



**Postgraduate Certificate in Public Health**

**Health Systems Research I  
Module Guide**

**2008**

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# Postgraduate Certificate in Public Health

## Health Systems Research I

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### Module Guide

Module Registration Code: 881519

Value of module: 20 credits

Study time required: 200 notional learning hours

Pre-requisites: None except those in the Rules for Admission

Qualifications serviced by this Module:

*Postgraduate Certificate in Public Health*

Study Materials for this module:

One Module Guide and one Reader

Module Convenor: Dr Smruti Patel

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### **Vision Statement of the School of Public Health University of the Western Cape**

The **Vision** of the School of Public Health is to contribute to the optimal health of populations living in a healthy and sustainable environment in developing countries, particularly Africa, with access to an appropriate, high quality, comprehensive and equitable health system, based on a human rights approach.

The **Purpose** of the School is to contribute to developing policy-makers and implementers who are knowledgeable and skilled in the principles and practice of Public Health, whose practice is based on research, influenced by informed and active communities, and implemented with a commitment to equity, social justice and human dignity.

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# ***I*    **MODULE INTRODUCTION****

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## **1    LETTER OF WELCOME**

School of Public Health  
University of the Western Cape  
Private Bag x17  
Bellville  
7535  
South Africa

Welcome to the module, *Health Systems Research I*. You might be wondering about the title – what is “health systems research”? You might also be asking yourself:

- How can HSR help me in my work?
- Who does the research?
- Can I do this research?
- How do I do health systems research?

This module provides you with a foundation in Health Systems Research. We wish you luck and hope you enjoy working through it with us.

### **Vision and Main Purpose**

The vision of the School of Public Health at the University of the Western Cape with regards to Public Health is for the health sector to transform from a predominantly curative, hospital-based service to a quality, comprehensive, community-based, participatory and equitable system. We aim to achieve this through developing and strengthening Public Health practice and Primary Health Care.

Health Systems Research is an integral part of the vision for a “quality, comprehensive, community-based, participatory and equitable system.” Accordingly, this module aims to provide an introduction to the kinds of research conducted within a health system, the research designs and methods used, and how to develop a research protocol– this is its main purpose.

### **The Approach**

The module adopts a distance, flexible, resource-based learning approach that relies primarily on printed materials – the Module Guide itself, and a compiled book of readings collected from various sources – and an informal interactive style. In it, we provide guidance and study skills support for students who need it, as well as further reading for students wishing to pursue certain areas in more depth, and to read more widely. Although the Public Health content and the academic learning content are integrated throughout the module, the outcomes of these academic areas are listed separately below. Read the module outline and outcomes carefully. Decide how you are going to use the module flexibly, to suit your needs.

Smruti Patel, Module Convenor

## 2 INFORMATION ABOUT THIS MODULE

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### 2.1 Module Outline

The module consists of four units. These units guide you through the process of understanding health systems research, while guiding you to develop an HSR protocol.

Unit 1 introduces health systems research and the protocol. Unit 2 focuses on research design. Unit 3 examines a variety of data collection techniques, while Unit 4 focuses on data analysis and how to draw up a workplan and budget for completing a protocol.

Each unit consists of a number of study sessions. Each study session focuses on a particular topic related to the unit theme. These are shown below.

#### **UNIT 1 – Introduction to Health Systems Research**

Study Session 1: What is Health Systems Research?

Study Session 2: What is a Research Protocol?

Study Session 3: Identifying Research Problems

#### **UNIT 2 – Research Design**

Study Session 1: Literature Review

Study Session 2: Aims and Objectives

Study Session 3: Variables and Indicators

Study Session 4: Study Design

#### **UNIT 3 – Data Collection**

Study Session 1: Data Collection and Record Reviews

Study Session 2: Questionnaires, Sampling and Bias

Study Session 3: Observations

Study Session 4: Interviews and Focus Group Discussions

#### **UNIT 4 – Data Analysis, Workplan and Budget**

Study Session 1: Planning for Data Collection

Study Session 2: Analysing Quantitative Data

Study Session 3: Analysing Qualitative Data

Study Session 4: Producing a Workplan and Budget

Many of the study sessions are written around core readings, and include activities to assist you to make sense of, to explore and to look critically at, the readings. Each activity is divided into one or more smaller tasks for you to complete. Where appropriate, feedback on these tasks is provided, so that you can check your ideas and evaluate your understanding and your progress. You are welcome to contact the lecturer for feedback, and to check your understanding.

### 2.2 Module Outcomes

The main learning outcomes for the Health Systems Research I module are listed below - these include the Public Health (HSR), and academic literacy outcomes. Remember that in the study sessions, these outcomes are integrated.

By the end of this module, you should be able to:



Health Systems Research Outcomes	Academic Learning Outcomes
<ul style="list-style-type: none"> <li>• Describe HSR and its characteristics.</li> <li>• Identify HSR problems.</li> <li>• Write a research protocol.</li> <li>• Define variables and indicators.</li> <li>• Conduct and write a literature review.</li> <li>• Write clear, concise problem statements, aims and objectives.</li> <li>• Match study designs, methods and techniques with research questions.</li> <li>• Use a range of qualitative and quantitative data collection techniques (record review, survey questionnaire, observation, interview, focus group discussion).</li> <li>• Develop and use data collection tools (questionnaire, observation checklist, discussion guide).</li> <li>• Analyse, code and interpret quantitative and qualitative data.</li> <li>• Present summary statistics using one-way and two-way tables.</li> <li>• Draw up a workplan</li> <li>• Draw up a budget framework.</li> </ul>	<ul style="list-style-type: none"> <li>• Read for a purpose and extract key ideas.</li> <li>• Identify different ways in which texts are structured.</li> <li>• Analyse texts, classify and synthesise information.</li> <li>• Read critically, noting missing or incorrect information.</li> <li>• Think critically and draw on your own knowledge and experience.</li> <li>• Write concisely.</li> <li>• Identify relevant sources of information.</li> <li>• Evaluate sources and texts.</li> <li>• Draw conclusions and substantiate these.</li> <li>• Interpret and use diagrams to present ideas.</li> <li>• Write in a clear, concise, structured way.</li> <li>• Use referencing consistently.</li> </ul>

### Academic Learning Skills Developed in the Module

A range of academic learning skills are practised and developed in this module.

#### Reading skills

Previewing texts

Identifying text structure and the language typical of particular kinds of texts

Reading critically and evaluating texts

Comparing texts

Scanning for specific information

Analysing and extracting:

- main ideas/arguments
- supporting reasons or evidence
- conclusions

Identifying text conventions and their purpose, e.g. quotes, references, bold/italic, inverted commas

#### Information and visual literacy skills

Reading, interpreting and drawing various diagrams (e.g. flow diagrams, tables, line graphs, pie charts, bar graphs, mindmaps, timelines)

Researching, finding and accessing relevant information, e.g. using libraries, the internet; speaking to relevant people

#### Cognitive (thinking) skills

Classifying and organising ideas e.g. causes/effects/results

Comparing and contrasting ideas

Synthesising information from different sources and texts

Structuring an argument

Analysing and interpreting information and drawing conclusions

Problem-solving (analysing a problem, identifying possible solutions, trying out solutions, evaluating etc.)

### Conceptual skills

Identifying, developing and formulating concepts, theories, assumptions, constructs, values, perspectives, approaches, supporting reasons, evidence

### Writing skills

Summarising

Making notes

Presenting information in a structured essay text form

Presenting information in diagram form, e.g. graphs, tables, mindmaps, flow diagrams

Using the Writing Process Cycle to write assignments and other texts

### Learning Skills

Using a range of general and language learning strategies to learn more effectively, e.g. vocabulary learning strategies, drafting and editing texts

- Using a range of general learning strategies to learn more effectively, e.g. planning study goals, discussing ideas with colleagues, managing study time, reading further, evaluating own progress

## 3 ASSESSMENT

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There is further information about assessment in the *SOPH Programme Handbook 2008*. Please refer to it before submitting your assignment.

### 3.1 Information about Assessment

Self assessment is built into the module in the form of Tasks, allowing you to check your progress and to study actively. You should try to do the tasks, as this is the best way to learn.

Two compulsory assignments are required to complete the module. It is important for you to take note that:

- The first assignment contributes 40% towards your final mark; and
- The second assignment contributes 60% towards your final mark for the module.

You will be allowed to rewrite your first assignment if you get less than 50%, because it is regarded as formative assessment. However, for the summative assessment (Assignment 2), you must pass with 50% or more, with no possibility of a rewrite. If you fail this assignment, you will have to repeat the module next year.

### 3.2 Submitting Assignments

Please read the guidelines for Submission of Assignments in section 8 of the *Programme Handbook*. When sending in your assignments, follow these important guidelines:

- *Assignments must be typed in 1,5 line-spacing.*
- *Use A4 paper and leave a margin of about 3 cm for the lecturer's comments.*
- *Always number the pages.*
- *When submitting your assignment by e-mail, include the fully completed Assignment Cover Sheet as the first page of your assignment file, and not as a separate file. If you separate them, your assignment will not be identifiable.*
- **When submitting your assignment by e-mail, you must title the file as follows:**
  - Your name (Surname, initial), e.g. Mambwe R

Please take note!!!

- Module abbreviation (see below for Core modules), e.g. HSR I
  - Assignment number, e.g. 1 or 2 and Draft or Final
  - The year, i.e. 2008
  - e.g. *Mambwe R, HSR I Asn 1 Final 2008;*  
*Mambwe R, HSR I Asn 1 Draft 2008.*
- Post, fax or e-mail the assignment to the Student Administrator at the address below by the due date. Do not send assignments directly to the lecturer. E-mail is preferred because it is quicker.
  - Type your assignment; no handwritten assignments will be accepted.
  - Keep a copy of your assignment.

Assignment deadlines will be sent to you by the Student Administrator. All assignments must be submitted, i.e. postmarked, by the due date.

### **3.3 Draft Assignments: Please read this section carefully**

*As you are studying at a distance, lecturers will provide feedback on Draft Assignments. However, Drafts will ONLY be reviewed if they are received TWO OR MORE weeks before the final submission date. If they are received less than two weeks before the submission date/deadline, they will not be accepted as drafts. Allow a week for your lecturer to return your work. If you experience long delays in getting feedback, please inform the Student Administrator.*

Take note that Drafts are also expected to be drafts, i.e. work in progress. Use opportunities like these to check your understanding of the assignment requirements, to try out difficult parts of the assignment, and to ask questions.

### **3.4 Assignment Extensions**

Assignments must be submitted by the dates indicated in the Assignment Deadlines schedule circulated by the Student Administrator. Extensions may be granted under special circumstances but will not normally be longer than two weeks. To request an extension, contact the Student Administrator (not the lecturer or Module Convenor) as soon as a problem arises. No extensions will be given for Draft Assignments, and no late assignments will be accepted in Semester 2.

Late submission of assignments may result in reducing your time for the next assignment, disrupting your lecturers' marking schedule, late submission of marks and therefore having to repeat the module. Please try to manage your time effectively. You'll find some guidance on doing so in the *SOPH Academic Handbook, 2008*.

### **3.5 Module Assignments for Health Systems Research I**

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There are TWO assignments for this module: Assignment 1 contributes 40% to your year mark, while Assignment 2 contributes 60%.

Please make contact with your lecturer should you have any queries.

## ASSIGNMENT 1 – Prepare to Investigate a Health Systems Problem

(40 marks)

### ASSIGNMENT INSTRUCTIONS

Based on initial discussions with your colleagues/manager/community members: **choose one Health Systems problem that you might investigate.** For this problem:

- Write a problem statement and provide a rationale for it. Summarise the people, processes and discussions engaged in to identify and prioritise the research problem. It should be practical, realistic and relevant to an aspect of the health system. (25 marks)
- Outline the structure and process of conducting a literature review on this problem. Your outline should include references that support the proposal; use the *SOPH Academic Handbook* to develop accurate references. (35 marks)
- Write down the aim/s and objectives of this investigation. (40 marks)

These are the criteria by which you will be assessed:

Assessment Criteria	Marks
i) Quality, clarity and rationale for problem statement.	20
ii) Grasp and insight into the purpose and structure of a literature review.	35
iii) Clarity of aim/s and objectives and relevance to problem.	35
iv) Referencing	10
<b>Total</b>	<b>100</b>

## ASSIGNMENT 2 – Write a Research Protocol

(60 marks)

Choosing the same Health Systems Research problem as in Assignment 1: **write a research protocol which you could use to get funding.** At the end of each session in this module, you are given instructions on how to build up a protocol. You will be marked according to the extent that you follow each step of the protocol.

The assessment criteria below are used to mark the assignment. The assignment should:

Be relevant to the assignment topic;

Address all the issues / answer all the questions;

- Be practical and realistic and relate to an aspect of the health system;
- Provide a convincing research proposal that could be used to source funds;
- Summarise the people, processes and discussions engaged in to identify and prioritise the research problem;
- Contain a problem tree, a clear, concise problem statement, study aim and objectives;
- Provide a convincing literature review with references, to support the proposal;
- Include “dummy” one-way or two-way tables that could be used to analyse data;
- Show evidence of having worked through ideas contained in the Module Guide and in the readings;
- Express ideas clearly and succinctly, using accurate vocabulary, grammar, punctuation and spelling. (See the *Programme Handbook* for information on available help.)

The assessment criteria are summarized below, together with their mark value.

### Assessment Criteria

Here are the marking criteria that will be used, and the marking schedule:

Section	Mark	Criteria - Marks will be awarded for the following:
Introduction	5 marks	Established that the problem is worth tackling; description of stakeholder consultation or plan for consultation; succinct problem statement
Literature Review	15 marks	At least five relevant references reviewed with a summary of their findings and some possible their weaknesses; review structure according to the three levels; establish what level of research question is needed; established what methodology and methods other researchers have used in answering similar research questions.
Aims & Objectives	10 marks	Aim is succinct and follows from problem statement and literature review. Objectives logically relate to the aim and will result in a successful study
Methodology/ Study Design	15 marks	Discussion on what methodology to choose mentioning strengths and weaknesses of each; discussion of choice of study design with justification of the choice.
Sampling	10 marks	Justification of sampling strategy; discussion of what factors will influence sample size.
Data collection methods	15 marks	Discussion of which data collection methods will be chosen after consideration of alternative methods; sample of data collection tool that is chosen
Rigour	5 marks	How the researcher will ensure that data collection methods are reliable and valid
Analysis	10 marks	Discussion of how the data will be cleaned, coded and analysed – including dummy tables for quantitative data and analytical strategy for qualitative data
Budget/Workplan	5 marks	Brief outline of possible expenditure items and major tasks
Layout and <u>referencing</u>	10 marks	Layout should be clear; Referencing should be accurate. See <i>SOPH Academic Handbook</i> .
<b>Total</b>	<b>100 marks</b>	

### 3.6 Assignment Cover Sheet

#### School of Public Health – University of the Western Cape

An Assignment Cover Sheet needs to be attached to every assignment. Please fill in all details clearly and staple this form to the front of your assignment. Alternatively, fax it as the first page of your assignment, or develop a cover sheet like this one to e-mail with your assignment.

Full name: \_\_\_\_\_

Address: \_\_\_\_\_

Postal code: \_\_\_\_\_

Student number: 

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Module name: *Health Systems Research I*

Module code: **881519**

Convenors: Dr Smruti Patel

If faxed, state the total number of pages sent including this page:

\_\_\_\_\_

Student's comments to tutor

\_\_\_\_\_  
\_\_\_\_\_

**Declaration by student**

I understand what plagiarism is. This assignment is my own work, and all sources of information have been acknowledged. I have taken care to cite/reference all sources as set out in the *SOPH Academic Handbook*.

Signed by the student: \_\_\_\_\_

The tutor's comments are on the reverse of this form

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**Office Use**

Date received	Assessment/Grade	Tutor	Recorded & dispatched
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## 4 WORKLOAD AND SUGGESTED WORK PLAN

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This module comprises 14 quite work intensive sessions, as this is a practically oriented module. Because the sessions vary in length, we suggest you set your own goals for when to complete each Study Session using the time-plan below and the estimated times which we have provided. Keep track of the time it takes you to study a session so that you can plan more accurately. Keep track of your plan and update it regularly.

We suggest that your plan be built around the submission dates for the assignments, which the Student Administrator will provide. Get them at the earliest opportunity. Remember that the draft assignments are due at least *two weeks* before the final assignment due date. Work on your assignments – the individual tasks – as you work through the Study Sessions.

### Planning process

- Fill in the dates for submitting assignments, and aim to submit drafts – fill in the dates for these as well.
- Review the suggested work-plan. Identify the weeks when you will be under other pressures. Fill in fewer Study Sessions for those weeks.
- Check that the weeks for draft and final assignments submission are clear on your work plan.
- Write the sessions you plan to complete in the final column in pencil, and adjust them as it becomes necessary.

WEEK	BEGINNING DATE	UNIT	YOUR OWN WORKPLAN
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			



12			
13			
14			
15			
16			

## II STUDY SESSIONS

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<b>UNIT 1</b>	<b>INTRODUCTION TO HEALTH SYSTEMS RESEARCH</b>	<b>13</b>
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# UNIT 1

## Introduction to Health Systems Research

### Introduction

Unit 1 introduces the concept of research and, in particular, the characteristics of Health Systems Research. We begin by defining what we mean by Health Systems Research and describe the scope of Health Systems Research as a defined area in the research field. We then examine research protocols and outline the process of drawing up a protocol, identifying the stages – the assignment is based on this process; take a look at it now, you will find it in the Module Introduction. In the last session of the unit, we start on the first stage in this process: selecting, analysing and prioritising research problems. We will also be discussing the assignment protocol.

There are three Study Sessions in Unit 1  
 Study Session 1: What is Health Systems Research?  
 Study Session 2: What is a Research Protocol?  
 Study Session 3: Identifying Research Problems

Intended Learning Outcomes of the Unit	
By the end of this unit, you should be able to:	
Public Health Content	Academic Learning Content
<ul style="list-style-type: none"> <li>Describe the main features of research.</li> <li>Describe the components of the health system</li> <li>Describe the purpose, scope and characteristics of Health Systems Research.</li> <li>Identify the purpose and content of a research protocol.</li> <li>Identify criteria for selecting health-related problems to be given priority in research.</li> <li>Analyse a problem and identify the factors influencing it.</li> <li>Write a problem statement for a research proposal.</li> </ul>	<ul style="list-style-type: none"> <li>Read, interpret and present information in diagrams.</li> <li>Analyse texts and classify information.</li> <li>Read critically, noting missing or incorrect information.</li> <li>Think critically and draw on your own knowledge and experience.</li> <li>Write concisely.</li> </ul>

# Unit 1 - Session 1

## What is Health Systems Research?

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### Introduction

This study session introduces Health Systems Research: its purpose and main characteristics, and what distinguishes it from other types of health research. We will examine some examples of HSR, and the process of conducting HSR.

### Contents

1. Learning Outcomes of this Session
2. Define Health Systems Research
3. Examine Features of Health Systems Research
4. Summary
5. References

## 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study Session, you should be able to:	
<b>Public Health Content</b> <ul style="list-style-type: none"><li>• Define Health Systems Research.</li><li>• Distinguish different kinds of health research.</li><li>• Describe the purpose, scope and main characteristics of HSR.</li></ul>	<b>Academic Learning Content</b> <ul style="list-style-type: none"><li>• Analyse and classify information.</li><li>• Read and interpret diagrams.</li><li>• Brainstorm ideas.</li><li>• Think critically, drawing on your own knowledge and experience.</li></ul>

### ASSIGNMENT

By the end of the session, you should be clear about what you are expected to produce in the assignment.

## 2. DEFINE HEALTH SYSTEMS RESEARCH

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Here, you will explore what Health Systems Research is, its scope, purpose, and the process of conducting health systems research.

### TASK 1 – Clarify what health research is

- Below are short descriptions of various health professionals at work. All of these people are engaged in research of some sort. What do they all have in common that distinguishes 'research' from other kinds of work tasks that they perform?
  - A nurse is taking down a patient's medical history, asking questions such as "Are you on any medication now?"
  - A health worker checking the weight of a child
  - A nurse is showing a bar chart with the number of children immunised at the clinic.
- What kinds of health research activities have you been involved in? Which health professionals are usually involved in health research?

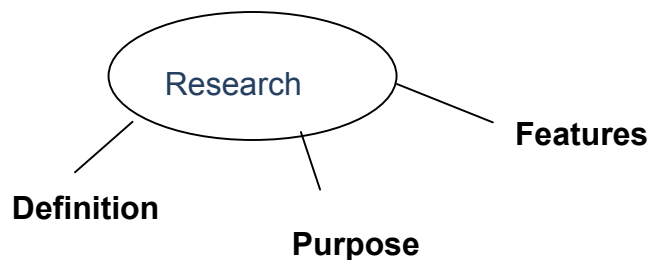
### FEEDBACK

- They are all asking questions of individuals or groups of people, performing observations, or presenting data for other people to read. These activities are all 'research'. What distinguishes research is the systematic collection of information to answer specific questions.
- From the scenarios and the kinds of research activities that you have probably been involved in, it is clear that research is an activity that is undertaken by most health professionals a lot of the time. It is not just something practised by doctors or researchers from universities and other institutions.

We move on to summarise what research is.

### TASK 2 – Summarise what research is

- What is the definition of 'research'? Check the meaning in a dictionary.
- What is the main purpose of research? What are its main features, or what does it entail? Jot down your ideas using this diagram as a guide.



### FEEDBACK

The Oxford International Dictionary defines research as:

- the act of searching (closely or carefully) for or after a specified thing or person
- an investigation directed at the discovery of some fact, by careful study of a subject

The main purpose of research is, simply, to find answers to questions. In terms of features, research usually:

- has a clear statement of the problem.
- has clear research questions and a research plan (it is not aimlessly looking for something in the hope that it will come across a solution).
- builds on existing data, using both positive and negative findings.
- collects new data as required, analyses and organises it in such a way that it answers the original research question(s).
- draws conclusions about the problem, based on the data.

The next task examines the process of carrying out research.

### **TASK 3 - Identify the steps in carrying out research**

1. To illustrate this research process, you are going to plan a dinner party. Imagine you have just received a call from your brother, his wife and his five children who are coming to spend an evening with you. Write down the steps you should go through in order to provide them with a nice evening meal. Make notes under the following headings:
  - The task or problem (define what it is)
  - Planning questions (to ask yourself)
  - Action (what to do to answer your planning questions)
  - Responsibilities (who will do what)
2. How would you evaluate the success of the dinner party?

### **FEEDBACK**

1. People plan meals in different ways, do there is no single correct way of doing this. Here is one way that we noted.

#### *Define the task/problem*

- Providing dinner for my brother and his family on Friday night.

#### *Planning questions*

- How many people will come to dinner?
- Who will do the cooking?
- What am I going to cook?
- What dish do I have to prepare first, next and so on?
- What ingredients do I need?
- Where will I get the ingredients?
- Who will get the ingredients?

#### *Action*

- Check what ingredients you already have
- Draw up a list of ingredients that you will need to buy
- Decide on the best place to buy these ingredients
- Decide who will go and buy them

#### *Responsibilities*

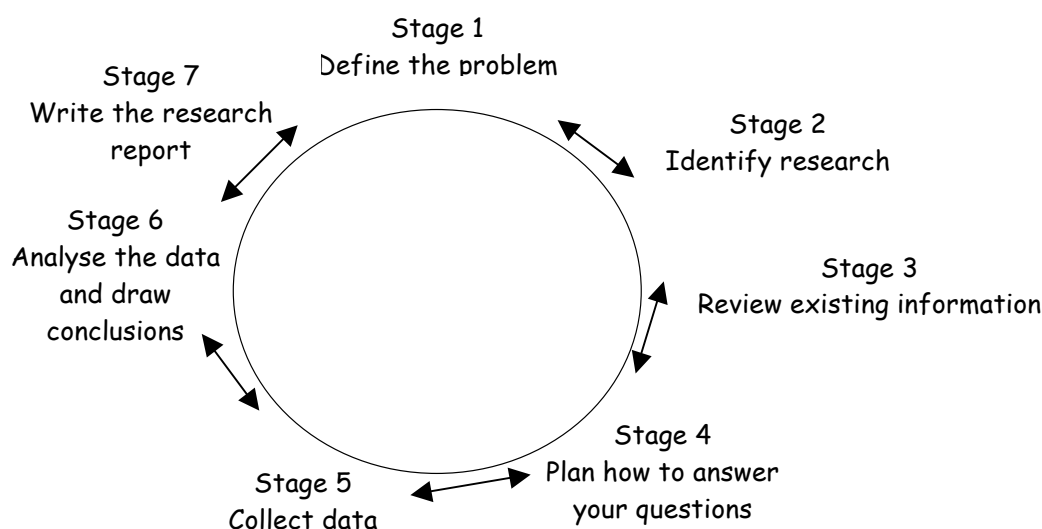
- Planning and cooking – Me
- Getting the ingredients – Julie
- Preparing the table - Paul

To evaluate, at the end of the meal you might ask the family if they enjoyed it. You could then draw conclusions as to how successful the dinner was.

## Research stages

The process of doing research is very similar to the process of planning a meal, as you have just done. The diagram below shows the main stages - or actions - in the process of conducting research.

### *Stages in Conducting Research*



First, you must be clear about the definition and the extent of the problem. You then need to have some clear questions you want answered. Next, you need to find out about existing research data or information on the problem, or subject you want to investigate. When you have done all this, you need a plan on how you will go about answering these questions. *Then*, you can go out and collect new data. The final stages in conducting research involve analysing the data, drawing conclusions on what the data is saying and writing up your findings in a report.

The main competence that the module focuses on is writing a research proposal, or a *plan* for a Health Systems research project. You will not be required to actually conduct the research. This module takes you through the stages of developing a protocol, and carefully guides you in planning and drawing up your own protocol for the assignment. In learning to develop a protocol, you also learn more about how to conduct Health Systems Research.

## **TASK 4 – Define and draw the health system**

1. What is a 'system'? If necessary, check the meaning in a dictionary.
2. What is the 'health system'? What is its main purpose or function?
3. When asked what the main components of the health system are, most people think of hospitals, clinics, doctors and nurses. Whilst these things are important components, many other factors influence the health of people. These can also be considered components, such as:
  - Cultural beliefs and practices around health and illness (e.g. household remedies)
  - The institutional arrangements within which these health beliefs/practices occur (e.g. the hospital, health services) and;

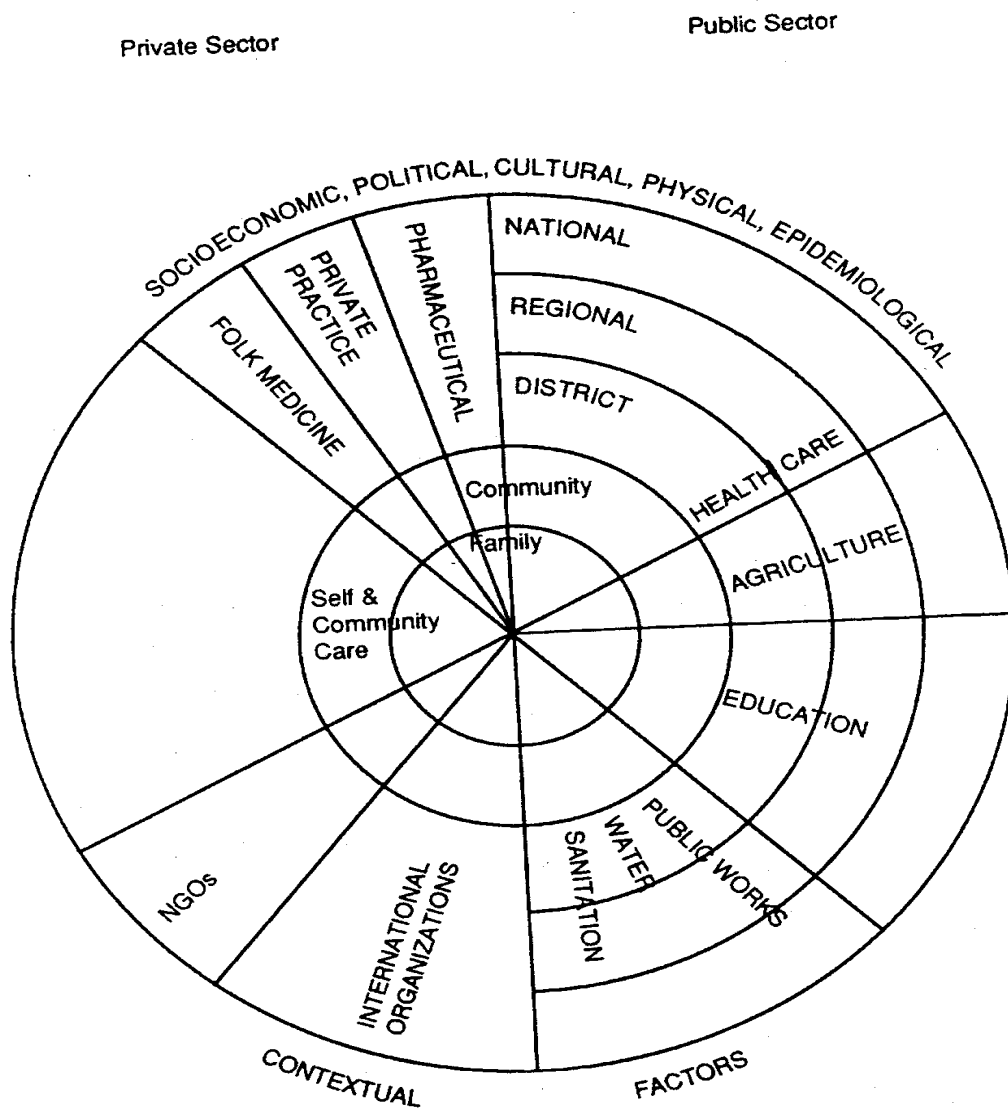
- The socio-economic/political/physical context for those beliefs (e.g. housing)

Try drawing the health system in its broader context, including some of its key components.

## FEEDBACK

1. A system is defined as a set of interrelated parts, which function as a whole.
2. The health system is a broad interconnected system around health. The main purpose of the health system is to support and to improve the health of the population.
3. The health system can be shown in different ways. Below is a fairly complex, detailed diagram showing the two main sectors (public and private), broad contextual factors and the main components.

**Figure 2.2. The health system.**



(Adapted from Varkevisser et al., 1991,19)



## TASK 5 - Define HSR

Now that you have come to a clearer understanding of what research and a health system are, try answering the following questions:

1. What is HSR and what is its main purpose?
2. What are some typical HSR questions?

## FEEDBACK

Health Systems Research (HSR) is, quite simply, research carried out on some component(s) or activity / activities of the health system. The aim of HSR is usually to improve the health status of the population, with the limited resources available, through improving the operation of the health system. This is a very broad definition of Health Systems Research. Because HSR is problem-orientated, it should be selective and concentrate on those factors that will help to explain and solve the problem being examined. In this module we concentrate mostly on just one of the components of the health system - health services delivery.

