiveness and diversity within the professional environment.

Moreover, injury details pertain to the precise injuries and health issues that individuals with disabilities who are employed may encounter. The findings of the topic analysis indicated a dearth of understanding among workers and managers about the distinct requirements and obstacles encountered by employees with disabilities. This deficiency in knowledge may lead to inadequate or inefficacious assistance. It is evident that there is a need for increased allocation of resources towards research and education pertaining to this matter. Additionally,

a more extensive range of rehabilitation services is required to effectively assist individuals with disabilities in their recuperation and reintegration into the workforce (Younesi, Jalali and Saremi, 2020).

In light of the significance attributed to return-to-work programs in providing assistance to injured employees and minimizing the adverse consequences of occupational accidents, it is essential to enhance our comprehension of the efficacy of such programs. There is a need for a thorough examination of the current body of literature pertaining to RTW programs targeting manufacturing employees who have had occupational injuries. This study aims to identify optimal strategies and practices, with the ultimate goal of informing the design and implementation of successful programs that may provide valuable assistance to workers throughout their rehabilitation process.

RTW programs may decrease the detrimental effects of occupational injuries and help people return to work (Figueredo *et al*., 2020). Nevertheless, the efficacy of these programs remains poorly understood as a result of the restricted body of research dedicated to this topic. Therefore, it is essential to conduct an in-depth analysis of the current state of research in order to ascertain optimal strategies and guide the formulation of efficacious reintegration programs for manufacturing employees who have had work-related injuries.

Understanding and Implication for Further Study

The present scoping review has identified many areas of information deficiency pertaining to the efficacy of RTW programs for individuals who have sustained job-related injuries. One primary issue is to the absence of precise delineations and desired results for RTW programs. Various studies use distinct meanings of the concept of RTW (Jakobsen and Svendsen, 2013; Hoefsmit, Houkes and Nijhuis, 2014; Sears *et al*., 2021), which the lack of consistency among researchers poses challenges in comparing outcomes and evaluating the efficacy of various interventions. Furthermore, the research often places emphasis on immediate results, such as temporary leave from work, rather than enduring consequences, such as job contentment and the durability of employment.

One area of knowledge deficiency is to the constrained comprehension about the significance of human and organizational aspects in the process of returning to work. Several research studies have examined the influence of individual variables, including age, gender, and employment characteristics before to injury, on the reintegration of individuals into the workforce (James *et al*., 2018; Sears *et al*., 2021; Tamene *et al*., 2022), but few studies have examined the impact of organizational factors(Jakobsen and Svendsen, 2013; Hoefsmit, Houkes and Nijhuis, 2014), such as workplace culture, support from managers and coworkers, and workplace accommodations. These factors are crucial in understanding how to create effective return to work programs that support workers in their recovery and return to work (Etuknwa, Daniels and Eib, 2019; Svanholm *et al*., 2022).

Moreover, the third gap in knowledge is the lack of consideration of the role of workers' compensation in return to work. The workers' compensation system can have a significant impact on return to work, yet many studies have not explored the relationship between workers' compensation and return to work (Collie *et al*., 2019; de Rijk *et al*., 2020). This is an important avenue for future research, as understanding the impact of workers' compensation on return to work can inform the development of more effective return to work programs.

At some point, a knowledge deficit exists on the efficacy of various RTW program. Acquiring a comprehensive understanding of the efficacy of RTW programs has significant importance in enhancing the overall welfare of workers, mitigating expenses, and optimizing resource allocation (Kamdar *et al*., 2020). Although some studies have examined the effects of various strategies, such as vocational rehabilitation, early intervention, and workplace adjustments, there is a dearth of research that directly compares the efficacy of these treatment. This is an important area for future research, as it will inform the development of evidence-based return to work programs that support injured workers in their recovery and return to work. These gaps in knowledge highlight the need for future research to explore the role of individual and organizational factors, workers' compensation, and different types of interventions in return to work programs for injured workers.

Strengths and Limitations

This scoping review has several strengths that make it valuable. Firstly, this review examined the studies with large sample size, multiple sources of data which combination of claims data and survey data that allowed the authors to control for a wide

range of demographic and work-related factors, increasing the internal validity of the study which increases the generalizability of the results. As far as we are aware, this is the initial scoping review that concentrates on uncovering hindrances, promoters, and shortages in evidence regarding RTW in manufacture. Scoping evaluations offer a systematic way of charting the evidence and recognizing missing information.

Nevertheless, it is important to note that there are certain limitations in our review that should be taken into consideration. The primary restriction is that most of the studies used in our analysis originated from countries that have established work disability insurance programs. This implies that the findings from our analysis may not apply to nations where studies on universal health care systems have not been conducted. On top of that, we were restricted to reviewing just English-language research, so we missed out on information from studies written in other languages. The review's findings may have been distorted because of the language barrier.

