هدف الدراسة: تحديد العوامل التي تؤثر على استخدام المرضى لمقدمي الرعاية الصحية الأولية في المملكة العربية السعودية.

طريقة الدراسة: تم جمع البيانات من خلال استبانة مصممة لتحقيق هدف البحث، حيث توزيعها عشوائياً على عينة شملت 408 من المرضى في خمسة مراكز للرعاية الصحية الأولية بوزارة الصحة، وخمسة من مراكز الرعاية الأولية بالقطاع الخاص. وقد تم جمع هذه البيانات خلال الفترة من 15 فبراير إلى 15 مارس 1998. تم استخدام تحليل التمييز الإحصائى المدرج للمجموعين بالنسبة للعوامل المؤثرة على استخدام المرضى لتلك المراكز.

نتائج الدراسة: نالت نتيجة الدراسة أن سبعة عوامل من ثلاثة وثلاثين عامل لديهم التأثير المعنوي في عملية التمييز بين المرضى الذين يعالجون في المراكز الصحية الحكومية والمراكز الصحية التابعة للقطاع الخاص. هذه العوامل هي: (1) مصدر الدفع، (2) توفر مصادر أخرى للدخل، (3) المسافة بين مكان إقامة المريض والمركز، (4) التعليم، (5) المفاضلة في جنس الطبيب، (6) المفاضلة في اختيار الطبيب السعودي، (7) جودة المدركة للبيئة الطبية.

التوصيات: توصي الدراسة بالتركيز على ناحية التوزيع الأمثل لمقدمي الخدمات الصحية من ناحية جنس الطبيب، بحيث يكون هناك نوع من توفر الجنسين في كل مركز. كما توصي الدراسة بالاهتمام بجودة الخدمات الصحية المقدمة من قبل المراكز الصحية الأولية في المجموعين. وتوصى الدراسة أيضاً باستمرار البحث العلمي في مجال الاستخدام الأثمن للخدمات الطبية في مراكز الرعاية الأولية.

الكلمات الممتعة: استخدام المرضى، مقدم الرعاية الصحية الأولية، تحليل التمييز المتعدد، جودة الخدمات.

Objective: To determine the factors that significantly discriminate between Ministry of Health (MOH) and private primary health care patients in Riyadh City, Saudi Arabia.

Methodology: Through a self-administered questionnaire, data were collected from 408 randomly selected patients in five MOH primary health care centers and five private dispensaries. Data collection was conducted from February 15 to March 15, 1998. Two-group stepwise discriminant analysis was utilized in analyzing the data.

Results: Seven of the 33 factors were found to be statistically significant in discriminating between MOH and private patients. These factors were: (1) source of payment, (2) availability of other sources of income, (3) distance between residence and

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Factors Influencing Patients’ Utilization of PHC Providers 23
Primary Health Care (PHC) provider, (4) education, (5) preference for similar-gender doctors, (6) preference for Saudi doctors, and (7) perceived quality of medical staff.

**Conclusion:** The study notes that PHC providers cannot control the sociodemographic characteristics of patients. Therefore, policy makers should focus on ensuring that PHC facilities have enough male and female doctors. Furthermore, the quality of the medical staff of these facilities should be upgraded to improve the overall quality of the services they provide. The conduct of further studies related to the utilization of health care providers is also recommended.

**Key Words:** Patientsʼ utilization, primary health care providers, stepwise discriminant analysis, quality of services.

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**INTRODUCTION**

Primary health care (PHC) can be considered the first contact between the patient and the health care system. It includes all the basic health care services provided to every member of the society. Thus, PHC is essential for attaining an acceptable level of health for the general public. It is also an integral and critical component of the entire health care system of any country. Therefore, PHC services should be accessible and available to the entire population, regardless of their economic or social class and geographical location.

In the Kingdom, the Ministry of Health (MOH) has the primary responsibility of meeting the health care needs of the general population. The MOH also emphasizes the importance of PHC services by implementing a referral system, the only means of gaining access to secondary and tertiary care. By 1997, the MOH was operating a total of 1,737 PHC centers throughout the Kingdom.

