Original Article

Reducing Patient Waiting Time in Dental Clinic According to Treatment Type

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Abstract

Introduction: The management of the hospital observed that patients on appointment and those on the queue, at times show their discontentment with the long waiting time at the hospital. Sometimes, patients goes without treatment. Hence, present study is undertaken to find out the causes leading to increased patient waiting time. **Material and Methods:** The study has been conducted in order to systematically improve patient waiting time in dental hospital in Hyderabad city. Fishbone diagram has been used to study the cause and effects. Paired t – test is used to statistically analyze the obtained data. p value <0.05 is considered as significant value. **Results:** Data so obtained reported patients waiting time from entering the hospital to initiation of the treatment is obtained as 2.01 ± 1.02 hours. The causes for long waiting time attributed to patient and clinician factors, lack of pre-telephonic appointment system, lack of trained attendants and slow sterilization process. **Conclusion:** The present study concludes that dissatisfaction with waiting time in the clinic reveals an important problem that needs to be resolved, possibly through a proper channel of appointment system.

Keywords: Patient satisfaction; Waiting time

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INTRODUCTION

Patient turnaround time is defined as the length of time from when the patient entered the outpatient clinic to the time the patient actually leaves the OPD. Patient waiting time is often one of the most frustrating parts about healthcare delivery system.[1] The amount of time a patient waits to be seen, is one factor which affects the utilization of health care services and patients perceive long waiting times as barriers to actually obtaining services.[2]Keeping patients waiting unnecessarily can be a cause of stress for both patient and doctor. Waiting time is a tangible aspect of practice that patients will use to judge health personnel, even more than their knowledge and skill.[3] The management of the hospital observed that patients on appointment and those on the queue, at times show their discontentment with the long waiting time at the hospital. Sometimes, patients even go without treatment. Hence, present study has been undertaken to find out the causes leading to increased patient waiting time.

MATERIAL AND METHODS

The study has been planned and conducted in order to systematically reduce patient waiting time in dental hospital in Hyderabad city. sample size is taken as 100 respondents with daily collection of 25 outpatients for 4 days. Detailed time study from patient arrival to initiation of treatment by specialist dentist was conducted, and the possible factors causing long patient waiting time were discussed. Patient waiting time in departments like oral surgery, periodontics, endodontics, prosthodontics, orthodontics and pedodontics has been observed. Ethical clearance has been taken

for the commencement of the study from the ethical committee of the institute. Information was collected for primary and secondary quantitative data by direct observation, interviews and check sheets. Fishbone diagram is used to study the cause and effects and Pareto analysis, Normal distribution plot, Pie diagram, bar graph, I-MR control chart has been used as tools to analyze variation. Paired t –test is used to statistically analyze the obtained data. p value <0.05 is considered as significant value.

RESULTS

Data so obtained reported patients waiting time as 2.01± 1.02 hours. Figure 1 shows fish bone diagram demonstrating the factors leading to increased patient waiting time. The causes for long waiting time are insufficient patient to dentists ratio, long patient queue with both old and new patient in same queue, long search for patients' cards due to insufficient training of staff, patients with missing OPD details, doctors arriving late to their respective chambers, less dentists at diagnosis department, doctors taking too long to attend to a patient, dentists absent without prior information, lack of pre-telephonic appointment system, patients delaying their appointment schedule and missing appointments. Target waiting time is taken as 0.5 hours to 1.0 hours. Our sample size is 100 with daily collection of 25 outpatients for 4 days. waiting time in the present study is 2.01±1.02. Figure 2, graph 1 and table 1 shows average waiting time in dental speciality departments. Figure 3 is a process capability chart which tells us the natural variability in a process. Here potential capability Cp value is 0.02 which is less than one that means statistically not good**.** Cp should always greater than 2 for good process and Cpk greater than 1.5. In below shown graph Cpk is 0.01 which means process needs to be controlled. Higher the Cp value more capable is the process. As Cp value is less than benchmark value (0.5hrs – 1.0hrs), which means process need to be improved. Higher the Cp value more capable is our process. Figure 4 shows Pareto analysis chart that analyses waiting time according to treatment type. It is a type of bar chart in which horizontal axis represent attributes of interest (defects). In our study the attributes are treatment types. Cumulative % line helps to judge the added contribution of each treatment type of departments. It basically says 80% of any effects are due to 20% of causes and vice versa. In our study 75% of waiting time for treatment is due to general dentistry, pedodontics and periodontics and

prosthodontics. Figure 5 is an individual chart that is drawn in upper half of screw, MR chart in lower half. Seeing both charts together allows us to track both process level and process variation at same time. There are three outliers which need to be bring under control. Figure 6 shows distribution plot. Based on a normal distribution with a mean of 2.01 and Standard deviation of 1.06, 5% of scores are less than or equal to our score of 3.754. Thus, our score is at the 5th percentile. Figure 7 shows probability plot, this graphical output is a plot of normal probabilities versus the data. The data approximately follow the fitted line. The Anderson-Darling test's indicates that P value obtained as 0.907 is greater than 0.005which gives the evidence that the data follow a normal distribution.

