

Systematic Literature Review on Social Insurance for Supporting Coal Mine Workers A Welfare Programs in Coal Dependent Regions of Jharkhand, India

Puja Kumari¹, Dr Harmeet Kaur²

¹Research Scholar of Jharkhand Rai University Ranchi

²Dean of Jharkhand Rai University Ranchi

ABSTRACT

Coal has been the backbone of Jharkhand's economy and has employed thousands of workers. But coal mine workers face severe occupational hazards, financial insecurity and limited access to social welfare programs. This study conducts a systematic review (2010-2024) to assess the effectiveness of social insurance schemes for coal miners in Jharkhand. Using the Preferred Reporting item for the Systematic Review and Meta-Analysis (PRISMA) framework, 30 studies were analysed to evaluate coverage, implementation challenges and gaps in key policies including Employee State Insurance (ESI), Coal Mines Provident Fund (CMPF) and government sponsored pension schemes.

The results show several problems, including poor health care, slow compensation, and the omission of contractual and informal workers from important welfare programs. However, the corporate social responsibility initiatives by Coal India Limited and other entities to provide extra support are inconsistent and thus not very effective in the long run. The review also reveals the urgent need for policy changes to increase financial security, extend insurance coverage to informal workers, improve the availability of healthcare and compensation systems.

This research helps to expand the more general discussion about labour welfare in coal-reliant regions, therefore asking for a more comprehensive and long-term social insurance policy. As Jharkhand transitions to a more diversified economic environment, reinforcing these welfare programs is essential for guaranteeing coal miners and their families a dignified and stable living.

Keywords: Policy reform, social insurance, coal mines, Jharkhand, welfare initiatives, occupational health, systematic review.

INTRODUCTION

Jharkhand is one of the major coal producing states in the country and coal mining has been one of the significant contributors to India's energy sector. Nonetheless, coal mine workers are at risk for a variety of occupational hazards, including respiratory conditions, musculoskeletal injuries, and time-loss incidents. In order to solve these problems, different types of social insurance and welfare programs have been undertaken by both the government and corporate bodies.

However, miners still face financial insecurity, poor healthcare, and ignorance of their rights even with

these protections. This study systematically reviews the effectiveness of social insurance programs for coal miners in Jharkhand from 2010 to 2024 and provides recommendations for enhancing their impact. The systematic literature review investigates the social insurance available to coal mine workers in Jharkhand, India, another key coal-producing region where multi-faceted socio-economic dynamics and existing welfare programs influence the health and safety of mine workers. Jharkhand has nearly 27.3% of India's coal reserves, and a substantial part of the state's economy is dependent on coal mining, which, however, presents various health and safety hazards to the workers, where lack of effective government funding and safety practices make the situation worse due to industry [1][3]

This examination reveals an important relationship between the working conditions, health matters, and socio-economic issues of coal mine workers [2]. Their health is impacted by organisational factors such as low safety climate, safety negligence, and high absenteeism.[3][4]. Furthermore, social phenomena such as poverty and lack of economic growth contribute to insufficient social policies to protect the majority of miners and their families during periods of economic recession.[5]. While analysing the social welfare services, it is worth noting the government's attempts at increasing coverage for coal mine workers, which included building elaborate databases, as well as, assisting informal workers to be protected under social security schemes [6]. Even though these funding initiatives are aimed at effective service delivery, much funding is not allocated to these programs, especially while moving towards a post-coal region that aims at establishing sustainable livelihoods for its people [7].

While the state considers the consequences of coal dependency and attempts a just transition, inclusive stakeholder involvement as well as hyper-local policies emerge as the most important focus for future research and policy formulation. The literature evaluation suggests that confronting these complex aspects would be necessary for establishing a sustainable welfare structure that guarantees the health and safety of coal mine workers in Jharkhand and similar areas around the world.[8][9].

