

# Evaluation of patient satisfaction of the status of appointment scheduling systems in outpatient clinics: Identifying patients' needs

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## ABSTRACT

Appointment scheduling systems are potentially useful tools for enhancing the patient satisfaction. This study was conducted to inspect patient's needs and satisfaction of the current status of appointment scheduling systems in outpatient clinics. This cross-sectional study was conducted in 10 outpatient clinics with different specializations. The outpatient clinics were selected based on the stratified randomization method. Data were collected using a questionnaire from December 2016 to March 2017. The questionnaire reliability was measured with the participation of 15 patients using the test-retest method. The content validity was also evaluated by 13 experts. A total of 319 patients completed the survey. The mean score of overall patient satisfaction and the patient satisfaction of the clinic environment were  $6.73 \pm 0.16$  and  $8.30 \pm 0.12$ , respectively. The average waiting time was  $64.2 \pm 3.45$  min. The service time took on an average  $9.85 \pm 0.37$  min. The patient satisfaction of the clinic environment ( $P = 0.023$ ), length of waiting time ( $P = 0.001$ ), and duration of service time ( $P = 0.005$ ) had a statistically significant association with overall patient satisfaction. Based on the results, the need for improving overall patient satisfaction score was felt. The patient satisfaction of waiting time, service time, and clinic environment had the greatest influence on overall patient satisfaction. Furthermore, it is recommended that a web-based appointment scheduling system should be implemented.

**Key words:** Appointment scheduling system, outpatient clinics, overall patient satisfaction

## INTRODUCTION

Today, due to the increased competition in providing favorable outpatient health-care services by providers, the patient satisfaction has become one of the priorities of health centers.<sup>[1,2]</sup>

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It has been previously found that appointment scheduling systems are potentially useful tools for enhancing patient satisfaction. Appointment scheduling system as the first step in health-care provision process in outpatient setting plays an important role in patient's view.<sup>[3,4]</sup> When an appointment scheduling system is designed and implemented based on the patient's needs and wishes, it helps providers better understand patient's problems, identify the system weaknesses, increase patient satisfaction, and improve clinical outcomes.<sup>[2,5-7]</sup>

As to the best of our knowledge, few studies have been performed to identify patient's needs on scheduling

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systems. Hence, this study was conducted to inspect patient's needs and satisfaction of the current status of appointment scheduling systems in outpatient clinics.

## MATERIALS AND METHODS

This cross-sectional study was conducted in 10 outpatient clinics with different specializations in Mashhad, as the second largest city in Iran. The study was sponsored and approved by Mashhad University of Medical Sciences. The permission was obtained from the Ethics Committee with No. IR. MUMS. fm. REC1395.312.

The outpatient clinics without a web-based appointment scheduling system, which were active during the study period and located on nursing street were included in this study. The outpatient clinics were selected based on the stratified randomization method in two steps. First, all included outpatient clinics were grouped according to the type of specialty. Second, from each group, one clinic was selected randomly. Finally, of 15 selected clinics, 10 clinics were included in this study. These clinics were working only in the evening shift.

All patients participated voluntarily, and the data they contributed to this study would be kept confidential. Data were collected using a questionnaire from December 2016 to March 2017. Patients not fully completing the questionnaire or not willing to participate in this study were excluded from the study.

### Assessment tool

The assessment tool was a self-designed questionnaire based on the two references.<sup>[8,9]</sup> The questionnaire consisted of three sections as follows: patient demographic information, satisfaction information, and appointment scheduling information.

Four boxes on the top of the questionnaire were related to the third section completed by the researcher. These boxes showed appointment time, patient arrival time to the clinic, patient arrival time to doctor's room, and patient departure time from doctor's room, respectively. By these items, patient waiting times (subtracting the greater of [appointment or arrival time] from the start of consultation time) and service times (the amount of time the physician spends with the patient) were calculated.<sup>[3,4]</sup>

In the second section of the questionnaire, VAS scale was used to determine the overall patient satisfaction and satisfaction of clinic environment (Question three and four). Patients who were very satisfied scored 8–10, fairly satisfied scored 4–7, and not satisfied scored 0–3. In question one and two, patients could have chosen several options.

In the third section, satisfaction was measured on a five-point Likert-type rating scale ranging from "very bad" to "very good". The "very good" and "good" category were reported in comparison with other three categories (*neutral, bad, very bad*) to show the patient satisfaction. Furthermore, the patient's priority regarding the different types of getting an appointment was evaluated.

The questionnaire reliability was measured with the participation of 15 patients using the test-retest method by estimating Cronbach's alpha coefficient. The Cronbach's alpha for overall questionnaire was 0.79. The content validity was also evaluated by 13 experts.

Data analysis was performed using SPSS software version 20 (IBM, USA). All data were reported as the mean  $\pm$  standard deviation. Univariate analysis was used for estimating the association between overall patient satisfaction score and some related questionnaire items. A value of  $P < 0.05$  was considered as statistically significant.

