

# Is medical research within the UK in decline? A study of publication rates from the British Society of Gastroenterology from 1994 to 2002

Andrew D Hopper, Robert J Atkinson, Adam Razak, Ashrafur Rahim, Anisha Perera,  
Georgina Jones and David S Sanders

**Andrew D Hopper**<sup>1</sup> MD,  
Specialist Registrar  
in Gastroenterology

**Robert J Atkinson**<sup>1</sup> MRCP,  
Specialist Registrar  
in Gastroenterology

**Adam Razak**<sup>2</sup> MB,  
Medical Student

**Ashrafur Rahim**<sup>2</sup>  
MB, Medical  
Student

**Anisha Perera**<sup>2</sup>  
MB, Medical  
Student

**Georgina Jones**<sup>3</sup>  
BA MA DPhil, Senior  
Lecturer

**David S Sanders**<sup>1</sup>  
FRCP MD,  
Consultant  
Gastroenterologist

<sup>1</sup>Department of  
Gastroenterology,  
Royal Hallamshire  
Hospital, Sheffield

<sup>2</sup>University of  
Sheffield Medical  
School, Sheffield

<sup>3</sup>Health Services  
Research Section,  
School of Health  
and Related  
Research,  
University of  
Sheffield

*Clin Med*  
2009;9:22–25

**ABSTRACT** – A number of reports have suggested that academic medicine within the UK may be in decline. This article assesses the number and outcome of abstracts presented at consecutive British Society of Gastroenterology (BSG) meetings. All abstracts presented at the BSG between 1994 and 2002 were assessed (n=4,096). Full publication rates of abstracts were then compared between meetings. Other abstract characteristics were also analysed. There was a significant downward trend demonstrated for the percentage of abstracts going onto full publication (p=0.02). In 1994, 57.6% of abstracts were subsequently fully published but by 2002 this number had fallen to 30.7%. The results show that the number of abstracts at the BSG which are then fully published has fallen with a significant trend. This observation could be taken as an indicator that there is a decline in research activity within the UK gastroenterology community.

**KEY WORDS:** British Society of Gastroenterology, research

## Introduction

The presentation of abstracts at national and international scientific meetings provides a unique opportunity to rapidly convey the results of novel research. It also allows the researcher a chance to receive informal peer review from other researchers in the field. This may help to clarify aspects of the work particularly in the identification and correction of potential weaknesses prior to submission for full publication. Although abstracts submitted to conferences are peer reviewed, this process may not be as rigorous as that of an indexed journal considering publication of the full manuscript.<sup>1</sup>

Presentation of an abstract at a prestigious meeting may suggest to the researcher that full publication is probable. Certainly, acceptance as opposed to rejection increases the likelihood of subsequent publication, but this is not absolute.<sup>2</sup> The percentage of abstracts published from different medical specialty

meetings has been reported to range from 11–78%.<sup>3–7</sup> A recent Cochrane review of 79 papers where the investigators had assessed the percentage of abstracts that were subsequently published, reported a mean publication rate of 44.5%.<sup>5</sup> This meta-analysis included all medical subspecialties and encompassed any national or international meeting that had been evaluated in this manner.<sup>5</sup> It has been previously demonstrated that in 1994 (at a single annual meeting) there was a high ‘full paper’ publication rate for abstracts presented at the British Society of Gastroenterology (BSG).<sup>8</sup>

However, recently within the UK a number of reports have suggested that academic medicine may be in decline and that research output is diminishing.<sup>9,10</sup> This is supported by evidence that between 1994 and 2002 the number of publications achieved by gastroenterology trainees (specialist registrars, SpRs) prior to starting consultant posts had fallen significantly from a median of 19 in 1993 to five by 2002.<sup>11</sup> This paper assesses if there was a change in the number of abstracts presented at consecutive BSG meetings that are subsequently published.

## Methods

Data collection was performed retrospectively in November and December 2006 ensuring that a period of four years had elapsed since the last meeting chosen to be assessed. This approach was taken because it has previously been reported that the upper limit of lag time to full publication of an abstract after a meeting is 48 months (four years).<sup>3,4,12</sup> All abstracts presented at the BSG between 1994 and 2002 were collected (BSG meeting supplements, *Gut* 1994–2002;43–51; n=4,096). Each abstract was cross referenced with the PubMed, EMBASE and Science Citation Index databases to assess for full publication. Abstracts were cross-referenced for first author, senior author and at least one key word from the abstract title. Abstracts and possible full publications were then examined in tandem to ensure they represented the same study. If two or more abstracts were part of a single fully published manuscript, then each abstract was counted

individually for all aspects of the study. Publication rates were then compared between meetings. In addition, study type, design, category, sample size, journal of publication, impact factor and lag time to publication (in months) were all assessed. The impact factor of the journals for the year in which the paper was published was retrieved from journal citation reports. Ethical approval was not required although it was discussed with the South Sheffield Research and Ethics Committee. Statistical analysis was performed using SPSS version 10.0. Means were compared with unpaired t tests.

