PDF version

S. Saleh,[1] W. Ammar,[2] N. Natafgi,[1] Y. Mourad,[1] H. Dimassi[3] and H. Harb[2]

:

:
24 .(%18.2) (%18.4) (%61.1)
/

ABSTRACT This study aimed to examine the association between the payer mix and the financial performance of public and private hospitals in Lebanon. The sample comprised 24 hospitals, representing the variety of hospital characteristics in Lebanon. The distribution of the payer mix revealed that the main sources of revenue were public sources (61.1%), out-of-pocket (18.4%) and private insurance (18.2%). Increases in the percentage of revenue from public sources were associated with lower total costs and revenues, but not profit margins. An inverse association was noted between increased revenue from private insurance and profitability, attributed to increased costs. Increased percentage of out-of-pocket payments was associated with lower costs and higher profitability. The study provides evidence that payer mix is associated with hospital costs, revenues and profitability. This should initiate/inform discussions between public and private payers and hospitals about the level of payment and its association with hospital sector financial viability.

Association entre la pluralité des payeurs, les coûts, les revenus et la rentabilité : étude transversale dans des hôpitaux libanais

RÉSUMÉ La présente étude visait à examiner l'association entre la pluralité des payeurs et la performance financièredes hôpitaux publics et privés au Liban. L'échantillon portait sur 24 hôpitaux, représentant la diversité des caractéristiques des établissements au Liban. La répartition des différents payeurs a révélé que parmi les principales sources de revenus figuraient le secteur public (61,1 %), les paiements directs (18,4 %) et les assurances privées (18,2 %). Des augmentations du pourcentage des revenus provenant du secteur public étaient associées à des coûts et à des revenus totaux plus faibles, mais non toutefois aux marges bénéficiaires. Une association inverse a été observée entre l'augmentation de revenus issus des assurances privées et la rentabilité, attribuée à des coûts plus élevés. Une hausse du pourcentage de paiements directs était associée à des coûts moindres et à une meilleure rentabilité. La présente étude fournit des élèments de preuve montrant que la pluralité de payeurs est associée aux coûts, aux revenus et à la rentabilité des hôpitaux. Cette situation devrait non seulement lancer des discussions entre les payeurs publics et privés et les hôpitaux sur le niveau de paiement et son association à la viabilité financière du secteur hospitalier, mais également contribuer aux débats à ce sujet.

[1]Department of Health Management and Policy, Faculty of Health Sciences, American University of Beirut, Beirut, Lebanon (Correspondence to S. Saleh: ss117@aub.edu.lb). 2Ministry of Public Health, Beirut, Lebanon. 3School of Pharmacy, Lebanese American University, Byblos, Lebanon.
Received: 15/07/14; accepted: 03/05/15

Introduction

Health-care organizations especially the most complex of them, hospitals, have always been expected to operate within uncertain financial environments. In recent years, emerging trends such as global inflation and financial crisis, biotechnological advances and investments in information systems have further increased the pressure on hospitals to maintain profitability (1,2). However, one of the main determinants of hospitals' financial performance remains the payer mix, defined as the types of payers and the percentage of a hospital's revenue from each payer (3). This is particularly relevant in countries with a mixed payer system, whereby each payer may set or negotiate different prices, payment mechanisms and structures (4). Payer mix can influence both the success of some hospitals and the financial demise of others, since some payers are considered more revenue-generating and/or profitable to hospitals than others (4).

The effect of payer mix on hospital financial status can be categorized into 2 factors: payment

levels and mechanisms. In multi-payer health-care systems, a hospital is likely to have several contractual arrangements with third-party payers, each dictating a different rate of payment for the same service. The other factor relating to payer mix is the method of payment. This can include the payment basis; for example, fee-for-service, in which the hospital is paid per service delivered, or capitation, payment per capita independent of volume of services (3). Hospitals and payers are in a continuous quest to identify more efficient and effective payment techniques to enhance the care process (5). The variation in hospital payment mechanisms and levels has a potential effect on the hospital's choices in terms of identifying and prioritizing patient mix, payer mix and service mix (6).

