12ª cnes

conferência nacional
de economia da saúde

Lisboa de 13 a 15 de Outubro, 2011
Fundação Calouste Gulbenkian
http://12cnes.apes.pt

Evaluating Hospital Efficiency Adjusting for Quality Indicators: an Application to Portuguese Public Hospitals

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Objectivos (Objectives): In an era of resource constraints, there is an increasing interest of hospital managers and health administration authorities in designing methods to evaluate hospital performance. The ability to rank efficient hospitals over their inefficient counterparts provides a benchmark for hospital managers to discover and improve potential inefficiencies, and provides health administration authorities with measures that may be used to reward good managers. With this increasing interest in hospital performance, a vast academic literature has emerged on measures and comparisons of hospital efficiency, where quantitative measures of inputs are compared with quantitative measures of outputs, usually using Data Envelopment Analysis (DEA) or Stochastic Frontier Analysis (SFA). However, many have expressed concerns that this increased focus on efficiency may induce managers to neglect service quality. Since health outcomes depend on the quantity, but also on the quality, of the healthcare services provided, it is possible that a hospital may increase its efficiency ranking with a deterioration of health outcomes, if there is a quantity efficiency/quality trade-off. The objective of this paper is to develop a methodology to incorporate measures of hospital quality in efficiency analysis, applied to Portuguese public hospitals, in order to assess whether there is a trade-off between quantity efficiency and quality in Portuguese hospitals.

Metodologia (Methodology): We develop and compare two methodologies to compute DEA technical efficiency scores adjusted for output quality, for a sample of Portuguese public sector hospitals in 2009. The quality of Portuguese hospital healthcare services is measured by two types of indicators. The first set of indicators is based on data from a 2009 survey of patients, designed by the ACSS (Administração Central do Sistema de Saúde) and Universidade Nova, whose main goal is to provide an independent system of regular evaluation of patient satisfaction and of hospital quality, as perceived by users of Portuguese public hospitals, the "Sistema de Avaliação da Qualidade Apercebida e da Satisfação dos Utentes dos Hospitais EPE e SPA 2009". The second set of indicators is related to the timeliness of care, as measured by the waiting lists for elective surgery.

Resultados (Results): We find that around 56% of hospitals are inefficient, and that the average level of output oriented efficiency scores is 1.15, when only quantity output indicators are used. When DEA efficiency scores are adjusted for output quality, the decision making units that lie on the technical efficiency frontier remain largely unaltered, even if a great weight is given to quality indicators over quantity indicators of output. Nevertheless, we find that outside of the frontier adjusting for quality does have an impact in efficiency scores. Our analysis of quality adjusted efficiency scores reveals that 58% of hospitals are inefficient and that, using a Wilcoxon matched pairs test, the mean efficiency scores are significantly different at a level of 1% of significance.

Conclusões (Conclusions): We conclude that there is room for substantial efficiency improvements in Portuguese hospitals. Furthermore, the empirical evidence is not sufficient to identify a clear trade-off between efficiency and quality in the hospitals under review, implying the possibility that efficiency gains may achieved without a significant sacrifice of service quality. Nevertheless, there is enough evidence to conclude that analyzing hospital efficiency without consideration of differences in quality of service will generate biased results.