The Health Project Book

A handbook for new researchers in the field of health

Neil Wood

London and New York

Also available as a printed book
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The Health Project Book

The Health Project Book is a practical and detailed guide to all aspects of conducting a research project in health. Neil Wood has supervised student projects in health over many years and this handbook is based on his experience in teaching students how to get the best out of themselves and their project.

Individual chapters cover:

- ethical considerations
- the selection of samples
- questionnaire design
- working in a laboratory
- conducting interviews
- statistical and qualitative analysis.

Case studies illustrate the use of:

- CD-ROM facilities
- the Cochrane database on the world wide web
- qualitative analysis software.

The Health Project Book encourages a systematic approach. It will be an extremely useful resource for students and professionals in nursing, health studies, health sciences, psychology and related fields.

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Contents

	List of figures	vii
	List of tables	viii
	Preface	ix
	Acknowledgements	x
1	Before you start	1
2	Matters ethical and otherwise	7
3	Different questions, different designs …	13
4	Choosing a sample	28
5	There are more questions than answers …	34
6	Working in the lab	40
7	Getting to grips with stats	45
8	Not everything that counts …	53
9	Do you, Mr Jones …?	79
10	Qualitative studies	85
11	Using qualitative analysis software	95
12	Surfin' safari	109
13	Writing your proposal	124
14	Carrying out a research project	127

15 Writing your project report 137

16 Telling it like it was … 150

17 Putting together a critical analysis 154

18 I know there's an answer 157

Postscript 167

Appendix I: Choosing and using a computer for research 169

Appendix II: Internet addresses to get started 172

Appendix III: Table of random numbers 175

References 179
Index 180

Figures and Tables

Figures

1.1 Steps involved in a research study 3
3.1 Design of a postal questionnaire survey 15
3.2 Explanations for a link between unemployment and ill-health 16
3.3 Design of a two-group randomised placebo-controlled clinical trial 19
3.4 Design of a pre-test/post-test intervention study without a control group but with a follow-up 20
3.5 Design of a repeated measures intervention study with a control group 21
3.6 Design of an epidemiological cohort study 22
3.7 Design of a retrospective case–control study 23
4.1 Nomogram for calculation of sample size 32
6.1 Key issues in conducting a laboratory study 43
7.1 Data from measurement of brain electrical activity with vertical scale starting at non-zero. 46
7.2 Data from measurement of brain electrical activity with vertical scale starting at zero 46
7.3 Histogram of data from an analogue rating scale item on energy levels 49
7.4 Histogram of data from an analogue rating scale item on helpfulness of staff 50
8.1 Screenshot of data in Microsoft Excel 54
8.2 Statistical decision-making chart 55
8.3 Venn diagram illustrating a partial correlation 68
8.4 Venn diagram illustrating interactions of six independent variables on CHD rates 68
8.5 Pie chart of settings in which patients were seen 73
8.6 Clustered bar chart showing gender breakdown of responses to a survey item 74
8.7 Histogram of heart rates 74
8.8 Error bar chart showing means and standard deviations of heart rates 75
8.9 Boxplot of ages of male and female survey respondents 76
8.10 Scatterplot showing the relationship between scores obtained on two rating scale items 77

