

A Study to Analyses the Impact of E- Appointment System on Waiting Time and Patient Satisfaction at Rehabilitation Center

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Abstract:

Aim: The aim of the research is to study the impact of E-appointment system on waiting time and patient satisfaction at rehabilitation center. **Research Methodology:** Cross Sectional Descriptive study. **Sampling:** Random sampling, patient attending Speech and Audio Clinic at Ashtavakra Rehabilitation Center. Sample Size of 100 Patients. **Data Collection:** Data collection is done through structured questioner. **Data analysis:** the data is analyzed using SPSS Version 21. **Result:** With the help of E-appointment System Health Care administrator can overcome the problem of thE-appointment load and can efficiently schedule thE-appointment by reducing the waiting time and increasing the patient satisfaction. **Conclusion:** E-appointment system has increased the patient satisfaction by reducing waiting time at Ashtavakra Rehabilitation Center. The waiting time of respondents has reduced by 24.7 minutes on average after its implementation. (95% CI [23.05, 26.36], ($t_{99} = 29.69$, $p < 0.001$).

Keywords: Waiting Time, Appointment System, Queue System, Scheduling System, Patient Satisfaction.

Introduction: With the increasing population, there has been proportionate increase in the number of patients seeking medical care. Delhi a largest metropolitan city, the known for possessing the advance medical health care facilities is also facing this health care load due to increasing population. (Currently as per census 2019 Delhi population is 1.90 Cr) .

In Delhi the medical facilities are availed both by the resident of the Delhi and NCR. In addition, residents of neighboring states travel to Delhi for seeking medical care, which is a very common practice. Due to increasing number of new patient, there is a need for up gradation of the processes and procedure by the health care administrator to distribute the health care load with the help of advancement in Information, Communication and Technology to assist the patients in the efficient manner. To serve the patient efficiently the fore most steps what needs to be taken care of is the-appointment scheduling. Appointment scheduling is the most important task, which need to be addressed since the increase in the patient load directly affects it and leads to long waiting hours for availing the medical facility and add on to the patient discomfort and dissatisfaction.

Today in the era of technology where almost every service is connected through web, Introduction of e-appointment system and its modules have made the patient appointment scheduling process easier and efficient by eliminating the queues, improving staff productivity, reduce patient complaint, reduce no show and improve experience for both health care administrator and the patients cost effectively.

This research is designed to analyses the impact of e- Appointment System on waiting time and patient satisfaction at Rehabilitation center.

Ethical Committee: Ashtavakra Rehabilitation Center Ethical Committee approved the study and allowed for collection of data and for its utility in the research study.

Abbreviation:

ARC – Ashtavakra Rehabilitation Center

EC – Ethical Committee

REVIEW OF LITERATURE:

Patient satisfaction is deemed one of the most important factors, which determine the success of health care facility (Joshi 2013). Patients' satisfaction with appointment booking is influenced by their ability to book at the right time with the right health service providers (Gupta D2011).

Since patient satisfaction is directly linked to the length of waiting time and its experience booking the appointment, Health care provider had tried to meet up the expectation for providing the hassle-free appointment and consultation with minimum waiting with the help of E-appointment system.

E-appointment system also called as online scheduling system is the web based application developed to increase the patient satisfaction by helping them to book appointment conveniently through web connected device with an instant booking without any human intervention.

E-appointment have benefits for everyone involved in the scheduling process, as health care administrators, health care provider which not only help in conducting their tasks more efficiently and accurately but also help patient to book their appointments quickly and more conveniently thus adding to the positive experience. (Appointment-Plus, 2012)

E-appointment scheduling has been found extremely important and most acceptable feature through various research surveys and most patients expressed to avail this service again. Zhang(2012)/

MODEL OF E- APPOINTMENT SYSTEM

Features of E- appointment System:

- Patients take E-appointments in real-time without visiting clinic.
- Patients can choose any available time slot for a particular doctor.
- Patients can cancel their appointment at any time.
- Patients get sms notifications for every successful appointment booking or cancellation. Patient get scheduled reminder alerts for appointment booking.
- Patient information is stored on cloud and can be viewed by doctor.
- Patient can book appointment online without visiting clinic.
- Patients can book appointment online at any time and from anywhere.
- Patients don't have to visit clinic for booking an appointment. This saves their time and money both.
- Patients don't have to wait in long queues for their turn.



