One of the important developments in the healthcare field has been the rapidly increasing demand for hospital outpatient services. Congruent with this development is the importance of consistently improving the services of hospital outpatient departments (OPD). Among the significant concerns of OPD services is the excessive length of time the patient has to wait before receiving treatment or at least, before being seen by the physician.

It is important to examine the factors that influence patient waiting time because it is both a significant indicator of healthcare accessibility, and an important indicator of patient’s perception of the quality of care provided. Furthermore, prolonged waiting time can have a significant effect on the hospital’s operating costs and the patients’ and professionals’ inconvenience.

Despite the large number of studies on patient waiting time conducted in many countries, it appears that researchers have not addressed the problem in Saudi Arabia. Through the use of multiple regression technique, the present study aimed to investigate attributes related to patient waiting time, as perceived by outpatients at Prince Salman Hospital in Riyadh.

**Review of Literature**

It has been recognized that one of the most annoying experiences for the patient and a detriment to public relations for a hospital is an excessively long wait at the outpatient department. There are a number of attributes that affect the length of patient waiting time. These attributes are generally related to patient’s and professional’s behaviour, and to the organizational procedures used in the medical setting.

In the study conducted by Al-Hamad & Al-Sheereb about 62% of the respondents waited less than 60 min, and almost 82% waited less than 90 min. According to the same study, approximately one-third of respondents indicated that the slowness in retrieving their medical files affected their waiting time. Earlier studies found that some of the long waits were attributed to the failure of staff to have the medical records on hand or a delay in the delivery of the patient’s file. Physician punctuality was also found to affect patient waiting time.

With regards to the type of visit, i.e. whether the patient was new or returning, there were inconsistent findings. Although a number of studies found that new patients waited significantly longer than return patients, there were also reports to the contrary.
Subjects and Methods

This study was carried out at the outpatient clinics of the Prince Salman Hospital (PSH) in Riyadh city from 8–21 February 1993. By consulting a number of faculty members at the King Saud University, a questionnaire designed in Arabic underwent several revisions to test its validity. Then, the revised questionnaire was randomly distributed among patients while they were seated in the pharmacy waiting for their drug prescriptions. The main reason for contacting and interviewing patients in the pharmacy waiting rooms was because all outpatients had already seen their doctors and had, to some extent, experienced the factors being measured. Patients were asked to document only their waiting from the time of arrival to the time they were seen by their physician. This can be considered as one of the limitations of the study. Besides, the findings of this study were based on patients' perceptions only.

Two hundred and twenty-five patients were requested to complete a questionnaire. Of these 225 persons, 190 (84.4%) completed their questionnaires and were therefore included in the analysis. The cultural considerations of interviewing female patients were critically examined. Because the study population included both sexes, the author asked female social workers to participate in interviewing female patients. The author met with those social workers several times to discuss the main purpose of this study, the appropriate interviewing techniques, and the need for sensitivity in approaching the prospective participants. Two types of patient were excluded from the sample survey: (1) patients who were referred as emergency cases and immediately admitted by the physician, and (2) patients who did not wait at the pharmacy waiting rooms.

After collating the demographic data and completing a descriptive analysis, a multiple linear regression analysis was utilized to determine the extent of influence of each selected explanatory variable thought to have an important influence on patient waiting time. For the purpose of regression analysis, all explanatory dichotomous variables were coded as zero or one. It has been recommended that the most frequent category be chosen as the reference category (or omitted category), so that the dummy regression coefficients represent deviations of smaller groups from the largest group.17

Results

The data revealed that the mean value of patient waiting time was 62.8 min with a standard deviation of 21.3 min. Also, the data showed that about 42.6% of the respondents waited less than 60 min, and almost 76.8% of them waited less than 90 min.

Table 1 shows the frequency distribution of all explanatory attributes included, their means and standard deviations. The table reveals that the mean value of patients’ age, monthly income and education were 39.4 years, 5450.4 Saudi Riyals, and 11.1 years, respectively. The same table also indicates that the majority of respondents were males (75.8%) and Saudis (84.7%). It can also be seen from Table 1 that the mean value of the number of visits to this hospital within the last 6 months was 5.6 visits, and about 55.8% of the respondents indicated that they had less than five visits to the hospital. Approximately 58.9% of the respondents categorized themselves as follow-up patients.

When patients were asked to specify major attributes to their lengthy waiting times, a number of factors were
Table 2

Multiple regression of patient’s waiting time on explanatory variables, Prince Salman Hospital, Riyadh, Saudi Arabia, 1993

<table>
<thead>
<tr>
<th>Explanatory variables</th>
<th>Measurement code</th>
<th>Patient waiting time (dependent variable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Missing patients’ files</td>
<td>Missed = 1</td>
<td>20.846</td>
</tr>
<tr>
<td>Number of visits</td>
<td>Continuous</td>
<td>-1.390</td>
</tr>
<tr>
<td>Sex</td>
<td>Female = 1</td>
<td>-16.437</td>
</tr>
<tr>
<td>Delayed delivery of files</td>
<td>Delayed = 1</td>
<td>6.788</td>
</tr>
<tr>
<td>Age</td>
<td>Continuous</td>
<td>0.222</td>
</tr>
<tr>
<td>Type of visit</td>
<td>New patient = 1</td>
<td>3.521</td>
</tr>
<tr>
<td>Language difficulty</td>
<td>Not difficult = 1</td>
<td>-3.142</td>
</tr>
<tr>
<td>Nationality</td>
<td>Non-Saudi = 1</td>
<td>2.432</td>
</tr>
<tr>
<td>Monthly income</td>
<td>Continuous</td>
<td>-0.0002</td>
</tr>
<tr>
<td>Physician’s punctuality</td>
<td>Not punctual = 1</td>
<td>3.423</td>
</tr>
<tr>
<td>Educational level</td>
<td>Continuous</td>
<td>0.022</td>
</tr>
</tbody>
</table>

| Intercept                      | 58.683           | 12.247                                   |
| R-square                       | 0.717            |                                          |
| Overall F-value                | 41.045*          |                                          |

