

## STUDY ON WORK RELATED FACTORS OF AGATE GRINDERS IN SHAKARPURA-KHAMBAT, GUJARAT

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### ABSTRACT

Decorative carving of agate stone is a traditional household industry localized in the Khambhat area of Gujarat. The following study analyses the i) age and sex distribution of agate workers ii) factors behind opting for this job and iii) adoption of preventive measures. It was a cross sectional study involving 98 agate workers in Shakarpura engaged in grinding work. The data was analysed in terms of percentage, mean, S.D, mode, etc. All the agate workers had opted this work because of family constraints. 97(99%) opted this job because of comparative good wages with less hard work than other jobs. 15.4% were using the preventive measures. KAP gap of 84.6% was found. It was also revealed that 53.0% were not using the devices because they find it cumbersome to use, difficulty in breathing and because of addiction to various tobacco products.

**Keywords:** Agate, Khambhat, Cumberseome, Debts, Preventive measures

### INTRODUCTION

Agate is a hard, semiprecious stone, a variety of chalcedony, with striped or clouded coloring and containing high amount of free silica (>60%). It is used to make cheap jewelry and various articles of decoration. Dust is generated mainly during the grinding process. Grinding of the stones is carried out indoors or under open shade, on electric emery. Dust generated during grinding pervades the work environment as well as the community.<sup>1</sup>

The problem of silicosis is much more severe in the unorganized sector of industries like slate pencil cutting, stone cutting and agate industry. The flaw here is that most industries belonging to the unorganized sector do not fall under the purview of the statutory tools such as the Factories Act aimed to protect the health and safety of the working population. Moreover, the employers lack the will to provide safe working environment for the workers. It is probably economic compulsions that the workers choose

to work in hazardous environments and are subjected to exploitation.<sup>2</sup>

The workers working in agate industry are in debt trap. The workers are not free to change either the job or employer till they fully repay the debt. The workers are scared of the employers because of dire consequences they may face. If the workers die, the family members are asked to repay the debt. Under these circumstances, the family is compelled to work under the same employer.<sup>3</sup>

### MATERIALS AND METHODS

This study was conducted with the objective to study the factors related to working in agate grinding home based working units and adoption of preventive measures. Total agate grinders in Shakarpura village in Khambhat are around 200. For the study half of them i.e. 100 worker were interviewed. Two persons were excluded from the study due to poor response. Information was collected by interview method

in a pre-designed proforma. The analysis is done by EPI-info package and the results were interpreted in terms of %, mean, S.D, median.

**RESULTS**

Table 1 describes the age & sex wise distribution of agate workers. Out of 98 workers 66.3% were males and 33.7 % were females. Maximum workers were from the age groups 30-50 in both male (70.8%) and female (74.0%).

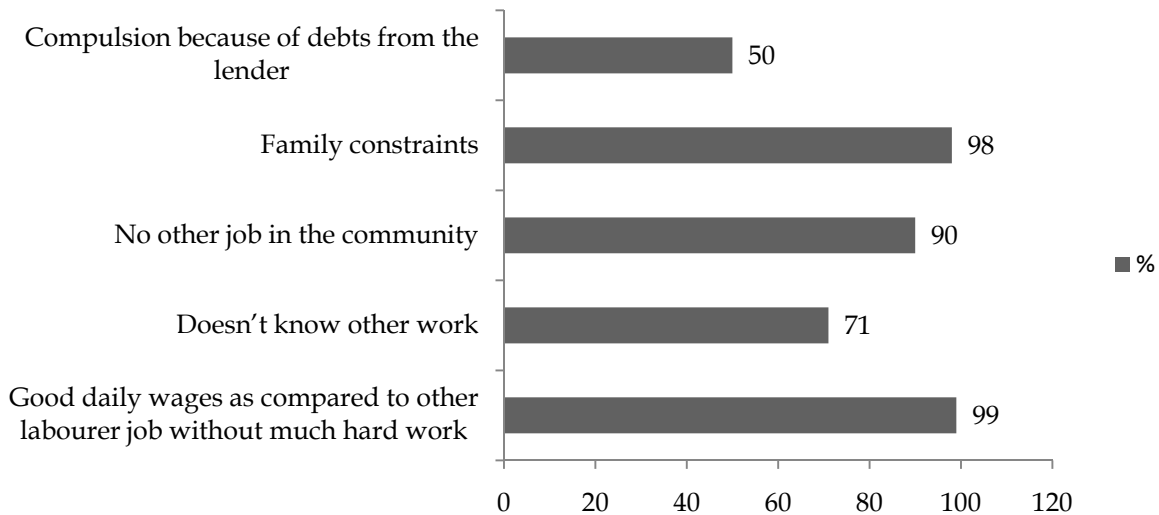
Figure 1 illustrates the distribution of agate workers according to reasons behind opting this work. Out of 98 workers, all had opted for this job because of family constraints. 97(99%) opted this job because of comparative good wages with less hard work than other jobs. 90(91.8 %) found that there is lack of opportunity in the area. Further 71(72.4%) said that they don't

