

The Framework to Implement Total Worker Health in the Indonesian Coal Mining Industry

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Abstract Objective: This paper aims to develop a sustainable intervention strategy for the Indonesian coal mining industry's implementation of total worker health. This implementation begins with a study of the starting circumstances, followed by the implementation of an intervention based on the findings of the prior analysis, and finally, the evaluation of the intervention's effects.

Methods: To determine the impact of an intervention on a subject that has already been the subject of analysis, researchers employed experimental or interventional techniques. This article will outline a framework for applying interventions to promote total worker health.

Results and Discussion: The conceptual model for implementing total worker health with an intervention approach in the Indonesian coal mining industry uses a two-way approach. The first uses government regulations to intervene in the coal mining industry, and the second is company intervention through the steering committee to intervene in workers. Based on the results of a literature review conducted by the authors, no intervention model uses a two-way approach from the government and enterprise.

Research Implications: An essential asset is employee safety. The well-being of employees must be evaluated while implementing work safety regulations. A total worker health approach is one method that can be employed to reduce accident rates as well as improve the well-being of employees. **Originality/Value:** Government constraints are in place to enhance the well-being of workers because employment regulators and designers of employment regulations need to be able to confirm that

enterprises have properly implemented occupational safety and health programs.

Keywords Framework, Intervention, Total worker health, Well-being, Employee

1. Introduction

The Indonesian government continues to work to promote and maintain a culture of occupational safety and health by implementing regulations in the labour domain, including Law No. 1 of 1970 concerning occupational safety and health, Law No. 23 of 1992 concerning health, Minister of Labor The Regulation No. 33 of 2016 concerning Labor Inspection Procedures, and Minister of Labor The Regulation No. 5 of 2021 concerning procedures for administering accident, death, and old age benefits. In reality, they still occur many instances of accidents at work leave workers permanently disabled, partly disabled, or functionally disabled. Production will stop because of this, wasted time, and damage to equipment for the organization, all of which result in additional losses. The incidence of work accidents has increased by 9.2% from 2001 to 2020, based on data from the Workers and Social Security Agency of the Republic of Indonesia. This exposes employees' ability to work safely, comfortably, productively, and efficiently at risk.

There are 139.81 million workers in Indonesia; however,

only 19.98 million are officially registered with the Workers and Social Security Agency for Employment, or just 14.29% of the total workforce. This information demonstrates how poorly work accident restrictions have been implemented. Employees, organizations, or associated party oversight may bring this on. To reduce or even completely eradicate work accidents, all stakeholders must collaborate to address the large number of fatalities resulting from workplace accidents. Adopting Total Worker Health (TWH), which involves the government acting as a regulator, all top management, and the workers implementing occupational safety and health in all elements, is one way to accomplish it.

Total worker health is a policy, program, and practice involving protecting workers from health and safety at-work hazards to minimize incidents and promote the workforce's well-being by protecting safety, improving worker health, and increasing worker productivity [1]. The TWH approach aims to increase workforce well-being [2], [3]. Workforce well-being is an integrated concept that describes the state of life regarding individual well-being, the environment, organizational structure, and psychosocial difficulties associated with work [4]. To create a holistic solution, the National Institute for Occupational Safety and Health (NIOSH) in the United States has been conducting workplace introductions and attempting to harmonize disparate approaches to occupational safety and health since 2004. The establishment of TWH with an approach that included TWH-related investigations, practices, and policies marked the culmination of this endeavour. Total worker health is multidisciplinary and affects all locations, people, groups, organizations, and work settings [5]. Total Worker Health is a strategy combining occupational safety and health protection to stop workplace accidents and illnesses and enhance employee health and safety [6]. The approach promotes the creation of initiatives that link individual behaviour that supports a healthy way of life to occupational safety. The American College of Occupational and Environmental Medicine (ACOEM) explains that workplace health and socialization programs include strategic, integrated, and systematic attempts in conjunction with the environment. Safety regulations that reduce the risk of work-related accidents combined with initiatives to enhance workers' general health and well-being [7], [8].

