

Factors determining choice of health care provider in Jordan

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العوامل التي تحدّد اختيار القائمين على إيتاء الرعاية الصحية في الأردن
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الخلاصة: درس الباحثان في هذه الدراسة العوامل التي تؤثر على اختيار المرضى للقائمين على إيتاء الرعاية الصحية في خدمات العيادات الخارجية في الأردن. وقد شملت الدراسة عوامل ديموغرافية واقتصادية اجتماعية، ووضع المريض من حيث التأمين، وجودة الرعاية، وحجم الأسرة وتكاليف الرعاية الصحية، وذلك باستخدام نموذج لوغاريتمي متعدد الحدود طُبّق على 1031 من المرضى الذين يراجعون العيادات الخارجية، وذلك كجزء من مسح الانتفاع بالرعاية الصحية ونفقاتها في الأردن لعام 2000. وبيّن أن خصائص المريض الاجتماعية والاقتصادية والديموغرافية تؤثر على اختياره للقائمين على إيتاء الرعاية الصحية. أما التأمين الصحي فلم يكن له أهمية يُعتدُّ بها إحصائياً في اختيار المرافق التابعة لوزارة الصحة وتفضيلها على سواها. وقد كان لدى المرضى الذين يتتبعون من القطاع العام حساسية بالنسبة للأسعار، ومن هنا فإن أي محاولة لتحسين إتاحة خدمات الرعاية الصحية في الأردن ينبغي أن تأخذ ذلك بعين الاعتبار.

ABSTRACT This paper examines factors influencing a patient's choice of provider for outpatient health care services in Jordan. Factors including demographic, socioeconomic, insurance status, quality of care, household size and cost of health care were studied using a multinomial logit model applied to a sample of 1031 outpatients from the *Jordan healthcare utilization and expenditure survey, 2000*. The patient's socioeconomic and demographic characteristics affected provider choice. Insurance was not statistically significant in choosing Ministry of Health facilities over other providers. Patients utilizing the public sector were price sensitive, and therefore any attempt to improve accessibility to health care services in Jordan should take this into consideration.

Facteurs déterminant le choix d'un prestataire de soins en Jordanie

RÉSUMÉ Cet article passe en revue les facteurs qui influencent le choix des patients en matière de prestataires de services de soins de santé ambulatoires en Jordanie. Les facteurs tels que les aspects démographiques et socioéconomiques, la situation au regard de l'assurance maladie, la qualité des soins, la taille du ménage et le coût des soins ont été étudiés grâce à l'application d'un modèle logit multinomial à un échantillon de 1 031 malades ambulatoires ayant participé à l'enquête sur l'utilisation des soins de santé et les dépenses afférentes réalisée en Jordanie en 2000. Les caractéristiques socioéconomiques et démographiques des patients avaient une incidence sur le choix des prestataires. La situation au regard de l'assurance maladie ne déterminait pas de façon statistiquement significative le choix des établissements dépendant du ministère de la Santé par rapport à d'autres prestataires. Les patients qui avaient recours au secteur public étaient sensibilisés aux prix, et cet aspect sera à prendre en compte si l'on veut améliorer l'accès aux services de soins de santé en Jordanie.

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Introduction

The health system in Jordan is a blend of several fragmented private and public programmes. The public sector has 2 major programmes that finance and deliver health care: the Ministry of Health (MOH) and the Royal Medical Services (RMS). Additionally, there are smaller public programmes such as university-based health schemes. There are also several nongovernmental organizations and donor owned and operated facilities, the largest being the United Nations Relief and Works Agency (UNRWA), which provides care to Palestinian refugees. There is a large and vibrant private provider market in Jordan.

According to the *Jordan healthcare utilization and expenditure survey, 2000*, roughly 60% of the population had at least one form of health insurance [1]. The MOH, through the Civil Insurance Programme, insured 20% of the population, including civil servants and their dependents; the RMS insured around 25%; UNRWA insured around 7.5%; and the private sector around 7.5%, leaving 40% of the population uninsured.

