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REVIEW ARTICLE

Governance and human rights in construction safety: A systematic review on cause of accidents among foreign workers

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ABSTRACT - As workplace accidents, including fatalities, continue to pose a significant concern, especially within the construction sector and among foreign workers, it needs to be seriously addressed and promptly monitored. However, there is a notable lack of comprehensive reviews exploring the causes of accidents among foreign workers in the construction sector. Consequently, this research undertakes a systematic literature review with the following study objectives: (1) What are the underlying causes of construction accidents among foreign workers? And (2) What potential areas of research can be explored to mitigate accidents among foreign workers in the construction sector? The study follows a review protocol, formulates research questions, and systematically conducts searches using Scopus databases to ensure rigour and relevance in the analysis. The findings of the review demonstrate that language problems have a very significant connection with the construction sector which can cause accidents, followed by lack of safety training among foreign workers, cultural differences, poor communication, lack of safety knowledge, falls from height, and lack of experience as the causes of construction accidents among foreign workers. Furthermore, this paper provides valuable guidance and ideas for future researchers interested in exploring deeper into Sustainability Development Goals (SDGs) investigations in the construction sector.

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1. INTRODUCTION

According to the United Nations Declaration on Human Rights, safety at work is recognized as a fundamental human right (Gutterman, 2024). The United Nations General Assembly has established the Sustainable Development Goals (SDGs) as a framework to guide sustainable development efforts by the year 2030. Among these goals are SDG 3 and SDG 8, which specifically target workplace safety and health. SDG 3 emphasizes the importance of a safe and healthy work environment in protecting the well-being of workers (Milea et al., 2025). Organizations could improve the overall health of employees by implementing safe work practices, which help reduce the chances of workplace accidents, injuries, and occupational illnesses (Kang et al., 2024; Michaels & Wagner, 2025). SDG 8 aims to encourage long-lasting, comprehensive, and environmentally friendly economic expansion, as well as ensuring full and effective employment (Arora et al., 2024). Achieving this goal relies heavily on safe work practices, which foster an atmosphere that is good for productivity on the job (Wong, Sapuan, & Ali Khan, 2023). A working environment that ensures safety in the workplace not only improves productivity but also makes a substantial contribution to economic growth. Companies should prioritize safety measures to foster inclusive cultures that protect employees and promote overall health and safety by acknowledging the critical necessity of a safe and healthy workplace. The adoption of a zero-accident policy is closely aligned with the objectives of SDG 3.6, which aims to reduce road injuries and fatalities, and SDG 11.2, which focuses on providing safe, affordable, and sustainable transport systems with improved road safety. This alignment is particularly significant in the construction sector, where the intersection of transportation and on-site safety presents critical risks. In this context, organizational commitment to such goals may also reflect the integration of broader governance principles.

Yap et al. (2023) highlighted that the construction industry is highly influential and contributes significantly to the growth of a nation. The construction industry is widely recognized as being particularly high-risk because of its dynamic, complex and unique nature (Kadil & Maarof, 2024). It also involves a wide variety of potentially hazardous duties. Sanni-Anibire et al. (2020) emphasize that the construction sector is recognized globally as one of the most dangerous due to the significant occurrences of fatalities and accidents that continuously increase yearly. As a result, in their risky job environment, construction workers are subject to a variety of safety dangers that have the potential to cause fatalities, permanent disabilities, and injuries (Koh et al., 2022). Additionally, Sanni-Anibire et al. (2020) concluded that there are 50% more construction-related injuries and accidents in the United States and Japan than in any other sector. Furthermore, the average frequency rate of fatal accidents (FAFR) in the Indian construction business is 50 times greater than in the United States (Sanni-Anibire et al., 2020). According to the International Labour Organization (ILO) in 2021, construction

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contributes to 30% of fatal accidents. Workers in this industry have a threefold higher risk of death than those in other industries (Zi Yi et al., 2023). Therefore, there is an urgent need for increased efforts to improve safety management in construction projects, particularly in the context of the developing world (Yap et al., 2023).

Given the high risk of hazards associated with the construction industry, workers in this sector encounter substantial risks in the course of their jobs. One of the most common risks is falling, which even at relatively low heights can have serious impacts, including fatalities (Neale & Gurmu, 2021). From 2000 to 2020, the construction industry in the US recorded 23,067 incidents involving falls from heights (Halabi et al., 2022). Comparably, fall and struck-by incidents have been the most frequent on construction sites in Hong Kong over the years (Chan et al., 2022). Furthermore, risks associated with specific work settings and building techniques differ for every project, for instance, operating close to water sources raises the possibility of mishaps, including fatalities (Chan et al., 2022). Despite extensive research on safety performance and awareness in the construction industry, it is crucial to recognize the profound influence of safety culture on human behaviour (Zhang et al., 2020). Foreign workers in construction, who are not citizens of the country in which they are employed, face a disproportionately higher risk. According to studies, foreign workers in Taiwan and Japan have a fatal accident rate that is half that of local workers (Zi Yi et al., 2023). Research conducted by Zerguine et al. (2018) indicates that 22.6% of foreign construction workers reported experiencing work-related injuries within a one-year recall period. As foreign workers originate from a variety of cultural backgrounds, safety education programs must be put in place in the countries of origin to improve workers' capacity to identify and mitigate risks effectively.