TWH can be used as a workplace safety and health model, and each choice should lead to the best outcome for all stakeholders. Because of this, it is believed that the final solution will benefit the government, organization, and workforce without causing harm to any of them. Case studies from the coal mining industry will be used in this essay. The mining sector was selected because of the high number of accident cases that resulted in fatalities; 146 out of 997 occurrences, or 14.64%, resulted in deaths, while 471 accidents resulted in serious injury (Ministry of Energy and Mineral Resources, 2021). This framework

aims to help people understand how organizations and workers select, adopt, and maintain the particular TWH approach with interventions.

Given that the TWH technique must be fully realized through stages of continuous process and review, its utilization is crucial. Developing managerial and workforce perspectives and behaviours is necessary for this process. To address the unique character of the safety, health, and well-being challenges encountered about organizational objectives, various employers frequently choose a variety of approaches. Case studies also permit the examination of quantitative and qualitative data, which aids in illuminating the complexity of real-world circumstances as factors to consider when putting TWH interventions into practice.

2. Literature Review

Total worker health fundamentals with the Essential Elements for Improving Workers Safety, Health, and Well-being are the critical practice tool the company created and released in 2016 [9]. TWH created works based on five fundamental steps crucial to TWH's strategy to assist organizations in launching and maintaining programs. The five TWH defining components are guiding concepts that offer organizations looking to create workplace policies, initiatives, and practices that support employee safety, health, and well-being with valuable guidance: Be a committed leader. Reduce harm and improve well-being. Include staff in the creation and delivery of programs. Assure privacy and confidentiality and efficiently integrate systems.

The intervention program identifies the theoretical basis for why the intervention is expected to be successful [10]. Four theoretical models resulted from several studies, namely the first socioecological model, a framework based on multilevel influences that influence or control behaviour [11], [12]. The second model is the job demand-control (JDC) model, which links job demands with individual controls [13]. The third model is the cognitive, social theory, which explains behaviour change as a result of the reciprocal interaction between a person's behaviour, cognition, and environmental influences, including the team process behind the intervention [14].

Results of an intervention study show that the effects of the integration of health promotion and protection of occupational safety and health can reduce the risk of occupational hazards and be able to improve occupational safety outcomes by increasing productivity [12], [15]. Conduct studies on the impact of sit-stand positions on workstations, productivity, and other behaviours [16], [17]. Obtained results showed a health improvement [18]. Van dongen et al., [19] in their research, have made economic calculations related to the implementation of TWH.

The effects of interventions at work will be positive. Employers can effectively manage occupational safety and

health management by enforcing rules and practices that comply with requirements. Employers can also create better working conditions. Personnel Policy Laws governing minimum salaries, overtime pay, work breaks, health insurance, and time off for sick or personal reasons must be complied with by human resource policy. Companies can also implement family-friendly policies, offer breaks and flexible schedules, and handle issues in the workplace. Work-family policies have been found to boost productivity, lower turnover, and lower medical expenditures [20]. Occupational health and safety are addressed via organizational interventions. The workforce must be involved in organized, managed, and sustained efforts to promote safety, health, and well-being. The intervention's design also considers the organization's features so that the effects of the implementation of total worker well-being may be quantified. The study uses three main designs to determine the effectiveness of the TWH program, each of which has advantages and disadvantages.

