

Costs and Benefits in Education

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Summary

Mental problems often begin to develop during childhood and/or adolescence and can be associated with high costs for multiple societal sectors, including the education sector. Children with mental problems are more likely to require additional support at school to help them achieve the same educational outcomes in comparison with their peers without mental problems. This support is often associated with substantial costs for the education sector. On the other hand, interventions to prevent or treat mental problems can lead to benefits to the education sector in the form of cost savings. Taking costs and benefits in the education sector into account in economic evaluations is important for informing policy decisions in relation to optimal resource allocation. Nevertheless, costs and benefits in the education sector are rarely included in economic evaluations of health interventions. This can be attributed to limited knowledge on the importance of including these costs and benefits, as well as the scarcity of methods and tools to support their inclusion in economic evaluations. Therefore, the aim of this dissertation is two-fold. The first aim is to investigate the available methods for including education costs and benefits in health economics research, and to explore the attitude towards their inclusion among health economists. This aim is addressed by the studies presented in Chapters 2 and 4. The second aim is to propose new standardized internationally applicable identification, definition, measurement, and valuation methods that can enable the inclusion of education costs and benefits in health economics studies in a transparent way and enhance the comparability and transferability of the results within and across countries. The second aim was addressed by the studies presented in Chapters 3-6, each of which corresponded to one or more of the four steps of costing in health economics, namely identification, definition, measurement, and valuation.

Chapter 1 introduces the scope and main concepts related to this dissertation. It discusses the rationale for conducting the research presented in this dissertation by outlining the economic impact of mental problems on society and within societal sectors. This chapter explores in more detail how mental problems affect the education sector. Furthermore, the chapter introduces the discipline of health economics with particular focus on the choice of perspective in health economics studies. The choice of perspective determines what costs and consequences of health interventions are included in the analysis. When a health sector perspective is adopted, only costs and consequences relevant for the health sector are included. When a societal perspective is adopted, all costs and consequences are considered regardless of the sector where they occur. A societal perspective is preferred for informing optimal resource allocation decisions. Chapter 1 also outlines key methodological research on costs and benefits in the education sector, highlighting gaps in the literature. Chapter 1 concludes with the context, aims, and outline of this dissertation.

Chapter 2 presents the results of a systematic literature review of economic evaluations and cost of illness studies conducted in the mental health domain over the population of children and adolescents. This study aimed to gain insights into the methods used for including education costs and benefits in health economics studies and into the proportion of education costs and benefits in relation to the total costs associated with a condition or an intervention. Forty-nine studies were included in the analysis. The results show considerable variation in the choice of identification, definition, measurement, and valuation methods for including

education costs and benefits in health economics studies, as well as the general lack of transparency in reporting on the methods. This limits meaningful comparison between the studies and the transferability of the generated evidence. Furthermore, the results show that education costs and benefits can comprise up to 67% (range 0-67%) of the total costs associated with a condition or an intervention. This provides a strong rationale for the importance of considering education costs and benefits for inclusion in health economics studies.

Chapter 3 explores the methods for identifying and defining costs and benefits in the education sector. The aims of this study were to identify costs and benefits in the education sector that could be relevant to health economics studies set in the mental health domain, to validate the identified costs and benefits in the European context, and to categorize them into conceptually harmonized clusters of terms. To identify costs and benefits in the education sector, a systematic review of peer-reviewed and international grey literature was conducted. The list of costs and benefits in the education sector, comprised of twenty-four items, was reviewed by an international group of fourteen experts in the education sector for completeness, clarity, and relevance. The list of costs and benefits was subsequently categorized into inputs (e.g. services, professionals), throughputs (e.g. interventions) and outputs (e.g. consequences). The main contribution of this study is in developing a comprehensive, validated list of costs and benefits in the education sector that could be relevant to health economics studies. Furthermore, the categorization of costs and benefits presents the first step towards the development of costing tools for the proper inclusion of these costs and benefits in health economics studies.

