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## Occupational Health Hazards of Ship Breaking Workers in Sitakunda, Bangladesh

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**Abstract:** Poor occupational health and safety at the expense of many lives and livelihoods that hinder economic growth in ship breaking industry of Bangladesh. Poor and unsafe working conditions are both causes and consequences of extreme poverty with life risk, both reinforce each other negatively. The significance of occupational health and safety is particularly strong in countries like Bangladesh where it is not addressed or explored. The main problems mentioned by the workers are low wages, irregular wages, overtime, lack of medical facilities, dirty working environment, inadequate modern equipment, lack of recreation, lack of job security. 41% workers job are contract type, 29% have no training facility, 53% not use safety equipment, 48% feel unsafe this job. The workers of this industry are exposed to an extremely risky and toxic working environment which makes them vulnerable to physical and psychological disorder as well as to accidental injury and deaths. Still, workers embrace these risks with very poor wages. So occupational health and safety in this industry of Bangladesh should be a higher priority in discussions of extreme poverty, its consequences and a sustainable development should be taken to minimize the impacts of ship breaking activities in coastal zone.

**Keywords:** Occupational health impact, ship breaking, Health risks, safety of workers, low paid workers

### I. INTRODUCTION

Ship breaking is a difficult and complex process because of the structural complexity of ships with vast environmental safety and health concerns are related, (OSHA, 2001). Bangladesh fully focused on the economic benefit from ship breaking industry that ignoring the environmental effects. When a ship is scrapped it mean all the parts like the hull, engine, machinery is reused and recycled that giving the ship a better way to dispose. But due to lack of awareness of the process of disposal is not fully worked that causes significant damage to the environment (Hasan, 2017). Additionally, this industry maintains steel demand at a cheap rate and employment facility to local workers. 90% of demand for iron steel in Bangladesh is met by the ship breaking industry (Ronning, 2000).

Generally, workers continue their work such as cut down steel plates without uniforms, protective gloves, boots and goggles. Workers, local community, beach, coastal water, biodiversity, ground water and air all are at risk during this process, (Shahadat, 2008). Workers sometimes use handheld

blowtorches, cutters and other tools to strip those are decades old vessels, and they continuously transport the jagged scrap metals with bare hands to reusing. So, the disposal process exposes workers to asbestos, toxic paints and hazardous wastes even burns, cuts and broken bones caused by falls, (YPSA, 2005; Rabbi, 2017). In fact, the last 20 years over 400 workers have been killed and near 6000 were seriously injured (YPSA, 2005) that indicates the highest accidents and casualties at the yards in the region. Majority deaths and accidents from the oil tanker explosion, (Pasha, 2012).

Apart from the worker's health risk, environment is highly vulnerable to the hazards caused by shipbreaking activities, (Nandita, 2020). Various unpredictable and non-disposable materials are being discharged and spilled from breaking of ships and get mixed with the soil and sea water which has a negative impact on our coastal environment and ecosystem. The area is frequently degraded with loss of its physical, chemical and biological features. Still the extraction processes, produce debris and wastes that represent a threat to the environment and similarly to human health, (Muhammad, 2013).

As a developing country, it focuses on economic growth rather environmental protection or worker issues. Neglecting environmental rules, regulations and occupational health safety guidelines, has created the obstacles in those industry, (Rabbi, 2017). So, despite of the several deaths and injuries, they are not taking any responsibility. on the other hand, people fond to the working opportunities in those industry for their livelihood (Pasha, 2012).

For all considering, a specific and well-balanced rule should be established for sustainable ship breaking activities in the context of occupational safety, (Kurt, 2019). So, this type of study or research is urgently needed for the protection of environment along with the implementation of sustainable development to progress this activity should be in a planned and safety standard way in Bangladesh, (Kazi,2013).

From the perspectives mentioned above, this study aims to identify the overall assess the major health hazards and risks to workers due to shipbreaking activities in Sitakunda, Bangladesh and find out the livelihood conditions of the workers in the ship breaking industrial area. Ultimately focus on the vulnerable situations of Ship breaking and hazardous consequences and give some recommendations for sustainable ship breaking industry activities.

## II. MATERIALS AND METHODS

### Description of study area

Chittagong ship breaking yard is located in Sitakunda Upazila of southeastern Bangladesh. In 1969, it established as a ship breaking industry,[9]. It covers 18 kilometers coastal strip and 20 kilometers long north-west of Chittagong with over 200,000 Bangladeshi employs and manage near one-half of all the need of steel in Bangladesh. Maintaining about a fifth of the world's total, it was the world's largest ship breaking yard, until that record was taken by Alang in India,[10].

