



Peer reviewed publication rates

An indication of research output

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BACKGROUND

The General Practice Evaluation Program (GPEP) funded general practice research between 1990–1999. We were interested in the publication rate of GPEP funded research as a measure of its research productivity.

METHODS

A literature search and an email survey of GPEP researchers. We compared publication rates between the types of grants, types of institutions, and academic status of the authors.

RESULTS

By June 2002, there were 201 peer reviewed articles in a range of 64 Australian and international peer reviewed journals from 99 projects (41% of completed or in progress projects, mean 2.3 per project), ranging from 0–22 per project. Forty-one investigators indicated they were in the process of writing for publication or plan to publish. They were more likely to publish with the support of a university.

DISCUSSION

GPEP has achieved one of its major objectives – to contribute to evidence and knowledge about general practice. The publication rate indicates that Australian general practice research should still improve.

The General Practice Evaluation Program (GPEP) funded 248 projects between 1990 and 1999 with approximately \$12 million, to evaluate the impact of structural changes introduced into Australian general practice and to determine the effects of those changes on clinical outcomes, quality of care and efficiency, and in part, to introduce a research culture into general practice.¹ By June 2002, 204 projects had been completed, 36 were in progress, and eight had been discontinued.²

General Practice Evaluation Program projects were funded as 'seeding grants': research lasting up to 1 year, limited to \$15 000, and aimed at new researchers, the identification of research questions, the development of methodologies, or to direct future research (n=96); and 'project grants' for larger projects taking several years to complete, and comprehensive evaluation research (n=144).^{3,4}

Assessing GPEP research output

To justify return on investment, there has been an emphasis on measuring research output.⁵ Measuring the number of peer reviewed papers is one way to quantify research output.⁶ Although limited in ability to capture effect on clinical practice and policy, such measures are currently the best standardised indicator of output across

disciplines, and has previously been used as a broad indicator of research activity in Australian general practice.^{7–9}

Project aim

There is a weak research culture in general practice.^{9–13} Australian general practice research output is low,^{7–10} including GPEP output.¹⁴ We decided to examine this further, looking at the peer review publication rate of GPEP projects (number of projects published). We decided not to measure impact factor as it is not considered an accurate indication of research or journal quality.^{15–19}

Method

We searched author fields of OVID databases 'Medline' and 'Current Contents' using chief investigators' (CIs) names from the 240 GPEP projects that were completed or in progress by June 2002. Adding the results from this search to a list of citations compiled in a previous study,¹⁴ we sent emails to CIs to check their accuracy and completeness.²⁰

As well as research papers, we included editorials, letters to the editor and comments published in peer reviewed journals, as they may contribute to knowledge.

We conducted chi-square analyses to test if projects were significantly more likely to be published by type of grant (project or seeding), type of institution where the

Table 1. Journals (n=64) publishing GPEP generated articles

Journal	Number of articles (n=201)
Australian Family Physician	54
Medical Journal of Australia	40
Family Practice	14
Social Science and Medicine	9
Australian and New Zealand Journal of Public Health	9
Australian Journal of Rural Health	5
Anaesthesia and Intensive Care	3
Australian Journal of Public Health	3
British Journal of General Practice	3
British Medical Journal	3
Journal of Quality in Clinical Practice	3
Health Policy	2
Health Promotion Journal of Australia	2
Other journals (one article each)	51

researcher worked² (academic or nonacademic), and academic status of first authors (academic or nonacademic). University departments and research centres were coded 'academic'. 'Nonacademic' included hospitals, health services, divisions of general practice and private practices. First authors were coded according to their appointment as listed in their peer review article. We conducted t-tests to determine if there was a significant difference in mean publication rates between the type of project grant, the type of institution, and the academic status of the first authors. All analyses were conducted using SPSS and probability <0.05.