As workplace accidents including fatalities continue to pose a significant concern, especially within the construction sector and among foreign workers, it need to be seriously addressed and promptly monitored. Therefore, there is a need for serious consideration and active monitoring, particularly in the construction sector and among foreign workers. Workplace accidents compromise organizational safety, productivity, and reputation and put employee well-being at serious risk. The outcomes are injuries, loss of lives, and project delays. The industry has not been very successful despite several initiatives on safety. While general construction safety has been widely studied, there is very little has been given to the unique vulnerabilities of foreign workers who often face heightened risks. Existing research tends to focus on local labor conditions or takes a focus on technical perspective. This study addresses this critical gap by conducting a systematic review to identify accident risk factors affecting foreign workers. In doing so, it contributes to the broader academic and practical discourse on occupational safety, ethical labor governance, and sustainable workforce management aligned with SDG 3 and SDG 8. Therefore, it is essential to gain a deeper understanding of these root causes and identify directions for future research. To address these issues, the following research questions were formulated:

a. What are the underlying causes of construction accidents among foreign workers?
b. What potential areas of research can be explored to mitigate accidents among foreign workers in the construction sector?

2. METHODOLOGY

The methodology in this research was employed to access publications regarding accidents among foreign workers in the construction sector. This approach involves stringent procedures and criteria aimed at identifying and reviewing related articles. Among the most widely used methods for conducting literature reviews are the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA), which serve as the foundation for locating the articles. PRISMA emphasizes the importance of examining randomized trials in review reports, making it an appropriate starting point for conducting systematic reviews. Additionally, PRISMA provides explicit criteria for inclusion and exclusion, thereby facilitating the identification of relevant publications for the review (Moher et al., 2009). PRISMA plays a crucial role in performing systematic reviews that prioritize randomized controlled trials as the primary basis for research. However, challenges may arise when reviewing qualitative and mixed-method study designs, requiring careful attention and adaptation throughout the review process. PRISMA searches scientific sources for comprehensive and unbiased systematic reviews (Rosa & Broday, 2018). By adhering to the research selection criteria, the screening strategy associated with PRISMA has the potential to streamline the volume of identified research, resulting in a more focused and relevant set of studies for further analysis (Moher et al., 2009). Although it is widely used in medical studies, PRISMA is versatile across disciplines, including this research, with precise inclusion and exclusion criteria to facilitate the selection of specific research studies for systematic review.

Among the most important and reliable databases competing in a systematic literature review are the Web of Science and Scopus (Zhu & Liu, 2020). This article utilizes Scopus as one of the primary databases. Al-Ryalat et al. (2019) justify the selection of articles from a single database, citing that Scopus yielded the maximum number of documents compared to Web of Science, emphasizing the necessity to explore further related papers. Furthermore, Patel et al. (2021) assert that the Scopus database stands as the most extensive multidisciplinary repository of abstracts and citations, making it an indispensable resource for relevant papers. Despite its relatively recent emergence, Scopus challenges the dominant position of the Web of Science in the field. Notably, Scopus encompasses eight prominent journals: ScienceDirect, Emerald Insight, Taylor & Francis, Springer Link, Wiley-Blackwell, Inderscience, SAGE, and IEEE Explore (Aripin et al., 2023).

In April 2024, search strings for the Scopus database were formulated by identifying all relevant terms. To enhance the transparency and reproducibility of the review process, Boolean operators were applied to formulate a comprehensive search string from the primary keywords; (1) accident, (2) construction, and (3) foreign worker. The final search string used was, ("accident" OR "hazard" OR "fatality" OR "incident" OR "mishap") AND ("construction" OR "building" OR "development") AND ("foreign worker" OR "migrant" OR "immigrant" OR "labour"). These terms were identified and refined based on previous literature and keyword expansion techniques. Subsequently, employing the updated keywords, the Scopus advanced search tool was utilized, resulting in the identification of 41 articles from the database as a result of the search efforts.

Therefore, this review exclusively focuses on journal papers, as the application of exclusion criteria enhances the quality of the results (Baashar et al., 2020). To ensure the relevance and quality of the selected articles, specific inclusion and exclusion criteria were applied. The inclusion criteria required that articles be published in English, appear in peer-reviewed journals, focus on the construction sector, and address safety issues or accidents involving foreign or migrant workers. On the other hand, the exclusion criteria eliminated articles that were not written in English, were conference papers, review articles, or editorials, or did not focus on construction or foreign worker-related topics. Following the application of inclusion and exclusion criteria, 35 articles were retained for the subsequent phase. Subsequently, a manual evaluation was conducted by reviewing titles and abstracts to ensure alignment with the research scope. During this stage, 18 articles were eliminated as they did not pertain to construction-related research or include foreign worker considerations. Furthermore, review articles were excluded due to their unsuitability for inclusion in this research. Consequently, 17 articles were concluded suitable for further analysis. Figure 1 provides a comprehensive process flow summarizing the systematic search process.

