



# The Association Between Wait Times and Patient Satisfaction: Findings From Primary Health Centers in the Kingdom of Saudi Arabia

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## Abstract

**Background:** It is no doubt that longer wait times can affect patient care and patients' willingness to seek health-care services. Not only does this disrupt the continuity of treatment and care, but it also negatively impacts patient outcomes. During the past few years, the concept of patient satisfaction has become a vital component in assessing the delivery and efficiency of care. Patient satisfaction is a performance indicator that measures the extent to which patient is content and satisfied with the level of care provided by health-care institutions and providers. Therefore, this research examined association between the wait times and patient satisfaction in selected primary health-care centers in Al Qassim region in the Kingdom of Saudi Arabia.

**Methodology:** A patient satisfaction questionnaire was administered to 850 patients, which collected patient perceptions on the delivery of care at health-care centers in Al Qassim City. Outcome measures included wait times for: registration and payment, seeing the physician, performing radiation and assays, and dispensing the medications.

**Results:** The response rate was 72.94% (n = 620). The study found that 27.90% of the participants stated that the wait time to see the physician ranged between 21 and 30 minutes. Overall patients were mainly dissatisfied for wait times in relation to medication dispensation, vital signs measurement, dental consultations, and radiological investigation. The study found a positive association between the patient satisfaction and their education, marital status, and job. A significant regression equation was established between the patient satisfaction and age-group and literacy.

**Conclusion:** The study advocated the need for recent technology, sufficient staffing, and patient-centered friendly methods to reduce wait times.

## Keywords

wait time, registration procedures, patient satisfaction, health-care centers, Al Qassim city

## Introduction

A long wait time among the patients are most frequently seen in all the outpatients' clinic across all the health-care centers and plays a significant role in a wide of public health problems that includes reduced access to health-care services, disruption of work pattern at health-care centers, and the patient dissatisfaction.<sup>1,2</sup>

Long wait times are the result of inefficiency and mismanagement of resources and some waiting periods have either saved the life of a patient.<sup>3</sup> Long wait time among patients lead to patient dissatisfaction and thus may eventually result in loss of patronage in a competitive health-care system.<sup>4</sup> It can also

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lead to poor patient compliance with instructions given at the hospital.<sup>5</sup>

Patient satisfaction plays a significant role in determining the health outcomes and in the quality of health-care services provided by any health-care organization.<sup>6</sup> It is also directly associated with the patient-provider relationship and with the compliance of treatment plans of the patients.<sup>7</sup> Patient satisfaction is measured by using several indicators that include services provided by the health-care professionals, cleanliness, quietness, and wait times.<sup>8</sup>

The information from patient satisfaction surveys is normally used by researchers for planning new programs and organizational policies that would enhance patients' satisfaction for better results.<sup>9,10</sup> A patient's experience of waiting for long periods of time can completely influence his/her perceptions of service quality. A study carried out at the University of Southern California<sup>11</sup> has shown that the overall satisfaction of patients with clinical services is closely related to their satisfaction with wait time.

Studies have found that long wait times can decrease outcomes and can negatively impact patient satisfaction scores.<sup>12</sup> Previous literature<sup>13</sup> proposed that customer dissatisfaction could result in a loss of long-term organizational profits because of decreased customer retention, fewer repeat visits, and conveyance of dissatisfaction with the organization to others. Therefore, the importance of reduced wait times is evident and should be considered as a strategic priority for any health-care organization.<sup>14</sup>

Several studies have investigated the consequences of excessive wait times at health-care facilities. Previous studies<sup>15</sup> found that today's patients are expecting shorter wait times in addition to increased service from their physicians and technicians. Moreover, the excessive patient waiting time undermines efficiency; such delay leads to patient dissatisfaction and thus may eventually result in loss of investment in a competitive health-care system.<sup>16</sup>

A study carried out by Fayah<sup>17</sup> in 2015 examined the impact of wait time reduction on patients' satisfaction of outpatients' pharmacy at Prince Sultan Military Medical City. The study tried to identify the factors influencing the patients' wait time, their estimation for the procedures of dispensing the medicine, and the suggested ways to reduce the patients' waiting time. The study recommended the following to reduce the wait time that includes advising the visitors of the availability or non-availability earlier before he/she waits in the queue, giving the prescription to the pharmacist before waiting in the queue and a sufficient number of the pharmacists to cope up with the numbers of the visitors.

