

would be well qualified to conduct the analyses and manage a family practice data base. Thus, use of a university mainframe computer to process family practice encounter data may be a versatile and cost-effective option for processing data for some family practice centers.

Acknowledgment

Development of the system described here was supported in part by grants #5-D15-PE15233-03 and #5-D32-PE15006-03 awarded to the Department of Family Practice, Rush-Presbyterian-St. Luke's Medical Center, by the United

States Public Health Service, Department of Health and Human Services, Bureau of Health Professions.

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Citation Analysis of The Journal of Family Practice

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As has been previously observed, the literature in family practice is of two types: the *literature of record* (based upon original work) and the *derivative literature* (principally review papers and related reports).¹ These two types of literature are complementary, and both are needed. As family practice is an emerging specialty, however, a sizable literature of record examining the experience of the family physician and others involved in the developing specialty from conceptual, clinical, educational, research, and health policy perspectives is required. This developing literature is central to the viability of family practice as a self-sustaining specialty and will be instrumental to the further definition of family medicine as an academic discipline.

Since the literature of record directly molds the content, shape, and methods of a specialty, it is

useful to examine the nature of this literature itself. Garfield has demonstrated the value of citation analysis as a tool to describe and evaluate the characteristics of the literature within a specialty discipline through identification of the communication network represented by citation patterns.² Such an analysis was recently reported for medical education as a developing discipline based upon citation patterns of the *Journal of Medical Education* over an 11-year period.³

In the United States *The Journal of Family Practice* is the only monthly journal in the field primarily devoted to publication of the literature of record. The purpose of this paper is to report the results of a study of citation patterns over the nine-year period, 1974 through 1982.

Methods

All major articles, communications, and editorials published in the 15 volumes of *The Journal of Family Practice* from 1974 through 1982 were included in the study. Clinical Reviews, Problems and Procedures in Family Practice, Family Prac-

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Table 1. Citations by Journal Source 1974-1982

| Journal | Number of Citations | Proportion of all Citations (%) | Cumulative Proportion of all Citations (%) |
|--|---------------------|---------------------------------|--|
| 1. <i>The Journal of Family Practice</i> | 1,473 | 13.6 | 13.6 |
| 2. <i>The New England Journal of Medicine</i> | 711 | 6.6 | 20.2 |
| 3. <i>The Journal of the American Medical Association</i> | 656 | 6.0 | 26.2 |
| 4. <i>Journal of Medical Education</i> | 387 | 3.6 | 29.8 |
| 5. <i>Pediatrics</i> | 296 | 2.7 | 32.5 |
| 6. <i>British Medical Journal</i> | 263 | 2.4 | 34.9 |
| 7. <i>Medical Care</i> | 241 | 2.2 | 37.1 |
| 8. <i>The Lancet</i> | 229 | 2.1 | 39.3 |
| 9. <i>Annals of Internal Medicine</i> | 196 | 1.8 | 41.1 |
| 10. <i>American Journal of Public Health</i> | 159 | 1.5 | 42.6 |
| 11. <i>American Journal of Obstetrics and Gynecology</i> | 158 | 1.4 | 44.1 |
| 12. <i>The Journal of Pediatrics</i> | 155 | 1.4 | 45.5 |
| 13. <i>The American Journal of Psychiatry</i> | 148 | 1.4 | 46.9 |
| 14. <i>American Journal of Diseases of Children</i> | 120 | 1.1 | 48.0 |
| 15. <i>The Journal of the Royal College of General Practitioners</i> | 119 | 1.1 | 49.1 |
| 16. <i>Archives of General Psychiatry</i> | 114 | 1.1 | 50.2 |
| 17. <i>Canadian Medical Association Journal</i> | 101 | .9 | 51.1 |
| 18. <i>Circulation</i> | 99 | .9 | 52.0 |
| 19. <i>Cancer</i> | 81 | .8 | 52.8 |
| 20. <i>Obstetrics and Gynecology</i> | 81 | .8 | 53.6 |
| 21. <i>The American Journal of Medicine</i> | 79 | .7 | 54.3 |
| 22. <i>Archives of Internal Medicine</i> | 73 | .7 | 55.0 |
| 23. <i>Postgraduate Medicine</i> | 72 | .7 | 55.7 |
| 24. <i>The Journal of Urology</i> | 65 | .6 | 56.3 |
| 25. <i>Journal of Chronic Disease</i> | 62 | .6 | 56.9 |
| 26. <i>Canadian Family Physician</i> | 60 | .6 | 57.5 |
| 27. <i>Clinical Pediatrics</i> | 53 | .5 | 58.0 |
| 28. <i>Psychosomatic Medicine</i> | 53 | .5 | 58.5 |
| 29. <i>Social Science and Medicine</i> | 53 | .5 | 59.0 |
| 30. <i>American Journal of Epidemiology</i> | 52 | .5 | 59.5 |
| 31. <i>Journal of Health and Social Behavior</i> | 51 | .5 | 60.0 |
| 32. <i>Public Health Reports</i> | 51 | .5 | 60.5 |

tice Grand Rounds, Forum papers, letters to the editor, book reviews, and self-assessment materials were excluded because of the strong tendency of these materials to be derivative literature.

A citation count of all journal references was carried out for all papers included in the study. References to books, monographs, or special reports were excluded. All journal references were collated by source. In an effort to further categorize citations by major specialty discipline, those journals with more than 50 citations each were col-

lated by specialty area. For comparison, multidisciplinary "general" clinical journals were also collated as a group.

Finally, one measure was taken of the extent to which *The Journal of Family Practice* has contributed to the overall medical literature in the field. A citation count was made for general and family practice specialty journals recognized by *Index Medicus* under the heading "Family Practice" for the two-year period 1981 through 1982.

