





 Current Issue Browse Issues Search About this Journal Instruction to Authors Online Submission Subscription Contact Us RSS Feed

Acta Medica Iranica

2009;47(4) : 89

Original Article

Designing Nursing Work Scheduler Intelligent System Based on Genetic Algorithm


Darvish* A (MSc.)- Towhidkhah** F (Ph.D) - Khayati*** R (Ph.D) - Keyhanian**** S (B.Sc).

* MSc. in Nursing, Dept. of Medical and Surgical Nursing, School of Nursing and Midwifery, Tehran University of Medical Sciences, Tehran, Iran.

** Associate Professor, Dept. of Biomedical Engineering, , Amirkabir University of Technology, Tehran, Iran.

*** Assistant Professor, Dept. of Biomedical Engineering, , Shahed University, Tehran, Iran.

**** Industrial Engineering Student, Planning and System Analysis, Faculty of Industrial Engineering, University of Tehran, Tehran, Iran.

 Corresponding Author:

Darvish A

e-mail: sedarvish@yahoo.com

Received: December 29,2009

Accept : April 24,2009

Available online: October 12,2009

Abstract:

Background & Aim: Adjustment of nursing scheduling for specific periods of time to meet the needs of hospitals, nurses and patients is a time-consuming and challenging task for nursing managers. The aim of this study was to design a nursing scheduler system based on genetic algorithm to render better services to patients and overcome traditional scheduling problems.

Methods & Materials: In this applied research, we designed software based on the data derived from interviews with the personnel of two pediatric wards. We transformed the expert entity planning procedure to mathematic function using Genetic Algorithm Programming and create the schedule. We compared the system-designed schedule with the schedule that was written by experts in MATLAB software.


Results: The results showed that the system-designed schedule resulted in 57% reduction in the arrangement costs and 93% time saving for nursing managers in comparison with the expert-designed schedule during 6 months.

Conclusion: System-designed schedule had higher efficiency than the expert-designed one. It entailed higher efficiency of managers and higher job satisfaction of nurses. It also reduced problems of working with paper schedules. Nurses' preferences and hospital requirements could be taking into account, as well. Since we used the limited data gathered from two selected wards for writing the program, the program should be modified based on the data provided from other wards. Further studies are needed to design similar systems with more details in order that it can be available in various wards of hospitals.

Keywords:

personnel staffing and scheduling, nursing, genetic, algorithms

TUMS ID: 14265

Full Text HTML  Full Text PDF  284 kB