## Results

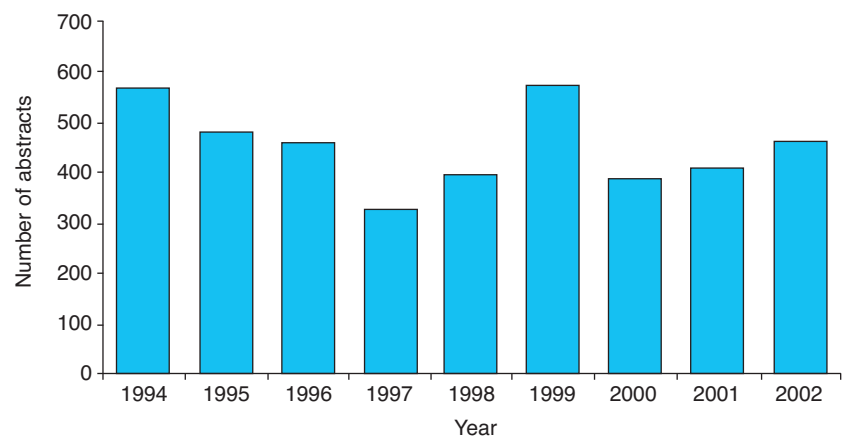
Figure 1 shows the number of abstracts presented over the nine-year period. The mean number of abstracts presented in the first half of the study (1994–8: mean = 450) did not differ significantly from the second half of the study (1998–2002: mean = 448) ( $p=0.98$ : unpaired t test), there was also no increasing or decreasing trend in the number of abstracts presented per year.

The actual number and percentage of abstracts presented that went on to full publication were higher in the first half of the study compared to the second half (1994–8: mean = 196.8, 42.4% versus 1998–2002: mean = 149.6, 33.6%), however this was not a significant difference ( $p=0.26$  for number and  $p=0.13$  for percentage, unpaired t test).

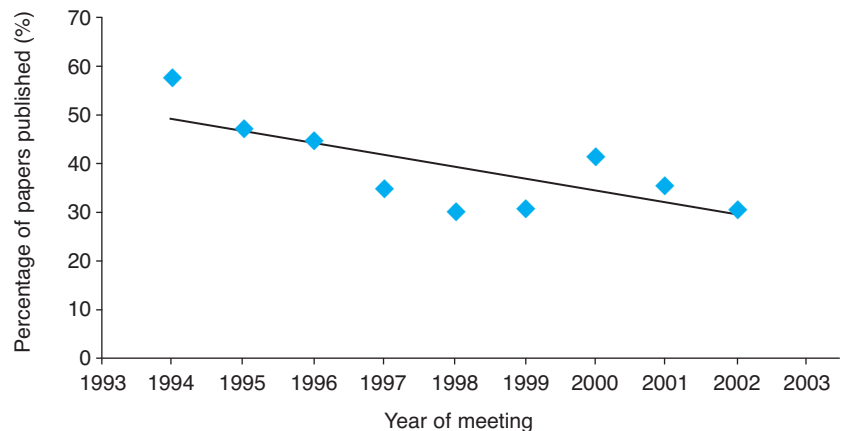
For the whole study period there was a significant downward trend demonstrated in the total number and the percentage of abstracts going on to full publication (correlation coefficient ( $r$ ) =  $-0.687$ ;  $p=0.04$  and  $r=-0.761$ ;  $p=0.02$  respectively). The percentage of publications is expressed as the number of abstracts which are fully published over the total number of abstracts presented at each meeting. The percentage of abstracts going on to full publication for each year is shown in Fig 2.