3. Framework

The intervention framework in this study was structured as a preparatory step that was carried out before and after the intervention was carried out in the control and intervention recipient groups. This stage consists of 4

(four), namely the analysis stage, the planning stage, the implementation stage, and the evaluation stage [21]. The framework of thought was improved to consider the elements that affect TWH implementation. Both a subjective and an objective method can be used to comprehend the idea of well-being [4]. According to the subjective method, an individual's quality of life is evaluated along with the satisfaction of basic requirements at work and everywhere that are essential for the individual. The subjective method is primarily focused on Work evaluation and experience within the context of the well-being of employees. Subjective evaluation enables people to express their choices openly and to mediate on what they believe the excellent life to be [22]. However, due to emotional adaptation—the tendency for people to adjust to both happy and unfavourable circumstances—subjective well-being may not be sufficient as the only indicator of well-being. The social comparison hypothesis states that an individual's assessment of their well-being may be influenced by their awareness of the opportunities that are accessible to them [23]. The goal of objective well-being research has been to identify the fundamental "needs" that people must have to fulfill their goals (such as physical health, material stability, social connections, and spiritual peace) [24]. The framework that is built looks like the following in Figure 1:

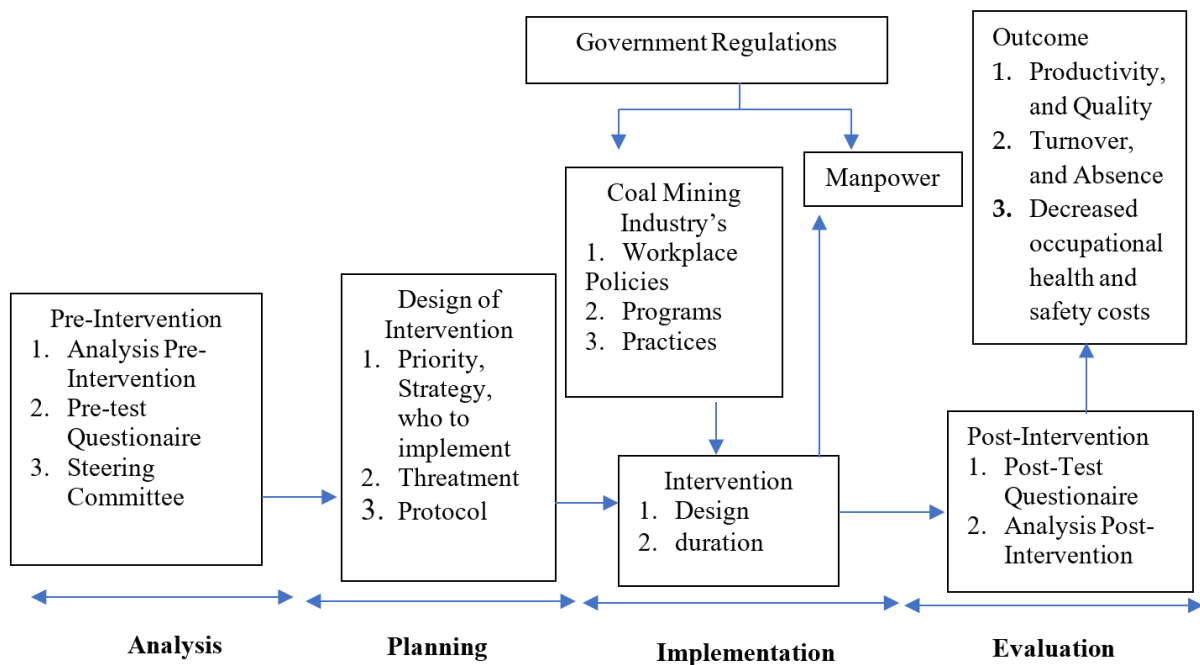


Figure 1. Framework for Total Health Workers in the Coal Mining Industry in Indonesia

The government must ensure that the coal mining industry and its employees respect the laws as it is responsible for creating and enforcing rules. The organization then uses an intervention method to produce guidelines for total worker health. Outcome after implementation: Increased productivity, quality gains, low employee turnover, zero absences from work caused by accidents, and increased expenses for care owing to accidents and poor health care are anticipated outcomes. Organizational policies, programs, and practices: In the model, these components are positioned as crucial intervention points that can help to enhance working conditions and, ultimately, the safety, health, and well-being of employees. Organizations can actively support these beneficial policies, initiatives, and practices by taking leadership roles, engaging employees in participation, and using collaborative and comprehensive methods [5], [12]. When management listens to workers' concerns and works cooperatively with key stakeholders to implement these changes, it benefits both the organization and the workers who feel more empowered and in control [6]. Participatory practices give workers the chance to identify specific problematic working conditions. Employers can alter policies and procedures to improve employee well-being and organizational outcomes, like boosting productivity and lowering expenses.

