

MODELS OF MENTAL HEALTH CARE FINANCING IN EUROPE

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Abstract

In our paper there presented some mathematic models used to study the durations of treatments, the improvement in the patient's condition, the use of medications, and the performance of the health services in general and of mental health in special.

More than these it will be looked after the different models of health care financing, their mental health care services in nine European countries, as partners of the EU funded REFINEMENT project

The most recent method to identify the health care funding systems can be found in the REFINEMENT project, in which a bespoke questionnaire was developed to ask questions about various aspects of the funding and organisation of health and social welfare systems in the nine countries.

The models and methods presented in this paper can be adapted to the specific conditions of the mental health system in Romania, which is subject to the next stages of the project activities REFINEMENT.

Keywords: mental health system, models of health care financing, performance

JEL Clasification: I11

1. Introduction

A country's health system has an effect on its economic growth and labour productivity. This is because the health status of the population affects the work force, which is an important factor in determining its productivity. Financing is a critical element determining the quantity, distribution and quality of health services. Financing also has an enormous effect on operational efficiency, and the ability to provide necessary health services according to need rather than ability to pay.

Based on a wide and long European experience there is a tide relationship between different models of health care financing and high quality, equity, efficiency and better long term health outcomes. To distinguish at least some of them it is necessary to do mapping services **for mental health care** in the studied countries, in our case in nine European countries: Austria, Marea Britanie, Estonia, Finalnda, Franta, Italia, Norvegia, Romania, Spania (as part of the EU funded REFINEMENT project).

There actually have been attempts to standardize the description of services ([1]) to aid these comparisons. This instrument classifies provision in a “service mapping tree” on the basis of operationalised definitions of Mental Health services and it also documents the associated levels of services provision in order to compare services in catchment areas across different countries.

A further development of this approach has been the creation of a new instrument called ‘**Description and Evaluation of Services and Directories in Europe**’ (DESDE) which also includes long term care and disability services and which is now used in sixteen European countries ([2]). What has been missing from these service mapping instruments to date – including the **WHO's Assessment Instrument for Mental Health Services (WHO-AIMS)** ([3]) - has been a common comparison of primary care, general health and social care services that may be used to support people with Mental Health needs. The majority of people with common Mental Health problems such as depression in a number of countries are treated almost exclusively by general practitioners whilst social care services can have an critical role to play in providing a route back to employment and/or providing support to allow independent living. For such a reason, the REFINEMENT project has developed its own tool **The Refinement Mapping Services Toolkit (REMAST)**, which is one of the three legacy products of the Refinement project intended to be used also by other

countries and regions seeking to undertake analysis of their mental health systems, and also for future adaptation for the analysis of the relationship between financing systems and health care outcomes.

2. Some models of mental health care financing

Financial models in the health sector are, in turn, a subgroup of the overall set of financial models. They provide a mapping of the complex interactions between financiers (contributors and taxpayers), third-party financial intermediaries (insurance schemes or the State), providers, and beneficiaries (patients) in the health sector.

A financial model describes the financial structure of the system or subsystem and projects this structure into the future, or simulates the effect of a change in a selected parameter or parameters. A financial model for the health sector could be used, for example, to estimate the total amount of expenditure for a component of the system, such as for mental health system, but to estimate the effects of the financing systems on the quality of mental health care.

➤ Motivation to use some models for financing mental health:

- A country's health system, in generally, and mental health in particular, has an effect on its economic growth and labour productivity;
- The health status of the population affects the work force, which is an important factor in determining its productivity. Productivity, in turn, has a strong influence on economic growth;
- At a time of rising incomes, ageing populations and urbanization in most countries, the functioning of the health system will have a significant impact on society;
- Many factors relating to health care services will have a significant impact on morbidity and mortality patterns - these include the type of services provided (preventive, primary care, curative care, etc.), the quantity and quality of these services, the method of their distribution, and the extent of their accessibility by the population;
- Financing is a critical element determining the quantity, distribution and quality of health services;
- Financing also has an enormous effect on operational efficiency, and the ability to provide necessary health services according to need rather than ability to pay.
- Therefore, governments have considerable means to influence the health status of their citizens through their choice of health financing policies.
- The level of national economic development is also obviously a significant determinant of the level of national health expenditure

The health economics literature presents several theoretical models to analyze prevention and the effects of financing about health system.

The human capital approach emphasizes the similarity between the decision to invest in health capital and in other forms of human capital.

