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The Reporting of Statistical Techniques in Otolaryngology Journals

ames A. Hokanson, PhD; Charles M. Stiernberg, MD; Melinda S. McCracken, MS; Francis B. Quinn, Jr, MD

● The domain of this study is the eporting of statistical analyses in the tolaryngology literature during 1983 and 984. Fewer than ten basic statistical rocedures accounted for more than 90% f the statistical techniques reported. nplications for authors, journals, and ducators are discussed. We offer sug-estions for imparting statistical skills at may be helpful in curriculum design, esidency training, and continuing medi-al education planning.

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The medical journal is the primary channel for disseminating medi-al information to the physician. The mount of information will continue grow at an increasing rate. The ractitioner who is determined to aintain cognitive skills is already rced to choose those items to which e will attend and those he will ignore. Our interest lies in those methods of presentation that permit the burdened reader to select efficiently and comprehend effectively this material.

The domain of this study is the reporting of statistical analyses in the otolaryngology literature during 1983 and 1984. We tabulated the types of statistical techniques employed and offer suggestions that may be helpful in curriculum design, residency training, and continuing medical education planning.

MATERIALS AND METHODS

Journals

The senior author (J.A.H.), an experienced biostatistician, personally reviewed the entire contents of the nine journals listed in Table 1. The collection represents recent issues of the major otolaryngology literature and one general medical journal (*Journal of the American Medical Association* [*JAMA*]). For every issue of each journal, he counted and classified the reported statistical procedures.

These otolaryngology journals have the highest "journal impact factor," as defined in "Citation Analysis as a Tool in Journal Evaluation" by Eugene Garfield.[1] Briefly, these are the journals whose contents are most frequently cited in other scientific journals. The *JAMA* was included as the paradigm and because "... all manuscripts undergo stringent peer review. This frequently includes statistical review...."[2] Only the regular issues of each journal were reviewed. Supplements did not exist for some journals or appeared too irregularly to be included in our study.

Table 1.—Otolaryngology Journals and One General Medical Journal Reviewed for Statistical Content

	Volume No.	
	1983	1984
Annals of Otology, Rhinology and Laryngology	92	93
Acta Oto-Laryngologica	97	98
Archives of Otolaryngology—Head & Neck Surgery	109	110
Ear and Hearing	4	5
Laryngoscope	93	94
Clinical Otolaryngology	8	9
Otolaryngology and Head and Neck Surgery	91	92
American Journal of Otology	4	5
Journal of the American Medical Association	249 250	251 252

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All peer-reviewed articles that reported new data or summarized past studies were reviewed. These comprised original articles, case reports, symposia proceedings, and literature reviews. Specifically excluded were editorials, book reviews, letters, short commentaries, and meeting notices.

Tabulation Methods

The senior author noted the occurrence of statistical techniques in the collection described above. The categories of statistical techniques were based on those developed by Emerson and Colditz[3] in a similar study of the *New England Journal of Medicine* (*NEJM*) and are shown in Table 2. The category "other" includes statistical techniques mentioned less than five times in all the material reviewed. Our study counted the articles in which a statistical technique was mentioned at least once. A technique was counted if it was mentioned negatively. For example, if multiple comparison tests following analysis of variance were not performed, then both analysis of variance and multiple comparison tests would be scored.

Our review then classified this tabulation using the following categories: (1) articles in which no statistical procedures were mentioned, typically, surgical reports, morphology reports, and ultramicroscopic structure studies; (2) articles containing statements referring to statistical significance when the specific tests or tests of hypothesis were not reported; and (3) articles reporting the use of individual statistical procedures or techniques, as listed in Table 2.

We concede that using only one reviewer introduces the risk of observer bias. We point out, however, that the reviewer merely counted the occurrences of the statistical techniques mentioned and made no attempt to evaluate the appropriateness of use. Further, a recount of a randomly selected 10% of the articles revealed only one error in tabulation.

RESULTS

About half the articles (1252 of 2139) mentioned the use of one or more statistical techniques. If we regard these 1252 articles as 100%, then 37% (473 of 1252) reported only counts, percentages, or descriptions of central tendency.

