

**LETTER TO THE EDITOR****TO THE EDITOR****Response to Letter About ‘Disability Assessment in Acute Ischemic Stroke: Which Score/Instrument Is Better?’**

**Keywords:** STROKE, Disability, Modified Rankin scale, Modified Barthel index, Instrumental ADL, NIHSS

We thank Drs. Panda and Sharawat for their comments regarding our study.<sup>1</sup> The three instruments are the most commonly used tools in assessing physical disability after stroke. The assessments are normally conducted by nurses and are important indicators of the need for physical assistance for stroke patients. Indeed, the three tools focus on different aspects of activity disability and may be suitable for patients in different periods after stroke. However, our study aimed to analyze and compare the association of these three instruments with the initial stroke severity, and their prediction ability for 30-day stroke severity. No official consensus has been reached on the target population of these three instruments, and all of them were widely used regardless of the disease stages. For example, Chu et al.<sup>2</sup> used these three tools in the acute care ward. Poalelungi et al.<sup>3</sup> designed a study to assess mRS and IADL at days 0–5, day 90, and day 180 after acute ischemic stroke, and Tang et al.<sup>4</sup> assessed BI, IADL, mRS, and NIHSS at 3 months after stroke. The comments suggested that we should determine which subgroups of stroke patients are most appropriate for these three scales. Owing to the limited sample size of our study, the subgroups analyses were not suitable.

In the multivariate analysis (Table 5), the use of thrombolysis and time from onset to admission were independently associated with 30-day NIHSS. Their combined effect on 30-day NIHSS was calculated as probability scores in the logistic regression analysis. The ROC curve of the scores for predicting 30-day NIHSS was depicted in Figure 3. In addition to the use of thrombolysis and time from onset to admission, we also incorporated MBI, mRS, and IADL into the logistic regression analysis. Probability scores of the models containing MBI or mRS or IADL were calculated. The ROC curve of the models for predicting 30-day NIHSS was depicted in Figure 2. Our results demonstrated that the addition of MBI, mRS, or IADL increased the performance of the prediction model.

Panda and Sharawat<sup>1</sup> indicated that the modified NIHSS is better than NIHSS. However, NIHSS is more extensively used for evaluating neurological function in stroke patients and can reflect the neurological deficits and accurately determine the prognosis.<sup>5</sup> Although the modified NIHSS is easier to implement, NIHSS is the most frequently used score worldwide for assessing the stroke severity, and the modified NIHSS scale has not been tested for reliability and validity in China.<sup>6</sup> Besides, Panda and Sharawat<sup>1</sup> questioned the logical relationship between the dependent variable and the independent variable. Our study measured the mobility of 5–7 days after stroke by the three instruments to predict the prognosis of 30-day stroke severity.

Panda and Sharawat<sup>1</sup> asked about the blinding method in assessing MBI, mRS, and IADL. In our study, these three

instruments were assessed separately by three nurses blindly, who assessed one instrument each, while NIHSS scores at admission and 30 post-stroke days were assessed by physicians.

Lastly, our study had relatively low sample size. However, 10 events per variable (EPV) is a widely advocated minimal criterion for sample size considerations in logistic regression analysis to enable accurate estimation of the regression coefficients.<sup>7</sup> For the binary outcome, the number of positive cases is 62 and the number of negative cases is 74 in our study. According to the 10 EPV principle, logistic regression allows six independent variables to enter the model at the same time. Since our study has only two independent variables entered the model, the sample size is sufficient.

We appreciate the comments provided by Drs. Panda and Sharawat. We believe that the discussions and additional explanations reported in this letter support the robustness of the findings in our study.

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**DISCLOSURES**

None.

**STATEMENT OF AUTHORSHIP**

QW wrote the paper. YS was responsible for the response’s concept and design.

*Qian Wu* 

*Shanghai Tenth People’s Hospital Affiliated to Tongji University,  
Shanghai, People’s Republic of China  
College of Medicine, Tongji University, Shanghai, People’s  
Republic of China*

*Yan Shi*

*Shanghai Tenth People’s Hospital Affiliated to Tongji University,  
Shanghai, People’s Republic of China*

*Correspondence to:* Yan Shi, Shanghai Tenth People’s Hospital Affiliated to Tongji University, Shanghai, People’s Republic of China. Email: [392470352@qq.com](mailto:392470352@qq.com)

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