Some models used in the literature on mental health contain multi-equation and use disaggregated data that describe individual patients and those who care for them. These models permit the study of the durations of treatment found in actual episodes of clinical care and takes into account the concurrent improvement in the patient's condition, the use of medications, and the reasons for termination of care. In the model are considered three major groups of mental health specialists: psychiatrists, psychologists, and social workers.

The developed models were analyzed various aspects of the health system, in general, and of mental health in particular. Thus, the influence of single variables on duration of treatment were analyzed by Pope, Balch, Carpenter ([4] - [6]) considered the effect of patient fees, while May studied the role of the patient's sex. Sue et al. and Silverman and Beech included treatment termination and other variables in their analysis of duration of treatment.

Modelling the data provided by surveys conducted on a representative sample of psychiatrists allowed the separation McGuire's conclusion that the demand for psychiatric services was about twice as elastic as the demand for general medical services.

In another recent study, the authors Manning, Morris et al. [7] analyzed the relationship between the decisions to seek treatment and its cost.

But, all of these studies have their limitations. The most serious are the problems attributable to shortcomings in available data resources and to econometric problems caused by missing explanatory variables or truncated dependent variables.

➤ **The econometric model** elaborated by de Cross ([8]), has, as variables the number of hours of mental health care, the concurrent improvement in the patient's condition, the probability the patient will receive medications, and the reasons for treatment termination. The model permits the estimation of the average length of treatment, the average price and income elasticities, and the average cost of treatment.

➤ **The Fixed-Effects Zero-Inflated Poisson Model.** Count data models have become increasingly popular in many fields of empirical economics and other social sciences ([9] - [11]). Applications include studies in health economics (on the number of doctor visits or hospital stays).

➤ **SIMFIN Model** focuses on governments' behaviour with regard to their budgets for publicly provided health services. It aims to provide decision makers with a tool for checking financial feasibility in health care planning. More concretely, it is a tool for examining the financial repercussions of choices regarding health services, such as preventive and curative care, primary health care, administration of facilities, staff qualifications, etc.

In his book "Panel data methods and applications to health economics", Andrew M. Jones (2009) shows that individual-level data for medical expenses and the cost of treatment are usually characterized by an abrupt increase to the zero value if non-users exist and a strong asymmetrical distribution with a thick "tail". Such data are often used in two applied fields: risk adjustment and cost-effectiveness analysis.

In the first case, the emphasis is on predicting treatment costs for certain types of patients often based on very large datasets. Cost-effectiveness analyses use smaller data sets and the purposes of parametric modeling may be more limited.

The issue of a database with a high percentage of zeros is usually solved by using a model in two parts: one includes a binary indicator used to model the probability of any costs and the other is a conditional regression model for positive costs.

Since political interests usually focus on cost predictions on the original scale, it is necessary to transform back the regression results, which can be a problem if there is heteroscedasticity in the transformed data.

Lately, experts considered other estimators. Thus, Basu et al. ([12]) compare logarithmic transformation models with Cox's proportional hazard model.

Gilleskie and Mroz ([13]) propose a flexible approach in which the data is divided into discrete intervals and discrete hazard models as sequential logit models are applied.

Generalized linear models specify a connect function for the relationship between condition mean, $\mu = E(y|x)$ and a linear function for the covariance and specify the conditional variance form $v(y|x)$, assuming it can be specified as a simple function for the mean.

The most common specification for costs generalized linear models is log-link with gamma error. Basu and Rathouz ([12]), as a response to the problem of selecting the appropriate link and variance functions, have suggested a flexible semiparametric extension of the GML model by incorporating a Box-Cox transformation in the link function which includes log-link as a special case with other exponential functions of y . The model, called extended estimation equations (EEE), allows for flexible specifications of variance using exponential and quadratic variance families for common distributions such as Poisson, gamma, inverse Gaussian and negative binomial.

3. Some elements of REFINEMENT project

The REFINEMENT project refers directly to health geography as an important factor that influences overall population health since it devotes considerable attention to the spatial distribution of health facilities. The question of spatial organization and distribution of health care facilities is one element of the spatial equity of public services where equity is the absence of differences across socially, economically, demographically or geographically defined population groups.

No major differences were found in any of the countries in the way in which mental health is funded compared with the health system in general, although these systems vary considerably; central government revenues account for 80% plus of funding for health care in England, Italy, Norway and Spain; local government revenue covers 68% of fund in Spain; predominantly single fund social health insurance accounting for 70% plus of funding in Estonia, France and Romania, with more mixed funding systems seen in Austria and Finland. While there are few differences in the way that mental health and somatic health are treated in primary care in each country, more marked differences are seen for that receiving inpatient care.