3.1. Analysis

The first step to identifying the conditions in the coal mining sector is analysis; at this point, management and all employees must provide internal support for developing and evaluating occupational health interventions [25]. The continuity and efficacy of interventions are increased when resources are allocated appropriately [26]. The workers should be involved at every stage and engaged from the beginning. Ensure the target group is kept in mind when taking any activity. To set up a steering committee, the workforce should be represented in person or through representatives chosen by the workers' union or nominated by themselves. Steering committees make strategic decisions and drive workplace health treatments using their experience, skills, and knowledge. If the organization is small, the steering group can be tied to the position and operate independently. The steering group is made up of people with a variety of skill sets and from different organizational levels. The optimal configuration of a steering committee includes a representative sample of various employee groups within the organization, and the steering group's size can range from two to many more people, according to the size of the organization. Company leaders, senior management representatives, line managers, HR, staff company representatives, representatives from various areas, and other board members are typically the two pools from which individuals are selected for the steering committee [27]. The creation and evaluation of well-being initiatives inside the organization must be

coordinated and monitored by the steering committee. Making decisions about workplace well-being and coming up with solutions to the problem fall under this category. The steering committee members each had a personal assignment during the planning phase.

The next step is to assess the existing situation after establishing internal support and a steering committee. Regarding the organization's employees' health and well-being and the services it now offers to suit the workforce's health needs. The current measuring technique gathers data at the individual and organizational levels using a modified Well-being Questionnaire [28]. Identifying particular groups' health and well-being requirements allows for the planning of treatments to address those needs. Additionally, it's a way to create a baseline for health and well-being that may be used to plan objectives and assess interventions in the future. A health needs assessment can also assist in identifying organizational strengths and weaknesses, potential obstacles to employee health and wellness, and employee perspectives and opinions on their health and the organization's present health and wellness treatments. Risks at work must be managed as part of health and safety management. To accomplish this, the organization must conduct a risk assessment, which is required by law, to determine what could affect the workforce and how to prevent harm.

Establishing objectives and outcomes is the next step in the analysis. Objectives can be decided upon once the organization's needs are understood. Goals might be seen as desired corporate health outcomes or as present company health concerns. The outcomes the workforce considers to be important might be determined by the organization (or steering group). The SMART criteria, which define objectives as Specific, Measurable, Achievable, Relevant, and Timely, are a typical method for goal-setting. Organizations can discern qualitative (connected to quality) and quantitative (using numbers) aims.

3.2. Planning

During the analysis phase, there are a lot of planning-stage issues to take into consideration. Planning involves prioritizing the effects of workplace health interventions, selecting tasks, and creating a strategy for how the treatments will be implemented after the analytical phase has established the groundwork. We are planning first by prioritizing goals and results. Goals must be clearly defined considering employees' needs, the organizational structure, and the available resources. The second goal is to establish an intervention evaluation strategy in all phases. Health needs assessment findings can help identify objectives and define key performance indicators and outcome interventions that can be used as an evaluation strategy. The third objective considers who will carry out the intervention.

