

Journal Citation Studies. XVI.
*Clinical Chemistry and
Clinica Chimica Acta*

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Among the 1000 journals most cited in 1969 were *Clinical Chemistry* (*ClinChem*) and *Clinica Chimica Acta* (*ClinChimA*). These two journals presumably deal with the same subject matter. We now have 1972 data on the citation frequency and impact of these journals. This permits me to comment on some changes that occurred in the two studies.

ClinChem is the official journal of the American Association of Clinical Chemists. Some people might refer to it pejoratively as a 'typical American journal'. It carries many advertisements, publishes letters to the editor, meeting abstracts, book reviews, and ephemeral matter related to the Association's activities.

ClinChimA publishes only original communications and some 'brief technical notes'.

Figure 1 shows the twenty journals cited most frequently in 1972 by *ClinChem* and *ClinChimA*. In each case, twenty journals account for about half the citations. Seventeen journals are common to the two lists. In each case, the three journals that appear only on one list turn up quickly as the lists are ex-

tended beyond twenty.

Figure 2 shows the twenty journals that most frequently cited *ClinChem* and *ClinChimA* in 1972. Just as *ClinChimA* cites more heavily than *ClinChem* (see Figure 1), it is cited more heavily, about twice as often. In this case, the top twenty journals account for only 40% of citations received by *ClinChimA*, but about 50% of those received by *ClinChem*. We have seen that the two journals cite the same journals most frequently. But, as Figure 2 shows, there is a greater difference in the lists of journals which cite them. Only twelve journals are common to the two lists. Those that uniquely cite *ClinChem* in Figure 2 tend to be laboratory-oriented and/or American. Those that cite *ClinChimA* uniquely tend to be clinically oriented and international, or at least not American. This characteristic difference is maintained as one extends the two lists of citing journals beyond the limit of twenty in Figure 2.

In Figure 3, as has been our practice in this series of citation studies, we list articles published in the two journals that were highly cited dur-

Journals Cited by *Clinical Chemistry* 1972

Item	Times Cited	Cumulative Percent of Citations	Journal
		↓	
1.	441	10.2	Clin. Chem.
2.	230	15.5	Clin. Chim. Acta
3.	165	19.3	New Engl. J. Med.
4.	151	22.8	Amer. J. Clin. Pathol.
5.	143	26.1	J. Biol. Chem.
6.	120	28.9	Lancet
7.	107	31.4	J. Lab. Clin. Med.
8.	100	33.7	*J. Amer. Med. Assoc.
9.	97	35.9	Analyt. Chem.
10.	78	36.7	Analyt. Biochem.
11.	67	39.3	Brit. Med. J.
12.	67	40.8	J. Clin. Invest.
13.	59	42.2	Biochem. J.
14.	54	43.4	*Ann. New York Acad. Sci.
15.	54	44.7	J. Clin. Pathol.
16.	54	45.9	Proc. Soc. Exp. Biol. Med.
17.	54	47.2	Scand. J. Clin. Lab. Invest.
18.	49	48.3	Nature
19.	43	49.3	Science
20.	41	50.3	*Ann. Internal Med.
	2151		Other
	4325	100.0	Total

Journals Cited by *Clinica Chimica Acta* 1972

Item	Times Cited	Cumulative Percent of Citations	Journal
		↓	
1.	682	10.2	Clin. Chim. Acta
2.	401	16.2	J. Biol. Chem.
3.	248	19.9	Clin. Chem.
4.	197	22.8	J. Clin. Invest.
5.	192	25.7	Biochem. J.
6.	174	28.3	J. Lab. Clin. Med.
7.	169	30.8	*Biochim. Biophys. Acta
8.	151	33.1	Lancet
9.	133	35.1	*J. Clin. Endocrinol. Metab.
10.	124	36.9	Nature
11.	115	38.6	New Engl. J. Med.
12.	113	40.3	Analyt. Biochem.
13.	104	41.9	Scand. J. Clin. Lab. Invest.
14.	99	43.4	Amer. J. Clin. Pathol.
15.	87	44.7	Analyt. Chem.
16.	70	45.7	Science
17.	60	46.6	Proc. Soc. Exp. Biol. Med.
18.	58	47.5	J. Clin. Pathol.
19.	56	48.3	Arch. Biochem. Biophys.
20.	56	49.2	*J. Chromatography
	3402		Other
	6691	100.0	Total

Figure 1. Journals cited by *Clinical Chemistry* and *Clinica Chimica Acta* in 1972. Asterisked titles are unique to the list.