CONCLUSION

The findings of this scoping review highlight the importance of various factors in promoting positive return to work outcomes for workers who have sustained occupational injuries. These factors include workplace leader communication skills, workplace adaptations, coordination of public services, safety climate, supervisor support, ability to take time off work, employer-healthcare provider communication, positive perception of the working situation, social support, belief that work stimulates health, effective cooperation, and professional certification. A multidisciplinary approach is necessary to address these factors and aid in the successful return to work of injured employees.

ACKNOWLEDGEMENTS

The authors would like to express sincere gratitude to the Tempus Public Foundation for awarding the first author with the scholarship, Stipendium Hungaricum. This opportunity has been instrumental in enabling the author to pursue research and academic interests. We would also like to extend our heartfelt thanks to the library of the University of Pécs for granting us access to conduct this scoping review. The resources and support have been invaluable in the research process and we are deeply appreciative of their efforts. This work would not have been possible without the support of these institutions, and we are grateful for the opportunities they have provided.

REFERENCES

Aas, R.W. *et al*. (2018) 'Who among Patients with Acquired Brain Injury Returned to Work after Occupational Rehabilitation? The Rapid-Return-to-Work-Cohort-Study', *Disability and Rehabilitation*, 40(21), p. 2561-2570.

Anderson, O., McLennan, V. and Randall, C. (2022) 'Treatment and Provider Choice in Worker Injury Rehabilitation: A Systematic Literature Review', *Journal of Vocational Rehabilitation*, 56 (1), pp. 43-53.

Ashraf, K., Ng, C.J. and Goh, K.L. (2021) 'Theories, Models and Frameworks in Men's Health Studies: A Scoping Review', *Journal of Men's Health*, 17(2), pp. 15-24

Bastien, M.-F. and Corbière, M. (2019) 'Return-to-Work Following Depression: What Work Accommodations Do Employers and Human Resources Directors Put in Place?', *Journal of Occupational Rehabilitation*, 29(2), pp. 423–432.

Berglund, G. *et al*. (1994) 'One-Year follow-up of the "Starting Again" Group Rehabilitation Programme for Cancer Patients.', *European Journal of Cancer*, 30A(12), pp. 1744-1751.

Birtanov, Y. (2016) 'Kazakhstan Gears up to Launch Social Health Insurance', *Bull World Health Organ,* 94(1), pp. 792-793.

Bonaccio, S. *et al*. (2020) 'The Participation of People with Disabilities in the Workplace Across the Employment Cycle: Employer Concerns and Research Evidence', *Journal of Business and Psychology*, 35(2), pp. 135–158.

Collie, A. *et al*. (2019) 'Patterns and Predictors of Return to Work After Major Trauma', *Annals of Surgery*, 269(5), pp. 972–978.

de Ramirez, S.S. *et al*. (2011) 'Trauma as the neglected emergency after emergency medical services systems introduction: Lessons learned from rural Uganda', *Annals of Emergency Medicine,* 58(4 Suplement), p.S281 .

de Rijk, A. *et al*. (2020) 'The Challenge of Return to Work in Workers with Cancer: Employer Priorities Despite Variation in Social Policies related to Work and Health', *Journal of Cancer Survivorship*, 14(2), pp. 188–199.

Diana, Z. *et al*. (2022) 'Voluntary Commitments Made by the World's Largest Companies Focus on Recycling and Packaging Over other Actions to Address the Plastics Crisis', *One Earth*, 5(11), pp. 1286–1306.

Dodoo, J.E. and Al-Samarraie, H. (2019) 'Factors Leading to Unsafe Behavior in the Twenty First Century Workplace: A Review', *Management Review Quarterly*, 69(4), pp. 391–414.

Etuknwa, A., Daniels, K. and Eib, C. (2019) 'Sustainable Return to Work: A Systematic Review Focusing on Personal and Social Factors', *Journal of Occupational Rehabilitation*, 29(4), pp. 679–700.

Figueredo, J.-M. *et al*. (2020) 'Well-Being at Work after Return to Work (RTW): A Systematic Review', *International Journal of Environmental Research and Public Health*, 17(20), pp. 1-27.

Hoedeman, R. (2012) 'OECD. Sick on the Job? Myths and Realities about Mental Health and Work.', *Tijdschrift voor bedrijfs- en verzekeringsgeneeskunde,* 20(5).

Hoefsmit, N., Houkes, I. and Nijhuis, F. (2014) 'Environmental and Personal Factors that Support Early Return-to-Work: A Qualitative Study using the ICF as a Framework', *Work*, 48(2), pp. 203-215.

Jakobsen, K. and Svendsen, E. (2013) 'Employers' Perspective: When a Return to Work is the Objective for Persons with Reduced Mobility', *Work*, 44(2), pp. 145-153.

James, C. *et al*. (2018) 'Practices and Processes Used in the Return to Work of Injured New South Wales Nurses: Are These Consistent With RTW Best Practice Principles?', *Journal of Occupational Rehabilitation*, 28(1), pp. 68–79.

Kamdar, B.B. *et al*. (2020) 'Return to Work after Critical Illness: A Systematic Review and Meta-Analysis', *Thorax*, 75(1), pp. 17–27.