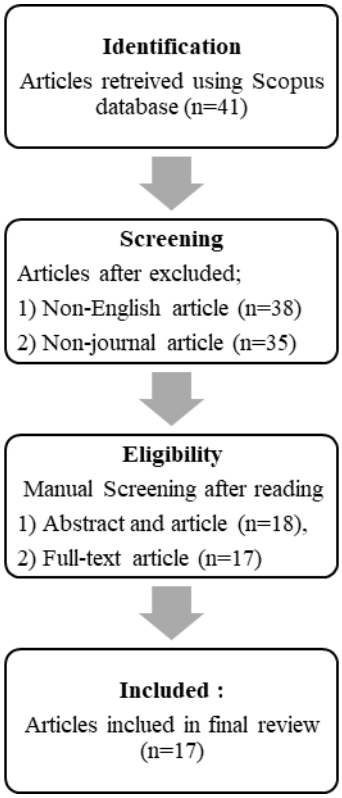

Figure 1. Search process flow

3. RESULT AND ANALYSIS

The section discusses the results from 17 articles based on the research string, the exclusion criteria and the manual screening process. The data revealed that the related articles were published from 1999 until 2023. In specific, one article was published in 1999 and years later, in 2011 one article was published. There was an increase in the publication of articles in 2013. Following that, one article was published in 2015, two articles in 2017, and three articles published in 2018. In addition, one article was published in 2019, 2021, and 2022 and in 2023, two articles were published. In short, the analysis proved a significant increase in interest and research linked to the causes of construction accidents among foreign workers as the trend has recently increased. Figure 2 provides a detailed explanation of the years of article publication.

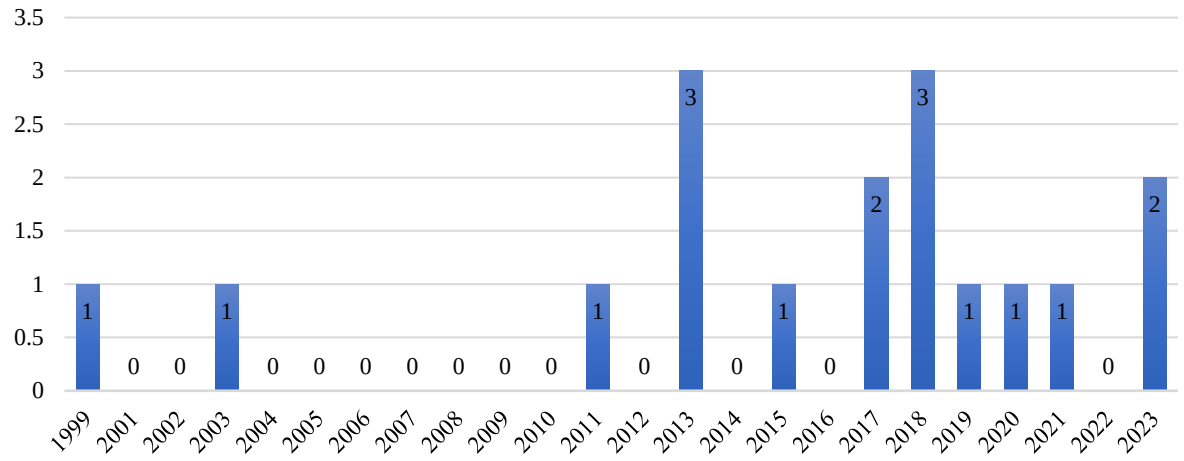

Figure 2. Year of publication

In terms of the distribution of publications by country, Korea has the largest number of published articles related to the causes of construction accidents among foreign workers with six articles published. Following that, three articles were published in Malaysia. In addition, Japan, Ireland, Thailand, Spain, the United Kingdom, Taiwan, the United States, and Israel each published only one article. A detailed overview of publication distribution by country is given in Figure 3.

