Analysis of the health variables of Khorasan Razavi province based on a geographical

Leyla Meshkani[1], Mohammed Salmani Moghadam[2]

1. **Correspondence to**: MSc in Geography and Urban Planning, Department of Geography and Environmental Sciences, Faculty of Earth Sciences Shahid Beheshti University, Tehran, Iran
Tel/Fax: +98 51 4003237
Email: Too.aram@yahoo.com
2. Assistant Professor of Geography and Environmental Sciences Department, Faculty of Earth Sciences, Hakim Sabzevari University, Sabzevar, Iran

Dear Editor-in-Chief

Nowadays, the poverty is the main reason for the public illness and threats the public health. However, in the third world's economic program more funding is allocated to import or produce medical drugs instead of preventing occurring illnesses [1]. Accordingly, the aim of this study is to define indices and analyze the effective variables that control the geographical distribution of illness using tools including Expert Choice, SPSS, GIS and AHP methods. Totally, a number of 19 indices are extracted from the census 1391. These indices are classified to the group listed below: 1- Sanitary index that contains a number of subcategories such as the infectious illness per 1000 (Small pox, Diarrhea, Tuberculosis, anthrax, hepatitis, measles, Malta fever, Leprosy, Cholera and Meningitis.) Medical centers, general practitioner per 1000, physicians per 1000, paramedical recruitments per 1000, mortality ratio per 1000, rubbish producing per person 2- index of environment sustainability which includes a number of subcategories such as Unemployment rate, surplus value of the economic activities, insurance, population growth rate, migration rate, education, green spaces, fertility ratio and climatic indices. In order to unique the units of each factor the method of Analytical Heritage Process (AHP) is used. In this method based on a binary comparison of the effective factors the final weights are measured [2]. In this study, in order to define the effective factors and their relative value on a healthy of

the environment, a questionnaire is designed that contains all the indices mentioned. The questionnaires are filled by academic experts and their responses to the questions are considered. Therefore, a number of ten questionnaires sent to the experts and their opinions were considered for the AHP binary comparisons. As a result, two main indices were recognized: 1- the compound index of sustainability 2- sanitation index which refers to the health definition of the Iran's government]3[. Each one of the indices has its subcategories. In order to compare the indices and their subcategories a binary comparison with values of 1 to 9 is applied. In the next step, after the normalization of the Matrix containing the binary comparison and evaluating the weights of the factors, the final values of each

criteria evaluated using the EC software and finally the regions classified accordingly. Due to the fact that there is not a standard index for healthy of environment in the environmental sustainability framework, in order to the values of each city become comparable, a new classification is defined based on the raw values of the cities. As a result, 5 classes are defined based on the health factors. The first class has the highest rate of healthy. Sabzevar and Mashhad cities with the range of 0.049 to 0.064 are in this class. The second class includes 5 cities (Kalat, Neyshapour, Ghochan and Gonabad) in a range of 0.042 to 0.048 .Torbat Jam, Taybad, Torbatheydarie, Kashmar and Daregaz are in the third group with the values of 0.038 to 0.041. The cities in the

fourth class (Khwaf, Bakhazar, Bardskan and Bajestan) have the values of 0.03 to 0.037 that is lower than average level of healthy. Having the values 0.024 to 0.029, the class fifth has the lowest rate of healthy and incudes jaghtai, Joien, Khoshab, Takhte Golge, Serakhs, Zavare, Khalil Abad, Binalood, Rashtkhar and Meh-o-velat. The results indicate that most of cities of the Khorasan Razav province have low values of environmental healthy (37.04) and 51.21 % of this province are below the average of the Healthy and only 7.4 % of the cities have an appropriate situation. Moreover, among the Economic, Spatial, Social and sanitation indices, a close correlation observed between the Sanitation and social development indices. In fact the inappropriate environments in the suburbs of these cities are the main reason of the poverty and spread of illnesses. Therefore, it is necessary to allocate more funding for the sanitation in order to provide a clean and healthy environments. The development of the cities will lead to improvement in the sanitation of the environment and public health.

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