9.1 Typical stages involved in conducting an interview study 80
10.1 Typical stages involved in the analysis of interview transcripts 89
10.2 Tree diagram of categories from a content analysis 90
11.1 Screenshot from WinMAX 99
11.2 Screenshot from WinMAX: specifying Object name 100
11.3 Screenshot from WinMAX: importing text 100
11.4 Screenshot from WinMAX: activating working text 102
11.5 Screenshot from WinMAX: procedure for coding 102
11.6 Screenshot from WinMAX: assigning text to codeword 103
11.7 Screenshot from WinMAX: codeword manager functions 103
11.8 Screenshot from WinMAX: searching text 105
11.9 Screenshot from WinMAX: result of text search 105
11.10 Screenshot from WinMAX: creating a memo 106
11.11 Screenshot from WinMAX: category scheme 106
11.12 Screenshot from WinMAX: index of codings 107
12.1 Screenshot from Infoseek search software 115
12.2 Screenshot from Cochrane database: search item entered 116
12.3 Screenshot from Cochrane database: result of search 116
12.4 Screenshot from Cochrane database: abstract selected 117
14.1 Screenshot of MEDLINE references in WinSPIRS 129
14.2 Screenshot of MEDLINE references: field-specific index 129
14.3 Screenshot from WinSPIRS: limiting the search 130
14.4 Screenshot from WinSPIRS: thesaurus 131
14.5 Screenshot from WinSPIRS: second search 131
14.6 Gantt chart of stages involved in conducting a research study 135
16.1 Microsoft Powerpoint slide: bullet list of methods 151
16.2 Microsoft Powerpoint slide: results 151
AI.1 A laptop PC and portable ink jet printer 170

Tables

8.1 Table of frequencies from two survey questionnaire items 56
8.2 Cross-tabulation of two survey question items 58
AIII.1 1000 random numbers 0–1 175

Preface

It is common practice for students on health-related courses to undertake a piece of supervised research as part of their degree programme. This book is written for such students who may be undertaking a project which involves either the collection of numerical data or data suitable for qualitative analysis. It is therefore a practical guide to a range of research techniques which are commonly used in student projects, although I have tried to avoid a 'cook book' approach, so that the need to understand the strengths and limitations of various research approaches is emphasised. This book has derived from handbooks that I have written for my own students on the BSc(Hons) degree in Health Studies at University College Chichester, who have tackled a wide range of projects including work in alternative medicine and immunology and more traditional areas of nursing, psychological or sociological research. The material in the book should prove of particular value to those who may have forgotten much of what they learned on research methods courses. It should be helpful to such students on health studies, nursing, psychology, sports science and pre-clinical medical courses. The book may also prove of some value to postgraduate students in these and related disciplines to accompany a course on research methods.

It is usual even in introductory books on statistics and research methods for authors to provide statistical formulae and computational techniques for working out the formulae. I have avoided this approach, as it is my experience that many students generally find these of little relevance nowadays when computers are routinely used to run analyses. There are plenty of statistics textbooks for those who need this information; I have been concerned instead to convey some appreciation of the decisions and assumptions behind the commonly used statistical analyses. Similarly, it is outside the remit of this handbook comprehensively to discuss the many differing standpoints and debates associated with qualitative analysis; these can appear remote and theoretical when the immediate need in a student project is typically to produce an analysis of interview transcripts or similar material. I have tried to emphasise a systematic approach to this, and generally throughout the book; Chapter 11 provides an example of the use of a computer software package to accomplish the task. This book is certainly no substitute, therefore, for the reading of specialist texts on research design, statistical or qualitative methods, but should provide a handy starting point for the aspiring health researcher in each of these areas as well as on a number of other topics not routinely covered in methods textbooks, such as the use of the internet.

Neil Wood
March, 2000

Acknowledgements

This book derives from course material I prepared for BSc(Hons) Health Studies students at University College Chichester. Any book, and especially an introductory text such as this, inevitably draws widely upon ideas and material which derive from others, even though all influences many not be explicitly acknowledged or even recognised. In preparing this volume, I am particularly indebted to Dr Peter Green for the interview material he kindly provided and which is introduced in Chapters 10 and 11. I am also grateful to colleagues who read and commented upon drafts of this volume including Beverley Hale, Elizabeth Kemp, Gill Kester, Anand Kumar and Sue Rowley from University College Chichester, Trudi James from Southbank University, Martin Orrell from University College London and John Sitzia from Worthing Priority Care NHS Trust. They have helped to shape the direction and content of the final book, whilst any errors and inaccuracies of course remain my own. Last but not least, I extend a warm 'thank you' to my family for putting up with many hours of my unsociability when I was researching and writing this volume. To these, and many others I have failed to mention by name who have helped me along the way, my grateful thanks.

