An Overview of Computer-Aided Medical Pedigree Drawing Systems

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ABSTRACT

The family history or pedigree is the main clinical diagnostic tool when the medical practitioner suspects an inherited or genetic component in a medical condition. Information and communication technology (ICT) has begun to play a significant role in transforming medical pedigree drawing from a 'paper and pen' into a computer-aided system approach. The system would replace the laborious and time-consuming manual creation of the pedigree or family tree charting. The system employs modules that are capable of assigning the appropriate genetic symbols, family relationships and disease status, using standardised nomenclature that is internationally accepted and used in genetic counselling. This paper discusses the background of pedigree creation in medical practice. A comparative review of various computer-aided pedigree drawing systems was performed with emphasis on the system features, editing capabilities, creation of databases, system security, ease of use and compatibility with needs of the medical profession.

Key words: Pedigree drawing system, Genetic symbols, Genetic counselling, Family history

INTRODUCTION

Genetic and inherited diseases are major medical problems in the world. As infectious diseases and malnutrition are being reduced, chronic medical disorders have emerged as the main casue of mortality and morbidity. These disorders include mental disorders, birth defects and blood diseases that are passed on from one generation to another. Many common medical conditions such as diabetes mellitus, cancers and hypercholesterolaemia have familial predisposition. According to a study in the United Kingdom, 40.3% of patients who attended clinics for examination and consultation had one or more diseases with genetic component in their family history (Rose et al., 1999). The diseases with genetic components could have an effect on the patients' health and potentially their offspring.