To our knowledge, only a limited number of studies have assessed the association between payer mix and profitability among hospitals operating in multi-payer health-care systems and all of these were carried out in developed country, high-income setting (7–10). A study of the effect of a single dominant payer concluded that efficiency seemed equivalent across hospitals and that the types of payer had significant effects on the profits of hospitals regardless of their type, i.e. whether they were not-for-profit, religious foundations or government-owned (9). Public payers' level of compensation for services has been associated with decreased profits for health-care institutions, and in some instances were on average lower than costs (8). For instance, in a physician clinic setting in Florida in the United States of America (USA), it was shown that clinics with a high reliance on public payers, specifically Medicaid, were at a financial disadvantage and were less likely to engage in new investments (10). Another study showed that hospital revenues from private payers contributed to the fixed costs of the hospital, whereas public sources were associated with amounts close to nothing in profits; in other words, the compensation of public payers is merely covering the variable costs of the health-care services (7).

The hospital sector worldwide is therefore engaging in more financial analysis to identify revenue/profit maximizing strategies. One such technique is portfolio analysis in which hospitals examine their payer mix and its association with profitability (11). Based on this exercise, hospital administrators can rationalize the process of assigning funds to programmes, services or payers as key to keeping a strategic plan on course (12). Hence, there is a need to monitor and inform both payers and hospitals on the effects of payer mix on financial operations. Our study in Lebanon adds to the literature on the association between payer mix and the financial viability of hospitals by providing a detailed exploration of the financial performance in a developing country, multi-payer, fragmented health-care system with relation to different payment methods and levels. The approach used is presented in Figure 1 and was adapted from Donabedian's structure–process–outcome model (13).

Context

Lebanon is a small middle-income country with a restricted regulatory role for the State and a

pluralistic, fragmented health-care system. The limited governance capacity has led to a proliferation of services in the private sector, which has witnessed a rapid expansion of private hospitals by 60% within few years (14) resulting in a total of 3.5 hospital beds per 1000 people (15). This oversupply of hospitals and physicians inflates the national health bill by increasing the expenditure on health services because of the supplier-induced demand (16). Moreover, due to the weak regulatory role of the government, the private insurance market maintains high premiums coupled with “cream skimming” techniques, while reimbursing for a limited number of services and covering only 6.5% of the population (17,18). As it stands, the health system in Lebanon suffers from a multiplicity of providers and financing agencies, each with different entitlement schemes, beneficiary provisions and, in most cases, separate contractual/financial arrangements with providers (19). All of these factors complicate the financing process and render it inefficient.

Four main categories of funding health services can be identified in Lebanon: (a) government financing, through the Ministry of Public Health (MoPH), based on taxes; (b) social insurance based on contributions, which itself is fragmented into sub-funding agencies including the National Social Security Fund, Civil Servants’ Cooperation and the army medical brigade among others; (c) private insurance based on risk-based premiums; and (d) household direct out-of-pocket payments (OOP). The government has initiated a series of sector reforms in an effort to combat escalating health costs and to decrease inefficiencies in the system.

One of the main pillars of the reform was limiting the unrestricted financing by MoPH through the development and expansion of public hospitals and the primary health-care network. In addition, the MoPH instituted a utilization review system for hospitalization in an effort to better understand and reduce billing inaccuracies and unnecessary utilization, particularly for its beneficiaries. For the purpose of this paper’s discussion it is important to note that public hospitals in Lebanon have organizational autonomy to a great degree. From a financial standpoint, such autonomy extends to include billing, to both public and private payers, based on type and volume of services provided.

The multiplicity of payers and the public–private mix in delivery means that the Lebanese health-care market serves as an ideal natural laboratory for exploring the effects of payer mix. This study aimed to examine the association between payer mix and costs, revenues and profit margins of public and private hospitals in Lebanon.

