

## Survey on waiting time and visit time in plan of health sector evolution in Iran: A case study in Tabriz

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### ABSTRACT

**Background and aims:** Visit quality is a crucial component of patient-physician interaction that its inadequacy can negatively influence the diagnosis and treatment efficiency. The waiting time and visit length are important determinants of quality in the outpatient care setting. Thus, the aim of this study was to determine waiting time and visit length and to compare them before Implementation of health sector evolution in Iran.

**Methods:** A cross-sectional study was conducted during autumn 2014. A sample of 540 patients who referred to the outpatient clinics of Sheikh Al Raeis of Tabriz Province (North West of Iran) were randomly selected and surveyed. Data were collected by the collection tools and analyzed using descriptive statistical methods.

**Results:** The average visit time and standard deviation were 8.52 min and 3.14 respectively, which is significantly lower than the minimum average of 15 min approved by the Iranian Ministry of Health and Medical Educations (MOHME). Average of waiting time was 101.57 min for patients. The result showed that visit time was shorter than standard (7.5 min per patient) of health sector evolution in specialties of general Surgery, ophthalmologist, ENT, orthopedics and pediatrics. Also, the variables such as: number of visits, age of physicians, experience of physicians, men physicians, working shift of afternoon influenced on visit time significantly.

**Conclusions:** The starting points of health care delivery to patients are consultations. This study showed that visit time is short and waiting time is very long. But, it seems that implementation of health sector evolution and plan of visit quality improvement led to increased visit time.

**Keywords:** Waiting time, Visit time, Health sector evolution, Physician - patient interaction.

### INTRODUCTION

In response to the certain conditions at any time, the health services organizations have

observed major changes and evolution. Increasing complexity of processes along

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with the increasing competition among the organizations of health care services has changed the attitude of the experts towards the health care sector.<sup>1-3</sup> Timely treatment in health services organizations means to minimize the time to get services with emphasis on the standard of visit length.<sup>1</sup> Furthermore, the quality of health services is a main component of service delivery in health services organizations, and is fundamental rights of patients. Regarding this, each patient has the right to profit by the best facilities and the best treatment.<sup>2</sup>

Visit time and waiting time is one of the crucial factors in correct diagnosis and patient satisfaction.<sup>2,4,5</sup> Time of outpatient visits is defined as the time taken from entering to leaving the examination room.<sup>1,6</sup>

In the most developing countries, due to lack of specialists and along with monitoring of inappropriate physicians, visit time is shorter for patients.<sup>2</sup> In some cases, patients had visited together and this will reduce quality of visit. In the most developed countries, visit length is longer than other countries. For example, the overall mean visit time for USA during 2012 and France during 2015 were 14.5 and 16.8 min, respectively.<sup>7,8</sup> Chen and et al in their study, estimated visit time about 30 min per patient in teaching hospitals of Guangzhou in china.<sup>9</sup> This time was 5 min in Iran during 2011 and waiting time was 161 min.<sup>1</sup> Therefore, about 10 min has been recommended for each consultation of GPs.<sup>10</sup>

Inappropriate quality of visit services led to design one program for improving the quality of services by the Iranian Ministry of Health and Medical Educations (MOHME). Health sector evolution of Iran began in 2014. One of the domains of this program was to improve the quality of visit services.<sup>11</sup> Health sector evolution emphasizes critically to improve the health situation of people by advancing and

increasing accessibility, quality, and efficiency of the delivery of health services.<sup>12</sup>

Given the importance of visit time and waiting time in the quality of consultation services, the aim of this study was to survey visit time, waiting time and factors affecting them in difference specialties at provincial level in Tabriz city. This study will compare the visit time and waiting time with other studies before health sector evolution and it identified factors affecting them.

## METHODS

A cross-sectional study was conducted in Tabriz city, during autumn 2014. The study population included all patients referred to the outpatient clinic of Sheikh Al Raeis of Tabriz Province. Using the results of a pilot study, the minimum sample size was estimated 540 participants using the following formula. ( $d=20$  second,  $\sigma=237$  second and  $Z=1.96$ ). Sampling method was systematic random that was classified alphabetically.

$$n \geq \frac{\left(Z_{1-\frac{\alpha}{2}}\right)^2 \sigma^2}{d^2}$$

A researcher developed checklist was used to collect data. This checklist included three parts: checklist included characteristics of patients and physicians such as: Demographic variables of patients and physicians, visit length and waiting time. All variables studied were based on previous studies and expert views.

