



Methodological Rigors in Medical Journals from Developing Countries: An Appraisal of the Scenario in Asia

Sathian B¹

¹Assistant Professor, Department of Community Medicine, Manipal College of Medical Sciences, Pokhara, Nepal

Editorial

Corresponding Author:

Dr. Brijesh Sathian, Assistant Professor, Department of Community Medicine, Manipal College of Medical Sciences, Pokhara, Nepal.

Email: drsathian@gmail.com

Several medical journals in developing countries are found to have methodological rigor when compared to those from developed European countries, which may contribute to the reasoning that research from Asian region is 'fraudulent research'. A former editor of the British Medical Journal (BMJ) reported in 2006 that fraudulent research regularly appears in more than 30,000 scientific journals published worldwide¹.

It is very easy to find out whether the research is fraudulent or not by the critical review of the research article by the expert editors. Statistical values reported will show errors. One simple example is the mean of the particular variable in the study should be equivalent to the average of all subgroups means (Sampling Distribution). So, it would be wiser not to continue the research than generating data digitally with imaginary patients, reproducing the few data collected several times and making a big sample size, conducting a badly designed methodological rigor and unscientific research, eventually becoming black listed by reputed Medical Journals.

Any institution can improve medical research by constructing a well designed research division with experts. It is institutions responsibility to assure the quality of data

reported in the manuscript. Medical research should not be aimed solely at the self advancement of the researchers. It should be for the pure improvement of the medical science.

The main theory of statistics lies in the term variability. All individuals are different. Characteristics which vary according to person, place and time are known as variables. For example, lipid profile levels of the patient with myocardial infarction visiting Medicine OPD. Several factors such as Gender, Age, BMI, Smoking, Alcoholism, Diabetes, etc will affect the lipid profile levels of different individuals. Most of the time, the sample infers about a big population (Sampling Error). Variability is instrumental and observer difference (Non Sampling Error).

Statistical methods try to quantify the uncertainties present in the medical research. Probability is the measure of uncertainty. From the very beginning of a study, the researcher should try to reduce this error using proper scientific methods. Several statistical techniques are available for analysing different types of medical data. Before starting the study, researcher should do an extensive review of good scientific literatures from the reputed medical journals and end up with a proper research hypothesis and prepare a research proposal with study design, sample size and statistical methods rather than after conducting the study and going to the statistician and conjuring up a result and according to that fixing a objective and writing a introduction and discussion. These types of researches will end up with serious errors.

There are several good research studies reported in medical journals from developing countries without utilizing the full findings of the study. The result section is usually not up to par because of the lack of knowledge in appropriate test for the analysis of data and the coding of data. If the researcher is not aware about the proper research design

in descriptive studies, case control studies, cohort studies and clinical trials, it would be better to discard the study rather than reporting clinical trials in the methodology part and making it a hospital based observational study.

Medical Statistics helps the researcher to arrive at a scientific judgement about a hypothesis. It has been argued that decision making is an integral part of a physician's work. Frequently, decision making is probability based. As medicine becomes increasingly reliant on statistics, no clinician can afford to leave the statistical aspects of a medical research and scientific paper to the "experts".

Suggestions to improve the quality of Medical Research Articles in Developing countries

1. The researcher should plan the study and write a proper research proposal before conducting the study by an extensive review and literature and the guidance of subject experts, senior author (Guide) and Statistician.
2. Always attempt to conduct research in new and relevant topics which is of high practical value and scope rather than selecting a widely known fact and unnecessarily burdening editors, reviewers, and readers, and finally the author.
3. It must also be familiar topic for the researcher as it is difficult to prepare an impressive paper on an unfamiliar topic.
4. When researchers do not know the methodology properly in advance, the study becomes a futile time sink and may become invalidated because of low sample size and lack of availability of materials. This is too frequent an occurrence to dismiss.
5. According to dependent and independent variables, the researcher should select the appropriate statistical tests (Table 1). If the data follows normal distribution then select parametric tests. Whenever data is not following normal distribution should use non parametric tests. For example: In a drug utilization study of antidepressants with independent variables of age, gender, monthly income, employment of the patient and dependent variable Essential drug list of Nepal, generic and trade, logistic regression is the appropriate statistical test. In the paper regarding significance of hepatobiliary enzymes for differentiating liver and bone diseases, the independent variable were taken as age, gender and dependent variable were the levels of AST, ALT, ALP, γ-gt were assessed in cases of viral hepatitis, extra hepatic cholestasis, Paget's disease, osteomalacia and the controls. In the latter study, ANOVA is the appropriate test²⁻¹⁷.

