

## Labour Issues in the Rice Mill Industry: Challenges, Solutions, and Impacts

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### Abstract

The rice milling industry is one of the most important industries of the world as rice is a staple in many countries worldwide. The rice industry usually performs the processes that makes the paddy fit for packaging, marketing and human consumption. There are many labour issues faced by this industry and few among them are related to their socioeconomic conditions, health and well-being, worker rights and wage issues. The current study has tried to address the labour issues faced by the rice milling industry, identify the factors causing these issues and address few solutions that need to be implemented in the rice milling industry in order to ensure better performance and overall well-being of the labour of this industry. The major factors causing these issues were identified as industrial effluent and emissions, gender bias practices and absence of education and awareness among the people working in the rice milling industry. These factors are resolvable but there are societal barriers that contribute to inequality among gender and overall wellbeing of the rice mill workers. The societal perception about women, lack of education, awareness and experience about rice milling process and financial barriers come in the path of resolving the labour issues. It is suggested that governmental intervention, regular monitoring, increase in awareness and education, and implementation of labour welfare laws will be helpful in resolving the labour issues in rice milling industry.

**Keywords:** Labour issues, rice milling, socioeconomic, wage, labour

### 1. Overview-Rice milling industry

Rice milling industry deals with the processes involved in cleaning, dehiscing, polishing the harvested paddy to make it fit for marketing and human consumption. *Oryza sativa* is a cereal grass plant which is usually the widely used rice variety worldwide (Njue, 2019). *Oryza sativa* is the Asian rice variety whereas, *Oryza glaberrima* is the African rice variety. Milling of rice is a multi-step process to obtain the white rice. It refers to the process of trash and husk removal from the rice, milling off the bran from endosperm to obtain the white rice and finally remove the broken kernels and other defects (Odior & Oyawale, 2011).

The harvested rice contains 18-24% moisture. This is usually dried down 12-14% moisture level for its safe storage (Piggot et al., 2007; Odior & Oyawale, 2011). The drying of rice is followed by the milling process. The rice is cleared at first by removing any foreign objects. The second step is known as hulling where the husk is removed and brown rice is obtained. The rice is then milled where bran is removed a white rice is obtained. It

is then polished to smoothen its surface. The polished rice are then separated from the broken rice with the help of a sieve grader. This step is known as grading. Finally the clean white rice grains are sorted and other defective rice types are removed. This step is known as sorting. Finally the pure white rice is packaged (Odior & Oyawale, 2011).

Rice milling industry lies among the small, medium and large scale industries in several nations across the world (Odior & Oyawale, 2011). Rice mills provide employment for many workers in more than 95 countries worldwide (Coats, 2003). It is an important source of employment for rural workers in Indonesia, Pakistan, India and Bangladesh (Memon, 2013; Paman et al., 2014; Spielman et al., 2013; Zaman et al., 2006). The rice milling industry in Indonesia and Bangladesh are among the primary income generation source for rural and unskilled labourforces (Kabir, 2017; Naylor, 1989).

The rice milling industry in India is the largest and oldest agro based industry and more than 50% of

the Indian population is dependent on agriculture based income sources (Rana et al., 2018). Paddy rice production in India occurs in West Bengal, Uttar Pradesh, Tamil Nadu, Andhra Pradesh, Telangana, Bihar, Assam, Orissa, Chattisgarh, Madhya Pradesh, Haryana and Punjab (Singh et al., 2021)

### **1.1 Labour issues of Rice milling industry**

The workers of rice industry are subjected to multiple work environment related issues such as hygiene, water and effluent management, dust, noise, odour and other solid waste disposal related problems (Zaman et al., 2006). These workers face several challenges due to the working conditions, work environment, infrastructure and construct of the rice milling industries (Salokhe & Wanitchang, 2001). There are many factors that hinder the development of rice milling industry such as economic, unfriendly work atmosphere, medical issues, wage related problems etc. (Khan et al., 2021). The knowledge of workers, their attitude and education was also found to be important considering the issues and accidents faced by the labour in rice milling industries (Oktaria et al., 2021a). Similarly socioeconomic conditions of the rice mill workers have major contribution in the development of rice milling industry and its labour conditions (Khan et al., 2021; Rahman et al., 2016; Tama et al., 2018).