Methods

Study design and population

The study employed a cross-sectional study design to capture a snapshot of the financial

performance of hospitals in Lebanon. The study population included 160 hospitals in Lebanon: 129 private and 31 public. In order to capture the difference and the spread of these facilities, stratified random sampling was utilized. Hospitals were divided into 5 strata according to the region/governorate—Beirut, Bekaa, South, Mount Lebanon and North—and within each stratum, hospitals were randomly sampled according to the respective distribution of hospitals in each governorate, taking into consideration size, type of ownership (private versus public) and accreditation status. Hospitals were classified into 4 accreditation classes (A, B, C and D) based on the hospital performance in the accreditation review process. Top-scoring hospitals received an accreditation status of A; class A hospitals tended to be the large teaching hospitals, while D hospitals were mostly the smaller rural ones.

The target sample size was 24 hospitals that reflected and represented the variability of hospital characteristics in Lebanon and covered almost one-third of hospital beds. A representative sample was based on hospital size and accreditation status, where possible, and at least 1 public hospital (irrespective of accreditation status). This was followed in 3 out of the 5 governorates. In the North and Bekaa there were classes of accreditation that were not present in these regions. Hence, these were replaced with hospitals in Mount Lebanon where there was a larger concentration of hospitals.

Ethical approval was secured from the institutional review board office at the American University of Beirut. Invitation letters were sent to the randomly selected hospitals to invite them to participate in the study, in order to brief them on the study and obtain consent for participation. Hospitals that refused to participate or failed to complete the survey were replaced through random substitution with hospitals that matched the above-mentioned characteristics. This process continued until a satisfactory number of surveys was completed. One hospital failed to complete the survey; it was not replaced as the data collection operation was scaling down.

Netbook laptops, with installed data entry software, were used by field staff for interviewing and data entry. Regular data quality checks and reports were undertaken by the research staff.

Data sources/study instrument

Extraction of hospital financial information was completed in 2012 through a review of financial records for the 2010 fiscal year. Other secondary data sources were used to complement this primary data, mainly from the MoPH and the Syndicate of Private Hospitals. The main variables of interest extracted from these sources included MoPH total payments to hospitals and hospital characteristics, including ownership, size, region, teaching status and accreditation status.

Analysis plan

The data were collected, coded and entered into SPSS, version 22 software for analysis. Means and standard deviations (SD) were used to summarize numerical variables such as revenue and cost, and frequency and percentages were used to summarize categorical data such as region and hospital size. Payer mix/revenues sources and cost distribution were transformed into percentages to reflect a better distribution of the variables. Profit margin was calculated using the difference between hospital revenue and cost and dividing by the revenue. The natural logarithms of revenue and cost was used in further analysis, and along with profit margin these were considered as the outcome variables. At the bivariate level, the Pearson correlation coefficient was computed between payer mix/revenue sources and log cost, log revenue and profit margin. The means of these 3 outcomes variables for different groups were compared using either the Student t-test or the analysis of variance F-test, depending on the number of groups. Three independent regression analyses were used to model the outcome variables, each separately. Due to the small sample size, only contributing variables to the models were kept, coefficients were exponentiated and reported along with the P-values. Categorical variables such as teaching status and accreditation status were transformed into dummy variables with one or more categories a references, depending on what best fitted the model. Differences were considered statistically significant at P

Results

A total of 24 hospitals, representing 31.6% of the hospital beds in Lebanon, provided information for the study; 18 hospitals were private (75.0%), 5 were teaching hospitals (20.8%), 11 were middle size (45.8%) and 7 were in accreditation class A (29.2%) (Table 1).

The distribution of the payer mix/revenue sources for all the hospitals revealed that, on average, the highest proportion of the hospitals' revenue came from public sources (61.1%), followed by out-of-pocket payments (18.4%) and private insurance (18.2%). The total cost distribution showed that, on average, the highest cost category was personnel (45.9%), followed by infrastructure and utilities (29%) and medical supplies (including drugs) and equipment (25.6%) (Table 2).

Table 3 presents the correlation between payer source and selected hospital characteristics. Significant correlations were detected between philanthropy as a payer source and ownership, as well as teaching status. In addition, "Other" payer sources were found to be significantly correlated with hospital region.