The government continues to shoulder the bulk of the responsibility for meeting the health care needs of the public. However, the government also emphasizes the importance of the private sector in the overall development including health care of the Kingdom. In fact, the concept of privatization was highlighted in the Sixth Development Plan. The private sector responded so well to this government initiative of privatization, that by 1997, there were 611 private dispensaries operating in various parts of the Kingdom.

Increasing the number of facilities may be a good start for any PHC initiative. However, the success of any PHC program in accomplishing its objectives and goals is largely dependent on good management. To get high quality of PHC services, the management must continually strive to meet the patientsʼ needs at minimum costs. Furthermore, the quality of services provided by PHC facilities should not only be maintained, but also continually improved.

This study was conducted with the main objective of determining the factors that influence patientsʼ utilization of PHC providers in Riyadh city. In view of the dearth of published materials in this area, the information generated by this study will be useful for policy makers in their attempt to improve the services available to patients. Specifically, this study aimed to determine the factors that best discriminate between MOH and private PHC patients.

**METHODOLOGY**

Al-Dayel and Al-Omar tested the reliability and validity of an initial version of the
questionnaire utilized in this study and later revised to suit PHC settings. To test the reliability and validity of the revised questionnaire, 10 PHC patients (five MOH patients and five private patients) were asked to answer the questionnaire. Their comments and suggestions were incorporated in the final version of the questionnaire, which measured with coefficient alpha had a reliability of 0.85.

The questionnaire included 11 socio-demographic and 22 attitudinal factors. The responses were ranked on a four-point scale: 1=not important at all; 2=not important; 3=important; 4=very important. A total of 450 questionnaires were distributed to a stratified sample drawn from five MOH-PHC centers and five private PHC centers or dispensaries. It should be noted here that no inclusion or exclusion criteria were used in the selection of respondents. Of the total number of questionnaires distributed, 408 were found valid and included in the analysis (194 from MOH-PHC centers and 214 from private dispensaries). Thus, the response rate of the data collected from February 15 to March 15, 1998 was 81.6%.

The SPSS PC+ statistical package was utilized in the data analysis, a two-group discriminant analysis to answer the study question, a Chi-square test to determine the significance of the function, and the Wilks’ Lambda test to determine the significance of each independent variable (note that the new versions of SPSS replace missing values with mean in the DA). Furthermore, descriptive statistics (frequencies, percentages, means and standard deviation) were also used in the data analysis.

RESULTS AND ANALYSIS
Table 1 presents the socio-demographic and attitudinal factors included in the study. This table shows that, on the average, the MOH primary care patients were older, had more family members, lower educational level and lower monthly income than private patients. The MOH had a higher percentage of Saudis and patients who were in employment. Furthermore, the MOH had a lower percentage of males, married patients, and patients with a source of income other than their employment. Moreover, a much higher proportion of MOH patients had a source of payment other than themselves and also had a relatively better health status than private patients.

The results of the test for equality of group means are shown in Table 2. It can be seen from this table that among the 34 factors considered in this study, only eight factors yielded statistically significant group means between MOH and private patients. These factors were: (1) source of payment, (2) preference for Saudi doctors, (3) nationality, (4) education, (5) distance between residence and PHC provider, (6) availability of same gender doctors, (7) accessibility of PHC provider, and (8) availability of other sources of income.

Table 3 shows that the results of the two-group stepwise discriminant analysis reveal seven factors that significantly discriminate between MOH and private patients: (1) source of payment, (2) availability of other sources of income, (3) distance between residence and PHC provider, (4) education, (5) preference for same gender doctors, (6) preference for Saudi doctors, and (7) perceived quality of medical staff. The results mean that only these seven factors independently and significantly discriminate between MOH and private patients.