Table 1: Appropriate statistical tests for the exposure and outcome variable

		Outcome					
Variable		Continuous	Discrete	Numerical Ordinal	Dichotomous	Polychotomous Nominal	Polychotomous Ordinal
Exposure	Continuous	Pearson Correlation & Regression	Pearson Correlation & Regression	Spearman Rank Correlation	't' test	ANOVA	ANOVA
	Discrete	-	-	-	-	-	-
	Numerical Ordinal	Spearman Rank Correlation	Spearman Rank Correlation	Spearman Rank Correlation	Mann Whitney U test	Kruskal Wallis test	Kruskal Wallis test
	Dichotomous	't' test	't' test	Mann Whitney U test	Chi square test	Chi square test	Chi square for linear trend in proportions
	Polychotomous Nominal	ANOVA	ANOVA	Kruskal Wallis test	Chi square test	Chi square test	Chi square test
	Polychotomous Ordinal	ANOVA	ANOVA	Kruskal Wallis test	-	-	-

6. Presenting the preliminary report of the study in reputed conferences will allow the researchers to improve the quality by the comments from the experts and seniors.

Recommended guidelines for submission to NJE

Before submitting the article to Nepal Journal of Epidemiology, make sure your article has the quality of the article published in the latest issue of NJE and it is in the journal format.

We have recently introduced the sub-headers under material and methods section, and in the Discussion section with distinguishable formatting for the new researchers and authors to understand easily and construct the same type of study in their setups. By this, the author will get more visibility and citations to his article. The author should not copy and paste tables directly from SPSS or any other statistical software. Construct simple MS word tables or make it in MS Excel.

In our journal, nearly ten well experienced editors will be working along with two chief editors, the Managing editor, Associate Managing Editors for each article, except the formatting editor, reference editor and reviewers. Plagiarism will be checked by the plagiarism committee from Gulf Medical University, Ajman, UAE, and any plagiarism detected will result in the rejection of the article. Before publication of any article in our journal, five of the editors do the critical review of the final version of the article and give the decision whether the article is publishable. We are holding the flag for quality of articles, not quantity of articles in each issue that is why we have less than 10% acceptance rate and more than 10 international indexations with plenty of citations to the articles and an average of 10,000 readers per article. We give more importance to a properly designed genuine study.

It is sincerely recommended and encouraged by the Managing editor and Author that the contributing researchers follow a diligent and systematic pattern in conducting and presenting their studies. This will not only lead to improved quality of research but will also enhance and augment the quality of Asian journals and thus, contribute meaningfully to the progress of research and improvement of medical care in developing countries.

Conflict of Interests

The author has no conflict of interest arising from the study.

