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The iMTA Productivity Cost Questionnaire A Standardized Instrument for Measuring and Valuing Health-Related Productivity Losses

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ABSTRACT

Background: Productivity losses often contribute significantly to the total costs in economic evaluations adopting a societal perspective. Currently, no consensus exists on the measurement and valuation of productivity losses. **Objective:** We aimed to develop a standardized instrument for measuring and valuing productivity losses. **Methods:** A group of researchers with extensive experience in measuring and valuing productivity losses designed an instrument suitable for self-completion, building on preknowledge and evidence on validity. The instrument was designed to cover all domains of productivity losses, thus allowing quantification and valuation of all productivity losses. A feasibility study was performed to check the questionnaire's consistency and intelligibility. **Results:** The iMTA Productivity Cost Questionnaire (iPCQ) includes three modules measuring productivity losses of paid work due to 1) absenteeism and 2) presenteeism and productivity losses related to 3) unpaid work. Questions for measuring absenteeism and presenteeism were derived from existing validated questionnaires. Because validated measures of losses of unpaid work are scarce, the questions of this module were newly developed. To enhance the instrument's feasibility, simple language was used. The feasibility study included 195 respondents (response rate 80%) older than 18 years. Seven percent (n = 13) identified problems while filling in the iPCQ, including problems with the questionnaire's instructions and routing (n = 6) and wording (n = 2). Five respondents experienced difficulties in estimating the time that would be needed for other people to make up for lost unpaid work. **Conclusions:** Most modules of the iPCQ are based on validated questions derived from previously available instruments. The instrument is understandable for most of the general public.

Keywords: absenteeism, presenteeism, productivity losses, unpaid work.

Introduction

Economic evaluations are increasingly performed to aid decision makers in allocating scarce health care resources. Such evaluations provide information on the relative cost-effectiveness of a (new) health care intervention compared with one or more (existing) alternatives [1]. Especially when decisions regarding the implementation or reimbursement of new interventions are (partly) based on outcomes of economic evaluations, and these outcomes thus influence access of patients to interventions, it is essential that these economic evaluations be conducted consistently and uniformly. A fundamental methodological choice, typically strongly affecting cost-effectiveness outcomes, is the perspective from which an economic evaluation is performed [2]. Evaluations from a health care perspective normally aim to include only those costs that fall on the health care budget (and therefore may be seen as most relevant to health care decision makers). From a theoretical viewpoint, it can be argued that optimal (i.e., welfare maximizing) decision making is possible only by taking a societal perspective [3]. Evaluations conducted from the societal perspective aim to incorporate all relevant costs and effects, regardless of where these occur [1]. An important cost category relevant from this perspective (but not from the health care perspective) is that of productivity costs. The value of productivity changes owing to illness and treatment often reflects a large part of the total costs related to health and health care interventions [4] and may even exceed medical costs [2]. Consequently, the decision regarding the inclusion of

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productivity costs in economic evaluations can have large implications for final outcomes. Some have argued that performing economic evaluations from *both* the societal and the health care perspective would be most informative [5–7]. Such a two-perspective approach is already recommended in several national health economic guidelines [8–11]. Despite the fact that some of the national health economic guidelines recommend a two-perspective approach *and* approximately half of the guidelines prescribe taking a societal perspective (http://www.ispor.org/peguidelines/index.asp), in practice productivity costs are ignored in the vast majority of economic evaluations [2,5,12,13].

It is unclear why productivity costs are ignored in economic evaluations so often. It has been suggested, however, that the exclusion of productivity costs in economic evaluations is related to a lack of guidance and standardization of measurement and valuation of health-related productivity losses [14,15]. Indeed, most health economic guidelines provide little or no guidance on how to estimate productivity costs. Moreover, golden standards regarding the measurement and valuation of productivity losses do not exist. Specific guidance as to the types of productivity costs that should be included in economic evaluations is generally limited as well [16]. In addition, validated questionnaires for measuring productivity losses are scarce and not systematically applied [16].

