



Effects of Flour Dust on the Health of Flour Mill Workers in Kolhapur City

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Abstract: The present work was undertaken the study on the health problems faced by flour mill workers in Kolhapur city with the aim of workplace environment affect on the health of flour mill workers. During study the unhygienic conditions were observed in the workplace environment of flour mills as fine organic flour dust gets airborne in the indoor environment of the flour mills that may cause serious health problems to the flour mill workers. Data has been collected by a structured interviewer and administered questionnaire. The questionnaire contains questions on respondents demographic attributes, reported respiratory symptoms, smoking status of the subjects and occupational history in relation to exposure. The work histories of the study subjects has been assessed through questions on current job, daily working time, job description, working conditions, and protective measures used etc. Collected data were analyzed with the help of Microsoft Excel.

Keywords: Flour Dust, Flour mill workers, Health, Unhygienic, Workplace Environment.

I. INTRODUCTION

The flour mill workers were facing the problems related to grinding; these were coughing and sneezing, eye irritation, breathlessness due to presence of flour dust in the work environment, Flour as a complex organic dust consisting of wheat, rye, millet, barley, oats or corn cereal, or a combination of these, which have been processed or ground by milling. Flour dust is a hazardous substance; it is a respiratory sensitizer and is known to cause allergic rhinitis and occupational asthma. It is also an irritant and may give rise to short term respiratory, nasal and eye symptoms. Sudha Babel and Rupali Rajvanshi (2013) observed unhygienic conditions in the workplace environment of flour mills as fine organic flour dust [1]. Inhalation of flour dust can produce allergic reaction and chronic respiratory disorders, including sensitization and asthma. Smith and Lumley, 1996, concluded that flour dust is a hazardous substance with respiratory sensitizing with pre-existing disease and also causes chronic bronchitis [2]. Due to all these reasons & the present investigation was planned with the objective to study the general profile of the respondents to find out the problems faced by the flour mill workers and use of personnel protective devices by the flour mill workers. In flour mills, dust generated are released into the air and later inhaled during industrial process, such as cleaning, crumbling, packing, and shipping. The level of dust exposure is highest in the mixing and packing sites of the flour mills. This study is therefore aimed at assessing the effects of flour dust on respiratory symptoms and lung function of flour mill workers in Kolhapur city.

II. METHODOLOGY

The present study is conducted in urban area of Kolhapur city. 45 flour mills are purposively selected for the study. These flour mill owners are working at flour mill from several years. Questionnaires are used to generate information on self-reported problems. Critical examination of work place is also done to know about the work environment. Data were analyzed using frequency and percentage.

Table 1: Data Collection Questionnaire

Part: A

Name of the worker				
Age		Contact No:		
Height(in cm)				
Weight(in kg)				
Duration of employment(In year)				
Education	Up to primary	Up to Middle	Up to Metric	Higher secondary



Family	Nuclear	Joint
Family Size	Small(up to 4members)	Medium(up to 5-8)
Marital status		
Family Occupation	Flour Mill	Other
Duration (hrs\day)	8-10	6-8
Past history of illness	Yes	No
Bad habits		

Part: B

Problems encountered	Activity		
	Cleaning	Grinding	Packing
Skin allergy			
Eye irritation and itching			
Back Ache			
Shoulder Ache			
Breathlessness			
Allergic Bronchitis			
Nausea			
Headache			
Sweating			
Cut in hand			
Coughing and sneezing			

III. RESULTS AND DISCUSSION

Flour dust contain particles from numerous cereal grains (wheat, barley, rye, corn) and may contain a large number of contaminants including silica, fungi, and their metabolites, bacterial endotoxins, mammalian debris and various chemical additives such as pesticides and herbicides. Workers exposed to flour dust during milling transfer operations, mixing process may develop respiratory diseases .The following table gives the information about general profile of the respondents and the problem encountered by the flour mill workers.

Table 2: General Profile of the Respondents:

Aspect	Categories	Frequencies
Age	20-40	23 (51.12%)
	41-60	12 (26.67%)
	61-80	10 (22.23%)
Duration of employment	10-20 years	32 (71.12%)
	<20 years	13 (28.89%)
Education	Primary	3 (6.67%)
	Middle	13 (28.89%)



	Up to metric	24 (53.34%)
	Higher secondary	3 (6.67%)
Family	Nuclear	17 (37.77%)
	Joint	28 (62.23%)
Marital status	Married	43 (95.56%)
	Unmarried	2 (4.45%)
Family occupation	Flour mill	41(91.12%)
	Other	4 (8.89%)
Duration of work	8-10 hr	20 (44.45%)
	6-8 hr	25 (55.55%)
Past history	Yes	9 (20%)
	No	36 (80%)
Bad habits	Yes	11 (24.45)%
	No	34 (75.56%)