Typical HSR questions include:

- *What proportion of X population has X condition?*
- *Given condition Y, what proportion of a group seeks care?*
- *What type of care is sought?*
- *What is the cost of care to the patient, the health care system and society?*
- *What proportion of those who obtain care is satisfied with the care obtained?*
- *Is treatment or care of Type A more effective than Type B?*
- *Is treatment of Type A cheaper than Type B, given similar effectiveness?*
- *How well do staff and patients communicate?*
- *Why is staff morale low?*

(Adapted from Varkevisser et al., 1991, p.153)

## 3. EXAMINE FEATURES OF HEALTH SYSTEMS RESEARCH

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This activity helps you to recognise the differences between Health Systems Research and other types of health research, to classify the types of research questions that HSR deals with, and to determine the main characteristics of HSR.

## TASK 6 - Classify types of research

1. Read the extract from Health Systems Research, Health Systems Trust, 1997, p. 2-3.

## WHAT IS HEALTH SYSTEMS RESEARCH AND WHY SHOULD WE BE DOING IT?

Health Systems Research aims to provide information which will improve the functioning of the health system, and ultimately lead to improved health status. It provides policy options and practical information to role players in the health system. These role-players may range from policy makers at a national level to clinic managers at the primary care level. Health Systems Research is applied health research.

Health managers and decision makers are daily faced with difficult decisions on how to use scarce resources. To spend more money on one thing usually implies that less can be spent on something else. For instance, an increase in spending for drugs to treat sexually transmitted diseases (STDs) requires that the money for this has to come from elsewhere. Spending on another programme, such as screening for cervical cancer may have to be reduced. Alternatively, another way of getting the extra money is through savings made by more efficient practices.

## How is Health Systems Research different from other types of Health Research?

Different types of health research vary in their focus. Each plays a different role in overall health development. This is shown by the following classification of health research:

A classification of health research based on the application of biological social and behavioural sciences methods		
Objects of Analysis		
Level of Analysis	Health problems/conditions	Health Care Responses
Individual or Subindividual	Biomedical research - biological processes - body structure and functions - pathological mechanisms	Clinical research - efficacy of preventive diagnostic and therapeutic procedures eg: drug efficacy and side effects - natural history of diseases
Population- Public Health Research	Epidemiological Research - frequency distribution and causes of diseases	Health Systems Research - policy research - operational research

Adapted from Frenk, J. (1993). "The new Public Health" in *Annual Review of Public Health*, 14:469-90

Both biological and clinical research focus on the individual. Biomedical research focuses on how the body works. It considers the biological processes, structures, functions and mechanisms within an organism. Clinical research focuses on the response of the body to various preventative, diagnostic or therapeutic interventions.

On the other hand Public Health research focuses on groups of people (populations). It has two main components: epidemiological research, which considers the frequency, distribution and causes of ill health; and Health Systems Research, which focuses on the organised response to health and disease. Health Systems Research considers the functioning of the health system, the costs and quality of the services provided, and the distribution of resources within the system. Along with biological research, behavioural and social research are important tools for Public Health research. In reality, it is not so easy to neatly pigeon-hole research as is done in the table above. An interdependency and overlap often exists between various types of research. For example, the results of biomedical research often feed into clinical research; epidemiological research determines the causes of ill health and indicates which services are needed; this in turn leads into Health Systems Research.

### Research into syphilis: Some examples

**Biomedical research:** Biomedical research: Biomedical research:

Biomedical research: Biomedical research: considers the life cycle of the micro-organism (spirochaete) in the human body and the effects of the infection on the various systems of the body and foetus.

**Clinical research:** Clinical research: Clinical research: Clinical research: Clinical research: determines the efficacy of various treatments for syphilis, such as long-acting penicillin injections and vaccines.

**Epidemiological research:** estimates the number of people suffering from syphilis and identifies risk factors determining the distribution of the disease.

**Health Systems Research:** examines the way the health system functions to ensure that an effective treatment for syphilis is delivered to those who

need it. For example, it helps to find out why so many pregnant women who have syphilis are inadequately treated and deliver newborn babies that are infected.

Health Systems Research has recently gained increased attention internationally. By looking at the above example it can be seen why. For many years we have had an understanding of the biomedical mechanisms of syphilis infection. There has also been effective clinical treatment for syphilis. However, we know from epidemiological research that many people in South Africa still suffer from syphilis. Health Systems Research examines why this is so and how to improve the situation.

2. The research problems listed here relate to tuberculosis. Classify them in the table below according to the type of research they entail.

- The resistance of TB to TB drugs
- How many people in the district suffer from TB?
- A high treatment defaulter rate
- The biological relationship between TB and HIV
- The effectiveness of TB drugs in patients with HIV
- The opinion of TB sufferers about the TB services in the district
- What are some of the barriers that local people face in getting TB treatment
- Who is at greatest risk of getting TB?

Biomedical	Clinical
Epidemiology	Health Systems Research

## FEEDBACK

2.

### **Biomedical**

The biological relationship between TB and HIV

### **Clinical**

The resistance of TB to TB drugs

The effectiveness of TB drugs in patients with HIV

### **Epidemiology**

How many people in the district suffer from TB?

Who is at greatest risk of getting TB?

### **Health Systems Research**

The opinion of TB sufferers about the TB services in the district

What are some of the barriers that local people face in getting TB treatment?

A high treatment defaulter rate

## TASK 7 - Identify the main areas of concern in HSR

1. Put yourself into the shoes of each person below. What questions do you think each one might ask about the ante-natal services in your area? Jot down at least one question for each person.
  - Minister of Health
  - District Manager
  - Clinic Manager
  - Village Leader
  - Mother
2. These questions illustrate different kinds of concerns that people have about ante-natal care services. How could you classify or group these concerns? For instance, one area of concern might be around the *efficiency* of the ante-natal services. What are some others? Use the questions you drew up to help you.

## FEEDBACK

1. Possible questions that people may ask about the ante-natal services are:

Minister of Health:

- Should AZT be provided to HIV positive pregnant women?
- Do the midwives see enough patients in an ante-natal clinic?
- District Manager:
  - How many mothers deliver healthy live babies when they use the local health services?
- Clinic Manager:
  - What do patients think of the ante-natal service?
- Village Leader:
  - Why must people wait so long for treatment?

Mother:

- Is the clinic open at night for delivery?

2. We can classify the areas of major concern in health services research as:

- Appropriateness (do they cover priority needs?)
- Effectiveness (what is the quality of the service?)
- Efficiency (is it providing the best outputs from the amount of inputs?)
- Accessibility (are people able to use the service?)
- Acceptability of service to clients (do clients find the service satisfactory?)

These areas of concern are illustrated below.

Should AZT be provided to HIV positive pregnant women?	Appropriateness
How many mothers deliver healthy live babies when they use the local health services?	Effectiveness
Do the midwives see enough patients in an ante-natal clinic?	Efficiency
Is the clinic open at night for delivery?	Accessibility
What do patients think of the ante-natal service?	Acceptability

## TASK 8 - Classify research questions into areas of concern

Classify the following research questions about ANC into their area of concern.

Question	Area of concern
----------	-----------------

What is the cost of saving one baby's life because of the ante-natal services?	
Why must people wait so long for treatment?	
What is the distribution of ANC in the district?	
Would it be better to increase the number of TB clinics and to reduce the number of ante-natal clinics	
Are the educational messages around ante-natal care understandable to the patients from a particular community?	

## FEEDBACK

You may have found that some questions can fit into more than one area because there is often overlap between these categories. Here is one possible classification.

Question	Area of concern
What is the cost of saving one baby's life because of the ante-natal services?	Efficiency
Why must people wait so long for treatment?	Effectiveness
What is the distribution of ANC in the district?	Accessibility
Would it be better to increase the number of TB clinics and to reduce the number of ante-natal clinics?	Appropriateness
Are the educational messages around ante-natal care understandable to the patients from a particular community?	Acceptability

## TASK 9 – Examine the characteristics of HSR

1. Read the text from Health Systems Trust, 1997, p.6. This summarises the nine essential characteristics of HSR.

## THE CHARACTERISTICS OF HEALTH SYSTEMS RESEARCH

The following points summarise the essential elements of Health Systems Research.

1. Health Systems Research should focus on **priority problems**. At each level of the health services, managers and policy makers will have different problems.
2. Health Systems Research should concentrate on the most pressing problems faced by each level. By focusing attention on priority problems, Health Systems Research makes the greatest possible impact on health services.
3. It should be **action-oriented**, i.e. aimed at developing solutions. The outcome of most Health Systems Research should be some simple practical advice. Health Systems Research should do more than count the number of people suffering from a certain condition, or describe people's behaviour. It should focus on finding practical solutions, for instance how to deal with people suffering from the particular condition or how to change people's behaviour.
4. Health Systems Research utilises an integrated **multi-disciplinary** approach. Input from many disciplines is needed; for example doctors, nurses, epidemiologists, economists, transport

managers, social and behavioural researchers. This is a reflection of the complexity of the questions that the "real world" throws up.

5. Health Systems Research should be **participatory**. The relevant stakeholders concerned should be involved (policy makers and health care managers, researchers, and community members) in all stages of the research. Recommendations from studies may be inappropriate or not feasible if health care managers are not involved; or simply have less chance of being utilised. If researchers are not involved then the methodology may not be valid or reliable. If the community are not involved, the suggested solutions may be unacceptable to them or just not wanted.
  6. Research must be **timely**. Studies must be done in such a way that results will be available when needed for key decisions. Health Systems Research loses its purpose if decisions have been made before the findings of the research are available.
  7. Research designs should be **simple and effective**.
  8. Health Systems Research projects focus on finding solutions which are **affordable and effective**. The research should always consider 'Can these recommendations be afforded?'
  9. Results should be accessible and easily understood accessible and easily understood. Their purpose is to make people aware of the findings and act upon them.
  10. Health Systems Research should be evaluated by how much it has influenced policy, improved services, and ultimately led to better health. A Health Systems Research project should not stop at finding answers to questions posed, but should include an assessment of what decisions have been made as a result of the study.
2. Why are these nine characteristics of HSR important? Summarise the main reasons for including each characteristic.

Characteristic	Reason
a) Priority Problems	
b) Action-Oriented	
c) Multi-disciplinary	
d) Participatory	
e) Timely	
f) Simple, effective	
g) Affordable, effective	
h) Accessible, easily understood	
i) Impact	

## FEEDBACK

2.

Characteristic	Reason
a) Priority Problems	Research will have a greater impact
b) Action-Oriented	Research will have a practical impact
c) Multi-disciplinary	To deal effectively with complex multi-faceted, real-world problems
d) Participatory	So that research is appropriate, feasible, reliable, valid, usable
e) Timely	So that results can be acted upon when they are needed
f) Simple, effective	To be feasible, easier to carry out and to implement the results
g) Affordable, effective	Recommendations must be realistic and able to be

	acted upon
h) Accessible, easily understood	So that everyone understands them and can act upon the findings
i) Impact	To know how useful the research has been, its impact on policy & services, & on improving health

We will come back to these characteristics later when we look at how to develop and evaluate a research protocol.

## ASSIGNMENT

**As mentioned earlier, this module does not take you through the process of conducting Health Systems Research. Instead, it guides you through the stages necessary to produce a complete research protocol. The protocol provides the plan (or the recipe), for the collection of research data.**

**For the assignment, you are expected to hand in a complete research protocol that could be presented for raising funds. In each study session, you receive guidance on how to incorporate ideas from the session into the assignment protocol. We strongly recommend that you complete each part of the assignment in this way as you work through the module. By the end of the module, you should have a complete draft of the assignment protocol.**

## 4. SUMMARY

We are becoming increasingly aware of the fact that although we know many of the biomedical and clinical causes of ill-health and have effective treatments for many of them, people still suffer from preventable and treatable diseases. For instance, we know very well the causes of tuberculosis and have devised very effective treatment for this disease. Yet many thousands of people still die every year because of no or incomplete treatment. Health Systems Research examines why this is so and what can be done to improve it.

HSR is particularly relevant for health workers in the new district health system. Increasingly, it is the responsibility of local health workers to identify, research and tackle local problems which reduce the effectiveness and efficiency of the health care that they provide. Therefore, acquiring skills to conduct HSR, with the characteristics outlined above, is important for the success of the district health system.

## 5. REFERENCES

- Health Systems Trust. (1997). *Health Systems Research*. HST: Durban.
- Varkevisser, C. et al. (1991). *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre. Geneva: WHO.

# Unit 1 - Session 2

## What is a Research Protocol?

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### Introduction

Having clarified what we mean by Health Systems Research, this study session examines the purpose, structure and content of a research protocol, and the stages involved in developing a full HSR protocol.

### Contents

1. Outcomes of this session
2. Readings
3. Analyse a Research Protocol
4. Examine the Process of Writing a Protocol
5. Summary
6. References

## 1. LEARNING OUTCOMES OF THIS SESSION

---

**By the end of this study Session, you should be able to:**

#### Public Health Content

- Identify the purpose of a research protocol.
- Outline the parts of a research protocol.
- Describe the stages in developing a protocol.

#### Academic Learning Content

- Analyse the purpose, content and structure of texts.
- Read critically, noting missing or incorrect information.

### ASSIGNMENT

**By the end of the session, you should be clearer about what is required for the assignment protocol.**



## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
WHO	(1995). Availability, Provision and Use of Antibiotic, Antihypertensive and Antidiabetic Drugs at Public Health Care Level in Mauritius. <i>Geneva: WHO: 5 - 23.</i>	205 - 225

## 3. ANALYSE A RESEARCH PROTOCOL

---

This activity clarifies what a research protocol is, its purpose, structure, content, and why it is important.

### TASK 1 – Define a research protocol

Find a research protocol to read. If necessary, ask your work colleagues or manager for a protocol to look at. Then answer these questions.

- What is a research protocol? What are other names for it?
- What is the main purpose of a research protocol? How does it help when carrying out research?

### FEEDBACK

A research protocol is also known as a research plan or proposal. It serves to guide the research team, their advisors and potential funders on exactly what the research aims to do, why, how and when. What differentiates research from other activities is the systematic collection of information to answer questions. This involves making a plan. A research proposal helps:

- to plan what problems to focus on;
- to be explicit, spell out why research needs to be done and how it will contribute to improving health services;
- to plan what actions are needed;
- to plan what information should be collected;
- to think through all the potential problems that may arise;
- to set out the resources that you will require, to ensure that you do not plan an over-ambitious study, which you cannot complete;
- to enable others to judge whether what you are planning is feasible and appropriate;
- to be able to approach funders in order obtain resources.

One of the main aims of this module is to develop your ability to draw up a Health Systems Research protocol. We now look at what this entails.

### TASK 2 – Analyse the content and structure of a protocol

1. Think back to the exercise you did in Study Session 1 – thinking about preparing for a dinner party. Preparing a research protocol is a similar process, although you have to be much more precise and systematic. Read the research protocol below. Jot down the main headings, what they cover and their purpose, as shown here. Note that, to save space, we have altered the page numbering and layout of the original protocol. This is a protocol for a Masters level student

so don't worry if you do not follow the content we want you to concentrate upon the structure of this protocol.

*A Research Protocol*

Heading	Content	Purpose

2. Why do research protocols tend to adopt a standard structure like the one in the following example?

**MATERNAL HIV-INFECTION AND PERINATAL OUTCOME:  
RESULTS OF A DISTRICT-BASED PREVENTION PROGRAMME FOR  
MOTHER-TO-CHILD TRANSMISSION IN KHAYELITSHA,  
CAPE TOWN**

**MINI-THESIS PROTOCOL**

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**Keywords:** HIV infection, Perinatal outcome, Mother-to-child transmission, AZT, Maternal, Pregnancy, PAIDS, Intervention programme, Neonatal, Developing countries.

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## SUMMARY

The relationship between maternal HIV infection and adverse perinatal outcome seems mainly influenced by local determinants and is generally higher in less-developed countries. Whether these outcomes should be attributed to the HIV status of the newborn or to the general health status of the HIV-infected mother remains unclear. The focus of intervention programmes for mother-to-child transmission is obviously to reduce the perinatal transmission rate. However it is also worthwhile to assess what impact such a programme has in terms of perinatal outcome, regardless of the HIV status of the neonate. This mini-thesis aims to evaluate the perinatal outcome of HIV-infected women and their neonates, enrolled in a district-based prevention programme for mother-to-child transmission (MTCT) in peri-urban Cape Town. This MTCT programme serves as a pilot project for South Africa. Therefore, all outcomes related to this project should help to guide policymakers and stakeholders in their decisions around the future of intervention strategies for perinatal HIV transmission.

## INTRODUCTION

Mother-to-child transmission of human immunodeficiency virus (HIV) is currently the major cause of paediatric acquired immunodeficiency syndrome (PAIDS) in all countries. Over 90% of this type of HIV transmission occurs in developing countries due to high fertility rates in combination with high HIV prevalence in women of childbearing age (Saba, 1997). World-wide estimates of children infected with HIV by the year 2000, are around 5 million; 80% of these children will live in sub-Saharan Africa (Nesheim, 1996).

Since the first cases of perinatally infected children with AIDS were reported in 1983, a lot of research has been done to get a better understanding of the dynamics of vertical HIV transmission. It is now generally agreed that there are 3 categories of perinatal transmission according to the timing: in utero, intrapartum and postpartum through breastfeeding. Most studies in this area suggest that more than 50% of perinatal transmission occurs close to the time of delivery (Orloff, 1996). Such findings have been of great importance to guide further research and the planning of intervention strategies to prevent perinatal HIV transmission. So far several prevention strategies

have been examined. These include: vaginal lavage with disinfectants or microbicides, vitamin A supplements for pregnant women, and obstetric practices such as elective caesarean section or reduction of invasive procedures (episiotomy, scalp electrodes etc.) (Cohen, 1995; Orloff, 1996). One of the most promising strategies has been the antiretroviral therapy with zidovudine (AZT) during pregnancy, which was studied in the AIDS Clinical Trials Group 076 protocol in 1994 and demonstrated a risk reduction of perinatal HIV transmission by two thirds (CDC, 1998).

Unfortunately due to its complexity and cost this regimen was not suitable for implementation in those parts of the world where most HIV-infected pregnant women live. In reaction to this, researchers have focussed on how to simplify and reduce the cost of the 076 protocol without losing its efficacy (Cohen, 1995). In March 1998 the preliminary results of a short-term antenatal AZT trial in Thailand were reported, showing a 50 % decrease in transmission risk (CDC, 1998). A recent trial in Uganda introduced the latest short-term antiretroviral regimen using nevirapine. This intrapartum and neonatal single-dose regimen lowered the risk of HIV transmission by nearly 50% during the first 14-16 weeks of life, in a breastfeeding population. Although the effectiveness of nevirapine was not directly compared with the Thai AZT regimen, the simplicity and low cost of the nevirapine regimen could make a difference for many babies born to HIV positive mothers in the less-developed parts of the world (Guay, 1999).

South Africa currently experiences a rapid increase in HIV prevalence with marked provincial differences. Antenatal surveys for HIV prevalence in 1997 ranged from 6% in the Western Cape to 27% in KwaZulu-Natal. Although the figures for the Western Cape were still low, this province showed the highest increase of all, by doubling its HIV prevalence in one year. The prevalence for the Cape Metropole was 7,6% in 1997 (Department of National Health and Antenatal Survey). In October 1998 the South African Government took a decision that the country was yet unable to implement the provision of AZT for pregnant HIV positive women (McIntyre, 1999). However in January 1999 a prevention programme for mother-to-child transmission (MTCT), using a short-term AZT regimen (similar to the Thai regimen), started as a pilot in two Maternity Obstetric Units (MOUs): Michael Mapongwana and Site B, in Khayelitsha, a peri-urban settlement near Cape Town. Monitoring and evaluation of the MTCT programme is done under the hospice of the Department of Community Health from the University of Cape Town.

## **PROBLEM**

There is no doubt about the seriousness of perinatal HIV transmission. Whether the factors influencing the transmission rate also affect the perinatal outcome of HIV-infected pregnancies is still unclear. In fact there is a lot of controversy around this subject. While most studies conducted in developing countries report an association between maternal HIV infection and adverse perinatal outcome (Temmerman, 1994; Kumar, 1995; Chamiso, 1996; Leroy 1998), studies from developed countries fail to demonstrate such an effect (Newell, 1997). Whatever the relationship between maternal HIV status, perinatal transmission and perinatal outcome, it is clear that the results are highly influenced by regional circumstances. Knowledge of the local situation seems crucial for implementation and evaluation of intervention strategies and will help to develop further guidelines concerning the prenatal care of HIV-infected pregnancies. So far, there have been no reports on the impact of maternal HIV-infection on perinatal outcome from South Africa. Furthermore, most studies around this topic in developed as well as developing countries reported the outcomes of hospital-based trials.

This mini-thesis will focus on the perinatal outcome of HIV positive pregnancies as compared to HIV negative pregnancies in a district-based intervention programme that intends to reduce the burden of PAIDS in this area. This programme has been implemented in the routine Primary Health Care services of the Khayelitsha district. In addition, this study will seek to identify concomitant factors for HIV positive women in this population group that may have a negative influence on perinatal outcome.

## **PURPOSE**

The MTCT programme in Khayelitsha serves as a pilot project. All outcomes related to this programme will help the stakeholders to make informed decisions about the future of this intervention strategy. The major stakeholder is the Provincial Health Department of the Western Cape, which provides the main funds for this two-year pilot project. It will also make health workers

understand the importance of HIV counselling for pregnant women and help them to find ways in which they can contribute towards the reduction of adverse perinatal outcomes in HIV-positive women, even in the absence of AZT. Finally the results of this study could be used to create awareness amongst women of childbearing age concerning the impact of HIV on perinatal outcome and help them to make informed choices about their own future and that of their children.

## LITERATURE REVIEW

Perinatal HIV transmission has been the topic of many researchers in developed as well as developing countries over the last 15 years. Transmission rates vary considerably among different regions in the world, ranging from 14% in Europe to almost 50 % in sub-Saharan Africa (Working Group on Mother-To-Child Transmission of HIV, 1995). Explanations for these variations involve several factors. Initial studies around this topic made use of different methods to calculate and report transmission rates. This problem was addressed during a workshop in 1992 in Belgium, where the use of standard methods was proposed to make studies in this field more comparable. Other factors that may explain some of the regional differences are breastfeeding practices, nutritional status and disease stage of the mother or concurrent sexually transmitted diseases (Datta, 1994; Orloff, 1996; Tovo, 1997), all of these often determined by socio-economic circumstances. Obstetric factors such as mode and timing of delivery also seem to play a role (European Collaborative Study 1996; Landesman, 1996; Tovo, 1996).

Some studies focus on the impact of a specific factor related to perinatal HIV transmission in order to formulate guidelines for prevention. Examples of such studies are the impact of maternal disease stage (Blanche, 1994); vitamin A deficiency (Semba, 1994; Greenberg, 1997; Coutoudis, 1999); or caesarean section (Kuhn, 1996; European Mode of Delivery Collaboration, 1999). Such aspects are usually studied within a group of known HIV-infected pregnant women.

Brocklehurst (1998) reports on the findings of a systematic literature review on the association between maternal HIV-infection and perinatal outcome over the period 1983 - 1996. This review includes 21 studies from developing countries and 10 studies from developed countries. All these studies were conducted with prospective cohorts of pregnant women identified as being HIV-positive during pregnancy or delivery and a control group of HIV-negative pregnant women. Another prerequisite for this study was that outcome measures had to be pre-specified. Summary odds ratios of the main adverse perinatal outcomes related to maternal HIV infection were reported as follows: spontaneous abortion 4.05 (95% CI 2.75-5.96); stillbirth 3.91 (95% CI 2.65-5.77); neonatal mortality 1.10 (95% CI 0.63-1.93); infant mortality 3.69 (95% CI 3.03-4.49); low birthweight 2.09 (95% CI 1.86-2.35) and pre-term delivery 1.83 (95% CI 1.63-2.06). The review also highlights that the association between maternal HIV infection and an adverse perinatal outcome is generally stronger for developing countries compared to developed countries. Control of confounding was done in some studies by matching the HIV-infected and uninfected pregnant women for age and parity. Another method to control for confounding was stratification of birth outcomes by maternal disease stage. Different types of multivariate analyses were also used for the same purpose.

Studies like those included in the literature review are similar to the scope of this mini-thesis. The focus is on the overall impact of HIV on pregnancy and its outcome, without knowledge of the HIV status of the newborn, as such test results only become reliable after the first year of life, unless more expensive test methods are used (Orendi, 1998). Most reports on adverse perinatal outcome of HIV-infected pregnancies come from less-developed countries, whereby perinatal outcome refers to neonatal as well as maternal outcome. The following neonatal outcomes have all been associated with a positive maternal HIV status: stillbirth, neonatal death, low Apgar score, low birthweight and prematurity (Aiken, 1992; Temmerman, 1994; Kumar, 1995; Taha, 1995; Chamiso, 1996; Leroy, 1998). Whether these outcomes should be attributed to the HIV status of the child or to the general health status of HIV-infected pregnant women remains unclear (Abrams, 1995; Brocklehurst, 1998). But even if an HIV exposed infant is uninfected, a low birthweight or prematurity in itself increases the risk of perinatal mortality or morbidity (Taha, 1995; Markson, 1996). Apart from adverse neonatal outcomes, there is also evidence that maternal HIV infection increases the risk of obstetric complications such as premature labour, chorioamnionitis and postpartum endometritis (Temmerman, 1994; Kumar, 1995; Chamiso, 1996; Orloff, 1996).

A retrospective record study was done to assess the association of maternal HIV-infection with low birthweight (Markson, 1996). This study design has the advantage that it is easier to include a larger sample, which might produce more convincing results.

So far, no studies have reported any evidence of an HIV dysmorphic syndrome or specific congenital abnormalities in children born to HIV-infected women (European Collaborative Study 1994). In addition several studies found that HIV-infected children rarely show signs and symptoms of their infection during the neonatal period (Abrams, 1995; Nesheim, 1996). Therefore most HIV-infected newborns seem perfectly healthy at birth and only show progress of their disease later in infancy.

Most studies in developing countries had larger sample sizes than those conducted in developed countries. This might be one of the underlying reasons why the latter studies fail to demonstrate an impact of HIV on perinatal outcome.

Research on maternal HIV infection and transmission has been rather limited in South Africa; most studies seem to be based on two cohorts of HIV positive pregnant women in Durban. The first report comes from a prospective cohort of 229 HIV positive pregnant women. The intermediate HIV transmission rate of 181 infants born to these women was 34% (95% CI 26-42). Furthermore this study showed an increased risk of transmission (RR 1.99; 95% CI 1.18-3.34) for women with lower haemoglobin concentrations (< 10 g/dl) during pregnancy and a protective effect from caesarean sections on vertical transmission (RR 0.46; 95% CI 0.23-0.91) (Bobat, 1996; Kuhn, 1996). The impact of breastfeeding on transmission rate, growth and mortality in infants of HIV infected women was studied in the same cohort. The results of this study showed an increased risk of 15% (CI, 1.8-31.8) for transmission by breastfeeding compared to formula feeding. A more recent study also conducted in Durban assessed the effect of vitamin A supplementation to HIV positive pregnant women in terms of transmission rate and birth outcome. This intervention did not appear to be effective in reducing the overall vertical transmission rate but seemed to have some potential for reducing the incidence of preterm deliveries and the risk of vertical transmission in these preterm infants (Coutsoudis, 1999)(1). In addition the influence of infant-feeding patterns on early mother-to-child HIV transmission was assessed in infants born to women who were part of the vitamin A intervention trial. Outcomes of this study suggest that exclusive breastfeeding in the first 3 months might not convey any excess risk of HIV transmission over formula feeding (Coutsoudis, 1999)(2).

## **AIM**

To establish the impact of maternal HIV-infection on perinatal outcomes in women, who volunteered for antenatal HIV screening and thus enrolled in a short-term AZT prevention programme for mother-to-child transmission in Khayelitsha.

## **OBJECTIVES**

- To determine whether there is an association between maternal HIV-infection and mortality outcome (maternal, neonatal and stillbirth).
- To determine whether there is an association between maternal HIV-infection and maternal and/ or neonatal morbidity.
- To establish within the group of HIV positive pregnant women the impact of compliance to the AZT regimen ( full, partial or no course of AZT received) , on stillbirth and neonatal mortality and morbidity
- To identify concomitant risk factors in HIV-positive pregnant women contributing to adverse perinatal outcome.

## **METHODOLOGY**

### **Study Design**

The study has a descriptive component to meet the first objective. This part will describe the total mortality outcome (maternal, neonatal and stillbirth) of the short-term AZT prevention programme, during the first year (1999). The study contains an analytic part, based on a retrospective cohort, to meet the other three objectives. The main advantage of this design compared to a prospective study is feasibility in terms of time and resources. Because the method is less time consuming it will be possible to study a larger sample of the population, which might produce more convincing results. A major disadvantage is the dependency on data that were not collected for research purposes, which might lead to a reduction in the accuracy and completeness of the collected data,

and has limitations in terms of follow-up. However, a special monitoring and evaluation system has been devised for the MTCT programme to guarantee that a certain set of data will be available (from a database). For the purpose of this mini-thesis, the advantages of the chosen study design weigh up to the disadvantages.

### Definition of Terms

- Gestation: length of pregnancy calculated from the first day of the last menstrual period or first trimester ultra-sound scans when available.
- Perinatal outcome: all maternal and neonatal morbidity and mortality outcome
- Mortality outcome:
  - maternal death: any death of a woman during pregnancy or within 6 weeks after delivery, unless any relationship to the pregnancy as a cause can be excluded.
    - still birth: all foetuses born dead after a gestational age of 20 weeks.
    - neonatal death: all neonates born alive who die within the first 4 weeks.
- Maternal morbidity outcome:
  - mode of delivery (including caesarean section).
  - sexually transmitted diseases (syphilis, vaginal discharge, herpes or condylomata  
    accuminata) diagnoses during pregnancy.
  - premature rupture of membranes: rupture of membranes > 1 hour prior to the onset of uterine contractions.
    - premature labour: the onset of labour before 37 completed weeks of gestation.
  - chorioamnionitis: woman in labour with a temperature of 38° C or more, without external causes of fever.
  - postpartum endometritis: record of at least 2 of the following symptoms: temperature > 38° C, foul smelling lochia or uterine tenderness.
  - postpartum haemorrhage: bleeding from the genital tract which exceeds 1000 ml and which occurs within 24 hours after delivery.
    - referrals to hospital.
- Neonatal morbidity outcome:
  - pre-term birth: all births before 37 completed weeks of gestation.
  - intrauterine growth retardation: all live neonates with a birthweight below the 10<sup>th</sup> percentile for gestational age.
    - low birthweight: all live neonates with a birthweight below 2500 gram.
    - Apgar-score.
    - congenital abnormalities.
  - any signs or symptoms of disease in the neonate within the first 4 weeks of life.
    - hospital admissions during the first 4 weeks of life.
- AZT regimen:
  - full: 300 mg BD from 36 weeks' gestation until onset of labour and 300 mg every 3 hours from onset of labour until delivery.
  - partial: any course of AZT containing fewer doses than the full regimen.
  - no treatment: no AZT doses at all.