### Methods of study

The study was based on a combination of primary and secondary sources of information. Preliminary data were collected from direct field observations, face-to-face interviews and focused group discussions (FGD), with a questionnaire survey (both through quantitative and qualitative data). The teams surveyed were local village people, workers, worker's family and victims and the number of respondents was 100. Secondary data were collected and analyzed from mainly research papers and journal articles including books, newspapers, magazines, NGOs documentaries and reports. The tools used are SPSS, MS Excel, Google Earth, and MS Word.

## III. RESULTS AND DISCUSSIONS

### Results

#### Working Hours of the workers

Working in a ship-breaking yard is rugged job as the workers had to work in very long shifts. The results showed that most workers (47%) work 8-10h in a day, and 28% of work more than 10h in a day. Moreover, workers have a wide range of experience from less than a year to above 21 years. There is no fixed time for working hours, labor working their in-contract way.

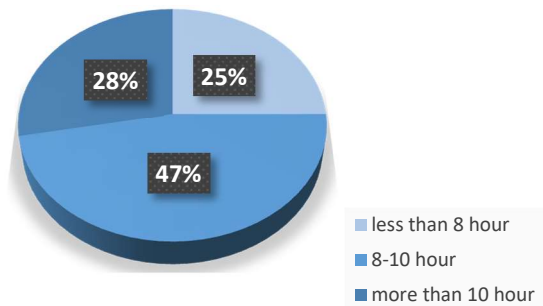


Fig 3.1 Working Hours (Field Survey, 2021)

#### Labour status of the responders

The laborers of the ship breaking industries have to work in a hostile and hazardous environment, with lack of facilities. The basic part they have no permanent job expect a few 6%.41% workers jobs are contract type. Its lead to job insecurity. 13% have temporary job,12% have casual as daily or weekly basis. Almost everyone denied that the life as very good here. Even a vast amount 28% are seasonal workers. That's directly impacted on their livelihood.

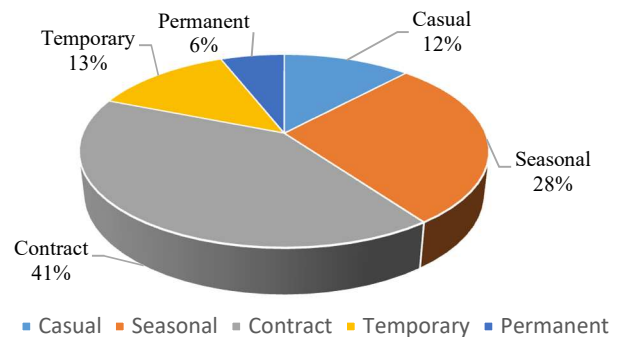


Fig 3.3 Work Category (Field Survey, 2021)

#### Income type of the responders

Labors are not always paid daily.41% have get their salary daily, on the other hand a maximum percentage of labor got their salary in weekly (55%). As a result, they have no savings, only 4% get monthly salary, they are mainly management officers in Ship breaking industry.

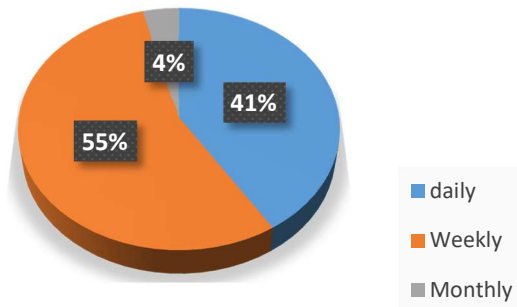


Fig 3.4 Income Type (Field Survey, 2021)

### Monthly income of the responders

The wages of the laborers in the study area vary depending on worker's working hours and individual skill. 48% are got 5000-7000 BDT on average monthly, where 35% get less than 5000 BDT per monthly. Only a few 7% get more than 10000 BDT per monthly, indicates really a low salary overall.

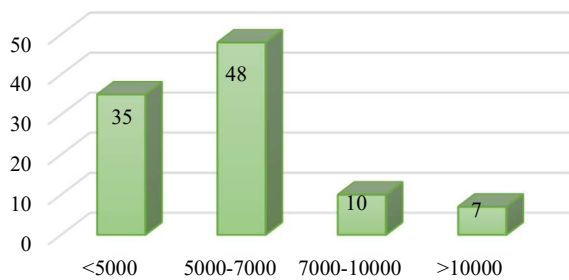


Fig 3.5 Monthly Income (Field Survey, 2021)

### Financial facilities and advantage of workers

It is observed from the survey that though majority workers expressed (89%) are not enough income for family. A few percentages 11% expressed the income quite okay due to they have little family member or everyone involved with jobs.