#### **1.1.1 Working conditions of the labour**

The working conditions of labour in rice milling industry has been studied from environmental, socioeconomic, physical, gender and health related perspectives (Zaman et al., 2006). Absence of plantation in the mill yards, poor aeration, insufficient light, excessive heat, lack of ventilation in machine rooms, excessive noise, load shedding and poor soaking water disposal causing bad smell (Kabir, 2017). Absence of sanitary latrine, absence of sheds for temporary resting, absence of protective cover of the moving belt, bad smell due to soaking water, absence of dust protective devices and first aid boxes, risk of accidents (Zaman et al., 2006) and unfavourable indoor climate (Salokhe & Wanitchang, 2001) are among the reported issues of work environment faced by the rice mill labourers.

The problems related to the unhygienic working environment and unfavourable working conditions in the rice mills give rise to many health problems in the workers of rice industry, such as, respiratory (Bhat & Ramaswamy, 1991; Dassanayake et al., 2007; Ghosh et al., 2014), infections (M. R. Desai & Ghosh, 2003; M. S. Desai & Ghosh, 1989; Natarajaseenivasan et al., 2002), and other morbidities (Roy et al., 2020).

#### **1.1.2 Workers safety**

Environmental and occupational hazards among workers were found to be prevalently occurring in many studies on rice mill workers (Njue, 2019). The workers in rice mill are exposed to several risks in their work environments in terms of physical and mental health (Guimarães et al., 2013).

##### **1.1.2.1 Physical hazard**

Noise and dust arising in the process of rice milling has the potential to harm or endanger the rice mill workers (Hera, 2017). The workers are exposed to noise level higher than 85dBA in the working areas of rice mills (Njue, 2019).

In 2004, workers were found dead in an underground pit of a rice mill in Thailand due to emission of toxic gases from wet paddy pile (Yenjai et al., 2012). The rice mill workers are exposed and bound to work in an environment that has the potential to affect their health and overall safety due to their exposure to toxic gases, soaked water and unhealthy environment, which can be accounted as occupational hazards of their job (M. R. Desai & Ghosh, 2003; Guimarães et al., 2013; Kabir, 2017; Mansor et al., 2020; Zaman et al., 2006). The noise pollution from huller and moving belts of the mill creates a high noise pollution and also the exposed moving belts having the potential to cause severe accidents to the mill workers (Zaman et al., 2006).

The oil drums used in rice mills have caused severe life threatening hazards to the mill workers in past caused by explosions (Zaman et al., 2006). The heavy lifting of sacks cause back pain and musculoskeletal disorders in the rice mill workers (Roy et al., 2020; Salokhe & Wanitchang, 2001).

##### **1.1.2.2 Mechanical hazard**

The workers of rice mills also faced mechanical hazards due to the machines during their work tenure at the mill. The workers faced cuts, injuries

and wrapping due to the exposed machine in rice mills (Iqbal et al., 2017).

### **1.1.3 Health risks**

The work environment of rice mills are often associated with an unfavourable indoor working climate. The poor ventilation inside the mill area and accumulation of dust from the hulling process is responsible for several lung related problems (Bhat & Ramaswamy, 1991; Roy et al., 2020). Asphyxia is reported among workers due to the excessive dust and low oxygen concentration inside the rice mills (Iqbal et al., 2017; Yenjai et al., 2012). The workers of rice mills were found to be suffering from blocked nose, phlegm, and morning sneezing along with respiratory problems (Ghosh et al., 2014; Rana et al., 2018; Tejpal, 2020).

Poor postures and carrying heavy weights is a cause of workplace injuries, back pain, shoulder pain and musculoskeletal problems among the rice mill workers (Iqbal et al., 2017; Roy et al., 2020; Tejpal, 2020).

Workers of rice mills have been found to be under the risk of airborne Aflatoxin (M. R. Desai & Ghosh, 2003; M. S. Desai & Ghosh, 1989) due to the close environment. The rice mill workers of Salem, Tamilnadu were found to be at risk of the widespread zoonotic infection caused by Leptospirosis (Natarajaseenivasan et al., 2002).