Checklist validity was measured by indicators of Content Validity Ratio (CVR) and Content Validity Index (CVI). CVI was found to be 73% and CVR was found to be 81%. Data collection was conducted by researcher and visit time and waiting time measured by the chronometer.

The Kolmogorov-Smirnov test was used to assess normality of data. Descriptive statistics were used to present quantitative and qualitative variables respectively. Linear regression of visit time with the patient and physician variables used to analyze the factors affecting visit time.  $P < 0.05$  was considered as statistically significant. Data entry and analysis was done using SPSS.

## RESULTS

A total of 540 patients were studied: 231 (42.8%) males and 309 (57.2%) females. Age ranges of patients were between 0 and 78 years. The majority of patients were female, lived in Tabriz, 63.90% were married, and 98.10% have insurance. The results of other demographic Characteristics, rate of waiting time and visit time are shown in Table 1 and 2.

**Table 1:** Demographic characteristics of patients (n=540)

| Variables related to patients | Frequency            | %   | Waiting time (min)<br>Mean (SD) | P*             | Visit time (min)<br>Mean (SD) | P*          |       |
|-------------------------------|----------------------|-----|---------------------------------|----------------|-------------------------------|-------------|-------|
| Patient age                   | Under 1              | 20  | 3.70                            | 110.93 (50.21) | 0.002                         | 7.24 (2.41) | 0.001 |
|                               | 2-15                 | 146 | 27.03                           | 75.11 (42.18)  |                               | 8.21 (2.57) |       |
|                               | 16-36                | 103 | 19.07                           | 87.93 (35.11)  |                               | 6.78 (2.45) |       |
|                               | 37-57                | 166 | 30.74                           | 101.12 (45.18) |                               | 9.12 (2.21) |       |
|                               | 58-78                | 105 | 19.44                           | 87.94 (54.12)  |                               | 8.54 (2.22) |       |
| Sex of patients               | Male                 | 231 | 42.80                           | 112.94 (55.21) | 0.001                         | 7.43 (2.46) | 0.002 |
|                               | Female               | 309 | 57.20                           | 93.12 (48.18)  |                               | 8.18 (2.86) |       |
| Habitant of patients          | Tabriz               | 359 | 66.50                           | 100.53 (2.95)  | 0.043                         | 8.13 (2.52) | 0.064 |
|                               | Other cities         | 30  | 5.60                            | 90.56 (2.56)   |                               | 7.53 (2.43) |       |
|                               | Village              | 151 | 28.00                           | 106.64 (2.03)  |                               | 7.27 (2.76) |       |
| Married status of patients    | Bachelor             | 195 | 36.10                           | 109.57 (51.33) | 0.035                         | 6.96 (2.02) | 0.005 |
|                               | Married              | 345 | 63.90                           | 96.88 (49.76)  |                               | 8.05 (3.03) |       |
| Insurance Status              | Yes                  | 530 | 98.10                           | 101.01 (50.28) | 0.03                          | 7.75 (2.53) | 0.084 |
|                               | No insurance         | 10  | 1.90                            | 128.63 (63.93) |                               | 6.65 (2.25) |       |
| Educational Status            | Under diploma        | 383 | 70.93                           | 99.37 (49.84)  | 0.054                         | 7.7 (2.56)  | 0.009 |
|                               | Diploma              | 88  | 16.29                           | 89.51 (46.60)  |                               | 8.51 (3.51) |       |
|                               | Bachelor             | 65  | 12.03                           | 96.94 (46.69)  |                               | 8.33 (3.07) |       |
|                               | Higher than bachelor | 4   | 0.75                            | 114.63 (52.75) |                               | 7.51 (2.27) |       |

\*Significance level  $< 0.05$ .