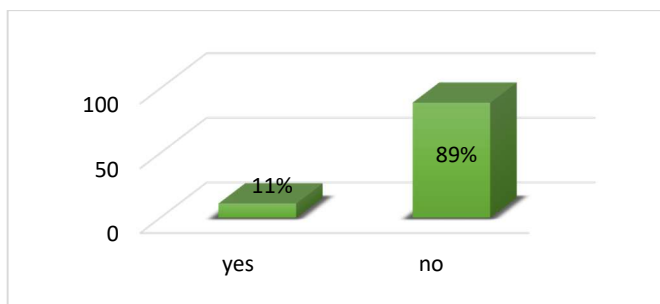


Fig 3.6 Financial facilities (Field Survey, 2021)

### Types of houses of the responders

The house system of the ship breaking workers in the study area are maximum semi wall (51%). It is observed from the survey that other most of house systems (34%) of the ship breaking workers are used to tin-fence, 10% are used to mud

house, and a little amount 5% have wall house, and the very common thing in all that their poor management of sanitation.

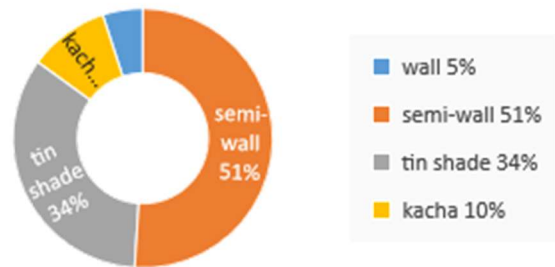


Fig 3.7 Types of houses (Field Survey, 2021)

### Smoking habit of the responders

Maximum labors are addicted on smoking. On average 70% labors smoking due to their work stress, tension about money. others 30% have no involvement with smoking. Even this 70% are involved with smoking per day like, 28% smoking 4-5 times in a day. Others 24% labors, smoking 2-3 times per day. 8% more than 6 times in a day, while 10% smoking on average 1time smoking per day.

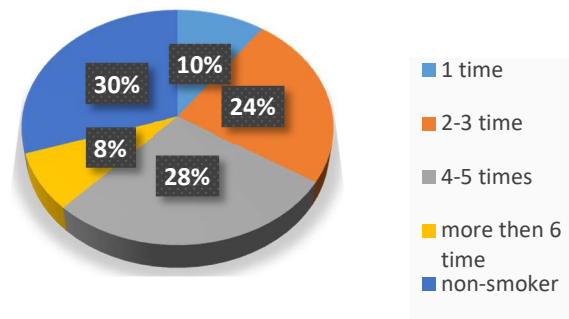


Fig 3.8 Smoking per day (Field Survey, 2021)

### Health issues for work of the responders

There are many responsible factors of health hazard risks are found in the ship breaking activities due to risky environment in the study area. Maximum workers are not used of life safeguard equipment which also responsible for these risks, where 45% labors feel about their health problem have direct influence with their work. 45% feels indirect relation and others 10% feel no connections.

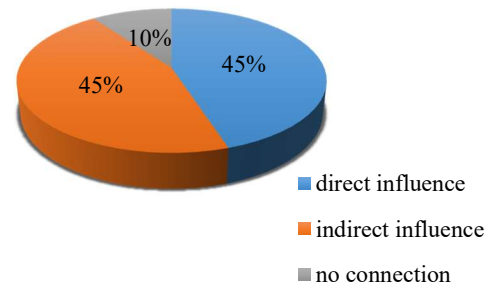


Fig 3.9 Health Issues for Work (Field Survey, 2021)

### Frequency of health problems of the responders

Due to hard work and massive pollution (sound, water and air) they have always some health issues. There are 16% labors that's have regular health problem, 41% have weekly health problem, 33% have monthly health issues, even 10% rarely due to their strong immune system.

