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A Fuzzy Multiobjective Model for Bed Allocation Optimized by Artificial Bee Colony Algorithm

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Abstract : With the development of health care systems competition, hospitals face more and more pressures. Meanwhile, resource allocation has a vital effect on achieving competitive advantages in hospitals. Selecting the appropriate number of beds is one of the most important sections in hospital management. However, in real situation, bed allocation selection is a multiple objective problem about different items with vagueness and randomness of the data. It is very complex. Hence, research about bed allocation problem is relatively scarce under considering multiple departments, nursing hours, and stochastic information about arrival and service of patients. In this paper, we develop a fuzzy multiobjective bed allocation model for overcoming uncertainty and multiple departments. Fuzzy objectives and weights are simultaneously applied to help the managers to select the suitable beds about different departments. The proposed model is solved by using Artificial Bee Colony (ABC), which is a very effective algorithm. The paper describes an application of the model, dealing with a public hospital in Iraq. The results related that fuzzy multi-objective model was presented suitable framework for bed allocation and optimum use.

Keywords : bed allocation problem, fuzzy logic, artificial bee colony, multi-objective optimization
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