INFORMATION NEEDS OF HEALTH RESEARCHERS IN DEVELOPING COUNTRIES: A SURVEY OF DEVELOPING COUNTRY PARTICIPANTS IN THE COCHRANE COLLABORATION

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KEYWORDS

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Background: In the majority of developing or low-resourced countries (LRCs) the Gross Domestic Product (GDP) is below $1000. Given these limited resources it stands to reason that there is less money available to spend on healthcare and health research in these countries. Included in health research is the need to have access to the best available information. In order for researchers in developing countries to be able to access this information, they need to overcome a number of resource related barriers. The Cochrane Collaboration is one organisation that tries to facilitate the process of helping researchers and policy makers worldwide obtain the best available, as well as, up-to-date, evidence and information regarding health care interventions.

Aim: To assess and describe the special needs and problems of health researchers related to the use, access and management of information as experienced by Cochrane reviewers living in developing or LRCs.

Research Design and Methodology: A cross-sectional descriptive survey was used. The survey was applied to a very distinct group of researchers, namely Cochrane collaborators living in developing or low-resourced countries. The questionnaire used in a Collaboration-wide needs assessment survey was adapted for this study and was distributed via E-mail.

Analysis was done using SPSS. Narrative information is presented in the form of summaries using MSWord.

Results: The response rate to the survey was 22% with 50% of respondents coming from South Africa followed by Brazil with 11%. A total of 26 countries and 23 different languages were represented. In 58% of cases respondents knew which Cochrane Centre was the reference centre for their country. Respondents were mainly members of a Cochrane Collaborative Review Group. All had some form of access to a computer, the Internet and E-mail. Access to these systems was not permanent or fast in all cases. The main computer operating system used was Windows 95/98. The majority had access to *The Cochrane Library* in some form. The biggest area of concern is the writing of reviews. The software used is not seen as being user-friendly and there is a need for it to be more compatible with commercial packages. There is also a need for the various components of the IMS to be interlinked.

Conclusion: Reviewers in both developed and developing countries experience certain difficulties when conducting systematic review research. In some instances the problems are similar, but in others they differ. For those from developing countries access to information and also access to training in the use of RevMan are the main problems. If the Collaboration is able to rectify, or make this easier, it would not just help current contributors, but also make the organisation more attractive to prospective reviewers. (439 words)

Declaration

I declare that *Information Needs of Health Researchers in Developing Countries: A Survey of Developing Country Participants in the Cochrane Collaboration* is my own work, that it has not been submitted for any degree or examination in any other university, and that all the sources I have used or quoted have been indicated and acknowledged by complete references.

Elizabeth Dorothea Pienaar June 2004

Signed:.....

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Chapter 1: Introduction

Introduction

One hundred and fifty two (152) countries in the world can be classified as developing or low-resourced countries (LRCs) according to the World Bank.[1] In the majority of these countries the Gross Domestic Product (GDP) is below $1000. Given these limited resources it stands to reason that there is less money available to spend on healthcare and health research. This situation gives rise to the need to prioritise the research being done so as to utilise the available resources in the best possible manner. For the latter to be possible policy-makers and researchers need to have access to the best available information. This information must also be appropriate or applicable to local situations.

The Cochrane Collaboration is an organisation that tries to facilitate the process of helping researchers and policy makers worldwide obtain the best available, as well as up-to-date, evidence and information regarding health care interventions. They do this through producing and maintaining up-to-date systematic reviews of the effectiveness of healthcare interventions. They also endeavour to make this process possible in those countries where resources are scarce. In order for researchers to be able to access this information, they need to overcome a number of barriers.

This mini-thesis will be examining the barriers faced by researchers in developing or low-resourced countries in obtaining relevant information when conducting research. Since participants in the Cochrane Collaboration who reside in LRCs represent a known group of active researchers, the experience of these participants

in the activities of the Cochrane Collaboration will provide information on the barriers faced by researchers who are living in these countries.

Introduction to the Cochrane Collaboration

The Cochrane Collaboration (from hereon referred to as "the Collaboration") is an international organisation that aims to help people make informed decisions about healthcare by preparing, maintaining and promoting the accessibility of systematic reviews on the effects of healthcare interventions.[2] In 1972 Archie Cochrane, a medical doctor and epidemiologist, made the following remark, *"It is surely a great criticism of our profession that we have not organized a critical summary, by specialty or subspecialty, adapted periodically, of all relevant randomised controlled trials".*[3] The Collaboration developed in response to Cochrane's call for up-to-date systematic reviews of all relevant randomised controlled trials in all fields of healthcare.[2] The underlying assumption of the Collaboration is that healthcare interventions can be made more effective if they are based on complete and up-to-date evidence.[4] One avenue to address this is by the preparation of systematic reviews of randomised controlled trials (RCTs), called Cochrane reviews. These are published quarterly in an electronic database called *The Cochrane Library.*

Since its inauguration at the first 1st Cochrane Colloquium in 1993 the Collaboration has rapidly evolved. The basic objectives of the organisation have however remained the same that is promoting the production and accessibility of systematic reviews of health of health care interventions.

In the Collaboration the preparation and maintenance of systematic reviews is the responsibility of international Collaborative Review Groups (CRGs). There are currently fifty CRGs that fulfil this function of the Collaboration. The members of the CRGs consist of researchers, healthcare professionals, and people using the health services. They joined these groups because they share an interest in generating reliable and up-to-date evidence that is relevant to the prevention, treatment and rehabilitation of particular health problems. These groups cover a wide range of topics, e.g. HIV/AIDS; Infectious Diseases; Depression and Anxiety; Pregnancy and Childbirth. The topics of the individual systematic reviews are determined by the individual reviewer's interest in consultation with the relevant review group. At present most reviewers reside in developed countries. The result of this is that topics currently covered by systematic reviews are not always relevant to resource-poor settings. It is therefore important that more reviewers are recruited from developing or low-resourced countries.

The production of Cochrane systematic reviews is dependent on the flow of information between a large number of people and places. Each of the CRGs provides assistance to reviewers from their editorial bases. This can be in the provision of literature searches and obtaining copies of relevant trials for a particular review. Since the Collaboration was established, several tools and systems have been developed to help with this and to facilitate the electronic production and publication of Cochrane reviews and other material. These tools and systems make up the Cochrane Information Management System.[5] This system currently includes: a) RevMan, the review writing software, with

MetaView as its statistical component; b) ModMan, the software used by the CRGs to compile the database for publication on *The Cochrane Library;* and c) a database with the contact details of all people participating in the activities of the Collaboration. In addition, included within *The Cochrane Library* is a system whereby comments and criticisms about a systematic review can be recorded.

In April 2000, the Cochrane Information Management System Group agreed that future development of the Information Management System (IMS) should be based on the basis of a Needs Assessment Survey of as many members of the Cochrane Collaboration as possible.[5,6] This survey assessed attitudes towards the current components of the IMS, development of these components and of new ones, and the interlinking of components.

Based on the results of the initial survey it was recognised that more effort should be put into collecting data from participants in developing or low-resourced countries (LRCs) and people whose first language is not English.[1,6] One of the preliminary recommendations, therefore, was that a supplementary survey should be conducted targeting these areas.

Combining the specific needs and recommendations of the Cochrane Collaboration and the need to understand the barriers faced by researchers living in developing countries of LRCs in accessing research evidence, this thesis presents results of a survey of Cochrane participants from LRCs.

Chapter 2: Literature Review

Introduction

The aim of this chapter is to give an overview of health research and the barriers encountered by researchers in the field in accessing research evidence. Attention will also be given to how the results of health research can be used to influence practice and policy in healthcare in developing countries. The review is presented in two sections. Section A reviews Health Research in Developing Countries and Section B reviews Evidence Based Health Care and the Cochrane Collaboration.

Section A: Health Research in Developing countries

There is a strong link between the health of people and the development of their country.[7] Poor health reduces life expectancy, educational achievement, and decreased productivity, and this in turn leads to reduced investment from outside of the country. Health research can contribute to significant gains in life expectancy and health status through the improvement of knowledge and technical interventions such as vaccines, therapeutics, diagnostics and other public health measures.[8]

In the majority of developing countries, Western models of health care have dominated the health services. These systems do not take into account how those living in developing countries experience illness, seek advice, or make use of traditional curative or healing methods.[9]

In 1978 health policy-makers from around the world signed the Alma Ata declaration, declaring that there would be equity in health for all people. However,

a widening inequity in health both within and between countries exists.[10] There are real disparities in the economic development of countries as well as in the burden of disease and health outcomes globally.[11]

On the African continent the majority of countries fall into the category of developing or LRCs. During the meeting of the G8 countries in Canada in 2000 the topics of health, security and Africa featured on the agenda. Health in Africa is currently staggering under the burden of not only HIV/AIDS, but also other infectious diseases. This has severe consequences for the continent. With the health of the continent's economy also being eroded it is necessary for countries to prioritise on where to spend their limited resources. Health research therefore has an enormous role to play in helping to break the circle of ill health and in so doing to increase productivity of healthy citizens from LRCs. One of the biggest challenges of health research is to conduct clinical trials and also clinical research in developing countries that will lead to interventions that will benefit the citizens of those countries.[12]

Developing countries carry 90% of the global burden of disease, including diseases like malaria and HIV, which cripple their economies by being a major cause of death of the economically active proportion of the population.[13] Yet less than 10% of the annual global expenditure on health research is allocated to addressing the problems of developing countries. The role of research is to ensure that the measures used to counteract ill health and its accompanying issues are, as far as possible, evidence-based and that the available resources to finance any

intervention are used in the most effective and efficient manner.[7] At present most of the research being done in these countries is done in collaboration with researchers in developed countries, which is probably due in part to the limited resources available for research in these countries.[14]

Obstacles to accessing information

The health of the world relies on biomedical researchers and public health workers to provide solutions to infectious disease and many other health problems at local level. Yet researchers in developing countries and LRCs face many obstacles. These have been described as:

- Scientific isolation
- Insufficient technical training and research tools
- Lack of up to date scientific information and
- Limited financial, material and human resources.[15]

During the research process a researcher may encounter many different barriers. The biggest one is often a lack of research capacity. In 2000 this was highlighted by the Global Forum for Health research.[14] Development of research capacity is a logical and much needed step, however, in order to avoid failure and the accompanying frustration among researchers it is necessary to go beyond this. There is also the need for functional infrastructure, access to information, and positive feedback on completed work. The last can be achieved by the publication of research results in international journals, as well the allocation of research grants by both foreign and national institutions.

It has recently been said that the gap between those who own knowledge and those who need it is actually widening.[16] This might also be diverting resources away from more important public health issues. Without adequate and affordable access to information, it is impossible to gain the necessary knowledge and skills to provide adequate and affordable health services to those who need it. The late James Grant, former executive director of UNICEF, once said the following, which today still holds true, *"The most urgent task before us is to get medical and health knowledge to those most in need of that knowledge. Of the approximately 50 million people who were dying each year in the late 1980s, fully two thirds could have been saved through the application of that knowledge."* [17]

Information poverty can also be seen as a substantial impediment to better health in countries. In some countries medical libraries are only supplied with a few worn books and many out-dated journals.[18]

Dissemination of information is enhanced in the developed world through the use of the Internet. However, in some developing countries there are enormous socio-economic differences limiting access to, and use of, the Internet. The Internet network has spread mainly to countries with a high gross domestic product and where there is an open competitive market in telecommunications.[19, 20] In Africa with a population of 700 million, fewer than one million had access to the Internet in 1998, with 80% of this number in South Africa. It has also been found that there are more Internet hosts in New York City than in the whole of continental Africa, and more hosts in Finland than in Latin America and the Caribbean.[20]

The following are some of the possible problems and obstacles faced by people from developing countries or LRCs in accessing health information and research evidence:[21]

1. Language – Within most countries of the world English is not the first, or even second, language; however a large percentage of health information is only available in English.
2. Internet Access – Access to the Internet is universally available throughout the USA and Europe, but this is not always the case in many developing countries.
3. Computer availability – Computers are often not available or might not be of the latest configuration and thus not able to handle the latest version of applicable software.

When one considers the need for health information in developing or LRCs, it is impossible to ignore the fact that poverty is one of the leading causes of ill- or poor health across the world.[18] Poverty reduces available resources including those for health research and access to health information, which in turn impacts on health and perpetuates the cycle of poverty.

Figure 1 presents a conceptual framework of the cycle of poverty and health and places health research and health information within this context. This framework highlights the relevance of health information and the impact of barriers to accessing health information for health service decision makers in the overall

context of development and health. (Note that Figure 1 is based on the review of the literature and underlying conceptual thinking used in this thesis and is provided for illustration only. It is not the purpose of this thesis to test this framework or otherwise prove this theoretical model.)