Chapter 1

Before you start

Getting going

Welcome to the world of research! A student research project is an opportunity to apply all the 'real world' skills which degree programmes aim to impart. Overall, your project should reflect your ability to sustain an in-depth enquiry on a health-related topic. The broad field of health-related research includes topics which may explore largely psychological, social, biological, medical or nursing issues, and examples in these fields are chosen throughout this volume.

As the first stage of beginning to plan your project, you need to think about what is practical to achieve as opposed to what is ideal or desirable. Thus you have an ultimate deadline by which to complete and write up your project report. You may also be limited by the availability of practical resources such as specialised facilities. A frequent constraint arises through the need to gain access to certain client or patient groups for some investigations and, if the idea you have in mind involves access to such individuals, you need to check in advance that the necessary permission is obtainable. You may decide to conduct a study because there is particular expertise, in the form of supervision and a research tradition in your department, in a particular field, and such support can be invaluable. Your tutors may suggest a project is carried out within particular areas, although the precise way in which it is conducted may be open to discussion and negotiation.

The planning stage is perhaps the most crucial stage in the conduct of any piece of research. Research which is entered into where the aims are woolly and ill-defined on the assumption that 'things will work out in practice' is almost certainly doomed to failure. The process of deciding upon a suitable research question and how to go about addressing it should not be rushed. You may have a few general ideas within some areas of inquiry and may need to hone your ideas by consulting literature in the library or conducting some CD-ROM or internet searches. You need to get an early 'feel' for what is known about the subject you have in mind and whether previous research has come up with definite conclusions. You will probably also want to bounce your ideas off friends, colleagues or members of academic staff before finally deciding on your particular research question. Alongside this process of deciding on your research question, you need to be thinking about the techniques and methods that you might employ in order adequately to address it.

The processes that you may employ in order to assist the planning of your research are as many and varied as there are researchers. Some people find that they like to sit down with a large sheet of paper and make a visual representation of the overall structure of the project, perhaps in the form of a flow diagram with arrows and boxes representing various stages of

the data collection process. Others may find that the use of a project management package on a personal computer can be helpful to identify critical stages and intermediate goals to be achieved by certain dates so that the project can be completed on time. An example chart of the output from such software is shown in Chapter 14 of this book. Yet others find a more unstructured approach to be helpful. For instance, most word processors have an outliner which allows you to set up in a hierarchical manner headings and sub-headings under which ideas about the project can be filled in as they come to you.

Whatever method is adopted, you will find it much easier if you are organised! So develop a system for keeping track of your references from the earliest stage. A haphazard pile of reprints and hastily scribbled notes are unlikely to provide the degree of organisation you will need. Typing referencing information about relevant papers, together with a summary of what they are about, into a database on a personal computer is a much more systematic approach. An equivalent goal can be reached by the use of a simple card index system; cards can then be sorted in order of topic or author. Your database of relevant literature will grow and evolve over the course of your study as more work is identified of relevance to your research, and you should be thinking about the implications of it all for your own project.

The overall general stages involved in planning, implementing and reporting a research study are illustrated in Figure 1.1. Although this is the general sequence of steps involved, it should be borne in mind that the process is not always such a linear and sequential one. For example, although the background literature searching in most studies should come at an early stage when the study is being planned, this may continue throughout the project. Data collection, analysis and interpretation sometimes proceed hand in hand, especially in qualitative research studies as is discussed in Chapters 10 and 11.