Diagram 1: Features of E- Appointment System

Mode of Appointment: Various appointment modes are being used for booking appointment in health care sector. The conventional appointment scheduling system uses the most common mode i.e. Walk In and telephonic appointment booking, Both of these E-appointment mode are time consuming and involve human intervention. On the other hand appointment mode has enhanced after introduction of e-appointment system, It has added booking of appointment through web enabled device, through android application and web linked kiosk.

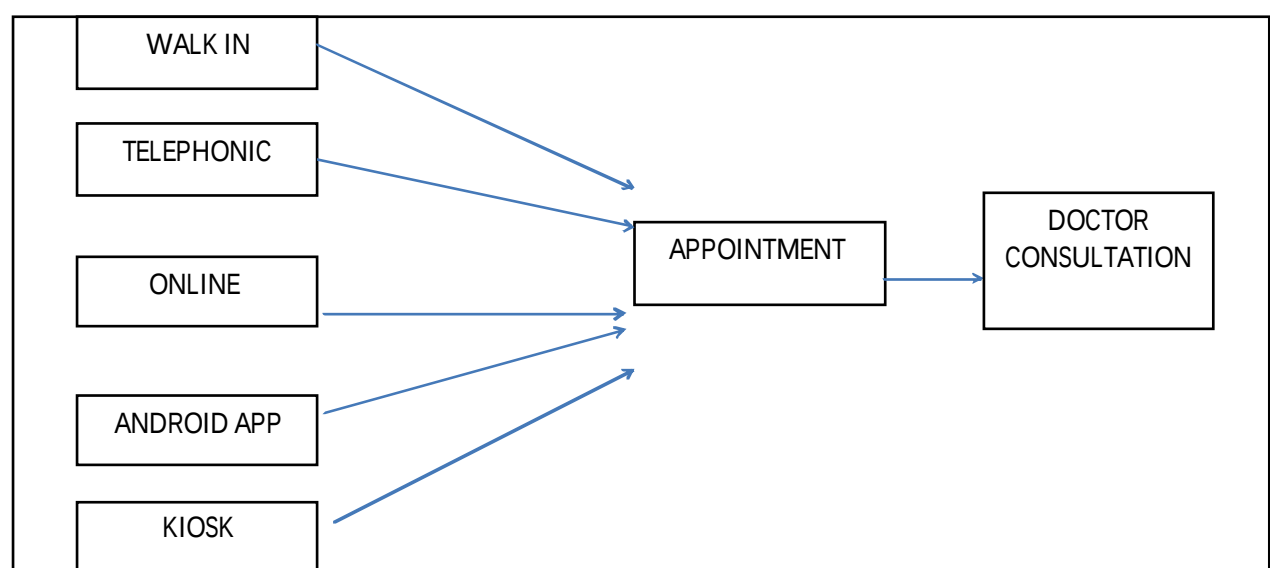
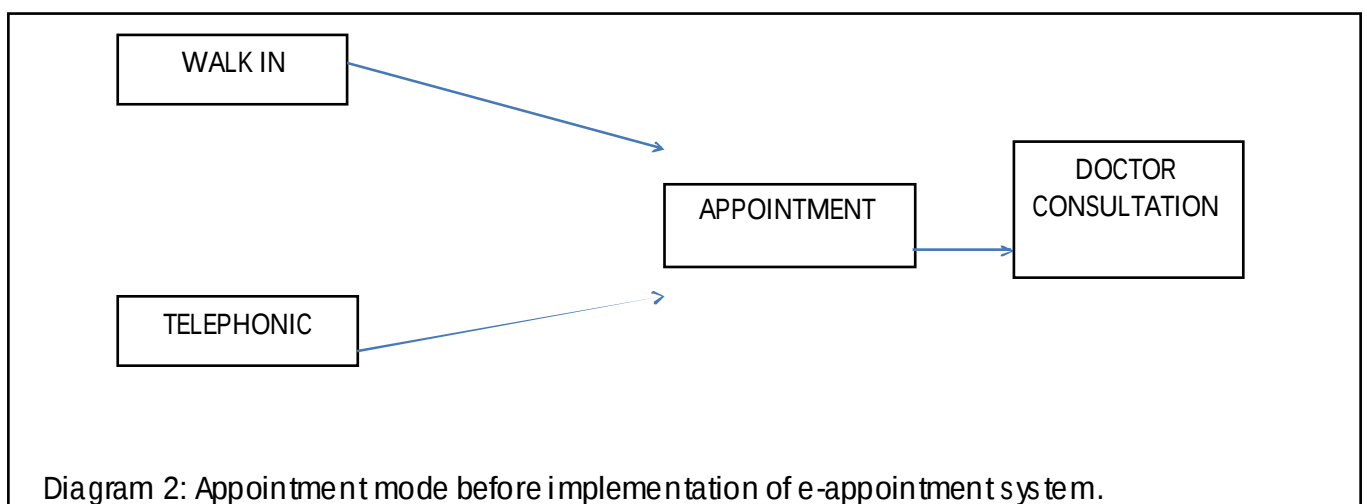