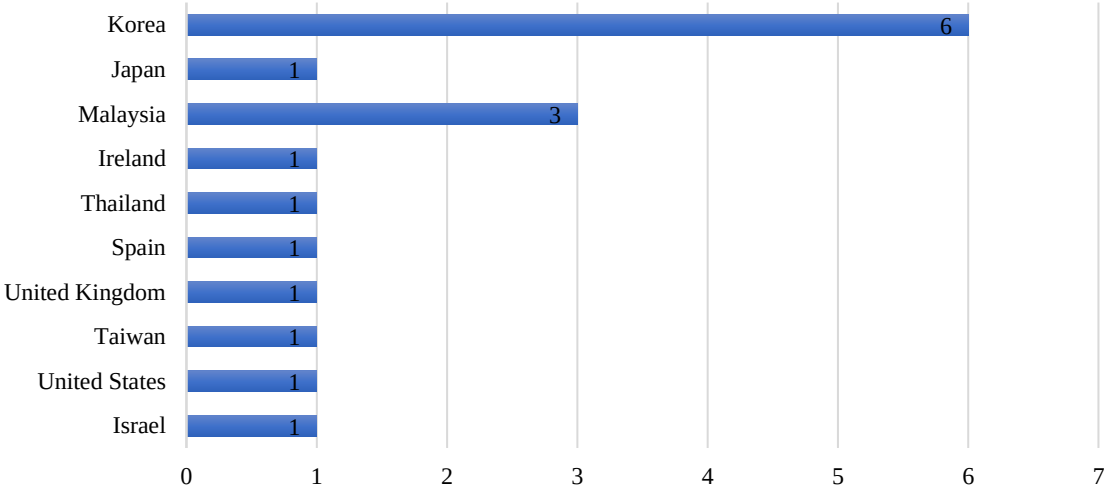

Figure 3. Publication by country

4. DISCUSSION

Based on the 17 articles, a thematic analysis was conducted leading to 7 main themes (i.e., language barrier, lack of safety knowledge, lack of safety training, fall from height, poor communication, lack of experience, and cultural difference). Table 1 presents a comprehensive list of developed themes and articles for the analyzed articles.

Table 1. Developed themes

Themes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Language barrier		/		/	/	/	/	/	/		/	/	/	/		/	/
Lack of safety knowledge	/	/		/	/				/			/	/	/			
Lack of safety training		/	/	/		/	/	/	/	/		/	/	/		/	
Fall from height		/	/	/					/						/	/	/
Poor communication		/		/		/	/	/			/	/	/	/			/
Lack of experience		/			/						/	/	/				/
Cultural Difference		/			/	/	/	/		/	/	/	/	/		/	

Note: 1 = Nam et al., (2023); 2 = Zi Yi et al., (2023); 3 = Lim et al., (2021); 4 = Yap & Lee, (2020); 5 = Cocerhan & Bradley, (2019); 6 = Pawthaisong et al., (2018); 7 = Romero Barriuso et al., (2018); 8 = Korkmaz & Park, (2018); 9 = Zerguine et al., (2018); 10 = Mazlina Zaira & Hadikusumo, (2017); 11 = Oswald et al., (2015); 12 = Cheng & Wu, (2013); 13 = Shin et al., (2013); 14 = Son et al., (2013); 15 = Park et al., (2011); 16 = Al-Kaabi & Hadipriono, (2003); 17 = Yanai et al., (1999).

Additionally, the rankings of each theme are influenced by the severity of the issues they address. Table 2 provides a detailed explanation of this relationship. The most frequently discussed theme is the language barrier, which is addressed in 13 articles, making it the top-ranked issue in terms of severity. Following is lack of safety training, discussed in 12 articles and cultural differences are the subject of discussion in 11 articles, it is the third position in severity rankings, while poor communication ranks fourth with 10 articles addressing this issue. Moreover, in fifth position, lack of safety knowledge is discussed in 8 articles and the theme of fall from height is addressed in 7 articles, ranking it sixth. Finally, lack of experience is discussed in 6 articles. These rankings offer insights into the relative importance and severity of each theme concerning construction accidents among foreign workers, providing valuable information for developing preventive measures and improving safety among foreign workers on construction sites.

Table 2. Ranks of themes

Themes	Article	Total	Rank
Language barrier	2, 4, 5, 6,7, 8, 9, 11, 12, 13, 14, 16, 17	13	1
Lack of safety training	2, 3, 4, 6, 7, 8, 9, 10, 12, 13, 14, 16	12	2
Cultural Difference	2, 5, 6, 7, 8, 10, 11, 12, 13, 14, 16	11	3
Poor communication	2, 4, 6, 7, 8, 11, 12, 13, 14, 17	10	4
Lack of safety knowledge	1, 2, 4, 5, 9, 12, 13, 14	8	5
Fall from height	2, 3, 4, 9, 15, 16, 17	7	6
Lack of experience	2, 5, 11, 12, 13, 17	6	7

Note: 1 = Nam et al., (2023); 2 = Zi Yi et al., (2023); 3 = Lim et al., (2021); 4 = Yap & Lee, (2020); 5 = Cocerhan & Bradley, (2019); 6 = Pawthaisong et al., (2018); 7 = Romero Barriuso et al., (2018); 8 = Korkmaz & Park, (2018); 9 = Zerguine et al., (2018); 10 = Mazlina Zaira & Hadikusumo, (2017); 11 = Oswald et al., (2015); 12 = Cheng & Wu, (2013); 13 = Shin et al., (2013); 14 = Son et al., (2013); 15 = Park et al., (2011); 16 = Al-Kaabi & Hadipriono, (2003); 17 = Yanai et al., (1999).

