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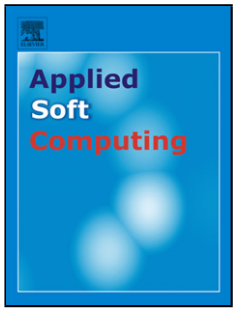

Title: Simulated Annealing for a Multi-Level Nurse Rostering Problem in Hemodialysis Service

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Simulated Annealing for a Multi-Level Nurse Rostering Problem in Hemodialysis Service

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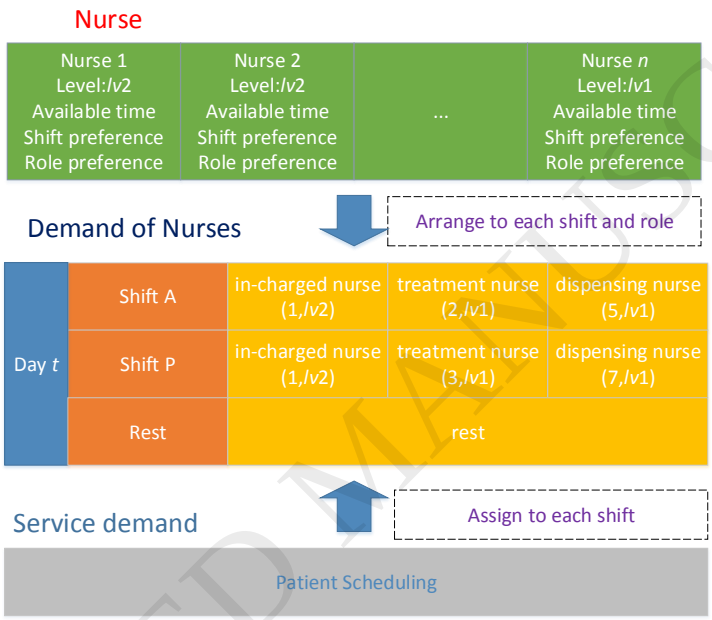
Graphical abstract



An effective simulated annealing algorithm (SA) based on a fast heuristic algorithm is developed for solving a multi-level nurse rostering problem in hemodialysis service (MLHSNRP) compared with a hybrid artificial bee colony algorithm (HABC). The problem is motivated by real cases in some hemodialysis center in Wuhan, China. The results of computational experiments show that SA has a better performance as a whole, SA and HABC respectively have advantages on problems of different scales, and SA runs faster than HABC.

Highlights

- Multi-level nurse rostering in hemodialysis service with preference on roles and shifts.
- A synthetic objective 0-1 integer programming model formulated.
- A fast heuristics algorithm developed.
- A simulated annealing algorithm with three neighborhood structures.

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