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Presenting a Model for Enhancing Psychological Well-being and Reducing Stress Among Mine Workers in the Workplace

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A B S T R A C T

Objective: The purpose of the current research was to present a model for enhancing the level of psychological well-being and reducing the stress of mine workers in the workplace.

Methodology: This study, in terms of its objectives, falls under developmental research and, in terms of methodology for gathering findings, employs a qualitative approach with a research synthesis method based on the six-stage model of Roberts (2009). The research population includes all relevant, credible scientific articles within the time frame (2000-2023) that are registered in both domestic and international specialized and scientific databases. After several stages of screening with criteria for reviewing titles, abstracts, content, and research quality along with the Critical Appraisal Skills Programme (CASP) standards, 25 sources were purposively selected. Data were coded and analyzed through a researcher-made checklist form and thematic analysis method in the MAXQDA software environment. The validation of the research findings was assessed through four criteria by Lincoln and Guba (1985), researcher reflexivity, and agreement between two coders.

Findings: Based on the research findings, 287 basic themes as indicators and 22 organizing themes as components of the model, and 4 overarching themes including; psychosocial factors, organizational factors, individual factors, and job-related factors were identified as dimensions of the model for improving the level of psychological well-being and reducing stress among mine workers in the workplace.

Conclusions: Considering the findings of the research, it is recommended that stakeholders of mining companies pay attention to the identified themes of this study to improve the mental health of mine workers.

Keywords: *Psychological well-being, Job stress, Mine workers, Qualitative research.*

1 Introduction

Mental health of the workforce is a determining factor in their overall health (Petrie et al., 2021). Poor mental health and stressors in the workplace can be reasons for a wide range of physical illnesses such as high blood pressure, diabetes, and cardiovascular diseases, among others. Moreover, poor mental health can lead to mental

illnesses including job burnout, occupational stress, job dissatisfaction among employees, and seriously affect their ability to meaningfully participate in their personal and professional lives (Mete, 2023). Data from various countries around the world indicate that mental health problems are one of the reasons for some employees leaving their jobs. For instance, in the Netherlands, about 58% of work-related disabilities are related to mental health. In the UK, it is estimated that about 30 to 40% of sickness absences are due to some form of mental illness (Kelloway et al., 2023). Therefore, mental health problems directly affect employers and businesses through increased absenteeism, negatively impacting productivity and profits, as well as increasing costs to address this issue (Katmah et al., 2023). In addition, they negatively affect employee morale (Pfeffer & Williams, 2020). Work-related stress is one of the main reasons for occupational diseases, poor productivity, and human errors. This means an increase in sickness-related absences, high staff turnover, poor performance in the organization, and an increased likelihood of accidents due to human error (Henssler et al., 2021). Moreover, work-related stress can also manifest as heart disease, back pain, headaches, gastrointestinal disorders, or various minor illnesses, as well as leading to psychological effects such as anxiety and depression, loss of concentration, and poor decision-making (Bauerle et al., 2018). Some jobs are more at risk of mental health problems than others. Mines have been identified as one of the most dangerous environments for work activities (Pizarro & Fuenzalida, 2021). Working in mines is defined as a heavy-duty activity with dangerous conditions and strict organizational systems such as long distances from workers' residences, demanding shift schedules, and job pressure associated with compliance with business goals. The existing literature extensively states that these features can severely affect the safety and mental health of workers, causing mental illnesses, disability, and even death (Kelloway et al., 2023). Given these negative consequences, a literature review has shown that mine workers may suffer from diseases and physical and mental health complications associated with physical hazards such as exposure to dust, high temperatures, high altitudes, noise and environmental vibrations, chemicals, heavy metals, injuries, and accidents (Das & Singh, 2011). Similarly, they cause psychosocial risks such as high job demand, mental distress, shift work schedules, distance and isolation from family, hostile legal environments, and aggressive employers (Sepadi et al., 2020). Due to the presence of both types of hazards in mining work (physical and psychosocial), global research has identified some of the common occupational diseases resulting from this working environment. For example, Basu et al. (2015) found in their research that mine workers sometimes feel nervous or have work-related stress and reported symptoms of chronic stress (Basu et al., 2015). Birkeland et al. (2015) stated that symptoms such as mental disorders, occupational stress, anxiety and depression, sleep disorders, and fatigue are serious indicators of the hazardous work environment that mine workers operate in, which can create a suffering experience and reduce their health (Birkeland et al., 2015). Study by Bauerle et al. (2018) focused on fatigue in mining and described factors associated with it, such as reduced quality of rest, lack of sleep affecting poor cognitive performance, long work shifts, leisure time, and imbalance between work and life and family (Bauerle et al., 2018). The mentioned issues not only reduce the health status of workers but also affect the productivity and development of mines (Pizarro & Fuenzalida, 2021).