know other work and 50(50.5%) said that compulsion because of debts from the lender.

**Table 1:** Age & sex wise distribution of agate workers

Age	Male (%)	Female (%)	Total (%)
15-20	1(1.5)	1(3.1)	2(2.1)
20-25	5(7.7)	4(12.5)	9(9.3)
25-30	9(13.8)	1(3.1)	10(10.3)
30-35	15(23.1)	5(15.6)	20(20.6)
35-40	12(18.5)	9(28.1)	21(21.6)
40-45	9(13.8)	10(30.3)	19(19.4)
45-50	10(15.4)	0(0.0)	10(10.3)
50-55	0(0.0)	2(6.3)	2(2.1)
55-60	2(3.1)	1(3.1)	3(3.1)
>60	2(3.1)	0(0.0)	2(2.1)
Total	65(100.0)	33(100.0)	98(100.0)

Mean age-35.94 years, S.D-8.91 years, Median-35years, Mode- 40 years

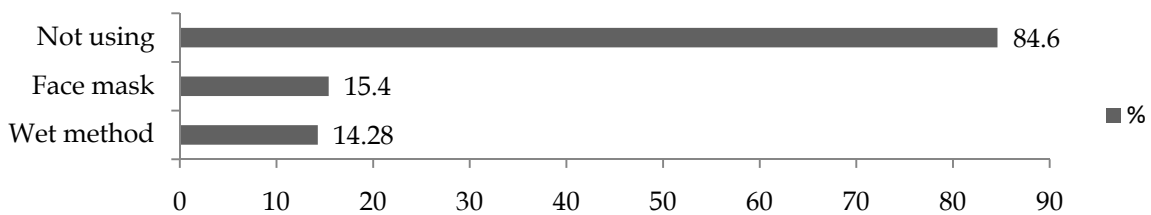


**Figure 1:** Reasons behind opting for Grinding Work

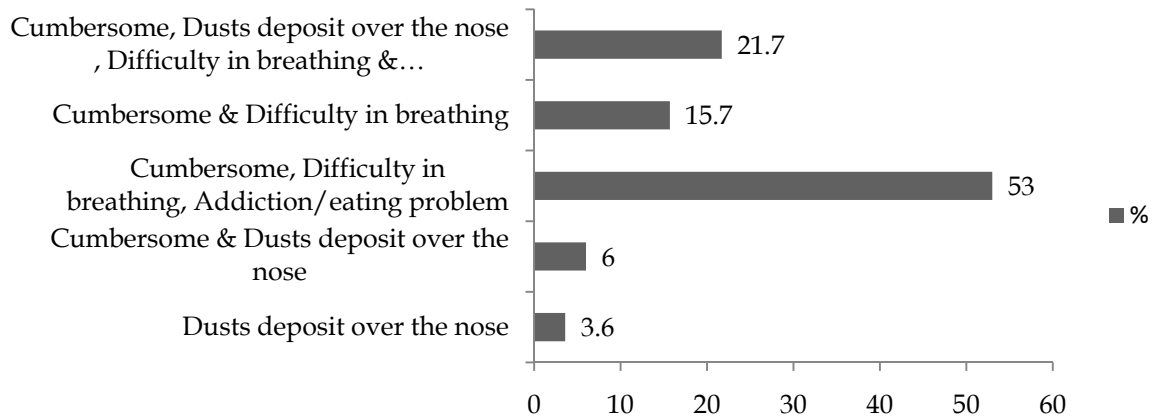
Figure 2 and 3 highlights the usage of preventive measures and reasons for not using face masks respectively.

