Health services research

Hand searching the *Journal of Epidemiology and Community Health* as part of the Cochrane Collaboration

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Abstract

***Study objective* – To identify randomised controlled trials (RCTs) published in the *Journal of Epidemiology and Community Health* and to explore the contribution of these to the evaluation of public health issues.**

***Design* – Hand searching of the journal by both authors with independent assessment of topics of the reports and of their relevance to the Cochrane Collaboration. Agreement was assessed using κ scores.**

***Setting* – All papers and letters published in the journal from the first issue to the end of 1994.**

***Subjects* – Reports that might be RCTs were collected and classified into seven categories: definitely/probably/possibly RCTs or quasi-RCTs; or none of these.**

***Main results* – Eighty two definite RCTs were identified and a further 23 were probably/possibly RCTs or quasi-RCTs. Most reports dealt with health education, drug treatments, or "other" health service interventions. Both authors failed to identify a number of trials on hand searching.**

***Conclusions* – The journal has published many trials of importance to the development of evidence-based public health policy. Hand searching may need to be done independently by more than one person.**

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Public health policy is of central importance in achieving the targets set out in the government's health strategy for England *The health of the nation*,[1] but to make effective decisions about public health policy we must first know which treatments and services are effective: that is, we need an evidence based public health policy. While some public health initiatives cannot, in practice, be evaluated by randomised controlled trials (RCTs), there are many others that can, and should, be so evaluated,[2] and many such trials have been undertaken. An important resource for evidence based public health policy is the Cochrane Collaboration, which aims to prepare, maintain, and disseminate systematic, up to date reviews of RCTs of health care.[3]

A central part of the work of the Cochrane Collaboration is an international endeavour to hand search health care journals, identify all randomised controlled trials in them, and then provide the National Library of Medicine with their details. The National Library of Medicine has undertaken to revise the *Medline* database by adding the publication type term RANDOMIZED CONTROLLED TRIAL to all RCTs identified by the Cochrane Collaboration, as well as the term CONTROLLED CLINICAL TRIAL for controlled trials that do not meet the strict criteria for RANDOMIZED CONTROLLED TRIAL.[4]

Our primary aim was to search by hand for RCTs in the *Journal of Epidemiology and Community Health*, from the first issue in 1947 to the end of 1994. Our secondary aim was to explore the contribution of RCTs in the journal to the evaluation of public health and related issues. A report elsewhere has looked at the quality of these trials as part of a broader report of trials published in UK public health journals.[5] Here, we report on assessing the specific contribution of this journal to the Cochrane Collaboration.

Table 1 Topic of trials

Category	*Meaning*
Infectious disease	The interventions in the trial are designed to prevent or treat an infectious disease
Health education	The interventions in the trial involve giving advice or information or seeking directly to alter the total "environment" of subjects
Research methods	The trial's intervention test different research methods
Health service care	The intervention in the trial is a method of care that is neither a drug nor health education (examples: surgical techniques, lactation nurses, triage techniques)
Drug	The trial is testing the effects of drug intervention
Screening	One of the trial interventions includes screening (testing for presymptomatic disease): (it is not enough for some screening to have occurred earlier in the trial, perhaps in identifying the study population)

*Table 2 Categories of reports**

Category	*Meaning*	*Action*
1	Definitely an RCT	Of interest to Cochrane Collaboration; for inclusion in register of RCTs
2	Definitely a quasi-RCT ("quasi" – ie alternate allocation)	Of interest to Cochrane Collaboration
3	Probably a RCT ("probably" – ie there was a reason to think it might have been randomised, eg with "double blind" or "placebo" in the text)	Of interest to Cochrane Collaboration
4	Probably a quasi-RCT	Of interest to Cochrane Collaboration
5	Possibly an RCT ("possibly" – ie there was no reason to think it was randomised but there were concurrent (not historical) controls and there was no reason to think it wasn't randomised)	Of interest to Cochrane Collaboration
6	Possibly a quasi-RCT	Of interest to Cochrane Collaboration
7	None of the above	Not of interest to Cochrane Collaboration

* Kay Dickersin – personal communication.
RCT = randomised controlled trial.