In planning the timescale of your project, you should allow a contingency element for slippage at all critical stages of your investigation. One of the key distinguishing features of successful planning of a research project is the ability to anticipate, as far as possible, potential difficulties which may arise along the way and to make contingency plans in the event of them arising. Critical pieces of laboratory equipment can fail, and may take weeks or months to be repaired. Or permission may suddenly be withdrawn by an organisation once a study has commenced in response to ongoing events. It is normal for some research subjects to fail to keep appointments or for people to forget to do things. The way that you handle the research problems will be an indicator of the quality of your research and of your initial planning to meet such contingencies.

The outcome of any non-trivial piece of research is never certain, otherwise there would be little point in carrying out the work. However, some investigations are more risky than others in the likelihood of generating usable data. In particular, it is vital that the methods of data collection and analysis that you have selected must be capable, *in principle*, of answering the questions originally posed, even if in the event the study was inconclusive. A study which cannot reasonably be expected to provide an answer, even in principle, to the questions you have set in your aims and objectives is going to fail.

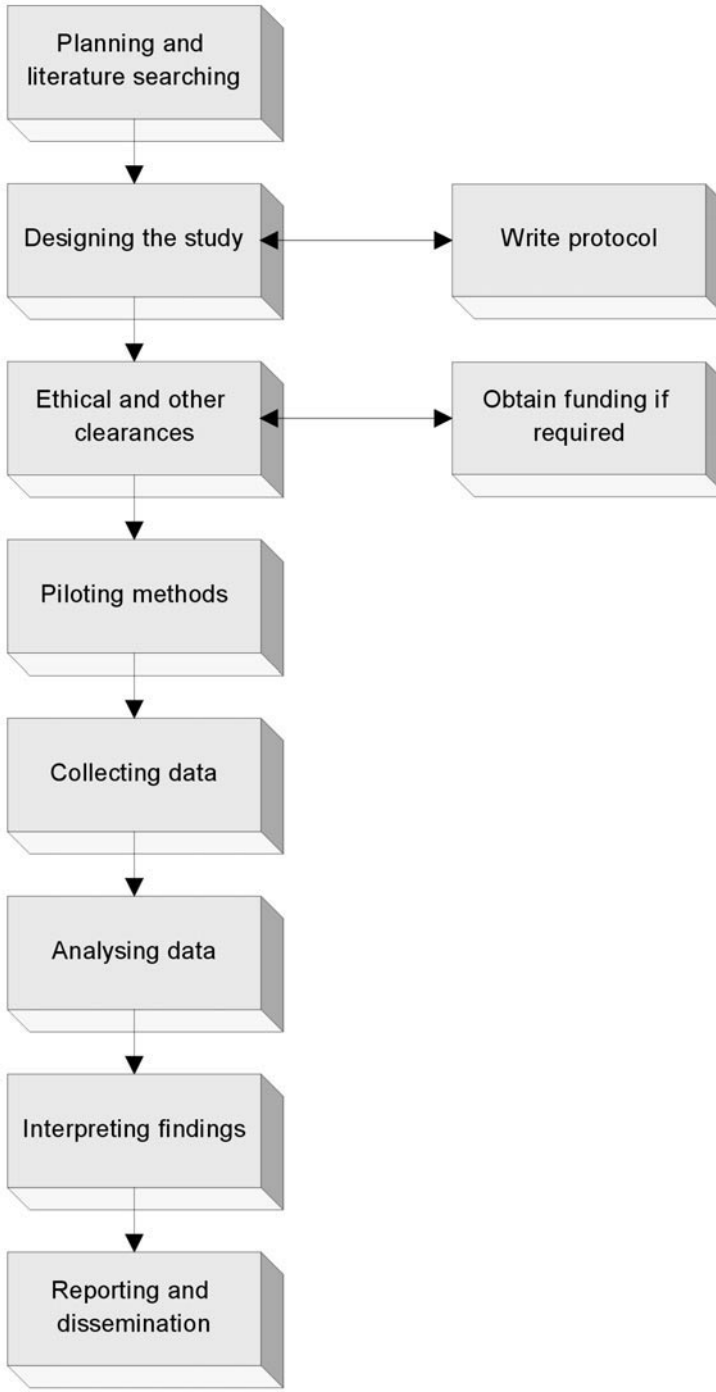

Figure 1.1 Steps involved in a research study from initial idea to conclusion

The research process

It is a main aim of this book to encourage a well thought out project conducted to high standards of research inquiry. Although my background is rooted within the scientific research tradition, some researchers within the very broad field of health-related research would not necessarily agree with their work being labelled as 'scientific'. Enthusiasts of 'post-positivistic' or 'new paradigm' research tend to downplay measures taken to increase objectivity, which are viewed as being at the expense of the naturalness of the setting and of an intuitive and empathetic approach to the understanding of the world of people. This issue is taken further in this book on the discussion of qualitative approaches in Chapter 10; the broad field of health research has been enriched by a great diversity and variety of research approaches and methods. Whatever our philosophical and emotional leanings in the field of health, however, it is important that researchers demonstrate an underlying integrity in their enquiries.

People often carry out a piece of research because they have perhaps a passionate, or personal, interest in the area of inquiry – whether this is gender discrimination, the effect of budget cuts on patient care or treatment for alcoholism. These sincerely held personal convictions and values are not, by themselves, reasons for not conducting research within the field, and indeed motivate much work which appears in the scientific literature. Nevertheless, it is danger to seize upon a project as an opportunity to 'prove a point' and attempt to present the results in such a way as to influence existing systems in desired directions. It is usually obvious to any disinterested reader when this has been done, and this approach is therefore, apart from being scientifically unethical or dishonest, also ultimately self-defeating. Policy indications may, of course, flow from findings in due course, and if these are recognised by the researcher they should be included in the discussion – but they will only be valid if an unbiased stance has been taken towards the collection and analysis of the data.

