FUZZY MEASURE OF MULTIPLE RISK FACTORS IN THE PREDICTION OF OSTEOPOROTIC FRACTURES IN INDIAN WOMEN

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Abstract

It has been claimed that osteoporosis is becoming more common in India although its prevalence in the country has not been established. Because of the lack of facilities for measurement of Bone Mineral Density (BMD), very little population-based research on osteoporosis has been done in India. Progress in the study of osteoporosis can only be made if it's symptoms can be diagnosed before bone fractures occur. However, osteoporotic fractures still remain unpredicted at large because the conditions leading to such fractures are due to multiple factors which are partially understood and incomplete. While the measurement of Bone Mineral Density (BMD) are primarily important in the evaluation and prediction of patients at risk of osteoporosis, patients' access to such measurement is not always feasible. This paper utilizes the theory of fuzzy measures to study the interactions of multiple fractures-risk factors. In a particular case study, we identified several subsets of risk factors that both have higher impact factors than those with the inclusion of BMD measurement and can be easily accessed by routine clinical practice. The results have shown a potential application of the fuzzy model for identifying the importance of the interactions of multiple risk factors being not associated with BMD measurements.