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## Assessment of errors and misused statistics in dental research

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The goal of the study is to assess the level of misused statistics in dental research, and identify the major source of statistical errors that are prevalent in dental literature. Misuse rate in dental literature is compared with that in medical literature.

The total of 418 papers, published between 1995 and 2009, was randomly selected from 10 dental journals. Every paper in the sample underwent careful scrutiny for the correct use of statistics. Of these, there were 111 papers that can't be determined whether or not the use of statistics is appropriate, due to insufficient information presented in the paper. Removal of these undetermined papers from the further consideration left 307 papers for the study. A paper with at least one statistical error has been classified as "misuse of statistics," and a paper without any statistical errors as "acceptable." Statistical errors also included misinterpretation of statistical results. To assess the misuse rate, the number of papers that contained at least one statistical error was counted.

From the sample of 307 papers, our investigation showed that 149 were acceptable and 158 contain at least one misuse of statistics. This resulted in the misuse rate of 51.5% for dental literature that is lower than that reported by several studies done for medical literature.

The improper use of statistical methods and data analysis could cause irreparable harm to the patients as the wrong analysis can lead the investigators to inappropriate conclusions that could be clinically detrimental. The major source of statistical errors discussed in this presentation should help reduce the potential misleading conclusions that might cause clinical mistakes.

In this presentation 8 most common statistical misuses in dental research will be discussed. These 8 misuses account for approximately 80% of the total statistical errors in our study.

## Biography

JeeSoo Kim holds a MS degree in mathematics and Ph.D. degree in Statistics. His specialty area is in biostatistics. His research interests are in survival analysis, reliability theory and quality assurance. He has taught biostatistics to students in medicine, dentistry, public health, nursing, and pharmacy at Loma Linda University, Loma Linda, California until he moved to Korea in 2009. He also taught students in mathematics, statistics, engineering and business. He also taught biostatistics at the School of Dentistry, Yonsei University until February, 2015. He has given many short courses in statistics and quality assurance techniques to business leaders in the U.S. and Canada. Dr. Kim has supervised numerous graduate students in their thesis and performed research projects with other faculty members that led to publications. He has published over 50 SCI journal papers. Dr. Kim has been serving as reviewer or referee for journals in medicine, dentistry, statistics, engineering and mathematics. He is also on editorial board of several dental journals as a statistical consultant. Dr. Kim has written a book with Dr. R. Dailey "Biostatistics for Oral Healthcare," published by Wiley-Blackwell Publishing, which is recognized as the most comprehensive biostatistics book for researchers and students in dental science.

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