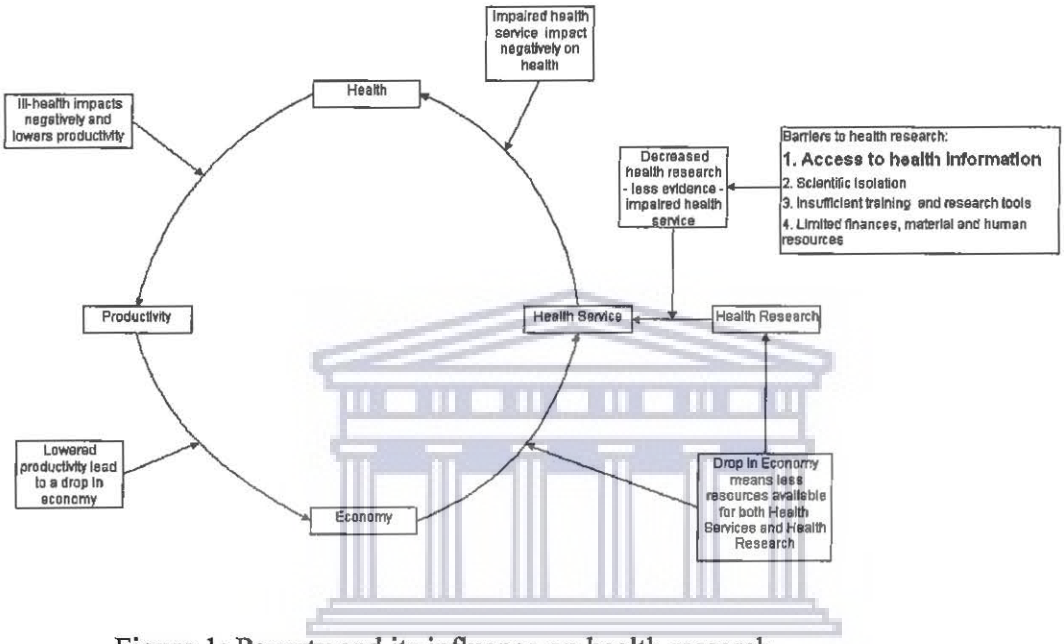

Figure 1: Poverty and its influence on health research and the quality of health

Understanding of the barriers found by researchers in LRCs to access health information may lead to solutions in reducing the barriers and this could assist in breaking the cycle as illustrated in Figure 1. Increased research funding would also help break the cycle, but careful consideration should be given to foreign funding. In a recent study done on international research collaboration and funding, and the relevance of African randomised controlled trials, it was found that industry funding may lead to a decreased relevance for the African continent.[22]

Obstacles to publishing research results

An important mission of the health research enterprise at both national and trans-national levels is to translate research results from laboratory and clinical settings into evidence-based practice. This can be achieved through the publication of research results in international biomedical journals.[8] This is especially important for researchers from developing countries and LRCs because they are the people who produce research relevant to their country or even continent. If such work is not published, those who need it will not be able to access it. This takes us back to the illustration in Figure 1.

Health researchers publish their work because they want to share their results. It is however true that a high proportion of published research is performed in the USA and developed world.[23] For researchers from South Asia and many other developing countries and LRCs it is difficult to get their work published due to a number of reasons. The perception exists that information from less-developed countries is of little, or no, interest to people from the developed world. For researchers from many parts of the world there is also the language barrier to overcome when publishing their work.[21] If English is not the first language researchers may be apprehensive about submitting their papers to English-language journals.[21] It is not only language that presents a barrier to get work published, but also the lack of knowledge about how to write a research paper.

Over the last few years journals have increased their use of electronic technologies for publication, manuscript submission and manuscript review. For

many researchers from developing countries and LRCs who do not have access to computers, email or the Internet, this has posed another barrier to publication.[24] High subscription costs limits access to journals and also discourages researchers to submit their work to journals that do not seem to be making an effort to appeal to the resource-poor in the world.[21]

Conclusion

It is clear from the literature that a number of barriers to the availability and accessibility of health information exist for researchers in the developing world. A recent position paper from the World Health Organization – *Improving access to health information in the developing world: a position paper for WHO* reviews the current situation regarding access to health information in LRCs.[25] This report recognises access to healthcare information as a "key international development issue" as health care providers and key decision makers in developing countries need information to "deliver the best possible health care with available resources", and that the majority are not better served than they were 10 years ago. The report recognises that known and assumed barriers include:

- Lack of physical access to health information (slow or unreliable internet connections, high cost of supplies and technology, high journal subscription costs),
- Lack of awareness of currently available health information resources,
- Lack of relevance of available information to developing country settings,
- Lack of time and incentives to access information, and

- Lack of training and skills to access and interpret it

Other barriers also noted in this review, include:

- Language barriers, as many journals are published in English, for both accessing and publishing of health information,
- Lack of training and skills in doing research and writing reports,
- Lack of funding to access information and conduct research due to low GDP in developing countries.

The WHO report[25] also notes that barriers to access to information are poorly understood and the need for more research on these barriers. This thesis addresses this need by examining access and resources available to health researchers participating in the Cochrane Collaboration from low-resourced countries, and how the Collaboration could better meet the needs of these researchers.

Section B: Evidence Based Health Care and the Cochrane Collaboration

This section of the literature review, specifically examines the Cochrane Collaboration and its' relationship to health care information access and informed decision-making by health care providers, specifically "Evidence-based Healthcare".

Evidence-based Healthcare

Even in developed countries where access to health information is usually readily available there is a problem in that healthcare workers have to cope with an increasing amount of research evidence relevant to the quality of care provided to patients.[26] The amount of information currently available is fast becoming unmanageable and sometimes much of it is irrelevant to clinical practice.[27] This has become very obvious from a comparison of the time required for reading for general medicine, i.e. time enough to examine 19 articles per day, 365 days per year[28], with the time available, which may be less than an hour a week. This is combined with the increasing pressure to ensure that care provided to patients is based on the best currently available research.[26] This trend has been called "Evidence-based medicine".

Evidence-based medicine, or evidence-based healthcare is not really new as it can trace its philosophical origins back to the mid 19th century Paris and even earlier.[29] The phrase or term "evidence-based medicine" was coined in the 1980s at the McMaster Medical School in Canada.[30] Evidence-based healthcare (from hereon referred to as EBHC) is the conscientious, explicit and judicious use of current best evidence when making decisions about the care of individual patients.[29, 31]

The practice of EBHC is the integration of the best available research evidence with individual clinical expertise and patient values. Patient values refer to the unique preferences, concerns and expectations of each individual patient a clinician may encounter.

External evidence can inform the clinician, but it cannot replace the clinical expertise of the individual clinician. It is this expertise that enables the clinician to make the decision whether or not the evidence obtained is applicable to a particular patient, and how to incorporate it into the appropriate clinical decision. EBHC builds on, but can never replace clinical skills, judgment and experience.[29]

EBHC is not restricted to randomised controlled trials and meta-analyses. It involves the process of finding the best external evidence from systematic reviews, when they exist, or from primary studies in order to answer a clinical question. Because randomised controlled trials (RCTs), and especially a systematic review of several RCTs is much more likely to inform, and so much less likely to mislead, it has become the "gold standard" to judge if a treatment does more good than harm. [29, 31]

Even though the origins of EBHC are over 200 years old, it still remains a relatively young discipline of which the positive impacts are being felt in various spheres of healthcare. The practice of EBHC is a process of life-long, self-directed learning in which care for patients creates the need for clinically important

information about diagnosis, prognosis, therapy and other clinical and healthcare issues.

The practice of EBHC ideally follows a series of steps through which to get the evidence needed to make a decision. The process usually starts with a patient and ends with the clinician evaluating his or her efficiency and effectiveness in dealing with his patients.[29] The steps in the process are listed in the table below.

Table 1: Steps in the practice of Evidence-based Healthcare

1. Formulate answerable clinical questions
2. Search for the best externally available evidence
3. Critically appraise the evidence for validity and importance
4. Apply the evidence in clinical practice
5. Evaluate the clinician's performance as a practitioner of EBHC

What is a Systematic Review?

Reviews of research are tools that allows healthcare workers, policy-makers, consumers and researchers to keep up with the ever-increasing amount of information in their field of interest.[27]

A systematic review provides for a more objective appraisal of the evidence than a traditional review of the literature. It also helps us get the best, most compelling, as well as most current evidence from research.[32] The following terms are used concurrently to describe the systematic reviewing and integration of research evidence: systematic review; meta-analysis; research synthesis; overview and pooling. Chalmers and Altman in 1995 defined a systematic review as a review

that has been prepared through a systematic approach in order to minimise biases and random errors which is documented in a materials and methods section.[33] A traditional review article usually has no standard format and often no quantitative synthesis of data.

The effort to produce summaries of research in order to help healthcare workers, who have to struggle with the amount of information available, is not new. In 2000 Chalmers and Tröhler drew attention to two publications from the late 18th century in Leipzig and Edinburgh[34], *Commentarii de rebus in scientia naturali et medicina gestis* published in Leipzig, Germany, between 1752 and 1798, and *Medical and Philosophical Commentaries,* the first English-language journal of abstracts of books relevant to clinicians. The latter was launched in 1773 in Edinburgh. Both publications contained critical appraisals of important books in medicine, for example, William Withering classic *Account of the foxglove* (1785) that discussed the use of digitalis in the treatment of heart disease. These journals were the forerunners to the modern day secondary publications such as the *ACP Journal Club* and *Evidence-Based Medicine.*

In 1904 Pearson rationalised the pooling of studies in his paper on the preventive effect of serum inoculations against enteric fever as follows:
"Many of the groups ... are far too small to allow of any definite opinion being formed at all, having regard to the size of the probable error involved".[35] These methods were, however, not widely used until much later. In the social sciences

there was a much earlier interest in the synthesis of research findings.[36] The psychologist Glass coined the term "meta-analysis" in 1976.[37]

A systematic review is in itself a scientific investigation based on a clearly set out research protocol that renders the review process transparent.[38] It is a review of a clearly formulated question that uses systematic and explicit methods to identify, select and critically appraise relevant research and to collect and analyse data from the studies that are included in the review.[39] This type of review allows a person to establish whether the findings of randomised controlled trials are consistent and can be generalised across different populations and settings.[40] A systematic review allows a researcher to combine the results of any number of trials into one single result, using strategies that limit bias and random error. The end-result reduces the number of documents that need to be read before a clinician can reach a conclusion.

During the process of writing a systematic review the reviewer should first prepare a detailed protocol. Within this document will be a clearly defined question and criteria for the type of studies to be included in the review. While systematic reviews can of course be conducted outside the Cochrane Collaboration, this process will be illustrated here as conducted within the Collaboration as the Collaboration provides a set process by which reviews can be completed.[39] Within the Collaboration the protocol, as well as the review, is written making use of a special software package called Review Manager (RevMan).[39] Once the protocol has passed through a peer-review process the

actual Cochrane review can be conducted. The first step is to identify all studies that reliably address the question posed by the reviewer. In order to be able to do this, reviewers need have to have access to electronic sources of information from which to retrieve the relevant trials to include in the review. The next step in the process is the assessment of the quality of the identified studies; this is done according to criteria specified in the review protocol. The relevant data is extracted from the selected studies and entered into RevMan which has a built-in statistical component called Metaview.[41] The final step in the process is the calculation of the results and the interpretation thereof. The software package used was developed within the Collaboration, and is not based on any commercially available package. The language used during the review writing process is English. Once the review has been completed it again passes through a process of peer-review. Only after this has been done can the completed review be published in *The Cochrane Library*.

The Cochrane Collaboration

As described in the *Introduction* the Cochrane Collaboration is an international organisation that aims to help people make well-informed decisions about healthcare by preparing, maintaining and promoting the accessibility of systematic reviews of the effects of healthcare interventions. It can be said that the Collaboration is intrinsically linked to the progress and development of the art and science of systematic reviews.

The British epidemiologist, Archie Cochrane, in his book *"Effectiveness and efficiency. Random reflections on health services"* in 1972 pointed out that there exists a collective ignorance about the effects of healthcare.[3] He recognized the need for people to make informed decisions about healthcare and also that they do not have easy access to reliable, up-to-date reviews of the available evidence. This led to what can be seen as a pilot project for the Collaboration. In 1974 a project was started to systematically identify and collect all controlled trials in perinatal medicine into a register, called the *Perinatal Trials Register*.[41] The growth of this register was remarkable, and by the late 1980s had led to the preparation of about 600 systematic reviews.

In response to the call of Cochrane for systematic, up-to-date reviews of all the relevant randomised controlled trials of healthcare, the Research and Development Programme, which had been initiated to support the British National Health Service (NHS), made funds available to establish a "Cochrane Centre".[41] The UK Cochrane Centre was the first Cochrane Centre to be established, and opened its doors in Oxford in October 1992 with Iain Chalmers as the first director.[42] Six months later the New York Academy of Sciences organised a meeting that facilitated the spreading of the idea of a Collaboration throughout the world.[43] This led to the formal launch of the Cochrane Collaboration at the first Cochrane Colloquium held in Oxford in October 1993. During the next year six more Cochrane Centres were founded in Europe, North America and Australia. Since its inauguration at the first 1st Cochrane Colloquium in 1993 the Collaboration has rapidly evolved, but the basic objectives have remained the

same. The functioning of the Collaboration is based on the following ten principles:[2]

- Collaboration
- Building on the enthusiasm of individuals
- Avoiding duplication
- Minimising bias
- Keeping up to date
- Ensuring relevance
- Ensuring access
- Continually improving the quality of its work
- Continuity
- Enabling wide participation

Ten groups to prepare reviews within various areas of healthcare were established. The Collaboration was formally registered as a charity in the United Kingdom in May 1995.[41]

Since then the Collaboration has grown rapidly to a network of 12 Collaborative Centres across the world.