Results

The database search yielded 114 publications with a further 35 publications provided by Ward.¹⁴ The CIs of 180 projects had valid email addresses and we received 83 email responses with information about 106 projects (some researchers were CIs for more than one project), (59% response rate). The CIs identified an additional 58 publications,

Table 2. Publication rates

	Published n %	Not published n %	Total n %
By project and seeding grant			
Project	62 (26)	82 (34)	144 (60)
Seeding	37 (15)	59 (25)	96 (40)
Total	99 (41)	141 (59)	240 (100)
By academic and nonacademic institutions			
Academic	74 (31)	94 (39)	168 (70)
Nonacademic	25 (10)	47 (20)	72 (30)
Total	99 (41)	141 (59)	240 (100)

(six publications were identified as non-GPEP funded projects and therefore not included), resulting in a total of 201 peer reviewed articles. The 201 articles (including 185 peer reviewed research papers, 11 letters to the editor, three editorials, and two comments) were published in 64 peer reviewed journals (Table 1).

The CIs of 30 projects indicated that papers had been submitted for publication or were in the process of being written, 11 indicated writing for publication was planned in the future, 23 indicated no further papers were planned, 13 indicated that there were no plans to publish, and for 29 projects there was no information.

Most (141, 59%) projects had not published, 61 (25%) published one article, 21 (9%) published two articles, and 17 (7%) published more than 2 articles (range: 1–22, average = 2). The 99 projects that did publish were more likely to be project grants conducted by academic institutions (Table 2). However, none of these differences were significant ($p=0.29$, and 0.11 respectively). The type of grant did not significantly influence the number of papers produced (project grant mean=2.3, seeding mean=1.5, $p=0.139$). Similarly for projects for academic institutions average publications per project was not statistically higher (academic mean=2.15, nonacademic mean=1.68, $p=0.37$). However, first authors working at academic institutions were significantly more likely to

publish (167 articles, 83%) than first authors working at nonacademic institutions (34 articles, 17%) ($p<0.5$).

Discussion

The publication of articles in 64 peer reviewed journals indicates that GPEP has contributed to the body of knowledge in general practice. These results do not compare favourably to NHMRC public health funded research publication output. In 1999, of the 55 contactable recipients of 63 Public Health Research and Development Committee grants, 31 out of 38 (82%) had produced peer reviewed papers from research funded in 1993.⁷ (Any response bias artificially inflating the rate may be off-set by the lack of a literature search, resulting in an underestimate). The GPEP publication rate is likely to increase once the 'in progress' projects are completed and the researchers of recently completed projects have time to write and publish articles. The delay between project completion and publication ranges from a median time of 4.8 years (3.9–5.7) for projects with positive results to 8.0 years (6.9 to ∞ , for projects with negative results.²¹

We have confirmed that academic departments of general practice conduct most (83%) general practice research.^{8,9,22} It would appear that more GPEP grant holders had links with academic departments than others undertaking general practice research. Whether the current

41% GPEP publication rate is acceptable needs to be considered in the light of the 201 (21%) articles published from GPEP grants awarded to nonacademic organisations, of which 34 (17%) were written by first authors working at nonacademic institutions, who experience difficulties writing and submitting papers to journals because of lack of time, resources, and expertise.²³ The publication rate of Australian general practice research will probably improve with the Primary Health Care Research Evaluation and Development Strategy.²⁴ This commonwealth government funded initiative encourages a research culture within general practice by increasing the research capacity of primary health care practitioners.²⁴

The wide range of Australian and international journals publishing articles generated from GPEP projects reflects the diverse topics researched, confirming previous research.⁸

We acknowledge that research dissemination occurs in many ways, including presentations, meetings, reports and newsletters. In one response, a CI (who had not published) described how his research had been replicated, and that the strategy developed from the project was now widely used by GPs. Another mentioned that despite few peer reviewed papers arising from her research, the results have been regularly cited in policy and practice related documents. We also acknowledge the shortcomings of bibliometric analyses, as have others⁶ and readily agree other indicators of GPEP research output and impact should be developed.

Implications of this study for general practice

- 41% of GPEP projects resulted in publication in a peer reviewed journal (mean 2.3, range 0–22).
- There was a broad range of journals publishing articles related to general practice research.
- Journals most likely to publish general practice research remain *Australian Family Physician*, *Medical Journal of Australia* and *Family Practice*.
- General practice researchers are more likely to publish with the support of a university.

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