### **1.1.4 Worker's rights**

Researchers have discussed about the problems related with rights of rice mill workers (Kabir, 2017; Khan et al., 2021; Njue, 2019; Zaman et al., 2006). The workers of rice milling industry face deprivation from their rights (Kabir, 2017). These workers lack a society or a cooperative body for securing their rights and looking after their overall welfare. In addition to that the workers of rice mill industry lack awareness and education about their rights and often face mental harassment at their work places (Khan et al., 2021).

### **1.1.5 Wages**

The majority of rice mill workers are daily wagers (Selvarani & Vijayanchali, 2013). The rice mill workers are reported to work on low salary and wage, receive no festival bonus or allowances, no loan facility from the mill owners, absence of advance payment from the salary (Kabir, 2017). These workers receive no salary during leave days

neither the women employees receive any maternity benefits (Zaman et al., 2006). The beginning of industrial era was marked by a situation in India where workers received low wages in rice mills, sugar factory and other small and medium industries (Vilanilam, 1980, 2019). The workers of agricultural sector and rural migrant workers in small industries like rice mills are reported to face the problem of low wages (Raju et al., 2015; Rogaly, 2021)

## **2. Socioeconomic impact of labour issues**

Studies have reported that the socioeconomic status most of the rice mill workers belonging to poor economic level at Burdwan. These workers have a rural background with altered societal structure. These rice mill workers tend to dwindle between the rural and urban forms of economic setup (Palit, 2021).

Considering the family size of the rice mill worker families, they were mostly belonging to a family having more number of females compared to males. They are mostly illiterate and around 25% of them completed their primary schooling whereas only 10% were educated till the secondary level. Most of the women in these households were working in rice mills as daily paid labourers (Tama et al., 2018).

There are many socioeconomic issues associated with rice mill workers in terms of salary, gender discrimination, awareness, education and attitude of workers (Kabir, 2017; Oktaria et al., 2021a; Zaman et al., 2006), job security (Howard, 1991), job involvement (Agha & Ekpenyong, 2018), job satisfaction (Sadiq & Sani, 2023), and lack of economic assistance and, job satisfaction and overall well-being of workers

### **2.1.1 Gender issues**

Female workers were reported to be inclusively working in the rice milling industry of India since generations (Choudhuri, 2014). The job of rice husking was done using the "dhenki" in older days by the women of West Bengal. The modernisation of rice milling industry has raised the issue of gender related issues like wage inequality between men and women and that has also resulted in an increase in cases of violence against women workers in rice mill industry (Chellattan Veettil et al., 2021; Tama et al., 2018).

Women are employed in large numbers in the rice husking mills, however there are no concerns related to women health and safety given by the mill owners for the female workers (Kabir, 2017; Selvarani & Dr. Vijayanchali, 2013). In the rice milling industry, female workers were reported to be paid less than male workers, women workers faced discrimination in workplaces, lack of maternity leave, women health status were ignored and there were no separate sanitary latrines for women (Kabir, 2017; Khan et al., 2021; Selvarani & Vijayanchali, 2013; Tama et al., 2018; Zaman et al., 2006).

## **2.2 Worker skills**

The rice mill industry performs de-husking, polishing, packing, clearing and sorting of rice for its packaging (Odior & Oyawale, 2011). Rice milling industry creates a constant supply of unskilled and semi-skilled workers from nearby rural areas who are being paid on contract basis (Palit, 2021). There is a deficiency of skilled workers in rice industry (Joshi et al., 2020; Ritthaisong et al., 2014).

## **2.3 Job satisfaction**

Job involvement, job satisfaction, job commitment, workaholism, absenteeism, and turnover, among others, are critically influenced by the organisation and it also critically influences an individual outcomes (Chughtai, 2008). Job satisfaction in rice agro processors using Sadiq-Sanyinna's job satisfaction index stated that lack of promotion, poor job rotation, nature of job and lack of job security, poor incentives, poor labourer productivity, obsolete machineries and poor utilization of productive assets are the reasons contributing to poor job satisfaction among the labourers (Sadiq & Sani, 2023). It was found that marital status, household size, education of worker, membership of association and a good income were few significant factors that affected the job satisfaction status in a positive manner.