Journals that cited *Clinical Chemistry* 1972

Item	Times Citing	Cumulative Percent of Citations	Journal
1.	441	15.7	Clin. Chem.
2.	248	24.5	Clin. Chim. Acta
3.	170	30.6	Japan Analyst
4.	97	34.0	Analyt. Chem.
5.	79	36.8	Scand. J. Clin. Invest.
6.	47	38.5	*Amer. J. Clin. Pathol.
7.	33	39.7	Proc. Soc. Exp. Biol. Med.
8.	31	40.8	J. Chromatography
9.	29	41.8	Biochim. Biophys. Acta
10.	27	42.8	Zschr. Klin. Chem.
11.	26	43.7	*J. Pharmaceut. Sci.
12.	25	44.8	*J. Chromatogr. Sci.
13.	25	45.5	J. Clin. Pathol.
14.	24	46.3	*Biochem. Med.
15.	22	47.1	*Amer. J. Physiol.
16.	22	47.9	*J. Nutrition
17.	21	48.6	J. Clin. Invest.
18.	21	49.4	*New Engl. J. Med.
19.	20	50.1	Analyt. Biochem.
20.	20	50.8	*Analyt. Letters
	1383		Other
	2811	100.0	Total

Journals that cited *Clinica Chimica Acta* 1972

Item	Times Citing	Cumulative Percent of Citations	Journal
1.	682	13.6	Clin. Chim. Acta
2.	230	18.3	Clin. Chem.
3.	172	21.7	Japan Analyst
4.	127	24.2	Scand. J. Clin. Invest.
5.	120	26.6	Analyt. Chem.
6.	92	28.5	Biochim. Biophys. Acta
7.	64	29.8	*Acta Med. Scand.
8.	47	30.7	J. Clin. Invest.
9.	47	31.6	Zschr. Klin. Chem.
10.	44	32.4	Analyt. Biochem.
11.	43	33.3	J. Chromatography
12.	42	34.2	*Biochem. J.
13.	41	35.0	*Ann. Biol. Clin.
14.	38	35.8	Proc. Soc. Exp. Biol. Med.
15.	34	36.5	*Klin. Wschr.
16.	33	37.1	*J. Lab. Clin. Med.
17.	31	37.8	*Experientia
18.	31	38.4	J. Clin. Pathol.
19.	30	39.0	*Deut. Med. Wschr.
20.	28	39.5	*Gastroenterology
	3021		Other
	4997	100.0	Total

Figure 2. Journals that cited *Clinical Chemistry* and *Clinica Chimica Acta* in 1972. Asterisked titles are unique to the list.

ing the period 1961-1972. *ClinChimA* has published sixteen articles cited 100 times or more. *ClinChem* has published nine. Almost all are so-called 'methods' papers. It is interesting to note how rarely the same authors of highly cited articles publish in both journals.

Obviously clinical chemistry is highly analytical. However *Analytica Chimica Acta* is strikingly missing from the lists in Figures 1 and 2. Neither in 1969 nor in 1972 was it significantly related by citation to either of the two journals under discussion.

In 1969, *ClinChimA* ranked 170th in terms of total citations (3640) and 319th in terms of impact (1.566). *ClinChem* ranked 367th in terms of total citations (1612) and 638th in terms of impact (0.683). Using basically the same method of impact factor calculation as we did for the 1969 data, we have calculated new factors for the two journals from the 1972 data.¹ In doing so, we have at-

tempted to correct a bias against certain journals that publish, like *ClinChem*, large numbers of items that by their nature are not likely to be cited. Because these items were included as 'published items' in our previous calculations, it worked against journals like *ClinChem* (and against journals like *Science* and *Nature*) in calculating their impact.

Considering only 'original articles', scientific and technical notes, and reviews, the 1972 impact of *ClinChem* was 2.701, and of *ClinChimA* 1.835. The first shows a decided and the second a slight improvement. Both are far above average. If *ClinChimA* has attracted more highly cited papers, *ClinChem* seems to have attracted a consistently higher quality paper, while *ClinChemA* has accepted in addition to its 'winners' a lot of papers that are rarely cited.