Table 2: Cochrane Centres across the world

Name of Centre	City and Country
Australasian Cochrane Centre	Melbourne, Australia
Brazilian Cochrane Centre	São Paulo, Brazil
Canadian Cochrane Centre	Hamilton, Ontario
Chinese Cochrane Centre	Chengdu, China
Dutch Cochrane Centre	Amsterdam, The Netherlands
German Cochrane Centre	Freiburg, Germany
Iberoamerican Cochrane Centre	Barcelona, Spain
Italian Cochrane Centre	Milan, Italy
Nordic Cochrane Centre	Copenhagen, Denmark
South African Cochrane Centre	Cape Town, South Africa
United Kingdom Cochrane Centre	Oxford, United Kingdom
United States Cochrane Center	Boston, Massachusetts, USA Providence, Rhode Island, USA San Francisco, California, USA

The United States Cochrane Centre was established in December 2002. This happened when the New England Cochrane Centre's two offices in Boston, Massachusetts and Providence, Rhode Island and the San Francisco Cochrane Centre merged to form a single entity with three offices. The Canadian Cochrane Centre is part of the Canadian Cochrane Network and Centre (CCN/C) which includes all 16 Canadian academic health science centres and collaborates with health researchers, health technology assessment groups, national consumer and health professional organisations, governments and other interested groups across Canada. The Nordic Cochrane Centre has established national branches of the Centre in Norway, Finland and Russia.

It is the responsibility of the Cochrane Centres to support the work of the other entities within the Collaboration. This is achieved through the provision of training and support to individual contributors within their respective geographical areas.[2] Centres also provide information to persons, or institutions,

wishing to learn more about the Collaboration, or wanting to become involved in its activities.

Of the 12 Centres, only three are in developing countries, namely the South African Cochrane Centre, the Brazilian Cochrane Centre and the Chinese Cochrane Centre.[2] Each of these centres is responsible for their own country, as well as several other countries, not only within their geographic region, but also those where the main language is the same. Developing countries not listed in Table 3 fall within the reference areas of the other nine Cochrane Centres. The Iberoamerican Cochrane Centre in Spain is responsible for the Spanish-speaking countries in Central and South America.

Table 3: Cochrane Centres in Developing Countries and their area of responsibility

Cochrane Centre	Countries
Brazilian Cochrane Centre	Brazil
Chinese Cochrane Centre	China, Hong Kong, Taiwan and Macao.
South African Cochrane Centre	Benin, Botswana, Cameroon, Comoros, Eritrea, Ethiopia, Gambia, Ghana, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Sierra Leone, Somalia, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe

Apart from the Cochrane Centres the structure of the Collaboration includes other entities as well. One such entity is the Collaborative Review Group (CRG). The core function of these groups is the preparation and maintenance of the systematic reviews.[44] Each of the 50 groups covers a specific healthcare topic as can be seen

in Table 4. The members of the groups have a shared interest in generating reliable, up-to-date evidence relevant on the prevention, treatment and rehabilitation of a particular health problem, or group of problems. The scope and functioning of the CRGs is described in what is called the Review Group Modules.[2] These modules are published in *The Cochrane Library.*

The Collaborative Review Groups each have an editorial base, which consists of a coordinating editor, a review group coordinator, and a secretary and in most instances a trial search coordinator. A register of all the controlled trials within the scope of the Review Group, is maintained at the editorial base by the trial search coordinator.[2, 41]

The systematic reviews produced within the CRGs are published in *The Cochrane Database of Systematic Reviews*. This database forms part of the collection of databases called *The Cochrane Library*, published for the Collaboration by John Wiley & Son, Ltd in the United Kingdom.

Table 4: Collaborative Review Groups

Cochrane Acute Respiratory Infections Group
Cochrane Airways Group
Cochrane Anaesthesia Group
Cochrane Back Group
Cochrane Breast Cancer Group
Cochrane Colorectal Cancer Group
Cochrane Consumers & Communication Group
Cochrane Cystic Fibrosis and Genetic Disorders Group
Cochrane Dementia and Cognitive Improvement Group
Cochrane Depression, Anxiety and Neurosis Group
Cochrane Developmental, Psychosocial and Learning Problems Group
Cochrane Drugs and Alcohol Group
Cochrane Ear, Nose and Throat Disorders Group
Cochrane Effective Practice and Organisation of Care Group
Cochrane Epilepsy Group
Cochrane Eyes and Vision Group
Cochrane Fertility Regulation Group
Cochrane Gynaecological Cancer Group
Cochrane Haematological Malignancies Group
Cochrane Heart Group
Cochrane Hepato-Biliary Group
Cochrane HIV/AIDS Group
Cochrane Hypertension Group
Cochrane Incontinence Group
Cochrane Infectious Diseases Group
Cochrane Inflammatory Bowel Disease Group
Cochrane Injuries Group
Cochrane Lung Cancer Group
Cochrane Menstrual Disorders and Subfertility Group
Cochrane Metabolic and Endocrine Disorders Group
Cochrane Methodology Review Group
Cochrane Movement Disorders Group
Cochrane Multiple Sclerosis Group
Cochrane Musculoskeletal Group
Cochrane Musculoskeletal Injuries Group
Cochrane Neonatal Group
Cochrane Neuromuscular Disease Group
Cochrane Oral Health Group
Cochrane Pain, Palliative Care and Supportive Care Group
Cochrane Peripheral Vascular Diseases Group
Cochrane Pregnancy and Childbirth Group
Cochrane Prostatic Diseases and Urologic Cancers Group
Cochrane Renal Group
Cochrane Schizophrenia Group
Cochrane Sexually Transmitted Diseases Group
Cochrane Skin Group
Cochrane Stroke Group
Cochrane Tobacco Addiction Group
Cochrane Upper Gastrointestinal and Pancreatic Diseases Group
Cochrane Wounds Group

Another entity within the structure of the Collaboration is Cochrane Fields. They also produce systematic reviews, but focus on dimensions of healthcare other than health problems. These may be the particular setting within which the care is provided e.g. primary care, or the type of consumer e.g. older people or child health, the type of provider e.g. nurses, or the type of intervention e.g. vaccines.[2] Cochrane Fields ensure that the priorities and perspectives within their area of interest are appropriately reflected in the work of the Collaborative Review Groups. This they do by commenting on systematic reviews that relate to their area of interest. Within the Collaboration there is also a Consumer Network. This network facilitates the involvement of consumers in the activities of the Collaboration. They also provide information for consumers.

In the process of conducting systematic reviews, reviewers make use of a range of different methods. In this process they draw on the work of the Cochrane Methods Groups. These groups have been formed to improve the validity and precision of the systematic reviews. They also support relevant empirical methodological research and help to prepare and maintain systematic reviews of relevant methodological research.[41]

An Information Management System (IMS) consisting of various components supports all the activities within the Collaboration. The largest of these is *The Cochrane Library*, which is published every three months. Contained within it are *The Database of Systematic Reviews* and also the *Cochrane Controlled Trials Register*. This is a compilation of the individual Trials Registers of the CRGs. A

very important component of the IMS is the review writing software, RevMan. Another part of the IMS is the software used by the review groups to manage the group modules, namely ModMan. Both the RevMan and ModMan packages are developed and maintained by the IMS Directorate within the Collaboration. Also within the current IMS is a central database of contact details of all the contributors to the Collaboration. At the present time all of these components function separately. It is the vision of the Collaboration to link these components in the future in order to facilitate the smoother functioning of Collaboration activities.[5]

For the effective and efficient functioning of the Collaboration it needs the participation of a wide range of people from different backgrounds and cultures, who bring with them different types of expertise and knowledge.[45] This wide participation is one of the ten key principles of Collaboration, but also one of its main challenges in the 21st century.[2] To facilitate this we need communication strategies that are understood by those persons inside and outside the Collaboration.

To further the participation of reviewers the Collaboration distributed a Needs Assessment Survey to 3 833 individuals during 2001. Of these 15% were returned.[6] The country of origin could be determined as a developing country in less than 10% of the responses. In the initial Needs Assessment Survey almost all of the individual respondents (471/481, 98%) who answered the relevant questions regarding E-mail and Internet access had some form of access.[6] From

the initial survey it was not possible to identify any problems specifically affecting persons from developing countries. It was therefore necessary to get more clarity on this for individuals from developing countries.

These results prompted the need for the development of a special survey for these countries. In order to increase the response rate from non-English speakers it was also decided that the survey should be translated into a selection of languages should it be necessary. It was hoped that through the collection of reliable data from these countries it will be possible to tailor systems within the Collaboration in such a way as to elicit wider participation from people living in developing or LRCs.

Conclusion

It is clear that researchers in developing countries have an urgent need for the best, as well as, appropriate information in order for them to provide the health care profession with appropriate solutions to the health problems faced by the populations of these countries. In order for this to be possible it is necessary to identify the problems facing researchers in accessing information, and to formulate possible solutions as to how these problems might be overcome.

Chapter 3: Research Design and Methodology

Aims

To assess and describe the special needs and problems of health researchers related to the use, access and management of information as experienced by Cochrane reviewers living in developing or LRCs.

Objectives

Objective 1: To identify Cochrane reviewers living in developing or low-resourced countries.

Objective 2: To assess the needs and problems the reviewers encounter in completing systematic reviews in LRCs.

Objective 3: To use the results of the study to make recommendations on:

- How computerized Information Management Systems (IMS), and in particular the Cochrane IMS, can be improved
- Facilitation of easier access to information sources for researchers in LRCs

Study Design

A cross-sectional descriptive survey was used.[46] This study design was chosen because it provides an overview of a situation at a point in time. A well-conducted descriptive study can comprehensively describe the current state of affairs of, for instance, the accessibility of health information to researchers.[47],[48] The strength of this type of study is that it is possible to establish and describe the problem within a reasonably short space of time.[47] In this survey the target population is health researchers in developing countries or LRCs and the sample to be surveyed

are those researchers who participate in the activities of the Cochrane Collaboration. Through making the study descriptive it was possible to describe and quantify the extent of the problems or barriers being experienced by the study individuals.[47] Information gathered with a descriptive study can be used by planners to allocate resources in an appropriate manner. In this study the information gathered is to be used to develop efficient information systems specifically within the Cochrane Collaboration. An inherent weakness of a descriptive study is that it can be difficult to identify causal factors that could assist in the design of an intervention plan to overcome the difficulties and problems identified.

Sampling Procedure

The sampling procedure used was that of non-probability sampling.[49] During this type of sampling process the sample is not selected according to the principle of statistical randomness. For the current study the sample was chosen according to the availability of certain individuals. This type of sampling has negative implications in that the statistical theories of probability do not apply to non-random samples. It is also not possible to know the degree to which properties of the sample can be used to describe the properties of the population. There are however advantages to this type of sampling in that it is not as costly as probability sampling.

The survey was applied to a very distinct study population, namely people living in developing or LRCs who were already participating in the activities of the

Collaboration. Classification criteria as set out by the World Bank were used to identify eligible countries.[1] The individual members of the study population were identified by scanning the participant lists of the most recent annual meetings of the Collaboration, the Cochrane Colloquia, i.e. the 8th Colloquium held in South Africa in 2000, the 9th Colloquium held in France in 2001 and the 10th Colloquium held in Norway in 2002. In addition to this the Contacts Database of the Collaboration was used to identify those members living in eligible countries. The three Cochrane Centres based in developing countries, (Brazil, China and South Africa), were also asked to supply names of current reviewers within their geographical reference areas. All names were collected in an Access database in order to avoid duplication of survey participants.

The survey was sent to all persons identified in the above manner by E-mail on 17 January 2003.

Sample Size

It was anticipated that a minimum of 300 persons would be identified from the various sources of information cited in the previous section, but eventually 468 individuals were identified from the various sources, of these 409 individuals (87%) with e-mail addresses were identified and survey questionnaires were distributed to them. The original 2000 Cochrane needs assessment survey was distributed to a population of 3 833 individuals. The result from this was a response rate of 15% (575/3 833). With this study we estimated a similar response rate i.e. 61 out of 409.

A review of the sample response rate can be found in the Results section

Questionnaire development

The current survey was based on the original questionnaire used for the Collaboration-wide Needs Assessment done in 2000. A working group representing a wide range of constituencies within the Collaboration developed the original survey during 2000. The group functioned mostly by E-mail. The original survey was divided into sections relating to different aspects of the Information Management System.[6] Respondents could skip sections that were not relevant to them. The original survey was piloted by sending it to the members of the RevMan Advisory Group (RAG) and the Information Management System Group (IMSG) of the Cochrane Collaboration. The original survey was designed from the responses received to the pilot survey.

The current questionnaire was again piloted by sending it to the members of RAG and IMSG for their input and comments.

The following are some of the possible problems and obstacles faced by people from developing countries or LRCs as discussed previously: [21]

1. Language
2. Internet Access
3. Computer availability

These concepts were used to guide the adaptation of the original survey tool for this study. The survey questionnaire for this study was divided into 3 sections:

- Section 1: Information about the respondents, i.e.

- Country of residence
- Whether there is a Cochrane Centre in the respondent's country of residence
- First language and respondent's competence in using English
- Computer system used
- Internet and E-mail accessibility
- Cost of Internet and E-mail access

- Section 2: Specific experiences of current participants in the activities of the Cochrane Collaboration
  - Access to *The Cochrane Library*
  - Satisfaction with the format of Cochrane Systematic Reviews
  - Satisfaction with, and experience of the software used to prepare reviews
- Section 3: Opinions about the current Cochrane Information Management System.

Both closed and open questions were included in the questionnaire. The open questions were included to give respondents the opportunity to voice their opinion of the current Information Management System (IMS).

A copy of the survey tool can be found in Appendix A.

Data Collection

The questionnaire was designed so as to take no longer than 20-30 minutes to complete.

The questionnaire was disseminated using E-mail. Accompanying the questionnaire was a covering letter (Appendix B). The letter explained what the survey was about and invited people to take part. It also included a paragraph about the incentive for completing the questionnaire. The latter was printed in bold so as to catch the eye of the reader. The covering letter went out with the initial mailing as well as with all subsequent reminders sent at two weekly intervals to those participants who had not yet returned a completed questionnaire. In order to give more people the chance of completing the survey the initial closing date of 28 February 2003 was extended by two weeks. A final reminder was sent out two weeks prior to the closing date.

