**Original Article**

# Using Mask Reduces Respiratory Problems Among the Workers of Ship Breaking Industry

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**Abstract:**

The cross - sectional study showed that using facial mask reduces respiratory problems among the workers of the ship breaking industry. The study was conducted at Shitakund, Chittagong. Total 150 respondents were selected. Majority of the workers were <30 years of age & worked 8 hours daily. Among 150 respondents, 96% (n=144) has no previous respiratory problems. But respiratory problems like nasal irritation, hoarseness of voice, cough without cold, sneeze, chest tightness etc. were developing day by day due to their current job. Most of the respondents were conscious about using facial masks. About 21% (n=30) of the respondents used masks from the time of joining at the ship breaking industry & almost all of them were stay out of any type of respiratory problems. Around 39% (n=56) and 17% (n=24) of the respondents started to use mask within 6 months and 1 year of their joining respectively. Approximately 13% (n=19) of the respondents started to use mask after 1 year of their joining. All most of the mask users felt better within few days of using mask. Their respiratory problems reduced gradually after using mask. Rest 10% (n=15) of the respondents did not use mask at any time of their duration of service and all of them have some sorts of respiratory problems. From the study it is evident that using mask reduces respiratory problems among the workers of ship breaking industry.

**Introduction:**

Ship breaking or ship demolition is a type of ship disposal involving the breaking up of ships for either a source of parts, which can be sold for re-use or for the extraction of raw materials. It may also be known as ship dismantling, ship cracking and ship recycling or ship disposal. Modern ships have a lifespan of 25 to 30 years before corrosion, metal fatigue and a lack of parts render them uneconomical to run. Ship breaking allows the materials from the ship, especially steel, to be recycled and made into new products. This lowers the demand for mined iron or/and reduces energy use in the steel-making process. Bangladesh has a long coastal belt of about 710 km. Shitakund is one of the Upazilla of Chittagong district where most of the ship breaking industries are situated.[1] More than 100 companies are engaged in this breaking process[2] but still now they are not under any environmental law. Even the companies are not aware about the health hazards and safety of the workers. The workers of these companies break up various foreign ships without any safety equipments like helmets, goggles, gloves, boots, work suits and even the cheapest facial masks.[3] Due to the unconsciousness of the worker and inadequate take care from the government the industry is facing several internal and external problems, among them the health hazard is most important. Whole process of ship breaking activities are a series of risky works as they are exposed to steel and paint mainly which contain lead, cadmium, arsenic, zinc and chromium and sea salts containing various types of asbestos and several thousand liters of oil (engine oil, bilge oil, lubricant oil and grease).[4] Practically 100% of the ship is recycled. In this regard ship breaking industry is a sound sustainable activity. Ship breaking industry is a major employer in the coastal area of Bangladesh specially Shitakund, Chittagong[3]. Today most of the merchant fleets' vessels are scrapped by the intensive use of the labor at non developed beaches where workers are easily available at minimum cost. That's why ship breaking is expanding in our country. Due to the lack of health knowledge all the workers suffer from various types of medical problems, among those respiratory problems is most common. Their airflow limitations caused by various respiratory diseases like bronchial asthma, chronic bronchitis, emphysema, fibrosis, silicosis, and asbestosis etc.[5] The potential health impacts associated with the use of asbestos are of such a severe nature that compulsory minimum precaution is

necessary. In fact in our country asbestos is recovered by manual crushing and then reprocessed for re-use.[6] Occupational Safety and Health Administration (OSHA) also identified hazardous work conditions like inadequate worker training, lack of or improper personal protective equipment (PPE) especially facial mask, inadequate fire protection, lack of emergency response and even first aid services.[7] Moreover the employers conceal the information regarding their workers and they treat them as replaceable instruments.[8] Along with so many problems the workers carry weights far above the limit prescribed by the factories act and rules.[9] The purpose of the study was to determine the use of facial mask in the protection of respiratory problems of workers of the ship breaking arena of Shitakund.

**Materials and Methods:**

**Study design:** It was a cross - sectional type of study.

**Study Place:** Ship breaking industry, Shitakund, Chittagong.

**Study Population:** Workers of the ship breaking industry, Shitakund, Chittagong.

**Sampling Technique and Sample Size:** Purposive sampling and sample size was 150.

**Data Collection Method:** Observation and face to face interview.

**Research Instrument:** A structured questionnaire was used as research instrument.

**Data Analysis:** Analysis was done by using SPSS 11.5 and was presented in tabular forms.

**Results:**

In this study total 150 respondents participated. The status of respiratory problems before joining at work showed that among 150 respondents 96% (n=144) had no respiratory problem & 4% (n=6) had some sorts of respiratory problems at the time of joining in the ship breaking industry (Table-I).

**Table-I: Distribution of the respondents according to presence or absence of respiratory problems before joining (N=150)**

| Presence or absence of respiratory problem | Number | Percentage |
|---|---|---|
| No respiratory problem | 144 | 96 |
| Some sorts of respiratory problem | 6 | 4 |

Table-II shows Among the 144 respondents 20.83% (n=30) were useing masks from their time of joining, 38.89% (n=56) were started to use masks within 6 months of their joining, 16.67% (n=24) & 13.19% (n= 19) were started to use masks between 6 months to 1 year and after 1 year of their joining respectively, 10% (n=15) did not use masks at any time of their service.

**Table-II: Distribution of using masks among the respondents in relation with their joining (n=144)**

| Starting of using masks | Number | Percentage |
|---|---|---|
| From the time of joining | 30 | 20.83 |
| Within 6 months | 56 | 38.89 |
| Between 6 months to 1 year | 24 | 16.67 |
| After 1 year | 19 | 13.19 |
| Never used | 15 | 10 |

Table III shows that among 144 respondents respiratory problems developed in 72.91% (n=105) & did not develop in 27.09% (n=39).