Table 1: Average waiting time in dental speciality departments

Departments	Waiting Times
General Dentistry	1.93
Periodontics	1.7
Pedodontics	1.5
Prosthodontics	1.33
Orthodontics	1
Endodontics	0.75
Oral Surgery	0.52

Table 2: One sample t- test

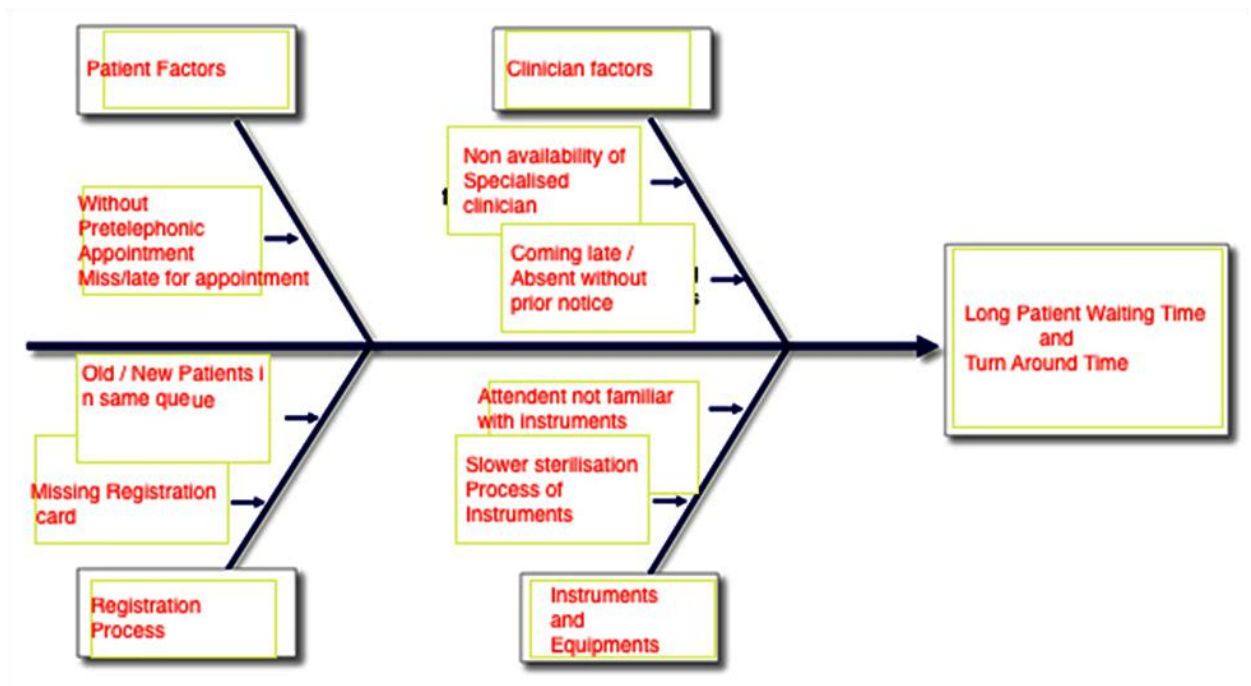| Sample Size	Mean	Standard deviation	Standard Error Mean	95% CI
100	2.010	1.020	0.102	(1.808, 2.212)