Multivariate regression analyses

Multivariate regression analyses, modelling log-cost, log-revenues and profit margin, are

presented in Table 4 . Inclusion of covariates was determined by 2 paradigms: reaching the most parsimonious model and the small sample size. The model fit for log-cost had an adjusted R2 = 80.7%. The increase in the percentage of revenues from public payers was negatively associated with cost (b = –0.085, P = 0.024) and the same was observed with out-of-pocket payments (b = –0.092, P = 0.019). Teaching hospitals were associated with higher costs compared with non-teaching hospitals (b = 2.1115, P = 0.001). In addition, accreditation status C and D was associated with a likelihood of higher costs as compared with hospitals without status (b = 1.009, P = 0.025)

The model fit for log-revenues showed an adjusted R2 = 66.7%, whereby an increased percentage of revenues from public sources was negatively associated with total revenues (b = –0.047, P = 0.042) and higher classes of accreditation status were positively associated with revenues. The model fit for profit margin had an adjusted R2 = 67.5%. These findings revealed that the increase in percentage of revenues from private insurance was negatively associated with profit margin (b = –2.4, P = 0.005). On the other hand, increased revenues from out-of-pocket payments was positively associated with hospital profit margins (b = 2.44, P = 0.020). Hospitals with accreditation status B had a higher profit margin compared with those with a C/D status.

Discussion

Payer mix remains a key factor associated with hospital financial performance, due to its influence on the hospital's revenue structure and cost-containment behaviour. Exploring such an association is most relevant in countries with a mixed (financing) health-care system in which hospitals have to cope with differing payment levels and schemes; Lebanon has such a system. The aim of this paper was to examine the association between payer mix and hospital costs, revenues and profit margins.

The findings from the study revealed an association between payer mix and financial performance. Increases in the percentage of revenue from public sources were associated with lower total costs and revenues, but not profit margins. Such a finding conforms with that of other studies showing that the payments received from public payers do not cover overall hospital costs (8,20). It has been shown, for example, that in the USA health-care system—which is contextually similar to that of Lebanon—Medicare and Medicaid payments cover a proportion of costs (7). In Lebanon, it has been the financial management practice that revenues from public payers are used to cover mostly fixed costs, with dependence on other revenue sources for profits. An additional factor that characterizes public payers in Lebanon is a substantial level of discount to the bill amount imposed that is linked to an active post-utilization review system. The process of review and associated appeal by hospitals, added to common government budgetary constraints, usually results in delays in payment for services rendered. It is a well-accepted fact that the average age of accounts receivable from public years exceeds that of any other payer

group. Although some public payers have reduced the time taken to process payments, it is not uncommon to have considerable numbers of outstanding invoices to public payers that are more than a year old (21). It is very likely that these 2 factors, lower payments levels and delayed payment, have structurally forced hospitals to implement cost controls that are applied proportional to the percentage of revenue from public payers, i.e. with more revenue from public sources, the tighter is the cost containment. The argument for the former factor's effect, i.e. lower payment levels, is reinforced by evidence indicating that public payers are generally more successful in controlling health services costs for their beneficiaries, even in the most complex and mixed systems (22,23).

Another finding of this study was the inverse association between increased percentage revenue from private insurance (in relation to total revenue) and profitability. This is an interesting finding, as the expectation, supported by evidence from other studies (24–26), is that an increase in the percentage of revenue from private insurance would be associated with higher profit margins. Nevertheless, our findings reinforces counter-arguments related to the fact that increased revenues from private payers are usually associated with lower profit margins due to their aggressive contracting strategies (27). A possible explanation also relates to the Lebanese context. The private insurance market in Lebanon is estimated to cover 6–8% of the total population (17), with a relatively small number of operating insurance companies. Although private insurance rates are not significantly higher, hospitals tend to seek contracts with such companies, mostly due to the prompt payment mechanism (compared with public payers). This stems from the fact that insurance companies are characterized by a rigorous concurrent utilization review system whereby most of the rendered services would have been monitored/approved during the hospital stay. The finding from our study indicates that hospitals may be willing to absorb the financial loss associated with private insurance, most probably to address their cash flow problems emanating from delays in public payer payments or the lack of knowledge of profitability associated with private insurance. Another factor contributing to reduced profitability is service demands by private insurance companies and their beneficiaries, which were found also to be associated with increased cost for this patient segment.