Where research integrity is compromised, research treads a dangerous path. Some of the worst excesses have been committed by researchers, once regarded as eminent, whom we now know to have systematically distorted, and even fabricated, their research data for ideological ends. The history of the development of IQ tests and their subsequent application in the early and middle years of the twentieth century to 'prove' the genetic inferiority of black and working class people is a sorry and salutary tale for any researcher. Research of course is never neutral or 'value free'; it is, after all, conducted by human beings with particular values and attitudes and is carried out within the context of a social structure where individuals have particular roles and responsibilities. Society, in the form of established structures, will ultimately set the agenda for research – either directly, for example, through the funding of research or more subtly through the questions and paradigms, or systems of beliefs, that it will support.

Books on research often include some brief – and occasionally thought provoking – 'philosophy' written for the benefit of the aspiring researcher, which is designed to get you thinking critically about the process and context as much as the outcomes and specific methods of your research. So here goes! The notion of the 'gradual accumulation of knowledge towards the truth' is generally not how research proceeds. Rather, it is normally a case of blind alleys and false trails, and sometimes of going completely in the wrong direction.

The currently accepted 'pot' of knowledge in any one social or scientific discipline can be likened to a pot of coins; some coins in the pot will be bright and shiny, and these represent carefully designed, well conducted studies producing reliable data. These will mingle with many others which are tarnished to one degree or another through bias, ideological distortion

on the part of the researcher, or simply bad design. The journal peer review refereeing system – whereby research papers are sent out by journal editors to fellow researchers in the field for comment – will generally weed out the worst excesses, so that hopefully most of the bent coins will never even get thrown in. However, research is a democratic process where all shapes and sizes of coin, and different currencies, are thrown into the pot and made available to the research community.

Sometimes the odd bad penny will be shown to be a forgery and will be ejected. Most of the time, however, the bad stays in, confusing the picture until it becomes recognised only very slowly. As research directions change, better theories emerge and previous papers fail to be cited in the literature. Unfortunately, the abilities of those who are picking up the coins – the other research workers and society generally – are impaired, and it is difficult to distinguish the shiny from the dull. Some will have the insight, as well as the necessary resources in the form of research grants, to conduct large studies or buy the electron microscopes, the laboratory equipment and so on to improve their discrimination and will be generally ahead in their thinking. Many others will have to accept, or be content to accept, what others tell them about the contents of the pot.