4.1 Language Barriers

According to Zi Yi et al., (2023), the language barrier is the main problem and has been a hot topic of discussion as the cause of accidents at construction sites. Language barriers in the workplace, especially on construction sites, can indeed pose significant challenges. They can affect safety and health, quality, and productivity, as well as lead to frustration among workers and management. When workers have limited proficiency in the primary language used on the site, it can have serious consequences, including fatal injuries and accidents (Zi Yi et al., 2023). Not only that, language barriers can pose significant challenges when conducting safety training for foreign workers, especially in classroom training where verbal communication is the primary method of instruction. Foreign workers may have varying levels of proficiency in the language used for safety training and they may struggle to understand complex vocabulary or technical terms related to safety procedures and regulations (Yap & Lee, 2020). According to Zerguine et al., (2018), the barrier of language problems is one of the causes of the low level of education among foreign workers which can cause accidents in construction sites. Their level of education is from no school and primary school and low literacy rate is an obstacle for them to understand the content of conversations and interact with other workers, especially workers who are from different countries in the construction site (Zi Yi et al., 2023).

As mentioned by Cocerhan & Bradley, (2019), Google Translate can indeed serve as a valuable and cost-effective assistive technology to address language difficulties on construction sites. Google Translate visual translation feature allows users to translate text captured in images taken on a mobile phone. This can be particularly useful for translating written instructions, signage, and safety notices on construction sites. Workers can simply take a picture of the text they need to be translated, and Google Translate can provide a translation in real-time, helping them understand important information even if it is in a language they are not familiar with. However, this can result in expended on-site and delays due to the constant need for translation and interpretation of instructions, comments, and signage. Therefore, if construction sites have foreign workers with different cultures and languages, construction companies can propose solutions such as imposing conditions on foreign workers to learn English and the local language before entering work on the construction site. In addition, holding an English language course before entering the workforce is very necessary because most of the industrial training they are required to participate in using English and the local language of the country (Romero Barriuso et al., 2018). This can reduce the language barrier problem as suggested by Korkmaz & Park, (2018), regarding foreign workers who come from different countries needing to understand Korean so that communication and instructions such as safety instructions can be well understood. However, there is also a previous study in which Oswald et al., (2015) recommends that safety training be provided in multiple languages following strong support for this by non-English speaking foreign workers in their study in the United Kingdom.

4.2 Lack of Safety Knowledge

Lack of knowledge is an important factor that can cause accidents on construction sites, especially among foreign workers. There has been a noticeable rise in the employment of foreign workers at construction sites in Korea (Shin et al., 2013). Consequently, the occurrence of construction accidents involving foreign workers has emerged as a significant social concern. However, despite this undeniable reality, the level of attention given to safety education for foreign

workers remains comparatively inadequate. Due to the lack of proper knowledge, foreign workers may not follow established safety protocols, increasing the risk of accidents. Inadequate knowledge of the correct use of tools and machines can lead to misuse, resulting in injury or death. In addition, foreign workers unfamiliar with the work environment may not recognize potential hazards, leading to unsafe situations. A lack of knowledge can hinder a worker's ability to respond effectively in an emergency, potentially increasing the severity of an incident (Pawthaisong et al., 2018). According to Zerguine et al., (2018), the organization is working to build a strong safety culture and awareness of hazards among foreign workers by enforcing training requirements and implementing a daily safety toolbox before starting work as a way to overcome the lack of understanding among foreign workers. In addition to encouraging foreign workers to learn basic safety-related phrases, they should also be provided with or participate in language classes or resources to improve language skills. Nevertheless, employers need to hire supervisors who work fluently in both the main language and the language spoken by foreign workers because the language problem is a major barrier to lack of knowledge among them. This is especially important for employers to make supervisors and foreign workers aware of cultural differences that can impact safety practices (Zerguine et al., 2018).

4.3 Lack of Safety Training

The lack of safety training is a significant contributing factor to accidents on construction sites, especially among foreign workers. According to Romero Barriuso et al., (2018), foreign workers may not be able to understand important safety protocols due to a lack of exposure to proper safety training such as hazard identification and risk reduction strategies. This lack of knowledge can lead to unsafe practices. The lack of safety training needs to be emphasized because it can cause foreign workers to misunderstand safety procedures and fail to follow them properly. Safety training plays an important role when dealing with emergencies. If foreign workers do not receive proper training, they will tend to panic and make wrong decisions during emergencies. Not only that, they also face difficulties in operating machines, tools, and equipment on construction sites that can cause fatal accidents. A study conducted in Thailand by Pawthaisong et al., (2018) revealed that the highest number of injuries caused by sharp objects were among foreign workers. The research focused on both local workers and foreign workers, highlighting that the risk level for injuries from sharp materials was equally high for both groups (Pawthaisong et al., 2018). Pawthaisong et al., (2018) also revealed some interesting findings regarding the risks involved in accidents at construction sites. Surprisingly, the second highest risk level is associated with objects or materials splashing into the eyes. It seems that many workers neglect to wear protective goggles, safety glasses, or face shields, which can lead to severe eye damage during high-risk tasks. To prevent such accidents, it is crucial to enforce the use of these essential safety measures. The research carried out in Malaysia by Zerguine et al., (2018) indicates that the absence of personal protective equipment (PPE) is identified as a primary factor contributing to construction accidents.