Chapter 4 addresses both aims of this dissertation. In line with the first aim, this study explores the attitudes of health economists towards including education costs and benefits in economic evaluations of interventions targeting mental health and behavioural disorders. This chapter further explores the methods for identifying education costs and benefits by quantifying their relative importance in the context of mental health and behavioural disorders. To collect the data for this study, an online survey with open-ended questions and a best-worst scaling object case study was developed. Thirty-nine experts in the field of health economics and health technology assessment completed the survey. The most important education costs and benefits were “special education school attendance”, “absenteeism from school”, and “reduced school attainment”. The majority of the respondents (68%) reported that education costs and benefits were relevant, but only a few (32%) included them in economic evaluations. The experts also indicated that irrelevance of these costs and benefits to the budget holder, the difficulty of obtaining information, the difficulty of quantifying these costs and benefits, and the difficulty of defining the boundaries of a broader (societal) perspective were the main barriers to the inclusion of education costs and benefits in economic evaluations. The results of this study can be used to select items for the development of measurement and valuation tools and for including education costs and benefits in economic evaluations in the mental health domain. Furthermore, by highlighting the barriers to adopting a societal perspective in health economics, this study proposed directions for further research to facilitate the inclusion of broader costs and benefits in economic evaluations.

Chapter 5 focuses on the methods for broader resource-use measurement (RUM) in health economics. This chapter describes the development process of a multi-sectoral multi-national RUM instrument developed in the Programme in Costing, resource use measurement and outcome valuation for Use in multi-sectoral National and International health economic evaluAtions (PECUNIA) project, the PECUNIA RUM. The methodological approach was based on best practice guidelines for the development of RUM instruments in health economics. The process consisted of six steps, including the definition of the instrument attributes, identification of cost-driving elements in each sector, a review of methodological literature, development of a harmonized cross-sectoral approach, development of questionnaire modules and their subsequent harmonization. The selected methodological approach was, overall, applicable to the development of the PECUNIA RUM instrument. However, due to the complexity of developing multi-sectoral RUM instruments, additional steps were needed. Establishing a uniform methodological basis and harmonization of questionnaire modules were necessary steps to ensure cohesion of the instrument, as it is made up of eight modules. Furthermore, the involvement of a broader range of stakeholders (healthcare professionals, sector-specific experts, health economists) was deemed important given the inclusion of resource-use in multiple sectors. The draft version of the PECUNIA RUM was presented to the focus group of sixteen health economists. The participants indicated that having a standardized RUM instrument would be important, although the full version of the instrument would not be likely to be applicable to every setting. This is the first study that transparently describes the development process of a generic multi-sectoral RUM instrument in health economics and provides insights into the methodological aspects and overall validity of the instrument. This study could also serve as a guide for researchers who undertake RUM instrument development.

Chapter 6 explores the methods for the valuation of education costs and benefits. This study describes the application of a standardised costing tool developed in the PECUNIA project, the PECUNIA Reference Unit Cost Template for services, for calculating the unit costs of services in health economics research. The tool was used to calculate the unit costs of three selected services in the education sector, namely special education services, educational therapy provided in primary schools, and educational therapy provided in secondary schools, in five European countries (Austria, Germany, Hungary, the Netherlands, and The United Kingdom). The unit costs of special education services ranged from €57 to €189 per day. The unit costs of educational therapy provided in primary schools ranged from €6 to €26 per contact and from €5 to €35 per day. The unit costs of educational therapy provided in secondary schools ranged from €8 to €27 per contact and from €5 to €13 per day. Variation was observed in the type of data used for the calculation, service unit, representativeness of the unit costs, and the components included in the unit costs. The majority of the unit costs were nationally representative and were calculated based on national secondary data. The most frequently included cost components included staff costs and overhead costs. This study fills the research gap by providing the unit costs of selected education services that can be used in future national and multi-national economic evaluations in the European context. The results of this study also indicate that despite the use of a standardized tool, the unit costs and their composition still varied. Other aspects, such as the choice of the input data for calculating unit

costs, and structural differences in educational systems in different countries could contribute to this variability.

Finally, in Chapter 7 the main findings of this dissertation are discussed in relation to the broader research context. The results of this dissertation demonstrate substantial variation in the methodological approaches to the identification, definition, measurement and valuation of education costs and benefits in the reviewed studies. This variation can lead to the lack of comparability and transferability of health economic evidence, inefficient research practices, and suboptimal resource allocation decisions within and across countries. The main contribution of this dissertation in bridging this research gap is in proposing identification, definition, measurement and valuation methods for including education costs and benefits in health economics studies in a standardized way. This chapter also provides reflections on the methodology used for conducting the studies included in the dissertation, directions for further research, and implications of this dissertation for policy.