The otolaryngology journals contained references to a set of statistical techniques that were very similar to those in the *NEJM* and *JAMA*. A major difference was that the *NEJM* and *JAMA* refer to survival analysis and pharmacokinetic modeling less often than do the otolaryngology journals. Within each otolaryngology journal, the frequency of occurrence of the individual statistical techniques remained relatively constant during 1983 and 1984.

The following list of techniques includes 95% of all techniques mentioned in the eight otolaryngology journals surveyed: (1) descriptive statistics, (2) contingency tables, (3) Student's *t* test, (4) Pearson correlation, (5) simple linear regression, (6) survival analysis, (7) transformations, and (8) pharmacokinetic modeling.

In four of the otolaryngology journals reviewed, the technique used to compute the *P* value often was not specified. In other words, the technique used to perform a statistical test of hypothesis was not identified. Many authors reported their results using only measures of central tendency and dispersion. By not using inferential statistical techniques (statistical tests of hypothesis), these authors missed opportunities to evaluate the strength of their conclusions.

EXPLANATION OF TABLES

Table 1 lists, in alphabetical order, the names and volume numbers of the journals reviewed. Table 2 lists categories used to classify statistical procedures. The method is based on the work of Emerson and Colditz[3] (*NEJM*). Table 3 lists the frequency of occurrence of each statistical technique by journal and year. Any technique having fewer than five occurrences in all journals reviewed was classified as "other." For every journal reviewed by us, and by Emerson and Colditz for the *NEJM*, Table 4 lists the statistical techniques in decreasing order of frequency of appearance in that journal. The Emerson and Colditz "descriptive statistics" category includes "no statistics" and "measures of dispersion" as well as "measures of central tendency."

Table 2.—Category Labels and Descriptions Used to Assess Statistical Content

Category	Description
Descriptive statistics	Mean, median, mode, count, or percentage
Contingency tables	χ^2 tests, Fisher's exact test, McNemar's test, Yales' correction
Multiway tables	Mantel-Haenszel procedure, log-linear models
Epidemiologic statistics	Relative risk, odds ratio, log odds, incidence, prevalence, sensitivity, specificity, receiver operating curve
Student's *t* test	One-sample, matched-pair, and two-sample *t* tests
Pearson correlation	Bivariate product-moment correlation
Simple linear regression	Least-squares regression with one predictor variable and one response variable
Multiple regression	Includes polynomial regression and stepwise regression
Analysis of variance	Analysis of variance, analysis of covariance or *F* test
Multiple comparisons	Multiple inferences on same data sets (eg, Bonferroni technique, Scheffe's contrasts, Duncan's multiple-range procedure, Newmann-Keuls' procedure)
Nonparametric tests	Includes sign test, Wilcoxon's signed-rank test, Mann-Whitney test
Nonparametric correlation	Spearman's ρ, Kendall's τ, test for trend
Survival analysis	Actuarial life table, Kaplan-Meier, Berkson-Gage, Cox proportional hazard, logistic regression, Breslow's Kruskal-Wallis, Lee-Desu, Gehan's, log ranks, or Cox's model for survival comparison
Power	Includes use of the size of detectable (or useful) difference in determining sample size
Transformation	Use of data transformation (eg, logs)
Dispersion	Includes SDs, SEMs, ranges
Unspecified test	Report of a test of statisical significance without explicit identification of methodology
Mathematical models	Mathematical models, Scatchard plot, Lineweaver-Burk plot, and pharmacokinetic models
Other	Anything not fitting above headings; includes cluster analysis, discriminant analysis, factor analysis

COMMENT

The strength of conclusions reported by authors, as well as the credibility accorded to these conclusions by readers, is best based on a shared conceptual framework of statistical methods appropriately selected and critically appreciated.[4-10] We have identified only the frequency with which statistical methods were mentioned in recent volumes of eight major otolaryngology journals and one general medical journal and compare these results to those reported for another general medical journal. We make no attempt to judge the appropriateness of statistical usage or the validity of the conclusions.[11] Rather, we believe this is a proper function of journal editors and their editorial boards. We did find, however, that, in addition to familiarity with the statistical methods used in the more general journals such as the *NEJM* and *JAMA*, otolaryngologists need to be conversant with survival analysis and pharmacokinetic modeling.