Mazlina Zaira & Hadikusumo, (2017) found safety training has been identified as the top safety management practice for enhancing safety performance. It is crucial to recognize that various countries may have unique safety practices that are essential for enhancing the safety culture among foreign workers. Based on Zi Yi et al., (2023), safety training techniques like lectures, toolbox training, and audio-visual materials can offer a more comprehensive understanding of hazards, leading to a decrease in accident rates through enhanced knowledge acquisition and modification of employee conduct via auditory, visual, and reading means. The educational results are contingent upon the individual and may differ (Zi Yi et al., 2023). It is very important to practice regular and continuous safety training sessions, including new employee orientation and annual refresher training for existing staff, especially in eliminating language and communication barriers among foreign workers. Language and Safety Training Program needs to be emphasized since language and communication barriers are the main problems often faced by foreign workers. Furthermore, foreign workers also find it difficult to understand safety training due to the language problems they face (Romero Barriuso et al., 2018). Disclosure about the importance of using PPE to workers, especially foreign workers, needs to be done and trained regularly since they have different work attitudes. In addition, companies need to conduct periodic security inspections and audits to help identify potential hazards and take corrective action. Therefore, safety training should include recognizing hazards in the environment to protect oneself from them, proactively reduce risk, and minimize the possibility of accidents. Compliance with safety regulations mandated by agencies such as the Occupational Safety and Health Administration (OSHA) is important (Korkmaz & Park, 2018). Following Korkmaz & Park, (2018), safety training should be customized based on the employee's education level and age. Foreign workers often have lower levels of education than their Korean counterparts, which may lead to potential difficulties in grasping the training content.

4.4 Fall from Height

Zerguine et al., (2018) indicated that work-related injuries are primarily caused by falling from a significant height. The study conducted on accidents within the Malaysian construction industry also highlights that falling from a height is the predominant factor contributing to accidents among foreign workers. The worker may sustain a range of injuries, including fractures, head injuries, spinal cord injuries, internal organ damage, or even fatalities (Zerguine et al., 2018). The severity of the injuries will depend on factors such as the height of the fall, the surface landed on, and whether safety measures such as PPE were used. Fall accidents are indeed a major concern in the construction industry, not just in Korea and Malaysia, but globally. Even falls from relatively low heights can lead to serious injuries or even fatalities. This is why it's so crucial to invest in comprehensive safety education and implement stringent safety measures on construction sites (Zerguine et al., 2018). Even in cases where workers experience a fall from a relatively low height, such as 1 meter,

while performing their duties, it frequently results in severe consequences, including fatalities. Fall accidents are identified as the primary risk in the construction industry. To successfully reduce these incidents, significant resources and financial commitments are being allocated to safety training in Korean construction sites (Lim et al., 2021).

Lim et al., (2021) outline six rules specifically aimed at preventing falls from heights among foreign workers. These rules are as follows:

a. General Scaffolding Requirements: Scaffolding must be designed by a registered professional engineer and must be able to support at least four times the intended load. It should be strong enough to carry its weight plus four times the maximum intended load without displacement. The platform is usually attached to the building or structure being worked on.

b. Duty to Have Fall Protection: All employers have to protect their employees at work and inform them of industry and PPE regulations, legislation, and standards set to help keep them safe and healthy. This includes providing fall protection systems to protect their workers on walking or working surfaces with unprotected edges or sides that are six feet above a lower grade.

c. Fall Protection System Criteria and Practices: Fall protection systems and falling object protection must meet the criteria set by safety standards. These include guardrail systems, safety net systems, personal fall arrest systems, positioning device systems or fall arrest systems.

d. Scaffolding Training Requirements: Scaffolding users must receive training from knowledgeable and qualified individuals who have the necessary skills and experience to provide such training. Workers must understand the hazards associated with scaffolding, including fall hazards, and how to use personal fall protection systems.

e. Steel Stand Fall Protection: In steel stands, a very narrow new work surface is always created when frame steel is erected at various heights. For most steel erectors, especially connectors, work begins at the upper level of the structure. This means anchor points above foot level are often limited or unavailable.

f. Ladders: Ladders are essential tools on construction sites. It comes in different types and is used for different purposes. Proper training on ladder use and regular inspections are essential to ensure safety.

4.5 Poor Communication

Communication difficulties due to language differences can lead to misunderstandings, resulting in unsafe practices. Foreign workers may not fully comprehend safety instructions or warnings, leading to accidents. Poor communication can result in a lack of awareness of potential hazards on the construction site. If foreign workers are not adequately informed about the risks associated with their tasks or the environment, they may unknowingly put themselves and others in danger. Cheng & Wu, (2013) showed that communication barriers were the main factors impacting the job or occupational safety of foreign workers. Additionally, the study found that foreign workers did not have enough safety information. Poor communication in a construction site can indeed lead to confusion, mistakes, and decreased productivity. This is particularly critical when dealing with foreign workers who may face language barriers. To overcome this problem, employers need to provide language training for foreign workers to help them better understand safety instructions and other important information. This problem is closely related to the language problem because they are from different countries and of course, do not understand the language of other countries and also the lack of education causes them to be stuck in the dilemma of communicating (Zi Yi et al., 2023). Not only that, employers need to expand the use of signs, symbols, and diagrams as much as possible. Visual communication can be understood by employees regardless of their language proficiency. It somewhat helps to facilitate the work at the construction site. Next, in overcoming communication problems, employers can also use technology such as mobile applications or digital boards to share real-time information with employees. However, they certainly cannot be tied to technology because it will cause work to be interrupted and jobs in the construction sector require direct and quick two-way interaction (Cocerhan & Bradley, 2019). Effective communication can be challenging in situations where language barriers exist. Hand signals are sometimes used as a workaround, but they can be misinterpreted as being abrupt or even threatening. This can complicate safety interventions, especially when time is of the essence. One worker mentioned using a translator app on his phone but admitted that it does not always provide accurate translations. The potential risks of miscommunication were highlighted in a near-miss incident involving the Croatian worker who did not understand English instructions to grab a tagline during a load-lowering operation (Oswald et al., 2015).