Table 3 Validity of different searches

	Gold standard			
	Cochrane categories 1–6		*Cochrane category 1*	
	Sensitivity	*Specificity*	*Sensitivity*	*Specificity*
Author A	0·93	0·11	0·94	0·09
Author B	0·62	0·89	0·63	0·56

Methods

We began by sharing the volumes to be searched between us, and searched for reports that might be RCTs. We independently checked a one in five sample of the volumes searched by the other. This check showed a marked lack of agreement and we decided that all volumes should be searched by both of us. We then pooled the results and recorded the reports' format as: articles, letters, conference abstracts, titles of conference abstracts, or abstracts from reports in other journals. We then independently assessed (a) the topic of the reports, using the classification in table 1 and (b) the relevance of the reports to the Cochrane Collaboration, using a suggested classification into seven categories (table 2) (K Dickersin, personal communication). Agreement was measured using the κ score; differences were readily resolved by discussion.

By using our joint decisions about the pooled reports as a gold standard, we were able to assess the sensitivity (proportion of the total number of useful reports correctly identified) and specificity (proportion of the total number of not useful reports correctly identified) of the searches we both conducted (table 3). We used a simple capture/recapture technique[6] (counting how many RCTs each author identified, as well as how many were identified by *both* authors) that allowed us to estimate the total number of RCTs in the journal for the years we searched.

The seven categories of relevance to the Cochrane Collaboration (table 1) collapse into three main areas of interest: (i) reports that are definitely RCTs and so need to be easily identifiable through *Medline* using the publication type term RANDOMIZED CONTROLLED TRIAL (category 1); (ii) those in categories 2–6, which are probably/possibly RCTs or "quasi-RCTs" and are of interest to the Cochrane Collaboration; and (iii) those that are certainly not RCTs (category 7). We searched *Medline* (using *CD-Plus*, with *Ovid 3.0 for Windows*) to see how many of the category 1 "definite RCTs" could be found in *Medline* at all.

Results

THE REPORTS

We identified 114 reports that we thought might be RCTs. We finally agreed that 82 (72%) were definitely RCTs, that a further 23 were probably or possibly RCTs or quasi-RCTs and that 9 were none of these (table 4). The reports were in a variety of formats, with 34 of the 82 (41%) reports of RCTs not being published as articles (table 4).

The distribution of the reports by year is shown in table 5. The number of articles published in the journal increased more than 10 fold between the early years and the early 1990s, but the number of RCTs published also increased sharply.

The reports' topics are shown in table 6. Trials of health education, drug treatments, and "other" health service interventions have been most common. Trials of screening have been particularly prominent in the past 10 years

Table 4 Cochrane category and format

Category and meaning	*No*	*(%)*	*Article*	*Letter*	*Conference abstract*	*Conference abstract (title only)*	*Journal abstract*
1 RCT	82	(72)	48	1	22	8	3
2 quasi-RCT	4	(4)	4	0	0	0	0
3 probably a RCT	6	(5)	1	0	3	0	2
4 probably a quasi-RCT	1	(1)	1	0	0	0	0
5 possibly a RCT	12	(11)	0	0	3	3	6
6 possibly a quasi-RCT	0	(0)	0	0	0	0	0
7 none of the above	9	(8)	6	0	1	1	1
Total	114	(100)	60	1	29	12	12

Table 5 Main Cochrane categories, by five year period

Year of publication	No of articles published	No of reports identified (categories 1–7)	RCTs (category 1)	
			No	(% of total articles)
1947–49	42	2	0	(0·0)
1950–54	111	10	3	(2·7)
1955–59	132	2	1	(0·8)
1960–64	136	5	3	(2·2)
1965–69	167	7	4	(2·4)
1970–74	202	11	9	(4·5)
1975–79	235	11	11	(4·7)
1980–84	303	16	12	(4·0)
1985–89	324	20	13	(4·0)
1990–94	466	30	26	(5·6)
Total	2118	114	82	(3·9)

and the journal has also published a number of trials exploring different ways of carrying out research – for instance, ways of maximising response rates to questionnaires.

AGREEMENT BETWEEN AUTHORS' DECISIONS

A number of decisions had to be made and we report here how far we agreed in making these decisions.