The data in the table showed that 51.12 per cent of respondents were in the age group of 20-40 while 26.67 per cent were between the age group of 41-60 years and remaining 22.23% of the respondents belong to 61-80 years age group. 62.23 per cent respondents belonged to joint family and remaining were from nuclear family. Further, 60 per cent of respondents had medium family size, 40 per cent of respondents had small family and none of the respondents had large family. The data in the table bring to light that 53.34 per cent of respondents were metric pass and only 6.62 per cent had primary education, remaining up to middle and higher secondary education. Regarding the marital status of the respondents, it can be reviewed from the table that vast majority of the respondents (95.56%) were married, whereas 4.45 per cent is unmarried. The occupational profile of the respondents reveals that good per cent of the respondents (91.12%) had flour mill as their family occupation as well as 8.89 per cent associated with agriculture sector and service along with flour mill. Good number of the workers (71.12%) had work experience of more than ten years. 55 per cent were operating flour mill for 6-8 hour while 44 percent for 8-10 hours. However, only 24.56 per cent were found in category under habits of smoking, drinking and tobacco chewing.

Table 3: Regular activities carried out in flour mills

Sr. No	Type of activity	Frequency	Percentage
1	Cleaning	27	60
2	Grinding	45	100
3	Packing	45	100
4	Loading	45	100



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Table above clearly shows that cleaning was the activity carried out by only 60 per cent of the unit, while all the other activities were carried out by the entire unit.

Table 4: Problems encountered by flour mill workers

Problems encountered	Activities		
	Cleaning F (%)	Grinding F (%)	Packing F (%)
Skin allergy	8 (17.78)	5 (11.12)	4 (8.89)
Eye irritation and itching	20 (44.44)	4 (8.89)	8 (17.78)
Back ache	6 (13)	7 (15.56)	12 (26.67)
Shoulder ache	6 (13)	14 (31.12)	11 (24.45)
Breathlessness	19 (42.23)	4 (8.89)	2 (4.45)
Allergic Bronchitis	7 (15.56)	3 (6.67)	1 (2.23)
Nausea	2 (4.45)	7 (15.56)	2 (4.45)
Headache	4 (8.89)	12 (26.67)	2 (4.45)
Sweating	8(17.78)	7 (15.56)	0
Cut in hand	3 (6.67)	8 (17.78)	3 (6.67)
Coughing and Sneezing	7 (15.56)	5 (11.12)	1 (2.23)

In 2013 Sudha Babel and Rupali Rajvanshi were observed unhygienic conditions in the workplace environment of flour mills as fine organic flour dust, the workers working in flour milling are exposed to many hazards, and the major hazards were related to grinding activity which may be due to exposure to flour dust [1]. Grain cleaning activity was carried out by only 60 per cent of the respondents. Problems encountered while grain cleaning were mainly related to eye irritation and itching, breathing and it ranged from 42-44 per cent. The table clearly shows that 83.33 per cent respondents suffered from sneezing and cough which lead to acute effects related to the respiratory problems. Due to excessive noise 26.67% workers faced problem of headache. About 8.89 per cent respondents suffered from eye irritation or eye itching it may be due to flour dust in the environment. 15.56 per cent respondents suffered from allergic Bronchitis. According to Ajeel and Al-Yasin, 2007, Flour dust is a hazardous substance; it is a respiratory sensitizer and is known to cause allergic rhinitis and occupational asthma, it is also an irritant and may give rise to short term respiratory, nasal and eye symptoms [3]. In present study 15.56 per cent respondents suffered from Nausea during work. 15.56 per cent respondents had back ache due to bending at the time of packing of flour. It was due to improper posture adopted during the activity. About 42 per cent of the flour mill workers were having shortness of breath problems, while 34 per cent of workers were having frequent coughing, and 19% workers were having respiratory tract irritation. Problems



faced while loading and unloading were related to transferring raw material (grains) to the process area. The hazard of suffocation in the grain area while emptying or shifting the grains was observed. All the bags and sacks were transferred by the hand to the final process area. But at the time of loading, the workers were carrying one bags / container of 15- 20 kg each at a time, on their shoulders or if the load is more than 20 kg than workers used to carry the load on their back which was the main reason for shoulder and backache. It was observed that working environment was quite unsafe and unhealthy for workers and also found occurrence of various health problems were due to work pressure, long working hours, and insufficient cleaning at the work place.

Use of Personnel Protective Equipments:

Personal Protective Equipment (PPE) helps to protect the workers health from the unsafe conditions in the workplace environment. During present study it was observed that PPEs were not available as well as was not used by any flour mill worker while doing their work. The workers in the work area were not wearing any type of PPEs. Even during high noise level not a single worker was using ear muffs. According to various studies even after proper cleaning operations in flour mills, the flour milling may not be able to reduce the flour dust below hazardous level. Therefore for flour mill workers when they are doing their work in the work area, the face masks are highly recommended.

IV. CONCLUSION

The present study was undertaken with the view of understanding the effects of flour dust on the health of flour mill workers in Kolhapur city. From above study it can be concluded that flour mill workers were facing various health related problems in their occupation due to presence of flour dust in the work. None of respondents were using personnel protective devices to protect themselves. It is necessary to make a awareness among flour mill workers regarding their health issues and benefits as well as the use of Personnel Protective Equipments to protect themselves.

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