**Table 2:** Demographic characteristics of physicians (n=46)

| Variables related to physicians | Frequency          | %  | Waiting time (min)<br>Mean (SD) | P*             | Visit time (min)<br>Mean (SD) | P*          |       |
|---------------------------------|--------------------|----|---------------------------------|----------------|-------------------------------|-------------|-------|
| Physicians age                  | 30-40 years        | 15 | 32.60                           | 101.74 (50.44) | 0.071                         | 8.02 (2.54) | 0.031 |
|                                 | 41-50 years        | 27 | 58.69                           | 101.63 (51.25) |                               | 7.63 (2.82) |       |
|                                 | 51-60 years        | 4  | 8.69                            | 101.46 (49.63) |                               | 8.39 (2.68) |       |
| Sex of Physicians               | Male               | 36 | 78.30                           | 104.16 (51.21) | 0.041                         | 7.63 (2.32) | 0.053 |
|                                 | Female             | 10 | 21.70                           | 91.66 (47.30)  |                               | 8.75 (3.63) |       |
| Married status of Physicians    | Bachelor           | 3  | 6.50                            | 118.25 (51.33) | 0.021                         | 6.96 (2.02) | 0.04  |
|                                 | Married            | 43 | 93.50                           | 99.48 (50.26)  |                               | 7.97 (2.48) |       |
| Experience of physicians        | Less than 5 years  | 18 | 39.13                           | 106.51 (50.89) | 0.052                         | 7.85 (2.39) | 0.001 |
|                                 | 5-10 years         | 14 | 30.43                           | 93.52 (50.47)  |                               | 7.01 (2.16) |       |
|                                 | More than 10 years | 10 | 21.73                           | 99.00 (48.96)  |                               | 9.25 (3.76) |       |

\*Significance level  $< 0.05$ .

The results showed that the average of visit time was 8.52 (3.14) min and waiting time was 101.57 (50.68). There was significant difference between the mean of visit times and standard of visit time (20 min per patient according to MOHME).

Visit time of nutrition specialists was significantly longer than others among Specialties. On the other hand, waiting time of patients was significantly longer than others for general surgery 138.50 (45.68) (Table 3).

**Table 3:** Waiting time and visit time of patients according to specialties (n=540)

| Variables                 | Waiting time (min) |       | Visit time (min) |      |
|---------------------------|--------------------|-------|------------------|------|
|                           | Mean               | SD    | Mean             | SD   |
| Cardiology                | 100.00             | 45.64 | 8.08             | 1.52 |
| General Surgery           | 138.50             | 45.68 | 7.00             | 1.33 |
| Infectious disease        | 104.05             | 50.96 | 9.36             | 2.66 |
| Nutrition                 | 70.50              | 41.06 | 14.79            | 2.80 |
| Ophthalmologist           | 65.80              | 28.61 | 5.63             | 0.78 |
| ENT                       | 106.00             | 40.08 | 6.05             | 1.21 |
| Orthopedics               | 105.75             | 52.47 | 5.48             | 1.46 |
| Obstetrics and Gynecology | 69.00              | 28.49 | 11.52            | 3.20 |
| Physical Medicine         | 77.50              | 34.20 | 8.45             | 1.22 |
| Psychiatry                | 71.75              | 34.38 | 10.84            | 1.68 |
| Pediatrics                | 119.00             | 53.12 | 7.46             | 1.87 |
| Internal disease          | 98.50              | 44.13 | 8.53             | 1.83 |
| Neurological disease      | 122.25             | 53.39 | 8.15             | 2.53 |
| Urology                   | 96.25              | 50.67 | 7.62             | 1.66 |
| Total                     | 101.57             | 50.68 | 8.52             | 3.14 |

The specialists that their visit time was shorter than standard (7.5 min per patient) of health sector evolution included: General surgery (7.00 min), ophthalmologist (5.63 min), ENT (6.05 min), orthopedics (5.48 min) and pediatrics (7.46).

Linear regression of visit time with patient and physician variables was showed in the Table 3. The result show that number of visits, age of physicians, experience of physicians, men physicians, working shift of afternoon influenced on visit time significantly.