### Study Population

All pregnant women attending the two MOUs in Khayelitsha, who underwent a voluntary HIV screening test during the study period, are eligible to the study.

### Generalisability

Although the MTCT programme in Khayelitsha is rather unique in South Africa, the results could also apply to other populations with a similar HIV prevalence and living under similar circumstances.

### Sample Size

The total retrospective cohort will consist of 540 records, 180 cases and 360 controls. This number is based on an expected adverse perinatal outcome of 15% in a normal population and an estimated risk ratio of two, for adverse perinatal outcomes in HIV positive pregnancies (Taha, 1995; Leroy, 1998). To determine an association with 80% power and 95% confidence interval, under these circumstances requires a minimum number of 480 records according to the WHO Epi info statistical package. The 60 extra records are included, taking into account possible loss to follow-up.

### Sampling Procedure

The sampling frame is systematic, whereby cases and controls are determined by the time/date they come for their first antenatal visit and consent for a voluntary HIV test. This first visit links the women to their record.

The MOU at site B is at least twice as busy as the MOU at Michael Mapongwana, therefore two third (360) of the study sample will be taken from site B and one-third (180) from Michael Mapongwana. At site B, the first 10 women in each month during 1999, who tested HIV positive during the voluntary antenatal screening will be included as cases. The first 20 women in each month during 1999, who tested HIV negative, will be included as controls. At Michael Mapongwana, the first 5 women who tested HIV positive and the first 10 women who tested HIV negative in each month will be included in the same way.

### Data Collection

Record review at two MOUs in Khayelitsha. The following data will be collected from each record:

sociodemographic	-	age, educational level, marital status, number of partners, occupation.
medical history	-	all relevant chronic or acute medical conditions, current medication.
obstetric history	-	parity, miscarriages/ abortions, STDs, VDRL result, haemoglobin level, gestational age at first antenatal visit, total number of antenatal visits, pregnancy induced hypertension or diabetes.
obstetric outcome	-	mode of delivery, gestational age, premature labour, premature rupture of membranes, placenta weight, post partum haemorrhage, chorioamnionitis, post partum endometritis, hospital referrals, maternal death.
neonatal outcome	-	stillbirth, birthweight, Apgar score, congenital malformations, symptoms, diseases or hospital admissions within the first 4 weeks of life, neonatal death.
AZT regimen	-	full, partial or no AZT course received.

A pilot study will be conducted to check whether it is possible to obtain the above mentioned data from the records.

### Validity

The retrospective character of the study is likely to have an impact on the validity in terms of information bias. It is not possible to control for inaccuracies in measurements or record keeping, but the bias in the relative risk estimates will be minimal, as the error will be equally distributed between the cases and the controls.

### Reliability

As with validity, the reliability will also suffer from the retrospective study design. It is unlikely that all health workers between the two facilities or even within one facility perform certain measurements in a standardised way or make use of the same measurement tool at all times. But the possible error will be equally distributed over cases as well as controls.

### Data Analysis

Statistics will be analysed using the WHO Epi Info 6 statistical package. Means of quantitative variables will be compared by a t-test; proportions will be compared with a  $\chi^2$ -test. Odds ratios and the 95% confidence intervals will be used to measure the strength of associations. Statistical significance will be set at a cut-off level of  $p < 0.05$ .

## LOGISTICS

Data related to the HIV positive women will be collected from their obstetric records or from the MTCT monitoring database. Data related to the control group will be collected from the obstetric records. Data related to the neonates will be obtained from the records that are given to them at birth. All mortality data will be retrieved from the annual mortality statistics for Khayelitsha. After collection all data will be entered in a database and made suitable for statistical analysis. The



results of the study will be distributed to the Provincial Department, health workers in the participating MOUs and the women of childbearing age in Khayelitsha.

## TIME FRAME

Planning phase (literature search, protocol writing): September 1999 - December 1999  
Data collection phase: January 2000 - March 2000  
Data analysis: April 2000  
Report writing: May 2000 - June 2000  
Handing in mini-thesis: July 2000

## RESOURCES

The student responsible for the mini-thesis will do all necessary data collection; she will need some help in searching the sample records at the MOUs and the referral institutions. The support of a supervisor will be required at all stages of the study. The advice of a statistician might be required for the methods section of the protocol and for the data analysis later on.

## ETHICAL CONSIDERATIONS

Although the MTCT programme in itself might give rise to ethical concerns, the programme has been approved and started in January 1999. The ethical question to consider for this mini-thesis is whether confidentiality of data can be guaranteed. Complete confidentiality is not possible as data collection allows the investigator to have knowledge of the HIV status of the study population, however in the data set and analysis these and other results will be linked to record numbers and not to the name of the individual. The retrospective character of the study does not cause any inconvenience in terms of extra visits, clinical examinations or laboratory tests for the population under study.

To obtain ethical approval this protocol will be presented to the ethical committee of the University of the Western Cape and the health authorities of the Provincial Administration of the Western Cape and the City of Tygerberg.

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## FEEDBACK

1. See also p.51 & 52 in the Epi book.

*The protocol is made up of the following headings:*

- Summary
- The summary presents a brief summary of
- Introduction

- *Problem*
- *Purpose*
- *Literature Review*
- *Aim*
- *Objectives*
- *Methodology*
  - *Study Design*
  - *Definition Of Terms*
  - *Study Population*
  - *Generalisability*
  - *Sample Size*
  - *Sampling Procedure*
  - *Data Collection*
  - *Validity*
  - *Reliability*
  - *Data Analysis*
- *Logistics*
- *Time-Frame*
- *Resources*
- *Ethical Considerations*
- *References*
  
- *Introduction*
  
- *Background information*  
*The background information provides some information on the setting of the research, how the research question came about and who is/will be involved in the research.*
  
- *Statement of the problem*  
*Problem identification is one of the major tasks for HSR researchers and this section shows how the problem was identified and why it should be prioritised. The problem should be defined and stated in a clear and brief manner.*
  
- *Literature Review*  
*The literature review shows what information is already available on this problem and what methods other researchers have used to answer the same types of questions.*
  
- *Aims and Objectives*  
*The aim of the study states the broad question this research is trying to answer and should be set out clearly. The aim can then be broken into several smaller connected objectives. An objective identifies a specific and measurable issue that will be achieved by the study.*
  
- *Methodology*  
*Describes study type, variables, and data collection*  
*Sampling*  
*Plan for data collection*  
*Plan for data processing and analysis*  
*Pretesting*  
*Ethical considerations*
  
- *Work Plan*  
*A work plan is a schedule, graph or chart that summarises in a clear fashion, the components of a research project and how they fit together. It should include the various tasks to be performed, when the tasks will be performed, who will perform the tasks and the time each person will spend on them.*
  
- *Plans for Dissemination of Results*

*The key to successful Health Systems Research is its impact on policy. It is conducted to highlight needs for change and recommend ways to bring about change. The protocol should show that you have thought through the process of influencing policy and developed a strategy for the best use of your results.*

- **Budget**

*The work plan can be used to plan your budget especially in terms of the resources required for each activity.*

2. Protocols have a standard structure because this has been found to be the most efficient and logical way of organising the necessary information for a reader to assess the quality of the proposed study and make a judgement as to whether it will be a feasible study.

### **TASK 3 - Review some protocols**

**READING:** WHO. (1995). Availability, Provision and Use of Antibiotic, Antihypertensive and Antidiabetic Drugs at Public Health Care Level in Mauritius. Geneva: WHO: 5 - 23.

1. Is the protocol in the reading structured correctly? Does it contain all the necessary information? Could the protocol be improved in any way?
2. Look again at any other research protocols that you have found. Check if they are structured correctly and contain all the necessary information. Discuss them with other students, if possible. Think of ways in which the protocol could be improved.

### **FEEDBACK**

1. This is a model protocol and is well structured with all the necessary information.

## **4. EXAMINE THE PROCESS OF WRITING A PROTOCOL**

Having examined the content and structure of a research protocol, we now look at the stages involved in developing a protocol.

### **TASK 4 - Explain the stages in writing a protocol**

1. The main stages involved in writing a research protocol are set out in the diagram below. Study this carefully.
2. Why should you start by selecting, analysing and stating the research problem? Why is this the most important stage?
3. Stage 2 is the literature review. Why does this happen before formulating objectives (stage 3)?
4. Why does stage 4 (research methodology) come after stage 3 (formulating objectives)?
5. The arrows indicate that the process of writing a protocol is not linear. Can you think of a reason why, on tackling stage 6 (budget), you might have to revisit earlier stages?

### **Stages in the Development of an HSR Protocol**

*The development of a research protocol is often a cyclical process, rather than a linear one. The arrows in the diagram below indicate this ongoing interaction between all stages in this process.*

<i>Questions to ask</i>	<i>Stage</i>	<i>Element</i>
What is the problem? Why should we study it?	1. Statement of the Research Problem ↕	<ul style="list-style-type: none"> <li>➤ Identify the problem</li> <li>➤ Prioritise the problem</li> <li>➤ Analyse the problem</li> </ul>
What information is already available?	2. Literature Review ↕	<ul style="list-style-type: none"> <li>➤ Review the literature and other available information</li> </ul>
Why do we want to carry out the research? What do we hope to achieve?	3. Formulation of Aims and Objectives ↕	<ul style="list-style-type: none"> <li>➤ Set aims and objectives</li> </ul>
What additional data do we need to reach our research objectives? How are we going to collect this information?	4. Research Methodology  ↑	<ul style="list-style-type: none"> <li>➤ Variables and indicators</li> <li>➤ Study design (types and approaches)</li> <li>➤ Data collection methods <ul style="list-style-type: none"> <li>- Record reviews</li> <li>- Questionnaires and sampling</li> <li>- Observations</li> <li>- Interviews</li> <li>- Focus group discussions</li> </ul> </li> <li>➤ Plan for data collection</li> <li>➤ Plan for data processing and analysis</li> </ul>
Who will do what and when?	5. Workplan ↕	<ul style="list-style-type: none"> <li>➤ Personnel</li> <li>➤ Timetable</li> </ul>
What resources do we need to carry out this study? What resources do we have?	6. Budget ↕	<ul style="list-style-type: none"> <li>➤ Material support and equipment</li> <li>➤ Money</li> </ul>
How will we present our proposal to relevant authorities and funders?	7. Proposal Summary	

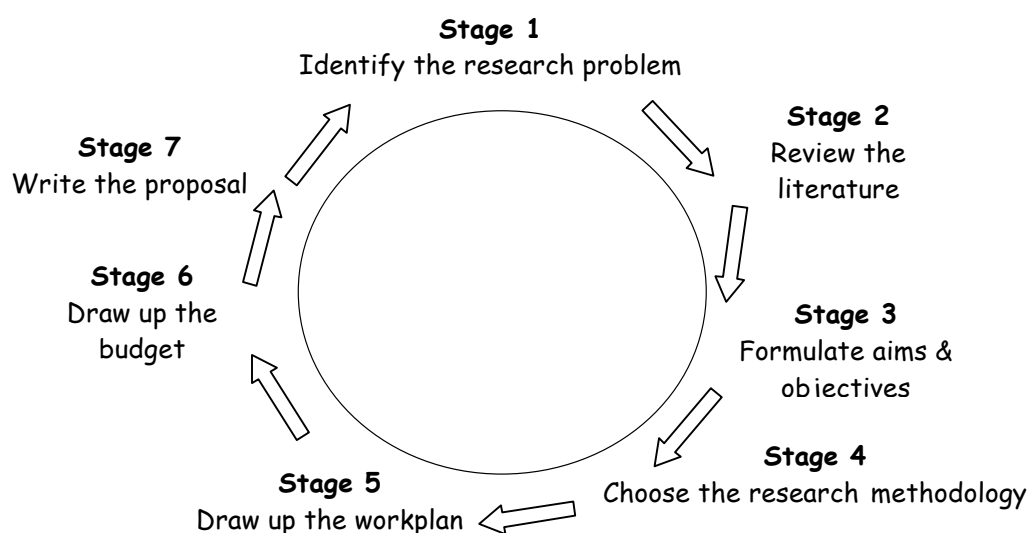
(Adapted from Varkevisser, 1991, p.6).

## FEEDBACK

1. The first stage involves identifying the problem to be researched. It is the crucial decision-making stage, which determines whether there is a worthwhile research problem to be investigated. Only when this has been decided are the other stages tackled.
2. The literature review serves two main purposes:
  - It provides related research information, so that you do not duplicate this.
  - It provides results, recommendations and conclusions from other research, which could inform your research and help to focus your research objectives.
3. The research objectives should inform and help to determine the most appropriate research methods to use.
4. There are many possible reasons for this. For instance, you might find that the budget is too high. In this case, you might look again at the methodology, to check whether less expensive methods could be used. You might even decide to narrow the focus or scope of the problem and to scale down your objectives.

A simplified illustration of the process of developing a protocol is shown below.

### *Stages in Developing a Protocol*



We refer to this diagram regularly during the rest of the module, as we tackle each stage in developing a full HSR protocol. Like the Writing Process Cycle discussed in earlier modules, designing a research proposal is a cyclical process, rather than a linear one. Therefore, as we guide you through the process of developing a protocol, you have many opportunities to review and, when the need arises, to revise parts of the proposal that you are busy drafting for the assignment.

## 5. SUMMARY

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This study session examined the purpose, content and the stages involved in developing a protocol. In the next study session we tackle Stage 1 in this process - identifying prioritising and analysing research problems.

## 6. REFERENCES

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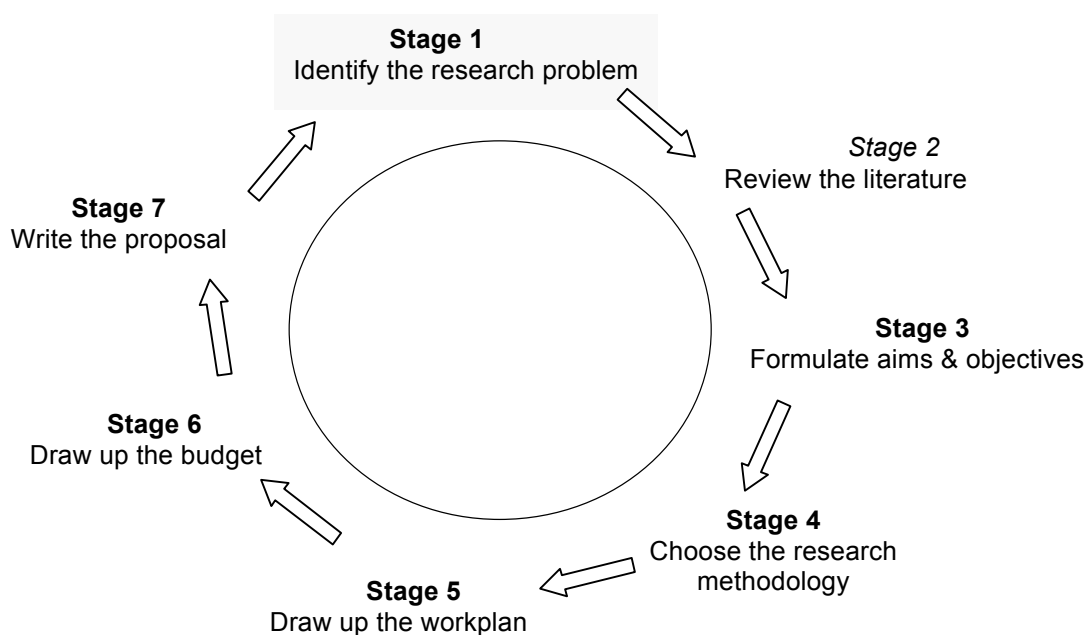
# Unit 1 - Session 3

## Identifying Research Problems

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### Introduction

In the previous study session we identified the stages in writing a research protocol. This study session looks at Stage 1 - Identify the research problem. The key questions to ask are: What is the problem? and Why should we study it? The three main elements are identifying, prioritising and analysing research problems.



### Contents



1. Learning Outcomes of this Session
2. Identify Research Problems
3. Prioritise Problems for Research
4. Analyse Research Problems
5. Summary
6. References

## 1. LEARNING OUTCOMES OF THIS SESSION

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**By the end of this study Session, you should be able to:**

### Public Health Content

- Identify and prioritise research problems.
- Explain why we should involve stakeholders in the research process.
- Follow steps in analysing a problem.
- Write problem statements.

### Academic Learning Content

- Interpret and use diagrams.
- Analyse and classify information.
- Compare information in texts.
- Write in a concise, structured way.
- Think critically, drawing on your own experience.

## ASSIGNMENT

**By the end of the session, you should have more notes for the assignment protocol.**

## 2. IDENTIFY RESEARCH PROBLEMS

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When deciding what to research, we usually start out with very broad, general research problems or questions in mind. These need to be narrowed down so as to focus on useful but smaller and more manageable research issues. This activity helps you to do this. It helps you to select and to state clearly your research problem.

The first thing a researcher needs to do is to find something to research about. In HSR, we are interested in identifying some of the problems and questions that need answering in order to improve the health services in particular areas. There are many problems with the delivery of health services, which could be addressed through research. Probably the most difficult and important aspect of HSR is choosing the problem that needs to be addressed and then formulating a clear problem statement or research question, which can be answered by the researcher or research team. This can be straightforward when you are told what to investigate by your manager or funder. However, it is more difficult when YOU have to choose what to research.

### TASK 1 - Identify what makes a problem a research problem

1. How would you decide whether a research problem is worth researching? What criteria would you use to make this decision? Jot down a few ideas.
2. Look at the TB research problems a) – d) below. Use your criteria to decide which of these problems would be worth researching. Decide why the other problems might not be as worthwhile to research. Then review the criteria that you used to make these decisions.

#### *TB Problems*

- a) A clinic nurse says there is a problem because her TB vaccination coverage is over 90%
- b) The TB supervisor says there is a problem in that his vehicle is broken down
- c) A health manager says there is a problem in long waiting times at the out-patient department
- d) The TB nurse says that her drugs are getting out of date

### **FEEDBACK**

1. Whether a problem requires research depends on three main criteria or conditions.
  - There should be a perceived difference or discrepancy between what exists and the ideal or planned situation.
  - The reason(s) for this difference should be unclear, so that it makes sense to conduct research.
  - There should be more than one possible answer to the question or solution to the problem.
2. Using these criteria it would appear that c) would be the most appropriate problem to investigate, since it fulfils all three criteria. With the problem of long waiting times, there is a difference between the present situation and the ideal situation. It is also unclear why this discrepancy exists. Finally, there could be more than one answer to the problem of long waiting times. The other problems do not meet these criteria. For instance, in a), the measles coverage is almost as high as one would hope and therefore there is little difference between the actual and ideal situation. The solution to the broken down vehicle in b) is fairly clear. There is probably only one answer or solution to d) (to restock with more drugs).

You now use the three criteria above to evaluate more research problems.

### **TASK 2 – Choose useful research problems**

Look at the list of ante-natal care problems a) – e) below. Which of these are appropriate to research and which are not? Explain your choice.

#### *Ante-natal Care Problems*

- a) There are a high proportion of low birth weight babies born in the hospital
- b) Mothers do not book into the ANC clinic until they are in the late stages of their pregnancy
- c) All the mothers receive anti-tetanus medication but some of them don't like the taste
- d) The mothers who come to the clinics are all very poor
- e) The mothers complain that they have to wait outside in the sun and rain

### **FEEDBACK**

The first two are good research problems, as there is a discrepancy between what is and what should be. Also, there are probably a number of different reasons contributing to these situations. Problem c) is a question of individual taste and problem d) is a broader political/socio-economic issue. Therefore there is not a lot that can be done by research to change these situations. Problem e) is a straightforward management problem - they either make space in the clinic or find/build a shelter. So it is not appropriate to research this problem.

### **TASK 3 - List important health research problems**

Make a list of some problems in your health district that you feel need research, and which meet the above three criteria. We come back to these problems later.

### **Deciding who should be involved**

You may recall that one of the most important characteristics of Health Systems Research is that it aims at changing things for the better. Another characteristic is the involvement of different roleplayers and sectors.

### **TASK 4 - Assess the involvement of different roleplayers**

1. Look back at problems a) and b) above. What are the main advantages of involving these people in identifying and clarifying these research problems?
  - Decision-makers and senior level managers.
  - Health workers
  - Community members
2. Why should these roleplayers be involved in all stages of the research studies? What might happen if they were excluded?

### **FEEDBACK**

Identification and a systematic analysis of the problem jointly by the researchers, health workers, managers, and community representatives is crucial in formulating the problem and the research question because:

- it enables those concerned to pool their knowledge of the problem;
- it clarifies the problem and possible factors that may be contributing to it, and
- it facilitates decisions concerning the focus and scope of the research.

Decision-makers and senior level managers should be interested and involved throughout this research, as they will be in a position to act upon and implement some of the findings. For instance, if the opening hours of the community health clinic need to be extended, they will need to arrange this.

The views and behaviour of health workers are important to the results of the study, for instance, nurses' attitudes towards pregnant women. If they are not included, they might not be very co-operative towards the study. Furthermore, they may not be inclined to implement the findings of the study. Again, the effectiveness of the study could be compromised.

Without community members' co-operation you will very likely have a poor and unrepresentative response and you might be viewed with suspicion. Recommendations for change will probably involve health education and changing the behaviour of local people. The active involvement of those affected will make this much easier and more effective.

### **TASK 5 - Identify participants for your research problem**

For one of the research problems you identified earlier, write down a list of people you think should be involved in selecting the problem. Next to each person, note the benefits of involving them in the research and some possible negative consequences of not involving them.

The next element in stage 1 is prioritising the various research problems that people raise.

### 3. PRIORITISE PROBLEMS FOR RESEARCH

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In identifying the research problem for stage 1, you began by sifting out those problems that do not meet the three research criteria identified earlier. However, you may still be left with lots of problems to choose from. In order to prioritise these research problems, you need to compare and assess them. It is also likely that the identified participants in this process, as well as yourself will have different thoughts as to what is the most important problem to tackle. This activity shows you how to prioritise the problems, while involving all stakeholders.

#### **TASK 6 - Identify criteria for prioritising research problems**

1. Let us imagine that these two problems have been highlighted after initial discussions with various stakeholders:

- lack of compliance to treatment by diabetic patients, and
- long waiting times for patients attending a TB clinic.

However, you only have resources to tackle one of these problems. What questions could you ask in order to decide which problem to tackle? For instance, you might ask:

- How serious a health problem is TB compared to diabetes in the district?

List other questions you would ask about these two problems, in order to decide which one is a priority.

2. Read the text below, adapted from HST, 1997, p.9-10. Compare your questions with the questions and criteria for prioritising problems listed here.

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#### **a. Relevance of the study**

The topic you choose should be a priority problem. Questions to ask include:

- How large or widespread is the problem?
- Who is affected?
- How severe is the problem?

Try to think of serious health problems that affect a great number of people or of the most serious problems that are faced by managers in the area of your work.

Also, consider the question of who perceives the problem as important. Health managers, health staff, and community members may each look at the same problem from different perspectives. Community members, for example, may give a higher priority to economic concerns than to certain Public Health problems. To ensure full participation of all parties concerned, it is advisable to define the problem in such a way that all have an interest in solving it.

If you do not consider a topic relevant, it is not worthwhile to continue rating it. In that case, you should drop it from your list.

#### **b. Avoidance of duplication**

The key question to ask is:

- Has the problem been investigated before?

Before you decide to carry out a study, it is important that you find out whether the suggested topic has been investigated before, either within the proposed study area or in another area with similar conditions. If the topic has been researched, the results should be reviewed to explore whether major questions that deserve further investigation remain unanswered. If not, another topic should be chosen.

Also, consider carefully **whether you can find answers** to the problem in already available, unpublished information and from common sense. If so, you should drop the topic from your list.

### **c. Feasibility**

Questions to ask include:

- How complex is the problem?
- What resources will be needed to carry out the study?
- Is enough time available?
- Are there people around who can give technical assistance?
- Will there be anyone willing to fund the research?

Look at the project you are proposing and consider the complexity of the problem and the resources you will require to carry out your study. Thought should be given to personnel, time, equipment, and money that are locally available.

In situations where the local resources necessary to carry out the project are not sufficient, you might consider resources available at the national level, for example, in research units, research councils, or local universities. Finally, explore the possibility of obtaining technical and financial assistance from external sources.

### **d. Political acceptability**

Questions to ask include:

- What is the broader political environment in which the research will be conducted?
- What are possible barriers to the research or its recommendations?

In general, it is advisable to research a topic that has the interest and support of the authorities. This will increase the chance that the results of the study will be implemented. Under certain circumstances, however, you may feel that a study is required to show that the government's policy needs adjustment. If so, you should make an extra effort to involve the policymakers concerned at an early stage, to limit the chances for confrontation later.

### **e. Applicability of possible results and recommendations**

Questions to ask include:

- Will the research recommendations be applied?
- Will I have the support of the authorities and the necessary resources to implement the recommendations?

Is it likely that the recommendations from the study will be applied? This will depend not only on the blessing of the authorities but also on the availability of resources for implementing the recommendations. The opinion of the potential clients and of responsible staff will also influence the implementation of recommendations.

### **f. Urgency of data needed**

Questions to ask include:

- How urgently are the results needed for making a decision?
- Which research should be done first and which can be done later?

### **g. Ethical acceptability**

Questions to ask include:

- Is there any possibility of inflicting harm on others while conducting the research?
- How acceptable is the research to those who will be studied? (Cultural sensitivity must be given careful consideration).
- Can informed consent be obtained from the research subjects?
- Will the condition of the subjects be taken into account? For example, if individuals are identified during the study who require treatment, will this treatment be given? What if such treatment interferes with your study results?

We should always consider the possibility that we may inflict harm on others while carrying out research. Therefore, review the study you are proposing and consider these important ethical issues.

### **TASK 7 – Use criteria to prioritise research problems**

1. Read the following case study, from Varkevisser, 1991, p.43. Using the criteria outlined above, decide which of the two possible research problems should receive priority. If possible, discuss the problems with other students, health workers or lay people. To what extent do you all share the same views about which problem to prioritise?
2. Reflect back on this task. What have you learned from this about the process of prioritising and selecting a research problem?

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#### **The Chobe District Health Team Select a Research Problem**

The Chobe district Health Team, responsible for the health of a population of 125,000, has to choose between two important study topics.

##### **Possibility 1**

The first possibility is a study into methods for motivating communities to provide voluntary labour for the installation of water systems.

In Chobe district, streams are used as latrines as well as sources of domestic water. Morbidity surveys show an extremely high prevalence of diarrhea and chronic infections with intestinal parasites. UNICEF has offered to supply free plastic pipes if the villagers will provide labour to install community water systems from protected springs.

Because the terrain is rocky, it will take a great deal of labour to dig trenches in which to lay the plastic pipes. Burying the pipes would seem necessary, as it is uncommon that the villagers cut into exposed pipes to obtain water. The motivation among male villagers to dig the trenches, however, is not high; the belief that water has a high purifying power and that anything dissolved in the streams cannot possibly be dangerous appears to be a stumbling block to increasing motivation.

The District health Team, encouraged by UNICEF to take action and aware that in pilot projects in neighboring district the population was successfully motivated, now wants to take action. So far, invitation to village leaders to attend training programs designed to demonstrate how they could develop and maintain their own water systems remain unanswered.

Proposed study: the District Health Team proposes to undertake a rapid assessment in four villages, two in the pilot project located in the neighboring district and two in Chobe district, to find out:

- What factors have contributed to the involvement of the community in the neighboring district;
- Whether it would be feasible to increase the population's interest in the project by providing more detailed information on the relationship between contaminated water and disease;
- Whether it would be possible to keep the burying of pipes to a minimum, if the whole population (males and females, youngsters and adults) were involved in the project, and representatives of all these groups participated in the village water committee.

The team would plan to interview project authorities in the neighboring district and conduct three focus group discussions in each village: one with males, one with females, and one with males and females combined, to explore the questions above.

##### **Possibility 2**

The second possibility is to examine the reasons for the assumingly increasing perinatal mortality among children delivered at the District Hospital. Various community members have expressed their concern over expectant mothers returning home from the district hospital "without babies." They are demanding an explanation from the health workers before they approach the government with the problem.

The district Health Team wishes to prevent the community from approaching the politicians. First of all it wants to assess whether the perinatal mortality among children born at the District Health Centre has indeed gone up over the past 5 years and, if so, how this could be explained.

Proposed study: The District Health Team would plan to analyze the records of the maternity ward over the past 10 years to investigate whether there indeed has been an upward trend in the proportion of deaths. What is the cause of each recorded death? Could some have been prevented either by more intensive care in the maternity ward or by earlier perinatal care and referral of high risk cases by TBAs and peripheral units? What other reasons may there have been for the deaths?

In addition to the record review, the District Team would plan to interview maternity staff in the District Hospital and in five peripheral health units. Also, TBAs would be interviewed and focus group discussions would be held with women in the age group of 15-45 years in five villages.

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## FEEDBACK

1. What did you decide? This task has no single correct answer because local circumstances and the perspectives of participants will vary. In fact when we carried out this task with several groups of people, they came up with different answers each time.
2. By going through the process of prioritising problems using the criteria, you should have gained an insight into the different views or perspectives of roleplayers on which problems to prioritise. The essential message from this task and from this session so far is the importance of involving as many of the stakeholders as possible in identifying and prioritising the research problem, so that you come up with a problem that everyone feels is valuable and worthwhile.

Having decided on one main research problem, you now move to the third element in Stage 1 - analysing the problem.

## 4. ANALYSE RESEARCH PROBLEMS

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Analysing the research problem is a crucial element in the process of arriving at a clear problem statement. It requires time for careful thought. This activity provides guidelines on one way of analysing research problems, with the involvement of the stakeholders.

### TASK 8 - Brainstorm how to facilitate a workshop

Imagine you are planning a workshop with the stakeholders in order to analyse the research problem. How you would facilitate this workshop and help the participants to analyse the problem? Jot down a few ideas.

## FEEDBACK

There are many ways of helping participants to analyse the research problem. We now take you through one way of doing this, using a sample research problem. Various tasks help you to apply each of the steps in analysing this research problem.

Please note that you, for your assignment, you are expected to go through a similar process with your team. You then describe this process as part of your assignment. So it is important that you record any discussions and activities that you carry out and keep these to include with your assignment.

### Steps in analysing the problem

The process of analysing a research problem can be divided into 4 steps as follows.