In some of the journals reviewed, measures of dispersion were sometimes used ambiguously.[12] The SEM was sometimes used to describe the dispersion within a single sample. This is not the purpose of the SEM. The SD is the preferred measure of the dispersion in a single sample. The SD can, however, be calculated from the SEM if the sample size is also reported.

Studies that used nonparametric tests of hypothesis (statistical techniques in which a bell-shaped [Gaussian or "normal"] distribution is not assumed) occasionally reported values for (parametric) means and SDs. The reasons for employing both parametric and nonparametric analyses on the same data were not always clear.

While a number of articles utilized the concept of rejecting the null hypothesis (ie, that no difference exists between groups), only seven articles mentioned the concept of statistical "power" (ie, the probability of being able to detect a difference if a difference indeed exists). The idea of statistical power can be illustrated by the following sentence, in which β and δ are percentages, α a rational number, and N an integer: If we want a β chance of correctly detecting a difference of δ between groups at the $P < \alpha$ level of statistical significance, we will need at least N patients per group. Within certain assumptions about the distribution of variables, relationships among β, α, δ, and N can be computed mathematically.

The calculated P value (the probability of incorrectly rejecting a null hypothesis $[0 \leq P \leq 1]$) is very useful and was cited in a number of articles surveyed. In some reports, however, the author did not specify which test of significance was used to calculate the reported P value. The scientific merit of a report is easier to judge when the author indicates the statistical technique used. Where a commercial statistical software package is used, it is sufficient simply to identify the package and technique. (Numerous programs are available for accomplishing the mechanics of a statistical analysis. Major packages include SPSS, SAS, BMD-P, MINITAB, P-STAT, and IMSL. These are all available commercially and run on a variety of computer systems.) We recommend that every test of statistical significance be accompanied by an unambiguous identification of the technique, the data source, and the sampling method, with the statistical analyses described in sufficient detail that the reader could reproduce the calculations.

Various strategies for improving the statistical content of medical journals have evolved.[13-15] Some journals employ statisticians as reviewers or as members of their editorial boards. Some require personal identification and the professional qualifications of those performing the statistical analysis for each submission. Some journals arrange for a separate statistical review of articles that have been accepted on their scientific merit.

SUGGESTIONS

We recommend that editorial boards adopt a minimal, standardized format for reporting the use of statistical techniques. We do not suggest that this format include a set of guidelines for the selection and application of techniques.[16-19] This minimal standard format would require explicit identification of sample size, the name of the technique(s) used, and the level of statistical significance at which the null hypothesis was (failed to be) rejected. If a statistical software package is used for more than simple counts, the package should be named and the procedure identified. We believe that a standardized reporting format would help editors decide if a formal statistical review is needed and might speed the review process itself. It might also help readers who have widely different statistical backgrounds.

We suggest that directors of residency training programs include a formal course of instruction in the statistical methods and concepts listed in Table 2. In Table 5, we present a partial list of current texts appropriate to this instruction. We suggest that the American Board of Otolaryngology/Head and Neck Surgery include questions on basic biostatistical methods in its annual certifying examinations. This, more than anything else, would motivate these young physicians to acquire a working understanding of statistical methods.

For the practicing physician, continuing medical education courseware on biostatistical techniques could be offered jointly with instruction on the use of medical computer software. As a minimum, we believe that the established physician would read and benefit from short tutorial articles regularly included in journal contents. Finally, the current level of "artificial intelligence" programming techniques permits the development of computer-based consultation ("expert") systems that can assist the researcher in his application of statistical techniques and the reader in understanding the statistical analyses reported.

