

THE PREVALENCE OF SILICOSIS AMONG CHINESE TOMBSTONE MAKERS IN MALAYSIA

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INTRODUCTION:

SILICOSIS occurring among stone cutters has been well documented in Literature (Ahlmarm *et al.*, 1960, Futherland and Bryson, 1930), whereas silicosis occurring especially among workers of the tombstone making profession has less frequently been described.

The custom of using tombstones, made of granite, for the graves, is very predominant among the Chinese in Malaysia. Even the Malays use granite tombstones, which are much smaller in size, but they are also made by the Chinese. Most Indians do not use tombstones as they being mostly Hindus, cremate their dead.

It is estimated that approximately 250 tombstone making industrial establishments, employing about 1,000 workers, exist in Malaysia. All the workers are traditionally Chinese and almost all males. Most of the establishments are family concerns, with hardly any hired labour. The father usually starts the business and the sons and other relatives join in. Some originally learnt the trade in China and then migrated here. Once the worker joins this profession he seldom leaves and this accounts for a stable population, with long standing exposures. The stone most commonly used is granite and the silica content of this is approximately 76%. The granite slabs are manually cut into the required size (2 feet by 3 feet). The surface is then polished by hand and finally the inscriptions are carried out. All of these are "dry" processes. Modernisation has brought in motorised cutting saws which generate more fine (dry) dust particles.

The majority of the establishments are located in crowded surroundings. They are small temporary sheds which are sandwiched among other similar neighbouring sheds. The rear sections of some of them are used as dwellings, for the family. The status of lighting and ventilation is invariably poor. No personal protective equipment is being used by any of the workers.

METHODOLOGY AND MATERIAL:

A pilot study was done among all the tombstone workers from establishments located in or near three major urban centres, namely Penang, Kuala Lumpur and Malacca. The Bukit Mertajam District, in Penang State is the largest producer of tombstones in the country and exports them to many other parts of the country. The trade flourishes here since the quality of granite is famed to be the best. Chest x-rays of all the workers were examined.

RESULTS:

119 workers were included in the study which showed that 43 workers (36%) had silicosis. 80% of the workers with 15 or more years of exposure also revealed signs of silicosis (Table I). 2 cases of silicosis were seen in the below 20 years age group. (17%) and 7 cases in the 50+ years age group (78%) (Table II).

5 of the workers had first started working at this trade between the ages of 12 and 13 years. There was one clerk who had silicosis, even though he had never made any tombstones. His "office" was just a desk, being situated in a corner of the dusty workshop.

Table I
The prevalence of silicosis among tombstone workers according to the duration of exposure

Exposure in years	No Silicosis		Silicosis		Total No. of workers
	No.	%	No.	%	
1 - 4	33	89	4	11	37
5 - 9	33	73	12	27	45
10 - 14	5	42	7	58	12
15 - 19	1	20	4	80	5
20 +	4	20	16	80	20
Total	76	64%	43	36%	119

Table II
The prevalence of silicosis among tombstone workers according to age

Age in years	No Silicosis		Silicosis		Total No. of workers
	No.	%	No.	%	
<20	10	83	2	17	12
20 - 29	54	83	11	17	65
30 - 39	8	36	14	64	22
40 - 49	2	18	9	82	11
50 +	2	22	7	78	9

Table III shows the results of the interpretations of the 43 x-ray's diagnosed as silicosis. More than 50% of the x-rays showed opacities larger than 1.5 mm. and approximately 60% had numerous

opacities occupying both lung fields (i.e. category 2 and 3).

7 of the 43 workers with silicosis (17%) had radiological lesions suggestive of pulmonary tuberculosis. Two of them were actually on antituberculous therapy, at the time of the survey. The prevalence rate of pulmonary tuberculosis among the tombstone workers was found to be three times that of the general population, conforming to the well known fact that silicosis predisposes to tuberculosis (Steele, 1970).

DISCUSSION:

The hygienic conditions in these workshops are poor. The introduction of more modern techniques like dry cutting with machine saws have only aggravated the amount of fine dust generated into the atmosphere. No preventive measures exist. Several constraints, which hinder the introduction of suitable control measures, are faced e.g.:

- (i) The health risks are not appreciated by the workers;
- (ii) The rate of literacy among them is low which makes it difficult to obtain an effect by ordinary methods of information.
- (iii) Most of these small private family undertakings are not licensed or under the pervue of the law.
- (iv) Their financial status does not allow expensive control installations.

The main recommendations for the improvement of the situation include:-

- (i) Health education, on work hazards, of these workers, based on personal contacts.

Table III
Interpretation of chest x-ray according to the ILO classification (1971). Category 1 - III: Degree of profusion of opacities. Size of opacities: p = less than 1.5 mm, q = 1.5-3 mm, r = 3-10 mm, A,B,C = large opacities.

Type	Category I			Profusion Category II			Category III			%
	1/0	1/1	1/2	2/1	2/2	2/3	3/2	3/3	Total	
p	4	3	8	3	3				21	49
q			3	4	4	4			15	35
r							1	2	3	6.7
A				1		1			2	4.7
B						1			1	2.3
C								1	1	2.3
Total	4	3	11	8	7	6	1	3	43	100
%	9.1	6.8	26	19	16	14	2.3	6.8	100	

- (ii) Bringing more of them under legislative jurisdiction, through local council by-laws etc.
- (iii) Free x-ray of the chest every 3 years, to be done by the Government hospitals.
- (iv) To introduce cheap and effective control measures on a priority and co-operative basis, e.g.: "wet" cutting and polishing, optional use of "natural" ventilation and personal protective equipment.

SUMMARY:

A pilot study of 119 tombstone workers showed that 36% of them had silicosis. 80% of the workers with more than 15 years of exposure and 11% with less than 5 years of exposure had silicosis. 17% of these workers had suffered from tuberculosis. This is evidently a very dangerous trade, from the occupational health point of view, and efforts should be made to improve the working conditions. These would include regular inspections of the work places,

health education of the workers and an x-ray of the chest for each worker, every 3 years.

ACKNOWLEDGEMENTS:

We would like to thank Dr. Raja Ahmad Noordin, the Director General of Health for his support and permission to publish this article and the radiologists Dr. Hussein bin Ghani and Dr. Narinder Singh, for their assistance in reading the x-rays.

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