

# The Role of Geographic Information Systems in Analyzing Diabetes

M. H. Vahidnia\*<sup>1</sup>, M. Shafiei<sup>2</sup>, S. K. Alavipanah<sup>3</sup>

In recent years, development of geographic information systems (GIS) has brought many capabilities such as integrating, visualizing, managing and analyzing spatial data which could be used to control and prevent diseases and build up health plans. For example, a GIS can help to recognize which cities are exposed to disease while health centers are not sufficient to service them. Overlapping different thematic map of disease factors with geographic borderlines in a GIS can lead to discover the relationship between these factors and disease rate. Therefore, GIS helps to codification of health care policies and procedure in different regions of the country. Diabetes as a main issue of public health is one of the most important concerns in our country. Thus, in this paper the role of GIS in analyzing diabetes is discussed. Geographical visualization of patients and classification of their information are the basic features. Other important analytical capabilities for the case of diabetes are spatial interpolation, clustering point patterns, detecting ecological relationships, analyzing regional patterns and recognizing hotspots. We will cover all of these topics in this paper. In addition, based on the existing data of diabetics in Iran, the continuous map of disease rate as well as hotspot regions have been prepared and discussed.

**Keywords:** Geospatial Information System, Diabetes, Spatial Statistics.

1. Postdoctoral Researcher, Department of Remote Sensing and Geographic Information System, Faculty of Geography, University of Tehran, Tehran, Iran.

2. Graduate Student, Department of Remote Sensing and Geographic Information System, Islamic Azad University, Science and Research Yazd Branch, Yazd, Iran.

Email: maryshafiei65@gmail.com

3. Professor in Department of Remote Sensing and Geographic Information System, Faculty of Geography, University of Tehran, Iran. & Member of Unesco Chair in Interdisciplinary Studies in Diabetes.

Telephone: (+98 21) 8896 5582, Fax: (+98 21) 88964917, Email: salavipa@ut.ac.ir