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The minimum basic dataset for diagnoses of cerebrovascular disease: Methodological issue on reliability



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ABSTRACT

Reliability (precision, repeatability, agreement) and validity (accuracy) are two completely different issues which should be assessed using appropriate tests. It is crucial to know that, reporting concordance rate; the selection error rate and the classification error rate are not the most appropriate estimates to assess reliability. Regarding reliability, for qualitative variables, weighted kappa should be used with caution. However, sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), likelihood ratio positive and negative as well as diagnostic accuracy are estimates that are usually used to evaluate the validity of a test compared to a gold standard.

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I was interested to read the paper by Hernández Medrano I and colleagues published in Neurologia 2017 Mar [1]. The minimum basic dataset (MBDS) is the largest available hospital care administrative database that is used in clinical studies and hospital management in association with diagnosis-related groups (DRGs). The authors aimed to assess the reliability of MBDS which are referred to cerebrovascular disease (CVD). Using all discharge reports from the Spanish MBDS in 2009, a representative sample was obtained by stratified sampling and 11,209 records were evaluated. Outcome indicators were obtained to measure any differences observed between the national MBDS being evaluated and the hospital's original MBDS. Analysis of codes for CVD as a primary diagnosis was performed for ICD-9-CM diagnostic categories 430 through 438. Based on their results, 397 discharges of cases of CVD which included 21 different DRGs. Diagnostic coding showed a concordance rate of 81.87%; the selection error rate was 2.26% and the classification error rate was 15.87%. The error rate in the DRG was 16.12% and associated with the greatest impact on the mortality risk level. They concluded that the quality of the MBDS for CVD is sufficient to ensure delivery of valid information [1].

First, reliability (precision, repeatability, agreement) and validity (accuracy) are two completely different issues which should be assessed using appropriate tests [2–7]. It is crucial to

know that, reporting concordance rate; the selection error rate and the classification error rate are not the most appropriate estimates to assess reliability [2–7]. Regarding qualitative variables, even applying kappa value can cause a misleading message. Two important weaknesses of k statistics to assess reliability are as follows: It depends upon the prevalence in each category which means it can be possible to have different kappa value having the same percentage for both concordant and discordant cells (selection error rate and the classification error rate)! Kappa value also depends upon the number of categories. In such situations, weighted kappa should be applied with caution. Moreover, to assess the validity (accuracy) of the MBDS; sensitivity, specificity, positive predictive value (PPV), negative predictive value (NPV), likelihood ratio positive and negative as well as diagnostic accuracy are among well-known estimates [2-7].

Therefore, to correctly assess reliability or validity of the MBDS, the above mentioned statistical and methodological issue should be taken into account.

Conflicts of interest

None declared.

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None declared.

Ethics

The work described in this article has been carried out in accordance with The Code of Ethics of the World Medical Association (Declaration of Helsinki) for experiments involving humans; Uniform Requirements for manuscripts submitted to Biomedical journals.

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