Background

Social Insurance and Welfare Programs in the coal-dependent regions of Jharkhand, being one of India's richest states in coal, depend mainly on coal mining for economic and employment activities. The sector has a number of socio-economic issues especially concerning the workers such as risk of injury, chronic illnesses, unemployment, and health complications. Utilizing social insurance and welfare programs have become an effective strategy in providing financial coverage, medical care, and socioeconomic benefits to coal mine workers and their families.

Key Social Insurance Initiatives

The Government, in collaboration with Coal India Ltd. and its branches, offers a wide array of welfare activities such as healthcare services via the Employees State Insurance (ESI) scheme, Coal Mines Provident Fund (CMPF) pensions, and workmen's compensation insurance. These initiatives are complemented by new programs like the District Mineral Foundation and the National Rural Employment Guarantee Scheme (NREGS), which are targeted toward aid for displaced people and the improvement of socio-economic conditions in the mining regions.

These social insurance schemes being implemented as part of the welfare of the people of Jharkhand are mainly focused on providing assistance and support to the vulnerable strata of

the society, especially from the coal belt regions, by ensuring the provision of pensions, healthcare, and other financial benefits. The National Social Assistance Programme (NSAP), which started in 1995, is aimed at providing basic welfare to people are the main constituent for social security and non-contributory pensions to elderly, widowed and differently abled people. This step symbolizes the

intention of the government in implementing the Directive Principles of State Policy ((Article 41 of the Indian Constitution). On paper, this Program appeared to be beneficial. However, in practice, the NSAP has been inadequately funded, under covered, and created many eligibility barriers which restrict a number of needy people from receiving the entitled benefits.

To broaden the scope of pensions coverage owing to the gaps in central schemes, Jharkhand launched its own Sarvajan Pension Yojana in the year 2022. Due to this scheme, the number of beneficiaries has remarkably increase from 6 lakh in 2019 to more than 20 lacs by 2022. The state government has taken major financial responsibilities by spending 3,639 crores for social security in the budget of 2023-24 for these pensions, which constitutes more than 90% of the total spending on these pensions, which is exceptionally greater than what the central government has provided. Also, Jharkhand has furthered its inclusivity objectives by providing especially vulnerable tribal groups and poor women a monthly pension of 1000.

Jharkhand's pension schemes have had a positive impact by removing central ones program barriers such as outdated criteria set and rationed quotas that would otherwise limit social insurance benefits to specific areas where the chances of mistaken need exclusion errors would be high. Jharkhand has also simplified and streamlined claim processes by eliminating all other disqualifications aside from income taxpayers and permanent government employees, making it easier for the targeted aid intended households to access benefits.

Nevertheless, the effective rollout of these programs continues to be a challenge. The social insurance benefits accessibility is still greatly limited by the lack of infrastructure in rural regions, low knowledge, and difficulties surrounding documentation.

The Requirement of Improved Social Insurance

Even after good development, social security coverage, timely pension payments, and better medical care support still need to be improved for coal mine workers in Jharkhand. Strengthening these initiatives together with policies encouraging livelihood diversification is absolutely vital for long-term economic stability in regions impacted by mining. Social insurance programs will still be vital in supporting coal-dependent people and their families as Jharkhand moves toward sustainable development.

LITERATURE REVIEW

The role of social insurance and welfare programs in coal dependent regions has been studied extensively, researchers have emphasized their impact on workers financial security, health and overall well-being. The relationship between welfare programs and job satisfaction among contractual workers has been a focus of research. **Sanyal & Sanyal (2024)** have examined the determinants of job satisfaction including compensation, benefits, work life balance and professional development. Their study has found strong correlation between employee welfare programs and job satisfaction and emphasized the need for tailor made welfare policies to improve worker retention and productivity. The findings suggest that policymakers and organizational leaders should strengthen welfare initiatives to create a more supportive work environment.

