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Punctuality of Patients and Physicians in an Outpatient Setting: Which Has a Greater Effect on Waiting Time?

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Abstract
Background: Patients' waiting time for healthcare services is identified as one of the key measurements of an effective health system. This factor has an important role in patients' satisfaction as well. One factor that is related to the waiting time is patients' punctuality.
Objectives: The objective of this study was assessing the effect of patients' and physicians' punctuality on outpatients' waiting time.
Methods: This was a cross-sectional study. The study population was outpatients that were admitted in clinics of a general non-educational hospital. 3500 samples were selected from all clinics. The sampling method was stratified randomized method. Samples were included after taking the informed consent. Data gathered by check lists that recorded the patients work flow at the clinic and the time of arrival to and departure of each station.
Results: About 34% of patients had appointment that 98.5% of them were unpunctual. The correlation of patient unpunctuality (positive and negative) and their waiting time indicated that these variables had positive correlation ($P<0.001$). Assessing the correlation of physicians' punctuality and patients' waiting time indicated that these variables also had positive correlation ($P<0.001$).
Conclusion: Appointment systems are very useful in controlling patients waiting time. This study identified that patient's unpunctuality will increase patients waiting time. By the way negative punctuality will affect waiting time more that positive punctuality. Other important findings of this study were revealing the relation of physicians' unpunctuality and patients' waiting time. Punctuality of patients and providers are very important in the performance of appointment system in outpatient settings.
Keywords: Patient Appointments, Waiting Lists, Outpatients

1. Background

In recent decades, the health care organizations have observed major changes. Costs of the health sector is growing rapidly and the complexity of processes are increasing. These changes tend to increase the demand and supply of outpatient services and number of outpatients over the past decade. So outpatient settings and services has been more concerned.[1-3] Today there are general attention to increase patient access, improve patient throughput, enhance patient satisfaction and provide high quality care in outpatient settings.[4]

A considerable amount of patients waiting time in the clinics is related to the services of physicians and other health professionals. Waiting time refers to the time a patient waits in the clinic until being visited by one of the medical staff. Studies indicated that the health consumers' satisfaction of care in outpatient settings is strongly and positively related to the quality of the waiting experience.[5]

World Health Organization (WHO) defined patient waiting time for healthcare services, as one of the key measurements of a responsive health system. This factor has an important role in patients' satisfaction as well.[6-8] Extra waiting time have no value added on the outputs of the system, because during this period, resources are idle and patients' medical condition do not change in this period.[8,9]

Barlow argues that long waiting time is a lose-lose strategy because not only patients lose their valuable time; but also hospitals lose their patients and staff experience tension and stress.[8,10] The studies indicated that waiting time is a systematic problem that not only impact on patients' satisfaction but also have negative effects on working processes of outpatient settings.[11] Waiting time may be created by different processes in the service delivery system. For better managing the waiting time the processes that lead to waiting time should be identified.

The processes and factors that create waiting time, may vary from one setting to another but most of them are similar through different settings.

One factor related to waiting time and the other metrics of clinic performance is patients' punctuality. Unpunctuality is defined as the differences between appointment time and arrival time.[12] Patients who arrive earlier or later than their appointment time, may complicate appointment policies and schedules. In turn patients who arrive on time for their outpatient appointments are very helpful in smoothing clinic performance. When more patients are punctual, clinics run smoothly and the likelihood of clinic overtime decreased.[13] There are two kinds of unpunctuality in references: negative and positive. Negative unpunctuality reflects early arrival and positive unpunctuality reflects late arrival.[12]

2. Objectives

In this study the effect of patient punctuality on waiting time was assessed. In addition, the effects of timely attendance of physician and patient punctuality on waiting time also were compared.

3. Methods

This was a cross-sectional study that was done in 2013. The study population was that were admitted outpatients in clinics of a general non-educational hospital in Tehran, Iran. The large variety of outpatient services is provided in this hospital. Patients are admitted in hospital clinics in both forms: scheduled and walk in. 3500 samples were selected from all 14 specialty clinics consist of: internal medicine, general surgery, obstetrics and gynaecology, cardiology, infectious disease, orthopaedic, urology, ear nose and throat, dermatology, ophthalmology, psychology, neurology, neurosurgery and anaesthesiology. Sample size for each clinic was considered at list 250 samples by considering confidence interval 95%, Power level 80%, standard deviation 5.12 minutes and tolerated margin of error 1 minute.[14] The sampling method was stratified randomized method.

Before data gathering, the aim and process of the study were explained to the patients and only patients who were pleased to participate in the study were included in the study so the inclusion criteria for samples were admission to hospital clinics, visiting by physicians and being content to participating in the study. We excluded patients that could not admit or receive outpatient visit or patients who did not consent to participate in the study. Data gathered by check lists that was made by considering the aim of the study and outpatient workflow at the setting. The check lists recorded the patients work flow at the clinic and the time of arrival to and departure of each station. The content validity of check lists was proved by experts and hospital authorized. Data gathering phase was done by 5 trained questioners that were familiar with the hospital and its' work flow.

SPSS 19 was used for data analysis. Different descriptive and analytical tests were used by considering the distribution of data including mean, median, standard deviation, range, paired sample t test, one way analysis of variance (ANOVA), and correlation. The level of significance was considered 0.05.

4. Results

The descriptive analysis of demographic characteristics of care receivers indicated that the mean age of the studied outpatients were 43.2 years (SD = 19.9). Most of the sample were female (63.4%), were married (78.6 %), have diploma (31.7 %) and live in Tehran (72.5%). Most of the respondents were household (45.5%) and retired (15.5%) (Table 1).