Similarly, a study by Perez-Carceles et al<sup>18</sup> showed a statistically significant relationship between patient satisfaction and patient perceptions of received information and perceived wait time but not with actual waiting time. Most of the Saudi public hospitals are aiming to reduce patient wait times and increase efficiency. Waiting time is considered to be one of the important factors that determines the quality of health-care services may represent a valuable tool for evaluating patient

satisfaction. There has not been any study in the central region of Saudi Arabia to explore this topic; therefore, the current study attempts to examine the factors influencing the patients' wait time at health-care centers in Al Qassim City in Saudi Arabia and recommend ways of minimizing that delay.

## Materials and Methods

### Study Design

This is a cross-sectional study.

### Research Population and Sample

The sample of the study consisted of a representative sample from patients who visited health-care centers in Al Qassim City. Al-Qassim is an arid desert with patches of oasis which is located in the central region of Saudi Arabia, and it has a population of about one million.<sup>19</sup> There are about 120 primary health-care centers (PHC) in Al Qassim city. The 11 PHCs were selected based on how they apply the quality measures, volume, and location. The patients from 11 primary health centers acted as the research sample.

### Data Collection Tool

The questionnaire is designed based on the previous literature and is composed of 2 parts: demographics and patient perceptions of wait times.<sup>3,11,12,20</sup> The first part includes 9 questions about the demographic and geographical data of the participants. The second part of the questionnaire consists of 9 questions on patients' perception of wait times and their satisfaction of the service provided. The rating scale used in the second part of the questionnaire is Likert-type scale that has 5 ratings "strongly agree," "agree," "not sure," "disagree," and "strongly disagree." It also included the 2 questions of "how long do you wait to see the doctor?" and "registration procedures."

### Validity and Reliability of Questionnaire

The researcher achieved the face validity of the questionnaire by asking the feedback from the experts in the respective fields. The experts were selected based on their experience in health service research as evidenced by the number of peer-reviewed publications.

In this research, the researcher has used Cronbach  $\alpha$  coefficient to assess the reliability of the questionnaire sections. The Cronbach  $\alpha$  coefficient values ranged from 0.722 to 0.847; these are considered to be acceptable values as they are higher than 0.500.

### Ethical Permission

Ethical permission was obtained from the regional research ethics committee in the Ministry of Health-Qassim province.

## Data Analysis

The data analysis was carried out by using SPSS (version 16.0, SPSS Inc, Chicago, Illinois). The responses of the participants are expressed in frequencies, counts, and percentages. Participant's responses to satisfaction at health-care centers are presented by using the mean ranking scores.

## Results

The response rate was 72.94%, where 850 patients were approached to participate in this study and only 620 (72.94%) patients participated. Table 1 shows participants' demographic characteristics.

The findings show that the participants belong to 11 different health centers. One hundred forty-four (23.26%) patients from the study belong to the age-group ranges between 31 and 40 years. Based on the results, 61.70% of the study participants are males and 60.78% of the participants in the study are married.

With regard to the education level variable, it is shown that 36.61% of the participants hold a secondary education. It is shown in Figure 1 that 27.90% of the participants expressed that the wait time is between 21 and 30 minutes.

The findings show that the participants vary in their responses to the 3 subquestions of this element. One hundred ninety-eight (31.94%) participants mentioned that registration does not take a long time; 37% (229) of them reported that registration procedures are easy, and 45.56% (282) of the study respondents said employees are sufficient at the registration counter (Table 2). Of all, 32.79% of the participants in the study are not satisfied with the wait time for registration and payment. Similarly 40.45% of the respondents are dissatisfied with the wait time for dispensing the medicine at the pharmacy. Of all, 39.16% and 37.22% of the participants in the study are not satisfied with the wait time for the nurse to take the vital signs and wait time for entry of the dentist, respectively; 44.34% of the respondents are unsatisfied with the wait time in the radiation section (Table 3).

