



Yield Results of Reduction in Respiratory Morbidity

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Abstract

Indoor air quality is a factor that has been strongly linked to chronic respiratory morbidities. There were study evidences implicating kerosene fuel, smoke from biomass fuels associated with bronchitis and asthma. The current study found that the use of kerosene fuel and chulha as significant determinant in bivariate analysis for bronchitis, chronic morbidity of any type and peak flow obstruction and also in the final model of chronic airway limitation.

Keywords: Rural residence; Solitary males; Adult hood; Hygiene related; Occupational safety; Economically feasible

Introduction

However the caveat is that the study population was exclusively male who may not have significant exposure to domestic indoor air pollution, as they spend major portion of the day at industry and less likely to be exposed to cooking fuels by nature of the gendered pattern of work at home. But the possibility of these indoor air pollutants playing a synergistic modifiers role can't be ruled out, though it may be trivial. Another explanation would be to place this factor in the wider gamut of lower socio-economic status that will be discussed [1]. The secondary levels of education, the primary and below levels were associated with all outcomes in bivariate analysis and also as determinants in final model for bronchitis and asthma. A similar association was noted for lower income category. Rural residence was associated with all outcomes except CRS. All these factors can be put under the entity of lower socio-economic strata, though they were kept separate for analysis purpose to know the exact contribution made by each [2]. An Indian study among the slum dwellers proves the lower socio-economic status associated with bronchitis and asthma, the same augmented from data from various regions of globe. An interesting finding was the lesser risk for bronchitis for those currently living with spouses compared to the solitary males. The probable reason could be spousal support for quitting smoking which is major additive effect modifier.

Methodology

It was interesting to note that none of the respondents gave a history of lung diseases before joining work except one and this assumes importance in the context of occupational risk. Also the family history which has been implicated in adult hood lung diseases was not associated with any outcome even in bivariate analysis as far as current study population was concerned [3]. The most crucial element in any occupational health study is the role of modifiable-behavioural and hygiene related factors. However this was the least explored in most studies and was suggested as area for future research by them. This study ventured to fill in this gap and explored the knowledge, behaviour and compliance with respect to Occupational safety and hygiene at work place within the context of cement occupation. Hand washing prior to food and drinks was routinely practiced in regular or satisfactory basis by all the labourers [4]. However this could be due to the cultural habit existing in the region and may not strictly be an occupational hygiene measure as part of any training. Majority regularly changed clothes immediately after work or before going home. However the most troubling aspect was that only slightly more than half of the labourers had the regular habit of taking bath after work and daily washing of

clothes worn at work. Hand and face washing were the substitutes for bathing. The cloths were washed once in a week or month. In this context it was significant to note that those with on-washing of clothes had the highest risk for all disease outcomes. Ideally they are supposed to wear disposable aprons daily if such a thing was economically feasible for management to provide those [5]. The wearing of boots was mandatory and was highly insisted upon and monitored. Other than the wearing of boots, the compliance to the regular use of eye goggles, gloves and facemask or respirator was poor for half of the labourers. This also gives a valuable indication that with necessary organizational will and standards, compliance to PPE can be satisfactorily achieved as shown in (Figure 1). However an important point worth noting was that there were two factors that limited or affected the compliance with regard to PPE according to the workers. The most common reason cited was that they were uncomfortable and unnecessary and the other was non-availability. It was noted during data collection, though not part of the questionnaire, that many respondents indicated that they would not wear the PPE even if they were available since they felt it was unnecessary and uncomfortable. This highlights the need to explore the attitudes and the practices of the workers according to their own perceptions so that interventions can be made that are worker friendly and implementable without resistance [6]. Observationally during the study two other points were also noticed and was thought worth reporting.

Discussion

Most of the workers used a cloth similar to a towel as the mask and most said that there were too few masks that were available for use in each section compared to the number of workers who needed it at a time. Any future study in a similar situation should explore the infrastructural capacity also in addition to worker's attitude and knowledge. More than half of the workers had satisfactory level of overall training. However when it analysed in detail was seen that the workers were trained well in the use of machineries and other logistics in their respective sections of work and in comparison their

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Figure 1: Worker friendly and implementable without resistance.



Figure 2: Personal protective equipment .

training in personal protective equipment and their confidence to use them were low as shown in (Figure 2). The overall knowledge level for awareness regarding cement hazards, safety and first aid measures was very low at 35 percentages. This conveys the fact that they are not kept abreast of needed information from management's point of view or the lack of involvement from workers point of view [7]. A strong reinforcing fact for above argument would be the very poor awareness regarding existence of respiratory protection program for dusty occupations. In developed nations it forms the basic right of every worker in dusty occupations. As a part of respiratory protection program, it becomes the duty of employer to have medical check-up or respiratory examination that includes clinical examination to full range of Spiro metric tests once in three years at least. One fourth of the workers had no such examination since joining job unless they acquired illness. The rest three fourth also denied having any lung function tests apart from routine blood examination. The large sample size and good response rate contributes to good statistical power and also to make relevant analysis. Standard occupational safety and health indicators applicable for dusty occupations and cement industry were studied. The perceived barriers identified and quantified. The spectrum of common respiratory morbidity was analysed with validated tools [8]. Peak flow meter and chest expansion measurements were strong objective measures of morbidity. The study used the wider Commission on social determinants of health conceptual framework and focused on the proximal, intermediate and distal determinants. This identified a wide range of factors like socio demographic, indoor air quality, personal habits, other lung diseases and non-communicable diseases and their inter linkage with the work related exposures [9]. Since the study was undertaken by principal investigator alone, there is lesser chance of variability in measurements and responses. Sampling could be relevant to other such cement industries in similar contexts. The study estimated association between occupational exposure and the respiratory morbidity. However causal linkages could not be made as it was a cross sectional survey. The study may not be exactly representative of industry workers since the mean age was slightly higher due to recruitment freeze and administrative sanction to interview contract workers was not available [10]. As interview schedule was the primary data collection tool, which required recall of information, regarding the exposure, illnesses and PPE usage; the possibility of recall bias exists [11]. Healthy worker bias could be another limitation since those who were severely ill could have died or left the job or shifted to other sections. Personal dust level samplers –PDL Scould not be used for individual dust exposure measurement since it was not available and costly [12]. For the same reasons, chest x-ray and spirometer in outcome measurements were not used [13]. Controlling for seasonal and other environmental interactions for causing the respiratory morbidity could

not be done [14]. The prevalence of chronic respiratory morbidity among workers in the cement sector in South India was significantly higher compared to the general population of the country but lower in comparison to similar workers in other developing countries from Africa and the Middle East. The morbidities could be associated to the occupational exposure among workers in the manufacturing sections, who were directly exposed to the cement dust. The duration of the job in the factory, the type of work section and the number of work hours were the important risk factors.

Conclusion

Though study had its focus on respiratory morbidity, a significant proportion of the workers had other chronic non communicable diseases including diabetes, hypertension and cardio-vascular diseases. The morbidities were also higher among the users of tobacco and alcohol, which requires further exploration to ascertain whether this was coping strategy for the nature of stress and discomfort due to the dusty occupation. In addition socioeconomic inequalities in terms of education, income, occupation, rural-urban divide affected the differentials in morbidity among the workers.

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Conflict of Interest

None

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