## RESULTS

A total of 319 patients completed the survey. The participants were predominantly female ( $n = 234, 73.4\%$ ). About 36.4% of the patients were middle-aged (25–34-year-old). A total of 165 cases (52%) were new patients, and 154 (48%) were returning patients. The sociodemographic characteristics of the participants are shown in Table 1.

Table 2 shows the association between overall patient satisfaction score and some related items in the questionnaire. As shown in Table 2, only three items including satisfaction of the clinic environment ( $P = 0.023$ ), length of waiting time ( $P = 0.001$ ), and duration of service time ( $P = 0.005$ )

**Table 1: The sociodemographic characteristics of the participants**

Index	n (%)
Age (years)	
<18	20 (6.3)
18-24	49 (15.4)
25-34	116 (36.4)
35-44	62 (19.4)
45-54	42 (13.2)
55-64	25 (7.8)
$\geq 65$	5 (1.6)
Gender	
Male	85 (26.6)
Female	234 (73.4)
Visit history	
First time	165 (51.7)
<1 year	86 (27)
Between 1 and 3 years	40 (12.5)
>3 years	28 (8.8)

had a statistically significant association with overall patient satisfaction. The patient satisfaction of the two items related to the appointment scheduling systems in outpatient clinic was also examined. A total of 184 cases (57.7%) were satisfied with the length of waiting time, and 255 cases (79.9%) were satisfied with the duration of service time.

The most important factors affecting the patient satisfaction in outpatient clinics under study are shown in Figure 1 in ascending order. Figure 2 presents the most important factors affecting the patient's attendance in the first visit. About 59% of the patients were introduced by their friends, families, or other patients, and 26% of the patients chose the outpatient clinics with respect to physician's reputation. The mean score of overall patient satisfaction and patient satisfaction of the clinic environment was  $6.73 \pm 0.16$  and  $8.30 \pm 0.12$ , respectively.

The average waiting time for different types of clinics was  $64.2 \pm 3.45$  min (ranging from 0 to 302 min). The service

time took on average was  $9.85 \pm 0.37$  min (ranging from 1 to 35 min). Furthermore, the patients were asked about the type of reminders they prefer to receive before their appointment. About 161 (50.5%) patients chose phone call, 149 (46.7%) chose SMS (Short Message Service), seven (2.2%) chose website, and two (0.6%) chose E-mail. In addition, 214 (67.1%) patients agreed with the implementation of an internet appointment scheduling system.

A total of 173 (54.2%) patients get their appointments by telephone, 125 (39.2%) cases by attending directly to the clinic, and 21 (6.6%) cases by their families or friends.

## DISCUSSION

To the best of our knowledge, this study was one of the first surveys evaluating patient satisfaction of appointment scheduling systems in outpatient clinics in Iran. A comprehensive questionnaire was designed to get a better understanding of patient's needs.

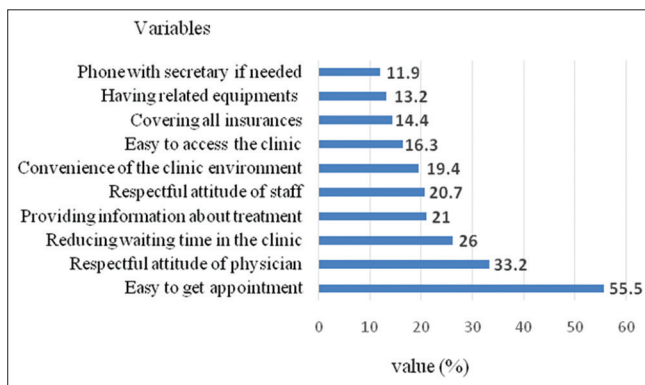


Figure 1: The most important factors affecting the patient satisfaction of outpatient clinics

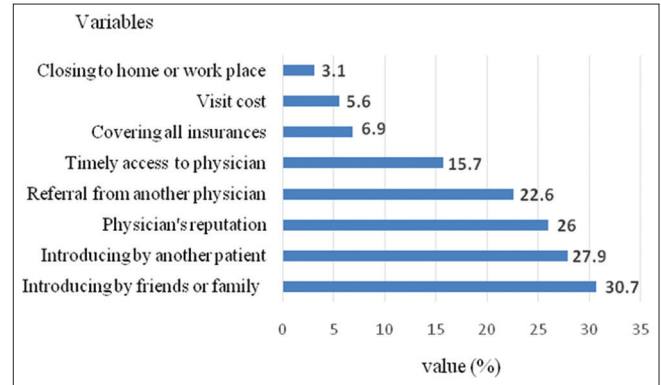


Figure 2: The most important factors affecting the patient attendance for the first visit

Table 2: The association between overall patient satisfaction and some related questionnaire items

