

Original Research Article

Selected morbidities among workers of a chemical processing industry in Goa

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ABSTRACT

Background: Exposure to various physical, mechanical, chemical hazards and unsafe practices by workers of fertiliser industries leads to many illnesses. So far not much attention has been given to occupational hazards in fertilizer industry. Therefore, the present study was undertaken to assess selected morbidities among workers in a fertilizer industry in Goa.

Methods: The study was conducted over a period of November 2018 to December 2018. The data of the workers was obtained from an occupational health and safety (OHS) centre catering to a fertilizer industry in North-Goa which conducted periodic medical check-ups of the workers. The data included details regarding selected morbidities among workers of the fertilizer industry.

Results: Among the workers, over one-third i.e. 104 (37.3%) were overweight and 38 (13.6%) were obese with body mass index (BMI) ≥ 30 kg/m². 22 (7.9%) workers were hypertensive, 35 (12.5%) were diabetic, 46 (26.5%) had abnormal far vision and 24 (8.6%) had near vision abnormalities. Spirometry reports showed 17 (6.1%) workers suffered from mild restrictive lung disease. Assessment of audiometry reports revealed that 2 (0.8%) workers had mild hearing loss, 4 (1.6%) had moderate hearing loss and 2 (0.8%) had severe hearing loss.

Conclusions: Workers in a fertilizer industry suffer from several morbidities, including the diseases like diabetes, hypertension and obesity. Apart from this, they also suffer from hearing impairment, visual impairment and conditions impairing their pulmonary functions. Periodic medical examinations are needed for timely detection and appropriate treatment of these health conditions among the workers.

Keywords: Morbidities, Workers, Fertilizer industry

INTRODUCTION

Processing of chemicals exposes the workers to several by-products as well as occupational illnesses. Chemical industry is nowadays among one of the most important industries.¹ The influence of harmful factors like microclimate, dust, noise, vibrations and chemicals like ammonia, nitric oxides, hydrogen fluoride and gaseous fluorides also affect the health status of workers. These industries use numerous other materials as raw products at the start of the manufacturing process which further results

into releases of toxic substances cause health hazards in workers who are constantly exposed to the environment.²

The occupational health scenario is such that workers engaged in the manufacturing sector do not undergo regular and timely health care facilities which then results in morbid conditions.³

The current study focuses on the need to look out for ways in which the health of workers can be improved.

Objective

Objective of the research was to study selected morbidities among workers in a fertilizer industry in Goa.

METHODS

This retrospective cross-sectional, record-based study was conducted over a period of two months (November 2018–December 2018). Health check-ups of all 279 workers of a chemical fertilizer industry in North Goa were conducted. Census method of sampling was followed. The data was entered in Microsoft excel sheet and analysed using statistical package for the social sciences (SPSS) software version 22. Confidentiality was assured to the occupational health physician in-charge with respect to the name of the company and the identity of their employees. Health records of all the employees employed in the company were included in the study. Employees whose health records were incomplete or misplaced were not included in the study. Ethical approval was obtained from Institutional Ethics Committee, Goa Medical College, Bambolim.

Health records of 279 workers who had voluntarily consented for the medical check-ups were analysed. The data obtained consisted of sociodemographic characteristics (age and sex), anthropometric measures (height, weight and body mass index), vitals (pulse and blood pressure), vision (near vision and far vision), spirometry and hearing impairment.

RESULTS

The study sample consists of 279 workers of which 33.33% belonged to the age group of 20–29 years. Table 1 shows the age distribution among workers of the industry. It was noted that 12.5% of the workers suffered from diabetes having $HbA_{1C} \geq 6.5\%$ whereas the others were having normal sugar profile (Table 2). The body mass index revealed that 37.3% of the workers were overweight, 13.6% were obese with $BMI \geq 30 \text{ kg/m}^2$ and 47.3% had a normal body mass index (Table 3). It was reported that 22 (7.9%) workers were hypertensive with $BP \geq 140/90 \text{ mmHg}$ (Table 4). Assessment of vision of the 279 workers revealed that 46 (26.5%) had abnormal far vision and 24 (8.6%) had near vision abnormalities (Table 5). Spirometry reports showed that a significant number of 17 (6.1%) workers suffered from mild restrictive lung disease (Table 6).

Table 1: Age distribution among workers.

Age (years)	Frequency	Percentage (%)
20-29	93	33.3
30-39	63	22.6
40-49	39	14.0
50-59	84	30.1
Total	279	100

Assessment of audiometry reports revealed that 2 (0.8%) workers had mild hearing loss, 4 (1.6%) had moderate hearing loss and 2 (0.8%) had severe hearing loss (Table 7).

Table 2: Sugar profile among workers.

Sugar profile	Frequency	Percentage (%)
Deranged	35	12.5
Normal	244	87.5
Total	279	100

Table 3: Body mass index of workers.

Body mass index	Frequency	Percentage (%)
Normal	132	47.3
Obese	38	13.6
Overweight	104	37.3
Underweight	5	1.8
Total	279	100

Table 4: Distribution of workers according to their blood pressure.

Blood pressure (mmHg)	Frequency	Percentage (%)
Hypertensive	22	7.9
Normal	257	92.1
Total	279	100

Table 5: Visual acuity among workers.

Visual acuity	Frequency	Percentage (%)
Normal	233	83.5
Uncorrected	46	16.5
Total	279	100

Table 6: Spirometry results among workers.

Spirometry	Frequency	Percentage (%)
Mild obstruction	17	6.1
Normal	262	93.9
Total	279	100

Table 7: Hearing among workers.

Hearing	Frequency	Percentage (%)
Uncorrected	1	0.4
Normal	278	99.6
Total	279	100.0

DISCUSSION

In our study, it was found that, 17 workers i.e. 6.1% had mild obstructive lung disease. This result is comparable to a study done by Zala et al, which showed that the incidence of obstructive lung diseases among workers of a manufacturing industry in Western India was 2.71%

annually.¹ A study conducted by Biswas et al showed prevalence of hypertension among 14.43% of the study population which is more compared to our study findings which reveal that 7.9% of the workers were hypertensive.² In our study it was found that 16.5% workers had refractory error which was similar to the results in a study conducted by Yenpude et al which revealed that 17.8% of the workers of a cotton mill industry in India had refractory error.³ A study by Bhumika et al revealed that 6.2% of the workers of a ship building industry had noise induced hearing loss which was contradictory to our study findings which shows hearing loss in 0.4% workers.⁴ A study by Lokhande et al showed that 53.5% of the workers were overweight.⁵ This was comparable to the results of our study which revealed that 37.3% of the workers were overweight. In our study, the HbA_{1c} assessment done for the 279 workers revealed that 12.5% of the total workers had diabetes mellitus. This result was comparable to the results seen in a study done by Sukumar et al, which revealed that 15.63% workers of a large automobile engine industry were diabetic.⁶

Limitations

The study was based on only a particular set of investigations. More studies using a wider range of investigations.

CONCLUSION

People working in the chemical processing industry for several years are prone to develop morbidities which may be prevented from occurring. This can be achieved if timely health checks are regularly conducted for the workers of these industries besides pre-placement examination. This would help the workers maintain a proper health and take corrective measures in the initial stages if they are found to have any morbidities.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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