

Original Article

Symptoms of Respiratory Health Problems in Rice Mill Workers of Bangladesh

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Abstract

Background: Husking, Major and Automatic types of rice mills are small scale industry abundant in Bangladesh producing parboiled rice. A little information is available about the chronic respiratory health problems of the workers due their occupational exposure to the rice mill dust in Bangladesh.

Objectives: To be aware of symptoms of chronic respiratory health problems in rice mill workers of Bangladesh.

Materials and methods: This descriptive cross sectional study was carried out among 500 rice mill workers. Data were collected about the symptoms of chronic respiratory health problems by face to face interview with questionnaire. Physical examinations and lung function test were done.

Results: Total 34.0% of workers complained suffering from the symptoms of chronic respiratory illness. Cough (18.0%), dyspnoea (10.0%), rhinitis (6.8%) and wheezing (5.8%) were the prevalent symptoms. No clinical sign of any respiratory disease was detected. The majority (69.0%) of the symptom sufferers worked in Parboiling and drying section (PBDS) of the mills and their duration of employment and suffering from symptoms were also short.

Conclusion: Occupational respiratory health problem in rice mill workers in Bangladesh is not at remarkable level. Only symptomatic treatment is required to elude the problems at present but continuing in job health education, supervision and monitoring are essential for future.

Key Words: Bangladesh, Rice mill, Rice mill workers, Symptoms of respiratory problems.

Introduction

Husking, major and automatic rice mills are small scale industry in Bangladesh for the production of parboiled rice¹. It is an important sector of employment for a large number of unskilled and semi-skilled people mostly females². Lack of specific guide lines for rice mills establishment and operation, the workers there face a lot of chronic and acute problems specially from respiratory illness for occupational dust hazards exposure at various stages and at all sections of the rice mills during the operation^{3,4}. The common presenting respiratory symptoms are cough, dyspnoea, wheezing and nasal irritation and /or watering and irritation and redness of

eyes⁵⁻⁷. Normal respiratory physiology usually tries to expel the dust out of the lung⁸⁻¹¹. The prevalence of the symptoms depend on composition and nature of dust, duration of exposure, altered respiratory pathophysiology, immunity status and allergies, rice mills environment, use of protective devices and many other factors^{8,9}. This study was planned to assess the prevalence of symptoms of chronic respiratory problems (CRHP) in rice mill workers for their occupational exposure to dust hazards in order to assess the threshold of the problem and to make recommendation for the preventive and control measures in the country.

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Material And Method

It was descriptive cross sectional study conducted among 500 rice mill workers at Rajshahi Bangladesh Small and Cottage Industries Corporation area (Rajshahi BSCIC), and the rice mills situated around the Rajshahi Metropolitan city area in the year 2010-13. Data about the symptoms of respiratory illness and problems and other related socio-demographic and occupation related variables were collected from purposively sampled workers through in-depth face to face interview with pretested close-ended questionnaire. They were examined physically for lung sounds and Lung function test was done by Microspirometer (Type: Micro Medical Digital Volume Transducer). The collected data were computerized, compiled and analysed using SPSS 16 software. Frequencies, cross tabulation and non-parametric tests (Chi square and Binomial tests) were done in accordance to the objective of the study.

Results

In this study, there were 266 (53.2%) male and 234 (46.8%) female with mean age 39.2 ± 8.9 years and 36.7 ± 7.8 years respectively. Majority (59.4%) of the respondents' BMI were in normal weight group [male 50.4% and female 69.7%]. Among the respondents, 86.8% the male and only 2 (out of 234) females were smokers. Majority of the female (217, 92.7%) and a large proportion of male (128, 48.1%) worked in the Parboiling and drying section (PBDS) of the rice mills. Mean age of duration of employment in rice mills were 6.3 ± 0.2 years and only 24.9% of the workers had been working in rice mills for ≥ 9 years. Among the respondents, 71.6 % (358) worked for 9-12 hours daily. Symptoms of chronic respiratory problem were the complaints of 34.0 % (170) of the respondents. Among them, 28.2% were suffering from single symptom and 5.8% of the total respondents had ≥ 2 symptoms. Chronic cough, wheezing, dyspnoea and rhinitis was the symptomatic complains of 18.0%, 5.8%, 10.0% and 6.8% of the respondents respectively. Non-productive cough, irritation or running nose, dyspnoea with or without wheezing was the major presenting features of the respiratory symptoms. Irritation, watering or red eye (symptoms of chronic conjunctivitis) was presented by 7.4% of the respondents also. It was found in the study that those chronic respiratory symptoms aggravated in the winter and had no relation with the work load or diurnal variations. On auscultatory examination of lung, only 21(4.4%) and 11(2.4%) respondents had ronchi and crepitation respectively. Those lung findings were mostly found in male (94.1%).