Very occasionally a gold coin – a real conceptual advance in a field – will be so shiny that it will stand out to most people, although not necessarily at first. A minority of sceptics will argue that it is false gold, and sometimes history will prove them right. Once in a blue moon, the whole pot is knocked over and a different vessel of a new shape and size has to be started again. So a Darwin or an Einstein will come along and Newton's classical mechanics is supplanted by Einstein's relativity theory, providing a major new paradigm wherein it becomes necessary to ask completely different sets of questions. These qualitative shifts in the mindset and world view of scientists have been described as 'scientific revolutions' by the philosopher of science, Thomas Kuhn.

A worthwhile contribution to this fund of knowledge or ideas should be the aim of a good research study, even if the particular objectives of a study are quite limited and practical. To achieve this, perhaps the over-riding factor to guard against by the conscientious investigator is bias. There are many sources of potential bias which can affect a research project at any level; some are inherent in the way studies are designed, some by the way studies are conducted. This book aims to point up such potential distorting influences and ways of guarding against them. For example, experiments are often conducted 'blind' – that is, without knowledge of which people have been allocated to which group in order to minimise the effects of experimenter expectations on the outcome, a form of bias which has been called the Rosenthal effect. Other techniques which are used by researchers to minimise bias, or systematic error, in their methods and approach are specifically discussed in Chapter 3 which introduces different ways of collecting data; Chapter 4 discusses issues concerned with sampling, Chapter 5 concentrates upon questionnaire design techniques, Chapter 6 discusses the experimental method and Chapters 10 and 11 are devoted to a discussion of qualitative approaches. All researchers within the field of health, whatever their method of approach, need to be aware from the start of potential ethical issues involved in their projects and the next chapter introduces some of these.

Action points

- Start your collection of references and other material as soon as possible.
- Explore the feasibility of the techniques you have in mind.
- Consider the strengths and weaknesses of alternative research designs.
- Plan out your approach.

Chapter 2

Matters ethical and otherwise

Virtually all research raises some questions of ethical interest. It is not only researchers at the 'leading edge', where animal or human experimentation is concerned, who need to be acutely aware of the ethical implications of what they are contemplating. An apparently innocuous questionnaire survey may have considerable ethical ramifications, for instance on the attitudes or psychological state of those taking part, depending on how and why it is being administered and used. The identification and selection of appropriate individuals in a sample is subject to ethical considerations. Likewise, the reporting of research results demands high ethical standards and integrity from the researchers.

Some projects may involve the use of patients or clients selected, for example, from hospital or GP lists or may involve conducting work using NHS premises or facilities. Appropriate local research ethics committee clearance needs to be obtained in advance for any such project work, even if the contact with the patients or ex-patients involves no more than the sending out of a letter or questionnaire. Many such committees only meet occasionally and it is important to submit an ethical committee application well in advance of the planned start date for data collection.

Although ethical committee procedures differ, depending upon the health authority, you are likely to be sent a lengthy form to complete. This will require information concerning, for example:

- qualifications and function of people involved in the project
- objectives of the study
- scientific background to the research
- design of the study
- information on potential benefits and risks of the work
- how research subjects will be recruited
- how informed consent will be achieved
- precautions taken to protect confidentiality
- copies of information sheets, consent forms and questionnaires.

Prior to ethical committee approval being obtained, it is, of course, permissible to carry out some preliminary work on the project such as the devising of questionnaires and literature searching, but you need to bear in mind that some people find their proposals rejected by an ethics committee and you may have seriously to rethink your approach once the project is under way. It cannot therefore be emphasised enough that if your proposed research needs to go to a hospital ethics committee that you write to the chair of the committee well in advance

of the proposed start date of your project, outlining what you intend to do and obtaining dates by which applications have to be submitted. Some ethics committees do not meet regularly and, if you miss a deadline for submission, your project may be held up for several months.