Since the most important and valuable asset of any country is its creative, efficient, and healthy human workforce, and on the other hand, societies, despite having abundant natural and God-given resources and facilities, cannot exploit them due to the lack of a worthy and healthy workforce, it is therefore important to know how the health of workers is affected by mining activities and to manage related factors correctly. On the other hand, one of the integral components for ensuring optimal work conditions and quality for mental health is reducing psychosocial risks associated with work and managing psychosocial risks (Leka et al., 2017). Further study on these factors is essential to help control and understand their impacts on psychological factors so they can be considered in management programs for the implementation of appropriate interventions. However, a review of the literature revealed that research related to the mental health of miners has been limited and shallow. To categorize research, to help understand problems related to mental health in the mining work environment, and to fill the existing gap in the literature review on the topic, this study has examined methods of improving the level of psychological well-being and reducing stress among mine workers in the workplace using a meta-synthesis approach and categorizing the results of studies conducted in this area. Indeed, the main issue of this research is what methods exist to reduce stress and increase the level of psychological well-being of mine workers?

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2 Methods and Materials

The present research was conducted with a qualitative approach and a research synthesis method based on the six-stage model of Roberts (2009), which includes combining specific characteristics and factors of the research literature. Research synthesis is sometimes known as qualitative meta-analysis, aiming to analyze research that it covers, resolve existing contradictions, and, while integrating results, also identify main themes for future research (Cooper & Hedges, 2009). The research population consisted of all valid written sources (reference books, original research articles, and doctoral dissertations) in the field of mental health of mine workers. Samples were selected through theoretical purposive sampling until theoretical saturation was achieved. To evaluate the quality of the research under analysis, the researcher reviewed the selected sources several times, adjusting irrelevant and less credible items based on the Critical Appraisal Skills Programme (CASP). This method, by asking ten questions, helps to determine the precision, validity, and relevance of the qualitative study. The qualitative research data were analyzed using the thematic analysis method in MAXQDA software. In such a way that, the full text of selected sources was studied, and wherever a theme related to mental health, mental hygiene, stress reduction was mentioned, it was recorded as key sentences in designed worksheets and coded. Coding of meaningful units continued until reaching saturation, meaning when no new code was found, and after completing the analysis units, these codes were categorized based on similarities or proximity to each other, and eventually, basic themes, organizing themes, and overarching themes were extracted. In the next stage, by examining the components, a schematic model for improving the level of psychological well-being and reducing stress among mine workers was designed. Validation of research findings was assessed through four criteria by Lincoln and Guba (1985). To achieve the "credibility" criterion, the description by peers method was used. In this way, the researcher asked two doctoral students who had used this method to recode some of the texts, to ensure the accuracy of the researcher's coding process and also to be aware of any biases in the analyses. For the "transferability" criterion, purposive and snowball sampling methods were used, in which initially, based on the main topic, i.e., improving the level of psychological well-being of mine workers, a few selected articles were accessed and through their references, we reached other articles. For the "dependability" criterion, consultation with professors and experts in this field and clinical experts in the field of mine and psychological safety in the mining work environment was used about the research process and feedback was obtained to improve the work. For the "confirmability" criterion, the note-taking method during the work process was used. Other methods to ensure the reliability of the research were researcher reflexivity. In this way, the entire process of collecting, extracting, and coding findings was reviewed again, and another method for calculating the reliability of research findings was the agreement between two coders. In this method, five selected articles were chosen, and one of the clinical experts in the field of mine and psychological safety in the mining work environment, without knowing the initial coding, conducted secondary coding. In the initial coding, 12 indices were extracted, and in the secondary coding, 15 indices were extracted, with disagreements in 3 cases. The reliability coefficient of the evaluators was calculated to be 0.8, which, since it is more than 0.6, can be claimed that the analysis tool of the findings is reliable.