EPILOGUE

We believe scientific curiosity may first express itself in an apparently undisciplined, almost random, "wondering about" a problem. Much progress has been made possible by those who first notice, then carefully observe, then accurately report, the phenomena of the clinical environ-

Table 3.—Distribution of Statistical Techniques in 1983 and 1984 Editions of Eight Major Otolaryngolo

	Acta Oto-Laryngologica		American Journal of Otology		Annals of Otology, Rhinology and Laryngology		Archives of Otolaryngology—Head and Neck Surgery	
	1983	1984	1983	1984	1983	1984	1983	1984
Total No. of procedures used (N)	233	275	14	33	102	111	181	161
Descriptive statistics only	30.9	34.2	64.3	33.3	47.1	40.5	49.7	49.1
Dispersion	24.9	25.5	21.4	24.2	19.6	25.2	19.9	17.4
Student's *t* test	5.2	7.6	0	3.0	4.9	5.4	3.9	5.0
χ^2	4.7	4.0	0	0	3.9	6.3	4.4	4.3
Pearson correlation	6.4	4.7	7.1	12.1	0	0.9	2.2	3.1
Mathematical models	5.2	5.1	0	9.1	2.9	0.9	3.3	3.1
P value not otherwise specified	6.9	4.4	7.1	9.1	6.9	3.6	1.7	3.1
Analysis of variance	2.1	2.9	0	0	5.9	2.7	2.2	1.2
Nonparametric tests	3.4	5.8	0	3.0	1.0	0	2.2	1.2
Simple linear regression	3.4	2.9	0	6.1	1.0	2.7	1.7	1.9
Transformations	2.1	1.8	0	0	1.0	4.5	2.2	3.7
Survival analysis	0.4	0	0	0	2.0	1.8	5.0	3.1
Epidemiological	1.3	0	0	0	3.9	1.8	0.6	1.2
Interrater reliability	0.4	0.4	0	0	0	0	0	0
Multiple linear regression	0	0.7	0	0	0	0.9	0.6	0
Multiple comparisons	0.4	0	0	0	0	0	0	0
Power	0.9	0	0	0	0	0.9	0	0.6
Wilks-Shapiro	0	0	0	0	0	0	0.6	0.6
Nonparametric correlations	0	0	0	0	0	0	0	0
Other	1.3	0	0	0	0	1.8	0	1.2
No. of articles reviewed	152	149	31	54	139	135	172	158
No. with no statistics	64	44	21	39	82	80	76	70

*See Table 2 for expanded definitions of techniques.

Table 4.—Ten Most Commonly Mentioned Statistical Techniques in the 1983 and 19

Acta Oto-Laryngologica (95.3%)†	American Journal of Otology (100.0%)	Annals of Otology, Rhinology and Laryngology (95.3%)	Archives of Otolaryngology—Head & Neck Surgery (93.9%)	Clinical Otolaryngology (94.3%)
Descriptive statistics	Descriptive statistics	Descriptive statistics	Descriptive statistics	Descriptive statistics
Dispersion	Dispersion	Dispersion	Dispersion	Dispersion
Student's *t* test	Pearson correlation	χ^2	χ^2	χ^2
Pearson correlation	*P* value NOS	Student's *t* test	Student's *t* test	*P* value NOS
P value NOS	Mathematical models	*P* value NOS	Survival analysis	Student's *t* test
Mathematical models	Simple linear regression	ANOVA	Mathematical models	Survival analysis
Nonparametric tests	Student's *t* test	Epidemiological	Transformations	ANOVA
χ^2	Nonparametric tests	Transformations	Pearson correlation	Transformations
Simple linear regression	...	Simple linear regression	*P* value NOS	Pearson correlation
ANOVA	...	Survival analysis	Simple linear regression	Nonparametric tests

*See Table 2 for description of categories. NOS indicates not otherwise significant; ANOVA, analysis of variance.

†For each journal, the number in parentheses indicates the cumulative percentage of statistical techniques represented by the ten most commonly mentioned procedures. For example, for *Acta Oto-Laryngologica*, a reader understanding the ten techniques listed would be familiar with over 95.3% of the statistical techniques mentioned in this journal.