One way to avoid the need to obtain local research ethics committee permission with a client group is to obtain a viable sample through a method which does not involve access to NHS patient lists. For example, research subjects in some instances may be contacted through an informal local support group. If the group facilitator or organiser, as well as each individual contacted, provides personal permission and volunteers to help with the study, such a study need not go before a hospital ethics committee, although you may need to submit the study to scrutiny from a local university or other appropriate ethics panel.

Information which personally identifies individuals must not be entered onto a computer without application and registration with the Data Protection Registrar, which is costly and impractical for student projects. This is a legal requirement governed by the Data Protection Act, 1984. If names and addresses, or even postcodes, are collected, these must not be entered onto the computer along with the data collected. In most student projects, it is safer not to record such identifying information, or to ask for it, unless in exceptional circumstances – for instance, if individuals need to be contacted again for follow-up at a later stage.

If research subjects are being obtained through clubs, societies or similar, before any approach is made to individuals, an initial approach should be made to the manager or person in charge and the proposed project discussed and approval obtained in principle. If this is obtained, permission may also be needed from other individuals such as line or area managers. This permission should be obtained in writing. Draw up a short letter and obtain the signatures of the relevant individuals so that copies of these can be included in an appendix to your project report, so there can be no dispute afterwards over the nature of the permission which was obtained.

Written consent must also be sought from the participating research subjects on an individual basis, including consent to conduct an interview or obtain information from stored records. In the case of people under 18 years old, consent must also be obtained from a parent or guardian. On consent forms, confirmation is required of each subject that:

- the volunteer is willing to take part in the study
- the researcher has explained the nature and purpose of the study and has informed the subject of any risk that the researcher foresees
- the subject has received information about the essential features of the study, including information in respect of attendances at research sessions
- the subject has been given an opportunity to question the researcher and has understood the researcher's advice
- the subject has been told s/he is free to withdraw consent at any time without the need to justify the decision.

An example of an information sheet and a consent form, which were approved by a local ethics committee, is shown on pp. 9–10. These were prepared for a study concerned with evaluating a child health service which involved conducting interviews with parents, children and staff involved in providing the service.

Assessment of the Integrated Child Health Service
Information for those taking part

Why is this study being done?

In 1997 the services for children in this area were reorganised to try to improve the way health care and help is given to local children and their families.

To make sure that the changes are the right ones for improving the services, we need to ask for your views on a number of issues.

We are asking a range of people to take part who are interested in making sure children get as good a deal as possible from the service. This includes doctors, nurses, therapists, health visitors, managers, parents and children, as well as the health authority itself.

What will my involvement be?

All we are asking of you is about an hour of your time to answer some simple questions relating to the service.

Families

We value the comments from both parents and children. If your child (who is receiving care from the service) would like to take part and you happy for this to happen, the researcher will be pleased to arrange for you each to talk about the service from your own points of view.

Who will know what answers I gave?

Only the researcher who interviews you will be able to identify who you are, the information you give will not have any of your personal details kept with it. Some of the comments people make might be used to help explain an issue when we share the overall results of the work. None of these comments will be identified with the person who made them unless we ask specifically for their permission (and you are happy to give it) before using them. Nothing you say during the interview will be shared with anyone else except in such a way that they will not be able to identify you, without obtaining your permission first.

What if I choose not to take part?

It is hoped that all those employed by the service will have no objection to being interviewed, although we respect that everyone has a right to refuse should they so wish, without affecting their work in any way.

Parents and children also have the right to refuse and in all cases, deciding not to take part will not make any difference to the care your child (and you) receives in any way.

Thank you very much for reading this information leaflet. If you have any further questions or concerns about this evaluation, you can contact: *(contact details provided here)*