The main priority goals of the current government in Jordan emphasize the political will to reach universal health insurance coverage, reduce health inequality and inequity and improve the quality of health care services. To achieve such goals there is a need to develop and implement appropriate policies that will enable effective and equitable access to services for all Jordanians, including the uninsured. Understanding socioeconomic factors underlying the choice of health care provider by health care service users is critical to informing this process.

Little research has been done analysing factors affecting consumer choice of provider in low- and middle-income countries,

and we believe that this study will contribute to the knowledge base. In Egypt the MOH/government and other public facilities account for only 36% of outpatient visits in comparison to 56% for private providers. On the other hand, nearly 85% of all inpatient visits occur in either MOH/government or public facilities, while private facilities account for only 11% [2-4]. In Lebanon, 9.4% of outpatient visits occur in public facilities, 12.2% in nongovernmental organizations and 78.4% at private facilities [5].

A study on choice of health care provider in Cameroon [6] illustrated that quality of care, insurance coverage, price and income were important determinants in choosing a health care provider. As quality of care increased in government health centres, the probability that an individual would choose a public facility also increased. Those with higher incomes tended to choose private health providers and those with larger families tended to choose government health units.

Additionally, insurance was a major factor in choosing a health care provider [7,8]; in a study conducted to determine patient choice of medical provider in rural China, insurance coverage significantly increased an individual's probability of seeking formal treatment, and, consistent with economic theory, price was important in determining the patient's medical care-seeking behaviour. The study demonstrated that, when making choices regarding which healthcare provider to visit, individuals trade off price and quality, choosing the provider that gives them the highest utility.

In Vietnam, it is estimated that the private sector provides 60% of all outpatient services [9]. Income, age, and number of sick individuals within the household were factors that influence the choice of a health care provider. Additionally, evidence suggested that severity of the illness is an im-

portant factor in choosing a health provider: those with severe illnesses tended to use private less than public health services.

This study investigates factors such as demographic and socioeconomic factors, insurance status, quality of care, household size, and cost of health care, and their impact on patient's choices of health care provider. We hope to provide a better understanding of the role, magnitude and contribution of both the public and the private sectors, and highlight the main factors determining choice of provider. These results can help policy makers to understand patient health-seeking behaviour, and thus provide important information for designing future health policies.

The hypothesis is that the poorest, illiterate, unemployed, residents of rural areas and publicly insured individuals are more likely to obtain care at MOH facilities than in the private sector.

Methods

Data

Data from the *Jordan household utilization and expenditure survey, 2000* were used for this analysis [1]. The survey was nationally representative covering about 8300 households and more than 49 000 individuals. The survey used a recall period of 2 weeks for outpatient care. In other words individuals were asked whether, conditional on being ill, they had used a health care provider in the past 2 weeks. In all, 1031 individuals had made an outpatient visit in the previous 2 weeks and all these individuals were used in the analysis. It is important to keep in mind that we were not trying to analyse the "seek or not-see" decision but rather, once a decision to seek care had been made, to understand what factors affected choice of provider.

Model

We decided to use a multinomial logit model to analyse choice of health provider. The model has the following specification:

$$\ln \left\{ \frac{P(\text{use}j)}{P(\text{use}p)} \right\} = X\beta_j$$

Where: j represents the 3 choices of health services providers MOH RMS or private sector, $\text{use}p$ is the base group who selected private providers, X is a vector of explanatory variables and β_j is a vector of coefficients when choosing provider j .

The multinomial logit used for this analysis is the standard method for estimating unordered, multi-category, dependent variables. Multinomial probit and gompit are logically possible but impractical. For example, multinomial probit involves probability expressions that are multiple integrals of the multivariate normal density. While accurate and simple approximations are available for the integral of the univariate density, comparable approximations are feasible for the multivariate integrals only up to about the fourth order [10].