## **2.4 Job security**

Patrick, (2010) stated that job security is a crucial factor that is related to gender, labour market and labourers household situation. The workers of rice mill industry face high amount of employment insecurity indicating the high rate of employee layoff in this sector (Ritthaisong et al., 2014). Kabir, (2017) stated that the most severe (98 per

cent) problems in rice milling industry of Bangladesh is absence of job security and the lack of salaried leave.

## **2.5 Overall well being**

Rice mill workers are made to work in closed, unventilated spaces with dust accumulation, high noise, bad smell and accident prone environments causing several health issues harming the workers overall mental and physical health (M. R. Desai & Ghosh, 2003; M. S. Desai & Ghosh, 1989; Ghosh et al., 2014; Iqbal et al., 2017; Rana et al., 2018; Roy et al., 2020). Such working environment has an impact on general health and poses long term negative effects on the labour (Roy et al., 2020). The rice mill workers are exposed to several occupational hazards such as, physical (Salokhe & Wanitchang, 2001; Zaman et al., 2006), mechanical (Iqbal et al., 2017) and biological hazards (Batsungneon & Kulworawanichpong, 2011; Dassanayake et al., 2007; Fatima et al., 2016; Ghosh et al., 2014) alongwith other economic (Zaman et al., 2006) and socioeconomic issues (Khan et al., 2021; Palit, 2021; Tama et al., 2018) in their workplaces.

## **3. Factors causing labour issues**

### **3.1 Industrial emissions and effluents**

Among the many issues faced by the labour of rice mill industry, few work environment related problems faced by the rice mill workers is due to the infrastructure requirement of a rice milling industry, such as the dust accumulation, noise generation and water effluents are the unavoidable steps of a rice milling process causing unfavorable circumstances to the mill workers (Mansor et al., 2020; Njue, 2019; Rana et al., 2018; Roy et al., 2020; Zaman et al., 2006).

### **3.2 Gender bias**

The gender discrimination faced by women in rice milling industry (Tama et al., 2018) could be due to the skilled tasks performed by male workers (Harriss-white, 2005). The social invisibility of women creates the society to look at female workers from a limited perspective about their role (Choudhuri, 2014). Women's domestic work burden, low mobility, less education and skill and lesser investible assets limit their range of non-farm employment in Indian society. On the other hand, women workers are perceived as less

trouble making and cheap compared to male labour, which contributes to their increased presence in few sectors.

### **3.3 Lack of education and awareness among rice mill workers**

The workplace conditions and work environment is found to be related with the education and awareness of labourers in rice mills about their occupational health and safety conditions (Oktaria et al., 2021b). The industry set-up of a rice mill comprises of many occupational hazards due to the emission of dust and chemicals, which are a part of the rice milling occupation (Njue, 2019). It was reported that work accidents in 31 rice mill centers in Kaway, Indonesia, was found to swiftly increase by numbers of 40, 45 and 58 cases in 2018, 2019 and 2020 (Oktaria et al., 2021a). It was found that the rice mill work accidents greatly depend upon unsafe action and unsafe conditions (Oktaria et al., 2021b). The absence of protective devices in the mills such as gloves, apron, masks, industrial booths and helmets is also a factor that causes different hazards to the rice mill workers (Oginyi et al., 2017). The lack of knowledge about the occupational risks of rice mill industry workers are a factors contributing to the occupational hazards caused in this industry (Oktaria et al., 2021a).

## **4. Barriers in implementation of solutions to labour issues**

As rice is one of most important crops used as a staple worldwide (Odior & Oyawale, 2011), therefore identifying the drivers and obstacles of rice mill industry is of great importance for its growth and development in coming time. Studies in the rice milling industry has also been carried out in terms of the characteristics and drivers and obstacles to the growth of the rice milling industry (Horadal, 2016).