The distribution of the survey drew on evidence in a Cochrane methodology review of methods to influence response to postal surveys, one of which is providing an incentive for the completion of a survey.[50, 51] The UK Cochrane Centre kindly provided two one-year subscriptions to *The Cochrane Library* as incentives. E-mail addresses of all respondents were numbered and two numbers were randomly selected from this list to receive the subscription.

When English was not an individual's first language and he/she found it difficult to complete the questionnaire, assistance was available. This was in the form of

the translation of the questionnaire into the person's first language. Only one person from Brazil requested the translation of the questionnaire into Portuguese.

Ethics and Confidentiality

The Cochrane Collaboration Steering Group (CCSG) approved the Collaboration-wide survey conducted in 2001. The Cochrane Information Management System Group, the latter being an advisory group to the CCSG, approved the current survey flowing from the original survey. The University of the Western Cape Higher Degrees Committee also approved the mini-thesis protocol.

All participants were fully informed about both the background and the purpose of the study. This was done by means of a detailed description of the survey on the first page of the questionnaire (Appendix A). This included a section on how the data collected would be used. All recipients of the survey had the option to refuse to complete the questionnaire. The return of a completed questionnaire was considered as consent to participate in the survey. Those participants who chose not to complete the survey were given the opportunity to indicate why. The names and details of persons participating in the assessment were not made available to a third party without the prior written consent of the participant. On the survey questionnaires participants were given the option to provide their contact details. Participants were assured that non-response would not impact on their ability to participate in the Collaboration.

Analysis

The data collected was both quantitative and qualitative.[52] Both these methods are used for analysis as they complement each other. The quantitative analysis of the data provides a measurement of the involvement of researchers, whereas the qualitative data provides a clear description of their individual experiences in a range of situations. With qualitative analysis it is possible to discover the unique narratives as provided by the respondents to the survey. [53] Data analysis of frequencies was carried out using SPSS and the results presented in the form of tables. Where narrative information was given, it is presented in the form of summaries in MSWord. A thematic content analysis was conducted to identify themes in the answers to open-ended questions. This involved the identification of as many themes as necessary to describe the answers. [52, 54]

Data Processing and Data Quality

Once the completed questionnaires were received the data was recorded in both Excel and SPSS so that the data quality could be determined.[46] During this process the data was checked for completeness. Where a field with missing data was noted on the data collection sheet, it was compared with the original questionnaire and data inserted or the field tagged as *"No response"*.

Validity and Limitations

The survey was limited in that only those potential subjects for whom a current E-mail address was available were included in the study. This may exclude participants who are likely to have the most limited capacity and resources.

However, use of E-mail was the only practical method for contacting persons who were located in many regions of the world based on the time frame required by the Collaboration. Another factor, which influenced the decision to exclusively use E-mail as the means of communication, was that in order for a person to return a postal questionnaire they would incur postage. It would have been impossible to calculate the return postage costs from many of the countries in the survey and the postal services may also not have been reliable.

Response rates

In the Collaboration-wide survey the response rate from individuals was 15%.[6] Based on this it was not expected that this survey would have a higher response rate. Responders and non-responders were compared according to their country of residence. This gave an indication of the representation from the various developing countries. Where representation for a particular country was low, non-responders were contacted again to try and elicit response. It can be hypothesized that when a person's first language was not English, this could have influenced them not to respond.

Review of the response rates is included in the results.

Logistics, Time Frame and Resources

The survey was commissioned by the Cochrane Information Management System Group and therefore forms part of the work of the South African Cochrane Centre. The process took approximately four months to complete. The South African Cochrane Centre provided the necessary resources.

Chapter 4: Results

Introduction

The results presented here are based on responses received by 31 March 2003. Although plans had been put into place to translate the survey into languages other than English, only one such request for translation into Portuguese was received.

Response rates

409 individual survey questionnaires were distributed via E-mail. Three E-mail reminders followed this. Fifty-two (52) surveys were returned due to problems with the E-mail address. Completed surveys were received from 80 of the 357 E-mails not returned with address problems.

The response rate was calculated according to the following formula:

$$\text{Response rate} = \frac{\text{Number returned}}{\text{N in sample} - \text{Number unreachable}} \times 100$$

$$\text{Therefore response rate} = \frac{80}{409 - 52} \times 100 = 22\%$$

The survey was sent in error to one person living in Iceland. Had he not replied pointing out that Iceland is not a developing country, it would have been recorded as a non-return. The response rates for individual countries are listed in Table 5.

Content of responses

The survey was divided into 3 Sections. The results from Section 1 provided information on who the respondents were, where they came from and where they fit into the structure of the Collaboration. Section 2 dealt with the experience of

those persons who had already completed a Cochrane systematic review, or were in the process of writing a protocol or a review. Section 3 addressed the current Cochrane Information Management System.

All respondents completed section 1 of the survey. Sections 2 and 3 were only completed by those who felt they had experience of the Cochrane Information System. Therefore the total number of respondents for Section 2 and 3 changes from 80 to 55.

Section 1

Who are the Contributors from Developing or Low-resourced Countries?

Countries, Languages and Reference Cochrane Centres

One of the barriers identified in the review of the current literature is the fact that for researchers from developing countries or LRCs English might not be their first or even second language.

The country with the highest number of respondents was South Africa, which is closely followed by Brazil. This correlates with the number of reviews from both South Africa and Brazil. This can be ascribed to the fact there are Cochrane Centres within both these countries.

The country of residence of 51% of respondents was South Africa, followed by Brazil (12%). All countries are listed in Table 5 together with the response rates from the individual countries. One individual indicated the United Kingdom as

his country of residence, but explained that he was originally from Argentina, but at the time of completing the survey was working in the UK.

The respondents represent 26 different countries and 23 different languages. English is the language of 40% (32/80), this is followed by Portuguese (15%, 12/80) and Spanish (6%, 5/80). The majority (93%, 75/80) of respondents indicated that they are comfortable using English for the preparation of systematic reviews.

Table 5: Response rates from individual countries

Country	N sent to this country	n respondents from this country	% respondents from this country
South Africa	174	41	24
Brazil	34	9	26
Zimbabwe	6	3	50
Argentina	10	3	30
India	3	2	66
Chile	3	2	66
China	5	2	40
Egypt	5	2	40
Kenya	7	2	28
Portugal	10	2	20
Cameroon	2	1	50
Hungary	9	1	11
Iran	1	1	100
Israel	1	1	100
Korea	1	1	100
Lebanon	2	1	50
Mexico	2	1	50
Nigeria	7	1	14
Seychelles	1	1	100
Syria	1	1	100
Thailand	10	1	10
Venezuela	1	1	100

Note: Table 5 lists only those countries from where responses were received.

In 65% (52/80) of responses there is a Cochrane Centre in the country of residence of the respondent. For the remaining 35% (28/80) of respondents their reference Cochrane Centre is in another country. Eighty-four percent (67/80) of respondents knew which Cochrane Centre was their reference centre.

Table 6 shows the Cochrane Centres indicated as reference Cochrane Centre by respondents.

Table 6: Reference Cochrane Centres

	n	%
South African Cochrane Centre	46	58
Brazilian Cochrane Centre	9	11
UK Cochrane Centre	9	11
Iberoamerican Cochrane Centre	7	9
Australasian Cochrane Centre	4	5
Chinese Cochrane Centre	2	3
Australasian Cochrane Centre	1	1
German Cochrane Centre	1	1
New England Cochrane Centre	1	1
TOTAL	80	100%

Not all the Cochrane Centres listed in Table 6 are based in developing countries. This is so because there are some developing countries that are the responsibility of Cochrane Centres in developed countries, as has been described in Chapter 2 in the discussion on the structure and function of the Collaboration.

Entity Membership

In the questionnaire people were asked to indicate how long they had been in a particular position in an entity within the Collaboration. At the time of the data being recorded it was realized that it would be of more value to know how many persons from developing countries or LRCs are in particular positions rather than

the length of time of involvement. From the results it can be clearly seen that some participants hold more than one position within the Collaboration.

It is clear from the results that the majority of respondents are either reviewers, (50/80, 63%) or co-reviewers (27/80, 34%). These two categories are followed by consumers (15/80, 19%), peer reviewers (11/80, 14%), and editors (7/80, 9%). A reviewer can be defined as the person responsible for preparing and, in the case of Cochrane Reviews, keeping the systematic review up-to-date. A co-reviewer assists the principal, or lead reviewer, during the review process, and contributes some unique expertise to the process. Consumers can be divided into two groups, namely general consumers and consumer advocates. General consumers are people who use, are affected by, or who are entitled or compelled to use a health related service, whereas consumer advocates are consumers actively involved with other consumers and able to represent the perspectives and concerns of that broader group of people.

When we look at the distribution of respondents amongst the various Cochrane entities we see that 52/80 (65%) are a member of one or more CRG. It should be noted that one person might be a member of more than one entity, depending on his or her interest.

Table 7: Cochrane Entities

Entity	n	% (n/80)
Collaborative Review Group	52	65
Cochrane Field	4	5
Consumer Network	10	23
Cochrane Centre	19	16
Methods Group	4	5
None of the above	14	18

Of the Collaborative Review Groups the one with the highest membership is the Pregnancy and Childbirth Group (10/80, 13%) followed closely by the HIV/AIDS Review Group (8/80, 10%). This correlates with the Pregnancy and Childbirth Group being the biggest CRG within the Collaboration with 382 members of whom 65 (17%) are from developing countries. Thirty-four of the 221 reviews conducted by this CRG have a lead author from a developing country listed in *The Cochrane Library*.[55, 56] Respondents reported low involvement among other Entities with only 4 respondents involved in Methods Groups (4/80, 5%) and Cochrane Fields (4/80, 5%) and 10 in the Consumer Network (10/80, 13%).

Access to Computers, the Internet and Email

All respondents have access to a computer. This is to be expected as response to the survey was only computer based. Fifty-eight percent (46/80) of respondents are using Windows 95/98 as their computer operating system. Windows NT and Windows 2000 are used by 43% (34/80) of respondents. None of the respondents are using MacIntosh and only 5% (4/80) do not know which computer operating system they are using. There are 3 people who indicated that they are still using DOS as their computer operating system. From the results in Table 8 it can be seen that more than one computer operating system is used by some of the respondents. This is due to them using different computers at their place of work and at home.

Table 8: Computer operating system used

	n	% (n/80)
WIN 95/98	46	58
WIN NT/2000	34	43
UNKNOWN	4	5
DOS	3	4
WIN 3X	1	1
LINUX	1	1
WIN XP	1	1
Total	90	113

Note: One person may use more than one operating system if he is using a computer both at home and at work.

The majority of the respondents have some form of access to the Internet (WWW). The type of connection used by respondents is mostly permanent access with a few accessing the WWW using a dial-up connection, and thus also when using E-mail. One person indicated that he only has access to the Internet and E-mail at an Internet Café. Access to both the Internet and E-mail is available to a number of respondents both at home as well as at their place of work. The modes of access are both permanent connections as well as dial-up connections. Some respondents have both modes of access as they have permanent access at work and a dial-up connection at home. Eleven percent (9/80) of respondents shares a personal computer (PC) at work. The speed of access for 42% of respondents is medium. Respondents were asked to give the actual speed of access (in Baud per minute), if they knew that. This was not reported by any of the respondents. The cost of access is charged in 50 % of cases and free for the other 50%.

Table 9: E-MAIL access, speed of access and the place of access

	Permanent Email access (n/80)	Dial-up Email (n/80)
Fast connection	30	8
Medium connection	15	16
Slow connection	2	6
Speed unknown	4	6
Personal PC at work	26	7
Shared PC at work	4	5
Home PC	1	9
Home & work PC	18	14
Internet Café	1	1
Cost - Free	36	10
Cost - charged	20	30
Cost - unknown	0	0

Table 10: INTERNET (WWW) access, speed of access and the place of access

	Permanent Access (n/80)	Dial-up Access (n/80)
Fast connection	24	5
Medium connection	21	16
Slow connection	3	7
Speed unknown	4	7
Personal PC at work	26	5
Shared PC at work	6	4
Home PC		9
Home & Work PC	21	15
Internet Café		1
Free access	38	7
Charged access	18	30
Unknown cost	1	1

Access to The Cochrane Library

The modes of access to *The Cochrane Library* are varied. The majority of respondents 53% (29/55) receive a free CD-ROM copy because they have already completed and published one, or more, systematic reviews. Nineteen persons have free access to *The Cochrane Library* because it is available free to all residents in their country. Only 5% (4/80) of respondents indicated that they have obtained personal licenses to either the CD-ROM or the online version. Of all respondents only 10% (5/80) indicated that they have no access to *The Cochrane Library.* It is possible to have access through more than one route.

Table 11: Modes of access to *The Cochrane Library*

	n	% (n/80)*
I don't know if I have access to *The Cochrane Library*	5	6
I do not have access to *The Cochrane Library*	12	15
I have free access online because it is available in my country	19	24
I have free access online because this is available for members of my Cochrane entity/group/organisation/institution	17	21
I have free access on CD-ROM because this is available for members of my Cochrane entity/group/organisation/institution	9	21
I have free access on CD-ROM because this is available for all reviewers with reviews published in *The Cochrane Library*	29	36
I have charged access online because I have a personal license	1	1
I have charged access on CD ROM because I have a personal license	3	4

**It is possible to have access through more than one route so totals = more than 80.*

Section 2

Review Preparation

Section 2 of the survey dealt primarily with the preparation of reviews and was thus only applicable to those persons who had already completed a review, or are in the process of doing so. This section was completed by 69% (55/80) of the respondents. Proportions (%) in this section were calculated using N=55.