*p < 0.05
NS: not significant

cited. Due to very low variability among some of the cited factors which could not be used for regression purposes, only four variables were included. These were missing patients’ files, delayed delivery of files, language difficulty and physician’s punctuality. While patients were waiting, they were told by nurses that their medical files were either missing or delayed.

As seen in Table 2, patient waiting time was regressed on sociodemographic and other related explanatory variables. The results indicated that the overall F-test for this model was significant (p < 0.01) yielding an F-value of 41.045 with 11 and 178 degrees of freedom. The R-square of 0.717 indicated that the explanatory variables together explain about 72% of the variation in patient waiting time. This regression model included eleven explanatory variables, of which only five had statistically significant coefficients (p < 0.05). These variables were missing patients’ files, numbers of visits, patient’s sex, delayed delivery of files and patient’s age. The other independent variables were not found to be statistically significant, which means that variance in patient waiting time cannot be explained by these variables.

The variable ‘missing patients’ files’ had a beta coefficient of 20.8 and was significant at p < 0.05. This result revealed that patients who reported that their files were missing, on average, had to wait 20.8 min more than patients who reported having had no problem with missing files. The beta coefficient of ‘number of visits’ was statistically significant and had a negative sign indicating that, on average, the greater the number of visits, the shorter the length of patient waiting time. The results also showed a statistically significant difference between males and females in terms of the length of their waiting time. In general, the findings suggest that females waited, on average, 16.4 min less than did males.

The beta coefficient for delayed delivery of files was significant at p < 0.05. This finding revealed that patients who reported a delay on the delivery of their files, on average, waited 6.8 min longer than patients whose files were delivered on time. The beta coefficient of patient’s age was also significant at p < 0.05. On the average, older patients tended to wait longer than younger patients.

Discussion

The results indicated that patients, on average, waited 62.8 min; approximately 42.6% of the respondents waited less than 60 min, and about 76.8% of them waited less than 90 min. These findings were generally consistent with the findings of Al-Hamad & Al-Sheheeb.9

To determine the major attributes influencing the length of patient waiting time at the Prince Salman Hospital, the roles of sociodemographic variables and other related variables were examined through multiple regression technique. Out of the eleven independent variables studied for their role in the lengthy waits, five independent variables were found to have a significant role at p < 0.05 or better. These variables were: missing patients’ files, number of visits, patient’s sex, delayed delivery of files and patient’s age. The attributes that were found to have no significant role were type of visit, language difficulty, nationality, monthly income, physician’s punctuality and patient’s educational level.

With respect to sociodemographic variables, only the patient’s sex and age were found to be statistically significant in predicting the length of
patient waiting time. Males and older patients, on average, waited longer than females and younger patients. Nationality, income and educational level were not found to be important determinants of the length of patient waiting time. That is, there was no statistically significant difference between Saudis and non-Saudis in terms of the length of their waiting times. The lack of a statistically significant difference in waiting time was also true among poor and rich patients, and among educated and uneducated patients.

The handling and managing of medical records have been one of the perennial issues concerning patient waiting times in many hospitals. Table 2 indicates that both missing files and delayed delivery of files were found to be strong predictors of the length of patient waiting time. The data reveal that patients who reported that their files were missing or delayed, on average, waited longer than other patients.

The finding about delayed delivery of files was consistent with the conclusions of earlier studies.8-10 The findings of this study mean that the medical records department plays a significant role in the functioning of the outpatient department. Thus, this study suggests that coordination be improved between the medical records department and the outpatient department in order to reduce patient waiting time.

Contrary to expectations, type of visit (new vs return patients), language difficulty and physician's punctuality were not found to be statistically significant in predicting the length of patient waiting time. The results of this study regarding language difficulty is consistent with the findings of Bin Saeed.10

This study was undertaken because almost no systematic research had been conducted to examine factors which influenced patient waiting time at the outpatient departments in different Saudi healthcare systems. However, one of the main limitations of this study was that the results were based on patients' perceptions only. Actually, little is known on the basis of solid empirical evidence about the magnitude of the problem, factors and conditions that facilitate or hinder the length of patient waiting time. Further studies are needed to address these issues in various healthcare organizations in the Saudi society; those studies should be conducted based on actual waiting time and professional perspectives.

Acknowledgements

The author thanks Dr Fahad Al-Sedary, Assistant Director of the General Directorate in the Riyadh Health Region for the permission to conduct this study. The author also thanks Dr Moharam Hossona, Hospital Director of the Prince Salman Hospital, and Dr Fahad Al-Massoud, Deputy Hospital Director, for facilitating data collection at the hospital.

References