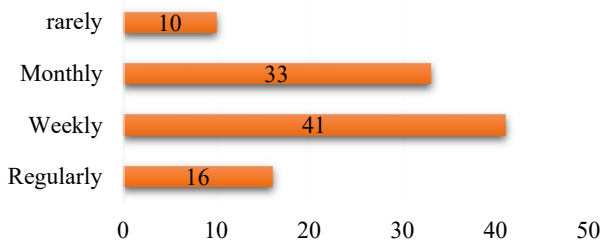


Fig 3.10 Frequency of health problems (Field Survey, 2021)

### Medicine availability of the responders

Almost all are taking health service from government hospital as the authority provides no minimum medical allowance and financial facilities except some cases. It is observed from the survey that though majority workers (43%) are taking medicine from hospital when they ill, but 21% workers informed that they are not taking medicine because authority not provides medical allowance while 36% workers taking medicine by their own cost. On the other hand, they are highly dependent on allopathy, even a normal headache issue they take paracetamol, not even knowing the consequences.

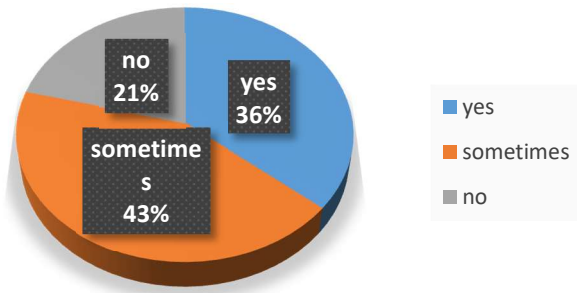


Fig 3.11 Medicine Availability (Field Survey, 2021)

### Health disease of workers

Majority workers fell several health hazards and diseases for working in an unhealthy and risky environment. The major health hazard risks on the ship breaking workers which are observed from the present study have shown in the following bar chart. It is observed that Gastric problem (67%), cough (62%), headache (68%) is most higher and common type problem of health hazards related to ship breaking activities in the study area.

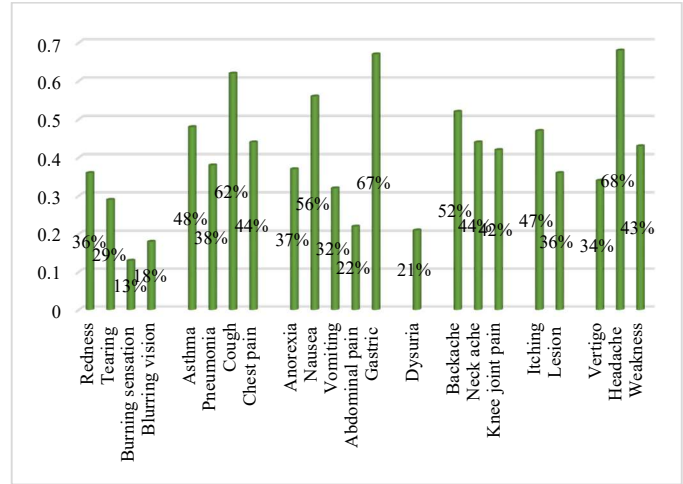


Fig 3.12 Health disease of workers

### Feel about work of the workers

It is clear from figure that most of the laborers (48%) feel unsafe this work, 24% feel very unsafe, 13% feel dangerous about their ship breaking work. Only 1% feel safe this work while other 14% are neutral as they thought every work place have some impacts to some extent. Additionally, almost all workers feel very exhausted after returning home as they really have doing very hard and uncomfortable job.

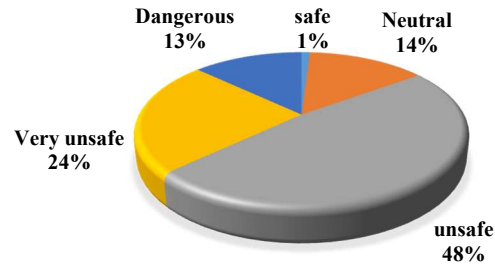


Fig 3.13 Feel about work (Field Survey, 2021)

### Training facility of the responders

Most of the workers have no knowledge about the impact of ship scrapping on health. Thus, they are uninformed about safety issues and do not take protective measures. Although the availability of safety gears observed during field investigation. The present investigation revealed that 29% workers have no training facility.