For reviewers to be able to complete a review they have to have access to basic resources like RevMan, the software used to write a Cochrane systematic review, and the Cochrane Reviewer's Handbook. These can obtain in a variety of ways. Table 12 indicates where and how these were obtained.

Table 12: Methods how basic resources for review preparation were obtained

	n	% (n/55)
From Cochrane Review Group	30	55
From Cochrane Centre	24	44
*Before contacting a Cochrane entity	4	7
Other Methods	2	4
No Response	1	2

*This could be downloading material from the Internet or obtaining the materials from a colleague.

When asked about their satisfaction with RevMan as software for the writing of reviews 60% (33/55) indicated they were satisfied, 16% were neutral and 18% were either dissatisfied or very dissatisfied with the software.

Table 13: Satisfaction with RevMan for the writing of protocols and reviews

	n	% (n/55)
Did not use RevMan	1	2
Very satisfied	7	13
Satisfied	26	47
Neutral	9	16
Dissatisfied	8	14
Very dissatisfied	2	4
No response	2	4
TOTAL	55	100

Some of the problems experienced were given in the open-ended questions within Section 2 of the survey and will be presented later in this chapter.

Twenty-seven of the 31 reviewers who exclusively used RevMan to prepare their review indicated that they would do the same if preparing another review. Of those who used other software in conjunction with RevMan, five of seven will do the same, and nine of 13 will use another word-processing package to prepare the text of the review and RevMan only to submit the review to their Collaborative Review Group. Eighteen percent (10/55) were not sure whether or not to use the same method again.

Table 14: Review preparation method used and whether this method would be used again. (n/55)

	Only RevMan (n)	RevMan & other software (n)	Other Software – RevMan to submit to CRG (n)	Other method (n)
Do the same	27	5	9	2
Won't do the same	2	0	0	0
Not sure	3	2	4	1
TOTAL	32	7	13	3

The main language used for review preparation was English (49/55). Four reviewers used English together with another language and two translated the text before submitting the review. Forty-eight reviewers indicated that they would again only use English when writing their review.

Table 15: Language used for text of the review and whether the same would be done for future reviews (n/55)

	English only (n)	English & another language (n)	Another language & translate at end (n)
Do the same	48	3	1
Not the same		0	1
Not sure	1	1	0
TOTAL	1	4	2

During the process of preparing a Cochrane systematic review it is necessary to share the text of the review between co-reviewers, and also between reviewers and the CRG of the review. This can be done using various methods. The preferred method is sending the text as a RevMan attachment via E-mail. This was done in 53% of cases for sharing with co-reviewers and 69% for sharing with CRGs. Between reviewers the second most used method of sharing information is an E-mail attachment in a format other than RevMan (38%), this is followed by sharing it personally (36%), and finally sending it as plain mail (25%). When it comes to the software used for carrying out analysis and preparation of graphs RevMan was most commonly used (60%, 33/55). Following this is STATA (9%, 5/55) and EpiInfo (4%, 2/55). In 25% of cases (14/55) it was indicated that no analysis was undertaken. RevMan was used from the start for the manipulation of references by 20/55 (36%). Following this is EndNote (10/55, 18%), Reference Manager (9/55, 16%) and ProCite (8/55, 15%).

The majority of respondents agree that reviewers should continue to use the same software package for the preparation of Cochrane reviews, while 14% disagree with this. When it comes to the software used for analysis and the preparation of graphs, the majority (85%) is in agreement that all reviewers should use the same package. There is a high percentage of agreement (98%) that for the submission of reviews to the CRGs all reviewers should use the same software.

Table 16: Should all reviewers be required to use the same piece of software to prepare the written part of Cochrane reviews?

	n	% (n/55)
Agree completely	31	56
Agree partially	22	40
No opinion	1	2
Disagree partially	0	0
No response	1	2
	55	100

Table 17: Should all reviewers use the same software for data analysis and preparation of graphs?

	n	% (n/55)
Agree completely	23	42
Agree partially	20	37
No opinion	4	7
Disagree partially	3	5
Disagree completely	3	5
No response	2	4
	55	100

Table 18: Should all reviewers use the same software to submit reviews to their editorial base?

	n	% (n/55)
Agree completely	34	62
Agree partially	11	20
No opinion	2	4
Disagree partially	3	5
Disagree completely	3	5
No response	2	4
	55	100

At present all Cochrane Reviews have a fixed structure. In the Collaboration-wide survey 80% (347/430) of respondents were in agreement that reviewers should continue to produce reviews with a fixed structure. In the current survey the sentiment of respondents were similar in that 98% (54/55) felt that the structure should stay fixed.

Qualitative Results

The results presented here are from the open-ended questions in Sections two and three of the survey. The full responses as taken from the returned questionnaires are given in Appendix C.

Question 2-9, 2-14 and 2-18 gave respondents the opportunity to list problems and suggestions regarding the software used for the preparation of systematic reviews within the Collaboration. From the responses there emerge a number of main themes with sub-themes or issues flowing from them.

The first main theme is the incompatibility of the software package RevMan with commercially available word processing packages such as MS Word. The sub-themes can be ordered as follows:

1. Text editing capabilities, including grammar and spellchecker, should be made similar to that of MS Word.
2. RevMan should be able to track changes in the same way as MS Word
3. More flexible regarding the cut and paste of review text.
4. As intuitive as MS Word
5. RevMan should be more user-friendly
6. Printing of table and graphs needs to be improved.
7. More control over the formatting of tables. At present the format of tables is fixed and only column width can be adjusted.
8. Inclusion of figures within the review text. This is currently only possible by putting the figures in a section called "Additional figures"

Note that the issues listed in 4 and 5 above are very closely related not only to each other but also to the training offered to users of the software.

The next theme emerging relates to the statistical component of RevMan. Here there are a number of issues that were listed.

1. The statistical models used in review should be expanded to include Random effects model.
2. Allowance should be made for covariants
3. Additional tables and graphs should be better displayed and printed.
4. Need the ability to perform cumulative meta-analysis

It should be noted here that issues 1-3 listed here have already been incorporated into RevMan.

A third theme that was identified is the compatibility of RevMan with commercially available reference management software packages. RevMan has a component with which reviewers are able to manage references. Several issues were listed regarding reference management:

1. Importing of references directly from electronic databases such as MEDLINE.
2. Commercially available packages like ProCite and EndNote have better resources for the management of bibliographic references.

The fact that respondents are not aware of some of the functions already available in RevMan is an indication of their lack of knowledge of the software. This is

related to the fourth theme identified, namely the issue of training, or the lack thereof. Respondents felt that as the package is not intuitive to use it is necessary for training to be provided. One respondent actually suggested that the package should be made "dummy-proof".

Respondents were asked to give the reason or reasons why they used software other than RevMan when writing their review(s). The reasons here again came back to the functionality of the software not being compatible with commercially available software and also not offering the same flexibility. Below are direct quotations from respondents which illustrate this point:

" *Because they (other packages) provide me with analysis and graphs that you can't have in RevMan"*

"RevMan did not allow for the meta-regression and presentation of adjusted results"

"Easier to work with MSWord, especially if English is not your first language"

"Used Word due to additional features for writing up not available in RevMan"

In response to the questions on how the Cochrane Collaboration's software used for sharing of reviews could be improved, the response followed the same pattern as before:

"*By making it more compatible with commonly used programmes"*

"Should be more intuitive"

"It could be similar to Word and Excel....."

The user-friendliness of the software was questioned and also the importing and exporting of reviews from RevMan.

Another aspect highlighted by respondents was the way the different versions of a review are tracked during the editing and review process. Some respondents indicated that the current system is confusing.

The issue of providing software free to all reviewers was also raised. RevMan is already provided free to all reviewers. One respondent not only asked for software but also computer hardware to be supplied by the Collaboration.

A number of reviewers indicated that they are happy with the software as it is at the moment.

"I like this type and have no opinion to change it"

"It is OK"

"Fine"

There were both negative and positive comments regarding the development of the Cochrane Collaboration's Information Management System. There is concern that the current system is too complex and that it is inaccessible, excluding people from developing countries. It is not always possible for reviewers from these countries to get a stable connection to the Internet to allow them to download the

necessary resources for the preparation of systematic reviews. The current cost of accessing information was another issue raised, and the suggestion made that more Cochrane Centres should be established within developing countries.

Some of the responses were:

"Train more professionals in developing countries on Cochrane Reviews since a number of them may not be informed of the same"

"Should always facilitate the participation / use by those based in countries where IT (information technology) *is not readily available"*

"There should be more accessible training on how to conduct reviews organised at regional level"

The final question in the questionnaire related to the design of the survey. Only 20 respondents gave their opinion to this question. The main issue emerging is the length of the questionnaire, and here there were conflicting responses. Some respondents found it too long and others were happy with the length. Another theme that emerged relates to the quality of the survey to which the response was overwhelmingly positive. It was also found to be inclusive of everyone.

The issue of the language of the questionnaire was also raised. Although the questionnaire was only distributed in English it was clearly stated that translations into other languages was possible. Only one request for translation into Portuguese was received.

Chapter 5: Discussion, Conclusions and Recommendations

Discussion

The research priorities for the health and development of developing countries are not the same as that of the developed world. This means that the information needed by the developing countries is not necessarily the same as that needed by the developed world. Much of the current information originates in developed countries. Spreading it is not an easy task, nor is it the complete solution to the information drought experienced by some researchers from developing countries or LRCs.

Review of the barriers or obstacles encountered accessing health information

The global spread of the Internet has brought with it the potential to achieve universal access to health information. This implies that access to relevant, up to date and reliable information for those who need it.[57] It has, however been established that a number of barriers to accessing health information, and indeed publishing research, exist for researchers living in developing or LRCs. Ten years ago the main challenge was to create information through research, now the main challenge is to make full use of what we know and to devise methods to get the knowledge and information to those who need it. Those researchers who work in developing countries still have to overcome many barriers and obstacles in order to get access to appropriate information for the setting they are working in. These barriers to accessing information and using it are sometimes still poorly understood.

Some known and assumed barriers to information for health researchers in developing countries or LRCs have been identified in the literature: [15, 25]

- Lack of physical access to information – this can be due to slow or unreliable internet connectivity;
- Lack of awareness of what is available;
- Lack of up to date scientific information;
- Lack of time and incentives to access information;
- Lack of skills to interpret the available information;
- Insufficient technical training and research tools; and
- Limited financial, material and human resources.

The participants in the Cochrane Collaboration

The country with the highest number of respondents identified in the current study was South Africa, closely followed by Brazil. This can be ascribed to the fact there are Cochrane Centres in both countries. The major language used by respondents is English. This does not however mean that English is their first language. Looking at the range of languages listed by respondents it is clear that there is a definite need for the translation of material not only into Spanish, but also into Portuguese and Chinese as well.

In addition, there are clearly countries or regions with a large research output that are not currently represented in large numbers in the Collaboration. For example, in India 40 local editions of international specialty journals are published [58], but only 3 collaborators (and 2 respondents) were identified from this large and populous region. Also of note is that although 70% of the Indian population live in rural areas and information on primary care is certainly needed, this

information is not provided by these journals. .[58] This again puts the emphasis on the access and availability of appropriate information.

Access to Computers, the Internet and E-mail

In this study respondents had access to computers, the Internet and also E-mail (due to sample design), however there were some restricting factors. For example, not everyone had permanent access to a computer and some had to share a computer with other colleagues. Erratic telephone, E-mail and postal services and limited Internet access were all potential limiting factors in the contact between reviewers and their CRGs.[21] In addition to sharing computers, many reviewers only had access to the Internet during working hours.

The type of access a person has to the Internet and thus also to E-mail can be a determinant of their access to the available information. Those with a permanent connection through an institution are more likely to have a faster connection than those making use of a dial-up connection. The latter will also not be the most stable type of connection, often breaking and causing significant frustration for researchers. The majority of respondents to the current survey did however indicate that sending reviews to both their co-reviewer and their CRG via E-mail was the preferred method. By making use of the alternative systems (such as the SatelLife system)[59] in Africa, communication opportunities for people to be able to access the Internet and E-mail could be greatly enhanced and would enable them to exchange data more easily with the CRGs.

Information and communication technology can greatly benefit the development of these countries and provide healthcare professionals access to much needed information.[60] It has been shown that systematically-harnessed information as well as communication technology can improve the health of populations in the developed world.[19] This last statement refers back to Figure 1: *Poverty and its influence on health research and the quality of health*, which illustrates how the availability of the best available information can improve not only the health services of a country, but also the health of its people.

Taking into account the actual benefit of efficacy and efficiency which can be obtained through introducing information technology in global health strategies, it is necessary to also recognize that the role of technology is directly dependent on context, that is where it is being implemented.[19] For the Collaboration this means that it will have to produce systematic reviews relevant to the context where the information is to be applied. In order to be able to do this there is the need to involve more people from these countries where information technology might not be as easily accessible.

One possibility for making information more accessible is SatelLife, a not-for-profit organisation founded in the United States. They aim to link health professionals and researchers in the developing world through the use of satellite, radio and where available, the telephone.[59] By making use of the SatelLife system health professionals can use the Internet through something called "store and forward technology". This system is not dependent on a continuous or "real-

time" connection for data exchange and thus costs less. SatelLife allows messages to be relayed from one point to the next along an electronic pathway, making use of either a satellite or telephone-modems, and in some instances both.[59]

MEDLINE and *The Cochrane Library* are only two of a range of databases providing health information. Of these MEDLINE is available free of charge to everyone with Internet access. In the current study the 36% (29/80) of respondents had some form of free access to *The Cochrane Library*. .