Step 1 Identify the viewpoints of stakeholders in relation to the problem

Step 2 Identify and describe the core problem

Step 3 Analyse and classify the causes of the problem

Step 4 Narrow the focus of the research and formulate the problem statement

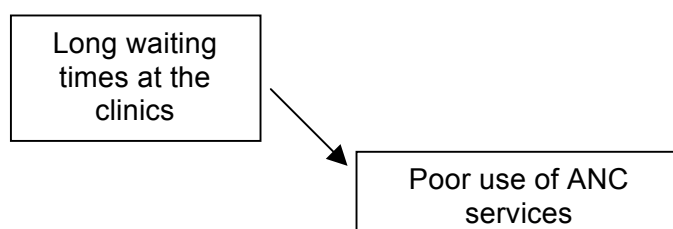
We now tackle each step in turn, using a research problem around ante-natal care to illustrate this process. You should follow a similar process for your assignment.

### Step 1 – Identify the viewpoints of stakeholders in relation to the problem.

Before we can focus in on a specific problem to research, it is essential to understand the scope of the problem and all aspects of it. Stakeholders can help with this. As mentioned earlier, stakeholders usually have very different viewpoints on a problem, because they see it from different vantage points. To expose these different perceptions, you can begin by asking stakeholders to list the key issues or aspects of the central problem that they perceive. At this stage, you are only interested in seeing all aspects of the problem, so you should not judge the issues raised. However, the way these aspects are phrased is important. If you recall, a problem exists when there is a discrepancy or a gap between 'what is' and 'what should be'. Therefore the issues should be worded in such a way as to illustrate this discrepancy. They should indicate what is missing or lacking in relation to the central problem.

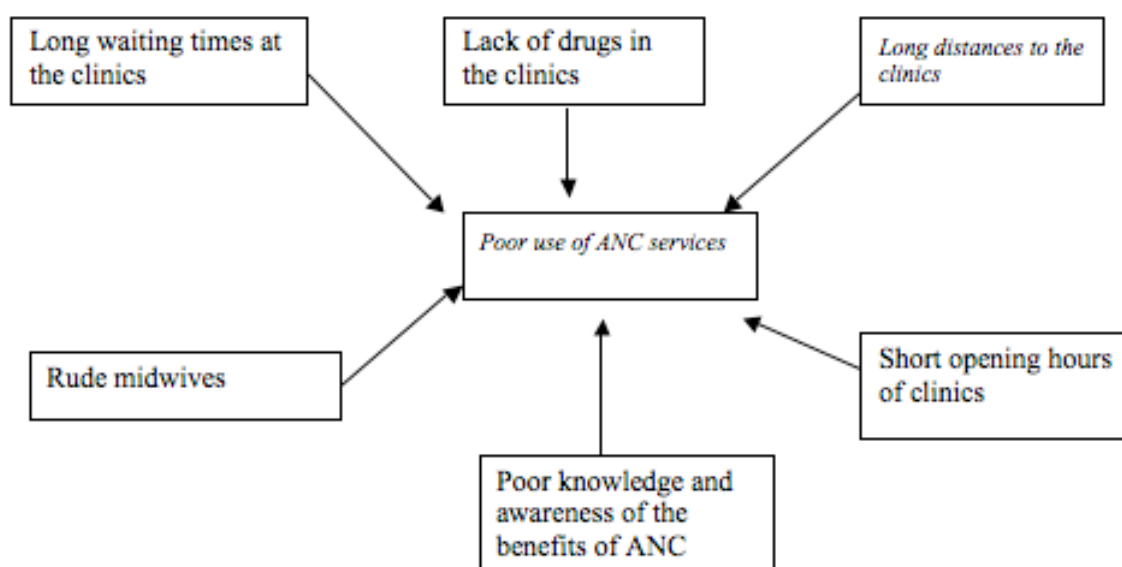
### TASK 9 - List aspects of the central problem

The example below illustrates some aspects of the central problem of the poor use of ante-natal care services (ANC). Add a few more aspects that stakeholders might identify around this problem.



### FEEDBACK

Below are some of the aspects we came up with.





We now move on to steps 2 and 3.

### Step 2 - Identify and describe the core problem

Identifying the core problem entails deciding which of the aspects to focus on in your research. We usually identify the core aspect to be researched using two main criteria. The aspect to be researched should:

- \* have a positive impact on the problem
- \* be small and feasible

Once you have identified the core aspect to be researched, you need to describe and elaborate upon this. This entails describing:

- the nature of the issue- the discrepancy between 'what is' and what you would prefer the situation to be.
- the burden and distribution of the problem.

**distribution** of the problem – who is affected, when and where

**burden** of the problem - the size and intensity of the problem – is it widespread, how severe is it, what are its consequences (such as disability, death and waste of resources)

### Step 3 - Analyse and classify the factors affecting or causing the problem

David Werner in his book *Helping Health Workers Learn* (1990) describes the use of the 'why?' method to help facilitate the further analysis of the causes of problems. You may recall that we used this method in the module 'Health, Development and PHC', when we drew chains of causation. You now use the method again, this time to analyse the causes of one of the aspects above.

## TASK 10 - Analyse the factors affecting or causing a problem

Think about the problem aspect noted above: Insufficient awareness of the importance of ANC in the community.

Use the 'Why?' game to probe possible reasons or causes of this lack of awareness.

For instance:

*Insufficient awareness of the importance of ANC in the community*

*Why?*

*Because local mothers ...*

*Why?*

*Because ...*

If it helps, sketch some chains of causation, or draw a mindmap. Include lines indicating the relationship between the various causes or factors.

If you get stuck, ask yourself:

- What else could be causing the problem?
- Are there any other factors (services, community, personal, etc.) that could be causing or affecting it in some way?

## FEEDBACK

Here is one possible analysis of the problem.

Insufficient awareness of the importance of ANC in the community

Why?

Because local mothers are ignorant

Why?

Because they do not have access to health information

But why?

Because there is no information available in the area

Because of a lack of training of the health workers

Because they have low education and literacy levels

Because there is no health promotion in the area

Because there have been no services available previously

Because the services were so poor previously

Because traditional beliefs dictate that a traditional birth attendant is used instead

It is also important to conduct a literature review to find out any other factors that the team may have missed. You will learn more about this in the next session.

You now classify these factors or causes.

### **TASK 11 - Classify the causes/factors**

In the causation chain above, classify the factors or causes as:

Socio-cultural (personal, community)

Economic/Political

Services-related

Medical or disease-related

### **FEEDBACK**

The causes can be organised into the following categories:

- Socio-cultural factors: Personal factors such as age, socio-economic factors, area of residence, beliefs about traditional birth attendants etc.
- Service related factors: Low availability of ANC facilities, attitude of health workers, quality of ANC care, no health promotion in the area, lack of training of health workers
- Disease-related factors: Complications of pregnancy, rate of maternal mortality.
- Economic/political factors: concentration of resources in the cities, lack of income

We now look at step 4 in analysing the problem.

#### **Step 4 - Narrow the focus of the research and formulate the problem statement**

The problem analysis does not automatically suggest a research topic or question. Instead, it improves our understanding of the problem and the multiple issues which impact on it. It exposes all the possible aspects of the problem that the researcher could study. At this point you need to narrow your focus once again and choose a specific factor or cause to study. To do this, you can use the same criteria used earlier to isolate the broad research problem.

To remind you, the criteria are:

There should be a perceived difference or discrepancy between what exists and the ideal or planned situation.

The reason(s) for this difference should be unclear, so that it makes sense to conduct research.

There should be more than one possible answer to the question or solution to the problem.

You can also use the criteria for prioritising the problem, covered in the last activity. Once you have identified the specific factor, you are now in a position to formulate the problem statement. Before we do this, let's look at what a problem statement contains.

## TASK 12 – Analyse a problem statement

1. What is a problem statement? What information does a problem statement usually contain?  
Read the problem statement below. Summarise the kind of information supplied in each sentence of this statement.

This is a poor rural community. There is a low use of ante-natal services in this community, which is resulting in high maternal and perinatal mortality. Local beliefs about the use of traditional birth attendants may act as a barrier towards the use of ante-natal services. There is presently little knowledge about the impact of these beliefs on the use of ANC services. Further research on these beliefs will allow a better understanding and perhaps lead to improved relations between the health services and the TBAs.

2. Why is it important to have clear problem statements?

## FEEDBACK

1. *This community is a poor rural community.*

This sentence describes the CONTEXT of the problem - the socio-economic and cultural characteristics of the area/community and an overview of health status and health care system in the area in as far as these are relevant to the problem.

*There is a low use of ante-natal services in this community, which is resulting in high maternal and perinatal mortality.*

This sentence provides a concise description of the nature of the problem (the discrepancy between what is and what should be). It describes the size, distribution, and severity (who is affected, where, since when, and what are the consequences for those affected and for the services)

*Local beliefs about the use of traditional birth attendants may act as a barrier towards the use of ante-natal services.*

This sentence provides an analysis of the major factors that may influence the problem.

*There is presently little knowledge about the impact of these beliefs on the use of ANC services.*

This sentence provides a convincing argument that available knowledge is insufficient to solve the problem.

*Further research on these beliefs will allow a better understanding and perhaps lead to improved relations between the health services and the TBAs.*

The final sentence offers a brief description of the type of information expected to result from the project and how this information will be used to help solve the problem.

2. A clear statement of the problem is important because:
  - it is the foundation for the further development of the research proposal
  - it makes it easier to find information and reports of similar studies from which your own study design can benefit
  - it enables you to systematically point out why the proposed research on the problem should be undertaken and what you hope to achieve with the study results. This is

important to highlight when you present your project to community members, health staff etc. who need to support your study or give their consent.

To summarise, the *five main components of a problem statement* are:

A brief description of the socio-economic and cultural characteristics of the area/community and an overview of health status and health care system in the area in as far as these are relevant to the problem. This provides us with the context of the problem.

A concise description of the nature of the problem (the discrepancy between what is and what should be) and of its size, distribution, and severity (who is affected, where, since when, and what are the consequences for those affected and for the services?)

An analysis of the major factors that may influence the problem

A convincing argument that available knowledge is insufficient to solve it.

A brief description of the type of information expected to result from the project and how this information will be used to help solve the problem

Although problem statements should contain all of this information, they can be written in a different order, using fewer or more sentences.

## **TASK 12 - Evaluate problem statements**

Evaluate the two research statements below. To what extent are they good, clear statements that include all the necessary information?

Problem statement 1

*The Highgate Hospital is a busy teaching hospital serving the whole of Tinsel Town. Patients have been complaining that they have to wait for long periods of time in the outpatient department. Sometimes this leads to the death of patients. There is a need for information to identify the reasons for this long wait, so that these factors can be remedied.*

Problem statement 2

*The teenage pregnancy prevalence in this community is 20%. It occurs mostly amongst the poorer sections of the community. It leads to increased school dropout and malnourished babies. We do not know why teenagers are becoming pregnant. There is a need to gather information from teenagers about their knowledge of contraception.*

## **FEEDBACK**

1. Problem statement 1 starts quite well with a sentence about the hospital and a brief outline of the problem and its consequences. However there is no evidence that the researcher has thought about the different causes or even established that there is a problem. We are also not told whether there is any information already available which could already answer the problem
2. In problem statement 2, there is no context given, so we do not know what type of community this is. There is also no evidence that the different causes of the problem have been thought through. Finally, no mention is made of how this information will be used.

## **TASK 13 - Formulate a research problem statement**

Formulate a research problem statement for the following factor identified for research.

Low level of knowledge of breastfeeding amongst young mothers in a poor rural community X.

## **FEEDBACK**

Here is an example of the how the research problem could be formulated.

*Community X is a poor rural community. The prevalence of breastfeeding has been dropping over the last few years, leading to increased childhood malnutrition and death. One of the most*

*important causes identified in this community is the low level of knowledge of breastfeeding amongst young mothers. There is a need to establish what knowledge young mothers have about breastfeeding and where they have received this knowledge. This will assist in developing an educational intervention.*

### **TASK 14 – Work on the assignment: Identify the Research Problem**

For your assignment protocol, go through Stage 1 of developing a protocol, as described in this study session. Using your list of important role-players, visit or telephone each one individually or in small groups and discuss the problems they are facing with the health services, either as providers or as customers. Make a list of the problems that arise. Sort out which ones you think are problems for which research is needed.

Then call together role-players in your district whom you think should be involved in your research. Present them with a few research problems you have gathered from these discussions and get them to prioritise the problems according to the criteria given above.

Go through the other elements of stage 1 as outlined above for a particular problem in your district/clinic or workplace. Make sure you draw out a problem tree that states all the factors that influence the problem. From this, narrow your focus to one of the factors and then formulate the problem statement.

You may find it necessary to revise your diagrams several times before you come up with a clear research focus.

Don't forget to record whom you interview and how you arrived at the priority research problem. You will be awarded marks for recording not just the problem tree and formulating a good problem statement but also for summarising discussions, which helped you come to this problem statement.

## **5. SUMMARY**

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In this study session you carried out Stage 1 in developing a protocol - identifying, prioritising and analysing a research problem. In the next study session we move to Stage 2 – conducting a literature review.

## **6. REFERENCES**

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- Health Systems Trust. (1997). *Health Systems Research*. HST: Durban.
- Varkevisser, C. et al. (1991). *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre. Geneva: WHO.

# UNIT 2

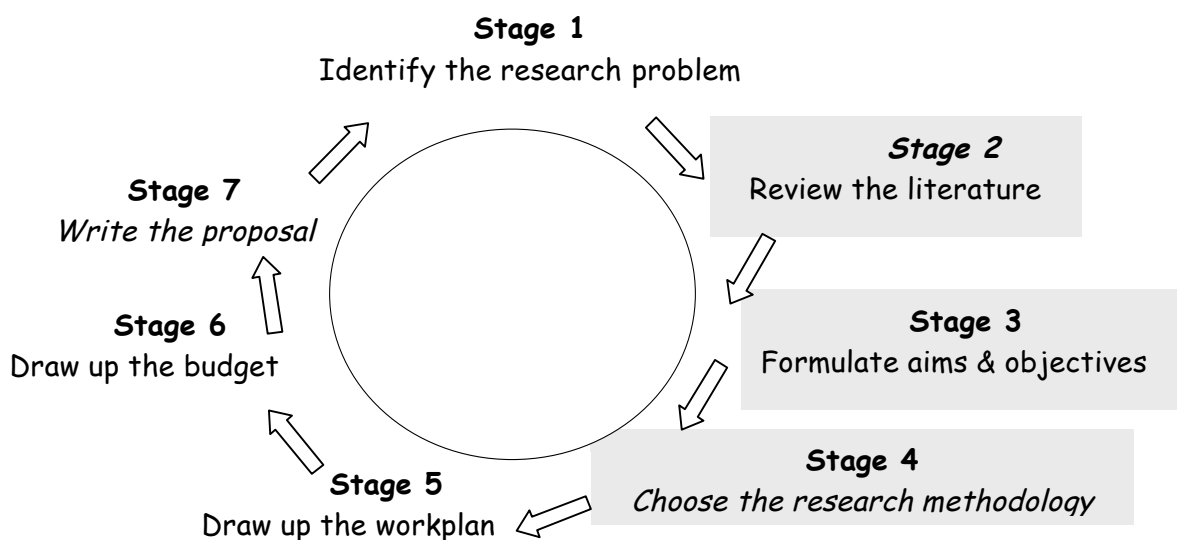
## Research Design

### Introduction

So far in this module, we have examined what HSR is and the structure, purpose and content of a protocol. We have also tackled Stage 1 in developing a protocol, having prepared a statement and brief description of the research problem and its importance.

In this unit, we focus on Stages 2, 3 and 4: conducting a literature review, establishing aims and objectives, variables and indicators and determining the study design.

#### *Stages in Developing a Protocol*



Doing research can be likened to crossing a river. The task of crossing the river is the overall aim of the project. How many people want to cross the river, with what frequency, the strength of the current etc., are the objectives of the study. The choice of study design is akin to a choice between swimming, walking, flying or sailing across. The choice of data collection methods and techniques is the particular type of boat, bridge, aircraft etc. that you choose to use.

Each aspect of planning a piece of research can be described in terms of the kinds of questions asked, as shown below. In Unit 2 we continue to tackle the question: What do you ask? We then tackle the question: How do you ask?

Defining the problem Reviewing the literature Establishing aims, objectives and variables	= What do you ask?
Deciding which study design to use	= How do you ask?
Choosing data collection methods/ techniques/ tools	= How will you collect the information?
Choosing a sample	= Whom do you ask?
Drawing up a workplan	= Who will do what and when?
Drawing up a budget	= What resources do you need?

There are three Study Sessions in Unit 2

Study Session 1: Literature Review  
Study Session 2: Aims and Objectives  
Study Session 3: Variables and Indicators  
Study Session 4: Study Design

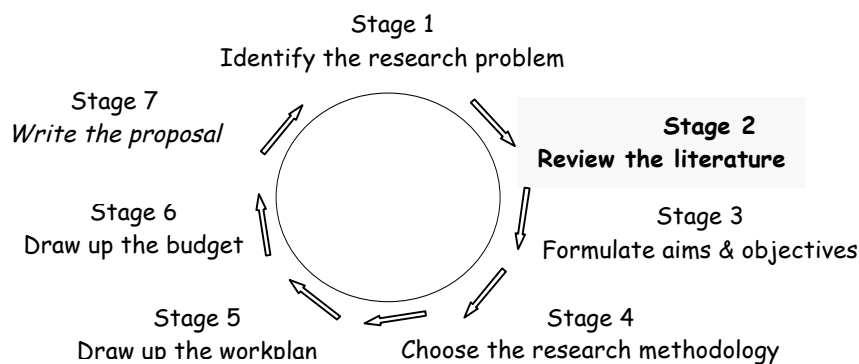
<b>Intended Learning Outcomes</b>	
By the end of this unit, you should be able to:	
<b>Public Health Content</b> <ul style="list-style-type: none"> <li>• Write a literature review.</li> <li>• Distinguish between research aims and objectives.</li> <li>• Write clear, concise research aims and objectives.</li> <li>• Define measurement variables and indicators for research questions.</li> <li>• Identify different study designs.</li> <li>• Choose appropriate study designs for research questions.</li> </ul>	<b>Academic Learning Content</b> <ul style="list-style-type: none"> <li>• Identify relevant sources of information.</li> <li>• Evaluate sources and texts.</li> <li>• Use in-text referencing consistently.</li> <li>• Read for a purpose and extract key ideas.</li> <li>• Identify different ways in which texts are structured.</li> <li>• Classify and synthesise information.</li> <li>• Read critically, evaluate texts, draw conclusions and substantiate these.</li> </ul>

# Unit 2 - Session 1

## Literature Review

### Introduction

So far in this module you have selected a research problem and prepared a statement and brief description of the problem and its importance. You are now ready to conduct a review of the literature relating to the problem. This is Stage 2 in developing a protocol.



### Contents

1. Learning Outcomes of this Session
2. Readings
3. Examine a Literature Review
4. Analyse Another Literature Review
5. Referencing and Finding Literature
6. Summary
7. References

## 1. LEARNING OUTCOMES OF THIS SESSION

**By the end of this study Session, you should be able to:**

#### Public Health Content

- Explain what a literature review is, its purpose, structure and content.
- Draft a diagram outline of a literature review with references.
- Locate and select suitable literature.
- Write a literature review.

#### Academic Learning Content

- Analyse and evaluate texts.
- Read and think critically.
- Use diagrams to plan a text.
- Select appropriate literature.
- Reference sources consistently.



## ASSIGNMENT

By the end of the session, you should have a draft literature review for your protocol.

## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
Katzenellenbogen, J. M., Joubert, G., Abdool Karim, S. S.	(1999). <i>Ch 5 – Literature Review. In Epidemiology: A Manual for South Africa. Cape Town: Oxford University Press: 54 - 55.</i>	<b>47 - 50</b>
Clifford, M.	(2000). <i>Using and Referencing Sources. Bellville: SOPH, UWC: 1-7.</i>	<b>31 - 40</b>

## 3. EXAMINE A LITERATURE REVIEW

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Earlier in this module, we discussed briefly the idea of conducting a literature review. We now examine in more detail the purpose, structure and content of a review, using two sample reviews taken from protocols.

### TASK 1 - Explain what a literature review is

How would you explain to someone very simply what a literature review is?

To help you, think about these questions:

- What do we do when we 'review' something?
- What do we mean by 'literature', in terms of research?
- What are examples of research 'literature' and where do we find these?

### FEEDBACK

To review means to look at, to inspect or to survey something. Research literature refers to any information or evidence available in print or other form (such as digital, audio-visual), which is pertinent to the research problem. Research literature usually refers to formal academic texts or official documents such as journal articles, academic papers, research studies, reports, government papers, statistical records, case studies, observations and clinical records. However, informal everyday texts can also be valuable sources of information, such as newspaper and magazine articles, lectures, interviews, TV programs, discussions, anecdotal material, oral histories, testimony (professional and lay) etc.

In simple terms, a literature review is a written summary of what is known to date about a particular research problem, including references to all the main relevant sources of information consulted. It provides an overview of the current state of knowledge in this area and how this was arrived at. It highlights the key debates or contradictions and any gaps or grey areas in our understanding. It

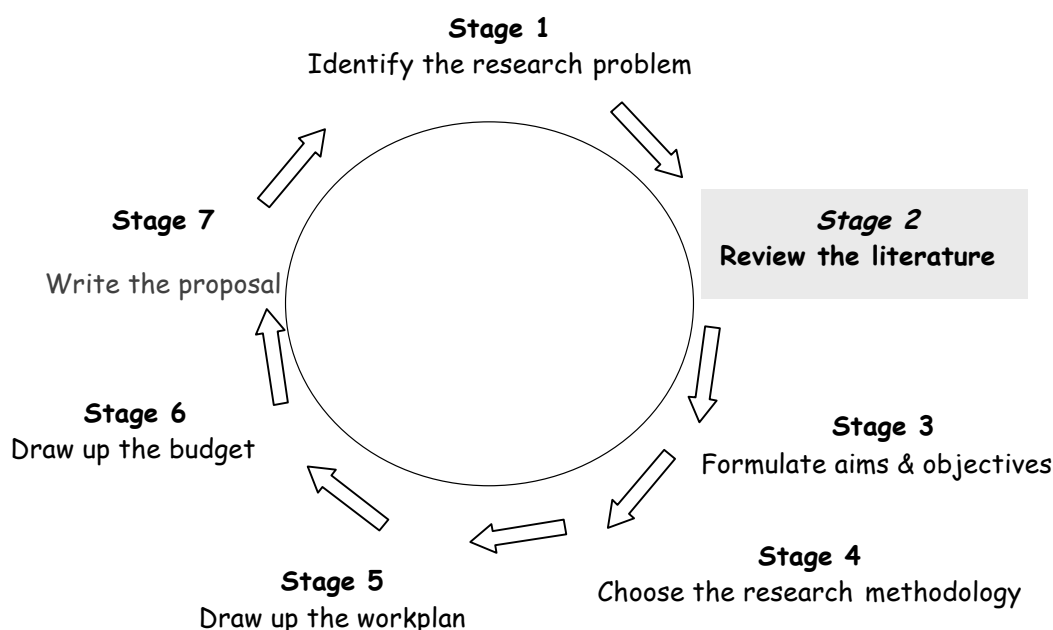
relates this information to the proposed study and motivates why this is relevant and likely to further knowledge in this area.

## TASK 2 - Explain the purpose and importance of a literature review

**READING:** Katzenellenbogen, J. M., Joubert, G., Abdool Karim, S. S. (1999). Ch 5 - Literature Review. In *Epidemiology: A Manual for South Africa*. Cape Town: Oxford University Press: 54 – 55. See pp 47 –50 in the Reader.

To remind you, we conduct a literature review at stage 2 in developing a protocol.

### *Developing a Protocol*



- How does the literature review build on the research problem?
- How does conducting the review help to then define aims and objectives?
- At later stages in developing a protocol, why might we decide to return to the literature review?
- What might happen if we did not conduct a literature review for a protocol?

## FEEDBACK

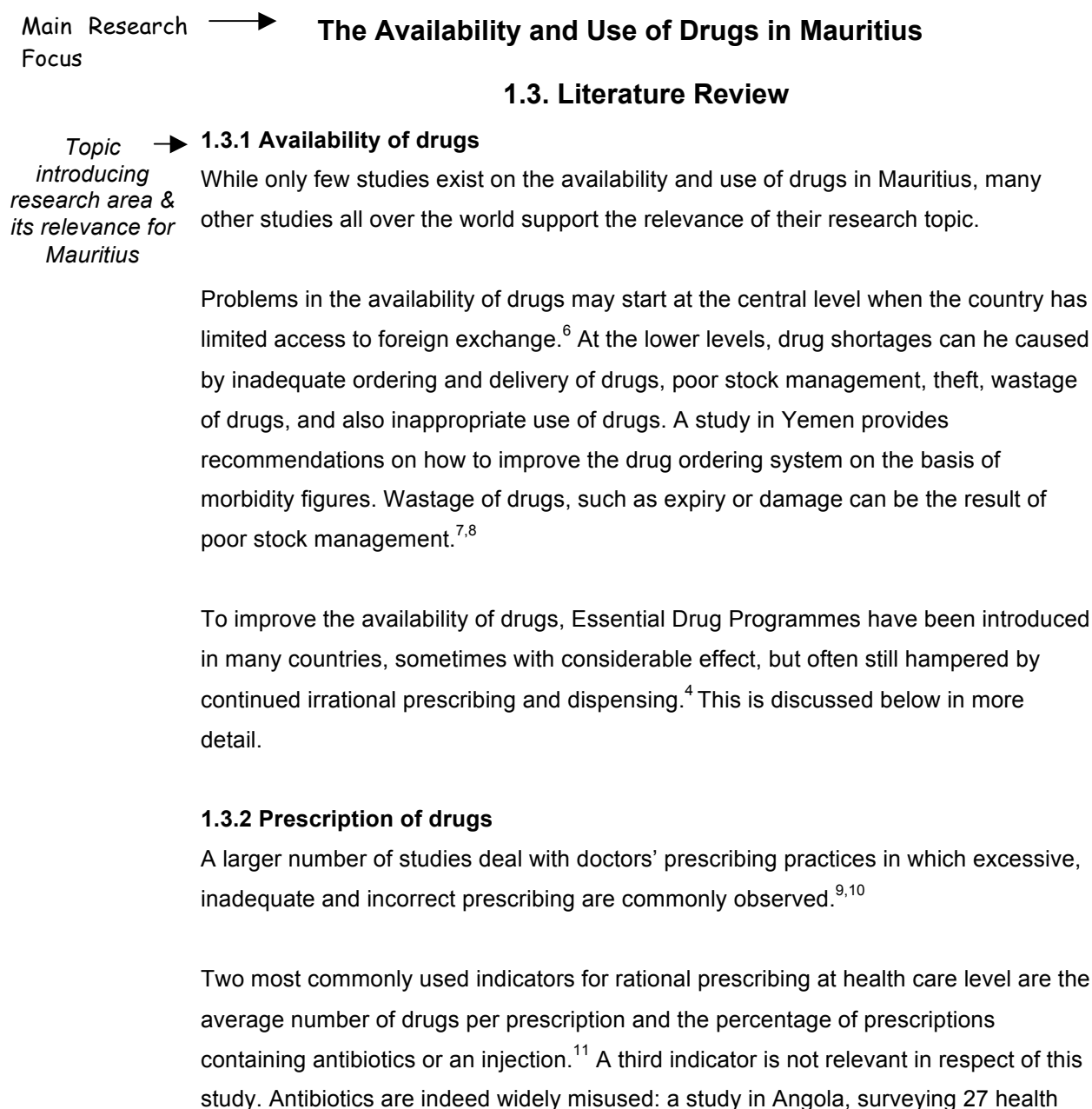
Having focused and defined the research problem, the literature review seeks out existing information and studies already conducted around this problem. This information helps to clarify the main issues or debates and to select the most relevant and useful aspect to focus on in the research. It can also suggest the research design and methods to adopt. All of this information enables us to then clarify our research aims and objectives.

At the later stages of developing a protocol, we might discover new information that alters our original thinking about the research problem. This might lead us to look for information on another aspect of the problem, or even to research an entirely new problem. By skipping the literature review we might conduct research that is too broad, unwieldy and unclear; that replicates existing research, and that therefore wastes time, effort and money.

### **TASK 3 - Analyse the structure and content of a literature review**

Below is the literature review section of a research protocol entitled: '*The availability and use of drugs in Mauritius*'.

Read the review carefully. Identify the structure of the review – the main topics and central ideas in each part of the text. Show these topics and ideas in the margin, as we have done for the first paragraph below.



units, found that there was an exaggerated use of antibiotics in the case of a simple diarrhoea. And very often antibiotics were used as a single dose or for three or less days.<sup>12</sup> An evaluative study in Yemen concluded that the Essential Drug Programme considerably reduced the figures for the three indicators referred to above. However, despite this reduction in use, antibiotics still appeared to be overused.<sup>13</sup>

A study in Bangladesh in two teaching hospitals showed that 65% of 234 patients received antibiotics. Ninety percent of the prescriptions were on clinical grounds only. Frequently combination preparations were used which were irrational and potentially harmful.<sup>14</sup> A study in the United States of America showed that 25 to 40% of antibiotics were given unnecessarily.<sup>15</sup> Misuse of antibiotics brings an unnecessary financial burden on national and individual health budgets. It also leads to an increasing drug resistance.<sup>16</sup>

Prescribing of unnecessary expensive brandname products is a burden on national and individual financial resources.

Overprescribing of antibiotics and other drugs could be due to doctors not being always aware of the costs of the drugs they prescribe. The introduction of Essential Drug Programmes intended to address these problems, has had limited effect. For effective implementation of the Essential Drug Programme, the simultaneous introduction of standard protocol for treatment of common diseases is a must. In addition, prescribing guidelines and measures to limit the choice for prescribing should be developed in consultation with health workers, otherwise co-operation is very unlikely and even strong protest might be the result.<sup>17</sup>

Some measures suggested by WHO Drug Action Programme to promote rational prescribing are the:

- a) prescribing of generic drugs,
- b) use of standard protocol for common diseases, and
- c) training of health workers in rational use of drugs.

Another method could be to provide feedback to prescribers on the costs of their prescriptions compared to costs for a standard treatment.