There are more methods to identify the health care funding systems. The most recent source for such methods can be found in the REFINEMENT project, in which a bespoke questionnaire was developed to ask questions about various aspects of the funding and organisation of health and social welfare systems in the nine countries. Responses to these questions were coupled with further literature analysis and investigation undertaken centrally for each of the nine countries, making use of a wide range of materials from international organisations such as the OECD, WHO European Observatory on Health Systems and Policies, Commonwealth Fund, Health Policy Monitor, World Bank, International Monetary Fund, as well as previous European funded projects including Euro-DRG. A separate search of relative country specific literature was also conducted. Questionnaires were undertaken during summer 2012.

According to this methodology developed in the REFINEMENT project, there have been obtained the following results:

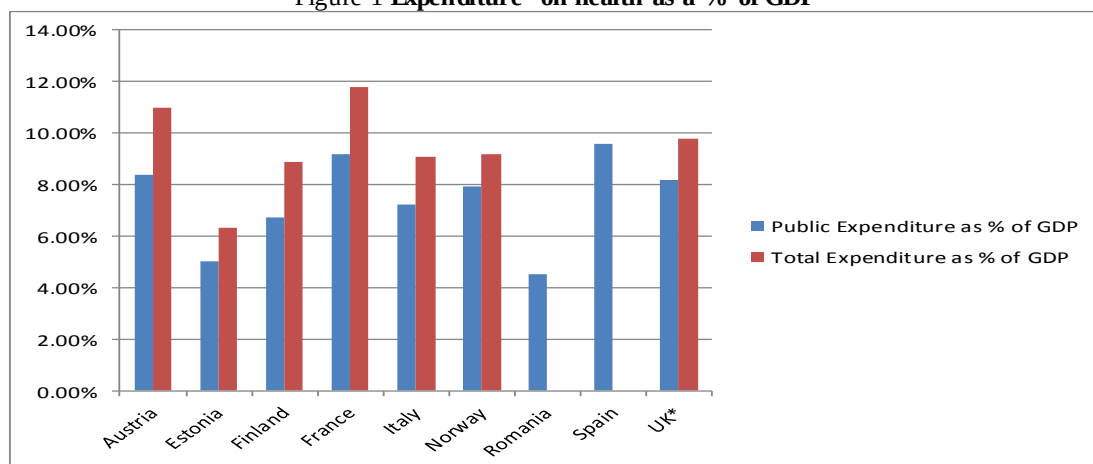
➤ **Sources of funding for overall health care expenditure:** there is a marked difference between a cluster of countries that are dominated by tax and a minority of countries where social health insurance plays a more substantial role. Central government revenue's dominate revenue sources in England (funds collected at UK level), Norway and Italy. In Spain the principal source of funding is revenue collected from each of the 17 autonomous communities that make up the country, with some redistribution of monies at central government level.

The majority of funds for health in Finland are from governmental sources, being a mixture of central and local government revenue. Romania, France and Estonia rely on social health insurance funds, although in all three countries there is either one health insurance fund in place (or no competition between insurance funds in the case of France where the largest fund covers 87% of the population) collecting earmarked revenues largely from earned income. Austria is the only one of the nine countries where there are differentials between the multiple sickness funds that is in place. Private/voluntary health insurance accounts for less than 2% of total healthcare expenditure in all countries, with the exceptions of Austria, Spain and France. In Spain this is largely a specific fund for civil servants, while in France the main purpose of the fund is to provide insurance against out of pocket payments rather than to fund alternative services. In the UK non for profit charitable organisations provide funding for around 5% of all health care expenditure while Romania is the only country that receives any substantive sums of external aid for health care.

➤ **Primary care in health and mental health:** should play a critical role in supporting people with mental health needs, particularly for those with mood disorders whose care in some systems may be entirely managed within primary care where appropriate, as for instance is indicated in guidelines from the National Institute of Health and Clinical Excellence in England. Our focus here was on general practitioners rather than other individuals, such as nurses, working in primary care.

