

UNIVERSITI TEKNOLOGI MARA

**PATTERN ANALYSIS OF
DIABETES MELLITUS USING
GEOGRAPHIC INFORMATION
SYSTEM (GIS): A CASE STUDY
OF HOSPITAL SULTANAH
BAHIYAH, ALOR SETAR, KEDAH**

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of the requirements for the degree of
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AUTHOR'S DECLARATION

I declare that the work in this thesis was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the results of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations or Undergraduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

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ABSTRACT

Diabetes is a group of metabolic diseases that caused by defects in insulin secretion, insulin action or both. Geographical information systems (GIS) tools can help improve our understanding of the disparities in health outcomes in society. The aim of this research is to analyse the spatial pattern of diabetes cases in Kedah relation to age, gender and race among patients of Hospital Sultanah Bahiyah from year 2014 to 2018 using Geographical Information Systems (GIS). The objective of this project to investigate the trend of diabetes cases using descriptive analysis and to analyses the pattern of diabetes cases using spatial statistics. The registration data obtained from Hospital Sultanah Bahiyah, Alor Setar's medical records to identify patients with diabetes mellitus based on socio-demographic age, race and gender. This information will be converted into a database file for use in GIS software. Then, it can identify the pattern of diabetes mellitus cases either it cluster, disperse or uniform and hotspot area with a high number of cases of diabetes mellitus. Based on this study, female has the highest number of patients in year 2016 compared to other year which is 63 (17.74%). Patients with the age between 40 to 60 years old shows the highest number of patients that was diagnosed with diabetes mellitus and Malay have the highest number of patients that have diabetes mellitus in year 2014 until 2018 followed by Chinese and Indian. Spatial autocorrelation (Moran's I) showed clustering significant with $p < 0.05$, Z score 3.488 and Moran's Index of 0.013. Hot spot areas fell on the Alor Star. This study provides examples of the use of useful GIS analysis for large data sets available in electronic medical records.

Keywords: Diabetes, Hospital Sultanah Bahiyah, Kedah, Spatial autocorrelation, Pattern Analysis, Gender, Age, Race

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