The study also revealed that increased percentage of out-of-pocket payment was associated with lower costs and higher profitability. It has to be noted that in the Lebanese hospital financing system, there is a relatively modest ceiling on the out-of-pocket levels in cost sharing arrangements for public and private payers. Hence, it is a valid assumption that the increase in out-of-pocket would be mostly from patients without insurance coverage paying for their care. Such findings are expected given that most studies have shown as association between out-of-pocket payment and higher profit margins (25,28). In the literature this has been attributed to a number of reasons including cost-shifting, lack of volume discounts and information asymmetry (clinical and financial). As observed from the findings of the present study, revenues and profit margins from public payers and private insurance companies tend to be restricted. As such, it is common practice among hospitals to shift the financial burden to out-of-pocket paying patients (29).

The study had several limitations that merit consideration. First, although the study sample comprised approximately one-third of hospital beds in Lebanon, it remained a sample and did not include all hospitals in Lebanon. The study attempted to employ a stratified random sample that factored in key characteristics including geographical location and accreditation class. Another restraint was the limited ability to validate cost data provided by hospitals. To help address this limitation, the surveyor team performed quality checks on-site. Moreover, data were re-checked by the investigators and anomalous values were highlighted and reviewed with hospital staff after the initial data collection phase. A third limitation was the accuracy of the payer mix/revenue source and amount of revenues. Again, care was taken to validate these numbers on-site. In addition, further validation was performed through comparing self-reported numbers with those from the MoPH files to make sure revenue amounts were accurate. When major discrepancies were detected, a follow-up contact was made to the hospital to validate the estimates.

In conclusion, the study revealed that payer mix was associated with hospital costs, revenues and, most importantly, profitability. For Lebanon, the findings should initiate a debate between public and private insurance payers on the one hand and hospitals on the other, about payment levels and their association with hospital sector financial viability. In most countries with mixed systems, public payers have a dual role of serving as one of the largest financiers of hospital services and equally, if not more importantly, the overseer/caretaker of the health-care sector. As such, public payers have an obligation to be sensitive to the potential impact of current payment rates or future reductions in payments on the financial viability of hospitals. On the other hand, private insurers, as well as hospitals receiving its beneficiaries, should be aware of the influence of payment rates on profitability. Finally, hospitals have a moral responsibility towards out-of-pocket paying patients (for the government, it is an obligation). Ensuring that all citizens have prepaid health-care insurance coverage is the responsibility of governments. Nevertheless, hospitals should not capitalize on deficiencies in the system by shifting the financial burden disproportionately to the out-of-pocket segment of the population.

Findings: None.

Competing interests: None declared.

References

1. Kentikelenis A, Karanikolos M, Papanicolas I, Basu S, McKee M, Stuckler D. Health effects of financial crisis: omens of a Greek tragedy. Lancet. 2011 Oct 22;378(9801):1457–8. PMID:21988763

2. Pappas SH. Profits, payers and patients: responding to changes. J Nurs Manage. 2009; 40(4):31–5.

3. Gapenski LC. Fundamentals of healthcare finance. Chicago: Health Administration Press; 2009.

4. Friedman B, Sood N, Engstrom K, McKenzie D. New evidence on hospital profitability by payer group and the effects of payer generosity. Int J Health Care Finance Econ. 2004 Sep;4(3):231–46. PMID:15277780

5. Langenbrunner Jc, Wiley MM. Hospitals in a changing Europe. Philadelphia (PA): Open University Press; 2002.

6. Hodgkin D, McGuire TG. Payment levels and hospital response to prospective payment. J Health Econ. 1994 Mar;13(1):1–29. PMID:10134436

7. Chernew M, Gowrisankaran G, Fendrick AM. Payer type and the returns to bypass surgery: evidence from hospital entry behavior. J Health Econ. 2002 May;21(3):451–74. PMID:12022268

8. Cohen JR, Gerrish W, Galvin JR. Health care reform and Connecticut's non-profit hospitals. J Health Care Finance. 2010 Winter;37(2):1–7. PMID:21294435