The number of abstracts being published in high impact journals (arbitrarily ranked  $>4$ ) did not differ significantly. However the mean impact factor did increase significantly from the first half of the study (1994–8) mean impact = 3.48, to the second half of the study (1998–2002) mean impact = 3.88 ( $p=0.01$  unpaired t test). This was associated with a significant increasing trend ( $2.96-4.22$ ;  $r=0.90$ ;  $p=0.001$ ), shown in Fig 3. The lag time from presentation of the abstract to full publication had a large range for each year (Fig 4). The mean publication delay for each year fell slowly over the study period but with a significant trend ( $r=0.599$ ;  $p=0.044$ ). Although the slow fall in mean publication delay gave no significant difference between the first and second half of the study (24.5 months *v* 22.2 months;  $p=0.15$ : unpaired t test) the publication delays at the start of the study period in 1994 (mean 23.0 months: SD 15.04) were significantly longer than 2002 (mean 19.9 months: SD 12.56) ( $p=0.042$  unpaired t test). When analysing abstracts for study type, design, category, or sample

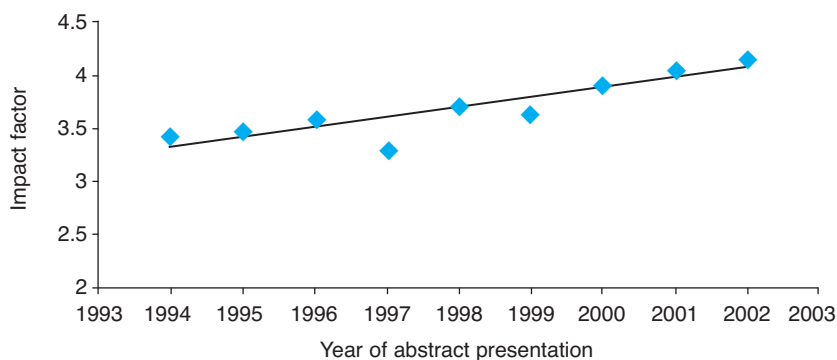
**Fig 1. The number of abstracts that were presented each year at the British Society of Gastroenterology meetings 1994–2002.**



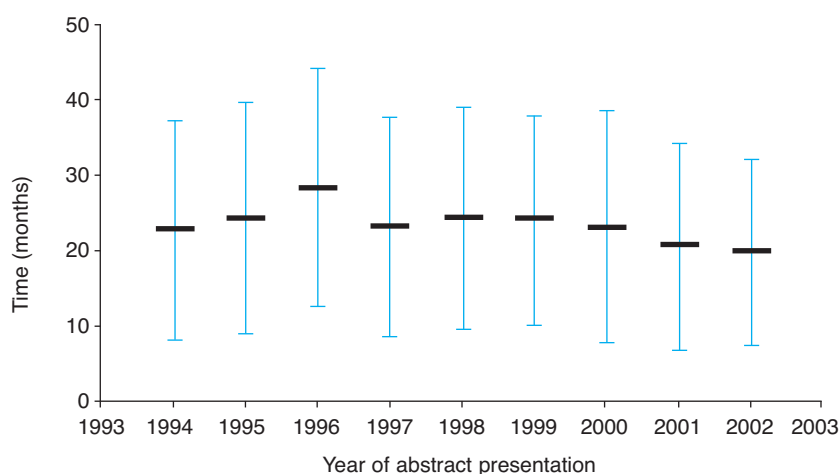
**Fig 2. The percentage of abstracts presented each year at the British Society of Gastroenterology meetings that went on to full publication between 1994 and 2002. A significant downward trend is shown ( $r=-0.761$ ;  $p=0.02$ ).**



**Fig 3. The mean impact factor of journals containing publications arising from abstracts presented each year at the British Society of Gastroenterology meetings between 1994 and 2002 ( $R^2=0.7799$ ,  $r=0.88$ ).**



**Fig 4. The mean time taken for abstracts presented each year at the British Society of Gastroenterology meetings between 1994 and 2002 to be fully published. Error bars represent one standard deviation above and below mean.**



size there was no significant difference between years and no factor that influenced an abstract achieving full publication.

## Discussion

This study shows that the number of abstracts presented at the BSG conferences that achieve full publication has fallen with a significant trend. Alternative publication can occur in a thesis, book or non-Medline article but previous documented reasons for non-submission include lack of time, lack of interest in publication, methodological limitations, co-investigators leaving the organisation and the data becoming redundant by virtue of other investigators publishing similar studies.<sup>13,14</sup>

These data could suggest that research within the UK gastroenterology community is in decline, particularly if taken in tandem with previous reports of fewer publications by gastroenterology trainees prior to starting consultant posts.<sup>11</sup> Another alternative may be that trainee's consider that acceptance of work at the BSG is a sufficient reward and enhances their curriculum vitae enough without the need to go on to full publication.