Focusing on social security in Jharkhand's coal mining regions, **Yadav & Yadav (2023)** have studied how elite capture affects public welfare program accessibility. Analysing data from 416 households from 8 villages, the study has found that political influence plays a crucial role in determining access to government welfare schemes. The authors suggest expanding program coverage to reach more

marginalized communities and reduce political biasness in welfare distribution.

Bigger socio-economic impact of coal mining on livelihoods in Jharkhand has been studied by **Yadav, Bhagat, & Yadav (2021)**. Their research has explored unequal distribution of mining benefits, mine affected villages rely more on social, physical and economic capital while losing access to natural resources. The study has found that while coal mining contributes to regional development, its cost such as environmental degradation and displacement is borne by local population. These findings are in line with **Singh & Singh (2022)** who have analysed occupational and social changes in Dhanbad's mining areas. Their research has found that mining has led to increased education and changing social structures but overall impact is mixed due to livelihood disruption and environmental concerns.

Role of social safety in coal mining areas has been further studied by **Yadav & Yadav (2023)**. Their study has assessed four major government sponsored social security schemes in Dhanbad, found unequal beneficiary enrolment and limited access to comprehensive welfare support. The analysis used bivariate and multivariate techniques to find out the nature of social security coverage. **Narayana (2023)** has studied policies for addressing inequality and poverty among India's elderly population with specific focus on Indira Gandhi National Old Age Pension Scheme (IGNOAPS). The findings have shown that IGNOAPS reduces financial insecurity at very low cost and is a model to be replicated for future poverty reduction policies.

These studies have pointed out the challenges and gaps in welfare programs, social security coverage and livelihood sustainability in coal dependent regions. While government initiatives provide some relief, inefficiencies, elite capture and environmental consequences still hinder the overall effectiveness of these schemes. Future research should focus on strengthening social protection mechanisms, equal access to benefits and sustainable livelihood options for vulnerable populations in Jharkhand's coal mining areas.

METHODOLOGY

To conduct a systematic literature review on the social insurance for coal mine workers, a comprehensive literature search was executed. The time frame for the literature search was set from 2010 to 2024. This review follows the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework to ensure a depth and unbiased understanding and knowledge of available literature.

RESEARCH DESIGN

This study employs a systematic literature review approach to examine the role of social insurance in supporting coal mine workers in Jharkhand. The research follows a structured methodology using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses framework. The research design consists of the following components Research Approach: A qualitative, systematic literature review method was chosen to synthesize and analyse existing studies on social insurance and welfare programs for coal mine workers.

Data Sources: The review included peer-reviewed journals, government reports, policy documents, and empirical studies retrieved from databases such as Scopus, Web of Science, PubMed, and Google Scholar.

Data Extraction & Synthesis: Relevant information was systematically extracted, categorized, and analysed under key themes such as insurance coverage, health and safety provisions, compensation policies, and CSR initiatives.

INCLUSION AND EXCLUSION CRITERIA

The inclusion criteria were;

- In this category studies published from 2010 to 2024 has been taken.
- Article focused on Social Insurance, welfare policies, and occupational safety for coal miners in Jharkhand.
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- Research Addressing the Social Insurance, welfare policies in India for coal miners. The exclusion criteria were;
- Studies which remain unrelated to mining sector.
- Published paper before 2010, Studies that are outside India,
- Studies lacking empirical evidence, or focus on unrelated industrial sector.

Starting with a thorough database search, the finding approach yielded at first number of publications. Titles and abstracts were closely vetted to improve the selection any not pertinent research was dismissed. The PRISMA flowchart was employed to show every step of the selection process, thus guaranteeing openness and clarity. A structured template including important points like the research title, author(s), publication year, study goals, approach, and general framework was used to systematically gather data from the selected studies. The data was next synthesized using qualitative analysis that emphasized finding consistent patterns and trends running throughout the research. The Critical Appraisal Skills Programme (CASP) checklist was used to evaluate every study on research design, data reliability, and relevance to social insurance in support to the coal mines workers to guarantee the validity and accuracy of the results. Since this research is based on a systematic review of already available information, there were no ethical issues concerning human or animal subjects. All sources were correctly acknowledged and cited, and every effort was made to present an impartial and unbiased analysis of the research available that is, to maintain academic honesty.