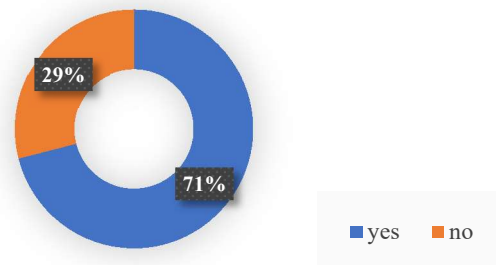


Fig 3.14 Training Facility (Field Survey, 2021)

### Safety equipment from workplace of the workers

Physical injury is prevalent amongst the workers in ship-breaking yards due to a lack of safety measures. Protective equipment such as gloves, sunglasses, and helmets are essential in working at the ship and the ship-breaking yard. However, the study found that 73% authority provides safety equipment for their labors. And 27% cases they are provide safety equipment for personal use in this work place that have faced physical injury once or multiple times. However, the study found that 53% of the workers do not wear any type of protective gear. others 38% use sometimes. And 9% use safety equipment as they need.

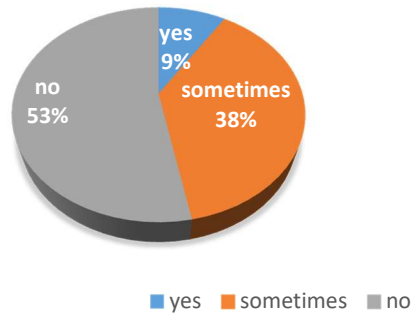


Fig 3.15 Use of safety equipment (Field Survey, 2021)

### Correlations

There is a positive correlation between the Labors health condition and others every depended variable. The correlation shows a strong positive connection on labors health condition with monthly income and comfortability from returning to home. Whereas, training facility and health insurance come up with highly moderate relation on their health condition, and weak significant on labors status.

TABLE 1  
Correlations

		Correlations				
		Monthly Labor income	Labor status	Health insurance	Comfortability from returning to work	Training facility
Labors health condition	Pearson Correlation	.874	.362	.574	.817	.593
	Sig. (2-tailed)	.000	.012	.001	.000	.000
	N	100	100	100	100	100

### Multiple Regression

The study concludes that there is a strong positive relation between the Labors health problem with monthly earning, how much hour they have to do work and what kind of work they do. alongside, others every depended variable have some positive connection except consume of cigarette. Their health problem moderately depends on their habit of taking medicine and health insurance. Most of them monthly income strongly

shows the significant impact on their life of standard with lowest health problem.

TABLE 2  
Multiple linear Regression

Model	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	33.422	13.573		2.47	.043
Monthly income	.094	.021	.758	4.508	.000
taking medicine	5.877	.071	.370	2.001	.000
health insurance	-.032	.039	.425	-3.234	.017
daily work time	.403	.079	.603	1.032	.001
Labor status	.065	.080	.286	3.814	.003
smoking per day	-.548	.039	-.322	-2.202	.000
category of work	.057	.058	.705	2.991	.002

Dependent Variable: health problems

### Discussion

In spite of significant adverse impacts on the coastal environment, the ship-breaking industry has hold continuous attention for Bangladesh due to the growing demand for raw materials of steel mills and employment opportunities. The housing condition denoted the social and economic status of a community. It can be said that workers working in the ship-breaking yards had been seen living in an unhealthy environment and poor houses.

Even, along with working in the ship-breaking yards, the workers also reported working as daily laborers, students, fishers, sales persons, small businesspeople, and rickshaw pullers because it is not a permanent job. The survey found that more than 82% of workers wants increase their salary because of their daily expenses and low wages.

The study shows that there is no standard rules and regulations for ship-breaking activities in Bangladesh to safeguard the workers from accidents, the loss of lives, and severe health injuries.

The main problems mentioned by the workers are low wages, irregular wages, overtime, lack of medical facilities, dirty and risky working environment, inadequate modern equipment, lack of recreation, lack of job security etc. As a result, the workers continue facing vulnerable conditions that clearly shows, those industries break the occupational laws and the environment are poorly enforced. About 91% of the workers want to improve this situation. Ship Scrapping Yards suggest developing a treatment facility, where suggest trade unions, increased wages, reduced working hours, canteen facilities and job security.

#### IV. CONCLUSION

Ship breaking activities not only impacts on biodiversity and environment but also all the workers done their works manually and sometimes the workers are forced to work more than their capacity in a short time, which causes major or minor accidents very often. Those industry are not arranging pure drinking water, healthy food, hygienic toilet and living place for workers. Moreover, there is no equipment for machine, chemical and water safety that divert their life very unsatisfactory way.

As a result, the workers are among the most vulnerable communities in Bangladesh due to frequent accidents and occupational health hazards.

Occupational laws implementation, compensation, treatment, and safety for workers, establishing fire stations and hospitals close to shipyards need to be development for avoiding severe losses from any accident and build a sustainable development for the ship breaking activities in Bangladesh.

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