As mentioned, in the present research, the six-stage model of research synthesis by Roberts, including stages; 1- Identifying need, conducting preliminary search, clarifying need, 2- Conducting research to retrieve studies, 3- Selecting, refining, and organizing studies, 4- Creating a conceptual framework and aligning it with information obtained from analysis, 5- Processing, combining, and interpreting in the form of tangible products, and 6- Presenting results was used.

From 1100 documents searched, 508 were excluded due to inappropriate titles, 211 due to unsuitable abstracts, 217 due to unsuitable content and lack of sufficient findings, and finally, 139 documents were excluded due to lack of quality. Consequently, 25 articles, books, and dissertations were analyzed as the final documents.

3 Findings and Results

In the current study, the conceptual framework revolves around the following concepts:

Psychological Well-being: Psychological well-being is a state of health that enables individuals to cope with life's stresses, understand their abilities, learn and work effectively, and contribute to their community.

Job Stress: Job stress can be defined as harmful physical and emotional reactions that occur when job requirements do not match the worker's capabilities, resources, or needs. Job stress can lead to poor health and even injury.

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Mental Health: Mental health includes emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make choices. Mental health is important at every stage of life, from childhood and adolescence through adulthood. Experiencing mental health problems at any point in your life can affect your thoughts, mood, and behavior.

Based on the findings from research related to the study's objective, the key elements of the model for improving the level of psychological well-being and reducing job stress among mine workers were initially extracted through the open coding process (Table 1) and then the open codes were categorized based on common concepts into defined categories.

Table 1

Results of the Qualitative Analysis of the Data Obtained

Base Themes	Year	Researchers
Policies to improve the level of psychological well-being of workers include orientation for managing the risk of mental disorders and other related outcomes, designing tools for awareness and promotion of mental health among mine workers, and maintaining national statistics of mental health problems and related issues.	2021	(*Pizarro & Fuenzalida, 2021*)
Soft organizational factors, such as organizational control, organizational culture, interpersonal relationships, role in the organization, responsibility, career development, and work-life balance lead to an increase in the level of psychological well-being of mine workers.	2019	(*Mościcka-Teske et al., 2019*)
Personality traits, sleep quality, adherence to shift work, organizational and managerial structure.	2019	(*Ma et al., 2019*)
Factors significantly associated with mental health included: age, race, housing status, diet health, sleep disorders, stress, and job satisfaction.	2019	(*Pelders & Nelson, 2019*)
Adherence to shift work and worker organization systems lead to an increase in the level of psychological well-being of mine workers and a reduction in their job stress.	2019	(*Li et al., 2017*)
Factors such as family support, work-life balance, psychosocial supportive factors increase the level of mental well-being.	2018	(*Lawrence et al., 2018*)
National occupational health and safety policy (for example, law, senior workplace management support, and having specific national regulations) underpins the support for workers' health and is essential for healthy and safe working populations.	2024	(*Potter et al., 2024*)
Psychosocial work environment factors include job organization, design and management including work demands, availability of organizational support, rewards, and interpersonal relationships in the workplace.	2017	(*Leka et al., 2017*)
Job satisfaction factors, psychological capital, social components, quality of life, disruptors and inhibitors, and modernization form the psychosocial themes of mental well-being.	2021	(*Raji et al., 2022*)
Job design and human resources management activities have a significant impact on the mental well-being of employees.	2016	(*Borhani & Hadizadeh Moghadam, 2016*)