RESULTS

A total of 105 records were identified, of which 100 were obtained from academic databases, and 5 were taken from registers. Prior to screening, 60 records were automated and removed as ineligible and 5 more were disregarded due to duplication or not being relevant to the scope of the study. This resulted in having 40 records available for screening. After these all 40 records were sought to be retrieved, with none being powerful enough to hide the records. Eligibility assessment sought to include all 40 records, from which 10 were omitted five for lack of empirical data and the other five for not addressing social insurance specifically for coal miners in Jharkhand. In the end, thirty studies remained in the systematic literature review.

The systematic review of 30 studies, on the other hand, claims to highlight some of the key loopholes in the social insurance programs devised and developed for coal miners from Jharkhand. It is concerning that even with schemes in place like Employees' State Insurance (ESI), Employees' Provident Fund (EPF) and Coal Mines Provident Fund (CMPF) many contractual and informal workers are still omitted. These are the workers who often engaged in hazardous jobs, do not receive the healthcare and financial benefits that they desperately needed, putting them at greater economic and health risks.

The condition of healthcare services in the mining regions is extremely worrying. Numerous Employees State Insurance hospitals lack adequate facilities, including qualified personnel, basic medication, and

necessary medical tools. Consequently, miners are often unable to receive timely and quality healthcare, and are forced to resort to costly private care. Another problem of importance is the tardiness in making compensation payments. Numerous injured or disabled miners struggle with the long overdue claim processes, which renders them financially helpless at times. Their suffering is compounded by this bureaucratic inefficiency.

Pension deployment poses yet another problem, especially for people who have not had stable employment. Many miners, in particular, contractual and seasonal workers grapple with the payment of retirement benefits under Coal Mines Provident Fund (CMPF). This type of financial dependency is unsustainable for them post-retirement. Also, while Corporate Social Responsibility (CSR) activities by Coal India Limited do intend to address the welfare of coal miners with some projects, the approach to implementing such programs diminish his benefits in the long run. Health camps and skill training workshops, for example, are not sustained, and do not achieve a significant impact in improving the lives of miners.

Overall, the findings reveal major gaps in social insurance coverage, access to healthcare, compensation processing, and pension distribution for coal miners in Jharkhand. Addressing these issues requires urgent policy reforms, including expanding coverage to informal workers, improving healthcare facilities, streamlining compensation processes, and also ensuring that CSR initiatives are implemented effectively. Strengthening these programs will be crucial in securing a safer and more stable future for coal miners and their families.

