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Preference-Based Assessments

QALY and Productivity Loss: Empirical Evidence for “Double Counting”

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ABSTRACT

Objectives: When quality-adjusted life-years are used for economic evaluation, the controversial issue of “double counting” of productivity loss emerges, particularly given the lack of empirical data. **Methods:** In this study, we performed a Web-based, large-sample survey to address the issue of double counting. To determine the influence of income reduction on utility scores, we obtained utility scores of eight health states with three instruction types: a) no instruction, b) instructed to consider income reduction, and c) instructed not to consider income reduction (compensated). Respondents were randomly sampled from the online panel and asked to evaluate 1 of 24 patterns by both standard gamble and time trade-off methods. **Results:** A total of 6551 respondents completed the questionnaire. First, despite the lack of instruction on income reduction, many respondents spontaneously assumed lost income. The proportion tended to be higher when considering more severe health states. Second, the degree of assumed income

reduction was related to utility scores. For a 10% income reduction, respondents assumed a 0.02- to 0.04-decrease in utility score (both standard gamble and time trade-off methods). Third, utility scores did not change significantly when instruction was given not to consider income reduction (compensated) compared with when no instruction was given. **Conclusions:** An assumed income reduction clearly influenced utility scores; however, compensation for lost income failed to sufficiently improve utility scores. In our view, the effect of income on utility scores does not only reflect wage loss. Our results suggest that the impact of double counting is negligible.

Keywords: double counting, productivity loss, QALY, standard gamble, time trade-off, utility scores.

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Introduction

The role of economic evaluation is becoming more important in many countries. Economic evaluation can clarify the relationship between the value and costs of various therapies. The result of economic evaluation depends on the perspective of analysis, such as “health care payer’s perspective” or “societal perspective.” From the health care payer’s perspective, only medical or relevant costs are generally considered, whereas from the societal perspective, all costs that occur in society are included in addition to medical costs.

In general, the societal analysis treats productivity loss as a component of costs [1]. Here, we use “productivity loss” in the limited sense of a patient’s own productivity change as a major consequence of health care programs. The other change in productivity (e.g., a family member taking time off to give care) is also included from the societal perspective. Because individuals other than the patient are not directly related to “double counting,” only patient productivity loss is considered in this survey.

Productivity loss can be measured by the human capital method and the friction cost method, among others. The human capital method uses wage to calculate productivity loss. Some insist that the friction cost method should be used, however, because full employment is not achieved in many developed countries. Although no consensus has been reached regarding the standard method for productivity loss calculation, these two methods are frequently used. Many pharmacoeconomic guidelines recommend either one or both of these methods [2].

Productivity loss was defined as the loss of income and was measured by using the human capital method; however, the cost for another or new worker (e.g., costs of recruitment and training) was measured by using the friction costs method. However, if income is reduced because of illness, this may influence a patient’s quality of life (utility scores). Accordingly, some insist that productivity loss should not be included in costs when using quality-adjusted life-years (QALYs) because the QALY also reflects the influence of work loss, and thus productivity, resulting in

Conflict of Interest: We declare no conflict of interest.

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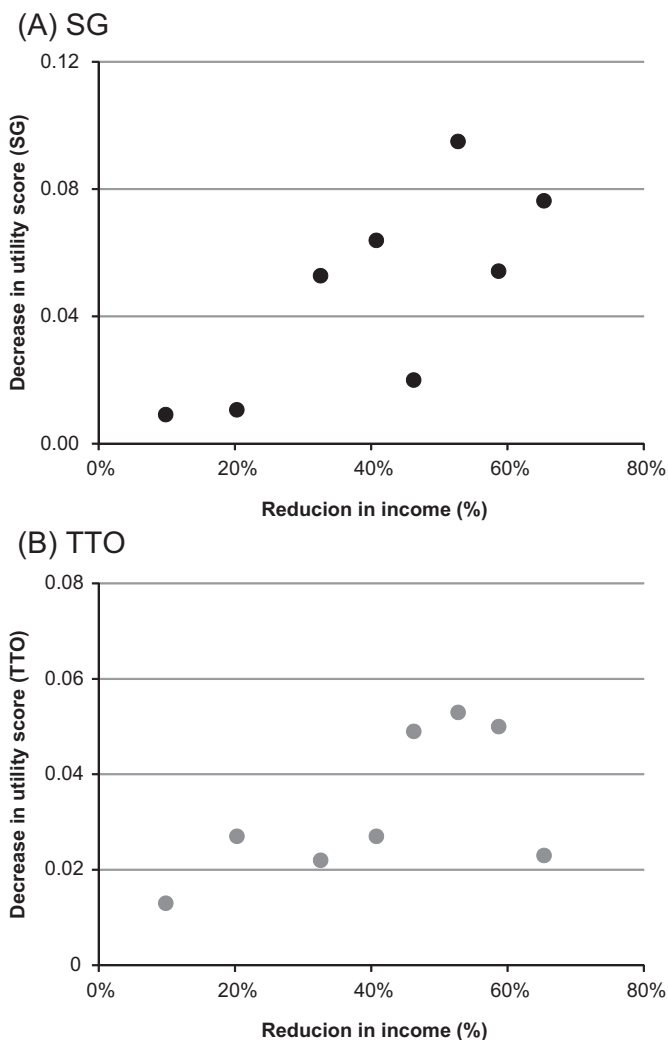


Fig. 1 – Decrease in utility score versus income reduction (instruction scenario c – instruction scenario b) measured by (A) SG and (B) TTO method. SG, standard gamble; TTO, time trade-off.

“double counting.” That is, productivity loss is included in both the cost (numerator) and the effectiveness (denominator) of the incremental cost-effectiveness ratio. For example, the Washington panel (i.e., Panel on Cost-Effectiveness in Health and Medicine in 1996) suggested that productivity costs associated with morbidity should be included in the denominator so that the QALY calculation captures the full impact of morbidity [3]. At present, this represents one of the important views of treating productivity loss in economic evaluation for health care technologies.

There are, of course, some theoretical issues to consider [4–6]. As is well known, the Erasmus group [4,6] in The Netherlands opposes treating productivity loss as part of the QALY calculation. In addition, the Washington panel recommendation is not clearly supported by empirical data. Some empirical surveys on the relationship between QALYs and productivity have been performed. In fact, a review of seven studies concluded that the “currently available empirical evidence on this issue cannot be considered decisive or conclusive” and that “[t]here are some inconsistencies between the conclusions of existing studies” [7]. Indeed, the proportion of those who spontaneously assume income reduction without being instructed to do so differs between studies [8–13]. It is still unclear whether utility scores

change if instruction is provided or if income reduction is spontaneously assumed. Some surveys detected statistically significant differences between two utility scores, but others did not. The influence of income loss on utility scores remains inconclusive, although approximately 15 years have passed since the suggestion of the Washington panel. One reason for this is the small number of respondents and health states to be evaluated (three or four at most).

Although some countries include the “societal perspective” in economic evaluation guidelines, the inclusion or exclusion of productivity loss is inconsistent. For instance, Sweden and [14] The Netherlands [15] recommend analysis from a societal perspective that includes productivity loss, while Australia [16] and Korea [17] do not. The double counting problem may not be the only cause of this inconsistency; one possibility is that the relationship between the QALY and productivity loss is confusing for decision makers. If productivity loss considerably influences utility scores, cost (including productivity loss) per QALY may be underestimated; that is, such an analysis may be too favorable for health care technologies. Given the importance of assessing this relationship on the basis of clear empirical data, the aim of this study was to examine the issue of double counting with a large, Web-based survey (Fig. 1).

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