4.6 Lack of Experience

Lack of experience with working regulations, PPE, and other safety measures can lead to accidents on construction sites, particularly among foreign workers (Zi Yi et al., 2023). According to Oswald et al., (2015), there was some evidence that the foreign worker was very inexperienced and had never worked in construction before. Workers with less experience of safety knowledge are more likely to make mistakes or overlook safety protocols leading to an increased risk of accidents, especially in the construction sector. This also can lead to inefficiencies and mistakes which can decrease productivity. Workers with less than two years of experience are often still learning the ropes, and this lack of experience can contribute to a higher risk of accidents on construction sites. This is particularly true for foreign workers who may also face language barriers or be unfamiliar with local safety regulations (Shin et al., 2013). According to Cheng & Wu, (2013), most studies on the factors and causes of occupational accidents for workers believe that these factors are related

to work experience. It is commonly understood that the accumulation of work experience should contribute to an employee's knowledge of workplace safety and their ability to identify hazardous situations.

However, the prevalence of job instability, highly dangerous working conditions, and heavy workloads has led to frequent job transfers and changes. When a worker secures a new job, their previous work experience is often not documented in their employment record, especially in cases where foreign workers accept temporary positions without a formal employment relationship. Consequently, general work experience records tend to rely on impressions and estimates from colleagues, which may lack accuracy (Cheng & Wu, 2013). According to Yap & Lee, (2020), most managerial staff assert that practical on-the-job experiences hold greater significance than educational achievements, particularly in the construction sector. Consequently, the number of years an individual has worked greatly influences their perception of safety. However, it is crucial to acknowledge that both experience and professional skill knowledge are equally vital, as workers possessing these attributes are more cognizant of potential safety hazards. Furthermore, the ability of construction personnel to identify safety risks hinges on their accumulated experiences and professional expertise.

4.7 Cultural Difference

The study revealed contrasting safety cultures between Japanese and Malaysian construction sites, as well as varying viewpoints among foreign workers. Foreign technical trainees demonstrated the ability to identify risks and respond appropriately to prevent unsafe practices on site. Conversely, foreign workers in Malaysian construction sites exhibited inadequate safety awareness, evident from their responses to scenario questions. These typical reactions highlight unsafe practices and substandard work protocols in Malaysian construction sites, attributed to the foreign workers' differing attitudes towards risk perception and their limited safety training and education levels, aligning with findings from Zi Yi et al., (2023). Inspections were conducted to assess the effectiveness of safety measures implemented with non-verbal materials. This study involves comparing the performance of construction workers from various countries working on construction sites in Japan and Malaysia (Zi Yi et al., 2023). Therefore, Zi Yi et al., (2023) confirmed that there are differences in the perception of safety and health in different countries, and this is more evident to those with experience working on construction sites than those who are inexperienced. The findings found different attitudes between foreign workers working in Malaysia and technical trainees working. For example, foreign workers strongly agreed that wearing shorts while working on a construction site is permissible, while local workers disagreed.

This cultural difference can be demonstrated when foreign workers show unsafe practices for working at heights where they strongly agree if they work on scaffolding without wearing a safety belt when working at heights and in scaffolding installation work, it is not necessary to wear a safety belt if they only move the scaffolding. This is very worrying and can cause a fall from a high place that can be life-threatening. Not only that, they also think cleaning the work area is a waste of time while local workers strongly disagree with the statement (Zi Yi et al., 2023). Misunderstandings frequently occur in the transmission of messages due to the influence of various cultural factors on intercultural communication. These factors include attitudes, social structures, cognitive processes, roles, nonverbal cues, and language. (Cocerhan & Bradley, 2019). The construction sector is greatly influenced by the diverse range of cultures and nationalities that come together, which has been identified as a crucial element in the training process. This diversity is also considered one of the main reasons behind the high incidence rate that affects the sector (Romero Barriuso et al., 2018). Based on Korkmaz & Park, (2018), the analysis reveals that foreign workers in the Korean construction industry hold a skeptical view towards safety regulations, perceiving them as lacking the intention to safeguard workers. Various nationalities exhibit distinct work practices, yet they must adhere to the health and safety regulations established by the nation. This can result in disagreements regarding safety measures, gaps in protocols, inadvertent risky behaviors stemming from a lack of awareness, and miscommunications that may escalate into conflicts between groups (Oswald et al., 2015).