1. Garfield, E. Citation analysis as a tool in journal evaluation. *Science* 178: 471-79, 1972.

Highly Cited Articles from *Clinical Chemistry* 1961-1972

1. 469 Silber R H, Busch R D & Oslapas R. Practical procedure for estimation of corticosterone or hydrocortisone. *Clin. Chem.* 4:278-85, 1958.
2. 244 Chaney A L & Marbach E P. Modified reagents for determination of urea and ammonia. *Clin. Chem.* 8:130-32, 1962.
3. 174 Washko M & Rice E W. Determination of glucose by an improved enzymatic procedure. *Clin. Chem.* 7:542-45, 1961.
4. 169 VanHandel E. Suggested modifications of the micro determination of triglycerides. *Clin. Chem.* 7:249-51, 1961.
5. 132 Raymond S. A convenient apparatus for vertical gel electrophoresis. *Clin. Chem.* 8:455-70, 1962.
6. 130 Dubowski K M. An o-toluidine method for body-fluid glucose determination. *Clin. Chem.* 8:215-35, 1962.
7. 118 March W H, Fingerhut B & Miller H. Automated and manual direct methods for the determination of blood urea. *Clin. Chem.* 11:624-27, 1965.
8. 105 Kessler G & Wolfman M. An automated procedure for the simultaneous determination of calcium and phosphorus. *Clin. Chem.* 10:686-703, 1964.
9. 100 Anderson J T & Keys A. Cholesterol in serum and lipoprotein fractions; its measurement and stability. *Clin. Chem.* 2:145-59, 1956.

Highly Cited Articles from *Clin. Chim. Acta* 1961-1972

1. 299 Marks V. An improved glucose-oxidase method for determining blood, CSF and urine glucose levels. *Clin. Chim. Acta* 4:395-400, 1959.
2. 263 Pisano J J, Crout J R & Abraham D. Determination of 3-methoxy-4-hydroxymandelic acid in urine. *Clin. Chim. Acta* 7:285-91, 1962.
3. 242 Ramsay W N M. The determination of iron in blood plasma or serum. *Clin. Chim. Acta* 2:214-20, 1957.
4. 207 Wieme R J. An improved technique of agar-gel electrophoresis on microscope slides. *Clin. Chim. Acta* 4:317-21, 1959.
5. 199 Carlson L A & Wadstrom L B. Determination of glycerides in blood serum. *Clin. Chim. Acta* 4:197-205, 1959.
6. 194 Duncombe W G. The colorimetric micro-determination of non-esterified fatty acids in plasma. *Clin. Chim. Acta* 9:122-25, 1964.
7. 185 Ramsay W N M. The determination of the total iron-binding capacity of serum. *Clin. Chim. Acta* 2:221-26, 1957.
8. 159 Hyvarinen A & Nikkila E A. Specific determination of blood glucose with o-toluidine. *Clin. Chim. Acta* 7:140-43, 1962.
9. 155 Searcy R L & Bergquist L M. A new color reaction for the quantitation of serum cholesterol. *Clin. Chim. Acta* 5:192-99, 1960.
10. 154 Pisano J J. A simple analysis for normetanephrine and metanephrine in urine. *Clin. Chim. Acta* 5:406-14, 1960.
11. 136 Hughes B P. A method for the estimation of serum creatine kinase and its use in comparing creatine kinase and aldolase activity in normal and pathological sera. *Clin. Chim. Acta* 7:597-603, 1962.
12. 116 Hannig K. Erfahrungen mit der quantitativen Aminosäure-bestimmung an Ionenaustauschersäulen unter automatischer Registrierung der Ergebnisse (Quantitative analysis of amino acids on ion exchange columns, with automatic recording of results). *Clin. Chim. Acta* 4:51-57, 1959.
13. 110 Heremans J F. Immunochemical studies on protein pathology; the immunoglobulin concept. *Clin. Chim. Acta* 4:639-46, 1959.
14. 104 Heremans J F, Heremans M T & Schultze H E. Isolation and descriptions of a few properties of the B₂A-globulin of human serum. *Clin. Chim. Acta* 4:96-102, 1959.
15. 104 Babson A L, Shapiro P O, Williams P A R & Phillips G E. The use of a diazonium salt for the determination of glutamic-oxalacetic transaminase in serum. *Clin. Chim. Acta* 7:199-205, 1962.
16. 103 Van Kampen E J & Zylstra W G. Standardization of hemoglobinometry. II. The hemiglobincyanide method. *Clin. Chim. Acta* 6:538-44, 1961.

Figure 3. Highly Cited Articles from *Clinical Chemistry* and *Clinica Chimica Acta*.