To change doctors' prescribing practices, however, appeared difficult. The usual promotional drive with educational objectives has generally little effect.<sup>18</sup> But in Australia a professionally-run advertising campaign to change doctors' preference for new broad-spectrum antibiotics to an old more effective penicillin showed quite successful.<sup>18</sup>

### 1.3.3 Utilization of drugs

Both pharmacy-based studies, as well as household-based studies show that inappropriate use of drugs, in terms of excessive or wrong use of drugs is also common among consumers. The most common types of misuse of drugs among consumers are:<sup>19</sup>

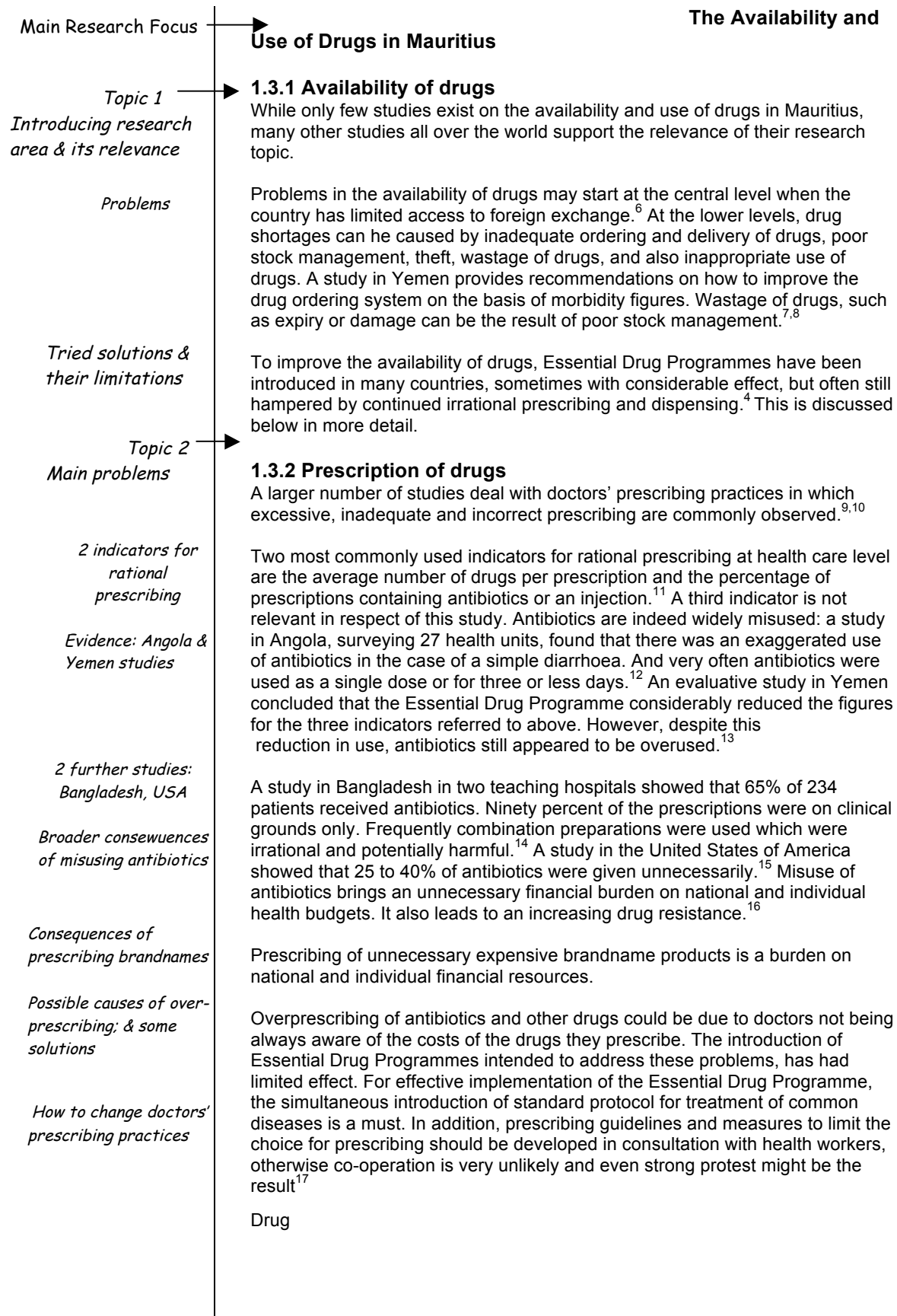
- a) non-compliance with health workers' prescription
- b) self-medication with prescription drugs
- c) misuse of antibiotics
- d) overuse of injections
- e) overuse of relatively safe drugs (e.g. painkillers)
- f) use of inessential combination drugs
- g) use of needlessly expensive drugs

Non-compliance to drug therapy has been extensively investigated. In general, compliance rates vary between 40 to 70%, even in serious conditions.<sup>17</sup> A study in Zimbabwe found that more than 60% of hypertensive and diabetic patients attending all out-patient clinic did not understand the disease and the use of the medicines prescribed to them.<sup>20</sup> Non-compliance from a medical perspective could also be regarded as a patient's way to ascertain control over his own disorder. Compliance behaviour can therefore be seen as a dynamic process by which changes occur as a result of new information and experience gained by the patient.<sup>21</sup>

Self medication with prescription drugs is also well documented.<sup>10</sup> A study in Ethiopia surveying 11700 drug orders in pharmacies in the capital found that 83% were purchased without a prescription, many of which were potentially hazardous. Various studies found that consumers sometimes have very strong preferences for certain drugs, pressing their doctors to prescribe them antibiotics or injections when they are not indicated.<sup>10</sup> People's ideas about drug efficacy and disease etiology may differ from the biomedical perspective, which can affect the way they use the drugs.<sup>22</sup>

Overconsumption of drugs by consumers may occur when drugs are provided for free, as is the case in Mauritius. In several countries user-fees are being introduced for cost recovery in Primary Health Care. User charges for drugs, however, could also result in overprescribing, as it provides a possibility for prescribers to make extra money.

## FEEDBACK



<i>WHO measures for rational prescribing</i>	<p>Some measures suggested by WHO Action Programme to promote rational prescribing are the:</p> <ul style="list-style-type: none"> <li>a) prescribing of generic drugs,</li> <li>b) use of standard protocol for common diseases, and</li> <li>c) training of health workers in rational use of drugs.</li> </ul>
<i>Another measure</i>	<p>Another method could be to provide feedback to prescribers on the costs of their prescriptions compared to costs for a standard treatment.</p> <p>To change doctors' prescribing practices, however, appeared difficult. The usual promotional drive with educational objectives has generally little effect.<sup>18</sup> But in Australia a professionally-run advertising campaign to change doctors' preference for new broad-spectrum antibiotics to an old more effective penicillin showed quite successful.<sup>18</sup></p>
<i>Topic 3</i>	<p><b>1.3.3 Utilization of drugs</b></p>
<i>Common ways in which consumers misuse drugs</i>	<p>Both pharmacy-based studies, as well as household-based studies show that inappropriate use of drugs, in terms of excessive or wrong use of drugs is also common among consumers. The most common types of misuse of drugs among consumers are:<sup>19</sup></p> <ul style="list-style-type: none"> <li>a) non-compliance with health workers' prescription</li> <li>b) self-medication with prescription drugs</li> <li>c) misuse of antibiotics</li> <li>d) overuse of injections</li> <li>e) overuse of relatively safe drugs (e.g. painkillers)</li> <li>f) use of inessential combination drugs</li> <li>g) use of needlessly expensive drugs</li> </ul>
<i>Compliance rates</i>	<p>Non-compliance to drug therapy has been extensively investigated. In general, compliance rates vary between 40 to 70%, even in serious conditions.<sup>17</sup> A study in Zimbabwe found that more than 60% of hypertensive and diabetic patients attending all out-patient clinic did not understand the disease and the use of the medicines prescribed to them.<sup>20</sup> Non-compliance from a medical perspective could also be regarded as a patient's way to ascertain control over his own disorder. Compliance behaviour can therefore be seen as a dynamic process by which changes occur as a result of new information and experience gained by the patient.<sup>21</sup></p>
<i>Why patients don't comply</i>	
<i>How to change this behaviour</i>	
<i>Problems with self-medication</i>	<p>Self medication with prescription drugs is also well documented.<sup>10</sup> A study in Ethiopia surveying 11700 drug orders in pharmacies in the capital found that 83% were purchased without a prescription, many of which were potentially hazardous. Various studies found that consumers sometimes have very strong preferences for certain drugs, pressing their doctors to prescribe them antibiotics or injections when they are not indicated.<sup>10</sup> People's ideas about drug efficacy and disease etiology may differ from the biomedical perspective, which can affect the way they use the drugs.<sup>22</sup></p>
<i>User fees, overconsumption &amp; overprescribing of drugs</i>	<p>Overconsumption of drugs by consumers may occur when drugs are provided for free, as is the case in Mauritius. In several countries user-fees are being introduced for cost recovery in Primary Health Care. User charges for drugs, however, could also result in overprescribing, as it provides a possibility for prescribers to make extra money.</p>





#### **TASK 4 - Evaluate the use of references in the review**

1. Look back at the review and underline or highlight all the references included. What kind of in-text referencing system is used? What do you like or dislike about this system?
2. The writer provides supporting references for most of the key ideas in the review. For which ideas are references not provided? Can you explain this?

#### **FEEDBACK**

A sequential numbered referencing system is used. This has the advantage of making the text easier to read and less cumbersome. However, the reader has no immediate access to who wrote the texts and when. Some readers find it frustrating to have to stop and check each reference in the list of references at the back of the document. We look in more detail at referencing later in this session.

The writer provides supporting references for all but the following main ideas in the text:

- i) Consequences of prescribing brandnames
- ii) WHO measures for rational prescribing
- iii) Another measure
- iv) User fees, over consumption and overprescribing of drugs

We can argue that some of these ideas are common sense or general knowledge, such as i) and iv), and so do not require supporting references. Also, the ideas may be covered in references already mentioned in the review. It is also possible that the writer has acquired this information informally and may not recall where the ideas originated. However, if we wanted to be rigorous, we might try to find out where ideas ii) and iii) originated.

#### **TASK 5 - Evaluate the review**

Look back at the review. How would you describe the way in which it has been structured in general? How effective overall is the review in terms of the structure and content? Give reasons for your opinion.

#### **FEEDBACK**

In terms of structure, the review is clearly laid out with headings to signal the three main topics. The review begins by introducing the general research area. It proceeds to look in more detail at the three main topics comprising the research focus. At the beginning of each main section, the topic is introduced. In the remainder of the section, the topic is elaborated upon or analysed in various ways, and examples or illustrations are provided, with numbered references. This is an effective way of structuring a review as the writer starts from the general research area and then narrows this down to a more detailed examination of the main topics and ideas pertinent to the proposed study. Overall, we think that this literature review is very effective in terms of both the structure and the content.

We now analyse and evaluate another more complex literature review.

## 4. ANALYSE ANOTHER LITERATURE REVIEW

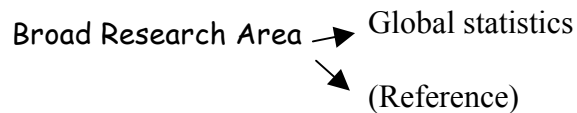
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This activity provides further practice in analysing and evaluating a literature review. This sample review is more complex than the one we expect from you for the assignment. It comes from a Masters degree protocol entitled *Maternal HIV-Infection and Perinatal Outcome: Results of a District-Based Prevention Programme for Mother-to-Child Transmission in Khayelitsha, Cape Town* (Dingena Koppelaar, UWC, 1999).

### TASK 6 - Analyse a literature review

1. Read carefully the literature review below. Identify the structure (main topics and ideas) and make notes in the margin. Note that there are fewer headings than in the previous protocol to signal the structure.
2. Try sketching a flow diagram showing the structure of the review. Indicate where the writer uses supporting references for topics or main ideas.

Your diagram might start something like the one shown here.



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### MATERNAL HIV-INFECTION AND PERINATAL OUTCOME: RESULTS OF A DISTRICT-BASED PREVENTION PROGRAMME FOR MOTHER-TO-CHILD TRANSMISSION IN KHAYELITSHA, CAPE TOWN

DINGENA KOPPELAAR, 1999

#### Literature Review

Perinatal HIV transmission has been the topic of many researchers in developed as well as developing countries over the last 15 years. Transmission rates vary considerably among different regions in the world, ranging from 14% in Europe to almost 50 % in sub-Saharan Africa (Working Group on Mother-To-Child Transmission of HIV, 1995).

Explanations for these variations involve several factors. Initial studies around this topic made use of different methods to calculate and report transmission rates. This problem was addressed during a workshop in 1992 in Belgium, where the use of standard methods was proposed to make studies in this field more comparable. Other factors that may explain some of the regional differences are breastfeeding practices, nutritional status and disease stage of the mother or concurrent sexually transmitted diseases (Datta, 1994;

Orloff, 1996; Tovo, 1997), all of these often determined by socio-economic circumstances. Obstetric factors such as mode and timing of delivery also seem to play a role (European Collaborative Study 1996; Landesman, 1996; Tovo, 1996).

Some studies focus on the impact of a specific factor related to perinatal HIV transmission in order to formulate guidelines for prevention. Examples of such studies are the impact of maternal disease stage (Blanche, 1994); vitamin A deficiency (Semba, 1994; Greenberg, 1997; Coutoudis, 1999); or caesarean section (Kuhn, 1996; European Mode of Delivery Collaboration, 1999). Such aspects are usually studied within a group of known HIV-infected pregnant women.

Brocklehurst (1998), reports on the findings of a systematic literature review on the association between maternal HIV-infection and perinatal outcome over the period 1983-1996. This review includes 21 studies from developing countries and 10 studies from developed countries. All these studies were conducted with prospective cohorts of pregnant women identified as being HIV-positive during pregnancy or delivery and a control group of HIV-negative pregnant women. Another prerequisite for this study was that outcome measures had to be pre-specified. Summary odds ratios of the main adverse perinatal outcomes related to maternal HIV infection were reported as follows:

spontaneous abortion 4.05 (95% CI 2.75-5.96);

stillbirth 3.91 (95% CI 2.65-5.77);

neonatal mortality 1.10 (95% CI 0.63-1.93);

infant mortality 3.69 (95% CI 3.03-4.49);

low birthweight 2.09 (95% CI 1.86-2.35) and

pre-term delivery 1.83 (95% CI 1.63-2.06).

The review also highlights that the association between maternal HIV infection and an adverse perinatal outcome is generally stronger for developing countries compared to developed countries. Control of confounding was done in some studies by matching the HIV-infected and uninfected pregnant women for age and parity. Another method to control for confounding was stratification of birth outcomes by maternal disease stage. Different types of multivariate analyses were also used for the same purpose.

Studies like those included in the literature review are similar to the scope of this mini-thesis. The focus is on the overall impact of HIV on pregnancy and its outcome, without knowledge of the HIV status of the newborn, as such test results only become reliable after the first year of life, unless more expensive test methods are used (Orendi, 1998).

Most reports on adverse perinatal outcome of HIV-infected pregnancies come from less-developed countries, whereby perinatal outcome refers to neonatal as well as maternal outcome. The following neonatal outcomes have all been associated with a positive maternal HIV status: stillbirth, neonatal death, low Apgar score, low birthweight and

prematurity (Aiken, 1992; Temmerman, 1994; Kumar, 1995; Taha, 1995; Chamiso, 1996; Leroy, 1998). Whether these outcomes should be attributed to the HIV status of the child or to the general health status of HIV-infected pregnant women remains unclear (Abrams, 1995; Brocklehurst, 1998). But even if an HIV exposed infant is uninfected, a low birthweight or prematurity in itself increases the risk of perinatal mortality or morbidity (Taha, 1995; Markson, 1996). Apart from adverse neonatal outcomes, there is also evidence that maternal HIV infection increases the risk of obstetric complications such as premature labour, chorioamnionitis and postpartum endometritis (Temmerman, 1994; Kumar, 1995; Chamiso, 1996; Orloff, 1996).

A retrospective record study was done to assess the association of maternal HIV-infection with low birthweight (Markson, 1996). This study design has the advantage in that it is easier to include a larger sample, which might produce more convincing results.

So far, no studies have reported any evidence of an HIV dysmorphic syndrome or specific congenital abnormalities in children born to HIV-infected women (European Collaborative Study 1994). In addition several studies found that HIV-infected children rarely show signs and symptoms of their infection during the neonatal period (Abrams, 1995; Nesheim, 1996). Therefore most HIV-infected newborns seem perfectly healthy at birth and only show progress of their disease later in infancy.

Most studies in developing countries had larger sample sizes than those conducted in developed countries. This might be one of the underlying reasons why the latter studies fail to demonstrate an impact of HIV on perinatal outcome.

Research on maternal HIV infection and transmission has been rather limited in South Africa; most studies seem to be based on two cohorts of HIV positive pregnant women in Durban.

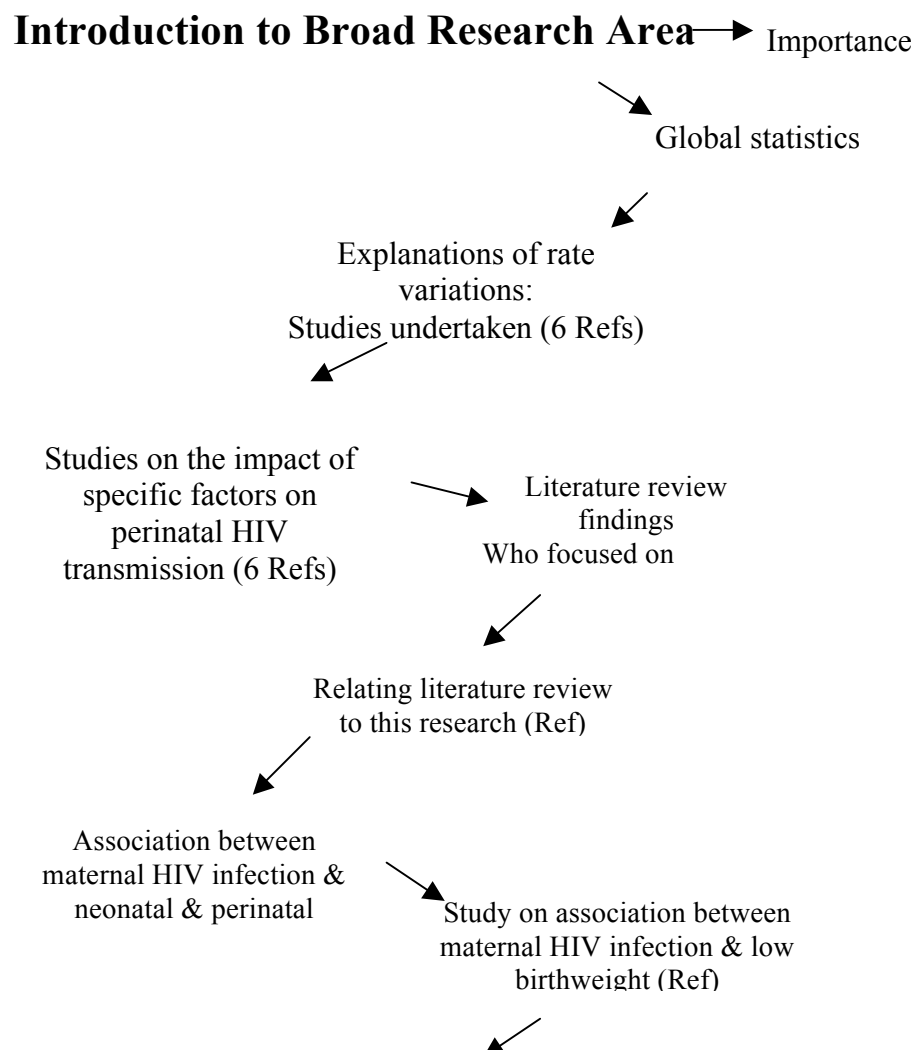
The first report comes from a prospective cohort of 229 HIV positive pregnant women. The intermediate HIV transmission rate of 181 infants born to these women was 34% (95% CI 26-42). Furthermore this study showed an increased risk of transmission (RR 1.99; 95% CI 1.18-3.34) for women with lower haemoglobin concentrations ( $< 10$  g/dl) during pregnancy and a protective effect from caesarean sections on vertical transmission (RR 0.46; 95% CI 0.23-0.91) (Bobat, 1996; Kuhn, 1996). The impact of breastfeeding on transmission rate, growth and mortality in infants of HIV infected women was studied in the same cohort. The results of this study showed an increased risk of 15% (CI, 1.8-31.8) for transmission by breastfeeding compared to formula feeding.

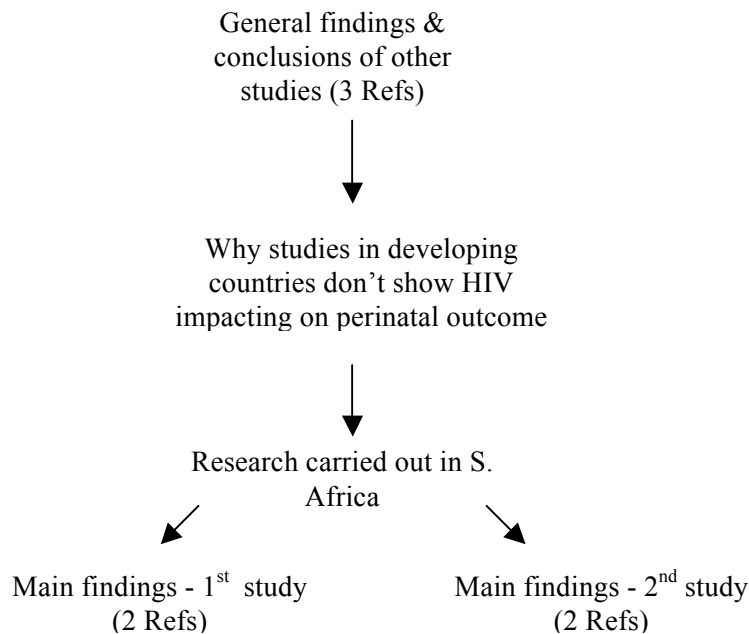
A more recent study also conducted in Durban assessed the effect of vitamin A supplementation to HIV positive pregnant women in terms of transmission rate and birth

outcome. This intervention did not appear to be effective in reducing the overall vertical transmission rate but seemed to have some potential for reducing the incidence of preterm deliveries and the risk of vertical transmission in these preterm infants (Coutsoudis, 1999)(1). In addition the influence of infant-feeding patterns on early mother-to-child HIV transmission was assessed in infants born to women who were part of the vitamin A intervention trial. Outcomes of this study suggest that exclusive breastfeeding in the first 3 months might not convey any excess risk of HIV transmission over formula feeding (Coutsoudis, 1999)(2).

## FEEDBACK

The main ideas, how they are linked, and the number of supporting references supplied are shown in the flow diagram below.





### **TASK 7 – Evaluate the literature review**

1. Look back at the review and underline or highlight all the references. What kind of in-text referencing system has been used? What do you like or dislike about this system? To what extent does the writer provide supporting references for the key ideas in the review?
2. How is this review structured - what general principles are followed? How effective overall is the structure and content of the review? Give reasons for your opinion.

### **FEEDBACK**

1. The review uses a more common referencing system which refers to the author, the date of publication and specific chapter/page numbers. Although it lengthens the text and interrupts the flow of the writing, it provides the reader with immediate access to key information and enables the author to assess the kinds of references provided. The writer provides references for all the main ideas in the review, except for the following:

“Most studies in developing countries had larger sample sizes than those conducted in developed countries. This might be one of the underlying reasons why the latter studies fail to demonstrate an impact of HIV on perinatal outcome.”

Here it seems that the writer is offering her own explanation for this situation.

2. The review begins by introducing the broad area of research into which the study falls, its importance globally and some significant global statistics. This is followed by explanations for the rate variations in different parts of the world. The main body of the review provides an overview or summary of the main findings and issues emerging from a range of relevant studies conducted in both the developed and less developed world. It identifies gaps or grey areas in these findings and then relates the information to the proposed study. The final part of the review shifts the focus to South Africa and to studies conducted here.

Thus we see how the writer starts with a broad global perspective on the research problem and gradually shifts to a narrower South African focus and to a specific aspect of the research topic.

Overall, the review is well written, carefully constructed, clear and logical. The information is substantiated by numerous examples with supporting references, which help to provide a convincing motivation for the study.

We now look in more detail at the sources used in a literature review.

## 5. REFERENCING AND FINDING LITERATURE

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This activity provides guidance around how to reference sources and how to find appropriate literature for a review.

### TASK 8 - Think about how to find literature for a review

If you are unsure about the difference between in-text referencing, quoting and citing, or how to reference different kinds of texts, read the text provided:

**READING:** Clifford, M. (2000). *Using and Referencing Sources*. Bellville: SOPH, UWC: 1-7. See pp 31-40 in the Reader.

1. Think back to the two literature reviews examined earlier. How do you think the authors found the literature they needed? Where did they look? Who did they ask? List all your ideas.
2. How do you plan to find relevant literature for your review?

### FEEDBACK

2. When we asked Dingena how she found the literature for her review, this is what she told us:

*"Unfortunately I did not have easy access to a good library or to the Internet for health resources, so I talked to my colleagues at work and to my lecturer. As they were more experienced than I was, they knew of relevant studies and where to get hold of them. For instance, one of my colleagues had all the latest HIV statistics in Natal. He also gave me the contact details of someone conducting research into HIV in my area. Then my lecturer gave me a list of texts and suggested I visit the Medical library attached to a university not far from my home. The librarian there was very helpful. She showed me how to look up texts and abstracts (summaries of articles and papers) in the catalogue. She also arranged for me to obtain texts through the interlibrary loan system."*

To find out about more ways of locating relevant literature, read the text:

**READING:** Katzenellenbogen, J. M., Joubert, G., Abdool Karim, S. S. (1999). Ch 5 – Literature Review. In *Epidemiology: A Manual for South Africa*. Cape Town: Oxford University Press: 54 – 55. See pp 47 - 50 in the Reader.

## TASK 9 - Identify text references

1. Below are some references that Dingena found for her literature review around maternal HIV-infection and perinatal outcome. Which of these six references is not from a journal?
2. What are the full names of these abbreviated titles:

Acta Paediatr Suppl

Int J Epidemiol

If you don't know, how can you find out?

Why are some journal titles abbreviated in this way?

- Cohen J. (1995) Bringing AZT to poor countries. **Science** 269: 624-626.
- Chowdrey, A., Vaughan, V., Abed, F., (1988) Mothers learn to save the lives of their children. **World Health Forum**, Vol 9, pp. 239-244.
- Saba J. (1997) Identification of HIV infection in pregnancy: another era. **Acta Paediatr Suppl** 421: 65-66.
- Sommer, A., Tarwotjo, I., Hussaini, G., (1983) Increased mortality of children with mild vitamin A deficiency. **Lancet**, Vol 2, pp. 585-8.
- Taha TE, Dallabetta GA, Canner JK. *et al.* (1995) The effect of human immunodeficiency virus infection on birthweight, and infant and child mortality in urban Malawi. **Int J Epidemiol** 24: 1022-1029.
- UNICEF, (1990) The situation of children and women. Hanoi, UNICEF.

## FEEDBACK

1. The UNICEF reference is not a journal article.
2. Acta Paediatric Supplement and International Journal of Epidemiology. If you do not know the full names of these publications, you can usually find a list of them at any medical library, where you can ask the librarian.

## TASK 10 - Identify relevant references for a review

Imagine that you are Dingena. You are identifying appropriate sources for your literature review around maternal HIV-infection and perinatal outcome. Look back at the six references above. From the information provided in the references, decide which of these seem to be the most useful. Explain your choice.

## FEEDBACK

The following two references appear to be the most useful because they focus specifically on the topic of maternal HIV-infection and perinatal outcome. The first reference looks specifically at maternal HIV-infection; while the second focuses on perinatal outcome. Also, the second reference is from Malawi, an underdeveloped African country, which is likely to offer useful findings for South Africa. Both references are fairly recent. As HIV-infection is a relatively recent disease, the references could be useful for the research topic.

Saba J. (1997) Identification of HIV infection in pregnancy: another era. *Acta Paediatr Suppl*, 421: 65-66.

Taha TE, Dallabetta GA, Canner JK. *et al.* (1995) The effect of human immunodeficiency virus infection on birthweight, and infant and child mortality in urban Malawi. *Int J Epidemiol* 24: 1022-1029.



The following four references appear less useful, although we would need to read the abstracts to verify this. The first reference focuses on child vitamin A deficiency, rather than maternal deficiency, and so is unlikely to be helpful. It is also very dated. The other references seem too broad in focus, such as policy issues around the cost of AZT and general concerns around the well-being of mothers and babies. The last two references are also published at a time when not much was known about HIV-infection in mothers and babies. So they are unlikely to shed much light on our research topic.

Sommer, A., Tarwotjo, I., Hussaini, G., (1983) Increased mortality of children with mild vitamin A deficiency. *Lancet*, Vol 2, p p. 585-8.

Cohen J. (1995) Bringing AZT to poor countries. *Science* 269: 624-626.

UNICEF, (1990) *The situation of children and women*. Hanoi, UNICEF.

Chowdrey, A., Vaughan, V., Abed, F., (1988) Mothers learn to save the lives of their children. *World Health Forum*, Vol 9, pp. 239-244.

### **TASK 11 – Draft your literature review**

Think about the research topic for your protocol. Plan how you will obtain the relevant literature - where you will go, who you will ask, etc.

Once you have identified potentially useful literature, try to obtain at least the abstracts or introductions, to enable you to decide which sources are essential for your protocol. Read these in detail and make notes.

When you have notes on several sources, start thinking about the structure of your literature review. Try sketching a flow diagram of the main topics and ideas and how they are related, as we did earlier when we analysed the structure of the sample reviews. Then for each topic or idea, jot down any literature that relates to it.

When you have a good outline of your review, with references for all the topics and key ideas, you are ready to start drafting the literature review.

As with other written texts, you will probably find yourself drafting and redrafting the review several times until you feel satisfied with it.

## **6. SUMMARY**

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In this study session, we:

- identified the purpose and content of a literature review;
- analysed how a review is usually structured;
- assessed the importance of providing supporting references for key ideas;
- explored how to locate and choose appropriate literature;
- practised sketching a diagram outline of a review;
- examined ways of writing references and using abbreviated titles for specific public health and medical journals, and finally,
- drafted a literature review for the assignment protocol.

## **7. REFERENCES**

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- WHO. (1995). *Availability, Provision and Use of Antibiotic, Antihypertensive and Antidiabetic Drugs at Public Health Care Level in Mauritius*. Geneva: WHO: 5 - 23.
- Koppelaar, D. (1999). Maternal HIV-Infection and Perinatal Outcome: Results of a District-Based Prevention Programme for Mother-to-Child Transmission in Khayelitsha, Cape Town. *SOPH, UWC (Unpublished thesis)*.

