## عنوان مقاله:

Developing a fuzzy programming model for improving outpatient appointment scheduling

## محل انتشار:

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## خلاصه مقاله:

Appointment scheduling for outpatient services is a challenge in the healthcare sector. For addressing this challenge, most studies assumed that patients' unpunctuality and the duration of service have constant values or a specific probability distribution function. Consequently, there is a research gap to consider the uncertainty of both patients' unpunctuality and the duration of service in terms of fuzzy sets. Therefore, this research aims to consider fuzzy values for both unpunctuality and duration of service have to improve an outpatient appointment scheduling (the time interval between two patients) in a referral clinic with the objective of reducing the total weight of waiting time, idle time, and overtime. Four different fuzzy linear programming models and ۳۶ scenarios have been developed based on the show, no-show of patients, single-book, and double-book by using GAMS software. These four models are as follows: (۱) probability of no-show equal to zero, (۲) probability of no-show equal to ۲۰\%, (۳) probability of no-show equal to zero and with double-book factor, and (۴) probability of no-show equal to ۲۰\% and with double-book factor. The results of the first, second, third, and fourth models, respectively, present the scenarios considering ۱۰, ۵, ۱۵, and ۱۵ minutes for the time interval between two patients that have the minimum total weight of patient waiting times, physician idle times, and physician overtime. By considering these findings, the investigated referral clinic can improve its appointment system's performance. Moreover, other similar clinics can apply the proposed model for improving their appointment systems' performance.

## کلمات کلیدی:

Appointment scheduling, Fuzzy programming, unpunctuality, no-show, healthcare