Once a review is published in *The Cochrane Library* the lead reviewer receives a free copy for as long as the review is kept up-to-date. In a number of countries there is national access because of a national subscription, e.g. South Africa. Not everyone is always aware that such free access exists. This was proven in South Africa through a survey of South African psychiatrists and general practitioners (GPs) to gauge their knowledge about evidence-based mental healthcare. In this survey it was found that 58% (89/153) of psychiatrists and 69% (106/154) of GPs who responded were unaware that they have free access to *The Cochrane Library*. Only 7% (11/153) of psychiatrists and 4% (6/154) of GPs had actually ever used it.[61] In the current survey 15% (12/80) respondents indicated that they don't have access with 6% (5/80) indicating that they don't know if they have access. Those that have indicated that they don't have access, may have national access, but are unaware of it. This puts the challenge to the Collaboration to promote national access where it already exists and to encourage those countries that do not have it to invest in such a subscription. If possible the Collaboration should work with

other groups and organisations that already have systems in place to provide information to those countries not as well resourced as those in the developed world.

Cochrane systematic reviews are being conducted in developing countries, but not to the extent that would satisfy the need for the best available, up-to-date-evidence on interventions appropriate for those countries. For researchers and Cochrane reviewers working in developing countries to be able to conduct appropriate research they need to have access not only to unpublished information, but also the original literature. This access can be in the form of access to online journals, journals available in local libraries and electronic databases of health and research information.

With the advent of electronic publishing, a number of journals are now available in electronic format. Unfortunately only those persons with access to the Internet can get access to these and then sometimes at a cost. There are at present a number of organisations that are engaged in projects that provide journals and other health information to countries classified as having the lowest Gross Domestic Product (GDP) by the World Bank.[1] They seek out information and try to enable the exchange of information. They have established an electronic network called HealthNet that tries to get around the problems of lack of library access and access to the Internet. HealthNet makes use of low earth orbit communications satellites and ground stations. This overcomes the problem of non-existent telephone lines through which the Internet can be accessed. At the

end of the previous millennium people in the poorest of countries had to wait for 10 years to get basic phone lines installed.[59]

There are also other ways in which information and in particular *The Cochrane Library* and electronic journals can be made more accessible, and even be provided free to those countries with the lowest GDP. A programme has been established within an existing non-profit organisation, the International Network for the Availability of Scientific Publications (INASP).[62] The main function of INASP is to ensure that developing countries are not left behind by the information revolution. In this regard they are negotiating access to an ever-increasing number of health related publications and databases for those countries falling into the low-income category as defined by the World Bank.[1] Another programme is the Programme for the Enhancement of Research Information (PERI) which consists of four components.[63]

These components are:

1. Delivering information: This provides access to scientific information through electronic means and includes more than 10 700 full-text journals online.
2. Disseminating national and regional research by providing access to and promoting regional and national journals.
3. Enhancing information and communication skills. PERI provides workshops to build the skills and expertise in the use of technology.
4. Strengthening publishing by offering training to enhance existing skills and to build the capacity in these countries.

In addition the British Medical Journal (BMJ) in 1995 investigated ways in which to improve dissemination of information to, from and within the developing world. In this regard they were one of the first journals to provide free online access to their journal globally. The BMJ also accepts systematic reviews conducted using Cochrane methodology for publication.

It can be said that progress has been made in many areas, i.e. the availability of information and telecommunication technologies, an increasing number and range of health information support programmes, and increased availability of free resources on the internet.[25] This progress needs to be sustained in order to realize the vision of universal access to relevant, reliable and up-to-date information on healthcare. In order to attain this goal there will have to be a concerted effort, cooperation and coordination among all stakeholders involved in the provision of healthcare and research information.

Review Preparation

The writing of systematic reviews is the main activity of the Collaboration. In order to progress with this process there are some basic resources that reviewers need, e.g. The Cochrane Reviewer's Handbook. Reviewers are able to obtain these resources in a number of different ways. They can either download them from the Internet themselves or ask their CRG to send it to them. The CRG can send it in either hardcopy or electronic format. In the current study the preferred method was to obtain the material from the appropriate CRG (30/55; 55%). For

both these methods reviewers need reliable access to the Internet, which as we have seen earlier is not always the case.

The preparation of Cochrane reviews means that reviewers have to use a software package written specifically for this purpose. This package is called RevMan and users require training in the use thereof. Providing training to users of RevMan is not made easy by the fact the majority of CRGs are based in the northern hemisphere and few in the developing countries in the south.

The most cited comment was a definite need for the software to not only be made more compatible with other commercially available software packages, and specifically MS Word, but also for it to more user-friendly. These issues have been referred to the RevMan Advisory Group to consider during the planning of the next version of the software. There is also the need to investigate the possibility of translating the software into languages other than English, e.g. Portuguese, Chinese, Spanish.

In the Collaboration-wide survey there was general satisfaction with the software as in the current study. The degree of dissatisfaction in the current survey was only 18% (10/55) which is slightly higher than in the first survey, 14% (63/430). Specific points of dissatisfaction were however detected in both of the surveys and this is cause for concern. It is clear that the most problems people experience is in the use of the RevMan software. The majority of reviewers tend to use a commercially available package such as MS WORD to write the text for both

their protocol and review before putting it into RevMan. In the first survey 54% (234/430) used MSWord and in the current survey this package was used by 73% (40/55) of reviewers.[6] This trend correlates with the suggestions given in the current survey as to how RevMan could be improved. Users prefer the commercial package because of the added advantages it has to track changes made during editing and they thus find it easier to use.

The Complete Information System

The structures of organisations and their information systems are seen as being highly interconnected.[64] This is also true for the Collaboration. As an organisation evolves and develops its organisational structure may change and its information system needs to change. The combination of hardware, software, data and communication forms the core of such a system. A view of evolving organisations is described by the five-typology structure.[64] These are based in part on the life-cycle of an organisation or business, and the competitive environment.

The five-part typology consists of the following:

1. Simple structures – These are characteristic of young businesses or organistions. They are usually small and operate in a niche market.
2. Machine bureaucracies – These are characterized by standardisation, functional structural design, and large size.
3. Professional bureaucracies – These rely on the standardisation of skills as a basis for coordination and have a high informational component.
4. Divisionalised forms – Integrated sets of semi-autonomous entities loosely joined by an administrative framework. These entities can be referred to as

business units. They can also be decentralized from the perspective of the total organisation.

5. Adhocracy – These can be construed as divisionalised forms held together by a strong culture. They are small and have the characteristics of a young organisation.

If we look at the current structure of the Collaboration it fits into two of these categories, namely Divisionalised forms, as well as Adhocracy. At the moment the components of the Collaboration's Information System are not linked with each other and function as separate entities described in the definition of Divisionalised forms. The database with the contact details of the Collaboration is separate from RevMan and each CRG editorial base has their own system whereby they manage reviews and bibliographic references. The system fits into Adhocracy because of the strong culture of collaboration between entities within the Collaboration.

For the Collaboration there is, however, no central control, or central sharing of resources. There is a desire for the system to be interlinked. Respondents to both the first survey a well as those in the current study expressed this. There are plans within the Collaboration to interlink the components of the Cochrane Information Management System. By interlinking the components of the Information System, users will have the advantage of a single point of entry into the system from where they will be able to access all the information currently spread over several access points.[5] This new system will provide global access to multiple users at any time.

Some of the comments about the current information system raised the concern that some respondents might not have a clear understanding of the current structure of the information system. The first survey did not pick up a strong desire for any of the components of the IMS to be developed in languages other than English, although there were requests for Spanish translation. In the current survey the picture was somewhat different with Portuguese the language mostly used other than English.

Study Limitations

Response rates

The final response rate of 22% to the survey was higher than was initially expected. In the light of the response rate of only 15% to the initial survey, it was expected that the response rate to this survey would be between 10 – 15%.[6] The response rates from the individual developing countries correlate with the number of reviews in the current issue of *The Cochrane Library* where the first, or contact author, is from these countries, suggesting that the sample is likely to be representative of the current distribution of Cochrane participants. Of the reviews coming from developing countries 44 are from South Africa, followed by Brazil with 29 reviews. This is evident from the annual analysis done of Issue 3, 2003 of *The Cochrane Library* by Phil Alderson of the UK Cochrane Centre.[55]

However, more than 200 individuals did not respond to the survey. It is unclear what could have been done differently to ensure a higher response rate. At the

present time it can be said that the data collected is the most reliable data currently available and can be used to assist the Collaboration to develop and enhance its IMS to assist both current and future contributors from developing countries.

Validity and Quality of Data

The survey was limited in that only those potential subjects for whom a current E-mail address was available were included in the study, so this might have excluded those participants who are likely to have the most limited capacity and resources. Use of E-mail was the only practical method for contacting subjects who were located in many regions of the world based on the time frame and logistics for this mini-thesis. It is important to increase and sustain the participation of person from developing countries in the activities of the Collaboration. Therefore the reason for why individuals did not, or could not, respond should be investigated.

Conclusions

Researchers from developing countries or LRCs who take part in the activities of the Cochrane Collaboration are mostly reviewers and concentrated in countries where there is a Cochrane Centre. This gives rise to the question of if there should not be more Cochrane Centres based in the developing world and to so encourage more researchers to produce systematic reviews.

Researchers in both developed and developing countries experience certain difficulties when conducting research. In some instances these problems are similar, but in others they differ. In the developed world the problem might be "information overload", but in developing countries it is the lack of the availability as well as access to relevant and up-to-date information. It is also clear that these barriers are not always well understood or properly researched.

Researchers from developing countries also lack the training and skills to enable them to interpret the information when they access it. In the case of Cochrane reviewers this is training in the use of software used for the writing of systematic reviews. If the Collaboration is able to rectify, or make this easier, it would not only help current contributors, but also make the organisation more attractive to prospective reviewers.

The use of the Internet is a valuable means to disseminate information throughout the world. However, in some developing countries there are enormous socio-economic differences limiting access to, and use of, the Internet. It is currently being harnessed to some extent to provide valuable information to the developing

world. The number of programs already set up to provide access to information for developing countries and LRCs is encouraging and has the potential to develop further through organisations such as SatelLife and the Cochrane Collaboration.

Recommendations

Based on the conclusions reached from the results of this study I would like to make the following recommendations for action by the Cochrane Collaboration:

1. Special effort should be put into getting more people from developing and LRCs involved in the various activities of the Collaboration, as well as assisting those already contributing to the Collaboration. This can be done through the different entities within the Collaboration. In this the regard they can build on the proposals that have already been put forward to the Cochrane Collaboration Steering Group.[65, 66]

2. The Collaboration should develop systems whereby people from developing countries can receive easy assistance during the process of preparing their review. The possibility of doing this through establishment of Reviewer Mentoring Programmes should be investigated. One such programme already exists as a joint venture between the HIV/AIDS Review Group in San Francisco, USA and the South African Cochrane Centre.

3. The possibility and feasibility of making the RevMan software package more compatible with commercially available software should be investigated. This should be done both in terms of word processing features, statistical analysis and the handling of bibliographic references.

4. The acquisition of national subscriptions to *The Cochrane Library* should be promoted. This should be promoted via the National Departments of Health of the various countries.

5. The Collaboration and its Centres should explore the possibility of collaboration with and supporting open journal access projects to benefit their members and reviews in developing or low-resourced countries.

6. The World Health Organisation is in the process of preparing a position paper on how access to health information in the developing world can be improved.[25] It is felt that the Collaboration should be a key player in the process as it is already established in a number of developing countries and accessing reliable, up-to-date health information is its core business.

7. In order to promote the activities of the Cochrane Collaboration in those countries where there exists the need for support in the development and practice of evidence-based health care it is recommended that more Cochrane Centres be established in developing countries. Alternatively a network of developing countries can be formed with all interested persons affiliated to it. Such a network could be registered by an existing Cochrane Centre where the necessary infrastructure for the administration of the network exists.

8. The barriers to getting research results from developing countries published, accessing published information by researchers from these countries and the use of the information is still poorly understood and warrants further research. From results of such research ways on how to overcome these barriers may then be developed.

Reviewers in both developed and developing countries experience certain difficulties when conducting systematic review research. In some instances the problems are similar, but in others they differ. For those from developing countries access to information and also access to training in the use of RevMan are the main problems. If the Collaboration is able to rectify, or make this easier, it would not just help current contributors, but also make the organisation more attractive to prospective reviewers. In this way, the activities of the Collaboration will be enhanced, ultimately enhancing wider participation and making it a truly global organisation.

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Appendix A: Questionnaire used as survey tool

NEEDS ASSESSMENT SURVEY FOR INDIVIDUAL PARTICIPANTS IN THE COCHRANE COLLABORATION BASED IN DEVELOPING COUNTRIES

Background

The production of Cochrane reviews is dependent on the flow of information between a large number of people and places. Since the Cochrane Collaboration was established in 1993, several tools and systems have been developed to help with this and to facilitate the electronic production and publication of Cochrane reviews and other material. These tools and systems make up the Cochrane Information Management System. This currently covers the review writing software (RevMan, with MetaView as its statistical component), the software used to compile information for submission to Update Software for publication on *The Cochrane Library* (ModMan), a contacts database (HIREx), and a comments and criticisms process. The Information Management System might be expanded to cover, among other things, software to help Collaborative Review Groups to compile their specialised registers and to track Cochrane reviews through the editorial process.