# Unit 2 - Session 2

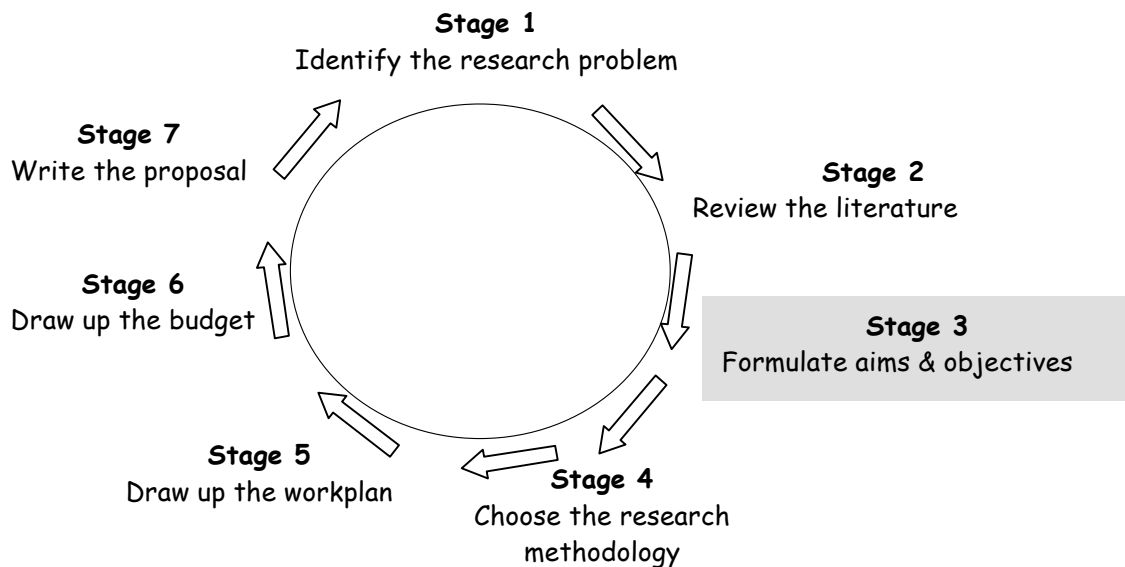
## Aims and Objectives

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### Introduction

So far in this module you have selected a research problem; prepared a statement and brief description of the problem and its importance, and conducted a literature review to determine what is already known about the problem. You are now ready to identify more clearly the study aims and objectives - Stage 3 in developing a protocol. Key questions to ask are:

- *Why do we want to carry out the research?*
- *What do we hope to achieve?*



### Contents

1. Learning Outcomes of this Session
2. Readings
3. Identify Good Aims and Objectives
4. Formulate Good Aims and Objectives
5. Summary

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## 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study Session, you should be able to:	
<p><b>Public Health Content</b></p> <ul style="list-style-type: none"> <li>• Distinguish between aims and objectives.</li> <li>• List key features of aims and objectives.</li> <li>• Evaluate aims and objectives.</li> <li>• Write clear aims and objectives.</li> </ul>	<p><b>Academic Learning Content</b></p> <ul style="list-style-type: none"> <li>• Extract key ideas from texts.</li> <li>• Sort out information.</li> <li>• Read critically and evaluate information.</li> <li>• Write clear precise</li> </ul>

### ASSIGNMENT

By the end of the session, you should have more notes for the assignment protocol.

## 2. READINGS

Author/s	Publication details	Page numbers in Reader
Katzenellenbogen, J. M., Joubert, G., Abdool Karim, S. S.	(1999). <i>Ch 6 - Setting Objectives for Research. In Epidemiology: A Manual for South Africa. Cape Town: Oxford University Press: 56 - 63.</i>	51 - 60

## 3. IDENTIFY GOOD AIMS AND OBJECTIVES

*In previous study sessions, you prioritised and analysed a research problem until you focused on a specific aspect of the core problem. You then drew up a problem statement. The literature review assisted you to further clarify the issues and may have given you some ideas about how to address the problem. You are now ready to formulate the overall aim and specific objectives of the research. This activity guides you in doing this.*

### TASK 1 - Compare and summarise features of aims and objectives

**READING:** Katzenellenbogen, J. M., Joubert, G., Abdool Karim, S. S. (1999). *Ch 6 - Setting Objectives for Research. In Epidemiology: A Manual for South Africa. Cape Town: Oxford University Press: 56 - 63. See pp 51 - 60 in the Reader.*

The reading describes stages 1-3 of writing a research protocol, i.e. statement of the research problem, literature review and setting aims and objectives. Answer these questions.

- What are the main features of a good aim?
- What are the main features of a good objective?
- What is the difference between aims and objectives, and how are they related?
- How do objectives relate to the research methods used?
- Why is it important to formulate good aims and objectives?

## FEEDBACK

A good aim:

- is related to the initial research problem.
- is clear and precise.
- can be defined.
- is achievable with the time and resources available.
- is important and worthwhile doing.

Good objectives:

- cover the different aspects or individual components of the problem and its contributing factors in a coherent way and in a logical sequence.
- are clearly phrased in operational terms and are easy to apply in practice.
- are commonly phrased in measurable terms.
- are clear, specific and unambiguous.
- include the implementation objectives indicating how the research results will be used. This enables decision-makers to ensure that the results are actually used in some way.

The aim of the study states what is expected to be achieved by the study overall, while objectives indicate the specific information the study must yield and the detailed research questions that must be answered to fulfil the aim. Objectives specify what you will do in your study, where and for what purpose.

Objectives indicate what is to be achieved. The methods specify HOW the objectives are to be achieved.

Formulating good aims and objectives is important because they help:

- to focus the study (narrow it down to essentials). to avoid collection of data that are not strictly necessary for understanding and solving the problem
- to determine the planning of the study and to organise the collection, recording, analysis, interpretation and utilisation of the data.
- to evaluate the implementation of the study.

## TASK 2 – Evaluate aims and objectives

Read the research aim and objectives below around women's perceptions of the ante-natal care (ANC) services.

- Which objectives are concerned with implementation?
- What clues tell us that the aim and objectives are phrased in 'operational' terms?
- To what extent are the aim and objectives clear, specific and unambiguous?

Aim: To investigate the perception of women of the ANC services run by the local health authority

### Objectives

- \* To identify a representative group of local women users of ANC clinics
- \* To describe the opinions of this specific group of users about the quality of care at ANC clinics
- \* To share and discuss the results with clinic staff and management
- \* To make recommendations to improve the care provided at ANC clinics

## **FEEDBACK**

The two implementation objectives are:

- To workshop the results with clinic staff and management
- To make recommendations to improve the care provided at ANC clinics

Operational objectives indicate what is to be done or performed and use 'action verbs' such as to investigate, to identify, to describe, to share and discuss, to make recommendations.

The aim and objectives are clear, specific and unambiguous. The only term that might seem vague is 'quality of care', because we do not know which aspects of 'quality of care' the research will focus on. However, this term will be defined and described in detail, as part of the research.

## **Action words**

Other action words used to state aims and objectives include:

To determine	To verify
To calculate	To establish
To measure	To list
To compare	To map out
To find out	

Avoid using vague non-action verbs such as 'to appreciate' or 'to understand'.

Other verbs such as 'to study', 'to investigate' or 'to find out', can express vague or specific aims and objectives, depending on the content of the rest of the sentence.

## **TASK 3 - Sort out aims and objectives**

1. The research projects a – c below are all concerned with tuberculosis. Each project has one main aim and several objectives. Identify the aim and the objectives in each set.

a.

- To understand the TB programme problems from National TB managers
- To study the problem of TB in Southern Africa
- To map the distribution of patients with TB in Southern Africa
- To measure the socio-economic status of TB patients

b.

- To make a list of all the TB clinics and staff in the district
- To do a situational analysis of the district TB programme
- To make recommendations to the TB services manager
- To measure the TB defaulter rate in the district

c.

- To identify a group of TB patients who are below 10 and are currently on treatment
- To study the appetite of children with TB
- To describe the nutritional status of children with TB
- To measure the dietary intake of all children with TB in the study
- To understand the appetite of children with TB
- To understand the beliefs of parents about feeding children with TB

Aim	Objectives
a.	
b.	
c.	

2. Which aim has all the features of a good aim? Explain your choice.
3. Which of these aims do NOT have the features of a good aim, identified earlier? Explain why they are not good and try rewriting them.
4. Which of these objectives do NOT have the features of a good objective? Explain why they are not good and try rewriting them.

## FEEDBACK

1.

Aim	Objectives
a. To study the problem of TB in Southern Africa	To map the distribution of patients with TB in Southern Africa To measure the socio-economic status of TB patients To understand the TB programme problems from National TB managers
b. To study the appetite of children with TB	To identify a group of TB patients who are below 10 and are currently on treatment To describe the nutritional status of children with TB To measure the dietary intake of all children with TB in the study To understand the beliefs of parents about feeding children with TB To understand the appetite of children with TB
c. To do a situational analysis of the district TB programme	To make a list of all the TB clinics and staff in the district To measure the TB defaulter rate in the district To make recommendations to the TB services manager

2. The third aim is the best, because it is clear and precise, worth doing and probably achievable.
3. The first two aims are not very good aims because they are too broad and vague. The first aim in particular is not easily achievable. Both aims use the vague action word 'study'.

The two aims could be rewritten like this:

  - To perform a profile of the national distribution and profile of TB patients.
  - To measure the appetite and diet of children with TB in Cape Town
4. The only objective that is a little unclear is:
  - To understand the appetite of children with TB

It would have been better phrased using a more specific action verb instead of 'to understand'. This would also make it easier to evaluate whether the objective has been achieved. We could then rewrite the objective as follows:

  - To record/to measure the appetite of children with TB

## **4. FORMULATE GOOD AIMS AND OBJECTIVES**

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This activity helps you to formulate clear aims and objectives for research studies.

### **TASK 4 - Formulate good aims**

Look back at the problem analysis on the high TB defaulter rate presented on page 59 of the reading by Katzenellenbogen.

Imagine that your literature search and discussions with service managers and nurses have suggested that the key problem has to do with the poor quality of the service. This is noted under 'service factors' on the left side of the diagram.

Write down one or two possible aims for a study to look at the influence of the quality of service on TB defaulters.

### **Feedback**

Possible study aims include:

- To measure the quality of service at different TB clinics and compare it with the defaulter rates at the different clinics
- To improve the quality of service given to TB patients and to measure any change in defaulter rate
- To measure the level of satisfaction with the quality of service between defaulters and non-defaulters

### **TASK 5 - Identify clear objectives**

Think about this study aim:

- To measure the level of satisfaction with the quality of service between defaulters and non-defaulters

What objective would you start with? Write this down.

Think about subsequent objectives that need to be achieved so as to reach the main aim. Remember to include at least one implementation objective. Think of the best order in which things should be done. Write down the objectives in this order.



## Feedback

Here are some objectives that we have come up with:

The first objective might be to find defaulters and non-defaulters:

- To identify defaulters and non-defaulters using the same TB service

We then need to measure the level of satisfaction amongst these two groups. So the second objective might be:

- To measure the level of satisfaction with the quality of the TB service amongst defaulters and non-defaulters.

After this, we need to compare the results between the two groups. So our third objective might be:

- To compare the level of satisfaction with the quality of the TB service amongst defaulters and non-defaulters.

Finally, we want to ensure that our recommendations are recognised by the people involved in the planning and rendering of TB services so that changes for the better can be made. So our final objective might be:

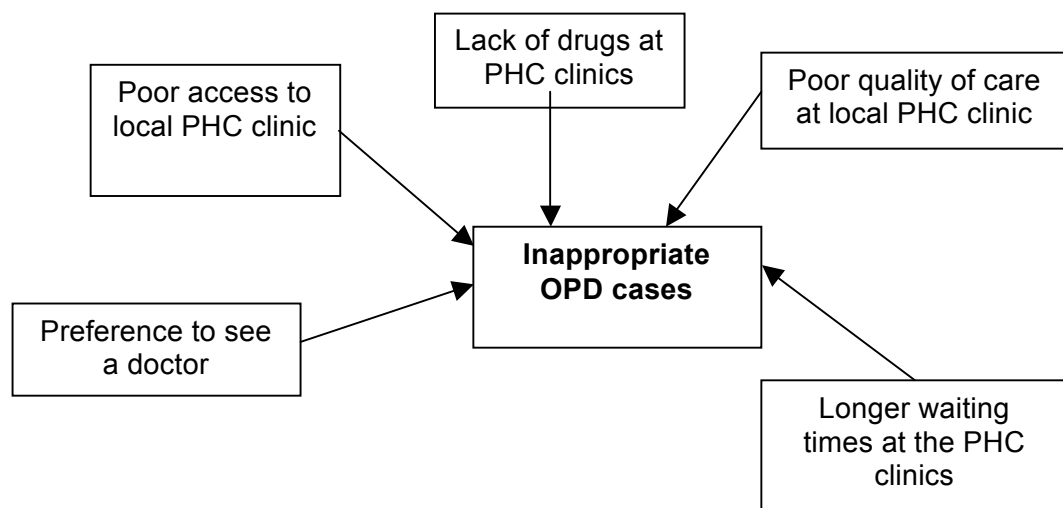
- To make recommendations and workshop the results with all parties concerned (managers, health staff and users), to ascertain what changes should be made, and how, to improve the compliance of TB sufferers

## TASK 6 - Produce a problem analysis diagram and a problem statement

1. Imagine that you are a hospital manager. You have received complaints from your out-patient staff that they are seeing too many inappropriate cases that should be dealt with at the Primary Health Care clinic. You decide to investigate this further by doing a small piece of Health Systems Research. Look back at unit 1 and the way you drew up a problem analysis diagram for the problem of poor use of ANC services. Draw a similar diagram for the possible causes of the inappropriate use of the hospital OPD.
2. Use the diagram to write a problem statement.

## Feedback

1. Here is an example of a problem analysis diagram.



2. Possible problem statements might read as follows:
- The OPD department at the hospital is very busy. Many of the cases are inappropriate since they could also have been treated at a Primary Health Care clinic. One reason for this could be the access to health services by the local community.
  - The OPD department at the hospital is very busy. Many of the cases are inappropriate since they could also have been treated at a Primary Health Care clinic. One of the reasons for this could be the poor quality of service that they receive at the Primary Health Care facilities.
  - The OPD department at the hospital is very busy. Many of the cases are inappropriate since they could also have been treated at a Primary Health Care clinic. One of the reasons could be that they like to be seen by a doctor only at the hospital.

### **TASK 7 – Formulate possible research aims**

From your discussions and literature review, you have decided to concentrate on access to health services as a possible reason for the inappropriate use of the OPD, as formulated in the problem statement above. What could be the aim of such a study? Try formulating one or two possible aims.

#### **Feedback**

Possible aims of the study could be:

- To investigate the difference in access to Primary Health Care clinics and the hospital OPD, or
- To investigate the different barriers clients face in attending Primary Health Care clinics, or
- To identify whether access to the hospital OPD is a reason why people do not go to the Primary Health Care clinic instead

### **TASK 8 – Formulate possible objectives**

Formulate four or five objectives that would enable you to achieve this aim:

- To investigate the difference in access to Primary Health Care clinics and the hospital OPD

#### **Feedback**

Here are some examples of possible study objectives:

- To measure the number of 'inappropriate' cases seen in the hospital OPD over a period of one week
- To compare the area of residence of 'inappropriate' cases with 'appropriate' cases
- To map out the distribution of Primary Health Care clinics in the district
- To compare the total cost for patients in different parts of the district to come to the hospital or to visit their local clinic
- To establish the knowledge of OPD patients about the existence and services provided by local Primary Health Care clinics

- To compare the time taken to attend the clinic versus the time taken to attend the hospital OPD
- To compare the opening hours of the clinics with those of the OPD
- To make recommendations to the district health management team

### **TASK 9 – Formulate good aims and objectives for your protocol**

1. For the problem statement or question identified for your research, write down the aim and objectives.
2. Review your aim and objectives by asking yourself these questions:

Is the aim:

- related to the initial research problem?.
- clear and precise?
- defined and achievable?

Are the objectives:

- dealing with the different aspects of the problem and its contributing factors in a logical and coherent way?
- clearly phrased in operational terms, and easy to apply in practice?
- phrased in a way in which they can be measured?
- clear specific and unambiguous?
- looking at how the research results will be used to solve the problem (implementation objective)?

## **5. SUMMARY**

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In this session, you have further analysed the research question by formulating an appropriate aim and breaking this down into relevant objectives. This is an extremely important step as it now allows you to identify what information you need to collect and to plan how you are going to collect this information.

This study session stressed the importance of having clear and concise aims and objectives. These come from the problem analysis diagram and literature review. Many experienced Health Systems Researchers will tell you that formulating good aims and objectives is the most important part of the research protocol.

In the next study session we move on to Stage 4 – Research Methodology, and the first element ‘variables and indicators’.

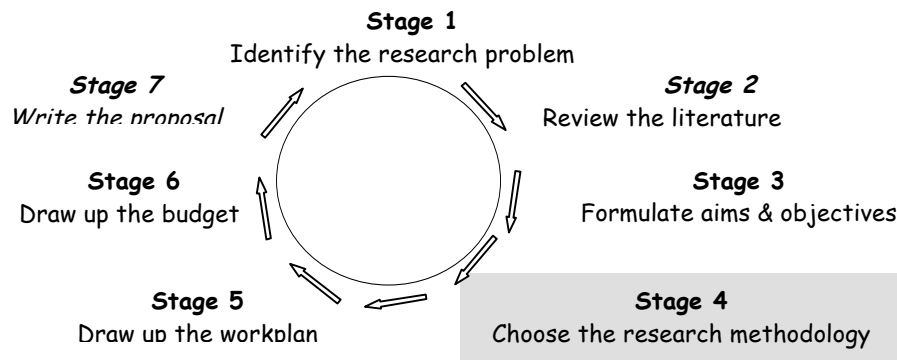
# Unit 2 - Session 3

## Variables and Indicators

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### Introduction

So far, in developing a protocol, you have a clearly defined problem and a specific research question. Through the literature review you have discovered what is already known about the problem. You have also identified appropriate aims and objectives so as to be able to answer the research question. **You are now ready to identify appropriate measurement variables and/or indicators that will enable you to achieve your objectives. This is the first element of Stage 4 in developing a protocol, where we ask ourselves:**  
**What additional data do we need to reach our research objectives?**  
**How are we going to collect this information?**



### Contents

1. Learning Outcomes of this Session
2. Readings
3. Identify Variables and Indicators
4. Define Measurement Variables
5. Summary

## 1. LEARNING OUTCOMES OF THIS SESSION

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**By the end of this study Session, you should be able to:**

### **Public Health Content**

- Describe variables/indicators and their purpose.
- Identify variables that need indicators.
- Define and clarify variables.
- Formulate variables and indicators for research objectives.

### **Academic Learning Content**

- Extract key ideas from texts.
- Sort out information.
- Read critically and evaluate information
- Write clear, precise statements.

## **ASSIGNMENT**

By the end of the session, you should have **more notes** for the assignment protocol.

## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
Varkevisser, C. et al.	(1991). Module 8. In <i>Designing and Conducting Health Systems Research Projects</i> . WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 98 – 101.	<b>147 – 152</b>

## 3. IDENTIFY VARIABLES AND INDICATORS

---

We are now at Stage 4 in developing a research protocol – the research methodology. The first question to ask ourselves is:

*What information are we going to collect in our study in order to meet our objectives?*

To answer this question, it is necessary to select variables or indicators of variables, which we can measure. Variables and indicators guide the information to be collected. How to identify measurement variables and/or indicators is the focus of this activity.

### **TASK 1 – Read about variables and indicators**

In your work or reading, you may have come across the terms 'variable' and 'indicator'. What do they refer to? How are they different? Can you think of some examples of variables or indicators?

To find out more about variables and indicators, read this text and use it to help you to complete the next task:

**READING:** Varkevisser, C. et al. (1991). Module 8. In *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 98 – 101. See pp 147 – 152 in the Reader.

## **TASK 2 – Identify variables and indicators**

1. For the following objectives, list some possible variables and/or indicators.
  - To list the ages of all the children attending an immunisation clinic
  - To measure the knowledge of mothers about measles
  - To measure the number of children admitted with measles to the hospital
  - To compare the cost of different TB medications
  - To measure the proportion of obese adults attending a diabetic clinic
2. Which of the variables you identified can be measured directly as they are, and which ones need indicators? Can you suggest some possible indicators of these variables?

## **Feedback**

Before giving you feedback, here is a brief description of a variable and an indicator.

- A variable is a characteristic of a person, object or phenomenon that can take on different values. However some variables are not directly measurable and need to be made measurable with one or more precise indicators.

We now look at variables for the objectives above.

*To list the ages of all the children attending an immunisation clinic*

Age is the variable. It can be directly measured.

*To measure the knowledge of mothers about measles*

The variable is 'knowledge about measles'. However, this cannot be directly measured. It requires a number of different questions that can form an indicator of knowledge about measles. For instance: How do you know when a child has measles? How is measles spread? What can be done to stop children from getting measles?

*To measure the number of children admitted with measles to the hospital*

The variable is 'the number of measles admissions'. This can be directly measured.

*To compare the cost of different TB medications*

The variable is 'the cost of TB medications'. This can be directly measured.

*To measure the proportion of obese adults attending a diabetic clinic*

The variable is 'obesity'. This cannot be directly measured. It requires the measurement of weight and body surface to form an indicator.

### **TASK 3 – Identify variables and indicators**

For the following more tricky objective, identify the variable to be measured.

1. Think about why this variable cannot be measured directly as it is.
2. Identify indicators for this variable.

*Identify factors related to the TB services that make them either accessible or not to TB sufferers.*

### **Feedback**

This objective is slightly different. The variable to be measured is 'accessibility'. However this cannot be measured directly. We must therefore think of indicators that can be used to measure accessibility. These could include:

- Distance to clinic
- Cost of reaching clinic
- Patient fees
- Time taken to reach clinic

We could measure each of these indicators and then make a judgement as to the accessibility of the TB service to defaulters.

## **4. DEFINE MEASUREMENT VARIABLES**

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Once the variables and/or indicators have been chosen, the next step is to plan how to measure them in the study setting. There are two requirements for every variable or indicator:

- A good definition
- A method of measuring it

In the next few tasks you will practise defining and measuring variables. Follow-up study sessions around study design and data collection methods equip you to decide what is the best way of measuring the variable or indicator.

### **TASK 4 – Define measurement variables**

1. Write down the six main variables for the following objective:

*To identify whether there are variations in TB compliance related to the age, gender, area of residence, type of treatment and type of treatment point.*

2. 'TB compliance' is not easy to measure, and so is not a good variable.

What would be a better variable for this?

3. Which two other variables need to be further defined and why? How would you do this?

## Feedback

For this objective the six variables around which information needs to be collected are:

- TB compliance
- area of residence
- age
- gender
- type of treatment
- treatment points

In terms of the variable 'TB compliance', people who do not comply are defaulters, so our variable is in fact 'the TB defaulter rate'.

In order to measure the variables 'area of residence' and 'treatment points', we would first have to define our different geographical areas.

## TASK 5 – Define variables

1. What is the main variable for the following objective?

*Determine the level of diabetes complications admitted to hospital in the last two years*

2. What aspects of this variable would you need to define more clearly before you could measure it? Try defining these aspects.

## Feedback

1. The main variable to be measured is:  
*'the hospital admission of diabetic complications'*
2. We need to define what conditions are classified as 'diabetic complications' and then we can measure the number of admissions.

We end this study session with a task around the assignment protocol.

## TASK 6 – Define variables and indicators for your protocol

For the objectives that you have identified for your research protocol, write down variables and/or indicators, which could be used to measure the objectives.

Check that your variables or indicators are clear and can indeed be measured. If necessary, define them more carefully.

## 5. SUMMARY

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Defining indicators and variables is an important part of the research process, since they provide the researcher with a clearer idea of what information needs to be collected. This is closely related to the research objectives that have been set. After defining variables and indicators, the researcher needs to think about how to collect this information. This is the focus of the next few study sessions.

# Unit 2 - Session 4

## Study Design

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### Introduction

In previous study sessions you:

- selected a research problem;
- prepared a statement and brief description of the problem and its importance;
- conducted a literature review to determine what is already known about the problem;
- identified the aim, objectives, variables and indicators of the research.

In this study session, we look at how to measure variables and indicators. This entails choosing an appropriate study design for the problem – the next element in Stage 4.

<i>What additional data do we need to reach our research objectives?</i>  How are we going to collect this information?	4. Research Methodology	<ul style="list-style-type: none"><li>• <i>Study design</i></li></ul>
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### Contents

1. Learning Outcomes of this Session
2. Readings
3. Identify Different Study Designs
4. Examine Cross-sectional Surveys
5. Examine Case Studies
6. Choose Appropriate Study Designs
7. Summary
8. References

## 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study Session, you should be able to:

### Public Health Content

- Describe and classify study designs.
- Describe the purpose, main features, types, advantages and disadvantages of surveys.
- Evaluate and identify problems with surveys.
- Match survey types and research problems.
- Describe the purpose and features of case studies.
- Describe the qualities of a good case study researcher.
- Choose the best study design for a research aim.

### Academic Learning Content

- Classify information, using diagrams.
- Extract key ideas from texts.
- Read critically and evaluate information.
- Think critically; make judgements and decisions based on available information.

## ASSIGNMENT

By the end of the session, you should have more notes for the assignment protocol.

## 2. READINGS

---

Author/s	Publication details	Page numbers in Reader
Varkevisser, C. et al.	(1991). Module 9. In <i>Designing and Conducting Health Systems Research Projects</i> . WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 119 - 129.	<b>153 - 166</b>
SACHRU	(1997). Questionnaire Design Principles. In <i>Planning Healthy Communities</i> . Adelaide: SACHRU: 19 - 38.	<b>91 -104</b>

SACHRU	(1997). <i>Planning Healthy Communities</i> . Paper 3. Adelaide: SACHRU. Ch 2 - Face-to-Face Interviews: 97 – 103. Ch 3 - Telephone Surveys: 105 - 111. Ch 4 - Mail Surveys: 113 - 118.	<b>73 - 78</b> <b>79 - 84</b> <b>85 - 90</b>
Hale, L., Fritz, V. U. & Eales, C.	(1998). Do Stroke Patients Realise that a Consequence of Hypertension is Stroke? <i>South African Medical Journal</i> , 88: 451 - 454.	<b>41 - 46</b>

### 3. DIFFERENT STUDY DESIGNS

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Study design is concerned with turning research questions into projects. This is a crucial part of the research process, but it is often passed over without any real consideration of the issues and possibilities. If you recall our earlier analogy of crossing the river, the study design is equivalent to the mode of transport used to get across the river.

Study design is a complex subject. In this activity we introduce the concept of study design and look at two main kinds: non-intervention and intervention study designs.

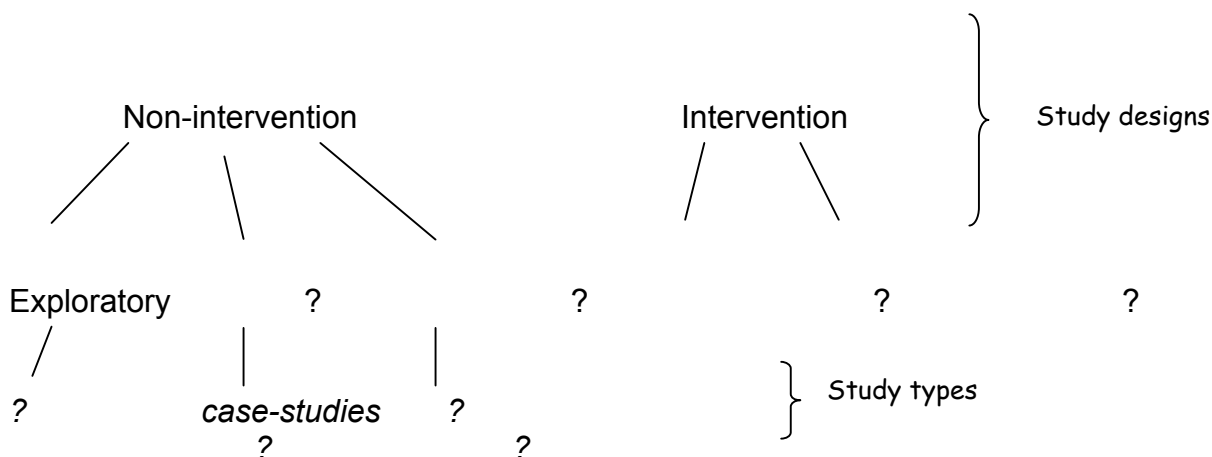
#### TASK 1 - Classify study designs and types

**READING:** Varkevisser, C. et al. (1991). Module 9. In *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 119 - 129. See pp 153 - 166 in the Reader.

This extract provides details about different kinds of studies. At this stage we want you to focus on how the studies are classified. The diagram below shows two main levels of studies as follows:

- Study designs (broad, general classification at two levels)
- Study types (study types related to particular study designs)

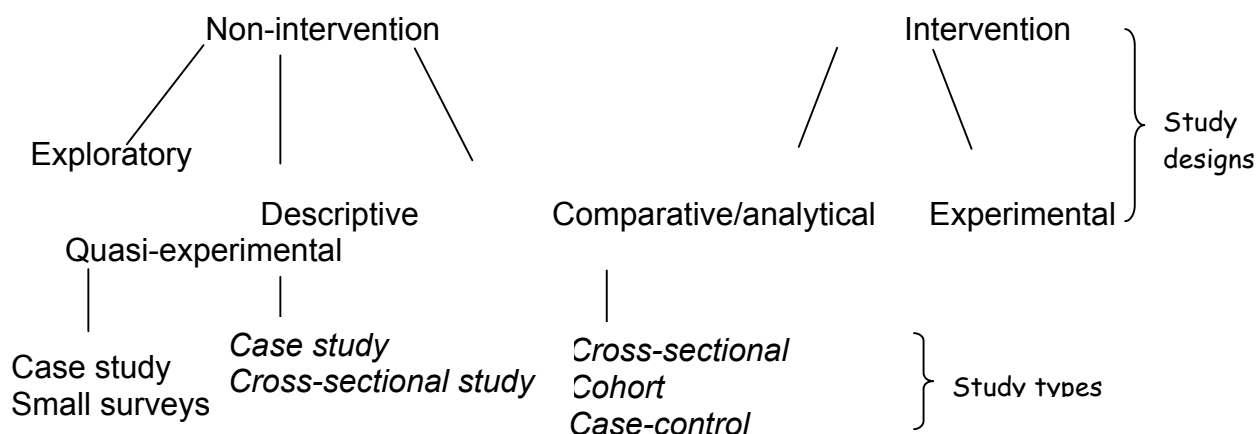
1. Complete this diagram to show the main classification of study designs and types described in the reading.



2. Compare non-intervention and intervention studies. What do the names suggest about the key distinguishing features of each? Which of these studies are an intervention and a non-intervention study?
  - A study to find out how many women attend the ANC clinic.
  - A study to see if more women come for ANC care, after increasing the opening hours of the clinic.
3. In this module, we focus mainly on non-intervention study designs for Health Systems Research. What are the main features of study designs and types associated with non-intervention studies?
4. What are the two most common types of non-intervention studies?

## Feedback

1.