Diagram 3: Appointment mode after implementation of e-appointments system.

Aims: The aim of the research study is to analyse the impact of e- Appointment System on waiting time and patient satisfaction at Rehabilitation center.

Objectives:

- To study the impact of E-appointment system on waiting time and patient satisfaction at Ashtavakra Rehabilitation Center.
- To suggest the changes based on the feedback of the patients for further improvisation of the E-appointments system.

Research Methodology: A Cross Sectional Descriptive study.

Place Of study: Sample collection done at Ashtavakra Rehabilitation Center (A super Specialized Center for Hearing and Speech) .

Duration of Study: One Month .Period Of Survey: 1 May 2019 to 31st May 2019

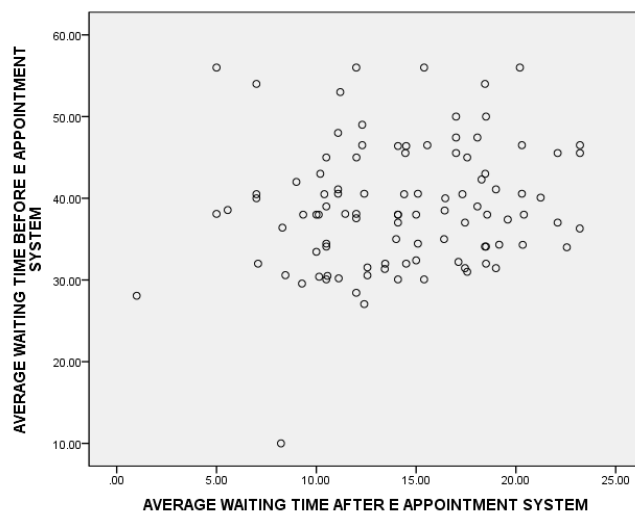
Sampling Technique: Random Sampling. Patients visiting Ashtavakra Rehabilitation Center during the period of survey except those who were critically ill.

Sample Size: The research study has been undertaken on 100 samples (patients visiting for speech therapy at Ashtavakra Rehabilitation Center) randomly irrespective of their age, sex, qualification, income out of the with 95 % level of confidence Interval and 5 % margin of error.