Kshitij, G. *et al*. (2022) 'Resource Conservation and Sustainable Development in the Metal Cutting Industry within the Framework of the Green Economy Concept: An Overview and Case Study', *Sustainable Materials and Technologies*, 34, pp. 1-22.

Kurnianto, A.A. *et al*. (2023) 'Managing Disabled Workers due to Occupational Accidents in Indonesia: A Case Study on Return to Work Program', *BMC Public Health*, 23(1), p. 943.

Laberon, S. (2014) 'Psychological Barriers to Professional Inclusion of People with Mental Disabilities', *L'Encéphale*, 40 (Suppl 2), pp. S103-114.

Li, J. *et al*. (2020) 'The Effect of Exposure to Long Working Hours on Ischaemic Heart Disease: A Systematic Review and Meta-Analysis from the WHO/ILO Joint Estimates of the Work-related Burden of Disease and Injury', *Environment International*, 142, pp. 1-138.

McMeekin, N. *et al*. (2020) 'How methodological frameworks are being developed: Evidence from a scoping review', *BMC Medical Research Methodology*, 20(1), pp. 1-9.

Ndzwayiba, N. and Ned, L. (2017) 'The Complexity of Disability Inclusion in the Workplace: A South African Study', *in Factors in Studying Employment for Persons with Disability,* 10.

OIT (2012) 'Violence at Work - A Major Workplace Problem', *Social Science and Medicine*, 9(1).

Peters, M.D.J. *et al*. (2020) 'Updated Methodological Guidance for the Conduct of Scoping Reviews', *JBI Evidence Synthesis*, 18(10), pp. 2119–2126.

Pollock, D. *et al*. (2021) 'Undertaking a Scoping Review: A Practical Guide for Nursing and Midwifery Students, Clinicians, Researchers, and Academics', *Journal of Advanced Nursing*, 77(4), pp. 2102-2113.

Rehman, K. *et al*. (2018) 'Prevalence of Exposure of Heavy Metals and their Impact on Health Consequences', *Journal of Cellular Biochemistry*, 119(1), pp. 157–184.

Rodriguez Diez-Caballero, B. *et al*. (2020) 'Occupational Risk Factors for Shoulder Chronic Tendinous Pathology in the Spanish Automotive Manufacturing Sector: A Case-Control Study', B*MC Musculoskeletal Disorders*, 21(1), pp. 1-8.

Sears, J.M. *et al*. (2021) 'Workplace Organizational and Psychosocial Factors Associated with Return-to-Work Interruption and Reinjury among Workers with Permanent Impairment', *Annals of Work Exposures and Health*, 65(5), pp. 566–580.

Shafique, M. and Rafiq, M. (2019) 'An Overview of Construction Occupational Accidents in Hong Kong: A Recent Trend and Future Perspectives', *Applied Sciences*, 9(10), pp. 1-16.

Skarpaas, L.S. *et al*. (2019a) 'Horizontal Return to Work Coordination was More Common in RTW Programs than the Recommended Vertical Coordination. The Rapid-RTW Cohort Study', *BMC Health Services Research*, 19(1), pp. 1-12.

Skarpaas, L.S. *et al*. (2019b) 'The Association between having a Coordinator and Return to

Work: The Rapid-Return-to-Work Cohort Study', *BMJ Open*, 9(2), pp. 1-8.

Svanholm, F. *et al*. (2022) 'Factors of Importance for Return to Work, Experienced by Patients with Chronic Pain that have Completed a Multimodal Rehabilitation Program – A Focus Group Study', *Disability and Rehabilitation*, 44(5), pp. 736–744.

Tamene, A. *et al*. (2022) 'Time to Return to Work After an Occupational Injury and Its Prognostic factors Among Employees of Large-Scale Metal Manufacturing Facilities in Ethiopia: A Retrospective Cohort', *Environmental Health Insights*, 16, pp. 1-11.

Varshavsky, A.E. and Dubinina, V. v. (2020) 'Global Trends and Directions of Development of Industrial Robots', *MIR (Modernization. Innovation. Research)*, 11(3). pp. 294-319.

Wang, F. and Wu, M. (2023) 'How does Trade Policy Uncertainty Affect China's Economy and Energy?', *Journal of Environmental Management*, 330, pp. 1-13.

Wei, H. and Lahiri, R. (2022) 'Urbanization, Energy-use Intensity and Emissions: A Sectoral Approach', *Economic Analysis and Policy*, 76, pp. 667–684.

Woods, M. and Matthewson, M.L. (2021) 'Managing and Mitigating Suffering in the Return-to-Work Process', *Frontiers in Psychology*, 12, pp. 1-6.

Younesi, S., Jalali, M. and Saremi, M. (2020) 'Investigating the Physical State of the Body and the Prevalence of Musculoskeletal Discomfort in the Fruit Pickers', *Iran Occupational Health*, 17(1), pp. 1-12.