1. The first study is an example of a non-intervention study because the researcher just describes the situation but does not intervene. The second study is an example of a Non-Intervention study in which the researcher manipulates objects or situations and measures the outcome of these manipulations.
2. Non-intervention studies can be divided into exploratory studies, descriptive studies and analytic studies. Exploratory studies are small-scale studies, which aim to provide some idea

of either the size, extent or causes of a problem. Descriptive studies involve the systematic collection and presentation of data to give a clear description of a particular situation. Analytical studies attempt to establish causes or risk factors for certain problems. This is done by comparing groups which have the problem (or develop it) with those who do not have it.

3. The two most commonly used types of exploratory and descriptive studies are case studies and cross-sectional studies (also known as surveys).

It is important that we do not confuse study design with data collection methods. The same data collection methods can be used with different study designs. For instance, an interview can use a questionnaire with both intervention and non-intervention studies.

In the next two activities, we examine the exploratory/descriptive study types: surveys and case studies.

## **4. CROSS-SECTIONAL SURVEYS**

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In this activity, you learn what surveys are, the different types of surveys that can be performed and the steps to take in conducting a survey.

### **TASK 2 - Define a survey and its purpose**

1. What is a survey? What does the word 'survey' mean? Why are they sometimes called 'cross-sectional' surveys? If necessary, check in a dictionary.
2. Think about any surveys that you have been involved in, such as household surveys, market surveys or the census. What was the purpose of such surveys? How were they conducted? Do surveys always involve the use of questionnaires?
3. What could be some of the reasons for using a survey in the health field?
4. What kind of information might you want to find out from a health survey? What questions would be important? Jot down some more possible questions under the following headings:
  - Who? e.g. Who is affected by TB?
  - When?
  - Where?
  - Why?

### **Feedback**

1. To survey means to view or to consider something in a comprehensive or general way. A survey collects the same information in a similar way from a fairly large number of people. They are sometimes called cross-sectional surveys because they are used to collect information from a section of the population at one particular moment in time.
2. Surveys aim to quantify the distribution of certain variables in a study population at one point in time. It usually involves the collection of a small amount of data, in standardised form from a large number of individuals. This involves selecting samples of individuals from known populations. Surveys do not have to involve questionnaires or even people. For instance, surveys can be made of vacant beds in a hospital, by looking at hospital records.

3. In the health field, surveys are mostly used to study the prevalence of a particular problem, disease, characteristic or attitude. For instance, asking a group of clinic nurses if they like their accommodation is a survey. Surveys attempt to answer some of the following questions:

**Who?**

Who is affected by certain diseases?

Who attends a clinic?

Who does not have their children vaccinated?

**When?**

When do community members suffer the most illnesses?

**Where?**

Where do community members go when they are feeling unwell?

Where do most of undernourished children in a district live?

**Why?**

Why do mothers not deliver in the health facilities?

Why do mothers not bring children for vaccination?

### TASK 3 - Read about different types of surveys

**READINGS:**

SACHRU. (1997). Questionnaire Design Principles. In *Planning Healthy Communities*. Adelaide: SACHRU: 19 - 38. See pp 91 – 104 in the Reader.

SACHRU(1997). *Planning Healthy Communities*. Paper 3. Adelaide: SACHRU.

Ch 2 - Face-to-Face Interviews: 97 – 103. See pp 73 – 78 in the Reader.

Ch 3 - Telephone Surveys: 105 - 111. See pp 79 – 84 in the Reader.

Ch 4 - Mail Surveys: 113 - 118. See pp 85 – 90 in the Reader.

1. Jot down the main features of each type of survey. Then list the main advantages and disadvantages of each.

	Face to Face	Telephone	Postal
<b>Main Features</b>			
<b>Advantages</b>			
<b>Disadvantages</b>			

### Feedback

	Face to Face	Telephone	Postal
<b>Main Features</b>	Interviewer is in the same physical place as interviewee	Interview is conducted through the telephone	Set of questions sent. Interviewee answers the questions alone
<b>Advantages</b>	Can immediately clarify queries about research, & correct	Shares the advantages of face to face,	Allows interviewee much more privacy & time to complete

	misunderstanding with questions	but is much cheaper	the questions
<b>Disadvantages</b>	Expensive Interviewer might influence interviewee	Many poorer people do not have telephones	Excludes those who are illiterate & don't have postal addresses

#### **TASK 4 – Identify problems with a survey gone wrong**

Look at the newspaper article in Chapter 4, p.119 of the SACHRU text. It describes a postal survey that did not go well. What was the main mistake made by the researchers? What other mistakes did they make?

#### **Feedback**

The main mistake was that the researchers did not consult with the community and warn them beforehand about the purpose of the survey and how it would be conducted. They also:

- did not provide supporting documentation with the survey
- numbered the questionnaires for their own purpose, which led recipients to believe that the survey was not confidential
- asked very personal questions, which people resented as an invasion of privacy
- did not emphasise that the survey was voluntary

#### **TASK 5 – Match survey type with research problems**

For the following research problems or scenarios, which type of survey do you think would be most appropriate and why?

- A health worker in a rural area wants to know how many mothers delivered a child in hospital
- A hospital manager wants to know what proportion of the doctors working in his large hospital have had a needle prick injury in the last month
- A researcher wants to do a survey with nurses working in Cape Town clinics to ask them about their attitude towards AIDS

#### **Feedback**

- For the first scenario, it is unlikely that many of the mothers have telephones. Those that do will be a select few who are relatively well-off. Therefore the sample would be biased. It is also likely that the postal services are not very reliable. In addition, some of the mothers may not be able to read very well and be put off from filling in a questionnaire by themselves, making a postal survey even more unsuitable. Therefore a face to face interview is the most appropriate way of doing this survey.
- Many of the above conditions do not apply to the second and third scenarios. The hospital manager could either send a questionnaire to the doctors or telephone them. In this case it is probably going to be cheaper and faster for her to call them. For a sensitive topic like attitude towards AIDS, health workers may prefer the privacy of answering questions by themselves, so a postal survey is probably the best option.

#### **TASK 6 – Evaluate a study**



**READING:** Hale, L., Fritz, V. U. & Eales, C. (1998). Do Stroke Patients Realise that a Consequence of Hypertension is Stroke? *South African Medical Journal*, 88: 451 - 454. See pp 41 – 46 in the Reader.

This research paper is an example of a descriptive study. What do you think are some of the strengths and weaknesses of this study? Use the following nine characteristics of HSR, discussed in Unit 1 Session 1 to evaluate the study.

a) Priority Problems	b) Action-oriented
c) Multi-disciplinary	d) Participatory
e) Timely	f) Simple, effective
g) Affordable, effective	h) Accessible, easily understood
i) Impact on policy and practice	

## Feedback

Strengths:

- Cheap
- Quick
- Can provide very useful information
- Easily repeated
- Easily understandable by lay people
- Procedures are transparent and therefore it can be evaluated by other researchers

Weaknesses:

- Does not tell you about the causes
- Respondents won't necessarily report their beliefs or attitudes accurately because they might want to please the researcher
- Data collection methods may not be reliable or valid
- Many people do not like answering questionnaires or might not be suitable for questionnaires, as in this case. This has meant that only a fraction of the people are actually included in the study

## 5. CASE STUDIES

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This activity provides an overview of the purpose and main features of case studies – our second main study type.

### 5.1 Different kinds of case studies

A case study has been defined as the investigation of a particular problem within its real life context, using multiple sources of evidence. It may involve investigating a single person, clinic, hospital or district. The numbers are necessarily small, as the cases are intensively explored in-depth, using multiple methods such as structured and unstructured interviews, focus groups, record reviews and observations. This is the most commonly used study design in HSR since it is usually cheap, quick and focused. Here are some examples of different kinds of case studies.

The following information about case studies has been adapted from Robson, C., *Real World Research*, Blackwell, 1993.

#### *1 Individual case studies*

A detailed account of one person. Tends to focus on antecedents, contextual factors, perceptions and attitudes preceding a known outcome (e.g. drug user, immigrant). Used to explore possible causes, determinants, factors, processes, experiences, etc., contributing to the outcome.

#### *2 Set of individual case studies*

As above, but a small number of individuals with some features in common are studied.

#### *3 Community studies*

Studies of one or more local communities. Describes and analyses the pattern of, and relations between, main aspects of community life (politics; work; leisure; family life; etc.). Commonly descriptive, but may explore specific issues or be used in theory testing.

#### *4 Social group studies*

Studies of both small direct contact groups (e.g. families) and larger, more diffuse ones (e.g. occupational groups). Describes and analyses relationships and activities.

#### *5 Studies of organizations and institutions*

Studies of firms, workplaces, schools, trades unions, etc. Many possible foci, e.g. best practice; policy implementation and evaluation; industrial relations; management and organizational issues; organizational cultures; processes of change and adaptation.

#### *6 Studies of events, roles and relationships*

*Focus* on a specific event (overlaps with 3 and 4 above. Very varied; includes studies of police -citizen encounters; doctor-patient interactions; specific crimes or 'incidents' (e.g. disasters), studies of role conflicts, stereotypes, adaptations.

Case studies of groups that are very different from each other can be useful for detecting management problems. We could, for example compare two health centers that are functioning well with two that do not function satisfactorily, to detect the possible reasons for bottlenecks in the functioning of the peripheral services. Or we could compare one community with high participation in health activities and another with low participation, to identify possible reasons for these differing participation levels.

### **TASK 7 - Analyse a case study**

1. Read the case study below.
  - What kind of case study is this?
  - How did they collect the information?
  - Why did they choose to use a case study approach? Was this an appropriate choice for this research problem? What were the main advantages of using this approach for this study?

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### **Evaluating health care to help implement change: the Khayelitsha studies**

Sometimes an HSR collaboration must first find the questions that need to be answered through an overview or situation analysis, and then look for appropriate methods of answering them. This

example describes how research contributed to the process of trying to improve the quality of care in a community health centre (CHC) in a large peri-urban settlement in Cape Town.

The CHC treated about 1000 patients each day, and had more than 150 staff, employed by three different health authorities. The local authority was responsible for running specialized clinics for sexually transmitted diseases (STDs), family planning (FP), tuberculosis, and preventive and promotive care for well children under six. They felt that fragmentation of health authorities had caused gaps and overlaps in services provided within one CHC, and wanted to co-ordinate their services with those provided by the other authorities, especially the provision of curative care for ill children. Community organizations had also criticized the quality of care and demanded improvements.

However, nobody had studied what the various problems were, how severe they were, what was causing them, or how they could be solved. The local authority thus asked a researcher to conduct a situation analysis, or rapid appraisal of the CHC, working part-time over two months. The situation analysis tried to identify overlaps and gaps in the services provided by different authorities, and to collect problems, their main causes and solutions as perceived by staff, management, patients, and local organizations. Qualitative and quantitative methods were used.

This study was a multi -method overview of a given health setting, to identify priority problems, and establish broad priorities for improvements. It relied heavily on qualitative methodology to understand service providers' perceptions, and simple routine data sources to estimate the load and available capacity of the staff to take on more work.

The researcher interviewed experienced staff, held group discussions with patients, staff, NGO staff and representatives of political organizations to gain insights into the running of the CHC. He examined and re-analysed some routine data, reviewed previous research on similar health services in Khayelitsha and elsewhere, and observed the functioning of CHC services by walking around at different times of the day and week.

The CHC was clearly busy, but it had underutilized resources available, especially as staff members were not always busy during afternoons. There were gaps in services; for example, sick children were not always treated if they arrived for immunization, and children who arrived ill and also needed immunization often received care, but not immunization. There were also overlaps; for example, patients with STDs were being treated by all three authorities, in three different places, at different times, by different staff, using different methods. The study also collected many ideas for improving the services using existing resources.

The situation analysis was presented, circulated, and widely discussed. It recommended that the managers of separate authorities working in the CHC should initially focus on combining curative and preventive services for children under six years old, to eliminate overlaps and gaps.

While the integration of preventive and curative services was being planned, managers focused on the problem of long periods of waiting for care, which had been identified in the situation analysis, having attracted frequent patient complaints.

### **Waiting times**

The researcher designed a study in collaboration with management to measure how long patients spent at the CHC curative and preventive clinics. The study also aimed to find out when (times of the day, and days of the week), waiting times were longest, and whether the flow of patients and work processes could be improved. One specific suggestion had been that patients receive their drugs during the consultation, without having to wait at the pharmacy. The study needed to assess whether this would save time. The idea was that after a first study, improvements would be made to reduce waiting times, and then the study could be repeated.

The study hired a fieldworker who stood at the only gate to the CHC for a week, noting patients' entry and exit times. Each patient was given a slip of paper with the time of entry, which was taken back at time of exit. Staff also entered information on which curative or preventive clinics were visited. Also, on three days, at different times each day, a fieldworker recorded the times at which patients arrived at the pharmacy, and the times at which they left with their drugs. The researcher developed a flow diagram of how patients moved through the clinic, noting every point at which patients were served, or waited to be served. This survey was repeated in exactly the same way (excluding the pharmacy study) a year later.

The study showed that waiting times were very long (an average of 4,1 hours in the curative clinic and 2,6 hours in the preventive clinic). Waiting times varied a lot in the preventive clinic because immunization was only provided during a few hours of the week. Most patients arrived early, causing crowding in the mornings, and an empty CHC in the afternoons. Patients waited only 15 minutes at the pharmacy, which did not justify changing the way drugs were issued. The patient flow mapping showed a number of stops where patients were waiting unnecessarily (for example, they could be weighed while waiting for a health education session), or that could be cut out. The follow-up survey, after the preventive clinic had been streamlined, but the curative clinic had not changed, showed that average waiting times in the curative clinic increased to 5,1 hours, but dropped to 1,5 hours in the preventive clinic. The study thus confirmed that waiting times were a problem, and that reorganizing the preventive clinic reduced the problem, but that changing the way of issuing drugs would not solve the problem.

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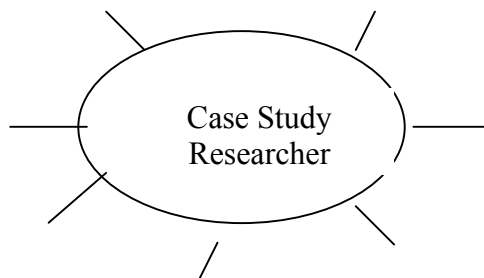
(Bachmann M. Site B Health Center, Khayelitsha: Situation Analysis and Recommendations. Community Health Department, UCT, quoted in Katzenellenbogen JM et al. Epidemiology: A Manual for South Africa.)

## Feedback

This is an institutional case study, since the case study was looking at a health clinic. They collected information through in-depth interviews, reviewing case records and observations. They were concerned with looking at the clinic as a whole to see how it functioned and what some of the problems were. The case study approach is well suited for this sort of study because it allows the researcher to use a variety of data collection methods within the same setting. The researcher can then build a complete picture by comparing the different sorts of information that is collected.

## TASK 8 - Identify good qualities of a case study researcher

The quality of a case study depends to a great extent on the quality of the investigator. What do you think are some of the key qualities of a good case study researcher? Jot down your ideas below. Then read the text that follows.



## 5.2 General skills needed by case study investigators

### 1 Question asking

Need for an 'enquiring mind'. Your task in fieldwork is to enquire why events appear to have happened or to be happening. This is something you ask yourself as well as others, and is mentally and emotionally exhausting.

### 2 Good listening

Used in a general sense to include all observation and sensing, not simply via the ears. Also 'listening' to what documents say. *Good* means taking in a lot of new information without bias; noting the exact words said; capturing mood and affective components; appreciating context. You need an open mind and a good memory. (Taping may help but is not a panacea.)

### 3 Adaptiveness and flexibility

Case studies rarely end up exactly as planned. You have to be willing to change procedures or plans if the unanticipated occurs. The full implications of any changes have to be taken on board: e.g. you may need to change the design. Need to balance *adaptiveness* and *rigour*.

### 4 Grasp of the issues

Investigator needs to *interpret* information during the study, not simply record it. Without a firm grasp of the issues (theoretical, policy etc.) you may miss clues, not see contradictions, requirement for further evidence, etc.

### 5 Lack of bias

The preceding skills are negated if they are simply used to substantiate a preconceived position. Investigator should be open to contrary findings. During data collection, preliminary findings should be submitted to critical colleagues who are asked to offer alternative explanations and suggestions for data collection.

## 6. CHOOSE APPROPRIATE STUDY DESIGNS

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This section offers you practice in choosing an appropriate study design, based on the research question and the kind of information that has to be collected.

### TASK 9 - Match aims and study designs

For the following study aims, decide which is the best study design to choose:

- To investigate the opinions of clinic attendees towards the new opening hours
- To investigate reasons why clinic Y has better TB completion rate than clinic X
- To measure the prevalence of hepatitis vaccination amongst health workers
- To identify reasons why diabetic patients don't use the diabetes clinic
- To measure the knowledge of members of the nursing union about HIV/AIDS

### Feedback

Here are some suggested study designs to answer the above study aims.

Study aims	Possible Study Design
To investigate the opinions of clinic attendees towards the new opening hours	Face to Face Survey

To investigate reasons why clinic Y has better TB completion rate than clinic X	Case Studies
To measure the prevalence of hepatitis vaccination amongst health workers	Telephone Survey
To identify reasons why diabetic patients don't use the diabetes clinic	Face to Face Survey
To measure the knowledge of members of the nursing union about HIV/AIDS	Postal Survey

## TASK 10 - Choose a study design for the assignment protocol

For the problem statement, aims and objectives you have identified for your protocol, which study design would be the most suitable way of conducting the research? Justify your choice of study design. (We strongly recommend that you choose a non-intervention descriptive study design that we have discussed in this module.)

## 7. SUMMARY

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Each aspect of planning a piece of research can be described in terms of the kinds of questions asked, as shown below.

Defining the problem, reviewing the literature, establishing aims, objectives and variables	= What do you ask?
Deciding which study design to use	= How do you ask?
Choosing a data collection method/ technique/ tool	= How will you collect the information?
Choosing a sample	= Who do you ask?
Drawing up a workplan	= Who will do what and when?
Drawing up a budget	= What resources do you need?

The first question we addressed in this Unit, and most difficult, was:

*What do you ask?*

As you saw, this involves defining, prioritising and analysing the problem, setting aims and objectives and defining variables and indicators.

We addressed the second key question in this study session:

*How do you ask?*

How do you ask the questions or, in other words, what study design do you use?

The choice of study design depends on:

- the type of problem
- the knowledge already available about the problem, and
- the resources available for the study.

In this session we focused on the two common non-intervention, exploratory / descriptive study types: surveys and case studies.

Having decided what study design to use, you now need to decide how you are going to collect the necessary information. The next unit will focus on this aspect.

## 7. REFERENCES

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- Bachmann M. Site B Health Center, Khayelitsha: Situation Analysis and Recommendations. Community Health Department, UCT, quoted in Katzenellenbogen JM et al. (1999). *Epidemiology: A Manual for South Africa*. Cape Town: Oxford University Press.

# UNIT 3

## Data Collection

### Introduction

*In the module so far, we have identified what information we would like to collect (aims, objectives and variables), and the strategy we are going to use to collect that information (study design). We now need to think about how we are going to collect the information, remembering that different data collection methods can be used with different study designs. This is a continuation of Stage 4 (Research Methodology) in developing a protocol.*

In this unit we focus on two key questions:

Choosing data collection methods/ techniques/ tools	= <i>How will you collect the information?</i>
Choosing a sample	= <i>Whom do you ask?</i>

As health workers we use different ways of collecting information. Sometimes we review records or observe what is going on, or we ask the relevant people questions about the situation. What distinguishes research from ordinary practice is that we try to do things systematically and not just haphazardly. Data collection methods allow us to systematically collect information about our objects of study (the variables).

There are four Study Sessions in Unit 3

**Study Session 1: Data Collection and Record Reviews**

**Study Session 2: Questionnaires, Sampling and Bias**

**Study Session 3: Observations**

**Study Session 4: Interviews and Focus Group Discussion**



## Intended Learning Outcomes

By the end of this unit, you should be able to:

### Public Health Content

- Distinguish between quantitative and qualitative data collection methods.
- Identify problems with questionnaires.
- Identify appropriate sampling strategies and sampling bias.
- Describe various data collection techniques - their uses, advantages and disadvantages (record review, survey questionnaire, observation, interview, focus group discussion).
- *Choose data collection methods and techniques to suit research questions.*
- *Use a range of qualitative and quantitative data collection techniques and tools (questionnaire, observation checklist, discussion guide).*

### Academic Learning Content

- Read for a purpose and identify key ideas.
- Compare ideas.
- Classify information.
- Present information in diagram form.
- Read critically.
- Evaluate texts.

# Unit 3 - Session 1

## Data Collection and Record Reviews

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### Introduction

Having tackled study design, we now address the next two elements in Stage 4 in developing a research protocol. These are data collection methods (quantitative and qualitative research), and the specific technique called record reviews (sometimes called 'routine records' or 'using available information').

<i>What additional data do we need to reach our research objectives?</i>  How are we going to collect this information?	4. Research Methodology	<ul style="list-style-type: none"><li>• <i>Data collection methods</i><ul style="list-style-type: none"><li>○ <i>Record reviews</i></li></ul></li></ul>
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### Contents

1. Learning Outcomes of this Session
2. Readings
3. Data Collection Methods
4. Qualitative and Quantitative Research
5. Record Reviews
6. Summary
7. References

## 1. LEARNING OUTCOMES OF THIS SESSION

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**By the end of this study session, you should be able to:**

### **Public Health Content**

- Distinguish between quantitative and qualitative data collection methods.
- Describe different data collection techniques and their uses.
- Identify when to use record reviews and the limitations of using this technique.

### **Academic Learning Content**

- Extract key ideas from texts.
- Sort out information.
- Read critically and evaluate information.

## **ASSIGNMENT**

**By the end of the session, you should have more notes for the assignment protocol.**

## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
Varkevisser, C. et al.	(1991). <i>Module 10A – Overview of Data Collection Techniques. In Designing and Conducting Health Systems Research Projects. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 142 - 144.</i>	<b>167 - 172</b>
Robson, C.	(1993). <i>Using Data Archives: The methods of Data Collection. In Robson, C. Real World Research. Blackwell: 282 – 285.</i>	<b>67 - 72</b>

## 3. DATA COLLECTION METHODS

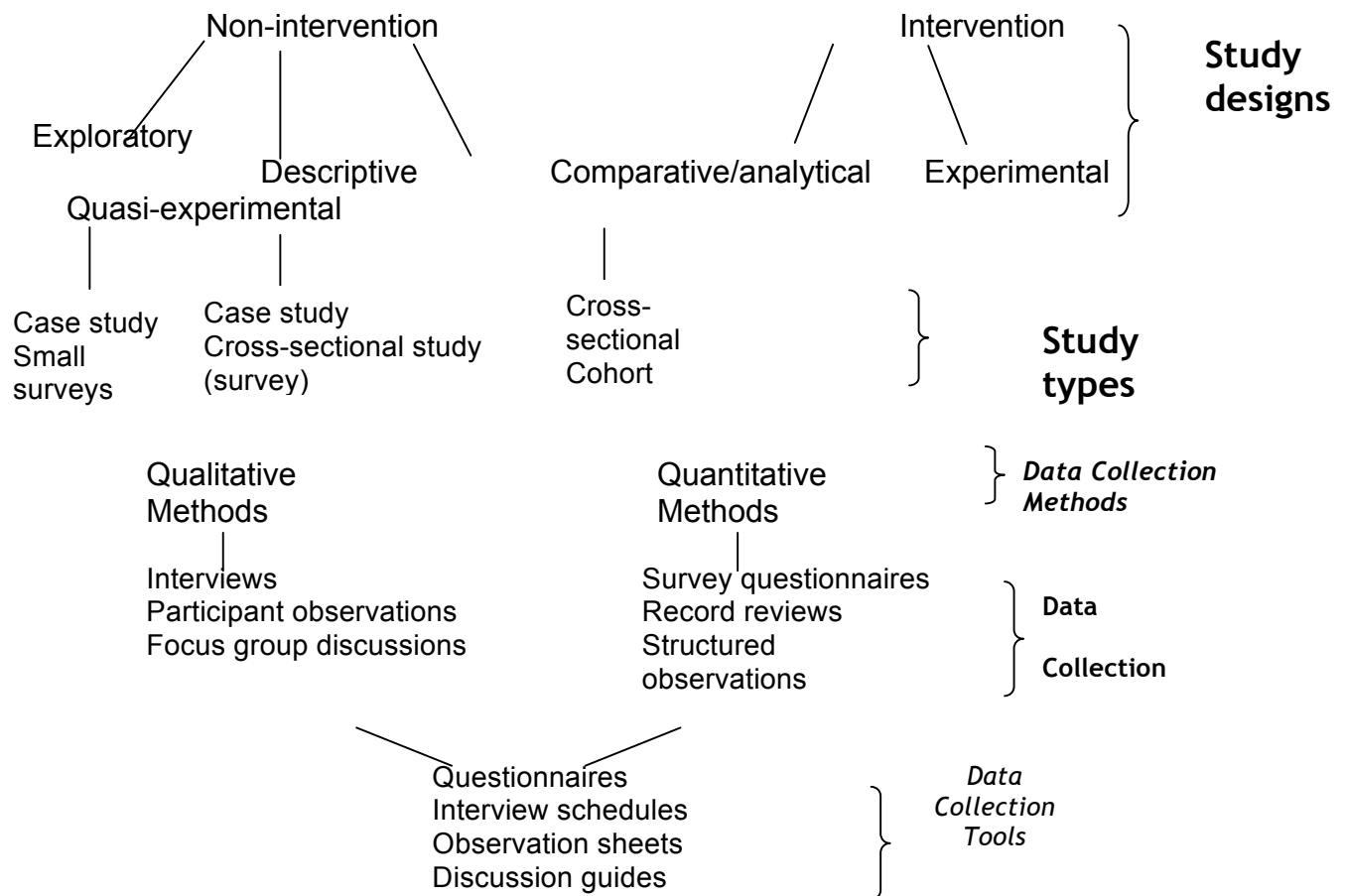
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This section provides an overview of quantitative and qualitative data collection methods, how they differ and how the type of data to be collected can influence the collection method and technique.

Before we look at data collection methods, let's clarify some potentially confusing research concepts.

We have spoken of the research concepts in the categories of Study Design and Study Type. We have also mentioned three other categories: Data Collection Methods, Data Collection Techniques and Data Collection Tools. In this session and subsequent sessions we examine these three categories in more detail. If you recall our earlier analogy where we likened research to crossing a river, the task of crossing the river is the overall aim of the project. How many people want to cross the river, with what frequency, the strength of the current etc., are the objectives of the study. The choice of study design is akin to a choice between swimming, walking, flying or sailing across. The choice of data collection methods and techniques is the particular type of boat, bridge, aircraft etc. that you choose to use.

The diagram below shows these concepts and how they are related.



We start by examining the general data collection methods known as qualitative and quantitative research.

## TASK 1 - Think about qualitative and quantitative research

- What do the terms 'qualitative' and 'quantitative' mean?
- What are 'qualitative' and 'quantitative' research methods?
- What are some examples of these two kinds of research methods?

To find out more about qualitative and quantitative research, read the following text. The first part has been adapted from CACE, Chapter 6, 1996, p.69-71. The second part has been adapted from Planning Healthy Communities, SACHRU, Adelaide, 1997, p. 176-178.

## 4. QUALITATIVE AND QUANTITATIVE RESEARCH

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### 4.1 Distinguishing between qualitative and quantitative research

Researchers obtain two kinds of information:

- 1) Qualitative information e.g. how a person thinks, behaves, feels and why
- 2) Quantitative information e.g. how old a person is, how many people smoke

Obtaining each kind of information employs different research methods or techniques, and requires different kinds of research skills and researcher qualities.

**Qualitative research** relies on methods that describe phenomenon, using words. Qualitative research tries:

- to describe and analyse the culture and behaviour of humans and their groups from the point of view of those being studied.
- to describe the meaning of events and behaviours
- to provide a comprehensive or "holistic" understanding of the social settings in which research is carried out
- to use a research strategy which is flexible

For instance, when a researcher records what people say about their life experiences, this is using a technique known as 'oral history'. When researchers live with communities and observe and record what the people say and do, they are using the technique of 'ethnography'.

**Quantitative research** relies on methods that count or measure, using numbers or figures and statistical procedures. In quantitative research:

- the social context in quantitative research is usually ignored or "controlled"
- knowledge and behaviours are measured
- the research strategy is usually fixed, rather than flexible

Although they obtain different kinds of information, qualitative and quantitative research can supplement each other. We often find a combination of both kinds of information in reports and the use of both kinds of techniques in studies.

There is much argument among researchers about the relative benefits of these two methods. Qualitative research is good at providing detailed, rich, small-scale descriptions of how people live, taking into account what people think, say and do. Quantitative research is good at providing information about larger groups of people or social movements and making comparisons between different groups of people. For instance, if you know the gender and occupation of people, you can then compare occupational level differences between women and men.

## 4.2 What is Qualitative Research?

Qualitative research in one sense is a bit like massage. When did you last rub your cheeks? ... Not long ago probably. Everyone does massage, even if subconsciously, but a masseuse who has studied and practised it should do it better, and would no doubt also apply it in ways (and places), we may not even have thought about. Every day of our lives, we make many decisions on a range of matters. In effect, we weigh up many things, or 'factors' as they can be called. Hundreds, if not thousands of factors make up our personal understanding at any time.

### Everyone Does Qualitative Research

Without consciously reflecting on our own thinking, which constantly assesses a range of information, we often decide upon a particular view of something, at least tentatively. Let us call this 'view of something' that we have arrived at our 'concept'. If we discover more information that seems to challenge the adequacy of our concept, that is, if it does not quite 'fit' the new information, we can modify our concept. Using this new view that we have arrived at, more information is assessed - again, to see if it is appropriately explained or described by our modified concept. This may be done at lightning speed in our thinking, or it can be a painstaking pencil-and-paper task, depending upon the decision and the type of information. The important thing is that we all do it: there is nothing mysterious about the way we change our thinking on things.

### Checking Our Prejudices

To illustrate the above process, uninformed people may have arrived at the view that all black people are lazy and drink too much. This view may have been determined mostly by earlier experiences, such as the prejudices of our home and school environments. Such views also may have been reinforced as they witnessed the behaviour of a few black people in the town square or near an employment agency. However, with further experience, including, say, a chance meeting with a black person in totally different social circumstances, they may have been tempted to reconsider their former view that all black people are lazy and drink too much. That initial view of black people, if those people were to stop and think about it, may have changed; the likelihood of 'all black people being lazy' let alone 'drunkards' would have begun to look rather shaky.

Now let us put ourselves into the shoes of this once racist person. Upon realising that we had once possessed a view of health-related behaviour of black people that was highly suspect, we may delve deeper even among black people who do drink a lot to attempt to learn why they behave that way. Then if we were thinking systematically, we may realise that we have not included non-black people in our thinking much at all; we may see the need to explore, say, the drinking behaviour of non-black people at football or cricket grounds, or on beaches. Such a change in our point of view may have happened in a rather random manner in our thinking as we matured over a long period, or it may have been the subject of intensive scrutiny over a brief period. In either case, we would have been in the process of theory-building and theory-modification.

