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EPIDEMIOLOGICAL INDICES FOR BREAST CANCER IN SOUTH INDIAN POPULATION – A NOTE

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ABSTRACT
Epidemiology is a scientific method of finding and analyzing the various risk factors and their combination influence in the manifestation of a particular disease. Cancer epidemiology refers to the study of cancer patterns and cancer causation. For cancer disease of any category the genetic mutations and environmental causes (carcinogens) have been well established. Epidemiological study of the various risk factors in different parts of the world, in different ethnic populations in different local haplo group of geographical locales has revealed the pattern of cancer incidence and mortality. A markedly declining trend due to awareness of risk factors in cancer incidence all over the world is the outcome of the above cancer epidemiology.

INTRODUCTION

Cancer epidemiology refers to the study of cancer patterns and cancer causation. By definition epidemiology is a scientific method of measuring events occurring in communities. It analyses and interprets the events in order to identify the relationships between them and to explain the causes and outcomes of a disease.

Epidemiological Studies

For several human diseases including cancer the epidemiological data have been used and employed to solve the disease problems. Though genetic basis and cause for cancer has been established in familial pedigree investigations and through mutations of the specific core genes viz., proto oncogenes and cancer suppressor genes and also by the frequencies of single nucleotide polymorphisms (SNPs) in the mitochondrial genome as well as in the down line gene sequences of nuclear genome of both familial and non-familial individuals, the epidemiological studies help to learn the changing pattern of cancer incidence and mortality in different parts of the world, the predis-posing risk factors and the potential prevention strategies in view of the impending risks that prevail in a geographic population and/or a haplogroup. Way back from 1895 to 2000 a number of studies have elucidated the nuances of epidemiological investigations. Various models predict the risk of developing the cancer, in order to enable interventional prevention, a preferable alternative to treatment of established cases of cancer. Models like Gails and Tyre-Cuzicks have explained risk factors that were associated to breast cancer disease [1&2]. Gails risk model has taken into account current age at menarche, first live birth number of breast biopsy for

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epidemiological consideration. Gails model has modest discriminatory value for the individual women and may not be helpful in decision making with regards to whether to take tamoxifan for prevention [3&4]. A large number of risk factors are not considered by the Gail model and it may only provide partial explanation. The Tyre-Cuzicks model attributed height, weight biometrics, presence of affected relatives, second degree relatives and details about unilateral and/or bilateral breast cancer in the past relatives towards risk analysis. This model was especially found to be more relevant to women seeking risk assessment in anticipation of a prevention intervention than the Gail model which is based on a screening cohort. This model was reported to be superior to Gails. However the model is also beset with assessment difficulties as it fails to take into account some important prognostic risk factors. Despite these models and such studies, more information through epidemiology seem to be pertinent to add new insights, in view of the shortcomings of various study designs, change in the life style of population as a sequel to economic upliftment or the otherwise shortage of economy, environmental pollution risks of potentially harmful carcinogenic substances and the self-behaviors etc.

The present investigation reports the analytical observational epidemiological findings about the potential risk factors for the breast cancer in south Indian women population. Several analytical observational studies have tested the individual informations obtained to attribute the potential risk factors for specific types of cancer. Such studies were the comparison of cancer rates among migrant population to a different country especially the migrant Asians to western countries, British migrants to Australia, Asian people to USA and population migrated to Australia [5&6]. Though the "complete cure' of cancer remains a far cry and the new jargon "cancer care' has become the modality in the treatment perspectives of cancer disease, the consistent war on cancer for over four decades, since 1970, has evidenced a markedly declining trend due to preventive efforts which are the sole outcome of cancer epidemiology. Since several prognostic/ risk factors work in tandem and in permutation combination the question remains to be answered is the following: Did anyone aware of the predisposing risk factors attempt or risk to reduce his exposure to the recognized causes of cancer? The answer to this depends on more informations and new insights to epidemiology. Analytical epidemiology is limited to two broad categories viz., cohort and case control studies. In the cohort studies information about risk factors can be obtained from both the general unaffected and the disease affected population. The data collected from unaffected may be presumptive whereas the one collected from diseased cohort is outcome oriented. The identification of two contrasting groups with reference to a given risk factor among the diseased population will enable a direct comparison of the particular cancer and its frequency/rate between the group subjected to and the other not subjected to a specific risk factor. In our investigation some new factors investigated for breast cancer manifestation from the patients include handedness, breast feeding, menarchial age, breast care procedures, breast size, breast parenchymal pattern, menopausal age, nature and rhythmicity of menstrual cycle, age of individuals, the total number of children delivered/born, lactation duration, food habits, nature of work, hereditary setting etc. Based on the observations and results through enquiry we put forward the structural equation modeling. It is a very general and a very powerful multivariate analysis technique which includes specialized versions of a number of other analysis methods as special cases. Most structural equation models can be expressed as a path diagram. Statisticians have developed procedures for testing whether a set of variances and covariances in a covariance matrix fits a special structure. Accordingly using path diagrams the various epidemiological factors showing significance in combination were plotted to the expression of the breast cancer.

CONCLUSION

Results of the statistical testing, and also parameter estimates and standard errors for numerical coefficients in the linear equations were reported. On the basis of the results it is found that the model fit to the data proving that the advancement of age, menopausal age, more number of children and the age below 40 when lactation stopped variables, cumulatively promoted the occurrence of breast cancer in the patients.

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