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کلیه و کلیه

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پزشکی، شناسی پزشکی، دومین. IHD، GIS، سخت‌های آب، بیماری‌های قلبی. www.kaums.ac.ir
Evaluating the effect of water hardness in reducing heart and kidney diseases in Samirom using the RS & GIS technologies

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Abstract:

Background: One of the important issues in the field of Medical Geology is the relationship between cardiovascular diseases (CVD) and water hardness in certain areas. The negative correlation between water hardness and the death caused by cardiovascular diseases has been observed in several countries and areas. Calcium carbonate has an antacid effect on renal defects and is used to treat Osteoporosis.

Materials and Methods: In order to verify this, using remote sensing technology, the Landsat 7 ETM+ thermal data were applied, and the areas containing mineral dolomite were identified using the images. Then by water sampling and determining its Cations and chemical properties, surveying the water resources in compliance with the dolomitic areas and studying the statistics, the number of renal and cardiovascular patients was determined.

Results: It was determined that the percentage of aforesaid diseases toward the region’s population—that is 30 thousand—due to the low levels of Calcium and Magnesium in water than the optimal ratio of these elements in water, is significant.

Conclusion: The amount of renal and cardiovascular diseases in the area expressed in terms of percent are 1.13 and 1.85, respectively.

Keywords: Remote sensing, Medical Geology, Dolomite, GIS, Water hardness, Renal diseases, IHD