Table 1: Symptoms of chronic respiratory health Problem (CRHP)in rice mill workers.

Symptoms	Number	Percent
Have symptom/s	170	34.0
1. Single symptom	141	(28.2)
2. 2 symptoms		(5.8)
CRHP Symptoms		
1. Cough	90	18.0
2. Dyspnoea	50	10.0
3. Wheezing	29	5.8
4. Rhinitis	34	6.8

Discussion

Respiratory symptoms are main health complains in every grain dust related occupation. Both acute and chronic symptoms had been mentioned in many studies¹²⁻²⁷. In most of those studies, the prevalence of the symptoms had been mentioned much higher than our finding extended from 88.0% to 44.7%. Those studies were conducted in European countries mostly among the grain elevators workers and farmers where management for protection of workers health was good. In our study, 34.0% prevalence of chronic respiratory symptom does not reflect the good working condition, rather than for short duration of employment and less exposure of the workers to the dust hazards. The proportion of workers suffering from single symptom in our study was also less than the findings of DoPico GA et al but a little more than the findings of Shurlea C et al.^{12, 27}. Prevalence of suffering from acute respiratory symptoms in our study was higher than most of those studies especially in male workers, supposed to be due to high prevalence rate of smoking in them^{18, 24}. Cough is the predictor and precursor symptom of all respiratory problems and is a respiratory reflexive physiology. More prevalence of cough among grain workers had been mentioned in all most all studies except a few like Deacon S P et al and Mc Cyrd SA et al studies^{28, 29}. In our study, aggravation of cough symptom more in winter rather than during the working hours and busy working season indicates more seasonal influence than to the dust exposure. In our study, male suffers from cough were double in number than the female did not indicate the sex predisposition rather for the very high prevalence rate of smoking in male.

Also it might had been an additive effects. Additive effect of smoking on cough symptom had been also supported in many studies^{26, 30-32}. In our study, dyspnoea symptom was explained by 10.0% of the respondents doubled in male than females. This symptom had been described in many studies in grain, grain processing, flour and food processing industry workers^{13,14,16,19,24,28,33,34}. But in our study, prevalence of dyspnoea was less than those studies. A remarkable portion of the dyspnoea sufferers had also symptoms of cough (24.0%) wheezing (8.0%) and rhinitis (4.0%). But a higher rate of dyspnoea in male workers in Parboiling and drying Section (PBDS) in proportional to female in our study indicated greater influence of other factors than the occupational exposure to dust. Dyspnoea with wheezing indicate the severity of the problem^{13,32}. In our study, 60.0% of the dyspnoic respondents mentioned dyspnoea without wheezing. Cookson W O et. all mention 13.0% prevalence of dyspnoea with wheezing their study³⁴. Yach D et al mentioned the prevalence of wheezing 25.0% in their study¹². Both these prevalence were much higher than our finding. As wheezing being an objective symptom phenomenon, we did not bring it in consideration for analysis.

In our study, nasal symptoms had been mentioned as rhinitis for running nose. Nasal symptoms in grain and dust job workers had been mentioned in many studies but the prevalence (64%-14.4%) were higher than our findings (6.4%)^{12,17,25,26}. Our lower findings might be for the short duration of exposure or for the less presence of hazardous content including less allergens in the grain dust. Lim H H et al mentioned rice husk dust responsible for nasal catarrh included in as "Rice millers' syndrome" in Malaysian in their study²⁵.

During the auscultation examination of the lung, ronchi and crepitation findings were very negligible and all lung function test results were within the normal range. These finding helped us in coming decision that there was no any anatomical and physiological changes and abnormalities in the respiratory system of the rice mill workers. They were only suffering from the symptoms.

Conclusion

The prevalence symptoms of respiratory health problem in rice mill workers in Bangladesh are low. As no signs of the problems were detected in the workers, it can be concluded that the Prevalence of respiratory illness in rice mill is not at alarming level. Only symptomatic

treatment is necessary to reduce the suffering as micro-measure for the prevention and control at present. Though continuing research, health education, inspection and monitoring of rice mill environment and workers are essential as macro-measure.

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