Data which never proceed beyond an abstract is an issue for discussion among the scientific community. Early and promising work may be cited by investigators while still in abstract form. This may lend inappropriate validity to such work as it will not have been fully scrutinised through the normal channels of a journal's peer-review system.<sup>15</sup> The

International Committee of Medical Journal Editors have recommended that abstracts should be avoided as a source of reference. As a result many journals will not accept the citation of abstracts.<sup>16</sup>

Sample size, statistically significant results, methodology and type of study are all factors which have been assessed by investigators trying to ascertain what aspects of abstracts, if any, influence the likelihood of publication.<sup>17</sup> However none of these factors influenced publication in this study. Previous studies have only shown sample size and positive results as factors which are predictive of an abstract being fully published.<sup>5</sup> There is a bias against the publication of negative results unless they serve to refute a commonly held concept. However, this prevents the complete dissemination of knowledge and in particular has more profound effects when considering meta-analysis.<sup>18,19</sup>

During the study period it was noted that the time taken for abstracts to be fully published decreased and the impact factor of the journals they were published in increased. These findings may be explained by the changing review and decision processes for submissions to journals over the study period. For example, the implementation of online submission and distribution to reviewers allows faster turnover for all editorial decisions. Easier access to electronic journal content and rapid powerful medical journal search engines (such as those used in this study) could also account for the increase in citations and thus the increasing impact factor of journals.

In conclusion, we have shown that the number of abstracts that go on to achieve full publication at the BSG has fallen with a significant trend. This observation could be taken as a surrogate marker for a decline in research activity within the UK gastroenterology community. Similar studies are now required in other UK medical subspecialties in order to validate this report.

## References

- 1 Quencer R, Grossman R. Unpublished papers perish. *Am J Neuroradiol* 1999;20:962–3.
- 2 Callaham ML, Wears RL, Weber EJ, Barton C, Young G. Positive-outcome bias and other limitations in the outcome of research abstracts submitted to a scientific meeting. *JAMA* 1998;280(3):254–7.
- 3 Juzych MS, Shin DH, Coffey J, Juzych L, Shin D. Whatever happened to abstracts from different sections of the association for research in vision and ophthalmology? *Invest Ophthalmol Vis Sci* 1993;34(5):1879–82.
- 4 Juzych MS, Shin DH, Coffey JB *et al.* Pattern of publication of ophthalmic abstracts in peer-reviewed journals. *Ophthalmol* 1991; 98(4):553–6.
- 5 Scherer RW, Langenberg P, von Elm E. Full publication of results initially presented in abstracts. *Cochrane Database Syst Rev* 2007;(2): MR000005.
- 6 Murrey DB, Wright RW, Seiler JG, 3rd, Day TE, Schwartz HS. Publication rates of abstracts presented at the 1993 annual academy meeting. *Clin Orthop Relat Res* 1999;(359):247–53.
- 7 Nguyen V, Tornetta P, 3rd, Bkarić M. Publication rates for the scientific sessions of the OTA. Orthopaedic Trauma Association. *J Orthop Trauma* 1998;12(7):457–9.
- 8 Sanders DS, Carter MJ, Hurlstone DP, Lobo AJ, Hoggard N. Research outcomes in British gastroenterology: an audit of the subsequent full publication of abstracts presented at the British Society of Gastroenterology. *Gut* 2001;49(1):154–5.
- 9 Bell J. Resuscitating clinical research in the United Kingdom. *BMJ* 2003;327:1041–3.
- 10 Sewell WA. Thwarted by bureaucracy. *BMJ* 2007;334(7592):491.
- 11 Hopper AD, Atkinson R, Prtak L, Sanders DS. Research trends in British gastroenterology: publication rates in newly appointed NHS consultants over a nine year period. *Gut* 2004;53(6):913.
- 12 Goldman L, Loscalzo A. Fate of cardiology research originally published in abstract form. *N Engl J Med* 1980;303(5):255–9.
- 13 Riordan FA. Do presenters to paediatric meetings get their work published? *Arch Dis Child* 2000;83(6):524–6.
- 14 Sprague S, Bhandari M, Devereaux PJ *et al.* Barriers to full-text publication following presentation of abstracts at annual orthopaedic meetings. *J Bone Joint Surg Am* 2003;85-A(1):158–63.
- 15 Soffer A. Beware the 200-word abstract! *Arch Intern Med* 1976; 136(11):1232–3.
- 16 Uniform requirements for manuscripts submitted to biomedical journals. International Committee of Medical Journal Editors. *JAMA* 1997;277(11):927–34.
- 17 Chalmers I, Adams M, Dickersin K *et al.* A cohort study of summary reports of controlled trials. *JAMA* 1990;263(10):1401–5.
- 18 Dickersin K. The existence of publication bias and risk factors for its occurrence. *JAMA* 1990;263(10):1385–9.
- 19 Hopewell S, Clarke M, Stewart L, Tierney J. Time to publication for results of clinical trials. *Cochrane Database Syst Rev* 2007;(2): MR000011.