‡Modified from Emerson and Colditz.[3]

§Includes "no statistics," "measures of central tendency," and "measures of dispersion."

nals and One General Medical Journal Reported as Percentages of All Techniques Used*

Clinical Otolaryngology		Ear and Hearing		Laryngoscope		Otolaryngology and Head and Neck Surgery		Journal of the American Medical Association		Total		
83	1984	1983	1984	1983	1984	1983	1984	1983	1984	1983	1984	Total of All
3	84	117	125	193	264	135	110	563	525	1611	1688	3299
5.6	41.7	33.3	32.0	59.6	61.0	47.4	68.2	37.5	34.3	42.7	44.7	43.8
0.5	22.6	29.1	25.6	14.0	13.6	18.5	9.1	21.7	20.2	21.1	21.0	21.1
5.5	4.8	11.1	3.2	2.6	3.4	3.7	2.7	6.4	6.9	4.7	5.0	4.9
9.6	9.5	1.7	1.6	4.1	2.3	4.4	5.5	8.5	11.6	3.9	3.8	3.9
1.4	2.4	4.3	6.4	1.6	1.1	3.0	3.6	3.2	2.3	3.7	3.7	3.7
2.7	1.2	2.6	3.2	2.1	3.4	4.4	2.7	0.4	0.4	3.7	3.5	3.6
1.0	2.4	1.7	0	4.1	1.9	6.7	0	3.4	1.7	4.3	2.7	3.5
4.1	1.2	8.5	8.0	0.5	1.9	0	0.9	2.8	3.6	3.3	3.0	3.1
)	3.6	2.6	3.2	1.6	1.1	1.5	1.8	2.0	3.2	2.0	2.7	2.4
1.4	1.2	1.7	4.0	1.0	0.8	3.0	0.9	2.0	2.5	2.6	2.1	2.4
2.7	2.4	0	3.2	2.1	1.5	1.5	1.8	2.1	1.5	2.2	2.2	2.2
5.5	2.4	0	0	3.1	1.5	2.2	0	2.1	2.9	2.0	0.9	1.4
1	1.2	0	4.0	1.6	4.2	0	1.8	3.0	4.0	1.0	1.7	1.4
)	0	0	1.6	0.5	0.4	2.2	0	0	0.2	0.6	0.6	0.6
)	1.2	1.7	0	0	0.8	1.5	0.9	1.6	1.7	0.5	0.6	0.5
	0	0.9	1.6	0	0.4	0	0	0.5	0.6	0.4	0.4	0.4
	1.2	0.9	0.8	0	0.4	0	0	1.2	0.8	0.2	0.4	0.3
	1.2	0	0.8	0	0	0	0	0	0	0.2	0.3	0.2
	0	0	0.8	1.0	0.4	0	0	0.2	0.6	0.2	0.2	0.2
	0	0	0	0.5	0	0	0	0.7	0.4	0.4	0.4	0.3
	48	53	50	252	283	120	122	377	289	1345	1288	2633
	11	13	6	132	118	55	45	145	95	608	508	1116

s of Eight American Otolaryngology Journals and in Two General Medical Journals*

ar and Hearing (93.0%)	Laryngoscope (94.3%)	Otolaryngology and Head and Neck Surgery (95.1%)	New England Journal of Medicine (87.4%)‡	Journal of the American Medical Association (90.6%)
riptive statistics	Descriptive statistics	Descriptive statistics	Descriptive statistics§	Descriptive statistics
ersion	Dispersion	Dispersion	Student's *t* test	Dispersion
VA	χ^2	χ^2	Contingency tables	χ^2
ent's *t* test	Epidemiological	Mathematical models	Nonparametric tests	Student's *t* test
son correlation	Student's *t* test	*P* value NOS	Epidemiology statistics	Epidemiological
le linear regression	Mathematical models	Student's *t* test	Pearson correlation	ANOVA
arametric tests	*P* value NOS	Pearson correlation	Simple linear regression	Pearson correlation
ematical models	Survival analysis	Simple linear regression	ANOVA	Nonparametric tests
emiological	Transformations	Nonparametric tests	Transformations	*P* value NOS
	Pearson correlation	Transformations	Nonparametric correlation	Survival analysis