Costs associated with health-related productivity changes are commonly referred to as *productivity costs* and can be defined as "Costs associated with production loss and replacement costs due to illness, disability and death of productive persons, both paid and unpaid" [17]. Currently, the importance of inclusion of productivity costs related to paid work in economic evaluations taking a societal perspective is generally acknowledged. This is not (yet) the case for unpaid work [18]. Nonetheless, unpaid work clearly is an important source of economic value contributing to overall welfare. Given that health care interventions are often aimed at elderly populations who do engage in unpaid work but not in paid work, inclusion of these costs can be highly relevant in many studies. Three types of unpaid activities can be distinguished: household work (e.g., cooking and cleaning), care work (e.g., taking care of children, helping friends or family with cleaning and personal care), and volunteer work (e.g., helping out in a commodity center or a sports club). Despite unpaid work's recognized importance, it is omitted from the vast majority of economic evaluations, even those that claim to take a societal perspective [4,18,19]. In addition, complete and validated measurement instruments for unpaid work are lacking. For instance, the measurement of unpaid work in the Health and Labor Questionnaire was limited to household tasks taken over by others [20]. The Work Productivity and Activity Impairment questionnaire asks about the ability to perform these tasks, with no opportunity to value in monetary terms [21].

Productivity changes in paid work may occur because of absence from work (absenteeism) or because of reduced productivity while at work (presenteeism). Information on absence from work due to sick leave may be derived from existing data sources (if available), such as registrations from occupational health service companies. Caution is warranted in using such sources, because on important aspects such as age, health status, and occupational background the people included in such registries may differ from the population included in an evaluation study. Moreover, such registrations are typically available only for salaried workers and not for self-employed workers. Therefore, it is advisable to directly measure productivity losses related to paid work, ideally by monitoring actual production. In many circumstances, however, this is not feasible. Because of these restrictions, often patients' self-completed questionnaires are applied in collecting productivity data for use in economic evaluations.

Today, various such instruments that have been developed are available. Several of these instruments have been specifically developed to measure health-related productivity losses. Most, however, are not specifically intended or suited for use in economic evaluations [22–24]. For instance, the measurements do not always allow directly translating productivity losses into monetary terms or the scope may be limited to losses related to paid work only. Additional differences between the instruments concern the formulation of separate questions, the inclusion of different types of productivity losses, the length of the questionnaire, the recall period, and the (implicitly assumed) valuation method. Regarding the latter, it is important to note the (ongoing) debates regarding preferred valuation methods for productivity losses [14,19]. Especially, the debate regarding the appropriateness of the human capital approach and the friction cost approach received quite some attention [25–32]. Applying these methods requires specific information that measurement instruments need to facilitate. Finally, not all instruments are specifically developed for self-completion in a broad population. Consequently, all these factors may affect the validity, completeness, generalizability, usefulness, and comparability of outcomes of these instruments.

This article reports on the development of a standardized instrument suitable for self-completion for measuring and valuing all relevant productivity losses: the iMTA Productivity Cost Questionnaire (iPCQ). For this purpose, we optimized the features of existing instruments. Our underlying aim was to enhance the generalizability and comparability of outcomes of economic evaluations.

Methods

Development

A group of well-experienced researchers in the field of measuring and valuing productivity losses for use in economic evaluations of health care interventions was empanelled for the development of a standardized instrument for measuring and valuing productivity losses. This group of researchers (all working at the Erasmus University Rotterdam) consisted of four health economists (L.H.R., M. Koopmanschap, M. Krol, and W.B.) and two health scientists (C. B. and H.S.). During three interactive brainstorming sessions of 2 hours, the approach for the development of the questionnaire was discussed and the main quality criteria the instrument should meet were drawn up. These criteria were based on up-to-date scientific knowledge and practical experience of the researchers involved. The criteria are summarized in Table 1.

It was decided to base the standardized instrument on preexisting questionnaires by optimizing the features of these instruments developed within or in cooperation with Erasmus

Table 1 – Summary of main criteria applied for the development of the iMTA Productivity Cost Questionnaire.

Objectives
Standardization: Generalizability and comparability
Building on preknowledge and evidence on reliability and validity of existing questionnaires
Including absenteeism, presenteeism, and losses of unpaid work
Allowing to quantify productivity losses in descriptive and monetary terms
Suitable for valuations based on the human capital approach and the friction cost approach
Feasible to use for adults in a broad general population
Applicable in economic evaluations of health care interventions, independent of the disease area