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Parameter estimation in a hierarchical random intercept model with censored response: An approach using a SEM algorithm and Gibbs sampling

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In this talk, we propose an approach, based on the stochastic expectation maximization (SEM) algorithm and Gibbs sampling, to deal with the problem caused by censoring in the response of a hierarchical random intercept models. As an application, we consider a dataset consisting of 2941 parasite density measurement gathered over a population of 505 Senegal children between 2001 and 2003. Assuming that all these measurements are correct, we simulate the effect of various censure levels by removing the corresponding entries before performing our algorithm. The model residuals are then compared to those obtained with the full data. Even when 10%, 20% or even 30% of the original measurements are missing, the produced residuals remain very accurate thus demontrating the effectiveness of our approach. Moreover, we compared our approach with the existing methods via real data sets as well as simulations. Results showed that our approach outperformed other approaches in terms of estimation accuracy and computing efficiency.

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Biostatistics and clinical research: Psychological burden and low level of knowledge among medical practitioners at King Fahad Medical City, Riyadh

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Background: Physicians, particularly those with no formal education in epidemiology and biostatistics, had a poor understanding of common statistical tests and limited ability to interpret study results. Fundamental concept of biostatistics and epidemiology are awful for physicians. If physicians do not understand fully the primary concept of biostatistics and epidemiology, then conclusions reach will be more likely to be wrong.

Objective: To evaluate the low level knowledge and awareness of basic and advanced biostatistics and epidemiology among physicians, residents, clinicians and researchers at King Fahad Medical City.

Methodology & Design: The cross sectional descriptive study design was used. The survey was completed among 250 participants in this study. Target sample was enumerated of all physicians, clinicians, residents, researchers and interns; both male and female; from different departments who were practicing and worked in their OPD, emergency, clinics and other faculties.

Result: The initial pilot survey was completed only 250 participants from 8 departments and 3 faculties. The overall mean percentage corrected answer score based on statistical knowledge and biostatistics of results was 31.8% [95% C.I, 28.6% - 38.2%] in contrast to 65.6% [95% C.I, 58.3% - 72.1%] for research fellows and general medicine faculty with research training which is highly statistically significant at ($p<0.001$). High scores in resident were associated with additional advanced degrees 48.3% [95% C.I, 45.6 – 55.8%] in comparison with 42.5% [95% C.I, 38.3% - 44.6%] at ($p<0.001$).

Conclusion: A large number of medical practitioners had low level knowledge and concept of biostatistics and unable to interpret basic and advanced statistical concept that commonly found in the medical literature. Formalized teaching system of biostatistics and epidemiology will be required during the residency for better understanding and proficient in statistical information.

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