The discriminant function was also found to be statistically significant (chi-square= 65.857; p < 0.0001). A high canonical correlation (about 0.80) for the discriminant function and a high percentage (greater than 85%) of grouped cases correctly classified are also
Table 1: Frequency distribution, means and standard deviation (SD) for the Socio-demographic factors included in the study

| VARIABLE                     | MOH PATIENTS |           |           | PRIVATE PATIENTS |           |           |
|------------------------------|--------------|-----------|-----------|------------------|-----------|-----------|
|                              | n            | %         | Mean      | SD               | n         | %         | Mean      | SD               |
| Age (years)                  |              |           |           |                  |           |           |           |                  |
| 25 years old or less         | 51           | 37.78     | 3.11      | 11.02            | 50        | 32.26     | 30.82      | 8.67            |
| 26 – 35 years old            | 51           | 37.78     | 64        | 41.29            | 426       | 88.67     | 41         | 26.45            |
| More than 35 years old       | 33           | 24.44     |           |                  | 41        | 26.45     |           |                  |
| Number of family members     |              |           | 6.59      | 2.98             |           |           | 5.64      | 3.04             |
| Five or less                 | 67           | 42.68     | 108       | 61.36            | 68        | 38.64     |           |                  |
| More than five               | 90           | 57.32     |           |                  | 68        | 38.64     |           |                  |
| Education                    |              |           |           |                  |           |           |           |                  |
| Little                       | 12           | 6.19      |           |                  | 5         | 3.86      |           |                  |
| Intermediate                 | 53           | 27.32     | 41        | 19.52            | 64        | 26.45     |           |                  |
| Secondary                    | 68           | 35.05     | 70        | 33.33            |           |           |           |                  |
| Undergraduate                | 58           | 29.90     | 84        | 40.00            |           |           |           |                  |
| Postgraduate                 | 3            | 1.55      | 10        | 4.76             |           |           |           |                  |
| Gender                       |              | 0.53      | 0.50      |                  | 0.62      | 0.49      |           |                  |
| Male                         | 101          | 53.16     | 131       | 61.50            |           |           |           |                  |
| Female                       | 89           | 46.84     | 82        | 38.50            |           |           |           |                  |
| Monthly salary               |              |           |           |                  |           |           |           |                  |
| Less than SR 2,500           | 46           | 33.09     | 35        | 28.93            |           |           |           |                  |
| SR 2,501 – SR 4,999          | 56           | 40.29     | 53        | 43.80            |           |           |           |                  |
| SR 5,000 or more             | 37           | 26.62     | 33        | 27.27            |           |           |           |                  |
| Nationality                  |              | 0.80      | 0.40      |                  | 0.64      | 0.48      |           |                  |
| Saudi                        | 153          | 79.69     | 78        | 36.45            |           |           |           |                  |
| Non-Saudi                    | 39           | 20.31     | 136       | 63.55            |           |           |           |                  |
| Marital status               |              | 0.65      | 0.48      |                  | 0.72      | 0.45      |           |                  |
| Married                      | 125          | 64.77     | 155       | 72.43            |           |           |           |                  |
| Unmarried                    | 68           | 35.23     | 59        | 27.57            |           |           |           |                  |
| Occupation                   |              | 0.63      | 0.48      |                  | 0.61      | 0.49      |           |                  |
| Employed                     | 120          | 62.83     | 129       | 61.43            |           |           |           |                  |
| Unemployed                   | 71           | 37.17     | 81        | 38.57            |           |           |           |                  |
| Has other source of income   |              | 0.10      | 0.31      |                  | 0.22      | 0.41      |           |                  |
| Yes                          | 17           | 10.37     | 35        | 21.60            |           |           |           |                  |
| No                           | 147          | 89.63     | 127       | 78.40            |           |           |           |                  |
| Source of payment            |              | 0.09      | 0.29      |                  | 0.81      | 0.39      |           |                  |
| Self                         | 18           | 9.42      | 171       | 81.43            |           |           |           |                  |
| Others                       | 173          | 90.58     | 39        | 18.57            |           |           |           |                  |
| Perceived health status      |              | 1.52      | 0.64      |                  | 1.59      | 0.61      |           |                  |
| Good                         | 105          | 54.69     | 98        | 46.23            |           |           |           |                  |
| Fair                         | 76           | 39.58     | 105       | 49.53            |           |           |           |                  |
| Poor                         | 9            | 4.69      | 7         | 3.30             |           |           |           |                  |
| Very poor                    | 2            | 1.04      | 2         | 0.94             |           |           |           |                  |
Table 2: Test for equality of group means