Data Collection Tool: Data collection is done through a structured questioner. This questionnaire to collect data is self- developed and to ensure validity of its content, item on the questionnaire were based on the result from the literature review.

Data analysis: The data collected is analyzed statistically through SPSS Version 21.

Graph 1



Normal average waiting times is plotted between 05 minutes to 50 minutes. Data is plausible since neither of the variable has any values that are way out of this normal range. It is also observed that there is substantial correlation between the variables. The graph seems to suggest that the mean waiting time before implementation of E-appointment system is near 39 minutes (vertical axis) and after Implementation of E-appointment system is reduced to 14 minutes (horizontal axis). Some respondent are denoted "outlier", but there score is not extreme enough to justify removing it from the data.

T Test

Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 AVERAGE WAITING TIME BEFORE E APPOINTMENT SYSTEM	38.9389	100	7.67856	.76786
AVERAGE WAITING TIME AFTER E APPOINTMENT SYSTEM	14.2293	100	4.64917	.46492

Paired Sample statistics N = 100, there is no missing values on the test variables and the average waiting time after implementation of the E-appointment system is 24.7 minutes lower than the average waiting time before E-appointment system .

Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 AVERAGE WAITING TIME BEFORE E APPOINTMENT SYSTEM & AVERAGE WAITING TIME AFTER E APPOINTMENT SYSTEM	100	.158	.115

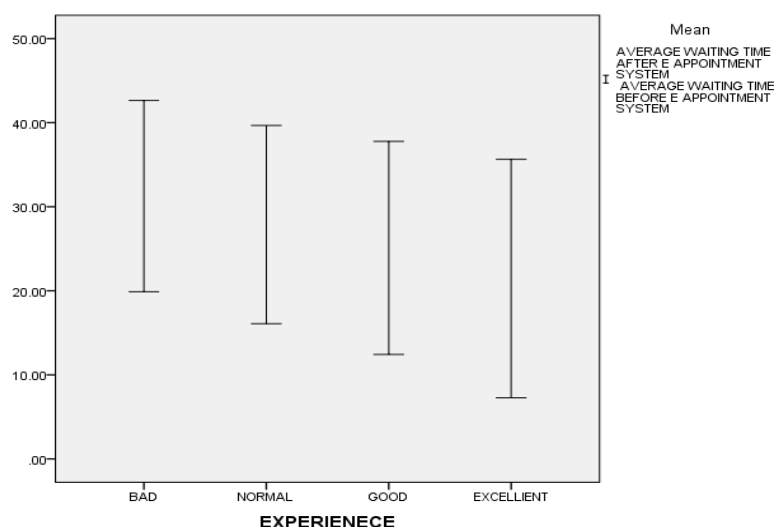
Paired Samples Test

	Paired Differences					t	df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference					
				Lower	Upper				
Pair 1	AVERAGE WAITING TIME BEFORE E APPOINTMENT SYSTEM - AVERAGE WAITING TIME AFTER E APPOINTMENT SYSTEM	24.70960	8.32249	.83225	23.05824	26.36096	29.690	99	.000

Interpretation and Discussion:

- Average Waiting time before and after implementation of E-appointment system were weakly and positively correlated ($r = 0.158$, $p < 0.001$).
- p-value denoted by "Sig. (2-tailed)" is 0.
- There was a significant difference between average waiting time before and after implementation of E-appointment system ($t_{99} = 29.69$, $p < 0.001$).
- On average, respondents waiting time is 24.7 minutes higher before implementation of E-appointment system.(95% CI [23.05, 26.36]).

Graph 2



Also average waiting time is directly proportional to the patient satisfaction. It is observed that as the average waiting time has reduced after implementation of e-appointment system, the patient satisfaction has increased. Patient experience has changed from bad to excellent.

Conclusion: It is concluded that implementation of E-appointment system has reduced the waiting time and has increased the patient satisfaction level.

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