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1. INTRODUCTION

1.1 Background

Silicosis is the commonest and most widespread form of pneumoconiosis. The etiology of silicosis has been well known, though attempts were made to standardize the diagnostic criteria, there are still differences in setting criteria for diagnosis and compensation purposes in different parts of the world. Little progress was made with respect to specific treatment. Traditionally diagnosis was based on occupational and medical history, signs and symptoms of disease, physical and chest X-ray examination. Since there is no effective treatment of silicosis, the prevention of silicosis is particularly important. Preventive measures could be divided into engineering control, hygiene monitoring and medical prevention.

Well known engineering control methods are wet suppression, enclosure, local exhaust ventilation, general ventilation, material substitution, general housekeeping and personal protection. Hygiene monitoring of dust level at the worksites provides data to regulate dust concentrations below recommended permissible level. Medical prevention consists of a medical examination and chest X-ray at regular intervals based on the risk level of workers and worksites. Persons suffering from silicosis or other lung diseases are generally removed from the dusty environment and assigned to other non-dusty jobs.

In order to implement the preventive measure and make control feasible, it is important to consider management attitude and the cost involved. Cost and benefit are the main concerns for factory or plant managers. It is not easy to convince a manager of a construction company to purchase expensive protective equipment as a control measure against harmful dusts unless he sees workers' health and safety as relevant to the cost benefit equation. However management attitude towards safety and health controls of workers is extremely important. Recent studies of Harber et al² indicated that 'the ability to use respirator safely and effectively may well be determined by a combination of physiologic, psychological and subjective factors'. Related studies like Dedobheller and German's¹ report on "Safety Practice in Construction Industry" showed that availability of safety equipment did not have association with the safety practice of the workers. Instead, worker's attitude towards safety performance and worker's perception of control over their own safety on the job were found significantly related to their perception of management's attitude towards safety practice and foreman's safety enforcement.' Apart from defining the health hazards and the appropriate preventive measure to adopt, the main task in the process of prevention is to increase the compliance of both employers and employees and to improve their cooperation. In the prevention of silicosis the main task in Hong Kong is education and training of the workforce to improve compliance to established preventive measures.

In Hong Kong, the preventive measure started way back to 1956 as the first confirmed cases of silicosis were reported. In 1964 Lawrie reported the dust control methods applied to Hong Kong. He suggested two major requirements, firstly the installation of local exhaust ventilation equipment to control dust generated by the rock and stone industries and secondly, training of a sufficient number of people to ensure that the dangerous dusts could be suppressed. After Lawrie's report on dust control, the Hong Kong Government took initial steps in organizing the interdepartmental committee on silicosis to tackle the problems of silicosis locally. Subsequently many 'small permit' quarries which were sub-standard in nature were phased out. The Pneumoconiosis Compensation Ordinance was established in 1981 and it became very important milestone in the history of silicosis in Hong Kong. On 1976, Shing, Chan and Allan presented a paper entitled 'A survey of cases notified, on a voluntary basis, as silicosis in Hong Kong'. This was a report on the cases of silicosis notified from 1956 to 1975. There was a total 562 cases. 358 were studied and 331 (92.5%) had history of having worked in quarries or construction sites or both. A report entitled 'The Control and Compensation of Pneumoconiosis in Hong Kong' was also presented locally by T.K.W. Ng⁷ in 1976 in the Joint Meeting of the Society of Occupational Medicine and the American College of Chest Physicians. It recommended ways of controlling harmful dusts such as using newer machines, training of occupational hygienists, dust counting, prohibiting blasting process from using materials containing free silica and local exhaustion to catch the dust. In compensation of affected workers, the report suggested that the government should be the insurer, the problems of control and compensation should be tackled together. The importance of continuing research was stressed in the field of Pneumoconiosis in Hong Kong - the need of a team for studying its epidemiology, control and compensation.

Ten years later, T.P. Ng^{7,8,9,10} published several research papers related to silicosis. The reports targeted on the high risk population groups such as gemstone workers, jade workers, caisson construction workers and granite quarry construction workers. The reports confirmed silicosis as the major occupational health hazard in Hong Kong. In the early 80's many important events occurred locally; legislation of compensation laws for pneumoconiosis, silicosis made a compulsory notification disease, the establishment of Pneumoconiosis Compensation Fund Board. In 1984 a report by Lam⁵ summarized that there were less than 20 cases of silicosis reported in Hong Kong in the 1960's. From the mid 1970's onwards the annual incidence rose suddenly to about 200. Then in 1980 it again rose abruptly to about 500. These two peaks were the results of review of the notification system and establishment of Pneumoconiosis Compensation Ordinance respectively.

In 1983, an epidemiology study on the problems of silicosis in mines, quarries and construction sites was conducted by Labour Department. The aim was to identify and assess the possible silicosis hazards, to introduce measure of environmental monitoring

as well as surveillance of workers. This study showed that workers involved in caisson, site formation and quarry were at highest risk of contracting silicosis. The prevalence among those working in buildings and superstructures were found to be relatively low because they were usually not exposed to silica dust. The highest prevalence was noted in rock drillers and rock excavation workers (28%), followed by underground caisson workers (22%) and crusher workers (6%).

1.2 Introduction to present study

Silicosis has been the most important occupational pulmonary disease in Hong Kong for the past 3 decades. Although etiology of silicosis has been well documented, there is no effective medical treatment for the silicotic patients. The need for primary prevention is obvious. This would include dust reduction at the worksites, and education of both employees and employers on the hazards and control of silicosis. From an educational perspective, health education should be tailored to meet the needs which were built upon the present state of knowledge, attitude and practice (KAP) of the workforce at risk. This study is the first of its kind in Hong Kong designed to examine the present state of KAP in the population exposed to silica dust in the course of work. The findings of this study can be regarded as the baseline information for the development and implementation of health education programme for the protection of workers at risk of silicosis in Hong Kong.

The selection of study population for the present survey was based on the results of the 1983's epidemiology study of silicosis prevalence in Hong Kong conducted by the Labour Department. The population was divided into construction and quarry workers. Since almost all of the silicosis cases reported in construction industry were from foundation work, the study of construction workers was therefore confined to those workers engaged in caisson, demolition and site formation activities. On the other hand the study of quarry workers would involve all workers working in quarry. This survey was conducted during June 1989 to July 1990.

2. OBJECTIVES

To study the knowledge, attitude and practice of construction and quarry workers regarding silicosis and its control in Hong Kong.