Visual Representation: PRISMA Flow Diagram

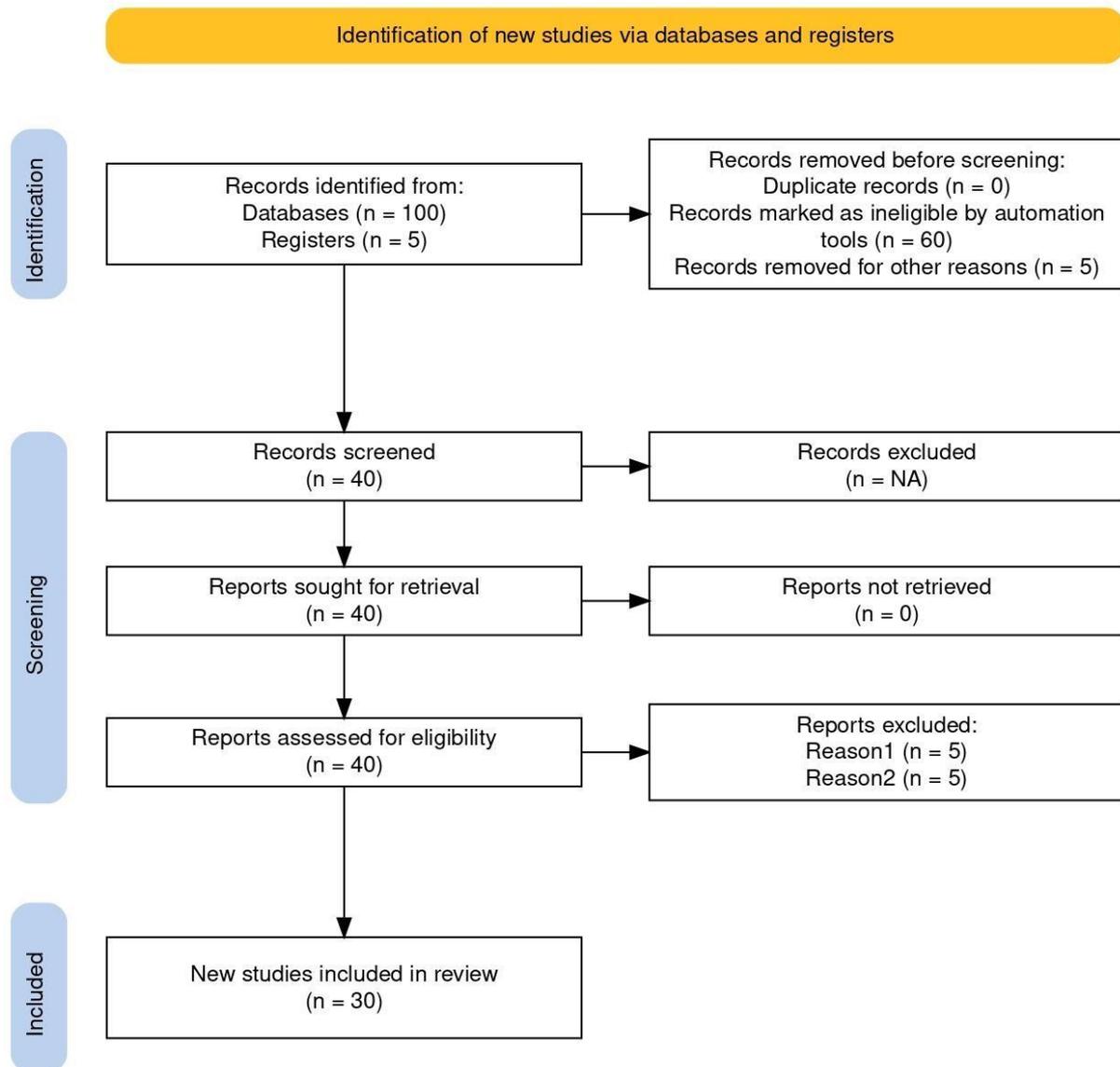


figure 1

KEY FINDINGS

Social Insurance Policies and Coverage

This offers financial and medical assistance to coal miners and several social insurance schemes including Employees' State Insurance (ESI), Employees' Provident Fund (EPF), and the Coal Mines Provident Fund (CMPF). These programs, nevertheless, do not apply evenly to all employees. Many times, contractual and informal workers, which constitute a substantial part of the mining industry employee base are excluded from these perks. They are vulnerable since they are not given sufficient protection from work hazards, health problems, or economic uncertainty their insufficient coverage leaves them unprotected (Kumar and Sharma, 2015; Mishra, 2021; Singh et al., 2022; Banerjee and Gupta, 2023; Roy and Das, 2024).