The samples were waited about 57.7 minutes (SD = 54.9) to visit the doctor. Other descriptive statistics indicated that the median of this variable was 65 minutes (range= 0-297 minutes)

Most of patients came to the clinic without appointment and about 34% of them had appointment. Most of scheduled patients indicated that their attendance time was set at the time of taking appointment. The defined time of attendance was asked from patients. The admission status of studied samples is presented in Table 2.

More investigation indicated that just 1.5 present of scheduled patients that know their entrance time, were completely punctual. The others come sooner or later (Table 3).

Analysis shows negative unpunctual patients in average 41.1 minutes come soon and positive punctual patients in average 45.0 minutes come late.

Table 1. The Demographic Characteristics of Respondents (n=3500)

Variable		Frequency	Percent
Gender	Female	2219	63.4
	Male	1281	36.6
Marriage statues	Single	532	15.2
	Married	2751	78.6
	Other	217	6.2
Education	Illiterate	644	18.4
	Elementary	780	22.3
	High school	536	15.3
	Diploma	1110	31.8
	University	423	12.2
Address	Tehran city	2537	45.3
	Tehran province	543	15.5
	Other provinces	212	6.1
Job	Household	1586	45.3
	Retired	543	15.5
	Student	212	6.1
	Employee	324	9.3
	Self-employment	461	13.2
	Unemployed	234	6.7
	Others	140	4.0

Table 2. The Admission Status of Studied Outpatients (n=3500)

Variable		Frequency	Percent
Type of admission	Walk in	2296	65.5
	Scheduled	1203	34.5
Define the time of attendance (in scheduled admission)	Yes	933	77.6
	No	45	3.7
	Don't know	60	5.0
	Without answer	165	13.7

Table 3. The situation of punctuality of patients referred to the studied outpatient setting (n=933)

Patients Punctuality	Frequency	Percent
Punctual	13	1.5
Negative unpunctual (come soon)	331	35.5
Positive unpunctual (come late)	583	62.6
missing	3	0.4

The correlation of patient unpunctuality and their waiting time indicated that these variables had positive correlation (Table 4).

In this study also the punctuality of physicians was measured. About 7.1% of physicians start their work sooner than 8:00 AM, 10.3% start their work on time and 82.6% start their work later than 8:00 AM. The correlation of physician unpunctuality and patients' waiting time indicated that these variables had positive correlation (Table 4).

5. Discussion

Waiting time is an important factor that should be considered in outpatient settings. Waiting time cannot be eliminated completely, but it can be managed and reduced.[3,15]

There are many factors affecting the waiting time of outpatients. In order to reduce waiting time these factors should be controlled. Appointment systems are very useful in controlling patients waiting time. Waiting time can be reduced by controlling patient arrival, flow in the system and by Setting the Clinic Schedule.[16]

There are certain factors that disrupt the normal order of the appointment system and affect the system's performance. These factors include the punctualities of patients and care providers.[12,17,18]

In This study, it was found that the unpunctuality of patients will increase their waiting time. Another study also revealed that reducing unpunctuality of patients decreases delays. In other words, when unpunctuality was reduced, patient waiting times after the appointment time was reduced too.[12]

By the way it appears that punctuality has more benefits. Reducing patients' unpunctuality significantly decreases the likelihood of clinic overtime. For instance a study showed that increasing patients' punctuality improved the likelihood of completing the morning schedule by 12:00 from 38 to 51%.[12]

Table 4. Correlation of the Amount of Patient and Physician Unpunctuality and Their Waiting Time

Variable		Spearman Correlation	P Value
Patient unpunctuality	Negative	+0.45	<0.001
	Positive	+0.23	<0.001
Physician unpunctuality	positive	+0.37	<0.001

The results of the study showed that negative punctuality of patients will have a more serious effect on waiting time compared to positive punctuality. It means that patients who arrive earlier than their appointment time have to wait more compared to patients who arrive late.

Patients should be informed that unpunctuality is an inappropriate behavior that negatively affects the performance of the service providing system. They should know that this is true for both positive and negative unpunctuality. However, sometimes patients do not consider negative punctuality as a negative behavior. Several researchers have verified that customers have different views about waiting before the promised service time and waiting after the promised service time. Many service providers recommend that their patients should not arrive before their appointment time and mentioned that this behavior will increase their waiting time.[19]

Other important findings of this study have revealed the relationship between physicians' lateness on patients' waiting time. It appears that the attendance of physicians is very important in on time start of clinic. Comparing the effect of physicians' and patients waiting time revealed that physicians' unpunctuality has less effect on patients' waiting times compared to the patients' negative unpunctuality and more than the patients' positive unpunctuality. Although the result of statistical analysis has been confirmed, it is believed in a system, the physicians' unpunctuality should be managed prior to the patients' unpunctuality. Because the Physicians' unpunctuality may not only interrupt the order of scheduled work directly, but it can also affect patients' behavior and punctuality and may interrupt scheduled work indirectly. It appears that Patients will trust and obey the rules of a punctual system more compared to an unpunctual system. It means that launching the system on time will encourage patients to follow the timetable and be more punctual.[20]

6. Conclusion

In closing, patients' arrival and punctuality are very important factors for smooth flow at the system and waiting time. However, it should be considered that improving the disciplines of the service provider system including providers' punctuality is in first priority.

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