Table 2

Results of the Qualitative Analysis of the Data Obtained)

Overarching Themes	Organizing Themes	Base Themes
Psychosocial Factors	Work-Life Balance	Loss of time with children and family, less involvement in family life, loneliness of spouse and emotional partner
	Quality of Work Life	Change in eating habits, change in living conditions, vitality, physical quality, public transportation, place identity, access to urban facilities and equipment
	Modernization	Modern socialization, modern identity elements, modern lifestyle, modern consumption patterns, introduction of the internet to the workplace, attention to virtual space, attention to virtual interactions
	Motivation	Rewards, social recognition and praise, personal satisfaction, sense of success, recognition and appreciation, meaning and purpose, opportunities for professional development, career development, development and promotion of intrinsic motivations, motivation based on the organizational philosophy, motivation based on duty, appreciation for work done
	Social Security	Creating a sense of care, family security, job security, mental security, financial security, security in living place, physical security
	Social Trust	Interpersonal trust, generalized trust, individual trust, trust in the efficiency of officials, specific trust
	Social Capital	Social cohesion, social and economic status, collective identity, religious participation, social bonding, sense of purpose
	Economic Factors	Relative financial satisfaction of individuals, homeownership, financial capability, access to employment, availability of individual and group welfare facilities, financial benefits, financial incentives, salary increase, competitive benefit packages, financial compensation for services, personal income