Dependent variable

The dependent variable "health care provider selected by the health care user" is used to define various health providers. The 15 variables reporting different levels of service and different type of provider were aggregated into 3 categories: MOH, RMS and the private sector.

Facilities owned by the MOH include primary health care centres, comprehensive health care centres, maternal and child centres, MOH hospitals and Jordan University Hospital are all listed as 1 variable, MOH. The sample indicated that Jordan University Hospital was the choice of a limited number of patients; this number was not significant when the hospital was analysed as a sepa-

rate entity. A decision was made to integrate these numbers under the MOH facilities since this was the classification it was given in the survey instrument

RMS clinics and hospitals are listed as a single variable. UNRWA, nongovernmental organization clinics and hospitals along with private clinics, laboratories, pharmacies and hospitals are also listed as a single variable: the private sector.

Independent variables

Table 1 describes the variables and their summary statistics.

Sex was measured as a dummy variable.

Geographic location was measured as a multi-dummy variable. Amman was chosen as the base.

Age was measured in complete years and treated as a continuous variable.

Education was measured in completed years of education, and treated as a continuous variable.

Employment was proxied by employment status, which includes permanent, contract, daily and others categories. Employment was measured as a dummy variable. About 35% of the respondents were under 15 years of age, which accounts for the missing values for employment status. An adjustment was made whereby all children below the age of 15 years were considered unemployed.

Marital status was measured as multi-dummy variables with never married as the base. The missing values (around 35%) were assumed to be unmarried individuals, since the sample included children, and they were integrated with never married. Divorced, separated and widowed individuals were aggregated into 1 variable.

Wealth index was used as a proxy for *household income*; 5 variables were created with the third quintile (middle income

group) used as the base group (the omitted variable).

Household size was measured by total members included in the household, and treated as a continuous variable.

Out-of-pocket expenditure was measured through 4 variables: total direct medical out-of-pocket expenditure for doctor fees, medication, X-rays and laboratory tests, and other medical expenditure; total cost of transportation; total medical expenditure specifically for chronic disease; and out-of-pocket expenses for health provision (all treated as continuous variables). Finally a dummy variable was developed which covered paying any out-of-pocket amount for health provision.

Insurance status was obtained through a question asking if the individual was insured or not. A dummy variable was created where insured = 1 and other = 0.

Quality variables included questions related to waiting time, privacy of the medical examination, cleanliness of the health facility, staff treatment and sufficient treatment time.

Health status was measured using 2 variables; the first related to chronic diseases, and the second related to consumption of medication on a regular basis.

For key independent variables, χ^2 was estimated to test if the value of those variables differed significantly from zero. Other relevant explanatory variables, such as provider characteristics and severity of the diseases, were not available and consequently were not included in this analysis. Therefore, these results should be viewed as a primary attempt to explain factors influencing choice of provider. Further analysis will be needed including providers' characteristics and severity of illness to properly understand factors influencing individual choice of provider.

Table 1 Description of selected variables and distribution of study sample

Independent variable	Description	%
Sex	1 if female, 0 otherwise	54
<i>Location</i>		
Amman	Omitted group	27
Northern governorates	1 if yes, 0 otherwise	28
Southern governorates	1 if yes, 0 otherwise	26
Central governorates	1 if yes, 0 otherwise	19
Age (mean 22 years)	Continuous	
Education (mean 5 years)	Continuous	
Employment	1 if temporarily employed or unemployed, 0 otherwise	93
<i>Marital status</i>		
Never married	Omitted group	58
Married	1 if married, 0 otherwise	36
Widowed	1 if widowed or divorced, 0 otherwise	6
<i>Income</i>		
Middle class	Omitted group	22
Richest	1 if richest quintile, 0 otherwise	23
Rich	1 if rich quintile, 0 otherwise	19
Poor	1 if poor quintile, 0 otherwise	19
Poorest	1 if poorest quintile, 0 otherwise	17
Insurance	1 if insured, 0 otherwise	64 ^a
<i>Out-of-pocket</i>		
Total (mean JD5.8 ^b)	Continuous	
Transportation (mean JD3.9 ^b)	Continuous	
Total chronic (mean JD1.4 ^b)	Continuous	
Waiting time (mean 50 min)	Continuous	
Family size (mean 6)	Continuous	
Examination	1 if in a private room, 0 otherwise	83
Cleanliness	1 if good, 0 otherwise	76
Staff treatment	1 if good, 0 otherwise	76
Treatment time	1 if sufficient time, 0 otherwise	70
Chronic disease	1 if chronic condition, 0 otherwise	11
Regular medication	1 if taking, 0 otherwise	17