Table 4 shows that there is a significant association between the patient satisfaction at health-care centers and the demographic variables such as education, marital status, and job. However, there is no statistical association between gender and age with the patient satisfaction at health-care centers.

A multiple linear regression was calculated to predict the patient satisfaction based on several sociodemographic variables. A significant regression equation was found between the patient satisfaction and age below 20 ( $F_{1,619} = 9.373$ ,  $P = .002$ ), with an  $R^2$  of 0.015, and illiterate ( $F_{1,619} = 9.373$ ,  $P < .001$ ), with an  $R^2$  of 0.23 (Table 5).

## Discussion

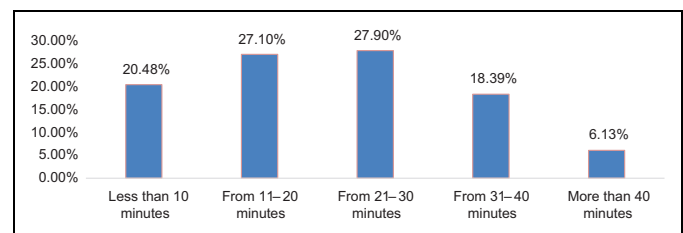
This study aimed at investigating the relationship between patient wait times and the level of patient satisfaction at PHC in Al Qassim city with specific to assess the patients'

**Table 1.** General Demographic Characteristics of Participants.<sup>a</sup>

Questions Asked	Numbers (Percentage)
Name of the health center	
Al Nahda PHC	65 (10.48%)
Al-Eskan PHC	53 (8.55%)
Al-Ofok PHC	64 (10.32%)
Al-Rabia PHC	50 (8.06%)
Al-Manar PHC	62 (10.00%)
Al-Montazah PHC	51 (8.23%)
Al-Rayan Algharbi PHC	53 (8.55%)
Al-Rayan Alsharki PHC	72 (11.61%)
Al-Safra PHC	50 (8.06%)
Al-Faiziah PHC	56 (9.03%)
Al-Jazera PHC	55 (8.87%)
Age group	
Less than 20 years	111 (17.93%)
From 21 to 30 years	140 (22.62%)
From 31 to 40 years	144 (23.26%)
From 41 to 50 years	97 (15.67%)
From 51 to 60 years	71 (11.47%)
More than 60 years	57 (9.10%)
Gender	
Male	382 (61.70%)
Female	238 (38.30%)
Marital status	
Married	375 (60.78%)
Single	170 (27.55%)
Divorced/divorcee	39 (6.32%)
Widow/widower	36 (5.35%)
Educational level	
Illiterate	40 (6.45%)
Elementary	101 (16.29%)
Secondary	227 (36.61%)
Diploma	118 (19.03%)
University or higher	134 (21.61%)
Job	
Working	366 (59%)
Not working (pensioner)	254 (41%)

Abbreviation: PHC, primary health-care centers.

<sup>a</sup>N = 620.



**Figure 1.** The wait time to see the doctor.

perception of waiting time on registration, seeing doctor, assays and radiation unit, and medication dispensing.

The findings of this study showed that the majority of the patients wait for 21 to 30 minutes followed by 31 to 40 minutes to see the doctor. This finding is supported by the study by Harnett et al<sup>21</sup> who reported that the standard wait time for half of the patients is 30 minutes.