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	Justice in the Mining Workplace	Procedural justice, distributive justice, interactional justice, justice in payments, justice in treatment, justice in task allocation, justice in job grades, justice in performance evaluation, justice in work shifts, justice in compensation based on merit, perceived equality of tools used for the distribution of compensation and benefits, equality in the behavior of decision-makers, prevention of personal bias, consistent use of decision-making criteria, timely feedback, justification of a decision
Organizational Factors	Job Design	Working hours, mining duration, shift duration, arrangement of day and night shifts, shift scheduling on holidays, working conditions, high workload, violence in the workplace, harder work, passive and active jobs, job autonomy, job identity, job importance, unifying job content
	Human Resource Activities	Recruitment and selection, housing construction, training and development, performance evaluation, compensation, leadership styles, performance control, precise job position planning, appropriate social services, offering suitable welfare services, suitable employee recruitment, creating a healthy environment, new employee recruitment, granting autonomy, high-performance work systems, human resource planning, performance management, fair and competitive compensation systems, internal promotion
	Mining Work Environment Culture	Respect for each other, inclusivity and equality among employees, compassion towards employees, organization's perceived value of individuals, organization's perceived value of teams, perceived nature of time, organization's perception of time value, safety and security in the organization, organizational vision, values, rules, people's views on issues in the work environment, collective rules for behavior manifestation, traditions and norms regarding internal and external organizations, developmental culture, innovation culture, honesty and integrity culture, flexibility culture, work and production culture, appreciation and gratitude culture, learning culture, responsibility and justice culture, resilience culture
	Safety in the Mining Workplace	Work hazard, work environment, mental safety, no fear of harassment, trust among colleagues at work, risk-taking at work, job safety, work tool safety, technological safety, respiratory protectors, safety helmets, gloves, special mining glasses, safety shoes, electrical safety, mine explosion safety, adherence to mine safety standards, work environment cleanliness, reduction of fire hazards, fire insurance, workplace insurance, safety training
Individual Factors	Interpersonal Relationships and Skills	Social relationships, having hobbies, creating beneficial relationships and cooperation with colleagues and supervisors, verbal communication, non-verbal communication, conflict management ability, empathy, listening, positive attitude, trustworthiness, flexibility, patience, social awareness
	Personality Traits	Education level, smoking, alcohol consumption, marital status, physical activity, obesity and thinness, risk-taking, age, gender, non-use of medication, race, ethnicity, flexibility and family mental well-being after a disaster, individual control, creativity, optimism, agreeableness, conscientiousness, extraversion, emotional intelligence, self-compassion
	Addressing Mental Illnesses or Symptoms	Physical health, cardiovascular diseases, mental and etc., negative emotions, impulsivity, depression, self-confidence, paranoid thoughts, anxiety, hostility
	Sleep Quality	Sleep disorders, falling asleep early, regular sleep, mental sleep quality, heaviness and lightness of sleep, bedroom tranquility, sleep and wake times, changes in sleep habits
	Positive Emotions	Pleasure, ecstasy, rapture, happiness, joy, love, wonder, humor, inspiration, hope, serenity, interest, behavioral, cognitive, and physiological emotions, placing oneself in a suitable situation, mindfulness
Psychosocial Factors	Work-Life Balance	Loss of time with children and family, less involvement in family life, loneliness of spouse and emotional partner
	Quality of Work Life	Change in eating habits, change in living conditions, vitality, physical quality, public transportation, place identity, access to urban facilities and equipment
	Modernization	Modern socialization, modern identity elements, modern lifestyle, modern consumption patterns, introduction of the internet to the workplace, attention to virtual space, attention to virtual interactions
	Motivation	Rewards, social recognition and praise, personal satisfaction, sense of success, recognition and appreciation, meaning and purpose, opportunities for professional development, career development, development and promotion of intrinsic motivations, motivation based on the organizational philosophy, motivation based on duty, appreciation for work done
	Social Security	Creating a sense of care, family security, job security, mental security, financial security, security in living place, physical security
	Social Trust	Interpersonal trust, generalized trust, individual trust, trust in the efficiency of officials, specific trust
	Social Capital	Social cohesion, social and economic status, collective identity, religious participation, social bonding, sense of purpose
	Economic Factors	Relative financial satisfaction of individuals, homeownership, financial capability, access to employment, availability of individual and group welfare facilities, financial benefits, financial incentives, salary increase, competitive benefit packages, financial compensation for services, personal income
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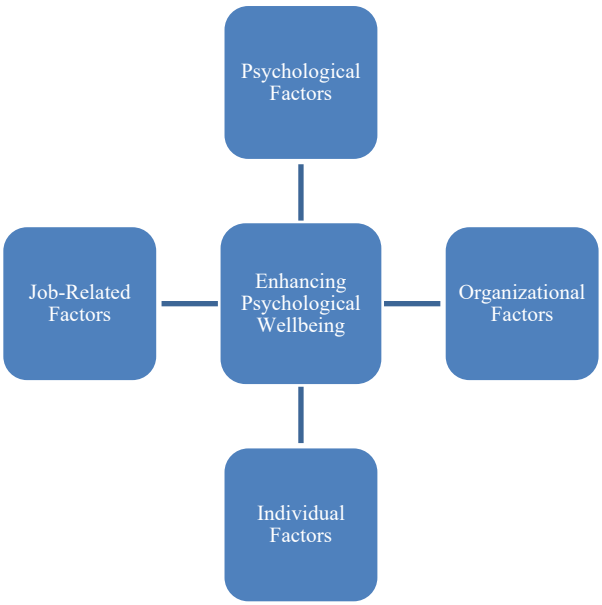
	Mining Work Environment Culture	Respect for each other, inclusivity and equality among employees, compassion towards employees, organization's perceived value of individuals, organization's perceived value of teams, perceived nature of time, organization's perception of time value, safety and security in the organization, organizational vision, values, rules, people's views on issues in the work environment, collective rules for behavior manifestation, traditions and norms regarding internal and external organizations, developmental culture, innovation culture, honesty and integrity culture, flexibility culture, work and production culture, appreciation and gratitude culture, learning culture, responsibility and justice culture, resilience culture
	Safety in the Mining Workplace	Work hazard, work environment, mental safety, no fear of harassment, trust among colleagues at work, risk-taking at work, job safety, work tool safety, technological safety, respiratory protectors, safety helmets, gloves, special mining glasses, safety shoes, electrical safety, mine explosion safety, adherence to mine safety standards, work environment cleanliness, reduction of fire hazards, fire insurance, workplace insurance, safety training
Individual Factors	Interpersonal Relationships and Skills	Social relationships, having hobbies, creating beneficial relationships and cooperation with colleagues and supervisors, verbal communication, non-verbal communication, conflict management ability, empathy, listening, positive attitude, trustworthiness, flexibility, patience, social awareness
	Personality Traits	Education level, smoking, alcohol consumption, marital status, physical activity, obesity and thinness, risk-taking, age, gender, non-use of medication, race, ethnicity, flexibility and family mental well-being after a disaster, individual control, creativity, optimism, agreeableness, conscientiousness, extraversion, emotional intelligence, self-compassion
	Addressing Mental Illnesses or Symptoms	Physical health, cardiovascular diseases, mental and etc., negative emotions, impulsivity, depression, self-confidence, paranoid thoughts, anxiety, hostility
	Sleep Quality	Sleep disorders, falling asleep early, regular sleep, mental sleep quality, heaviness and lightness of sleep, bedroom tranquility, sleep and wake times, changes in sleep habits
	Positive Emotions	Pleasure, ecstasy, rapture, happiness, joy, love, wonder, humor, inspiration, hope, serenity, interest, behavioral, cognitive, and physiological emotions, placing oneself in a suitable situation, mindfulness

