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OPERATIONAL FEASIBILITY ANALYSIS OF QUEUE MANAGEMENT SYSTEM IN A DECENTRALIZED OUTPATIENT DEPARTMENT LAYOUT AT RUKMANI BIRLA HOSPITAL, JAIPUR

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INTRODUCTION

Queue Management Systems (QMS) are responsible for organizing individuals in various situations and locations within specified queue areas. The process governing the formation and progression of queues is termed "queueing theory." This theory finds applications in various settings such as doctor's offices, accessing diagnostic procedures, specialist referrals, and billing counters. Extended waiting times in hospitals, particularly in emergency rooms, can become challenging for sick patients, potentially leading to undesirable behaviors like the use of inappropriate language, making unreasonable demands, and even resorting to physical abuse [1].

The advent of the coronavirus (COVID-19) has emphasized the necessity of avoiding crowds, considering that certain diseases can be transmitted when patients and visitors are in close contact within a hospital environment. Hence, it becomes crucial to develop strategies to reduce the usual crowds observed in different hospital units, particularly in the outpatient department. Yange et al. (2020) have introduced a centralized queue control system designed for application in various areas of a hospital [2]. Implementing an alternative queue management system has the potential to minimize inconvenience for the public. The introduction of this system was prompted by individuals queuing for services at hospitals and government agencies without adhering to the estimated time for their diagnosis and treatment. Waiting for a service is inefficient, and it takes away an unreasonable amount of time from the patients' productive time. An improvement in the queuing management benefits both stakeholders through better time management utilization of the space available in hospitals [3].

In one of the studies, researchers remarked that the public clinic's biggest concern is always the long wait to be served at the outpatient counter. In comparison to the other sections, the outpatient department of the public health clinic had the most queues. Patients have frequently expressed their dissatisfaction with this circumstance. As a result, at the outpatient counter, to patient's wait time and service time as well as to build an appropriate queuing system using simulation techniques is

determined as the objective of this research [4].

RESEARCH OBJECTIVES

1. To assess the operational feasibility of QMS.
2. To evaluate the challenges for QMS implementation.
3. To document the effectiveness of QMS in improving hospital service delivery.

RESEARCH METHODOLOGY

A descriptive cross-sectional survey was conducted, which included administering questionnaires to patients attending Furthermore, observations were undertaken on the queuing model and service discipline within the general outpatient department (OPD) clinic. The questionnaire aimed to gather information on patients' demographic characteristics, the duration spent in the queue before seeing a doctor, their comfort with the Queue Management System (QMS), and their perspectives on the effectiveness and challenges associated with the QMS. A total of 86 patients participated in the survey. Staff members responsible for patient billing were also included in the survey. The automatically generated data report comprehensively captures the patient journey at each stage of the process, contributing to improved performance and providing opportunities for benchmarking.

RESULTS & DISCUSSION

Patients expressed the most positive feedback about the General Outpatient Department (OPD), particularly regarding the reduction in waiting times, effectiveness of the display system, and the preference for SMS-based tokens over paper tokens. The experiences of 86 patients were systematically analyzed to gauge their satisfaction with the Queue Management System (QMS) implemented in the hospital's OPD. A significant majority, more than 80% of patients, reported high levels of satisfaction with the QMS, while only a few expressed dissatisfactions. The challenges of crowding and extended waiting times sometimes lead to patients leaving without consulting a doctor, resulting in

dissatisfaction. Queueing models effectively represented the OPD environment, accommodating both scheduled appointments and walk-in patients. The key components of queuing systems include arrivals, servers, service principles, and the flow or routing of customers through the system. These models help describe the impact of fluctuating demand on wait times, waiting tolerance, capacity, and utilization measures.

According to a study, when wait times keep on increasing, the number of patients who leave without being seen (LWBS) also increase as well. Patients leaving the ED without being assessed by a clinician are having poorer health outcomes and having risk, which costs hospitals money and reduces patient satisfaction. According to another study the greater the accessibility, the higher the level of patient happiness. Following an analysis, it was discovered that more than half (62%) of patients agreed that the waiting time for receiving treatment from a doctor is appropriate for them, implying that the accessibility for receiving a treatment card is poor, i.e., 38% of patients disagreed with the statement that the waiting time for receiving the OPD is appropriate for them. As a result, the hospital administration must pay attention to this issue. Similar outcomes were reported in a study conducted by Andrabi Syed Arshad to gauge patient satisfaction in a tertiary care centre, SKIMS, Soura, Srinagar. Approximately 42% of patients said the time it takes to get prescribed drugs from the pharmacy was too long for them, and that the pharmacy staff sometimes treated them unfairly while they waited.

CONCLUSION

The study found that patients were satisfied with all aspects of the system, including the display system, the message mode as a token system, time savings, and reduced re-billing time. The maximum number of respondents had very good feedback with 5 rating while just a small proportion of patients had a negative experience. In acceptability of the system to provide more information about the turn for doctor consultation, convenience of use of the system and time saving it was found to be acceptable by most of patients and staff. Some of the

limitations found were that it requires an extra manpower to introduce the patients about the system because 59.3% patients were using this system for the very first time. As the waiting time was always a major concern to patient. The majority of the patients had found this system which reduced waiting time, and reliable as the queue is managed by a virtual system and their number of consultations with the doctor can't be altered manually. Also, QMS found to fill the gap of the hospital administration should made continuous efforts based on the satisfaction level of the parameters in this patient satisfaction and operational feasibility study, to improve some aspects of the service.

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