### **4.1 Societal perception**

One such factor is the socioeconomic factor of labour of these mills that affect the performance of the rice milling industry (Khan et al., 2021; Tama et al., 2018). It has been found that the social perception of women about their performance and invisibility (Choudhuri, 2014), may have a role in contributing to the wage

inequality and discriminatory behavior towards female workers (Tama et al., 2018).

### **4.2 Education and awareness**

Lack of awareness of workers regarding their own safety at workplace, environmental pollution in their workplace and occupational hazards in the rice mill working environment (Njue, 2019; Oktaria et al., 2021a; Zaman et al., 2006) is a barrier in smooth functioning of the mills and attaining efficient productivity from the workers as well as for their overall wellbeing. The lack of education and awareness among the rice mill workers greatly influences the stability and growth of rice milling industry in terms of labour safety and labour welfare (Saini, 2019).

### **4.3 Financial barrier**

Lack of finances, lack of understanding and experience of rice milling technology are reported as few major barriers in the process of rice milling industry (Wijesinghe & Weerahewa, 2017).

## **5. Strategies for betterment of rice mill workers**

Several studies have proposed policies, strategies and suggestions for the betterment of rice mill workers (Ariyanto, 2023; Oktaria et al., 2021a; Tama et al., 2018; Zaman et al., 2006) which will indirectly promote the growth of rice milling industry.

### **5.1 Improvement of socioeconomic conditions and reduce gender bias**

To improve the socioeconomic status of rice mill workers it is essential for the NGOs and government organisations to intervene in the administrative activities of rice mill industries (Khan et al., 2021; Tama et al., 2018). Discrimination against female labour is a crucial problem that impacts the labour welfare of rice mill industry, which can be reduced by the involvement of NGOs and enforcing strict policies to ensure good environment and equal facility at rice husking mill for both the genders (Tama et al., 2018). Female workers often face multiple health issues which are not being kept in account by the mill owners and administration (Nwosu, 2019; Selvarani & Vijayanchali, 2013). These workers must receive proper awareness and sensitization, should be made to use protective devices and regularly be provided medical check-ups (Nwosu,

2019). As most rice mill workers are women therefore better and special measures should be taken for their welfare and protection (BILS, 2007; Kabir, 2017)

### **5.2 Reduce the risk of occupational health hazard**

Guimarães et al., (2013) stated that, occupational health and safety management in rice mills is dependent on the safety culture that is usually being followed in the premises and also on the level of compliance of workers with the regulatory standards. It is suggested that the rice mill workers shall be provided proper protective devices like mask, goggles, gloves, PPE kits for their health safety (Nwosu, 2019; Oginyi et al., 2017; Rana et al., 2018) and personal hearing protection devices to protect their ears from the high noises created by the rollers and belt of the mills (Mansor et al., 2020). As there is immense amount of dust released in the milling process, the mills should be properly ventilated and exhausts should be installed wherever necessary (M. R. Desai & Ghosh, 2003; Nwosu, 2019). The workers of the mills must be kept under continuous research/jurisdiction, provided occupational health services, they should be regularly inspected and monitored to maintain healthy work conditions (Nwosu, 2019; Rana et al., 2018).

The workplaces shall ensure proper training of their workers to improve their level of awareness and reduce workplace hazards, injuries and accidents (Njue, 2019). Educating the workers on potential occupational hazards is the key to reduce the risks of work accidents in rice mills (Oktaria et al., 2021a)

### **5.3 Restore wage related issues**

The rice mills have been reported to have wage inequality among workers as well as among genders (Kabir, 2017; Khan et al., 2021; Tama et al., 2018). To reduce these problems and restore equal and fair wage distribution government must intervene and provide salaries to the workers as per their position and services (Khan et al., 2021). To ensure equal rights and provide a stable work culture for women workers, it is important that women shall receive equal wages and it should be properly monitored by the government and minimum wages should be received by all rice

mill workers (BILS, 2010). Government intervention has been suggested to be an important measure to reduce wage related issues in rice mill labour (Kabir, 2017; Khan et al., 2021; Tama et al., 2018; Zaman et al., 2006; BILS, 2010).

