Asian Biomedicine Vol. 10 No. 4 August 2016; 393 - 394 DOI: 10.5372/1905-7415.1004.503

Letter to the Editor

Observer heterogeneity can be thought of as a confounding variable

Amir Mirhaghi
Evidence-Based Caring Research Center, Department of Medical-Surgical Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran

Abstract

The study published in the April 2016 issue of *Asian Biomedicine* recruited 2 different sets of observers to perform triage assessments. We know that each observation is subjected to an error. The error has 2 varieties including interobserver variation and intraobserver variation. So effort must be devoted to reduce these errors. The methodology reported may suffer from both intraobserver and interobserver error substantially.

Dear Sir,

I have read the outstanding contribution in *Asian Biomedicine* from Yuksen et al. entitled "Emergency severity index compared with 4-level triage at the emergency department of Ramathibodi University Hospital" [1].

I write to bring your attention to the results concerning the uncertain reliability of observers in the study. Based upon my understanding, each patient was triaged by an emergency physician on duty, and a triage nurse in the emergency department (ED). The Emergency Severity Index (ESI) triage algorithm was used by the ED physicians to triage patients. Four-level triage was used by nurses to triage patients. The authors concluded that the ESI algorithm was more accurate than the 4-level triage algorithm with regard to lifesaving intervention. In other terms, critically-ill patients were better recognized by the ESI than 4-level algorithm.

The study recruited two different sets of observers to perform triage assessments. We know that each observation is subjected to an error. The error has two varieties including interobserver variation and intraobserver variation. These two variations are measured as inter-rater and intra-rater reliability, respectively. In general, intra-rater reliability has lower error than inter-rater reliability as supported by a meta-analytical study on the reliability of ESI triage algorithm. Mirhaghi et al. showed that inter- and intra-rater reliability agreement was 0.786 (95% CI: 0.745–0.821) and 0.873 (95% CI: 0.801–0.921), respectively [2]. By contrast, interobserver reliability between nurse and physician (0.760) is lower than that between nurse and nurse (0.799) or physician and physician (0.842) in triage assessments, indicating that interobserver error between physician and nurse is relatively high. Considering this, the methodology may suffer from both intraobserver and interobserver error substantially. To reduce this problem, several studies have used a longitudinal design such as pre–and post implementation, and homogeneous observers to minimize the interobserver error. Moreover, physicians may have superiority over nurses in terms of emergency medicine. Therefore, the accuracy of the ESI triage for life-saving interventions that has been reported may be the result of these factors, rather than the ESI algorithm itself that carries the effect. Observer heterogeneity can be thought of as a third variable that mediates between them. It would be benefit if it were possible for authors to provide inter-reliability coefficients between emergency physician and triage nurse to control this bias.

We highly recommend further studies on the reliability of the 5-level triage scales and desired outcomes including time-related indices, mistriage rates (over-triage and under-triage), weighted and un-weighted kappa coefficients concerning different populations, and emergency clinicians in Thailand. In addition, authors could also consider the issue that triage system should be compatible with culture of care in the ED.

Amir Mirhaghi

Correspondence to: Amir Mirhaghi, Evidence-Based Caring Research Center, Department of Medical-Surgical Nursing, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran. E-mail: mirhaghia@mums.ac.ir

References

1. Yuksen C, Sawatmongkornkul S, Suttabuth S, Sawanyawisuth K, Sittichanbuncha Y. Emergency severity index compared with 4-level triage at the emergency department of Ramathibodi University Hospital. Asian Biomed. 2016; 10:155-61.
2. Mirhaghi A, Heydari A, Mazlom R, Hasanzadeh F. Reliability of the Emergency Severity Index: meta-analysis. Sultan Qaboos Univ Med J. 2015; 15:e71-7.
3. Ebrahimi M, Mirhaghi A, Heydari A, Mazlom R, Nassehi A, Jafari M. The role descriptions of triage nurse in emergency department: a Delphi study. Scientifica (Cairo). 2016; 2016:5269815. doi: 10.1155/2016/5269815.
4. Mirhaghi A. Triage system should be compatible with culture of care in emergency department. Med Klin Intensivmed Notfmed. 2016; 111:138-9.