Topics of trials

There was good agreement on classifying the topics of the reports, with κ scores ranging from 0·83 (health service care) to 1·0 (research methods).

Cochrane categories

In deciding whether a report was definitely a RCT, we agreed in 107/114 cases (κ 0·85). The other important question was whether the report was of interest to the Cochrane Collaboration (ie, falling into categories 1–6). Here we agreed in 105/114 cases (κ 0·27).

VALIDITY OF SEARCHING

Both authors missed a number of trials, with the author who missed more trials also making fewer incorrect identifications of trials. The capture/recapture technique suggested that there were a total of 85 RCTs in the journal for the years which we searched, implying that together we still missed about three trials.

MEDLINE

Eight of the 82 reports of RCTs were published before 1966, the first year that *Medline* covers. Of the remaining 74 reports, 51 (69%) were found in *Medline*. The proportion of RCT reports that were in *Medline* by format is shown in table 7.

RESOURCE IMPLICATIONS

One author spent a total of 14 hours and the other eight hours hand searching 48 volumes of the journal, which contained 2118 papers, and more than 1500 abstracts.

Discussion

Two areas figured prominently in the trials identified here: evaluation of public health initiatives such as screening programmes, vaccination programmes, and smoking cessation initiatives; and examination of issues of research methodology. Evaluation of public health initiatives is important since it is vital that public health policy, including health promotion, is subjected to the same rigorous evaluation proposed for other branches of medicine. Since the journal has an important position internationally in epidemiology, it is appropriate that many trials of methodology have appeared here.

Table 5 shows that the proportion of papers in the journal which were RCTs increased after 1970 and has remained similar since then, although the 1990–94 figure may indicate the start of an upturn. While many issues of interest to public health workers and epidemiology researchers are not amenable to evaluation by RCTs, many others are, and it is, perhaps, disappointing that the proportion of RCTs has not shown a greater increase.

Systematic review of all the available trial evidence is crucial in evaluating a proposed policy change.[2] A central part of a systematic review is the identification of as many as possible of the trials which have been conducted. Such identification is difficult because many published trials are not identifiable as RCTs on computerised databases, either because of inadequate indexing (searching *Medline* for trials in journals indexed in *Medline* lacks sensitivity, with a weighted mean of 77%[4]), or because the trials are not there at all. *Medline* goes back to 1965 and all the RCTs we found published after that year in the journal as articles could be found in *Medline*. This fell to 69% (51/74) when RCTs published in other formats were included (table 7). A crucial question is

Table 6 Topic of reports in categories 1–6 in relation to five year period*

Year of publication	Total	Infectious disease	Health education	Research methods	Health service care	Drug	Screening	Other
1947–49	2	2	0	0	0	2	0	0
1950–54	9	6	3	0	1	6	0	0
1955–59	2	1	0	0	0	2	0	0
1960–64	5	0	2	0	3	0	0	0
1965–69	7	1	0	3	0	2	1	0
1970–74	11	1	0	3	2	3	2	1
1975–79	11	2	4	0	3	3	2	0
1980–84	15	2	7	1	3	4	2	0
1985–89	16	1	7	1	7	1	5	0
1990–94	27	2	10	7	6	3	5	0
Total	105	18	33	15	25	26	17	1

* A few reports were allocated to more than one category.

Table 7 Proportion of randomised controlled trials published after 1965 in Medline in relation to format

	Article	*Letter*	*Conference abstract*	*Conference abstract (title only)*	*Journal abstract*
Not found in Medline	0	0	15	8	0
In Medline	43	1	7	0	0
Total	43	1	22	8	0

how far these "other format" RCTs were later published in *Medline*-indexed journals. Until that is answered, there is no alternative to handsearching if an important number of trials is not to be missed.

Although the introduction of structured abstracts has eased the burden, hand searching remains labour intensive. Nevertheless, our experience indicates that there are benefits if hand searching is done independently by more than one person. It means that fewer trials will be missed; and it allows interobserver variability in the classification of trials (whether their topic or relevance, as in this study, or for instance their quality) to be assessed. We did not assess the costs of having two hand searchers and the trade-off between these benefits and the costs will have implications for the organisation of future hand searches.

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