Dependent variable = health care provider (private sector = 0; Ministry of Health = 1; Royal Medical Services = 2).

^aIncludes multiple insurance.

^bJordanian dinars.

Source: Jordan healthcare utilization and expenditure survey, 2000 [1].

Results

Descriptive analysis

During a 2-week period, 20% of the sample reported some kind of illness among whom 63% sought treatment through health care providers; 54% were women, 28% were

from the Northern Governorates, 14% were employed and 64% have one kind of health insurance or another. Mean age was 22 [standard deviation (SD) 20] years and a range of 88 years, nearly 51% were 18 years or younger. On average they had 5 years of education (SD 5.5), range 21 years.

Among those who reported illness and sought treatment, 41% used MOH centres; 9% used MOH hospitals; 0.4% used JUH facilities, 7% used RMS clinics and hospitals, 3.6% used nongovernmental organization facilities, 27% used private clinics, 2% used private hospitals and 11% used private facilities such as pharmacies and laboratories.

Table 2 **Distribution by provider type**

Variable	MOH	RMS	Private sector
Total	51.4	6.5	42.1
Insured	77.0	94.0	56.0
Uninsured	23.0	6.0	44.0
Income quintile			
Richest	18.4	6.1	75.4
Rich	49.2	7.0	43.7
Middle	57.6	4.9	37.5
Poor	60.2	8.7	31.1
Poorest	65.2	6.0	28.8
Residence			
Amman	15.7	10.4	41.5
Northern governorates	36.4	25.4	18.9
Southern governorates	29.1	47.8	19.8
Central governorates	18.9	16.4	19.8
Health status ^a			
Chronic disease	44.7	14.1	41.2
Regular medication	44.8	14.4	40.8
Employment			
Economically active	14.9	22.4	20.5
Economically inactive	85.1	77.6	79.5
Age cohort			
< 18	56.2	34.3	45.4
18+	43.8	65.7	54.6

MOH = Ministry of Health.

RMS = Royal Medical Services.

^aChoice of health provider by patients with chronic disease.

Source: Jordan healthcare utilization and expenditure survey, 2000 [1].

As illustrated in Table 2, 75.4% of those in the highest income group used private providers compared with 28.2% of the lowest income group, while 65.2% of the lowest income group used MOH facilities compared to 18.4% of the richest group.

In addition, the joint impact of income and residence showed a statistically significant difference (significantly different from zero at $P < 0.001$) comparing residents of Amman, from different income groups, and residents of other governorates: 41% of the poorest income group in Amman use private facilities compared to 54% who used MOH facilities. In the other governorates, 66% of the poorest income group used MOH facilities compared to 20% who used private facilities.

Regression analysis

The results of the multinomial logit estimations are presented in Table 3. Using Nagelkerke R-squared, the overall strength of association prediction for this model across the various choices was 57%. The general model shows that demographic factors (such as place of residence), insurance status, socioeconomic factors (such as being in the poorest income group and marital status), cost of treatment, quality of care, and health status [using regular medication ($P = 0.034$) as a measure] were statistically significant and influenced the patients' choice of health provider.