Figure 1: Fish bone diagram showing causes attributing to increases patient waiting time
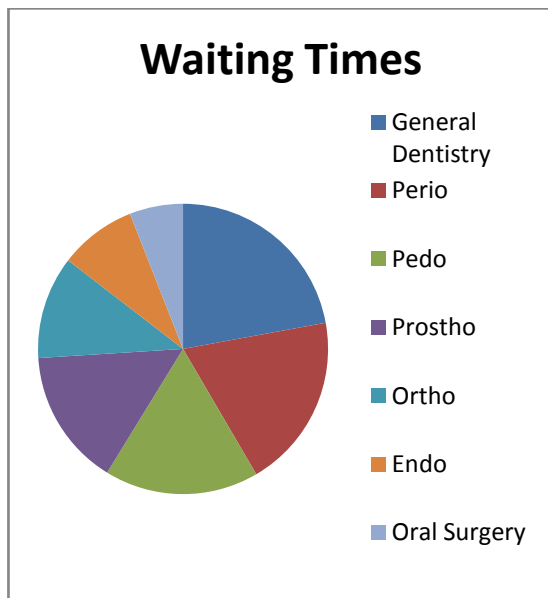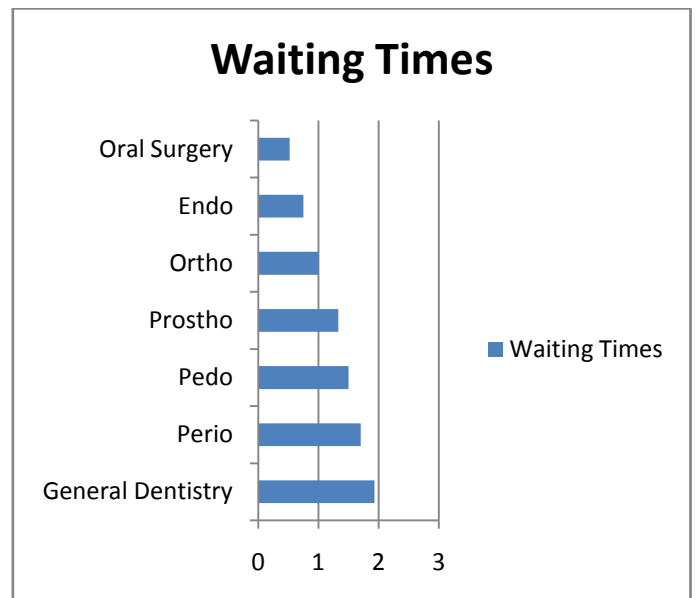

Figure 2: Pie Diagram of waiting time in dental speciality departments

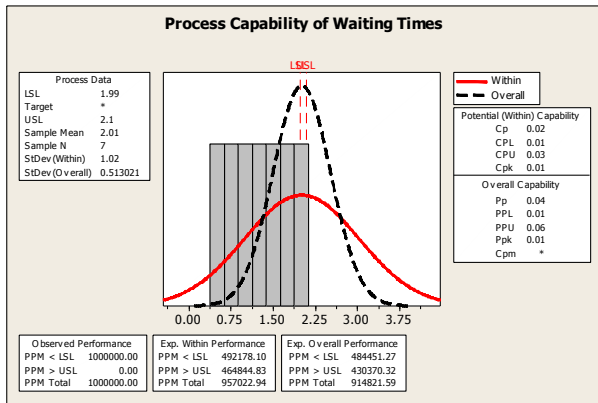**Graph 1: Bar graph showing average waiting time in dental speciality departments**

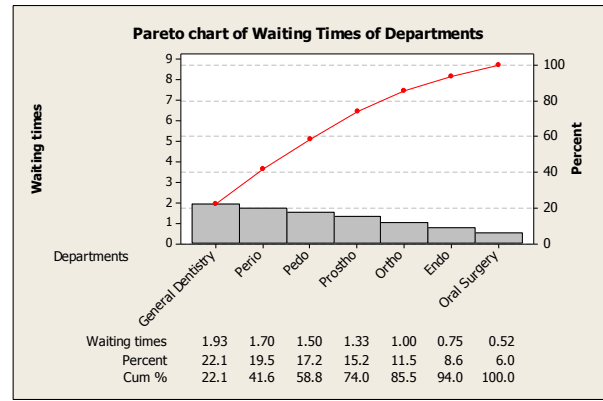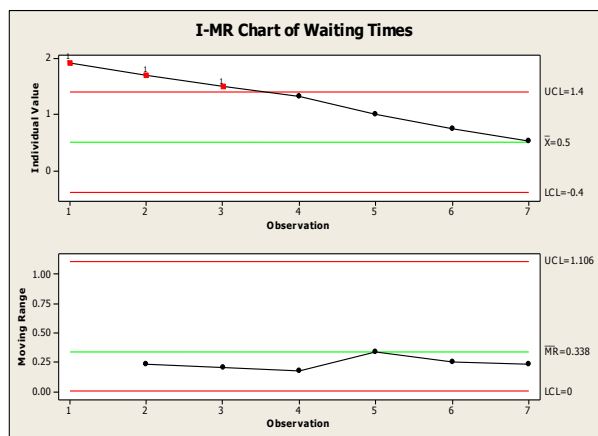**Figure 3: Process Capability of waiting times**

