



Process simulation using non-clinical-data to optimize clinical care in the State Health Sector

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ABSTRACT

Introduction: Sri Lanka is a developing country, the resources in health sector is limited. This is particularly true in Outpatient Departments (OPD) and Preliminary Care Units (PCU). This can be overcome by utilizing available resources efficiently by identifying bottle necks in care delivery process. Process simulation is a popular approach used worldwide for similar purposes. Non-clinical-data in health sector i.e. waiting time and service delivery time could be used as variables in this approach. The objective of the study was to design a process simulation based on non-clinical-data for optimization of emergency care medical services in the state sector health institutions in Sri Lanka.

Methodology: An analysis of the current first contact care systems in the Accident and Orthopaedic Service (AOS) of the National Hospital of Sri Lanka and PCU at Base Hospital, Panadura was carried out to identify the temporal dimension of resource allocation for time-domain simulation. Process simulation & modelling was done in the AOS by using Arena[®] software.

Results: Congestion was observed in the OPD - AOS in the morning hours. This was mainly at the X-ray department, as 85% of total OPD patients were directed to take X-rays. There was no reduction in waiting time observed by increasing the number of doctors or pharmacists. However, there was a reduction of waiting time (from 97 minutes to 1 minute) observed by increasing X-ray stations from one to two.

Conclusions: Process simulation can be used to identify the delays in the clinical care pathway and hence, to allocate & utilize resources effectively & efficiently in hospital settings. Implementation of this process can be advantageous in developing countries like Sri Lanka, where there are limited financial resources.

Keywords: Process simulation, Resource utilization, Process modelling