In April 2000, it was agreed that future development of the Information Management System should be planned on the basis of a Needs Assessment Survey of as many members of the Cochrane Collaboration as possible. This survey was intended to assess attitudes towards the current components of the Information Management System, development of these components and of new ones (e.g. software to help Collaborative Review Groups to compile their specialized registers or to track Cochrane reviews through the editorial process) and interlinking of the components so that changes to data in one component would lead to equivalent changes elsewhere in the System.

The survey was distributed to individual participants within the Collaboration in July 2001 and the findings have been helpful in planning the next steps. However, it was also recognised that more effort should be put into collecting data from participants in developing countries and people whose first language is not English. One of the recommendations following the initial survey, therefore, was that a further survey should be conducted to target these areas and that the new survey should be available in other languages, as well as English.

Purpose

As many participants in the Cochrane Collaboration from developing countries as possible are being surveyed to collect data that will guide the development of the Collaboration's Information Management System (see below for details of this System). Any such developments should take account of the perspectives of Cochrane Collaboration participants who are based in developing countries. This will help the System to meet its primary objective of facilitating the production of high quality Cochrane reviews, by maximising the use of resources and supporting reviewers.

Completing and returning the survey

The survey has been divided into sections relating to different aspects of the Cochrane Information Management System. We would be grateful for your answers to as many of the questions as possible. Please use additional paper if necessary. We very much hope that you will be able to spend the 20-30 minutes needed to complete this survey. If you are not able to complete the full survey, the most important questions are highlighted at the start of each section. The deadline for completion of the survey is **28 February 2003**. Completed surveys should be sent to Elizabeth D Pienaar. If you are not able to complete it, please send a message to epienaar@mrc.ac.za.as soon as possible.

If you would prefer to complete the survey in another language, please contact: epienaar@mrc.ac.za

If you decide not to complete this survey, please tell us why

---

Section 1: About You

1-1) How long (in months or years) have you had any of the following role(s) in the Cochrane Collaboration?

Complete all that apply

	Years	Months		Years	Months		Years	Months
Contact reviewer			Secretary			Consumer		
Co-reviewer			Centre staff			Peer reviewer / referee		
Review Group Coordinator			Field member			Hand Searcher		
Trials Search Coordinator			Methods Group member			Translator		
Coordinating Editor			Statistical Advisor to a Collaborative Review Group			Paid staff		
Criticisms Editor			Health Economics Advisor to a Collaborative Review Group			Unpaid		
Editor			Other methods advisor to a Collaborative Review Group					
Other , please specify								

1-2) Which types of Cochrane entity are you involved with?

Tick all that apply

Collaborative Review Group	
Field	
Consumer Network	
Centre	
Methods Group	
None of the above	

1-3) What part(s) of the Cochrane Information Management System do you use?

Tick all that apply

I do not use any parts of the Cochrane Information Management System	
RevMan	
Comments and criticisms	

1-4) In which country are you based?

1-5) Do you know which of the Cochrane Centres is the reference Centre for your country?

NO	
YES	
If YES, please specify:	

1-6) Is your nearest Cochrane Centre in the country in which you work?

NO	
YES	

1-7) Which Cochrane Review Group (CRG) are you a member of?

I am not a member of a CRG	
Please specify the CRG(s) of which you are a member:	

1-8) What is your first language?

1-9) Are you comfortable to use English when preparing a systematic Review?

YES	
NO	

1-10) What computer operating system(s) do you use?

Tick all that apply

I do not use a computer		Macintosh	
DOS		UNIX	
Windows 3.X		Linux	
Windows 95/98		I use a computer but don't know the operating system	
Windows NT/2000			
Other - Please specify			

1-11) What type of access to The Cochrane Library do you have?

I don't know if I have access to the Cochrane Library	
I do not have access to the Cochrane Library	
I have free access online because it is available in my country	
I have free access online because this is available for members of my Cochrane entity/group/organisation/institution (please specify type of entity, group, organisation, or institution: _____)	
I have free access on CD-ROM because this is available for members of my Cochrane entity/group/organisation/institution (please specify the type of entity, group, organisation, or institution: _____)	
I have free access on CD-ROM because this is available for all reviewers with reviews published in the Cochrane Library	
I have charged access online because I have a personal license	
I have charged access on CD ROM because I have a personal license	
I have access but do not know the type of it	
Other (Please specify)	

1-12) Please describe the availability of email to you

1-12a) Connection type

No access to email	
Permanent	
Dial-up (modem)	
Don't know	

If no access go to question 1-13

1-12b) Connection speed

Fast	
Medium	
Slow	
Don't know	

If you know the speed of your connection, please specify:

_____

1-12c) Location of computer for email

Personal PC at work	
Shared PC at work	
Home PC	
Home and work PC	

1-12d) Cost of the connection to you

Free	
Charged	
Don't know	

1-13) Please describe the availability of the World Wide Web to you

1-13a) Connection type:

No access to Web	
Permanent	
Dial-up	
Don't know	

If no access, go to Section 2

1-137b) Connection speed

Fast	
Medium	
Slow	
Don't know	

If you know the speed of your connection, please specify:

_____

1-13c) Location of computer for access to the World Wide Web

Personal PC at work	
Shared PC at work	
Home PC	
Home and Work PC	

1-13d) Cost of the connection to you

Free	
Charged	
Don't know	

Section 2: Experience of Cochrane reviewers (Please complete this section if you have prepared a Cochrane protocol or review.

If you have limited time, please answer at least the first two questions in this section, before moving on to section 3

Please tick ____ if this section is not relevant to you and move to Section 3

Aspects related to Information Technology other than the actual software used to prepare a Cochrane review

BACKGROUND: As well as using the software provided by the Collaboration to prepare a Cochrane review (RevMan), other tasks are involved in the conduct of a Cochrane review: a protocol/review has to be written/submitted in English, databases searched, paper copies of trials obtained, etc. The Cochrane Collaboration (through Collaborative Review Groups and Cochrane Centres) provides the support, resources and training to reviewers to do a Cochrane review but there may be room for improvement in these areas, in particular for Cochrane reviewers based in countries were information technology is not readily available.

(If you have prepared more than one Cochrane protocol or review, please answer these questions for one that you think is most typical of all your reviews.)

2-1 In which language(s) did you write your Cochrane protocol or review?

Only used English (i.e. used English from the start and throughout the process)	
Used English as well as another language as well (e.g. to share protocols/reviews with co-reviewers)	
Used a language other than English throughout the process and had the protocol/review translated into English to be submitted to my editorial base	
Did something else (Please specify)	

2-2 Would you do the same next time?

YES	
NO	
Not sure	

2-3 How did you acquire the basic resources (Cochrane Reviewers' Handbook, RevMan user guide, RevMan software) to prepare your Cochrane protocol or review?

Contacted a CRG and obtained the resources through the CRG editorial base	
Contacted a Cochrane Centre and obtained the resources through the Centre	
Acquired the resources before (or independently of) contacting any Cochrane entity (e.g. downloaded and used the material before any contact)	
Did something else (Please specify)	

2-4 How did you perform database searches (CRG register, CLIB, MEDLINE, EMBASE, etc) for your Cochrane protocol or review?

TICK ALL THAT APPLY

Through CRG - search results were sent as e-mail attachments	
Through CRG - search results were sent as hard copies	
Through Cochrane Centre - search results were sent as e-mail attachments	
Through Cochrane Centre - search results were sent as hard copies	
I performed the searches myself at the CRG editorial base	
I performed the searches myself at the Cochrane Centre	
I performed the searches myself somewhere else (at libraries for example)	
I did something else (Please specify)	

B Use of RevMan /other software to prepare Cochrane Reviews

Background: Cochrane reviews have a fixed structure, so that the same set of headings is used in each Cochrane review, and so that the same format is used for all tables, references, data types, analyses and graphs. The Cochrane Collaboration provides all Cochrane reviewers with software called RevMan to prepare systematic reviews. RevMan contains software called MetaView to produce the analyses and graphs for Cochrane reviews. RevMan is provided free of charge. At the moment, in order for Cochrane reviews to be published in The Cochrane Library, they must be submitted using RevMan. However, we know that some reviewers use other pieces of software to prepare their review and then transfer it to RevMan for submission. (If you have prepared more than one Cochrane protocol or review, please answer these questions for one that you think is most typical of all your reviews)

2-5) Should all Cochrane reviews continue to have a fixed, standard structure?

Agree completely		No opinion	
Agree partially		Disagree partially	

2-6) How did you prepare your Cochrane protocol or review?

I only used the software provided by the Cochrane Collaboration (i.e. used RevMan/Metaview from the start and throughout the process)	
I prepared the protocol/review in RevMan/MetaView but I used other software at the same time (i.e. transferred material when tables or graphs were to be prepared)	
I used other software throughout the process and only used RevMan/Metaview to submit my protocol/review to my editorial base	
I did something else - please specify:	

2-7) Would you do the same next time?

YES	
NO	
Not sure	

-8) How satisfied are you with RevMan for preparing protocols/reviews?

I have not used RevMan	
Very satisfied	
Satisfied	
Neutral	
Dissatisfied	
Very dissatisfied	

2-9) How could the Cochrane Collaboration's software for preparing protocols/reviews be improved?

2-10) What software did you use to write the text for your protocol/review before loading it into RevMan?

Tick all that apply

I used RevMan from the start	
Word	
Wordperfect	
Other - please specify:	

2-11) What software did you use to create the tables for your protocol/review before loading them into RevMan?

Tick all that apply

I did not create any tables		dBase	
I used RevMan from the start		Access	
Word		Excel	
WordPerfect		Other - please specify	

2-12) What software did you use to manipulate or store references for your protocol/review before loading them into RevMan?

Tick all that apply

I did not have any references		Endnote	
I used RevMan from the start		MeerKat	
Reference Manager		Excel	
ProCite		Access	
Other - please specify			

2-13) What software did you use to perform analyses and/or produce graphs for your review before loading them into RevMan?

Tick all that apply

I did not perform any analyses		Comprehensive Meta-analysis	
I used RevMan (MetaView) from the start		MetaWin	
Excel		EpiInfo	
STATA		Meta-Analyst	
SAS		Meta-Test	
S-PLUS/R		EasyMA	
StatXact		SPSS	
BUGS / WinBUGS			
Other - please specify			

2-14) If you used software other than RevMan and MetaView, why did you use it instead of RevMan or MetaView?

2-15) How did you share the whole or parts of your review with your co-reviewers?

Tick all that apply

I did not have any co-reviewers		Plain email	
Telephone or personal contact		Email with a RevMan attachment	
Mail of a paper copy printed from RevMan		Email with a non-RevMan attachment	
Mail of a disk containing a file from software other than RevMan		Mail of a disk containing output from software other than RevMan	
Mail of a disk containing output from RevMan			
Other - please specify			

2-16) How did you share your protocol/review with your editorial base?

Tick all that apply

Telephone or personal contact		Mail of a disk containing output from software other than RevMan	
Mail of a paper copy printed from RevMan		Plain email	
Mail of a paper copy printed from software other than RevMan		Email with a RevMan attachment	
Mail of a disk containing output from RevMan		Email with a non-RevMan attachment	
Other - please specify			

2-17) How satisfied are you with using RevMan for sharing reviews?

I have not used RevMan	
Very satisfied	
Satisfied	
Neutral	
Dissatisfied	
Very dissatisfied	

2-18) How could the Cochrane Collaboration's software for sharing reviews be improved?

2-19) Should all reviewers be required to use the same piece of software to prepare the written part of Cochrane reviews?

Agree completely	
Agree partially	
No opinion	
Disagree partially	
Disagree completely	

2-20) Should all reviewers be required to use the same piece of software for analysing data and producing graphs within Cochrane reviews?

Agree completely	
Agree partially	
No opinion	
Disagree partially	
Disagree completely	

2-21) Should all reviewers be required to use the same piece of software to submit Cochrane reviews to their editorial base?

Agree completely	
Agree partially	
No opinion	
Disagree partially	
Disagree completely	

2-22) If the Cochrane Collaboration provided support for commercially available software, what packages should it concentrate on

2-22a) for writing reviews?	
2-22b) for managing references?	
2-22c) for analysing data?	
2-22d) for producing graphs?	

Section 3: Your opinions on the Information Management System as a whole

3-1) Do you think that information within the Cochrane Collaboration (such as contact information for people, reviews, entity modules and registers of studies) should be linked together so that information stored in different parts of the system can be automatically shared between these parts?

Agree completely	
Agree partially	
No opinion	
Disagree partially	
Disagree completely	

3-2) What parts of the system should be linked together?

Tick all that apply

No parts should be linked		Module submission	
Contact details of people		Specialised registers	
Review preparation		Comments and criticisms	
Review tracking			
Other - please specify			

3-3) All parts of the Information Management System are currently produced as English versions only. Please tell us which other language(s), if any, should be used for any of the following parts of the Information Management System?

Contact details of people	
Review preparation	
Specialised registers	
Comments and criticisms	
Other - please specify	

3-4) Please give any additional comments you may have regarding the development of the Cochrane Collaboration's Information Management System

3-5) Please give any comments you may have on the design of this survey

There is no requirement that you provide your name and contact details but, if you do so, we will send you a copy of the report prepared following this survey. No comments will be directly attributed to the person making them, without their prior permission.

Name	
Email Address	
Postal Address	

Would you like to be sent a copy of the report prepared following this survey?

Yes		No	

Please complete and return this survey to Elizabeth Pienaar by 28 February 2003 at

E-mail: **epienaar@mrc.ac.za**

FAX: **+27 21 938-0836**

MAIL: E Pienaar
South African Cochrane Centre
PO Box 19070
TYGERBERG 7505
SOUTH AFRICA

Thank you!