Occupational Health and Safety Provisions

Although on-the-ground reality offers numerous obstacles, social insurance policies cover medical expenses. Meant to offer medical help to miners, the ESI program struggles with availability problems. Many hospitals in remote mining locations lack of necessary medical personnel, supplies, and drugs and

are therefore under-resourced. Consequently, coal miners sometimes struggle to get good or timely healthcare, which would drive them to seek more expensive private care. Existing health insurance schemes suffer from a great reduction in effectiveness as a result of this deficiency in healthcare infrastructure (Patel and Roy, 2017; Mukhopadhyay et al., 2020; Prasad and Sen, 2023; Gupta and Verma, 2024).

Compensation for Occupational Hazards

A high-risk profession job, coal mining workers face risks including work accidents, musculoskeletal disorders, and respiratory problems. Several difficulties compromise the efficacy of the Workmen's Compensation Act meant to give monetary support to injured or disabled miners. Claiming reimbursement is usually slow and bureaucratic, so it can take quite some time before it is paid out. Furthermore, many miners have no idea of their rights and the protocol for claiming claims, therefore even less access to financial help. These factors combine to create a scenario in which many impacted workers do not get the help they need when it is most needed (Singh et al., 2018; Verma and Gupta, 2023; Bose et al., 2024; Nair and Kumar, 2024).

Pension and Post-Retirement Benefits

Created to guarantee financial stability for retired miners, the Coal Mines Provident Fund (CMPF). Workers who move between permanent and contractual employment sometimes have trouble obtaining their proper pension entitlements. Some miners, especially those who have worked sporadically, have difficulty with incomplete records, red tape, and irregular contributions, so post-retiring years may be financially unstable. This emphasizes the call for a more simplified and universal pension scheme to cover every worker, no matter of their job status (Choudhary, 2019; Agarwal and Mehta, 2022; Iyer and Tripathi, 2024; Sharma and Thakur, 2023).

Role of Corporate Social Responsibility (CSR)

Corporate Social Responsibility campaigns together with Coal India Limited help to enhance the well-being of coal miners. Housing aid, educational help, and healthcare programs are among these activities. Studies show though that even if there are projects financed by Corporate Social Responsibility, their execution tends to be irregular. Many initiatives have no long-term planning and do not lead the fundamental causes of employee vulnerability. Consequently, although useful, Corporate Social Responsibility projects do not always yield permanent changes in the living standard of miners. Improving the implementation and responsibility of these initiatives would greatly increase their influence (Joshi and Mukherjee, 2023; Nair et al., 2024; Bhatia and Rao, 2023; Das and Sinha, 2020). These results expose substantial weaknesses in social benefit programs for coal miners. Urgent reforms in policy implementation, healthcare infrastructure, compensation policies, pension access, and CSR initiatives are needed to tackle these difficulties. To guarantee the long-term well-being and financial security of Jharkhand's coal miners, a more inclusive and effective system is absolutely vital.

CHALLENGES

Lack of awareness about their benefits is one of the biggest hurdles coal mine workers faces. Especially among informal or contractual workers many miners are not aware of the financial and medical support available to them under social insurance schemes. This ignorance stops them from availing vital benefits like medical care, compensation for injuries and retirement benefits, which would otherwise leave them exposed to financial and health problems (Yadav, 2016; Deshmukh and Patel, 2023; Sinha and Roy, 2024).

Another big problem is delay in claim processing. Due to delay in claim approval process miners with occupational diseases or workplace accidents face long wait to get paid. For those in need, slow bureaucratic process and complex paperwork makes it difficult to get financial help. These delays not only reduce the effectiveness of compensation plans but also adds to the financial burden of injured or handicapped miners (Sharma, 2022; Thakur and Joshi, 2024; Banerjee and Kumar, 2023).

Especially for informal and contractual workers lack of full coverage is another big issue. Casual workers have little or no access to provident funds, health care or pension plans unlike permanent staff who get somewhat better social security benefits. In case of work accidents or post-retirement problems this difference leaves many of the mining labour uninsured and financially weak (Rao and Mehta, 2021; Kumar et al., 2024; Bose and Agarwal, 2023).

