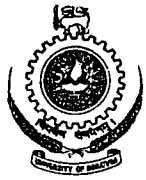

Statistical Analysis and Modeling of Factors Influencing Lung Cancer

Final Report

The Dissertation submitted for the

Degree of

MASTER OF SCIENCE

Department of Mathematics

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Master of Science (Full Time)

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DECLARATION

I certify that the dissertation entitled "**STATISTICAL ANALYSIS AND MODELING OF FACTORS INFLUENCING LUNG CANCERS IN SRI LANKA**" is entirely my own work. It has not been accepted for any degree and it is not being submitted for any other degree.

Candidate *UOM Verified Signature*

A.N. Ekanayake Signature :.....

Date :. 01/03/05.....

Supervisor *UOM Verified Signature*

Dr. M. Indralingam Signature :.....

Date :. 1/3/05.....

ABSTRACT

Statistics show that lung cancer occupies the third position among the incidence rates of cancers in Sri Lankan males and this rate is increasing yearly. This research is focused on two main areas. These are to find factors associated with lung cancers and study on time to death after detection of a lung cancer, known as the survival time.

Data collection was done at Cancer Institute, Maharagama (CIM) which is the largest hospital for treatment for the disease in Sri Lanka. Three sources of data have helped in this research study. First one was data in summary format at the CIM. Second was file belongs to each of the patients. Third was the patient's detail form, which is filled by a patient. All together two hundred and sixty two lung cancer patients have come to CIM, in the study period from 1st January to 31st December 2002.

Findings of this research are as follows. Smoking is the main risk factor for lung cancers. People who do occupations in areas uncovered for polluted air have high risk for lung cancer. There is a genetic effect for lung cancer. Consuming alcohol and chewing betel are also considerable factors for lung cancer. Having Tuberculosis is also risk factor for lung cancer. Among four types of lung cancer viz.; Adenocarcinoma, Squamous cell carcinoma, Small cell carcinoma and Large cell carcinoma, the most common types in Sri Lanka are Adenocarcinoma and Squamous cell carcinoma. Age, sex, religion and smoking habit of the patient have high relationship with those two types of lung cancer. A male person with age greater than 48 years having smoking habit is more susceptible to Squamous cell carcinoma than for Adenocarcinoma.

This research shows that the mean survival time of lung cancer patient is approximately 6 months. Treatment given at Cancer Institute, Stage of diagnosis and sex of the patient affect survival time. Treatment mixture reduces risk of death by half compared to single treatment. Our research shows that of a patient is diagnosed for a lung cancer in extended stage, he/she has eleven times more in risk of death than a patient with localized stage. Risk of death for males is three times more than females.

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