Socioeconomic and demographic factors such as age, sex, education, income and marital status varied according to type of provider. Female sex was significantly negatively associated with choosing RMS compared to the private sector. The odds of a female selecting RMS compared to the private sector was 0.45 times (about 45%) that for a male.

Residents of the Southern governorates were 2.23 times more likely to choose MOH

and 5.35 times more likely to choose RMS over private facilities compared to residents of Amman.

Controlling for other variables, the poorest income group was 0.34 times as likely to choose MOH facilities over private facilities compared to the middle income group, while the rich income group was 2.28 times more likely to use RMS facilities over private facilities compared to the middle income group.

Marital status was statistically significant only for married individuals seeking treatment at RMS. The odds of a married individual selecting RMS rather than a private provider were 3.62 times greater than the odds of a never married individual. In contrast to prior expectations, education, age and family size had no significant influence on provider choice.

Controlling for other variables in the equation, increasing family size by 1 SD

Table 3 Factors associated with choice of health service provider

Variable	MOH coefficient	OR	RMS coefficient	OR
Female	-0.168	0.845	-0.793*	0.453
Age	0.018	1.018	-0.014	0.986
Northern governorates	0.688**	1.989	0.678	1.970
Southern governorates	0.804**	2.235	1.676**	5.346
Central governorates	0.399	1.490	0.542	1.719
Insurance	0.003	1.003	1.269*	3.556
Richest	0.349	1.418	0.478	1.613
Rich	0.268	1.308	0.823	2.278
Poor	-0.003	0.997	0.419	1.520
Poorest	-1.085**	0.338	0.617	1.853
Married	-0.096	0.908	1.286*	3.617
Divorced	-0.853	0.426	1.278	3.590
Employment	-0.155	0.856	-0.225	0.798
Family size	0.085*	1.089	0.055	1.057
Years of education	-0.035	0.966	-0.049	0.953
Out-of-pocket expenditure	-0.211	0.810	-1.669**	0.188
Private examination	1.695**	5.447	0.843	2.324
Cleanliness of facility	0.174	1.190	1.656**	5.240
Good staff treatment	0.336	1.399	-0.710	0.492
Sufficient treatment time	-0.342	0.710	0.835	2.304
Chronic disease	-0.084	0.919	0.514	1.672
Regular medication	0.659*	1.933	1.502**	4.491
Total out-of-pocket	-0.377**	0.686	-0.462**	0.630
Transportation cost	-0.028	0.972	-0.233**	0.792
waiting time	-0.049	0.952	0.456*	1.577
Out-of-pocket for chronic diseases	0.002	1.002	0.010	1.010

The comparison group is the private sector.

MOH = Ministry of Health; RMS = Royal Medical Services.

OR = odds ratio.

*P ≤ 0.05; **P ≤ 0.01.

-2 log likelihood = 1161.607.

increased the probability of choosing MOH facilities over a private provider from 44.0% to 50.0%, and the probability of choosing RMS from 3.0% to 3.4%. Moreover, controlling for other variables, increasing the years of education by 1 SD decreased the probability of choosing MOH facilities over the private sector from 44% to 40%. Furthermore, an increase in age by 1 SD increased the probability of using MOH over the private sector from 44% to 53%, controlling for other variables.

Insurance status was statistically significant in choosing RMS facilities over private providers; the odds of an insured individual selecting RMS rather than a private provider were 3.6 times greater than the odds of an uninsured individual.

As expected, *out-of-pocket expenses* (proxy for cost of treatment) was a major determinant of choice of health care provider. An increase in out-of-pocket expenditure was negatively associated with choosing MOH and RMS facilities compared to private facilities.

The results regarding *health status and chronic disease* variables suggest that, although the presence of the health condition itself and the out-of-pocket payment for medication were not statistically significant, the need for regular medication contributed significantly to explaining the variation in the pattern of utilization. Individuals with a chronic disease history in the previous 6 months who took regular medication were twice as likely to visit MOH facilities and 4.5 more likely to visit RMS facilities than private providers.

