

Abstract- This paper studies a scheduling problem in which patients request appointments at specific future days within a specialty definite time window. This research is inspired by a study of Ophthalmology scheduling practices. In this hospital, patients do not know in advance neither the proximate time at which they will be seen by the doctor nor the total amount of time to be spent at the reference hospital. In this article, an optimal distribution of patients during the designing scheduling process has been performed. The study has improved other models done by the author considering, availability of medical equipment and the calendar of every health care professional.

The optimality condition obeys to three different goals: to maximize the effective working time for health care professionals, ensuring high levels of quality of service, to give the appointments as soon as possible and to minimize the time that a patient would spend in the hospital to complete a protocol.

We formulate this problem as a Multi-Objective Integer Problem (MOIP) and compare the performance of the resulting MOIP policies with traditional practices decision rules for the diagnosis and treatment of ophthalmology diseases. We show that this method outperforms traditional methods by far. Specifically, it reduces the total diagnosis time for cataract, cornea and glaucoma diseases by 66% on average or, in other words, by roughly two hours, relative to the standard approach. Arguably, this translates into improved patient satisfaction and efficiency in the use of resources in health services.

Keywords- healthcare, tecnologia; scheduling; multi-objective integer optimization.