| FACTOR (Measurement code)                                           | WILKS' LAMDA | F-VALUE | P-VALUE |
|---------------------------------------------------------------------|--------------|---------|---------|
| Source of payment (1=Self; 0=Others)                               | 0.6809       | 31.40   | 0.0000* |
| Preference for Saudi doctors†                                       | 0.8537       | 11.49   | 0.0012* |
| Nationality (1=Saudi, 0=Non-Saudi)                                 | 0.9053       | 7.01    | 0.0101* |
| Education (1=Little, 5=Postgraduate)                               | 0.9237       | 5.54    | 0.0215* |
| Distance between residence and PHC provider†                        | 0.9254       | 5.40    | 0.0232* |
| Availability of similar-gender doctors†                            | 0.9259       | 5.36    | 0.0237* |
| Accessibility of PHC provider†                                      | 0.8381       | 4.42    | 0.0393* |
| Availability of other sources of income (1=Yes, 0=No)              | 0.9430       | 4.05    | 0.0482* |
| External design of the center of dispensary†                        | 0.9466       | 3.78    | 0.0561  |
| Availability of doctor who speaks similar language†                 | 0.9537       | 2.99    | 0.0886  |
| Number of family members (continuous)                              | 0.9589       | 2.87    | 0.0948  |
| Availability of medicine†                                          | 0.9694       | 2.11    | 0.1506  |
| Availability of diagnostic facilities†                             | 0.9762       | 1.63    | 0.2056  |
| Availability of advanced medical equipment†                         | 0.9789       | 1.44    | 0.2337  |
| Cost of treatment†                                                 | 0.9798       | 1.38    | 0.2440  |
| Availability of 24-hour services†                                   | 0.9829       | 1.16    | 0.2850  |
| Perceived health status (1=Good, 4=Very poor)                      | 0.9832       | 1.14    | 0.2888  |
| Monthly salary (continuous)                                        | 0.9834       | 1.12    | 0.2918  |
| Easy admission procedures†                                          | 0.9865       | 0.92    | 0.3408  |
| Physical setting of the center or dispensary†                       | 0.9897       | 0.69    | 0.4083  |
| Perceived quality of administrative staff†                          | 0.9899       | 0.68    | 0.4115  |
| Marital status (1=Married, 0=Unmarried)                            | 0.9912       | 0.60    | 0.4418  |
| Perceived quality of medical staff†                                 | 0.9914       | 0.58    | 0.4487  |
| Existence of relationship with a staff of the center or dispensary† | 0.9951       | 0.33    | 0.5667  |
| Availability of specialized doctors†                               | 0.9968       | 0.22    | 0.6447  |
| Perceived quality of nursing staff†                                 | 0.9984       | 0.11    | 0.7405  |
| Cleanliness of the center or dispensary†                            | 0.9985       | 0.10    | 0.7555  |
| Availability of entertainment facilities†                           | 0.9991       | 0.06    | 0.8018  |
| Waiting time†                                                       | 0.9993       | 0.05    | 0.8307  |
| Age (continuous)                                                    | 0.9997       | 0.02    | 0.8846  |
| Occupation (1=employed, 0=unemployed)                               | 0.9998       | 0.01    | 0.8889  |
| Convenience of appointments†                                        | 0.9999       | 0.00    | 0.9724  |
| Friendliness of the staff†                                          | 1.0000       | 0.00    | 1.0000  |

*Statistically significant at p<0.05
†1=Not important at all; 4=Very important
Table 3: The discriminant analysis results after seven steps

| FACTOR                        | WILKS’ LAMBDA | SIGNIFICANCE | STANDARD COEFFICIENTS |
|-------------------------------|---------------|--------------|-----------------------|
| **Financial factors**         |               |              |                       |
| Source of payment             | 0.6810        | 0.0000       | 0.5855                |
| Availability of other sources of income | 0.4727        | 0.0000       | 0.5606                |
| **Accessibility of provider**  |               |              |                       |
| Distance between residence and PHC provider | 0.5863        | 0.0000       | 0.3542                |
| **Socio-demographic factors**  |               |              |                       |
| Education                     | 0.5200        | 0.0000       | -0.5183               |
| **Provider characteristics**  |               |              |                       |
| Preference for similar-gender doctors | 0.4244        | 0.0000       | 0.4045                |
| Preference for Saudi doctors  | 0.3871        | 0.0000       | 0.3014                |
| **Quality of staff**          |               |              |                       |
| Perceived quality of medical staff | 0.3633        | 0.0000       | -0.4103               |