Quality variables suggest that *quality of care* in the form of private examination, cleanliness of the facility, sufficient treatment time, good staff treatment, and waiting time had an impact on patient choice of health provider.

Discussion

The model demonstrates that, after controlling for sex, employment, age, and marital status, geographic location was an important determinant of an individual's choice of health care provider. Location of residence played a significant role in choosing public providers versus private providers. Residents in the regions were more likely to use public providers compared to residents of Amman. Possible explanations include a stronger presence and greater variety of private providers in Amman and the fact that the highest proportion of uninsured is clustered in Amman (38%).

In contrast to expectations, and controlling for other variables, insurance was not statistically significant in choosing MOH facilities over the private sector; unlike the RMS facilities where insurance increased the probability of using RMS. Additionally, the role played by income in determining the choice of health provider, once again, contradicted our expectations. These results are at variance with other research conducted in this field, which indicates that the higher the income of the household the higher the probability of choosing a private health provider [6], and should be interpreted with care. However, it should be noted that there is a regulation obligating the MOH to provide highly subsidized health care services to all Jordanians regardless of their insurance status. On the other hand while it is compulsory for those with RMS insurance to use RMS facilities, the RMS charges fees for others who use their facilities.

Tembon suggested that the presence of a close relative in the area where the health care provider is situated and the familiarity of the provider or workers in the facility might influence the choice of provider [6]; these factors may be also applied to Jordan.

The analysis illustrates the importance of the socioeconomic factors covered in this study, but it does not provide any information related to the availability of the private sector in the regions compared to Amman, or the quality of services provided by different health providers. Furthermore, the utilization pattern cannot only be explained by the insurance effect since 56% of those utilizing the private sector had one kind of insurance or another, and only 35% of those who used private facilities had private insurance. Our findings indicate that private providers play an important role in providing outpatient health services, not only to high-income groups, but also to lower income groups.

Conclusions and policy implications

We can conclude that the private sector plays a significant role in providing health services in Jordan, especially in Amman. The bivariate analysis as well as the regression analysis showed that, compared to other governorates, the probability of using the private sector by the poorest income group in Amman was greater than the probability of using MOH providers. One possibility is that the private sector in Amman is responding to the demand from the poor by price discrimination across income groups. Additionally, this may be an indicator of inequities in financing health care services within the health system in Jordan between different income groups as well as between different regions and the capital Amman.

According to our findings; if the MOH is planning to expand its health insurance then it needs to consider how best to include the poorest income group in Amman. Although the results indicate that as quality increases the choice probability and demand for public

health services will increase significantly; they also suggest that patients utilizing the public sector are cost-sensitive. Policy-makers need to keep this in mind when developing strategies and policies aimed at increasing access to health services and reducing health inequities in Jordan. The results suggest a great difference in health expenditure between the poorest income group in Amman, who are more likely to seek healthcare from the private sector, and the poorest income group in the regions, who are more likely to use MOH facilities.

This study provides basic understanding of patient choice of healthcare provider, but further in-depth studies are recommended to determine how the MOH will finance expansion, and the effect of this on prices in both the private and public sectors.

Limitations

The aggregated variables were carefully chosen. However, they may hide some differences that might appear in the disaggregated data.

This study presents the effect of different socioeconomic factors, but it does not provide any information related to the availability of the private sector in the different regions compared to Amman. Moreover, we did not include other important explanatory variables such as provider characteristics and severity of the disease. Additionally, factors such as the presence of a close relative in the area where the health care provider is situated and the familiarity of the provider or workers in the health facility were not available; therefore the impact and influence of such factors were not captured.

This study provides basic understanding of patient choice of healthcare provider. Further analysis is needed to understand other important factors influencing individual choice of provider.

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