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The Estimation and Inclusion of Presenteeism Costs in Applied Economic Evaluation: A Systematic Review

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ABSTRACT

Objective: Given the significant costs of reduced productivity (presenteeism) in comparison to absenteeism, and overall societal costs, presenteeism has a potentially important role to play in economic evaluations. However, these costs are often excluded. The objective of this study is to review applied cost of illness studies and economic evaluations to identify valuation methods used for, and impact of including presenteeism costs in practice. **Methods:** A structured systematic review was carried out to explore (i) the extent to which presenteeism has been applied in cost of illness studies and economic evaluations and (ii) the overall impact of including presenteeism on overall costs and outcomes. Potential articles were identified by searching Medline, PsycINFO and NHS EED databases. A standard template was developed and used to extract information from economic evaluations and cost of illness studies incorporating presenteeism costs. **Results:** A total of 28 studies were included in the systematic review which also demonstrated that presenteeism costs are rarely included in full economic evaluations. Estimation and monetisation methods differed between the instruments. The impact of disease on presenteeism whilst in paid work is high. **Conclusions:** The potential impact of presenteeism costs needs to be highlighted and greater consideration should be given to including these in economic evaluations and cost of illness studies. The importance of including presenteeism costs when conducting economic evaluation from a societal perspective should be emphasised in national economic guidelines and more methodological work is required to improve the practical application of presenteeism instruments to generate productivity cost estimates.

Keywords: economic evaluation, presenteeism, productivity costs, reduced productivity.

Introduction

Productivity costs can be defined as "[c]osts associated with production loss and replacement costs due to illness, disability and death of productive persons, both paid and unpaid" [1]. According to the neoclassical theory, the idea of productivity is part of a production function, with labor as a key input contributing to output. Productivity therefore is a measure of output per unit of input [2]. Detailed theoretical and methodological discussions on this concept have been extensively discussed elsewhere [2]. In the context of this article, *productivity loss due to sickness* refers to output loss resulting from work absence and/or reduced labor input due to sickness (i.e., it is not concerned with lost income from the individual perspective, but with lost output from the societal perspective). Productivity costs have an important, yet controversial, role in economic evaluation. This is particularly the case when the evaluation is performed from a societal perspective. There have been strong arguments in favor of adopting a societal perspective in economic evaluations [3,4], although there is no theoretical consensus on the most appropriate perspective [5,6]. Some have argued that adopting a narrower perspective—such as a specific provider or institution, patient, or third-party provider could lead to biased health policies for society as a result of ignoring important cost categories outside the health care sector [4]. Comprehensive discussions on the issue of perspectives are addressed elsewhere in more detail [3,4]. In theory, when adopting a societal perspective, all relevant costs and consequences to whomsoever they accrue should be considered in the evaluation, including productivity costs. It is important to note that there have been various debates about the inclusion of productivity costs in economic evaluations. These debates include whether productivity costs should be included on the cost or the outcome side, and also the methods used to measure and value productivity costs, especially in relation to paid work [2,7–9]. The inclusion of productivity costs has mostly been limited to the context of paid work, which is the broad focus of this article. Another issue often ignored in productivity costs that will not be covered in this article relates to unpaid work. Detailed methodological and practical discussions in relation to unpaid work are provided elsewhere [10].

Paid work broadly consists of productivity loss to society as a result of absence from work (absenteeism) or working with limitations due to illness (presenteeism). Compared with absence from work, the evidence suggests that presenteeism generates

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significantly higher cost estimates than does absenteeism [11]. Productivity costs related to presenteeism seem to be rarely considered in economic evaluations [12], although there is limited evidence on this. Ignoring these costs could significantly underestimate the value of interventions that reduce limitations at work due to illness.

The exclusion of societal costs related to presenteeism in economic evaluations may be explained by several factors. First, an overview of most national economic guidelines, in which a societal perspective is recommended, shows there tends to be a bias toward including absenteeism costs, but not presenteeism costs [13]. Second, the theoretical literature suggests a lack of consensus on the most appropriate instrument for measuring presenteeism and on the valuation methods for generating monetary estimates from existing measures. Both are required if presenteeism costs are to be included in economic evaluation [14,15]. A scoping review [16] of existing productivity loss measurement instruments reported in various systematic reviews identified a total of 24 instruments [2,15,17–26]. The most commonly reported were the Work Limitations Questionnaire (WLQ) [27], the Health and Work Performance Questionnaire (HPQ) [28], the Work Productivity and Activity Impairment (WPAI) Questionnaire [29], the Health and Labour Questionnaire (HLQ) [30], and the Health and Work Questionnaire (HWQ) [31]. These instruments differ in the ways that presenteeism is measured and valued. Inevitably, this will have an impact on comparability between studies that use different instruments.