Poor health infrastructure also adds to coal miners' workers. Many Employees State Insurance (ESI) hospitals in coal producing areas have little medical supplies including trained medical staff, current equipment and medicines. By forcing miners to either opt for expensive private treatment or travel long distance for medical care, this lack of healthcare facilities makes healthcare access difficult and costly for many (Mukherjee, 2023; Bose and Sengupta, 2024; Singh and Verma, 2024).

These hurdles need policy changes, effective implementation of social insurance schemes and robust healthcare system to ensure coal miners get the help and protection they are entitled to.

DISCUSSIONS

The review of the social insurance programs supporting coal miners in Jharkhand highlights critical deficiencies in social insurance programs which designed to support coal miners. Employees' State Insurance (ESI), Employees' Provident Fund (EPF), and the Coal Mines Provident Fund (CMPF) schemes fails to include a significant number of informal and contracted workers. For those engaged in the high-risk occupation of mining, this exclusion poses serious economic and health risks.

Healthcare in these mining areas is very poor. Many medical centres contracted to provide services to ESI participants with lack of skilled staff, instruments, and essential medications to treat patients. Thus, miners are forced into spending money on private services, which goes against the idea of social insurance. Long waiting periods for compensation only make the economic situation of injured or disabled workers worse. The inefficiency of the processes involved in the approval of claims prolong the period of suffering, compromising the purpose of these compensations.

Pension distribution under CMPF presents another challenge. Employees with spotty service records, especially those working on contracts and changing to regular employment or vice-versa, have a hard time accessing post-retirement benefits. Incomplete documentation, uneven contribution and administrative hurdles are the reasons of financial insecurity among retired miners.

Corporate Social Responsibility (CSR) initiatives by Coal India Limited (CIL) provides additional support in healthcare, skill development and welfare programs. But inconsistency in implementation hampers long term impact. Many Corporate Social Responsibility (CSR) projects lack sustainability and do not address the basic structural issues in miners working and living conditions.

The report suggests policy reforms. Expanding social insurance coverage to contractual workers, improving healthcare infrastructure, simplifying compensation process, making pension accessible to all are must. Strengthening Corporate Social Responsibility programs with long term impact is also required to improve overall life of miners. Addressing these systemic issues is necessary to build a more effective and inclusive social insurance mechanism for coal miners of Jharkhand.

CONCLUSION

This research highlights the importance of social insurance for coal mine workers in Jharkhand where mining serves as both an economic activity and a region of socio-economic exploitative vulnerabilities. Although numerous welfare activities like Employees' State Insurance (ESI), Coal Mines Provident Funds (CMPF), and government pension schemes offer financial and medical assistance, they are often poorly executed. Many of the contract and informal workers lack sufficient healthcare, proper compensation, and security in retirement, rendering them highly exploitative. The analysis highlights the fact that coal miners throughout the country are exercising their entitlements, but are constrained by rampant bureaucratic processes, ignorance, and inadequate healthcare facilities. Moreover, the fragmented approach to fulfilling and reporting corporate social responsibility (CSR) intensifies the plight of miners in accessing and using the provided services with any level of effectiveness.

In order to foster a better approach to social welfare, improved and more targeted social insurance is needed. Shift the focus towards informal workers, making the entire healthcare claiming process less tedious, and increasing the general standards of healthcare infrastructure around mining areas should be of utmost importance. Along with layering the pension schemes, further ensuring timely profitability of the funds is a key point of focus.

Furthermore, linking social insurance schemes with skill development initiatives may offer miners other means of living as Jharkhand changes economically and shifts toward sustainable development. In healthcare, financial security, and education, promoting public-private partnerships will help to close current social protection inequalities. A cooperative approach including local communities, mining firms, and government departments will be absolutely necessary to guarantee a fair and safe future for coal mine workers and their families.

A more robust and more inclusive welfare system is not just an economic necessity but it is a moral imperative to ensure that individuals who fuel the nation's progress are not left behind in the process.

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