When and Where to Calculate Confidence Interval

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To

The Editor

Sir, we read with interest the paper by Verma et al. published in November issue of this year.[1] The authors concluded that "longer boarding in emergency department (ED) is associated with increased inhospital mortality" and "mortality rate increases even further in patients who are boarded in the emergency for more than 24 hours." It was a retrospective cohort study on a relevant topic. However, I have some concerns regarding presentation of results and analysis. In Table 2, category-wise percentages would have been sufficient and 95% confidence intervals (CI) are unnecessary. The purpose of CI is to calculate the possible set of observations that will contain the true population mean or proportion.[2] In Table 2, category I, the meaning of 95% CI would be that we can be 95% confident that true percentage of patients in category I is between 40.5 and 43.8%. This is ambiguous and not needed as we can calculate true percentage that is 42.09%. Here the aim of Table 2 was to share the proportion and percentages of patients in different categories of study sample and not to define population proportion. Similarly, 95% CI was not desirable in Tables 3 and 4. Writing CI in these tables may create confusion for readers and may pose difficulty in interpretation of the results of the study.

Tables 5 and 6 show percentages of mortality. Only columns with "yes" would have been sufficient. If you calculate or know the percentage of patients who died, then, automatically you know the percentage of patients who did not die. In statistical analysis, authors have written that they compared CI with analysis of variance (ANOVA), but this analysis (ANOVA) did not appear in results. Similarly, it is written that authors did regression analysis "to identify factors associated with outcomes," and simple linear regression technique to identify factors directly associated with length of stay (LOS). It is difficult to appreciate the difference between the two statements. Probably by the first statement, authors meant to conduct logistic regression. These all analyses have not been shown in paper. These analyses would have been beneficial for the readers as these would result in robust statistic.

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The opening statement in "discussion" says that "longer a patient is boarded in the ED, the more is the risk for mortality." The authors have not shown any risk statistic in the results. Without a statistic it is hard to understand the author's viewpoint. Lastly, the conclusion that longer ED stay is associated with higher mortality cannot be based on just descriptive analysis. There must have been appropriate statistical analysis before authors conclude such statement. Therefore, the level of confidence in presenting conclusion does not match with the level of statistical analysis and level of evidence. Concluding such statements may mislead the readers in understanding the study results and principles of statistical analysis.

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