9. Gruca TS, Nath D. The technical efficiency of hospitals under a single payer system: the case of Ontario community hospitals. Health Care Manag Sci. 2001 Jun;4(2):91–101. PMID:11393746

10. Menachemi N, Matthews MC, Ford EW, Brooks RG. The influence of payer mix on electronic health record adoption by physicians. Health Care Manage Rev. 2007 Apr-Jun;32(2):111–8. PMID:17438394

11. MacStravic RE, Mahn E, Reedal DC. Portfolio analysis for hospitals. Health Care Manage Rev. 1983 Fall;8(4):69–75. PMID:6643053

12. Bare JL, Bess AI. Hospital portfolio analysis. Health Care Strateg Manage. 1990 May;8(5):10–4. PMID:10106650

13. Donabedian A. The quality of care: How can it be assessed? JAMA. 1988;121(11):1145 –50. PMID:3045356

14. Kronfol NM. Rebuilding of the Lebanese health care system: health sector reforms. East Mediterr Health J. 2006 May-Jul;12(3-4):459–73. PMID:17037717

15. Hospital beds. (per 1,000 people) indicator [Internet]. Washington (DC): World Bank; 2012 (http://data.worldbank.org/indicator/SH.MED.BEDS.ZS, accessed 24 April 2013).

16. Naylor D, Linton AL. Allocation of health care resources: a challenge for the medical profession. CMAJ. 1986 Feb 15;134(4):333–40. PMID:3080215

17. Ammar W. Health beyond politics. Beirut, Lebanon: World Health Organization Country Office; 2009.

18. Kronfol NM. Rebuilding of the Lebanese health care system: health sector reforms. East Mediterr Health J. 2006 May-Jul;12(3-4):459–73. PMID:17037717

19. Osseiran A, El-Jardali F, Kassak K, Ramadan S. Harnessing the private sector to achieve public health goals in countries of the Eastern Mediterranean: Focus on Lebanon. Beirut, Lebanon: American University of Beirut Press; 2005.

20. Dor A, Farley DE. Payment source and the cost of hospital care: evidence from a multiproduct cost function with multiple payers. J Health Econ. 1996 Feb;15(1):1–21. PMID:10157423

21. Kronfol N. Case study: Lebanon. In: Long term care in developing countries: ten case studies. Geneva: World Health Organization; 2002.

22. Boccuti C, Moon M. Comparing Medicare and private insurers: growth rates in spending over three decades. Health Aff (Millwood). 2003 Mar-Apr;22(2):230–7. PMID:12674426

23. Hashimoto H, Ikegami N, Shibuya K, Izumida N, Noguchi H, Yasunaga H, et al. Cost containment and quality of care in Japan: is there a trade-off? Lancet. 2011 Sep 24;378(9797):1174–82. PMID:21885098

24. Hopkins S, Frech H. The rise of private health insurance in Australia: early effects on insurance and hospital markets. Econ Labour Relat Rev. 2001;12(2):225–38.

25. Hadley J, Holahan J, Coughlin T, Miller D. Covering the uninsured in 2008: current costs, sources of payment, and incremental costs. Health Aff (Millwood). 2008 Sep-Oct;27(5):w399–415. PMID:18725375

26. Devereaux PJ, Heels-Ansdell D, Lacchetti C, Haines T, Burns KE, Cook DJ, et al. Payments for care at private for-profit and private not-for-profit hospitals: a systematic review and meta-analysis. CMAJ. 2004 Jun 8;170(12):1817–24. PMID:15184339

27. Farley DE. Patterns of hospital utilization among privately insured patients, 1980–1986. Rockville (MD): Agency for Health Care Policy and Research, US Department of Health and Human Services, Public Health Service, Center for General Health Services, Intramural Research; 1990. pp. 207–36.

28. Melnick GA, Fonkych K. Hospital pricing and the uninsured: do the uninsured pay higher prices? Health Aff (Millwood). 2008 Mar-Apr;27(2):w116–22. PMID:18252736

29. Schuhmann TM. Hospital capital spending: shifting and slowing even before the financial meltdown. Healthc Financ Manage. 2009 63(11):92–8, 100.

Thursday 11th of July 2024 11:13:04 AM