Abstract

Genetic and inherited diseases are major medical problems in the world. Many severe illnesses such as mental handicap, cancers and blood disorders are passed down from one generation to another. Detailed information of the family tree and its analysis are required by doctors to assist in genetic counselling and in the prevention of inherited diseases.

A research was conducted to study the domain of recording hereditary diseases and to analyse genetic risk in a family. A comparative review was done on various computer-aided pedigree drawing systems. Interviews and discussions were held to gather information to be used to define the objectives of the project. It is important to transform a ‘paper and pen’ medical pedigree drawing into a computer-aided system to save time in drawing the pedigree chart manually which is time-consuming and laborious. Currently, no such system has been developed in Malaysia. An existing system does not fulfil the Malaysian environment and the local cultural aspect. There is a need to develop a pedigree drawing system for the Malaysian context that also takes into consideration polygamy and polyandry relationships in a family. Based on the findings, a computer-aided system, PedigreePro, was designed and developed to record hereditary diseases and analyse genetic risks in a family.

PedigreePro was developed using Microsoft Windows 2000, Microsoft SQL Server 2000, Borland Delphi 7 and Adobe Photoshop 7.0. The system employs the client-server architecture in a local area network (LAN), thus facilitating the sharing of data among doctors. Upon completion of the system, integration testing and user acceptance testing were conducted.
PedigreePro assists doctors to determine at-risk genetic factors in the family; establish the mode of inheritance; estimate the genetic risk to other family members; and summarise information on an individual.