References

1. Batty D. Journals 'regularly publish fraudulent research'. [online] 1996 [cited 2011 Dec 05]. Available from: URL:<http://www.guardian.co.uk/society/2006/may/03/health.medicineandhealth>
2. Sathian B, Sreedharan J, Baboo NS, Sharan K, Abhilash E S, Rajesh E. Relevance of Sample Size Determination in Medical Research. *Nepal Journal of Epidemiology* 2010; 1(1): 4-10.
3. Roy B, Banerjee I, Sathian B, Mondal M, Saha CG. Blood Group Distribution and Its Relationship with Bleeding Time and Clotting Time: A Medical School Based Observational Study among Nepali, Indian and Srilankan Students. *Nepal Journal of Epidemiology* 2011;1(4):135-40.
4. Sreeramareddy CT, Ramakrishnareddy N, Harsha KumarHN, Sathian B, Arokiasamy JT. Prevalence, distribution and predictors of tobacco smoking and chewing in Nepal: a secondary data analysis of Nepal Demographic and Health Survey-2006. *Substance Abuse Treatment, Prevention, and Policy* 2011;6:33.
5. Roy B, Banerjee I, Sathian B, Mondal M, Kumar SS, Saha CG. Attitude of Basic Science Medical Students towards Post Graduation in Medicine and Surgery: A Questionnaire based Cross-sectional Study from Western Region of Nepal. *Nepal Journal of Epidemiology* 2010; 1(4):126-34.
6. Banerjee I, Roy B, Sathian B, Banerjee I, Kumar SS, Saha A. Medications for Anxiety: A Drug utilization study in Psychiatry Inpatients from a Tertiary Care Centre of Western Nepal. *Nepal Journal of Epidemiology* 2010; 1(4):119-25.
7. Sathian B, Sreedharan J, Mittal A, Chandrasekharan N, Baboo SN, Abhilash ES, Rajesh E, Dixit BS. Case Control Studies in Medical Research. *Nepal Journal of Epidemiology* 2011;1(3):77-80.
8. Mittal A, Sathian B, Kumar A, Chandrasekharan N, Farooqui MS, Singh S, Yadav KS. Hyperuricemia as an Additional Risk Factor for Coronary Artery Disease: A Hospital Based Case Control Study in Western Region of Nepal. *Nepal Journal of Epidemiology* 2011;1(3):81-5.

9. Basha AS, Mathew E, Sreedharan J, Muttappallymyalil J, Sharbatti AS, Shaikh BR. Pattern of Blood Pressure Distribution among University Students in Ajman, United Arab Emirates. *Nepal Journal of Epidemiology* 2011;1(3):86-9.
10. Banerjee I, Jauhari AC, Bista D, Johorey AC, Roy B, Sathian B. Medical Students View about the Integrated MBBS Course: A Questionnaire Based Cross-sectional Survey from a Medical College of Kathmandu Valley. *Nepal Journal of Epidemiology* 2011;1(3): 95-100.
11. Mittal A, Sathian B, Poudel B, Farooqui MS, Chandrasekharan N, Yadav KS. The Significance of Hepatobiliary Enzymes for Differentiating Liver and Bone Diseases: A Case Control Study from Manipal Teaching Hospital of Pokhara Valley. *Nepal Journal of Epidemiology* 2011;1(5): 153-9.
12. Poudel B, Mittal A, Yadav BK, Sharma P, Jha B, Raut KB. Estimation and Comparison of Serum Levels of Sodium, Potassium, Calcium and Phosphorus in Different Stages of Chronic Kidney Disease. *Nepal Journal of Epidemiology* 2011;1 (5): 160-7.
13. Mittal A, Sathian B, Chandrasekharan N, Lekhi A, Rahib R, Dwedi S. Hepatic Steatosis and Diabetes Mellitus: Risk Factors, Pathophysiology and with its Clinical Implications: A Hospital Based Case Control Study in Western Region of Nepal. *Nepal Journal of Epidemiology* 2011;1(2):51-56.
14. Banerjee I, Roy B, Banerjee I, Sathian B, Mondol M, Saha A. Depression and its Cure : A Drug Utilization Study from a Tertiary Care Centre of Western Nepal. *Nepal Journal of Epidemiology* 2011;1 (5):144-52.
15. Mittal A, Sathian B, Kumar A, Chandrasekharan N, Sunka A. Diabetes mellitus as a Potential Risk Factor for Renal Disease among Nepalese: A Hospital Based Case Control Study. *Nepal Journal of Epidemiology* 2010; 1(1): 22-5.
16. Mittal A , Sathian B, Chandrasekharan N , Lekhi A, Farooqui M S, Pandey N. Diagnostic Accuracy of Serological Markers in Viral Hepatitis and Non Alcoholic Fatty Liver Disease. A Comparative Study in Tertiary Care Hospital of Western Nepal. *Nepal Journal of Epidemiology* 2011;1(2): 60-3.
17. Mittal A, Sathian B, Kumar A, Chandrasekharan N, Dwedi S. The Clinical Implications of Thyroid Hormones and its Association with Lipid Profile: A Comparative Study from Western Nepal. *Nepal Journal of Epidemiology* 2010; 1(1): 11-6.

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