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AUTHOR REPLY**How to measure comorbidity: a critical review of available methods**

We would like to thank Rozzini et al. for their letter regarding the Geriatric Index of Comorbidity (GIC). The GIC was not included in our review [1] because it was only recently published [2]. On the basis of their publication and Letter to the Editor, we will briefly review the GIC according to the criteria applied in our review of comorbidity measures [1].

The selection of the 15 diseases is based on the prevalence of these conditions in an elderly population [2]. This selection and the severity rating of the condition are based on the Index of Coexistent Disease–Disease Severity (ICED-DS) [1,3]. Subsequently, the GIC class (I–IV) is determined. Although the authors give a clear description of this classification, they do not describe the rationale for it. Medical charts are used to collect the information. Their study population consisted of 493 elderly patients admitted to the Geriatric Evaluation and Rehabilitation Unit [2] and 1402 hospitalized elderly patients (letter). Concurrent validity was studied by correlating the GIC with the number of comorbid diseases (selected from the 15 diseases and stratified into four levels) and the sum of severities of the 15 conditions (stratified into four levels). The correlation coefficients were 0.14 and 0.53, respectively [2]. Unfortunately, the authors do not explain why they decided to use stratification. Predictive validity was assessed by using the GIC in multivariate models predicting basic activities of daily living (BADL) ($r^2 = 0.32$) and Physical Performance Test (PPT) ($r^2 = 0.39$). A relative risk (RR) of 2.3 (95% confidence interval [CI] 1.7–3.1) was found for the GIC in a multivariate model predicting 12-month mortality [2]. An RR of 1.1 (95% CI 1.0–2.1) was found for Class III, and an RR of 3.0 (95% CI 1.7–5.3) was found for Class IV in a multivariate Cox regression model predicting 6-month mortality (letter). The relationships between the scores for the GIC and BADL, PPT, Minimal Mental State Examination, Acute Physiological and Chronic Health Evaluation II (APACHE II), and length of stay support the construct validity. Inter-rater agreement is 89%, and intra-rater agreement is 97%.

The authors showed that the GIC was independently associated with BADL and PPT after adjustment for the severity of individual diseases. Thus, the GIC seems to contain some information that is not obtained by using the number of diseases and their severity ratings only. In our review, we discussed the possibility that certain disease combinations may have synergistic effects, leading to more disability than would be expected on the basis of addition alone. Knowing these combinations would provide extra information, so it would be very interesting to study these phenomena in depth.

Although the GIC certainly seems promising, further validation studies are needed. We would be very interested in studies comparing the GIC with other comorbidity indices mentioned in our review and in more extensive reliability studies. However, on the basis of the information that is currently available, we would not be able to add the GIC to the list of recommended measures of comorbidity.

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