Considering the findings from Table 2, the components of the model for improving the level of psychological well-being and reducing stress among mine workers in the workplace can be classified and integrated under four general dimensions: 1. Psychosocial factors including components (work-life balance, quality of work life, modernization, motivation, social security, social trust, social capital, economic factors, justice in the mining workplace), 2. Organizational factors including components (job design, human resources activities, work culture in the mining environment, safety in the mining workplace), 3. Individual factors including components (interpersonal relationships and skills, personality traits, addressing mental illnesses and symptoms, sleep quality, positive emotions), and 4. Job-related factors including components (job satisfaction, job rotation, career path, job security, career development).

Figure 1

Simple Model of Study



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4 Discussion and Conclusion

The aim of the present research was to present a model for improving the level of psychological well-being and reducing stress among mine workers in the workplace. To achieve this, articles and documents related to the topic were initially searched on reputable sites, and 25 items were selected and analyzed based on the mentioned criteria. The research findings indicated that in the first phase of coding, 278 base themes were identified. These themes were reduced to 22 organizing themes in the second phase of coding. Finally, in the third phase of coding, where the overarching themes were identified, the 22 themes from the second phase were categorized based on their similarities and proximity into four overarching themes, forming the dimensions of the model for improving the level of psychological well-being and reducing stress among mine workers in the workplace. These themes are psychosocial factors, organizational factors, individual factors, and job-related factors. The discussion further elaborates, interprets, and explains the identified factors for improving the level of psychological well-being and reducing stress among mine workers.

4.1 Psychosocial Factors

According to the research results, one of the dimensions of the model for improving the level of psychological well-being and reducing stress among mine workers was psychosocial factors. This dimension consists of 9 organizing themes, including work-life balance, quality of work life, modernization, motivation, social security, social trust, social capital, economic factors, and justice in the mining workplace. Confirming the results of this section, Raji et al. (2021) identified components such as psychological capital, social components, quality of life, disruptors and inhibitors, and modernization as dimensions of mental well-being (Raji et al., 2022). Leka et al. (2017) introduced psychosocial factors for improving workers' mental health (Leka et al., 2017), and Pizarro & Fuenzalida (2021) mentioned factors such as managing the risk of mental disorders and other related outcomes, designing tools for awareness and promotion of miners' mental health, and maintaining national statistics on mental health issues and related problems (Pizarro & Fuenzalida, 2021). Additionally, Amponsah et al. (2013) and Moscicka et al. (2019) researched psychosocial factors. It can be said that health is central to socio-economic development. If the aim of all socio-economic policies is societal welfare, the entry to societal welfare starts first with a correct and healthy life expectancy and then with the quality of life, none of which is possible without mental health (Amponsah-Tawiah et al., 2013; Mościcka-Teske et al., 2019). Development is unthinkable without the existence of healthy humans. The new century has brought new ideas; one serious belief is that a nation cannot be judged solely by its economic growth, but also by the happiness, security, and social satisfaction of its people. In a sustainable society, equality, education, health, and respect for human rights, as well as having basic needs, are essential and indicators of development. In recent years, some countries have created a paradigm shift in thinking about health. The old paradigm emphasized disease, while the new paradigm focuses on health, functionality, and psychological well-being. Disagreement about the space and concept of health is common because health can have medical, social, economic, psychological, and many other dimensions. Health can be defined as the absence of disease, ability, endurance, and high quality of life (Hezarjaribi & Mehri, 2013). The findings in this section of the research address all these issues and introduce the psychosocial dimension as one of the important dimensions of the model for enhancing mental well-being of mine workers.