It is of the utmost importance to take interventionists into account when planning. This will depend on the size and organizational structure of the company; if it is large, a particular department can be formed; if it is small, a department can be connected to it. To prevent duplication of work, steering committee members can be designated to carry out particular functions. Some duties include calculating human and financial resources, creating budgets, creating communication plans, and creating evaluation techniques. The organization involves identifying levels throughout the company and support for workplace health treatments. Success in developing and implementing health workplace interventions depends on effective communication between management, the workforce, and management, who oversee the development of the interventions at all phases. Communication is crucial to consult and include employees during the planning stage and ensure that they are aware of the interventions and how to participate during the implementation stage. Many other communication methods, including printed bulletins, email, small groups, and large groups, can be used.

At this stage of planning, treatment must be chosen. This treatment refers to how things or people are handled [29]. Numerous threats, including the prohibition of smoking in all work areas, the prohibition of drinking alcohol in all work areas, and the provision of wholesome food, are frequently employed in Indonesia's coal mining industry. They offered health services, counselling, and health news on programs for managing chronic diseases like heart disease, diabetes, and hypertension, as well as information on maintaining a healthy weight and exercising regularly. Health examinations are routinely performed, such as those that look for blood vessels, obesity, blood sugar, cholesterol, lung function, eyesight, and hearing.

The intervention protocol at the planning stage was prepared according to the results at the analysis stage. The experimental protocol in question is the steps in the experiment designed to ensure research validity can be achieved. This protocol contains at least an initial explanation of the subject, subject grouping, treatment, and debriefing. The protocol also contains who, when, and how an intervention is carried out [30]. The intervention protocol at this stage is to establish a steering committee representing the workforce at each level/department, develop an intervention plan, carry out the intervention, and evaluate the intervention results.

3.3. Implement

The government participates in labour inspection and the implementation process in this segment, particularly regarding workplace policies, programs, and practices that adhere to legislation. The current restrictions must be implemented carefully, correctly, and consistently. The Labour Law number 13 of 2003 concerning labour, the

decision of the minister of Manpower of the Republic of Indonesia number 234/MEN/2003 concerning work and rest time in the energy and mineral resources industries in certain areas, and the regulation of the minister of human resources of the Republic of Indonesia number 15/MEN/2005 are the regulations that are related to the need for intervention in the implementation of total worker health in the coal mining industry in Indonesia. Organizations must abide by and put into effect any regulations established by the government. The next phase is that the corporation intervenes with all employees in the organization based on current regulations and the findings of the analysis and planning that have been established.

The specific part of the implementation phase depends on the desired outcomes, the interventions planned, and whether internal or external providers deliver them. This stage involves identifying individual roles for implementing and piloting the intervention. At this stage, the organization must clearly define the role of the intervention director and carry out continuous monitoring. To ensure that the intervention is carried out as intended and corrects the target group, the steering committee must ensure that positions within the group are clearly defined. Employees may anticipate instant replies to their input throughout the analysis process. Thus, implementation should ideally happen quickly after analysis and planning are finished. The steering committee or person in charge of the intervention should monitor the program to spot any new problems that require attention.

The duration and design of the required intervention were prepared during this implementation stage. The research methodology to address the overall worker health issue is typically classified into experimental and observational studies. According to the framework provided, this involves experimental or interventional research to evaluate how an intervention affects a previously expected outcome. The advantages of experimental or interventional research are that it allows for randomization and conducting double-anonymized research assessments. Randomization techniques can only be done in experimental research. This experimental research consisted of a Randomized Controlled Trial (RCT) and cluster Randomized Controlled Trial (Cluster RCT) Quasi Experiment. Randomization techniques can allocate samples into two or more groups based on criteria determined by the researcher. An experimental technique in the coal mining industry, namely the Quasi Experiment design, is proposed. Using this method makes it possible to conduct a double-anonymized study in which neither the implementer nor the respondent is aware of whether they are a part of the intervention or control group [31]. The effectiveness of this design can reduce confounding elements that may skew the intervention's outcomes. These traits have individual/personal randomization applied at the individual level and presume that each person is independent.