Mental health services in many countries are currently subjected to change and are being reviewed and redesigned. These changes reflect, in part, the growing evidence of what constitutes cost-effective care, and also an acknowledgement of the failures of the system of care that was based on old-fashioned and remote institutions. Asylums do not offer the quality of care that is expected today, both by patients and their families. There is also an increasing worldwide focus on chronically disabling conditions, including mental disorders, rather than infectious and communicable diseases. This is reflected in the attention given not only to mortality but also to a wider concept of morbidity that goes beyond symptoms to attach importance to disability, quality of life and the impact of responsibilities on care givers ([14]). Policies and general descriptions of the health and social services that provide care to mentally ill in the 9 Refinement countries have been described separately in details (Figure 1).

Figure 1 **Expenditure on health as a % of GDP**



Source: calculations of the authors in the project REFINEMENT

In term of funding models and interfaces with social care services, there is a representative range of health care systems across Europe; these systems are at very different stages in the development of mental health care, ranging from heavily hospital reliant systems in Romania through different balances between community and institutional care found in countries including Austria, the UK and Norway to the highly community centered system seen in Italy.

4. Conclusions

The overarching aim of our paper is to look at the different models of health care financing, their mental health care services in nine European countries: Austria, Marea Britanie, Estonia, Finlanda, Franta, Italia, Norvegia, Romania, Spania, taking into account their influence on the of high quality, equity, efficiency and better long term health outcomes.

Based on a special methodology it can be concluded that no major differences were found in any of the countries in the way in which mental health is funded compared with the health system in general, although these systems vary considerably.

Of fundamental concern to any economic analysis of mental health services is the cost-effectiveness of service providers. Issues of this sort have been difficult to address, however, because of the lack of adequate comparative data describing both providers and their patients.

The models presented in this paper can be adapted to the specific conditions of the mental health system in Romania, which is subject to the next stages of the project activities REFINEMENT.

5. Bibliography

- [1] De Jong A., *Development of the International Classification of Mental Health Care (ICMHC)*. Acta Psychiatrica Scandinavica. Supplementum, 405: 8-13, 2000.
- [2] Salvador-Carulla L., Romero C., Weber G., Dimitrov H., Sprah L., Venner B. for the eDESDE-LTC Group. *Classification, assessment and comparison of European LTC services. Development of an integrated system*. Eurohealth 2011, 17(2-3): 27-29, 2011.
- [3] World Health Organization, *Assessment Instrument for Mental Health Systems (WHO-AIMS)*. Geneva, World Health Organization, Available at www.who.int/mental_health, 2005.
- [4] Pope K. S., Getter I. D. and Wilkinson L., *Fee assessment and outpatient psychotherapy*. J. consult. clin. Psychol. 43, 835-841, 1975.
- [5] Balch P, Ireland J. F. and Lewis S. B., *Fees and therapy: relation of source of payment to course of therapy at CMHC*. J. consult. Clin. Psychol. 45(3), 504, 1.
- [6] Carpenter P.J. and. Range L. M., *The effects of patients' fee payment source on the duration of outpatient psychotherapy*. J. clin. Psychol. 39(2), 304-306, 1983.
- [7] Manning W. G., Morris C. N., Newhouse J. P., *A two-part model of the demand for medical care: preliminary results from the health insurance study*. He&h, Economics, and Health Economics (Edited by J. van der Gaag and M. Pertman), pp. 103-123. North-Holland, Amsterdam, 1980.
- [8] Cross J.G., Knesper D.J. and Paul De Rooij, *An Econometric Model of an Episode of Mental Health Care for Patients with Mild Conditions: Implications for Caregiver Substitution* Socio-Econ. Plann. Sci. Vol. 24. No. 3. pp. 173-185, 1990.
- [9] Cameron C., and Trivedi P.K., *Microeconometrics: Methods and applications*, Econo-metric Society Monographs, Cambridge University Press, New York, NY, 2005
- [10] Winkelmann R., *Econometric analysis of count data*, 4th edition, Springer-Verlag, Berlin, 2003.
- [11] Wooldridge J., *Econometric analysis of cross-section and panel data*, MIT-Press, Cambridge, MA, 2002.
- [12] Basu a. and Rathouz P.J., *Estimating marginal and incremental effects on health outcomes using flexible link and variance function models*, Biostatistics, 6, 1, pp. 93–109, 2005.
- [13] Gilleskie D.B. and Mroz T.A., *A flexible approach for estimating the effects of covariates on health expenditures*, Journal of Health Economics 23 (2004) 391–418, 2004.
- [14] Amaddeo F., Barbui C., and Tansella M. *State of psychiatry in Italy 35 years after psychiatric reform. A critical appraisal of national and local data*, International Review of Psychiatry, in press, 2012.