**Table 4:** Linear regression of visit time with patient and physician variables

| Variable                 |                      | B        | SE    | Beta   | P     |
|--------------------------|----------------------|----------|-------|--------|-------|
| Constant                 |                      | -2.15    | 1.43  | ---    | 0.143 |
| Age of Patients          |                      | 0.06     | 0.008 | 0.04   | 0.052 |
| Number of visits         |                      | -0.865   | 0.106 | -0.265 | 0.000 |
| Age of physicians        |                      | 0.222    | 0.032 | 0.657  | 0.000 |
| Experience of physicians |                      | 0.196    | 0.025 | -0.604 | 0.000 |
| Sex of patients          | Female               | Referent |       |        |       |
|                          | Male                 | 0.006    | 0.165 | 0.001  | 0.941 |
| Habitant of patients     | Other cities         | Referent |       |        |       |
|                          | Tabriz               | -0.002   | 0.189 | 0.000  | 0.903 |
|                          | Village              | 0.016    | 0.222 | 0.003  | 0.941 |
| Married status           | Bachelor             | Referent |       |        |       |
|                          | Married              | -0.256   | 0.254 | -0.036 | 0.304 |
| Insurance Status         | No insurance         | Referent |       |        |       |
|                          | Yes                  | 0.393    | 0.586 | 0.019  | 0.501 |
|                          | Under diploma        | Referent |       |        |       |
| Educational Status       | Diploma              | 0.18     | 0.197 | 0.04   | 0.24  |
|                          | Bachelor             | 0.21     | 0.220 | 0.03   | 0.24  |
|                          | Higher than bachelor | 0.21     | 0.273 | -0.03  | 0.44  |
| Physician's sex          | Female               | Referent |       |        |       |
|                          | male                 | -1.36    | 0.250 | -0.278 | 0.000 |
| Training of Counseling   | Yes                  | Referent |       |        |       |
|                          | No                   | 0.042    | 0.294 | 0.008  | 0.787 |
| Working shift            | Morning              | Referent |       |        |       |
|                          | Afternoon            | 2.46     | 0.510 | 0.290  | 0.000 |

Visit time: dependent variable.  $R=0.838$ ,  $R\ square=0.713$ ,  $Adjusted\ R\ Square=0.691$ .  $B$ =raw score regression coefficient;  $SE$ =standard error;  $Beta$ =standardized regression coefficient.

## DISCUSSION

An important part of patient satisfaction derives from a dynamic interactional process with medical staff. Physician-patient interaction is acknowledged as a key domain of a successful medical consultation.<sup>2,13,14</sup>

The main finding of this study was the short mean visit length (8.52 min) and waiting time was Very long. Visit time in our study was shorter than in several other developed and developing countries. But, it must be stated that visit time has been longer than the past by implementation in the health sector evolution of Iran.

For example, Mohebbifar and Hasanpoor conducted a research in educational hospitals of Qazvin University

in Iran and found that visit time and waiting time were 5 and 161 min per patient, respectively.<sup>1</sup> In the other study in Iran, mean of visit time was 3.15 min for specialists. The results of this study has determined the mean visit time of 2.3 min for internal specialties, 4 min for general surgery, 3.1 min for obstetrics and gynecology, and 3.2 min for pediatrics.<sup>15</sup> Also, Hasanpoor et al. conducted a research in Iran and found the average visit time was found to be 4.67 min, which is significantly lower than standard.<sup>2</sup> Khori and et al estimated visit time 6.9 min for GPs.<sup>16</sup>

As a result, strategic points of changes are doctors for improving visit time. Therefore, by using motivational tools and training them, health systems could

influence the quality of visit service.<sup>17</sup> The result showed that mean of visit time was longer than other studies in Iran. It seems that the implementation of health sector evolution and plan of visit quality improvement led to increased visit time. Of course, waiting time is one of the important components of quality visit and it was very long in this study. Waiting time was about 102 min.

In the study of Fung and et al in Brunei Darussalam, the overall mean waiting time for the morning and afternoon sessions were 58 and 37 min respectively.<sup>18</sup> Average waiting time improved from 54 min to 21 min after the implementation of plan in Singapore.<sup>19</sup> It should be stated that waiting time for consulting must be less than 30 min.<sup>1,18</sup> By using virtual visit, process model, queuing theory and FIFO (First In, First Out) model can decrease waiting time.<sup>1,5,18</sup>

It seems that this plan can be prosperous by careful planning and follow-up visits and it enhances service quality of visit and visit them. Also, it can be reached to decrease the waiting time outpatients.

Shorter visits time influences the quality of visit services and sometimes it will enhance drug usage and prescribing diagnostic tests such as MRI, CT and etc. on the other hand, it could be lead to increase expenditures of service delivery in hospitals. As well as, the shorter visit time decreases the customer satisfaction and their trust on health care services. Also, It reduces right diagnosis, threatens patient safety and treatment will be non-effectiveness.<sup>1,16,20,21</sup>

## CONCLUSION

The starting points of health care delivery to patients are consultations. This study showed that visit time is short and waiting time is very long. But, it seems that implementation of health sector evolution and plan of visit quality improvement led to increased visit time.

## CONFLICT OF INTEREST

The authors declare no conflict of interest.

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