Appendix B: E-Mail message sent out with the survey

From: Elizabeth Pienaar <elizabeth.pienaar@mrc.ac.za>
To: <Developing Country List>
Sent: Friday, January 17, 2003 09:25 AM
Subject: The Cochrane Collaboration and Developing countries

Dear colleagues and friends,

Needs assessment survey for individual participants in the Cochrane Collaboration, who are based in developing countries

You are important to the Collaboration and therefore we need to find out what can be done to make your work easier and even more enjoyable. So, please take the time to complete the attached survey for us. This will enable us to know what needs to be done to improve the Information Management System of the Collaboration so as to better suit you.

Completing the survey should not take you more than 20 - 25 minutes, but may just help with future review completion! I would appreciate it if you could please complete it and return it to me by **28 February 2003**.

There is also extremely good news: The names of every person who returns the survey will go into a lucky draw. Two persons will each receive a one-year subscription to The Cochrane Library courtesy of the UK Cochrane Centre. The subscriptions can either be CD-ROM or Internet depending on the choice of the recipients.

This is your chance to make your voice heard!

Thank you very much

Elizabeth Pienaar
Developing Country Representative: Information Management System Group

Appendix C: Open-ended question responses

Needs Assessment Survey for Individual Participants in the Cochrane Collaboration Based in Developing or Low-Resourced Countries:- Open-ended Question responses

2-9 How could the Cochrane Collaboration's software for preparing protocols/reviews be improved?

1. I have recently finished a trial of preparing abstracts of reviews in Arabic. The result was a CD that was found useful by many practitioners and consumers. Having a multilingual interface in CC software would make this work easier and help in distributing it to potential beneficiaries. (1)
2. Apply the technical features of WinWord (2)
3. Additional analysis (4)
4. Better printing of graphs
5. Better additional tables
6. Editing of the review should be made more user friendly in RevMan (6)
7. Would be useful to make more compatible with reference manager programmes for importing references. (7)
8. Fixed structure probably ideal, but I found the RevMan software very frustrating to work with – caused me to give up at times, sometimes with tears of frustration. (8)
9. By operating like other publishers who accept articles in a format that is available to the majority (14)
10. The links to tables and references are NOT intuitive, REVMAN IS NOT INTUITIVE AT ALL!

One battles with simple things like creating new tables, it was a PAIN! I FELT LIKE GIVING UP, IT WAS THE WORST PART OF PREPARING THE REVIEW!! Some of us do not know much (and could not really be bothered) about computers AND are busy clinicians, we would prefer simplicity, or at least an option to submit tables we are battling with for an expert to enter into RevMan. Besides I don't know many clinicians (who are not associated with Cochrane, with evidence-based medicine or who work outside the UK) who actually USE these reviews (I am talking here about clinicians who DO have access. Don't get me wrong, I agree totally with the philosophy and that is why I have gone through the pain of preparing a review! (16)

11. A more flexible platform for text editing. The possibility of a better interaction between RevMan and a citation editor. (17)
12. I find it difficult to use even after a workshop on the subject. The time between a workshop to enter the Cochrane reviews and the time to use RevMan is too long and I forgot just about everything.

    I do not find it self-explanatory and the Help bar is not that helpful either. Though I'm pretty used to computers and different kinds of software, I found RevMan not to be very friendly.... (19)
13. I have already have had contact with the new version that is being prepared and it seems better (20)
14. To provide tools for improvement to font and paragraphs. The fonts are very small and space of line very short. It is not easy to read the text of review. (23)

15. I have no opinion (25)
16. Random effects model should be included in the metaview (29)
17. Text editing capabilities (32)
18. I needed help from my co-reviewers to use it as I am not very experienced (34)
19. More flexibility with cut and paste (38)
20. By making it easier to (1) import and export references from bibliographic management programmes (e.g. Endnote), (2) merge different RevMan versions of reviews. (41)
21. The software can be made more interactive and not so fragmented. It should also be improved to include advanced formatting features. (42)
22. It could be more flexible. I couldn't include figures in my review, and had to only include the reference to them (and placed them on a website) (47)
23. I believe the feedback system needs to be improved.

    Standardise and provide always the date when the search or different searches were done.

    Make it easier to import and export references to Reference Manager.

    Full Windows XP compatibility

    Easier "track changes" facilities (e.g. similar to Word) and inclusion of comments from editors.

    Track editorial comments.

    A link that will automatically flag when a new and probably relevant RCT has been identified by the CRG.

A dummy-proof version control system that facilitates sharing documents with other reviewers without getting confused.

Automatic downloading of references from MEDLINE by using Unique identifiers or search methods (e.g. by author, date and page).

Ease access to PubMED and other databases (Bireme, SA MRC or HINARI) (48)

24. I am not very good with computers and prefer Windows based systems, as that is what I am used to. Perhaps the software could become more intuitive, like Windows. (49)
25. Make RevMan user friendly. As it is now it is not user friendly. One spends a lot of time with minor technical problems (50)
26. It should have more functions (51)
27. More like MS Word (52)
    a. Not familiar enough with it at this stage.
    b. Text editing functions should include Review tools – as in Word (55)
28. It needs to be more user friendly (56)
29. RevMan could be like a word processor. More control over table formatting – Allow to present complex tables (57)
30. Making it as compatible as possible with generally used software (59)
31. Improving friendship to use it (60)
32. Talvez uma versão em português? → Perhaps a Portuguese version? (61)
33. Editing functions needed
    a. Need to be able to do adjusted estimates
    b. Prettier forest plots (63)

34. Allow for analysis of covariants (i.e., regression analysis) (66)
35. The text editor and Metaview may be made independent of, but compatible with each other. Metaview should be more flexible (I will provide more specifics on request). Facilities for agreement statistics may be incorporated (67)
36. Couldn't view diagnosis etc. (77)
37. The software could be made to accept a wide range of symbols used in scientific writings, as well as graphs (where necessary) prepared in other software. (80)

2-14 If you used software other than RevMan and MetaView, why did you use it instead of RevMan or MetaView?

1. Because they provide me with analysis and graphs that you can't have in RevMan (4)
2. Because it is hard work to use graphs from RevMan to a paper publication
3. I wasn't told about RevMan at the start – I think this has been corrected now. (8)
4. The possibility of performing cumulative MA, the possibility of running a meta-regression. (17)
5. ProCite and Endnote have better resources and I was already used to using them (20)
6. I didn't use anyone (25)
7. Editing capabilities (32)
8. I wasn't the member of the team to do this. (34)
9. Easier to work with MS Word especially if English is not your 1st language (36)
10. For ease of manipulation of references (42)
11. As part of my MSc training, and because I was more familiar with that software at the time (48)
12. I find RevMan difficult to use (49)
13. Because it was easy to use Word to check grammar and spelling (50)
14. Familiarity with Word, and greater functionality of package (e.g. reviewing tools) (55)

15. RevMan did not allow for meta-regression and presentation of adjusted results (57)
16. Word – due to additional features for writing up not available in RevMan

    Reference Manager – required after downloading results from multiple database searching

    Excel – required for coding data for analysis that was carried out outside RevMan

    STATA – Because analyses could not be performed in RevMan due to type of measure of treatment effect chosen (59)
17. Used Word because of greater ease of use and flexibility (64)

2-18 How could the Cochrane Collaboration's software for sharing reviews be improved?

1. By allowing use of packages for data analysis that are easily accessible to all co-reviewers or providing user-friendly step-by-step guide of how to convert graphs from RevMan to other software and vice versa. I struggled to access RevMan myself as contact reviewer and my co-reviewers and could not view graphs because they too did not have access. (14)
2. RevMan needs to be made more idiot proof, it is true to say it does get easier the more one uses it but that is not good! It should be easy to use right from the beginning so more people can use it to mange clinical problems.(16)
3. A better way to detect changes in the review, similar to that one in Word. (17)
4. It could be more similar to Word and Excel. Too many different specifications, too many functions that you learn and never use – and when you need them, you have already forgotten them all. (19)
5. It is OK (20)
6. The graphs should be present in html and rtf versions. (23)
7. I like this type and I have no opinion to change it. (25)
8. Free export and import of any part of the review.(29)
9. By making it compatible with other commonly used programmes (41)
10. Easier to send – the zipping is an added complication for me (47)
11. We end up having several versions with changes and it gets difficult to establish which is which. For updates, the basefile (version previously published) could have a mark. Improve the track changes and notes system,

allowing comments and tracking of notes. I use Word because of the English grammar and orthographic corrector. If this were incorporated into RevMan, fine, otherwise, it is easier for non-English speakers to use this sort of tools and then paste the text into RevMan (48)

12. Should be more intuitive, like Word (49)
13. By making sure that all co-reviewers have RevMan software that is user friendly (50)
14. Would it not be possible to use MS Word templates? (52)
15. Not sure (55)
16. Again, allow word processing options so changes can be made using track changes facilities etc (57)
17. Making it as compatible as possible with generally used software (59)
18. Fine (63)
19. I find the system for identifying different versions of reviews is confusing. I'm not sure what is meant by primary version, and find the default numbering system for earlier versions confusing. (64)
20. Mail it for free to all reviewers or freely downloadable (66)
21. Adding a kind of system of "control changes" in the draft version (as in Word), because usually we need to create a word document listing the changes for the others to check. Then changes could be saved when we have to submit the primary version. When more than one co-reviewer add their changes/comments, sometimes feedback is complicated as a list of different versions (1,2,3,4,5, or more) are stored before making the final one.

22. As English is not my first language, I use Word for grammar corrections, then I cut and paste. (72)

3-4 Please give any additional comments you have regarding the development of the Cochrane Collaboration's Information Management System

1. The information management system is complex and inaccessible and so excludes people from developing countries from contributing or using the service. I have only been able to contribute and use the service because I am currently residing in a developed country (14)
2. We are working in a programme of translation of content of Cochrane Library and even some training material to Portuguese. (20)
3. I have no comments for this time (25)
4. I wish to facilitate connection and participation for new candidates to the Cochrane Collaboration by providing support to access the information Management system. (35)
5. There should be more accessible training on how to conduct reviews organized at regional level (42)
6. I am not sufficiently informed to provide an accurate comment but it appears to me that there needs to be more stimulation, training in the use of the system, particularly amongst university students. That means training university staff (44)
7. The centre is very good at distributing information and providing Assistance when needed (50)
8. Make information readily available in developing countries
9. The current cost of accessing the information is expensive for individuals

10. We should have more Cochrane Collaboration Centres in many other developing countries
11. Train more professionals in developing countries on Cochrane review since a number of them may not be informed of the same (53)
12. I would like to be fully involved in the activities of Cochrane but the following resources are not readily available
13. Computer and associated accessories (hardware: printer, scanner, modem etc)
14. Laptop computer for easy data acquisition from health institutions when requested.
15. Cochrane software and other software that can be useful
16. Financial support to purchase software like.
17. Finally, may I state that computers and other computing facilities have become very cheap and it is time Cochrane Collaboration facilitated acquisition of these things so that we do not continue depending on institutions tat we work for. It becomes very inconveniencing. Time spent on Cochrane matters is considered time wasted, since Cochrane has not seen it necessary to pay for this time. (54)
18. Should always facilitate the participation / use by those based in countries where IT is not readily available (59)
19. Would like to know how to access reviews via the web. E.g. using a word search etc. (68)

3-5 Please give any comments you have on the design of this survey

1. Well thought off
2. Excellent (6)
3. A necessary service, but time-consuming (14)
4. It is very good to have the opportunity to write this up – despite my difficulties with RevMan, nobody else in the world seems to have them. Even joining the RevMan discussion group has not helped! After all, they are light years ahead of me discussing new version of RevMan…
   In all other aspects, reviewing for Cochrane Foundation is really good, it makes me study deeply certain subjects in areas of my interest. (19)
5. Well structured and including (25)
6. This survey is not relevant to me as I have only had a very brief introduction to the Cochrane Library and have not been a reviewer. (31)
7. Didn't really acknowledge the fact that in a team different members may do different parts of the work according to their skills. (34)
8. Although my second language is English, this survey could be done in Spanish for the Iberoamerican group (37)
9. I wonder if a focus group approach would not yield a better result. The questionnaire is rather long, and the issues raised may not be uppermost in many people's minds (41)
10. Nicely designed, pleasant to fill out! (47)
11. It is too lengthy (48)
12. Easy to use and short (50)

13. The survey is ideal for providing information on the state of establishment and accessibility to Cochrane Collaboration's IMS. It may further provide information on the existing gaps regarding Cochrane review in developing countries (53)
14. The survey is rather to long. So areas are repetitive. It could be made shorter, so that it does not eat into many people's time since Cochrane does not pay for this time. This looks like it is charity work and yet the indications seem to suggest otherwise. This survey is reaching you late. I hope you understand I had to leave everything else to concentrate on this rather longish work (54)
15. Well designed. Thanks (55)
16. Great question – I've not seen it before. Anyway you could have made it anonymous? Suppose not as the emails give the person away. Some aspects may be slightly confusing re the linkages – not sure I understood to what degree these should be linked. Otherwise, easy to complete and quick (57)
17. Great! (63)
18. Do not understand all your jargon (68)
19. I am really interested in Cochrane Collaboration. But despite applying several time to participate in workshops and congress, due to lack of financial support I could not participate. I am very much interested to participate in workshops to become more familiar with it. (73)
20. Excellent. Pity the present leadership of the NCF is not that familiar with the Cochrane issues. We hope to make a better contribution in the near future. (76)