An international comparison of efficiency of inpatient mental health care systems ☆☆

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ABSTRACT

There is a fundamental gap in the evidence base on quantitative cross-country comparison of mental healthcare systems due to the challenges of comparative analysis in mental health including a paucity of good quality data. We explore whether existing limited data sources can potentially be exploited to examine technical efficiency of inpatient mental healthcare systems in 32 OECD countries in 2010. We use two analytical approaches: Data Envelopment Analysis (DEA) with bootstrapping to produce confidence intervals of efficiency scores and country rankings, and Cluster Analysis to group countries according to two broad efficiency groupings. We incorporate environmental variables using a two-stage truncated regression. We find slightly tighter confidence intervals for the less efficient countries which loosely corresponds with the 'inefficient' cluster grouping in the Cluster Analysis. However there is little stability in country rankings making it difficult with current data to draw any policy inferences. Environmental factors do not appear to significantly impact on efficiency scores. The most pressing pursuit remains the search for better national data in mental healthcare to underpin future analyses. Otherwise the use of any sophisticated analytic techniques will prove futile for establishing robust conclusions regarding international comparisons of the performance of mental healthcare systems.

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1. Introduction

The World Health Organization (WHO) World Health Report (WHR), while provoking much critical debate at a conceptual and empirical level, made an important contribution in seeking to provide a quantitative assessment of comparative health system performance, bringing the topic to the attention of policy makers worldwide [1]. Quantitative cross-country comparisons have been used in many different contexts and while they present many challenges [2], can constitute a rich source of evidence for policy makers [3]. There has been a substantial effort to conduct such quantitative cross-country comparisons for healthcare systems focusing on physical health or particular disease conditions [4,5]. Very little research endeavour has focused on cross-country comparisons of mental health care performance. One of the key reasons for this has been due to substantial gaps in the data for mental health compared to physical health [6]. There is therefore a fundamental gap in the evidence base on quantitative comparative mental health care system performance.

Some international efforts have been made to establish cross-national comparative benchmarking for mental health indicators. The National Institute for Health and Welfare in Finland together with the European Commission Health Monitoring Programme developed a set of

mental health performance indicators for European Union countries [7]. The Organization for Economic Cooperation and Development (OECD) has also identified key mental health quality indicators for use in international benchmarking [8]. The OECD Health Care Quality Indicators (HCQI) project currently collects two mental health indicators – re-admission rates for schizophrenia and bipolar disorders [9], while the WHO have developed the Assessment Instrument for Mental Health Systems (WHO-AIMS 2.2) to assess mental health system performance on a multi-item scale [10]. The WHO's Department of Mental Health and Substance Abuse has designed 'Project Atlas' to collect data on resource use for mental health on a global basis [11].

There are particular challenges to mental health comparative analysis. Lauriks et al. [12] report on many national initiatives to develop performance measures for mental health. They provide a systematic review identifying 1480 unique performance indicators that are used internationally to measure the performance of public mental health care. They find that less than 3% of performance indicators actually assess the efficiency, cost or expenditure of mental health care systems. Most countries which collect data on mental health quality and performance, tend to focus on hospital care and measures of utilization [13]. There is also a wide variation between countries in the indicators which are collected, reflecting a focus on local priorities. This makes international comparative work more difficult. Efficiency and performance measurement is also immensely more challenging in mental than in somatic health care due to difficulties in measuring outputs and outcomes, the complex nature of mental health care [14], interactions with non-health sectors and the seriously marginalizing social consequences of mental ill health which may impact on measurement [15].

There is a substantial gap between the burden caused by mental disorders and the resources available to prevent and treat them. Neuropsychiatric disorders are estimated to account for 14% of the global burden of disease [16,17]. The economic costs to societies of mental health problems are enormous, including lost employment, absenteeism and sick leave, reduced performance at work, lost leisure opportunities and premature mortality [18]. Conservatively the costs of poor mental health are estimated to account for 3–4% of GDP in the European Union (EU) alone, yet nowhere in the EU does spending on mental health much exceed 1% of GDP [19]. Funding for mental health as a proportion of the total health budget in the EU ranges from around 14% in England to much less than 4% in some countries including Bulgaria, the Czech Republic, Poland and Portugal [15]. The relatively low level of resources allocated to mental health and the commensurate large burden of disease, makes the efficient use of resources imperative. Moreover, there is an increased impetus to this need given the current economic context which has seen a consolidation in overall health (as well as mental health) budgets in a number of OECD countries [20].

We aim to examine the feasibility of quantitative cross-country comparison of mental healthcare systems by exploiting available, though limited data sources on mental health care systems. We examine whether different analytical approaches are able to offer insights into quantitative international comparison in this much neglected area. Our research question asks whether it is feasible to use different methodological approaches on current data to analyze the technical efficiency of inpatient mental health care in a cross-country context. Technical efficiency refers to the extent to which a country secures the maximum output attainable given its inputs [21]. While many OECD countries are increasingly moving towards community-based models of mental health care, inpatient care still constitutes a core component of care and one which accounts for a significant amount of resources. On a global basis, 67% of mental health expenditures are directed towards mental hospitals (54% in high income (World Bank classification) countries and 60% in the EURO region) [11].

We try to tease out the relative efficiency of inpatient mental health care systems across 32 OECD countries. We propose the use of two analytical approaches, Data Envelopment Analysis (DEA) with bootstrapping [22] and Cluster Analysis [23] which may offer potential for exploring the data. We examine whether these techniques provide complementary results in terms of distinguishing groups of countries that are high or low performers in terms of efficiency. Both DEA and Cluster Analysis are explorative data mining techniques and we examine whether these methods applied to existing, even very limited data sources, can offer any scope for cross-country comparative insights. DEA has previously been applied to measure the efficiency of mental health services primarily in national contexts [24–26], but not in a cross-country context. There have been very few cross-country comparative studies of health systems using Cluster Analysis [27].

The Scientific Peer Review Group that commented on the WHO (2000) WHR [1], suggested future comparative efficiency analyses should explore exogenous factors that may impact on health system performance [28]. We include four environmental variables in the efficiency analysis to examine whether they contribute to efficiency estimates and whether they impact on countries' ability to improve their efficiency. We also employ a two-stage DEA analysis, where the bootstrap DEA scores are regressed against a set of environmental variables using a truncated regression analysis, to assess the impact of potential exogenous factors on technical efficiency [29,30].

2. Data

We use data from the 2012 edition of the OECD Health Database and acknowledge there are a number of significant limitations around data availability and measurement [9]. The majority of the data covers the year 2010 but there are a notable number of exceptions where data from earlier years had to be used in order to get the most complete dataset possible. This is clearly far from ideal since there may be an intervening period of a number of years between countries in which significant change may have occurred in the mental healthcare systems. Yet countries are being evaluated as if all inputs and outputs are occurring contemporaneously. Furthermore, there are important limitations to cross-section data – they could lead to misleading inferences if variables are influenced by systematic