Source	Type III sum of squares	df	Mean square	F	Significant
Corrected model	1887.215 <sup>a</sup>	199	9.483	2.467	0.000
Intercept	130.168	1	130.168	33.860	0.000
Gender	0.305	1	0.305	0.079	0.779
Age	20.357	6	3.393	0.883	0.511
Visit history	2.905	3	0.968	0.252	0.860
Satisfaction of clinic environment	84.994	10	8.499	2.211	0.023
How to get an appointment	9.241	2	4.621	1.202	0.305
Satisfaction of waiting time length	128.584	4	32.146	8.362	0.001
Implementation of a web-based appointment	18.004	4	4.501	1.171	0.329
How to receive a reminder	11.673	3	3.891	1.012	0.391
Satisfaction of service time duration	60.927	4	15.232	3.962	0.005
Waiting time	610.349	117	5.217	1.357	0.062
Service time	132.493	28	4.732	1.231	0.227
Error	365.206	95	3.844		
Total	15,663.000	295			
Corrected total	2252.420	294			

<sup>a</sup>R<sup>2</sup>=0.838 (adjusted R<sup>2</sup>=0.498)

The results showed that the average of overall patient satisfaction in outpatient clinics was moderate (6.73) based on a scale ranging from 0 (*low satisfaction*) to 10 (*high satisfaction*) while only 139 (43.7%) patients expressed their overall satisfaction of the received services.

There are mix results on overall patient satisfaction of health services. Some studies results are consistent and the others are opposed to our findings.<sup>[10-12]</sup> Several reasons may lead us to reach this finding. First, this study was conducted in outpatient clinics with various specializations and on patients with different severity of disease. Therefore, it is not surprising that people's expectations of the received services are different.

Consistent with our findings, some studies showed that if a patient suffers from poor health conditions and pays more costs for treatment, the level of expectation increases, and the degree of satisfaction decreases.<sup>[11,13,14]</sup> Second, 52% of our patients were new with no prior knowledge or experience with the clinic and its conditions. Therefore, during the first encounter, a negative view of the clinic conditions may be created. Returning patients unlike newcomers usually have greater overall satisfaction due to better understanding of the clinic conditions and compatibility with the health center problems.<sup>[11,15]</sup>

Studies have shown that short waiting time is very effective on patient satisfaction.<sup>[16,17]</sup> A statistically significant association was found between overall patient satisfaction and satisfaction of waiting time ( $P = 0.001$ ). The average of waiting time was 64 min. This value was tolerable in comparison with some studies reporting longer waiting time.<sup>[16,18]</sup> In addition, 57.7% of the patients were satisfied with their waiting time.

Findings indicated a statistically significant association between overall patient satisfaction and satisfaction of the clinic environment ( $P = 0.023$ ). Similar to this study results, Sadjadian *et al.* showed that the clinic environment had a positive association with overall patient satisfaction.<sup>[19]</sup>

It was shown that appropriate amount of service time contributes to overall patient satisfaction.<sup>[20]</sup> In this study, the association between the satisfaction of service time and overall patient satisfaction was statistically significant ( $P = 0.005$ ).

In this study, two factors including the ease of getting an appointment (55.5%) and the respectful attitude of physician (33.2%) make the patients to be satisfied with outpatient services [Figure 1]. These results overlap with the findings of Gibler *et al.*'s study,<sup>[21]</sup> showing that these two factors contribute to patient satisfaction. Another study reported that positive relationship between doctor and patient was also effective on increasing patient satisfaction.<sup>[22]</sup>

This study also revealed that the patients preferred to receive phone call (50.5%) and SMS reminders (46.7%) before their appointment time. Consistent with this result, Junod Perron *et al.* have reported that among the communication technologies, phone call, and text reminders have been more useful than other reminder strategies.<sup>[23]</sup>

This study confirmed that the majority of the patients (67.1%) agreed with the implementation of a web-based appointment scheduling system. Cao *et al.*, revealed that using a web-based appointment scheduling system could basically increase patient satisfaction and decrease waiting time.<sup>[24]</sup> Therefore, the implementation of a web-based appointment scheduling system is needed.

The limitation of this study was that we had to select clinics without a web-based appointment scheduling system because the most outpatient clinics located on Nursing Street, as one of the most important outpatient medical location, did not have a web-based appointment scheduling system. Therefore, it is suggested that this evaluation be performed on both types of outpatient clinics with or without a web-based appointment scheduling system to compare the results of this assessment.

## CONCLUSION

This study presented important outcomes about the outpatient services in Mashhad. Based on the results, the need for improving overall patient satisfaction score was felt. The results revealed that the satisfaction of waiting time, service time, and clinic environment had the greatest influence on overall patient satisfaction. Doctor reputation along with the appropriate behavior has been identifies as the key factors in satisfying patients. It is recommended that a web-based appointment scheduling system tailored to the patient's needs should be implemented.

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Nil.

## Conflicts of interest

There are no conflicts of interest.

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