4.2 Organizational Factors

The research results showed that organizational factors are another dimension of the model for improving mental well-being and reducing stress among mine workers. Organizational factors are created by four organizing themes, including job design, human resources activities, work culture in the mining environment, and safety in the mining workplace. Confirming the results of this section, Raji et al. (2021), human resources activities, Borhani et al. (2016), job design and human resources activities, Amponsah et al. (2013), factors related to physical hazards and workplace safety, Torkington et al. (2011), respect, organizational nature, and work environment culture, and Jackson et al. (2011) referred to the role of acculturation on mental well-being in their research (Amponsah-Tawiah et al., 2013; Borhani & Hadizadeh Moghadam, 2016; Jackson et al., 2011; Raji et al., 2022; Torkington et al., 2011). Thus, it can be said that the results of this section of the research overlap with the mentioned studies. Explaining this research finding, it can be stated that historically, humans have established and expanded organizations to cope with phenomena and realize their goals and needs. Despite recent significant advancements in various fields, humans still

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constitute the main components of organizations; thus, the success of organizations in achieving their goals depends on their attitude towards humans and how they utilize these forces (Ebrahimpour et al., 2012), Human resource management is the science and practice that deals with the nature of the employment relationship and all decisions, actions, and issues related to this relationship (Alipuor Darvishi et al., 2012). Another definition of human resource management refers to policies, methods, and systems that affect the behavior, attitudes, and performance of employees. Dessler (2002) states that human resource management involves policies and actions necessary for carrying out aspects of management functions related to employees, especially recruitment, training, performance evaluation, rewards, and creating a fair and healthy environment for organization employees (Amirkhani & Borhani, 2016; Amirkhani et al., 2014). Recent studies in human resource management have specifically registered one of the two main streams. The first stream focuses on various human resource management functions, for example, recruitment, selection, training, development, performance evaluation, and rewards; the second stream examines strategic resource management including delegation of authority, high-performance work systems, and their relationships with organizational performance (Yang & Lin, 2009) The primary goal is to ensure that management effectively deals with everything related to hiring and improving people and relationships that exist between management and work. The human resources function plays a major role in creating an environment where people can make the best use of their capabilities. People must realize that their potential talents are used for both individual and organizational benefits (Abbaspour, 2002) Given what has been said, it can be stated that human resources activities have a positive impact on improving mental well-being and reducing stress among mine workers.