5. CONCLUSION

This study identified and ranked 7 factors that causes construction accidents among foreign workers. This study also found potential areas of research can be explored to mitigate accidents among foreign workers in the construction sector. It is revealed that "language barrier" is the most influential factor that causes the construction accidents among foreign workers while the other leading factors include lack of safety training, cultural difference, poor communication, lack of safety knowledge, fall from height and lack of experience. Language barriers on construction sites can indeed pose significant challenges. Communication language is a barrier for the foreign workers to learn and fully understand during safety training. Reconstruct the existing safety training may be needed considering the education level and multicultural background of construction workers specifically from countries where an understanding of common language is a main barrier.

Besides, finding also found that other important factor that can cause accidents on construction sites among foreign workers is lack of knowledge. Due to the lack of proper knowledge, foreign workers may not be aware of safety measures in the construction sites, which can lead to more accidents to occur. In addition, the lack of safety training is also a significant contributing factor to accidents on construction sites among foreign workers. If foreign workers are not properly trained, they will panic and tend to make a bad decisions during emergency. It is essential to practice regular and continuous safety training sessions to foreign workers. This includes new employee orientation as well as annual training for existing staffs. This training should focus in eliminating language and communication barriers among foreign workers. Language and Safety Training Program must be prioritized since language and communication barriers are the core

problems often faced by the foreign workers. Thus, in order to mitigate accidents among foreign workers in the construction sector, an employer should ensure that all workers are adequately trained in their job scope before entering the jobsite. By applying this, safety awareness and worker performance can be improved. With a good understanding of safety, it will help in eliminate factors that causes the construction accidents among foreign workers. In addition, employers must send their foreign workers to training programs to give them knowledge and skills regarding safety so that it could minimize the number of accidents occur in the construction sites.

5.1 Research Implications

The finding of this study contributes new insights by systematically identifying and classifying the underlying causes of construction accidents specifically affecting foreign workers which remains underexplored in occupational safety. While previous works toward this direction had a more generalized focus on construction safety, this review highlight specifically seven factors that are uniquely impact foreign worker. In this respect, it advances academic understanding besides helping direct attention to where assistance is most needed in practice among construction practitioners and policymakers. In addition, this research contributes to the implications for corporate governance and ethical business practices within organizations in the construction industry. The safety concerns among foreign workers highlight the inadequacies in managing as well as the implementation of inclusive policies and ethical treatment for this unique labor group. Construction companies are under additional responsibilities to ensure fair and culturally sensitive safe-working standards besides complying with regulations. This demand for transparent governance mechanisms to be developed and strengthened, including periodic safety inspections, clear accountability measures, and multilingual safety information. Incorporating these good governance and integrity principles into daily operations would be a commendable toward meeting SDGs, specifically SDG 3 and 8 towards commitments to corporate responsibility and ethical labor management.

Particularly, this study contributes to the exploration of new potential research areas. Based on the seven key factors identified, several research directions can be proposed to improve safety among foreign workers in the construction sector. First, future research could explore the design and implementation of safety programs tailored to various cultural backgrounds to reduce miscommunication and enhance training effectiveness. Second, studies can examine the use of multilingual communication tools such as visual aids, multilingual signage, and mobile applications to support workers with limited language proficiency. Third, researchers may investigate the relationship between safety awareness and work experience to inform the development of training modules targeted at inexperienced or first-time foreign workers. Fourth, further exploration could be carried out on how organizational safety culture, including leadership support and supervisor communication styles, influences accident prevention in multicultural construction teams. Fifth, research may also assess the development and effectiveness of simplified or pictorial safety training materials designed for workers with low levels of education or literacy. Finally, there is an opportunity to investigate existing policies and regulatory frameworks to identify gaps in employer practices related to the safety training of foreign workers. These suggested areas for future research are directly aligned with the critical factors highlighted in this study and can guide meaningful improvements in construction safety management involving foreign labour.

5.2 Limitation and Suggestion for Future Researchers

Limitations of this study are acknowledged to guide further research. First, the review was journal articles published only in English and indexed in Scopus, hence relevant studies published in other languages and from other databases were excluded. Second, the scope was limited to research on foreign workers in the construction industry, leaving out more generic safety related findings that could apply to wider the populations of workers. Third, although the systematic review has identified factors that lead to accidents, it has not carried out a quantitative assessment of how much strength or impact each factor contributes. These set limitations give an opening for future studies towards having more general data sets and broadening the scope towards broader industrial settings.

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AUTHORS CONTRIBUTION

Nurul Izzatul Hidayah Saundi led the literature review and manuscript write-up.

Norhana Mohd Aripin provided overall guidance, particularly in structuring the systematic literature review.

Nur Sofia Nabila Alimin contributed to the introduction and conclusion sections.

Azim Azuan Osman assisted with final editing and manuscript refinement.

AVAILABILITY OF DATA AND MATERIALS

The data supporting this study's findings are available on request from the corresponding author.

ETHICAL STATEMENT

Not applicable.

CONFLICT OF INTEREST

The authors declare no conflicts of interest

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