The intervention's time frame might be modified

depending on the original circumstances or the outcomes of the analysis stage. The time used in various intervention studies varied from ten weeks to three years. Intervention compared to effectiveness, physical exercise, training management stress, and integrated programs used randomized control trial pretest-posttest over ten weeks [32]. The ten weeks that the physical labor activity intervention was implemented [33]. Environmental interventions, individual internal determinants, and individual behavior over sixteen weeks [34]. Work environment interventions, behavior, and work-related musculoskeletal disorders used quasi-experimental design over six months [35]. Sitting time intervention during working hours used quasi-experimental design over six months [16]. Environmental interventions in the workplace used cluster randomized trial pretest-posttest over three years [36].

3.4. Evaluation

Utilizing the post-intervention questionnaire to assess the intervention's effectiveness, compare the changes that occurred before and after the intervention. When creating workplace health treatments, evaluation is a critical first step. Without this stage, it is impossible to determine the impact or worth of the intervention. Planning must include consideration of the evaluation. This guarantees that baseline data is gathered to enable pre- and post-intervention comparisons and develop an evaluation procedure as part of the intervention. At this point, it's crucial to set evaluation goals that seek to enhance intervention design or implementation by investigating the topics covered in this research, such as awareness of the intervention, behaviour changes caused by the intervention, health outcomes, productivity, costs, absenteeism (impact or outcome evaluation), and the economic effectiveness of workplace health interventions.

The intervention implementer gathers data on workplace health interventions at this evaluation stage. It is critical to ascertain the precise elements of the intervention, how it will function (and effect the desired change), and whether it has been used before. Creating a logical model or theory of change, commonly acknowledged techniques for assessing complex programs that may be used for workplace health interventions, maybe one way to prepare the evaluation of occupational health interventions. Influential individuals should be consulted to ensure the assessment meets information needs and agree on how workplace health intervention's effectiveness will be established and quantified. These are essentially evaluation inquiries. The evaluation method can be chosen after the evaluation questions and desired outcomes have been decided upon. The evaluation timeline, available talents, and other resources may all play a role in determining which method to adopt.

At this stage of the evaluation process, it is intended that the leader will be able to create an evaluation design that

addresses the attribution question of whether the intervention alone resulted in the desired improvements or if other factors also played a part. The organization must consider whether internal or external resources are available for the method of choice. One can do an internal evaluation. However, external evaluators might also be taken into account at this point. It is crucial to remember during the evaluation phase that procedures and other events (such as management changes and economic constraints) might impact how successfully workplace health treatments are implemented. Therefore, it is essential to document any adjustments to the organizational structure or operational procedures while the intervention is implemented [37]. Any evaluation-related lessons learned can contribute to more extensive knowledge, direct future assessments, and influence future iterations of workplace health interventions. The person or team delivering the intervention can gain more understanding of the specifics of the intervention and their practice through reflection. Reflection enhances and supplements the evaluation technique rather than replacing it.

4. Conclusions

The total worker health framework's findings lead to the following conclusions:

- a. Total worker health can be implemented in Indonesia's coal mining industry in two ways, namely through government rules that act as regulators of policies, programs, and practices. The organization ensures the government's rules are correctly implemented while intervening using a quasi-experimental design for a fixed period.
- b. Steering committees can be created in specific departments or affiliated with certain departments to implement comprehensive worker well-being. Using the steering committee is a novel method of streamlining implementation for whole worker health.
- c. Through continuously carrying out the phases of analysis, planning, implementation, and evaluation, the framework that has been established has preserved the continuity of the implementation of total worker health.

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Author Contributions

WT performed the project administration, as well as the conceptualization, data collecting, formal analysis, funding acquisition, inquiry, design approach, software operation, validation, and visualization. The supervision, formal analysis, investigation, design approach, validation, visualization, and review were all completed by SGP. The AS performed supervision, formal analysis, inquiry, design approach, validation, visualization, and review.

Conflict of Interest

The authors declare no conflict of interest.

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