### **5.4 Improvement of overall well being**

Due to excessive workload and shortage of labour, workers are often made to work for long hours, which should be maintained to a healthy timing to maintain overall well-being of the labour, basic medical allowance and basic labour laws should be followed for the overall welfare of the labours (Khan et al., 2021).

Zaman et al., (2006) suggested adoption of practical measures for the overall improvement in work environment, minimizing the environmental pollution and therefore increasing the working efficiency of labour by reducing the possibility of health hazards..

Overall well-being of the rice mill workers shall be improved by academic level of the workers shall be improved by the mill owners for their overall development (Nwosu, 2019). It is essential that the owner of mills and local government shall jointly extend welfare measures for improvement of health, sanitation and day care centre facilities for their workers (BILS, 2010). These facilities will aid in improving the efficiency of workers which will result in them being able to concentrate on their work in a better way (BILS, 2010; Kabir, 2017). Government sponsored policies should be properly enforced to ensure better development of the workers for the rice mill labours (BILS, 2007). Rana et al., (2018) stated that, The Factories Act, 1948 and The Employees' State Insurance Act, 1948 shall be enforced and implemented with priority in the rice mills to improve health, welfare, and safety of the labour.

## **6. Conclusion**

Labour issues that are prevalently faced by the rice mill workers are related to their working conditions, health risks, occupational hazards and risks, lack of education and awareness about the rice mills and its working system, lack of worker rights and issues related to wage discrimination among different classes of workers as well among gender. The work environment related issues have the potential of creating severe health

hazards to the workers such as respiratory disorders, skin problems, hearing loss, musculoskeletal issues and minor to severe accidents. Socioeconomically these workers usually belong to the poor groups that are often found to be migrating between rural and urban set up, having low educational background and mostly reported to have a large household. Most of the people are unskilled and this causes a shortage of skilled labour in the rice mill industry. However, the skilled labour were found to earn more in the rice mill industry.

Gender discrimination is very common among the labour office mill industry. The male workers in the industry are often skilled and are usually paid more than the female workers. However, female workers are perceived as the less troublesome working group and are therefore preferred in the industry for several types of tasks like husking, sewing sacks etc. Gender discrimination also contributes to the wage inequality, violence against women and unequal socioeconomic conditions of female rice milling industry. Wage insecurity, wage inequality, lack of salaried leave, lack of maternity leave and absence of medical allowance and bonuses are also few major problems faced by the rice mill workers.

Several barriers come in the path of resolving the labour issues such as societal, educational and financial barriers. Societal barrier in terms of gender discrimination contributes to the wage inequality and worsens the socioeconomic condition of women in this industry. Lack of education an awareness of the workers regarding the process of rice milling, lack of experience in the process and sometimes even shortage of funds for modern and safe technological support increases the risks of accidents and occupational hazards to these workers. The labour issues faced by the rice mill workers should be resolved by the intervention of government bodies and non-governmental organizations by imposing strict rules and regulations in and around the rice mills and its premises. The workers of these mills should be trained about the process, educated and made aware about the risks and hazards of the rice milling occupation. Extreme priority should be given to accidental risks to avoid hazards and accidents thereby ensuring worker

safety. In addition to that, safety devices like PPE kits, gloves, goggles, masks and factory booths shall be available for use by the workers. Above all the health and well-being should be monitored by the end of the governmental and non-governmental bodies as well as from the rice mill owners to ensure overall well-being of the workers.

Rice milling industry is an important industry in terms of economy and food security of country and world therefore it is essential for the workers of these mills to feel more secure in their work places and ensure their job involvement. The job satisfaction of workers, wage related issues, gender discrimination and work environment and health of the workers should be given utmost priority and regular intervention on behalf of non-governmental organizations as well as government organizations is essential for this purpose. Female workers are a vital group of labour in rice milling industry and therefore, the resolution of labour issues require special attention to female workers to ensure their safety, wellbeing and equality for proper regulation of the rice mill activities. Lastly, The labour welfare laws should be strictly enforced along with Employees' State Insurance Act, 1948 to improve health, welfare, and safety of the rice mill workers.

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