Out of 98 agate workers only 15.4% were wearing mask as a preventive measure and 14.28% using wet method to prevent spillage of

dust in the environment. KAP gap of 84.6% is found. 53.0% were not using the devices because they find it cumbersome to use, difficulty in breathing and because of addiction to various tobacco products.



**Figure 2:** Adoption of Preventive measures



**Figure 3:** Reasons for not using Face mask

## DISCUSSION

The study showed that the ratio of male and female workers was 2:1 and maximum workers were from the age 30-45 yrs.

This study also showed that the workers opted this job because of family constraints, comparative good wages with less hard work than other jobs, lack of opportunity in the area and compulsion because of debts from the lender. PUCL (Peoples Union for Civil Liberties) Bulletin had also emphasized the same facts.<sup>3</sup>

A large KAP gap in using preventive measures was found. Very few 15 (15.4%) workers were using the face mask and wet methods 14 (14.28%). According to Prevention and control exchange, there is a worldwide need to effectively apply existing knowledge into appropriate preventive strategies in the workplace.<sup>4</sup>

Dust control measures remain the single most potent strategy for the prevention of silicosis. Saiyed (1999) in an article in the ICMR Bulletin has said that there is no silicosis without dust exposure, and the dust levels in the work environment correlate well with the incidence as well as the severity of the disease. Therefore, elimination or suppression of dust in the work environment is the key in the control of silicosis. Each industry has its unique work process and therefore it is not possible to have a single prescription appropriate to all.<sup>5</sup> In the same study, it was however emphasized that the personal protective equipments such as masks should be prescribed only when all available dust control measures have failed. In fact, the dust masks are of little value when the dust

concentrations are high as the dust particles will clog the pores in the filter resulting in a choking sensation and discontinuance of the use of masks by workers. Moreover, the masks are not suited for hot and humid climate.<sup>5</sup>

The agate workers in Shakarpura are working mostly in household units. When no other preventive measure is available to the agate workers, it is better to have the cheapest one as the costlier one can't be installed by the agate workers themselves and the employers are also not interested in getting these machines for their employees. Pre-placement examination is again a very big question in such an unorganized sector of work.

Lakho et.al (2008) in his Cost Benefit Analysis study showed that if dust control devices are installed in all the agate-grinding facilities of Khambhat, not only the prevalence of Silicosis and TB can be reduced, but in the long run there are financial benefits also.<sup>6</sup>

Very little can be done once the disease has set in and therefore, prevention is most important, pre - placement & periodic health examinations of the worker are important. Dust control is the most important engineering procedure to reduce risk. If a significant number of workers develop silicosis within 20 - 25 years of first employment, the dust control measures should be suitably revised.<sup>7</sup>

## CONCLUSIONS

The study highlights that there is a need to increase the receptivity of the preventive measures like use of wet methods and dust

control measures (face mask) when hardly anything can be done else using these methods . The devices developed by the NIOH for the reduction of dusts in the environment needs to be installed, lest we want to safeguard the lives of agate workers as the silica filled dust is the real killer in Shakarpura-Khambat.

### ACKNOWLEDGEMENT

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### REFERENCES

1. Saiyed HN. Silicosis among children in the agate industry, In: J. Pronczuk de Garbino, Editor-in-Chief, Children's health and the environment: a global perspective, a resource manual for the health sector. Section VI; Case Studies, 2004. p 277-281.
2. Kulkarni GK. Prevention and control of silicosis: A national challenge. Indian Journal of Occupational and Environmental Medicine. December 2007; 11(3).
3. Silicosis - A Death Trap for Agate Workers in Gujarat. PUCL Bulletin 2008 March; XXVIII(03).
4. Prevention and control exchange: Hazard prevention and control in the work environment: airborne dust, Occupational and environmental health. Department of protection of the human environment, Executive summary, World Health Organization, Geneva, August 1999.
5. Saiyed HN. Silicosis - An Uncommonly Diagnosed Common Occupational Disease. ICMR Bulletin September 1999; Vol 29, No 9.
6. Lakho J, Bhagia H, Sadhu G. Cost-benefit analysis of installing dust control devices in the agate industry, Khambhat (Gujarat), Indian Journal of Occupational and Environmental Medicine - 2008; Volume 12 - Issue 3, 128-131.
7. Vaz LS, Jindal AK & Dudeja P. Organ /System Diseases Peculiar to Occupational Settings. In: Rajwir Bhalwar, Chief editor, Textbook on Public health and Community Medicine, Section 11: 225; p-1275.