Table 5.—Suggested Elementary Statistics Text and Reference Books

Colton T: *Statistics in Medicine.* Boston, Little Brown & Co Inc, 1974.
Remington RD, Schork MA: *Statistics With Applications to the Biological and Health Sciences.* Englewood Cliffs, NJ, Prentice-Hall International Inc, 1970.
Kuzma JW: *Basic Statistics for the Health Sciences.* Palo Alto, Calif, Mayfield Publishing Co, 1985.
Feinstein AR: *Clinical Biostatistics.* St Louis, CV Mosby Co, 1977.
Swinscow TDV: *Statistics at Square One.* London, British Medical Association, 1978.
Leaverton PE: *A Review of Biostatistics.* Boston, Little Brown & Co Inc, 1986.

ment. It is just this "notebook and pencil" research of Sir William Osler that has led to many useful hypotheses, and, often, the unusual case or rare finding prompts new thought.

Few testable hypotheses arise from divine revelation. Most result from long work and intimate acquaintance with a particularly puzzling phenomenon. Hypothesis generation must precede hypothesis testing, and the former is every bit as "scientific" as the latter. A well-constructed hypothesis requires a clear and complete understanding of the phenomenon studied. If otherwise, even the most rigorous mathematical analysis can lead us into "statistical errors of the third kind": the right answer to the wrong problem.[20]

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References

1. Garfield E: Citation analysis as a tool in journal evaluation. *Science* 1972;178:471-479.
2. Vaisrub N: Manuscript review from a statistician's perspective. *JAMA* 1985;253:3145-3147.
3. Emerson JD, Colditz GA: Use of statistical analysis in the *New England Journal of Medicine. N Engl J Med* 1983;309:709-714.
4. Matthews DE, Farewell V: *Using and Understanding Medical Statistics.* New York, S Karger AG, 1985.
5. Daubs J: A survey of biostatistics in clinical journals. *Am J Optom Physiol Opt* 1980;57:801-807.
6. Hayden GF: Biostatistical trends in pediatrics: Implications for the future. *Pediatrics* 1983; 72:84-87.
7. Culliton BJ: Information as a 'cure' for cancer. *Science* 1984;227:732.
8. Colditz GA, Emerson JD: The statistical content of published medical research: Some implications for biomedical education. *Med Educ* 1985;19:248-255.
9. Feinstein AR: A survey of the statistical procedures in general medical journals. *Clin Pharmacol Ther* 1974;15:97-107.
10. Emerson JD, McPeek B, Mosteller F: Reporting clinical trials in general surgical journals. *Surgery* 1984;95:572-579.
11. Bailar JC III, Louis TA, Lavori PW, et al: A classification for biomedical research reports, Department of Biostatistics research report 215. Boston, Harvard University, 1983.
12. Bunce H, Hokanson JA, Weiss GB: Avoiding ambiguity when reporting variability in biomedical data. *Am J Med* 1980;69:8-9.
13. Glantz SA: Biostatistics: How to detect, correct and prevent errors in the medical literature. *Circulation* 1980;61:1-7.
14. George SL: Statistics in medical journals: A survey of current policies and proposals for editors. *Med Pediatr Oncol* 1985;13:109-112.
15. DerSimonian R, Charette LJ, McPeek B, et al: Reporting on methods in clinical trials. *N Engl J Med* 1982;306:1332-1337.
16. O'Fallon JR, Dubey SD, Salsburg DS, et al: Should there be statistical guidelines for medical research papers? *Biometrics* 1978;34:687-695.
17. Weiss GB, Bunce H: Are we ready for statistical guidelines for medical research papers? *Biometrics* 1979;35:91.
18. Zelen M: Guidelines for publishing papers on cancer clinical trials: Responsibilities of editors and authors. *J Clin Oncol* 1983;1:164-169.
19. Simon R, Wittes RF: Methodologic guidelines for reports of clinical trials. *Cancer Treat Rep* 1985;69:1-3.
20. Kimball AW: Errors of the third kind in statistical consulting. *J Am Stat Assoc* 1957; 278:133-142.