Group classification Results

| Actual Group | Group | N   | Predicted Groups |
|--------------|-------|-----|------------------|
|              |       |     | MOH   | Private |
| MOH-PHC provider | 0     | 194 | 166 (85.6%) | 28 (14.4%) |
| Private PHC provider | 1     | 214 | 31 (14.5%) | 183 (85.5%) |

Percentage of grouped cases correctly classified = 85.54%
Canonical correlation = 0.7979, Chi-square = 64.294, p-value = 0.0000

Discriminant function’s group centroids: MOH-PHC patients (Group 0) = -1.3625
Private PHC patients (Group 1) = 1.2490

Presented in Table 3. The group centroid of –1.3625 for the MOH-PHC patients (group 0) and 1.2490 for the private PHC patients (group 1) can be explained as the number of standard deviations each group is from the average of both groups (the standardized average for both groups is zero). The centroids show a significant degree of discrimination between MOH and private PHC patients. The canonical correlation of 0.7979 means that 63.66% of the variance in the utilization of PHC provider can be explained by the model.

In the discriminant analysis, each significant factor was entered into the model according to its contributing power to the differentiation between the two groups. The estimates for this model reveal that the source of payment was the strongest predictor of the utilization of PHC provider. Thus, a patient who would pay for his or her treatment could be expected to choose a private PHC provider.

The distance between residence and PHC provider was the next strongest discriminating factor. In a study conducted in the Cameroons, distance was also found to strongly influence the utilization of health care provider. The results of this study mean that a patient who reckoned this factor as important was more likely to choose a public PHC provider. This supports the findings of Al-Omar and Egunjobi.

The third discriminating factor was education, implying that the more educated patients were more likely to go to private PHC providers. This may indicate some dissatisfaction among educated patients with the PHC services provided by MOH facilities. These results agree with the findings of Al-Dayel.
but contradict that of Bin Saeed\textsuperscript{12} who found no significant influence of education on the choice of health care facilities. The significance of the preference for same gender doctors confirm the findings of Al-Zahrani\textsuperscript{13} that patients were more likely to go to private health care providers if they preferred to be treated by doctors of the same gender. The preference for Saudi doctors indicates that patients were more likely to go to MOH facilities if they preferred to be treated by Saudi doctors. The perceived quality of medical staff was another statistically significant discriminating factor between MOH and private patients. An earlier study found that patients considered the quality of medical staff as the most important factor in choosing a health care facility.\textsuperscript{14} The results of this study support the findings of Bin Saeed\textsuperscript{15} that those patients who thought of the quality of care as important were more likely to seek treatment in private health care facilities.

**CONCLUSION**

This study primarily focused on determining the independent factors that significantly discriminate between MOH and private patients. The results of this study suggest that PHC settings must give serious consideration to the significant factors obtained by this study in order to meet the expectations of their patients. It should be noted that the sociodemographic characteristics of the patients are beyond the control of PHC providers. Therefore, PHC policy makers should focus on those factors within their control, such as providing enough number of both male and female doctors, especially Saudi doctors. The results of this study indicate the heavy reliance of private facilities on non-Saudi doctors.

Primary health care facilities should also focus on improving the quality of its medical staff since the results of this study indicate that patients consider this factor as vital in their utilization of PHC providers. The quality of PHC medical staff in MOH facilities could be improved through the provision of continuing education and training activities. It is our view that it would be economical to improve the quality of service in PHC facilities with the provision of advanced medical equipment.

At this point, it is important to note that due to certain limitations of this study there should be caution in generalizing its findings. Since the sample of the study was taken from one geographical area it cannot be viewed as representative of the entire population. Furthermore, the total number of respondents was relatively small compared to the total primary health care patient population. Nonetheless, these findings provide an important starting point for future research.

Finally, the findings of this study suggest that further studies focusing on a different geographical area or greater number of respondents should be done on the utilization of health care facilities and providers. Other statistical techniques may also be utilized. The data generated by these studies can fill in the serious paucity of information in this area. The information thus obtained will be invaluable to policy makers, especially in dealing with the greater demand for high quality care at the lowest possible cost.

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