4.3 Individual Factors

One of the very important dimensions found in this research regarding improving mental well-being and reducing stress among mine workers relates to individual factors. According to the research results, individual factors are defined by six organizing concepts, including interpersonal relationships and skills, personality traits, addressing mental illnesses and symptoms, sleep quality, and positive emotions. The findings of this section of the research align with the results of previous studies (Amirkhani & Borhani, 2016; Borhani & Hadizadeh Moghadam, 2016; Lawrence et al., 2018; Legault et al., 2017; Ma et al., 2019; Mościcka-Teske et al., 2019). In this regard, studies by Powell (2009) and Legault et al. (2017) on the variables of sleep quality/disorders and personality traits, examined the role of personality traits such as negative affectivity, impulsivity, risk-taking, and depression on injury risks, safe work behavior, and occupational stress. Amponsah et al. (2013) mentioned interpersonal relationships, substance/drug use, and other individual variables (Amponsah-Tawiah et al., 2013). Explaining this research finding, it can be said that individual factors affect mental health. These factors include genetics and physiology, gender, life skills learning, self-confidence, appreciation, individual beliefs and convictions, laughter and joy, enjoying life, absence of conflict, nutrition, exercise, adequate and quality sleep, absence of addiction, employment, social relationships, having hobbies, creating beneficial relationships and cooperation with colleagues and supervisors, verbal communication, non-verbal communication, conflict management ability, empathy, listening, positive attitude, trustworthiness, flexibility, patience, social awareness, education level, smoking, alcohol consumption, marital status, physical activity, obesity and thinness, risk-taking, age, gender, non-medication use, race, ethnicity, flexibility, and family mental well-being after disaster, individual control, creativity, optimism, agreeableness, conscientiousness, extraversion, emotional intelligence, self-compassion, etc. For example, one of the individual factors is positive emotions, which are more related to individuals' personal characteristics. Happiness is sometimes associated with optimistic and purposeful feelings, and interestingly, even a small amount of positive emotions can significantly reduce the negative effects of stress, leading to increased body resistance against diseases and infections and reducing the likelihood of illness. Thus, it can be said that attention to individual factors leads to improved mental well-being and reduced stress in the mining work environment.

4.4 Job-Related Factors

Another dimension extracted from the model for improving mental well-being and reducing stress among mine workers was job-related factors. This dimension is composed of four organizing themes; job satisfaction, job rotation, career path, job security, and career development. Another dimension extracted from the model for improving

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mental well-being and reducing stress among mine workers was job-related factors. This dimension is composed of four organizing themes; job satisfaction, job rotation, career path, job security, and career development. Confirming this research finding, Raji et al. (2021), job satisfaction component, Potter et al. (2024), job security, Leka et al. (2017), job rotation and career path, and Borhani & Hadizadeh Moghaddam (2016) mentioned development and job design (Borhani & Hadizadeh Moghadam, 2016; Leka et al., 2017; Potter et al., 2024; Raji et al., 2022). Thus, it can be said that the results of this section of the research overlap with the mentioned studies. Explaining this research finding, it can be said that job characteristics refer to the nature of activities, tasks, duties, and various dimensions of a specific job (Ebrahimpour et al., 2012). Job characteristics fundamentally address how work is performed and cover the range and nature of tasks associated with a specific job. On one hand, job characteristics play a role in increasing efficiency and, on the other hand, in creating job satisfaction and professional growth of individuals; therefore, appropriate job design is an effective way to motivate and develop individuals in the organization. The efficiency and satisfaction of employees indicate how well a job is designed. Jobs that are not well-designed may result in lower efficiency, absenteeism, complaints, destruction, resignation, leaving service, tension, decreased motivation and performance, and other problems.

4.5 Suggestions and Implications

Thus, it can be said that job characteristics are one of the factors affecting tension and mental health among mine workers. Based on the results of this research, the following suggestions are presented to increase the level of mental well-being and reduce stress among mine workers:

Investigate the effects of job satisfaction in mining work environments among workers to expand the empirical background on the role of this category in providing mental well-being.

Pay more attention to the dimensions of psychological capital and psychological components as a significant variable in the feeling of mental well-being through public education including media or educational interventions in mining work environments.

Research and study social components such as social capital of individuals in connection with mental well-being and facilitate the process of social trust in executive, public, organizational mechanisms.

Pay attention to different dimensions of quality of life in livelihood, educational, environmental policies, and attention of mining companies and legal channels to this category considering the contribution of this variable to the feeling of happiness and well-being.

Expand technological infrastructures and structures conducive to modernity considering the cultural context of the country.

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Declaration of Interest

The authors of this article declared no conflict of interest.

Authors Contributions

All authors have contributed significantly to the research process and the development of the manuscript.

Ethics principles

None.

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