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Table 2. Citations by Major Discipline (1974-1982)

| Major Discipline | Specialty Journals Represented | Total No. of Citations | Proportion of Total Citations (%) |
|--|--|------------------------|-----------------------------------|
| General/Multi-disciplinary | <i>The New England Journal of Medicine</i> | 2,032 | 18.8 |
| | <i>The Journal of the American Medical Association</i> | | |
| | <i>British Medical Journal</i> | | |
| | <i>The Lancet</i> | | |
| | <i>Canadian Medical Association Journal</i> | | |
| | <i>Postgraduate Medicine</i> | | |
| | (Subtotal) | (2,032) | (18.8) |
| Pediatrics | <i>Pediatrics</i> | 624 | 5.8 |
| | <i>The Journal of Pediatrics</i> | | |
| | <i>American Journal of Diseases of Children</i> | | |
| | <i>Clinical Pediatrics</i> | | |
| Public health and health services delivery | <i>Medical Care</i> | 451 | 4.2 |
| | <i>American Journal of Public Health</i> | | |
| | <i>Public Health Reports</i> | | |
| Medical education | <i>Journal of Medical Education</i> | 387 | 3.6 |
| Internal medicine | <i>Annals of Internal Medicine</i> | 348* | 3.2 |
| | <i>The American Journal of Medicine</i> | | |
| | <i>Archives of Internal Medicine</i> | | |
| Psychiatry and behavioral medicine | <i>The American Journal of Psychiatry</i> | 319 | 3.0 |
| | <i>Archives of General Psychiatry</i> | | |
| | <i>Psychosomatic Medicine</i> | | |
| | <i>Social Science and Medicine</i> | | |
| | <i>Journal of Health and Social Behavior</i> | | |
| Epidemiology | <i>American Journal of Epidemiology</i> | 52 | .5 |
| | (Subtotal) | (2,181) | (20.3) |
| | Total | 4,213 | 39.1 |

*Falsely low, since a sizable proportion of "general" journals (eg, *The New England Journal of Medicine*, *The Lancet*) is oriented to internal medicine

Results

A total of 10,810 citations were found over the nine-year period of publication of *The Journal of Family Practice* from 967 different journal sources: Table 1 ranks the 32 most frequently cited journals (ie, those with more than 50 citations each). Three journals accounted for more than one quarter of citations, 6 for more than one third,

16 for one half, and 32 for almost three fifths of citations.

The five most frequently cited journals were *The Journal of Family Practice*, *The New England Journal of Medicine*, *The Journal of the American Medical Association*, *Journal of Medical Education*, and *Pediatrics*.

Multidisciplinary "general" journals accounted

Table 3. Citations By Journal Source in Family Practice (1974-1982)

| Journal | Number of Citations |
|---|---------------------|
| 1. <i>The Journal of Family Practice</i> | 1,473 |
| 2. <i>The Journal of the Royal College of General Practitioners</i> | 119 |
| 3. <i>Canadian Family Physician</i> | 60 |
| 4. <i>American Family Physician</i> | 50 |
| 5. <i>Family Medicine Teacher/ Family Medicine</i> | 6 |
| 6. <i>Continuing Education for the Family Physician</i> | 5 |
| 7. <i>Family Practice Research Journal</i> | 1 |

for 2,032 (18.8 percent) of all citations. Pediatrics, public health and health services delivery, medical education, internal medicine, psychiatry and behavioral medicine, and epidemiology were the major specialty disciplines, represented by more than 50 citations each (Table 2).

Table 3 shows the comparative listing of journal citations for specialty journals in family practice.

Four general or family practice specialty journals were found cited in the *Index Medicus* listings under "Family Practice" over the two-year period 1981 through 1982 (Table 4).

Discussion

It is no surprise that the major clinical disciplines contributing to citations in *The Journal of Family Practice* include internal medicine, pediatrics, obstetrics and gynecology, and psychiatry. In view of the comparatively small role played by surgery in the evolution of family practice as a specialty, the absence of surgery from this group could be expected. The inclusion of journals primarily oriented to health services delivery and public health and medical education is also not surprising in view of the early concern of family practice with its role in the health care system and its vigorous developmental efforts in education at all levels.

The high number of citations recorded for *The Journal of Family Practice* attests to the growing volume of the literature of record in the field as

Table 4. *Index Medicus* Citations Under Category of "Family Practice" by General/Family Practice Specialty Journals (1981-1982)

| Journal | Number of Citations |
|--|---------------------|
| <i>The Journal of Family Practice</i> | 182 |
| <i>The Journal of the Royal College of General Practitioners</i> | 80 |
| <i>Australian Family Physician</i> | 36 |
| <i>American Family Physician</i> | 3 |

well as to its active use for reference purposes by those contributing to the specialty's literature. Were a non-family practice journal to record the highest number of citations in this journal, family practice would not be developing its own base of independent, nonderivative literature.

That a large number of journals contribute to the family practice literature represents diversity appropriate to a broad clinical specialty. It is gratifying that epidemiology, considered by many to be perhaps *the* basic science of family medicine, is represented in the 30 most frequently cited journals in the field.

Emerging from this citation analysis is an illuminated view of the family practice literature of record as a spontaneous body of literature with a predominately clinical focus. Internal medicine, pediatrics, obstetrics-gynecology, and psychiatry and behavioral medicine, together with public health, health services research, epidemiology, and the social sciences, are major contributors to this literature base. In my view, the breadth and content of the family practice literature as reflected by this study are appropriate to the needs and concerns of the specialty and are "on track" for this stage of the specialty's development.

Acknowledgment

Ms. Chris Nolten recorded journal citations for this study.

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