Figure 4: Pareto analysis chart

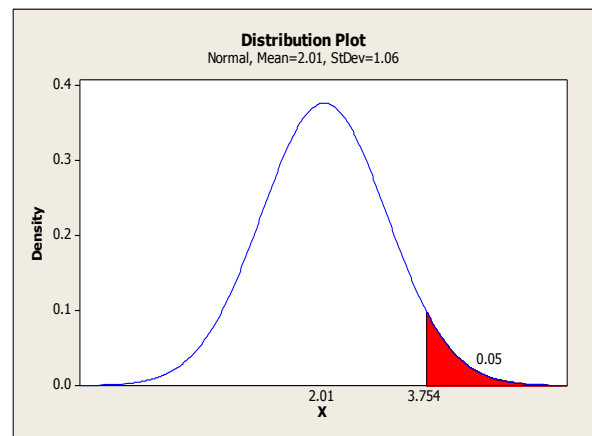**Figure 5: I-MR Chart of Waiting Times**

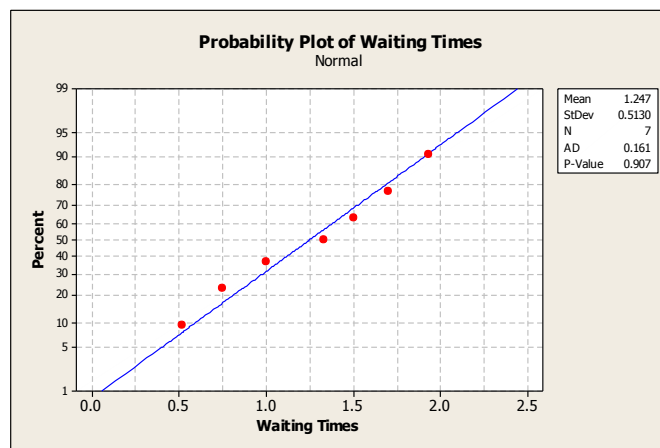**Figure 6: Distribution Plot for Waiting Times**

Figure 7: Probability plot of waiting times

DISCUSSION

Assessment of quality of the health care is necessary and compulsory for all health services, in such evaluation the participation of patients and their experience as well as their review pays important role.[4] Patients spend substantial amount of time in the waiting area for services to be delivered by physicians and other allied health professionals. The degree to which health consumers are satisfied with the care received is

strongly related to the quality of the waiting experience. Failure to incorporate consumer-driven features into the design of wait experience could lead to patient and provider dissatisfaction.[3]The present study reported average patient waiting time was 2.01± 1.02 hours. Singh H et al[5] reported that the average waiting time was 2 hours 40 minutes, the range being from under 1 hour to 6 hours; 41% of the patients were satisfied and 48% were dissatisfied with this situation. Ofili AN et al[6] conducted study in Nigeria and reported the average waiting time of patients was 2 hours 53 miniutes (173 minutes) and suggested waiting time prior to consultation as an area of concern that need to be addressed. Oche M et al[3] reported the three most common factors leading to long waiting time were high patient load, few doctors and record clerks. Pandit A et al[7] reported that the major bottleneck causing high waiting time was found to be the waiting time for consultation which was 40 minutes on an average and reported it to be one of the major causes of discontent among the OPD patients to which a fall in OPD numbers can be attributed. Camacho F et al[8] conducted a survey to find the relationship between patient's perceived waiting time and satisfaction and revealed that reduced waiting time may lead to increased patient satisfaction and greater willingness to return in primary and specialty care outpatient settings. Moreover, increased waiting time combined with reduced time spent with the physician coincide with noticeable drops in patient satisfaction. Patel JY[4] studied patient satisfaction with dental health care services and reported that long waiting time for the treatment seemed to be the main reason for patient dissatisfaction. In the present study, evaluation of obtained results according to department revealed The various countermeasures that can be put in place to address the complexity of factors that lead to the long patient waiting time in the clinic include designing a standard appointment system for the clinic, setting up a central tray set-up system for the instruments of the various dental procedures, sensitizing staff on time management and respect for patients' time and last but not least, designing and putting in place a patients' information flow system to emphasize their responsibilities in this aspect of reducing their waiting time.[9] Outpatient clinics serve an ever increasing role in the modern healthcare system. It is important that the organization, administration, and layout accurately reflect the patient population it serves.[10]

CONCLUSION

The present study concludes that dissatisfaction with waiting time in clinic reveals an important problem which has been resolved through proper channel of appointment system and thus waiting time in present study has been reduced from 2.01 ± 1.02 to 1.5 ± 0.5 by improving the process.

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