**Table 2.** Responses to the Registration Procedures.<sup>a</sup>

S. No.	Statements		Yes	No	To a Maximum Extent
1	Does registration take a long time?	F	162	198	260
		%	26.13%	31.94%	41.94%
2	All the registration procedures are done easily?	F	229	171	220
		%	37%	27.63%	35.38%
3	There are sufficient employees at the registration counter	F	282	145	193
		%	45.56%	23.42%	31.00%

<sup>a</sup>N = 620.**Table 3.** Participants' Responses to Satisfaction at Health-Care Centers.<sup>a</sup>

S. No.	Statements		SA	A	NS	D	SD	Mean	Standard Deviation	Rank	
1	The wait time for registration and payment is acceptable	n	92	174	203	103	49	3.04	0.81	7	
		%	14.86	28.11	32.79	16.64	7.92				
2	The period between the appointment time and seeing the doctor is suitable	n	109	232	193	57	28	3.71	1.12	1	
		%	17.67	37.60	31.28	9.24	4.54				
3	The wait time for filling prescription is long	n	62	229	198	97	32	3.37	1.01	4	
		%	10.03	37.06	32.04	15.70	5.18				
4	You wait a long time to dispense the medicine at the pharmacy	n	62	161	250	112	36	3.01	0.77	9	
		%	10.03	26.05	40.45	18.12	8.83				
5	You wait for a long time for the nurse to take the vital signs (temperature and blood pressure)	n	71	169	242	93	43	3.02	0.79	8	
		%	11.49	27.35	39.16	15.05	6.96				
6	The wait time for entry of the dentist is appropriate	n	63	209	230	75	41	3.07	0.84	6	
		%	10.19	33.82	37.22	12.14	6.63				
7	The wait time for taking sample and assays is acceptable	n	73	217	216	65	47	3.12	0.97	5	
		%	11.81	35.11	34.95	10.52	7.61				
8	The wait time to enter into the vaccinations department is acceptable	n	68	230	223	72	24	3.43	1.04	3	
		%	11.02	37.28	36.14	11.67	3.89				
9	The wait time in the radiation section is appropriate	n	28	272	274	30	16	3.50	1.09	2	
		%	4.53	44.01	44.34	4.85	2.59				
Total mean			3.25								

Abbreviation: SA, Strongly Agree; A, Agree; NS, Not Sure; D, Disagree; SD, Strongly Disagree

<sup>a</sup>N = 620.

There are previously published studies that looked at the association between the average wait time and patient satisfaction. A study in the United States reported that average wait time among the patients was more than 30 minutes, where waiting for more than 30 minutes was very common.<sup>12</sup> Similarly, another study conducted by Service et al regarding the patient satisfaction of primary health-care service found that the patients were satisfied if they waited less than 37 minutes.<sup>22</sup>

Overall, we found that one-third of the patients reported that they were satisfied with the wait time. Several studies reported a low satisfaction rate among the patients regarding the wait time at the health-care centers. A study carried out in 2018 in Botswana among the patients in the primary health-care centers, more than half of the patients reported a greatest dissatisfaction about the wait time for availing the health-care services at the health-care centers.<sup>23</sup> In contrast to it, a study carried out in India found that 62.5% satisfaction rate among the patients who waited for more than 30 minutes at the health-care centers.<sup>24</sup>

The results of the present study showed that the most of the patients reported that the registration procedures do not take a long time and can be easily completed. The patients also stated that there are sufficient employees at the registration counter. In contrast to the results of the present study, a study conducted by Med et al<sup>25</sup> found that long wait times especially in the registration counter and physician offices were the primary reason for higher rates of dissatisfaction among the patients in the primary health centers.

The current study found that the 32.79% of the respondents were not satisfied with the wait times at the registration and the payment counter. Generally, registration is a quick and simple process. Sometimes, it takes a long time due to long queues because of lack of appropriate number of staff at the registration counter who are responsible for giving appointments to the patients.<sup>26</sup>

The present study has been conducted in the selected primary health centers; however, there are studies which were conducted earlier to compare the satisfaction among patients