**Table-III: Distribution of the respondents on the basis of developing and not developing respiratory problems (n=144)**

| Developing or not developing respiratory problem | Number | Percentage |
|---|---|---|
| Developing respiratory problem | 105 | 72.91 |
| Not developing respiratory problem | 39 | 27.09 |

Table-IV shows that among 105 respondents 50.47% (n=53), 25.71% (n=27) & 23.8% (n=25) developed respiratory problems within 6 months, between 6 months to 1 year and after 1 year respectively.

**Table-IV: Distribution of the respondents developing respiratory problems after joining in the current job (N=105).**

| Time period after joining to develop respiratory problem | Number | Percentage |
|---|---|---|
| Within 6 month | 53 | 50.47 |
| months to 1 year | 27 | 25.716 |
| After 1 year | 25 | 23.80 |

Table-V shows that different types of respiratory problems like nasal irritation in 13.33% (n=14), sneeze in 12.38% (n=13), cough without cold in 21% (n=20), cough and cold in 8.56% (n=9), shortness of breath in 17.14% (n=18), chest tightness in 6.67% (n=7) and combination of multiple symptoms in 21.9% (n=23) were developed among the 105 respondents.

**Table-V: Distribution of the respondents on the basis of respiratory symptoms (N=105)**

| Different types of respiratory problems | Number | Percentage |
|---|---|---|
| Nasal irritation | 14 | 13.33 |
| Sneeze | 13 | 12.38 |
| Cough without cold | 21 | 21 |
| Cough with cold | 9 | 8.56 |
| Shortness of breath | 18 | 17.14 |
| Chest tightness | 7 | 6.67 |
| Combination of multiple symptoms | 23 | 21.9 |

Table-VI shows that among 105 respondents respiratory problems were reduced after using mask in the following pattern 22.86% (n=24) within 3 months of use, 39% (n=41) within 6 months of use, 16.19% (n=17) within 9 months of use, 13.33% (n=14) within 12 months, 5.71% (n=6) after 1 year of use. 2.86% (n=3) were found no improvement after 1 year of using mask.

**Table-VI: Distribution of the respondents on the basis of reducing respiratory problem after using masks (N=105)**

| Time duration of reducing different types of respiratory problems | Number | Percentage |
|---|---|---|
| Within 3 months of use | 24 | 22.86 |
| Within 6 months of use | 41 | 39 |
| Within 09 months of use | 17 | 16.19 |
| Within 12 months of use | 14 | 13.33 |
| After 12 months of use | 6 | 5.71 |
| No improvement after using mask after 12 months of use | 3 | 2.86 |

**Discussion:**

This cross sectional study was conducted in the month of February, 2012 to determine that respiratory problems among the workers of ship breaking industry reduced by using facial mask. 150 male respondents were purposively chosen. Average age and daily average working hours ware 30 years & 8 hours respectively. Among them 96% (n=144) had no respiratory problem before their joining at their current job & 4% (n=6) had some sorts of respiratory problems at the time of joining and these 6 respondents were not included to our further steps of the study. Educational status was not high among the workers. So employers took the advantages of illiteracy of the workers. Maximum of the employers didn't ensure any type of safety & security measures for their employees. Facial mask is a simple, cheap & easily available mechanical device so maximum workers use the device at their own cost. Among the 144 respondents 20.83% (n=30) were use masks from their time of joining, 38.89% (n=56) started to use masks within 6 months of their joining, 16.67% (n=24) & 13.19% (n=19) started to use masks between 6 months to 1 year and after 1 year respectively, 10% (n=15) did not use masks at any time of their service. Many of the workers develop respiratory problems after joining at the ship breaking industry. Among 144 respondents respiratory problems developed in 72.91% (n=105) & did not develop in 27.09% (n=39). In our observation we found that development of respiratory problems had some relation with duration of service period at ship breaking industry. Among 105 respondents who had developed respiratory problems, 50.47% (n=53), 25.71% (n=27) & 23.8% (25) developed respiratory problems within 6 months, between 6 months to 1 year and after 1 year respectively. Different types of respiratory problems like nasal irritation in 13.33% (n=14), sneeze in 12.38% (n=13), cough without cold in 21% (n=20), cough and cold in 8.56% (n=9), shortness of breath in 17.14% (n=18), chest tightness in 6.67% (n=7) and combination of multiple symptoms in 21.9% (n=23) were developed among the 105 respondents. Another study showed that there were increased numbers of workers about 63% were suffering from respiratory problems at ship breaking industry.[10] Prevalence of respiratory problems among the workers of ship breaking industry of about 80% was found in another study.[11] Respiratory problems decreased by using mask. In our study among 105 respondents, respiratory problems reduced after using mask in the following pattern 22.86% (n=24) within 3 months of use, 39% (n=41) within 6 months of use, 16.19% (n=17) within 9 months of use, 13.33% (n=14) within 12 months, 5.71% (n=6) after 1 year of use and 2.86% (n=3) found no improvement after 1 year of using mask.

**Conclusion:**

A good number of population earn their livelihood by working in the ship breaking industry of Shitakund, Chittagong. Most of the workers were suffering from various types of health hazards including respiratory problems like bronchial asthma, pneumonia, chest pain, nasal irritation, hoarseness of voice, cough, sneeze, dyspnoea etc. Maximum of the employers do not ensure any type of safety & security for the workers. As facial mask is a simple mechanical device & which is cheap and easily available so maximum workers use the device without receiving any help from the employers. Respiratory problems are lower among the mask users. In respect of the study it is clearly revealed that respiratory problems are less common among the workers of the ship breaking industry who use masks.

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