The evidence on whether, and how, presenteeism costs are estimated in economic studies and on the size of these costs also appears to be limited. Previous literature has involved assessing the appropriateness of existing instruments [18,22] and valuation methods [15,20] but has not studied which instruments have been used to estimate presenteeism in practice in the context of cost-of-illness studies or economic evaluation. This review goes further by assessing which instruments have been used in practice, and how, to estimate presenteeism costs. A 2009 review of presenteeism considered the impact of presenteeism on the total cost of health conditions from a narrow employer perspective, but did not examine the methods used in economic studies [25]. The review found that job-related reduced productivity was a major component of total employer costs for various health conditions, but it was not able to assess presenteeism instruments used in practice, and how, to estimate presenteeism costs at the time. The more up-to-date review presented here aims to extend the earlier review by investigating two related research questions in relation to this area: 1) What methods are economic studies using to estimate presenteeism in current practice? and 2) What is the impact of presenteeism on the total costs of interventions and health conditions in existing economic studies?

Methods

A systematic review of published applied economic studies, comprising cost-of-illness studies and economic evaluations, was conducted to explore the research aims.

Search Strategy

Searches were conducted in MEDLINE (Ovid), PsycINFO (Ovid), and the specific health economics database, the National Health Service Economic Evaluation Database, and were limited to studies published up to August 31, 2015, with no starting date limitation. The search strategies used were based on the following key predefined search keywords: "presenteeism" or "reduced productivity" or "productivity costs" or "lost productivity" or "work limitations" or "work productivity" or "work performance," subsequently in conjunction with the terms "cost and cost analysis" or "cost-effectiveness analysis" or "cost-utility analysis." Whenever relevant, Medical Subject Headings were explored. The list of study titles was supplemented by a bibliographic review of articles included in the review, and through searching other electronic sources such as Google Scholar for articles from academics known in this area.

Study Selection

Studies were included only if they 1) were original, applied cost-of-illness studies or economic evaluations; 2) incorporated costs related to presenteeism, and described the methods for doing so; and 3) were written in English. After excluding duplicates, the abstracts of the remaining articles were assessed in terms of these inclusion criteria. Full texts were obtained for all studies that appeared to meet the inclusion criteria at this point, and were read to make a final decision on study inclusion. Initial study selection was performed by one of the researchers (J. Kigozi), and when there was any ambiguity about inclusion or exclusion, the study was discussed by the whole research team before a final decision was made.

Data Extraction and Analysis

A data extraction form was developed to extract systematic information on study characteristics related to the study country, publication year, type of economic evaluation, and disease area. Methodological characteristics of interest included type of instrument, recall period, productivity loss reported, type of instrument, monetization algorithm used (if available), and the proportion of presenteeism costs in relation to absenteeism and/or overall total costs. Data extraction was performed. Narrative synthesis was used to summarize and explain the findings.

Results

Study Selection

In total, 610 potentially relevant articles were identified, of which 16 were excluded on the ground that they were duplicates. Of the remaining 594 articles, 538 did not meet the inclusion criteria on the basis of the abstract, leaving 56 articles that were read in full. Of these, 35 did not incorporate presenteeism, or were reviews or protocols, and were subsequently excluded. Seven additional articles were identified through searching references of studies identified from the databases and other electronic sources. This resulted in a total of 28 studies that met the criteria for the review.

Study Characteristics

A summary of the 28 studies included in the review is presented in Table 1. Most of the studies identified (57%) were conducted in the United States. The others were from the Netherlands [32,33], Canada [34–36], the United Kingdom [37–39], Sweden [40], and Thailand [41]. There were two multicountry studies, with one set across Australia, the United States, and the United Kingdom [42], and the other reporting cost estimates from eight European countries including Germany, Italy, Lithuania, the Netherlands, Luxembourg, Austria, France, and Spain [43].

The studies evaluated a wide range of diseases and varied from national survey–based costing studies covering various conditions to cost estimates from specific disease conditions. The most common conditions considered were obesity [37,44,45], rheumatoid arthritis [34,36,46], migraine [43,47,48], and