**Table 4.** Association Between the Demographic Variables and Patients' Satisfaction.<sup>a</sup>

Sociodemographic Variables	Numbers (Percentage)	Mean Satisfaction	P Value
Age group			
Less than 20 years	111 (17.93%)	3.07	.060
From 21 to 30 years	140 (22.62%)	3.03	
From 31 to 40 years	144 (23.26%)	3.17	
From 41 to 50 years	97 (15.67%)	3.20	
From 51 to 60 years	71 (11.47%)	3.30	
More than 60 years	57 (9.10%)	3.18	
Gender			
Male	382 (61.70%)	3.01	.412
Female	238 (38.30%)	3.05	
Marital status			
Married	375 (60.78%)	3.65	<.001 <sup>b</sup>
Single	170 (27.55%)	3.58	
Divorced/divorcee	39 (6.32%)	3.45	
Widow/widower	36 (5.35%)	3.63	
Educational level			
Illiterate	40 (6.45%)	3.33	<.001 <sup>b</sup>
Elementary	101 (16.29%)	3.23	
Secondary	227 (36.61%)	3.30	
Diploma	118 (19.03%)	3.21	
University or higher	134 (21.61%)	3.19	
Job			
Working	366 (59%)	3.43	<.001 <sup>b</sup>
Not working (pensioner)	254 (41%)	3.39	

<sup>a</sup>N = 620.<sup>b</sup>P < .05, statistically significant.**Table 5.** Multiple Linear Regression Predicting the Patient Satisfaction.

Predictors	Zero-Order, r	$\beta$	Standard Error	P Value
Age below 20	0.122	.329	0.111	.002 <sup>a</sup>
Male	0.022	-.547	1.035	.597
Married	0.053	.186	0.143	.195
Literate		.420	0.111	<.001 <sup>a</sup>
Working	0.162	-.678	0.724	.349

<sup>a</sup>P < .05, statistically significant.

in public and private hospitals.<sup>27,28</sup> The current study point out there is a negative impact of longer wait time on satisfaction of patients which is also acknowledged by the Institute of Medicine which recommends that the 90% of the patients should be attended within 30 minutes of their scheduled appointments.<sup>29,30</sup>

The findings of the present study showed a statistical significance between the educational qualification and the level of significance at the health-care centers. Similarly, a study conducted by Owaidh et al<sup>31</sup> showed that there was a significant association between the higher level of education and satisfaction of patients at the health-care centers which supports the findings of the present study. Whereas in contrast there were previously published studies<sup>7,8</sup> which reported that there was

significant positive association between the higher level of satisfaction and the lower educational levels of patients.

A significant association between the patient's satisfaction at the health-care centers and the marital status is established in the present study, whereas a study carried out by the Al-Sakkak et al<sup>8</sup> reported that there was no relationship between the patient satisfaction and the marital status which contradicts the findings of the current study.

There was no statistical significance between the gender and the patient satisfaction in the current study, whereas in contrast, a study done by Alshammari<sup>32</sup> about the patient satisfaction in primary health-care centers reported that the lower satisfaction rate were associated with the male gender.

Limitations of this study are as follows: The study was carried out in the selected primary health centers in the Al-Qassim region, generalization to cover the rest of Saudi Arabia or even the central region remains uncertain. The data were collected while the patients were receiving their medical treatment which may bias the responses of the respondents due to the fear of jeopardizing their medical care. Further studies are needed in this area with possible alternative methods that can reduce the potential risk to validity and to have a wider generalizability.

## Conclusion

This study aimed at assessing the association between the wait time and the satisfaction of patients in the selected primary health centers in Al-Qassim region. Majority of the participants reported that the wait time to see the doctor ranges between 21 and 30 minutes. The study respondents were dissatisfied with the wait time on dispensing the medicine, for the nurse to take the vital signs, for entry of the dentist, and the radiation section. A positive correlation was established between the level of satisfaction and education qualification marital status and job of the study participants. The study found a significant regression equation between the patient satisfaction and age and literacy status. The study recommends that the Ministry of Health should play a professional role in reducing the wait time of patients at the primary health centers. There is a need for a large-scale study that measures the wait time and patients' satisfaction at the primary health centers in order to find the better association.


## Declaration of Conflicting Interests

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