### Theory Building and Theory Modification

All of us, sometimes haphazardly, sometimes systematically, confront complex information, which leads us to reconsider former ideas. We don't just test former viewpoints to see if they fit in a 'Yes' or 'No' fashion, but we build further ideas as needed, in order to strengthen the likelihood that our (new) viewpoint fits all the information available to us.

In due course, new information may become available to us and we may have to reconsider our ideas yet again. This is the process that lies at the heart of qualitative research.

Qualitative researchers, such as ethnographers or anthropologists, have merely developed this common procedure for dealing with primarily non-numeric information into a systematic research method.

The ultimate aim of all research, regardless of approach, is to arrive at conclusions (i.e. generalisations), that hold true considering all the relevant data. In qualitative research, without this systematic process of idea or theory building, in which our data is checked and re-checked and our ideas modified (the process known as the logic of analytic induction), qualitative researchers are left with a serious dilemma. Our conclusions could be disregarded as merely chance or convenience conclusions, with little power to persuade others.

We should recall briefly, although this will be developed later, that this 'validating' process is fundamental to all research. 'Experimenters' can use control groups; 'survey researchers' can use statistical tests of significance to assess the explanatory power of different variables' (Silverman 1985:111-112); but ethnographers or field researchers wage an uphill battle of considerable scale if they do not use important (equivalent) analytic aids: in other words, aids to the process of modifying and testing theories in order to produce more appropriate and soundly-based theories or generalisations. One significant aid is the process of deliberately searching for data, which appear to refute our tentative conclusions, which may then lead to modifications of those conclusions.

Needs assessment in community health usually involves the application of qualitative research techniques to community health issues. There is much to learn from those who have been involved in the process.

## **TASK 2 – Distinguish between qualitative and quantitative methods**

### **1. Are these four extracts (a-d) examples of qualitative or quantitative research?**

#### **a. Prison populations just too high**

Correctional services spent R58,7m more than its budget of R863,420m in the first third of the current financial year, Correctional services Minister Sipho Mzimela said yesterday. He attributed this to a daily average prison population of 117,000, instead of the 97,000 budgeted for ... The department had estimated it would have to cater daily for 53,000 probationers and prisoners on parole. The budget had provided for only 33,000 and there had been 48,273. (*Business Day*, 6 Nov 1996)

#### **b. Research Proposal - The meaning of poverty**

The purpose of this study is to find out what poverty means to people in the same community, in terms of how they live and feel. This will entail asking poor people to talk about themselves and their lives.

#### **c. 750,000 Cellphone Users**

National Assembly – There was an estimated 750,000 cellphone subscribers, of whom 44% were in Gauteng, Posts and Telecommunications Minister, Jay Naidoo said yesterday. Distribution in the other provinces was 15% in KZN, 22% in the Western, Eastern & Northern Cape and Free State, and 19% in Mpumalanga, Northern Province and North-West, he said, in reply to Kobus Jordaan. (*The Citizen*, 7 November 1996).

#### **d. Proposed Study – Income differences in South Africa**

The purpose of this study is to investigate the effect of different incomes on people in a community. This entails constructing a questionnaire, which asks people about their income, as well as other questions about their lives. The results will indicate the differences between rich and poor in terms of numbers and proportions of people in the community.

2. Summarise the main features of qualitative and quantitative methods, using the table below.

	Qualitative	Quantitative
<b>Information obtained</b>		
<b>Methods used</b>		
<b>Advantages</b>		

### Feedback

a. Quantitative    b. Qualitative    c. Quantitative    d. Quantitative

	Qualitative	Quantitative
<b>Information obtained</b>	Descriptive data – people's thoughts, feelings, desires, emotions etc.	Numerical data: numbers, measurements
<b>Methods used</b>	Language-based, descriptive	Numbers-based -, e.g. figures, proportions, percentages, statistical procedures
<b>Advantages</b>	Good for small-scale, detailed, rich, holistic information-gathering about people	Good for gathering information about larger groups, comparing groups

### TASK 3 - Match methods with variables

For the following variables, indicate whether quantitative or qualitative research would be most suitable and why:

- What are the beliefs of TB patients about their disease?
- How many people have TB in the district?
- How many women use the ante-natal clinic?
- What do women think about the quality of care provided at the clinic?
- What proportion of users would like to change the opening times of the clinic?
- Do the hospital staff enjoy their work?

### Feedback



Generally speaking, research questions that begin with 'how many' or 'what proportion' are usually best answered using quantitative research, whilst questions which are concerned with people's thoughts, beliefs, attitudes or opinions are usually best answered with qualitative research.

#### **TASK 4 - Identify qualitative and quantitative techniques**

1. Before reading more about data collection methods and the techniques associated with them, list all the techniques that you know of that are best suited to collecting quantitative and qualitative data?
2. Read about the variety of data collection techniques that can be used in the following reading.

**READING:** Varkevisser, C. et al. (1991). Module 10A – Overview of Data Collection Techniques. In *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 142 - 144. See pp 167 – 172 in the Reader.

#### **Feedback**

Record reviews (using available information), structured observations and survey questionnaires (administering written questionnaires), are usually used to collect quantitative data. In-depth interviews, participant observation and focus group discussions are usually used to collect qualitative data. However, it should be stressed that focus group discussions and interviews can also sometimes be used to collect quantitative data, while structured observations can focus on qualitative data and questionnaires can ask very open questions that collect qualitative data. This becomes clearer as we look at each of these techniques in more detail.

In the remaining parts of this module we will focus on the following quantitative and qualitative techniques:

- Record reviews
- Survey questionnaires
- Observations - structured, unstructured and participant
- In-depth interviews
- Focus group discussions

At the same time, we look at the research tools used with these techniques: questionnaires, interview schedules and observation checklists.

We begin with the quantitative technique - record reviews.

## **4. RECORD REVIEWS**

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If you are a health worker, you probably spend some of your time collecting statistics for health information systems. It is also quite likely that a research group has already conducted research in your area or workplace. These records can provide important information for your study, although it is unlikely that they will directly answer your research question.

Typically, it will be necessary to rearrange the data in various ways, so that, for example, you can compare data over different time periods. The purpose of record reviews, the kind of data they provide and common problems associated with using this technique are the focus of this activity.

## TASK 5 – Examine the use of record reviews

Read the text about record reviews.

**READING:** Robson, C. (1993). Using Data Archives: The methods of Data Collection. In Robson, C. *Real World Research*. Blackwell: 282 – 285. See pp 67 – 72 in the Reader.

1. Look at these research aims/questions. For which ones would record reviews be appropriate and why?
  - a. How many people have TB in the district?
  - b. How many patients first go to a local traditional healer first?
  - c. What do women think about the quality of care provided at the clinic?
  - d. What proportion of users would like to change the opening times of the clinic?
  - e. Is there any seasonal variation in the incidence of diarrhoea?
  - f. A comparison of the quality of surgical operations performed in two hospitals

### Feedback

1. Questions a, e and f could be answered through the use of records. The information to answer the other questions is not usually captured in normal records.

## TASK 6 – Identify key issues in record reviews

1. Based on your work experience, what do you think could be some of the problems associated with record reviews?
2. Read this abstract. It comes from a study examining the quality of care of severely malnourished children in hospitals, by first looking at the hospital records. What were the main problems that these researchers faced in using these hospital records?

Findings from the ward register showed that case fatality rates (CFR) from malnutrition to be high for both hospitals. The record review showed that many records were incomplete (21%) and that there were some which were missing. Of those with information the average weight gain was very low (2g/kg/day). The records revealed that treatment in the two hospitals did not conform with WHO guidelines for any of the ten steps for the management of severe malnutrition. However, there was a problem with the non-standardisation of the definition of severe malnutrition.

*(Adapted from Puoane T, Sanders D, Chopra M et al. Improving the clinical management of malnourished children through participatory Health Systems Research.)*

### Feedback

There were a number of problems that the team encountered with the hospital records:

- Some of the records were missing.
- Many of the records were incomplete.

- There was no standard definition of 'severe malnutrition' so there might be some children with the illness who were not recorded as 'severe malnutrition' but perhaps with another illness (such as diarrhoea).
- The researchers should have ensured that the confidentiality of the patients was respected and that no identification of the patients was allowed when reporting the results.

For more detail about using routine data sources see the SOPH Certificate module *Measuring Health and Disease* and *Using Information for Effective Management 1*.

In the next study session, we examine another data collection technique – survey questionnaires.

## 6. SUMMARY

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In this study session, we distinguished between quantitative and qualitative research. Quantitative research is concerned with quantifying the size, distribution, and association of certain variables in the study population, while qualitative research involves the identification and exploration of variables that give insight into the nature and causes of certain problems and into the consequences of the problems for those affected. Both types can be used in the same study.

This session also introduced a common quantitative data collection technique - record reviews, and identified the advantages as well as some of the limitations associated with using this technique.

## 7. REFERENCES

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- CACE. (1998). Chapter 6. *Research Methods for Adult Educators*. Centre for Adult and Continuing Education (CACE), UWC: 69-71
- SACHRU. (1997). *Planning Healthy Communities*. Adelaide: SACHRU: 176 - 178.
- Author unknown. (6 Nov 1996). Prison Populations Just Too High. *The Business Day*.
- Author unknown. (7 Nov 1996). 750,000 Cellphone Users. *The Citizen*.

# Unit 3 - Session 2

## Questionnaires, Sampling and Bias

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### Introduction

This study session provides more information about data collection involving the use of questionnaires. This includes the design and production of questionnaires, how to choose a sample and how to minimise bias in sampling. This is the next element in Stage 4 of developing a protocol.

<i>What additional data do we need to reach our research objectives?</i>  <i>How are we going to collect this information?</i>	4. Research Methodology	• <i>Questionnaires and Sampling</i>
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### Contents

1. Learning Outcomes of this Session
2. Readings
3. Questionnaires
4. Choose Appropriate Sampling Strategies
5. Identify Bias in Sampling
6. Summary
7. References

### 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study session, you should be able to:	
<b>Public Health Content</b> <ul style="list-style-type: none"><li>• Identify problems with questionnaires.</li><li>• Evaluate and rewrite questions.</li><li>• Identify appropriate sampling strategies.</li><li>• Identify sampling bias.</li></ul>	<b>Academic Learning Content</b> <ul style="list-style-type: none"><li>• Critically analyse texts.</li><li>• Evaluate texts and draw conclusions.</li></ul>

## ASSIGNMENT

By the end of the session, you should have more notes for the assignment protocol.

## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
SACHRU	(1997). <i>Questionnaire Design Principles. In Planning Healthy Communities. Adelaide: SACHRU: 19 - 38.</i>	<b>91 -104</b>
SACHRU	(1997). <i>Ch 5 - Introduction to Questionnaires. In Planning Healthy Communities. Adelaide: SACHRU: 121 - 133.</i>	<b>105 - 113</b>
SACHRU	(1997). <i>Questionnaire Design Principles. In Planning Healthy Communities. Adelaide: SACHRU: 19 - 38.</i>	<b>91 -104</b>
SACHRU.	(1997). <i>Ch 9 - Samples. In Planning Healthy Communities. Adelaide: SACHRU: 151 - 154.</i>	<b>121 - 126</b>
Bowling, A.	(1997). <i>Non-Responder Bias. In Research Methods in Health: Investigating Health and Health Services. Oxford: Open University Press: 234 – 239.</i>	<b>1 - 8</b>

## 3. QUESTIONNAIRES

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This activity introduces questionnaires, which are probably the most commonly used research tool associated with surveys. Being able to design good questionnaires is an important aspect of most research projects.

### TASK 1 - Analyse questions and answers in an interview

1. Read the extract from a TV programme in Britain called 'Yes Prime Minister', in Planning Healthy Communities, SACHRU, 1997, p.122. This is a structured interview about the introduction of national (military) service for young people in Britain.

'Mr. Woolley, are you worried about the rise in crime among teenagers?'

'Yes,' I said.

'Do you think there is a lack of discipline and vigorous training in our Comprehensive Schools?'

'Yes.'

'Do you think young people welcome some structure and leadership in their lives?'

'Yes.'

'Do they respond to a challenge?'

'Yes.'

'Might you be in favour of reintroducing National Service?'

'Yes.'

'Are you worried about the danger of war?'

'Yes,' 1 said quite honestly.

'Are you unhappy about the growth of armaments?'

'Yes.'

'Do you think there's a danger in giving young people guns and teaching them how to kill?'

'Yes.'

'Do you think it wrong to force people to take up arms against their will?'

'Yes.'

'Do you oppose the reintroduction of National Service?'

I'd said 'yes' before I'd even realised it.

In the two parts of the interview, how did the interviewer manage to get the respondent to contradict himself and to state that he was both in favour of and against national service? What kind of questions did s/he ask and how were they sequenced? What do you notice about the answers? What do you think is Mr Woolley's opinion on the issue of national service for young people?

2. What lessons can we draw from this extract about conducting interviews?

### **Feedback**

1. The interviewer asked 'closed' questions that put forward certain propositions, to which Mr Woolley was only required to answer yes or no. He could not explain further or give his opinion on the matter. In both parts of the interview, the questions were carefully ordered to lead Mr Woolley along a particular path of thinking. In the first part, the questions supported an argument in favour of national service as a way of disciplining and challenging young people. In the second part, the questions supported an argument opposing national service because of the danger of young people being forced to take up guns and kill. Mr Woolley ended up agreeing with both arguments, thus contradicting

- himself and leaving the reader/listener uncertain as to what his true feelings are on the issue of national service for young people.
- From this example it is clear that the content, wording and sequence of questions is very important in preparing interviews and designing questionnaires, in order to obtain useful, unbiased information around a research problem.

We now look into these issues in more detail.

## TASK 2 - Identify open and closed questions

### READINGS

SACHRU. (1997). Questionnaire Design Principles. In *Planning Healthy Communities*. Adelaide: SACHRU: 19 - 38. See pp 91 –104 in the Reader.

SACHRU. (1997). Ch 5 - Introduction to Questionnaires. In *Planning Healthy Communities*. Adelaide: SACHRU: 121 - 133. See pp 105 – 113 in the Reader.

- Which of the following questions are open questions and which are closed? Which words/phrases provide helpful clues?
  - How many children do you have?
  - What is the reason for the long waiting times?
  - Who is in charge of the pharmacy?
  - Why are so many mothers delivering at home?
  - Where do most of the TB defaulters live?
- What do you think are some of the advantages of asking open and closed questions?

### Feedback

- Questions ii and iv are open questions; the others are closed questions. The open questions ask for explanations, using the words/phrases 'Why...' and 'What is the reason for...'. The closed questions ask for short factual answers, using words/phrases 'Where...', 'Who...' and 'How many...'.
  - The following table outlines the advantages and disadvantages of open and closed questions.

	Open-ended questions	Close ended questions
<b>Advantages</b>	<p>Issues not previously thought of when planning the study may be explored, thus providing valuable new insights into the problem</p> <p>Information provided simultaneously is likely to be more valid than answers suggested in</p>	<p>Answers can be recoded quickly</p> <p>Analysis is easy</p>

	options from which the informant must choose. Information provided in the respondents own words may be useful as examples or illustrations that add interest to the final report	
<b>Disadvantages</b>	Skilled interviews are needed to get the discussion started & focused on relevant issues, & to record all important information  Analysis is time consuming & requires experience	Respondents may choose options that they would not have thought of (leading questions)

(Adapted from Varkevisser, 1991, p.162)

### TASK 3 – Critically analyse questions and reformulate them

**READING:** SACHRU. (1997). Questionnaire Design Principles. In *Planning Healthy Communities*. Adelaide: SACHRU: 19 - 38. See pp 91 –104 in the Reader.

1. What is the problem with the following questions? Rewrite them so that they are more appropriate and useful.
  - i. Research shows that eggs are a very healthy food, do you think that eggs are healthy?
    - Are you a healthy person?
    - Do you exercise regularly?
    - How many cigarettes do you smoke per day?
    - Do you practise safe sex?

#### Feedback

In question i, by first giving an opinion the question is biasing the response towards being favourable to eggs. It would be better to leave out the first part of the question and to rephrase it simply:

- *Do you think that eggs are healthy?*

In question ii, it is not clear what is meant by 'healthy'. Also, the phrasing of the question suggests that the answer should be in the affirmative. Instead of using the word healthy, the question could ask about feeling good and the ability to perform certain tasks. For instance:

- *How many steps can you climb before stopping for a breath?*
- *Can you walk for 1km without stopping?*
- *Do you feel contented with life and able to cope well with its demands most of the time?*

In question iii, it is again not clear what the definition of 'exercise' is and what constitutes 'regular' exercise. For instance, is it once a day, once a week etc? It would be better to be more specific and to ask, for instance:



- *How many times a week do you perform physical exercise lasting for longer than 10 minutes?*

Question iv assumes that a person smokes. A better question would be:

- *Do you smoke cigarettes? If you do, how many cigarettes do you usually smoke per day?*

Question v assumes that the respondent understands the term 'safe sex'. It is also not clear whether the question means at all times, sometimes or occasionally. A better question might be:

- *Do you always use a condom when having sexual intercourse?*

## 4. CHOOSE APPROPRIATE SAMPLING STRATEGIES

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When doing a study it is important to clearly define the group you want to gather information and draw conclusions about. This group is called the 'target population'. It should be clearly defined in terms of who the people are (identity/numbers), the place or context and the time. For instance, in the study to examine the reasons for TB defaulters, the study population is:

"all the TB defaulters (who), receiving TB treatment in Cape Town (place), in the previous six months (time)".

However, it is quite often impossible to interview everybody in the target population. So instead we choose a sample of the target population. This activity explains various ways of doing this using simple random sampling, systematic sampling, purposive sampling and convenience sampling.

### TASK 4 - Clarify key terms

1. What do the words 'sample/sampling' and a 'representative' sample mean in everyday use? If necessary, check in a dictionary.
2. What do these terms mean when applied to research?

### Feedback

1. A sample is a selection, a taste or a specimen taken from the whole thing. A representative sample is a selection that displays the qualities or ingredients of the whole thing.
2. In research, sampling involves the selection of a number of study units from a defined study population. A representative sample has all the important characteristics of the population from which it is drawn.

### 4.1 Sampling Frame

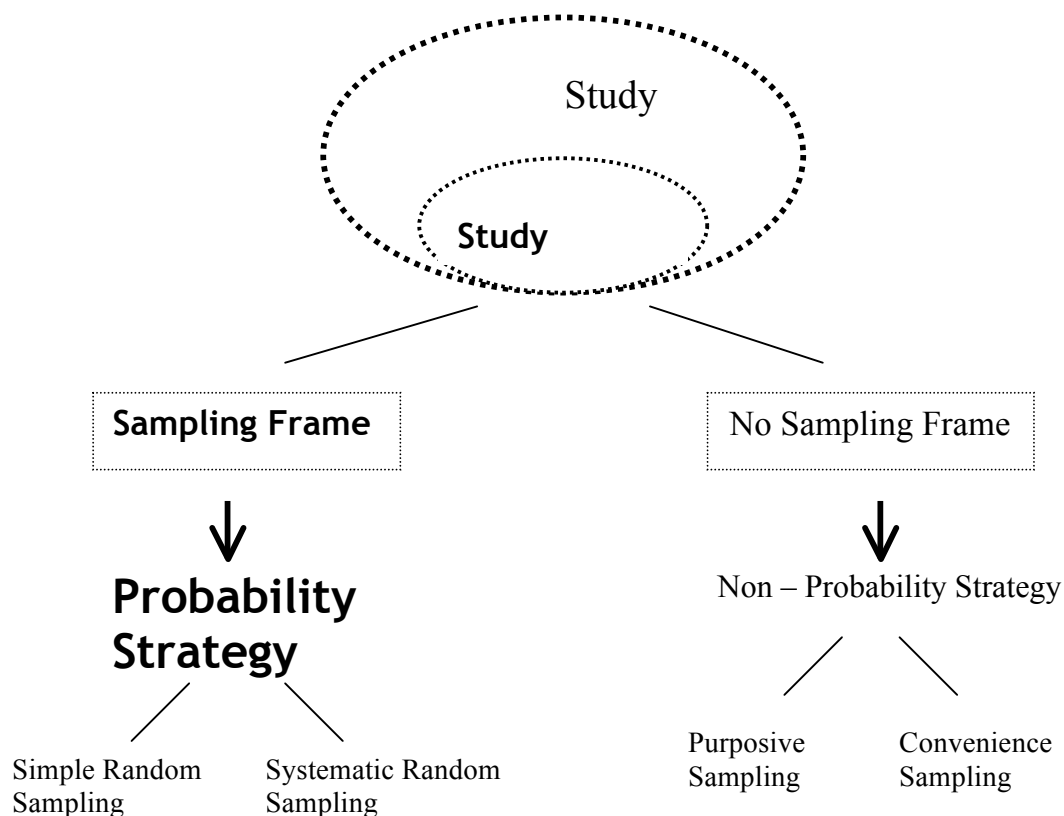
In research, the challenge of choosing a sample is to make it representative of the target population. In other words, the findings we get from the sample can be said to be more or less true for the whole target population. There are many ways of obtaining a representative sample from a target population. However, before deciding what sampling method to use, we need to find out if there is a complete list of the target population available. Such lists or maps are called the 'sampling frame'. Examples of sampling frames are:

- A list of villages or administrative areas
- A list of plot holders
- Clinic records of all patients seen at a clinic
- A map of a town/village showing individual dwellings

- School registers

The ideal sampling frame would include every unit in the target population separately, once and only once. For instance, it would be best if there was one clinic record for each patient rather than several records for the same patient. It would not include units outside the target population and it should be fairly recent. Such lists are quite rare and the researcher either has to choose another sampling method, such as convenience sampling (which we explain later), or draw up a list themselves.

If you have identified a sampling frame, or created one, then you can use a probability strategy. Otherwise you will have to use a non-probability strategy. The following diagram outlines the different sampling strategies.



### TASK 5 - Identify probability and non-probability sampling strategies

**READINGS:** SACHRU. (1997). Ch 9 - Samples. In *Planning Healthy Communities*. Adelaide: SACHRU: 151 - 154. See pp 121 – 126 in the Reader.

1. What do the terms 'probability sampling' and 'non-probability sampling' mean? When might a researcher choose to have a non-probability sample?

2. Which of the following are examples of probability and non-probability strategies?
- Researcher interviews people in the street as they pass by
  - Questionnaires are sent to all nursing matrons in the health district
  - Every 5th patient attending a clinic outpatients is interviewed
  - Names are selected from a telephone book by randomly selecting the last digit of their phone number
    - Community leaders and community health workers who are thought to be well informed are specially chosen

## Feedback

1. A probability sample means that everybody in the sampling frame has an equal chance of being chosen. A non-probability sample means that some people have more of a chance of being chosen than others. Non-probability sampling is often used when you have limited resources and you wish to ensure that people with certain characteristics are included in your sample. It can also be useful when you cannot generate a sampling frame, for instance, of all the pregnant women in a rural health district, which makes getting a probability sample difficult. In this situation, a convenience sample has to be chosen.
2. Examples i, ii and v are non-probability strategies; the others are examples of probability strategies.

## 4.2 Convenience and purposive sampling

Convenience sampling is a method in which, for convenience sake, the study units that happen to be available at the time of data collection are selected in the sample. Many clinic-based studies use convenience sampling. For example, a researcher who wants to study the attitudes of TB patients towards the TB services might interview all the TB patients who come to the TB clinic during one particular day.

A drawback of convenience sampling is that the sample may be quite unrepresentative of the study population.

However sometimes representativeness of the sample is not a major concern, for example, in case studies or exploratory studies where the main aim is to get in-depth information or rough estimates of the distribution of variables. In these studies it is better to use purposive sampling.

Purposive sampling is a method in which the researcher's judgement is used to decide which study units should be included in the study sample. Key informants are one of the major sources of information because they are people in the community who have access to the information about the community or study site as a whole, rather than individual problems. They are seen as representatives of a range of opinions held by the community. Key informants could hold official positions or be informal leaders in the community. They can be divided into three groups:

- a) People who work within the community and have a professional understanding of the issues: for example, school teachers, clinic nurses, social workers etc.
- b) People who are recognised as community leaders and seen to represent a section of the community: for example, councillors, church leaders, old women in the community
- c) People who are important within informal networks and often play a central role in local communications: for example, shop-owners, old women in the community, income generation project leaders.

## TASK 6 - Identify sampling strategies

1. What type of sampling is being used in the following examples? Give reasons for your answers.
  - Researcher interviews people in the street as they pass by
  - Questionnaires are sent to all nursing matrons in the health district
  - After choosing the first patient randomly every 5th patient attending a clinic outpatients is interviewed
  - Names are selected from a telephone book by randomly selecting the last digit of their phone number
  - Specially chosen community leaders and community health workers who are thought to be well informed

### Feedback

Example i is a convenience sample because whoever is chosen will become the sample and only those who happen to be walking on the street are eligible. Example ii is a purposive sample because only people that fit certain criteria (nursing matrons) were chosen. Example iii is a systematic random sample because the first patient is chosen randomly and then every fifth patient is then systematically chosen. Example iv is a simple random sample because from the sampling frame (the telephone book), names are picked randomly. Example v is purposive sampling because key informants have been deliberately chosen.

## TASK 7 - Choose a sampling strategy

Imagine you are doing some research to investigate the opinions of clinic attendees as to the quality of care that they receive. You estimate that you can only do about 25 interviews per day. From the records you note that the clinic sees about 100 patients a day. How will you choose which attendees to interview? How representative would a random sample be? How could you ensure that you include in your study attendees from *all age groups* and *both sexes*?

### Feedback

There are a number of ways you could do this. The most straightforward is to do a systematic random sample. In this case, since you can only do 25 interviews, you will have to interview 25 people in every 100, or every 4th clinic attendee. However, if you want to ensure that you include in your study attendees from all age groups and both sexes, you might choose to do purposive sampling by ensuring that you interview at least some people in each of these categories.

The most important issue in considering which sample strategy to use is to avoid bias.

## 5. IDENTIFY BIAS IN SAMPLING

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We have mentioned the danger of 'bias' in asking questions and constructing questionnaires. This activity introduces the concept of bias in sampling and why this is important, and suggests ways in which sampling bias, especially non-response bias, can be minimised.

Bias in sampling is a systematic error in sampling procedures that leads to a distortion in the results of the study.

Bias can also be introduced as a consequence of improper sampling procedures that result in the sample not being representative of the study population.

For example, a study was conducted to determine the health needs of a rural population to plan Primary Health Care activities. However, a nomadic tribe, which represented one third of the total population, was left out of the study. As a result, the study did not give a picture of the health needs of the total population.

## 5.1 Sampling Bias

There are several possible sources of bias in sampling. The best known source of bias is nonresponse.

Nonresponse is encountered mainly in studies where people are being interviewed or asked to fill in a questionnaire. They may refuse to be interviewed or forget to fill in the questionnaire. The problem lies in the fact that nonrespondents in a sample may exhibit characteristics that differ systematically from the characteristics of respondents.

Other sources of bias in sampling may be less obvious, but at least as serious:

- *Studying volunteers only*  
The fact that volunteers are motivated to participate in the study may mean that they are also different from the study population on the factors being studied. It is better to avoid using non-random procedures that introduce the element of choice.
- *Sampling of registered patients only*  
Patients reporting to a clinic are likely to differ systematically from people seeking treatment at home.
- *Missing cases of short duration*  
In studies of the prevalence of disease, cases of short duration are more likely to be missed. This may often mean missing fatal cases, cases with short episodes, and mild cases.
- *Seasonal bias*  
It may be that the problem under study exhibits different characteristics in different seasons of the year. For this reason, data on the prevalence and distribution of malnutrition in a community, for example, should be collected during all seasons rather than just at one time,
- *Tarmac bias*  
Study areas are often selected because they are easily accessible. However, these areas are likely to be systematically different from more inaccessible areas.

*(Adapted from Varkevisser, 1991, p.204-5).*

## 5.2 Reducing bias

There are several ways to reduce the possibility of bias:

- Data collection tools (including written introductions for the interviewers to use with potential respondents) have to be pretested. If necessary, adjustments should be made to ensure better co-operation.
- If nonresponse is due to absence of the subjects, follow-up of nonrespondents may be considered.
- If nonresponse is due to refusal to co-operate, an extra, separate study of nonrespondents may be considered to discover to what extent they differ from respondents.

- Another strategy is to include additional people in the sample, so that nonrespondents who were absent during data collection can be replaced. However, this can only be justified if their absence was very unlikely to be related to the topic being studied.

## **TASK 8 – Identify examples of sampling bias**

1. What sampling biases are present in the following sampling proposals?
  - We will interview the first fifteen patients who arrive at the clinic.
  - In order to find out what ante-natal attendees think of the service, we will do telephone interviews. The names will be chosen randomly.
  - We will measure the prevalence of diarrhoea in the community during the next three weeks.
  - We will interview and examine all the people living around the Clinic, to estimate the prevalence of TB in the community.

### **Feedback**

- In the first proposal, there is a selection bias in that the patients who arrive first at the clinic may be very different to those who come later. For instance, they may be much sicker and very eager to see the staff, or might be working and want to see the staff before going to work.
- In the second proposal, only those with telephones will be interviewed. They might be very different from those who do not have telephones, i.e. much better off.
- In the third proposal, there is probably a seasonal variation in the prevalence of diarrhoea. Therefore just measuring for the next three weeks will not give a fair reflection of the prevalence of diarrhoea for the whole year.
- In the last proposal, the people living around the clinic might not be representative of the whole community. They will probably be better off, as those with more wealth tend to live around the clinic. This is an example of tarmac bias.

Another serious bias in using questionnaires is non-responder bias.

**READING:** Bowling, A. (1997). Non-Responder Bias. In *Research Methods in Health: Investigating Health and Health Services*. Oxford: Open University Press: 234 – 238. See pp 1 – 8 in the Reader.

## **TASK 9 – Assess non-responder bias in a questionnaire**

1. Below is the first page of a self-administered questionnaire distributed to school pupils as part of a study examining teenagers' use of condoms and their views about using condoms. In what ways might it lead to non-response by students? How might the researchers reduce non-response?

*This is a health survey carried out by the school health authority. We thank you for taking part and please hand in your completed questionnaire to the teacher.*

1. What is your name?

2. What is your age?
3. Are you male or female?
4. At what age did you have your first sexual encounter?
5. Do you use a condom during intercourse?
6. Why don't you use a condom?

## Feedback

1. Obviously one of the first things they should do is to ensure that the identity of the respondents is confidential because this is a very sensitive topic. So it would be important to remove the person's name from the questionnaire. To further guarantee confidentiality, it is important that the respondents have complete privacy when completing the questionnaire and are informed of the ways in which their confidentiality will be respected. It would also be important for the respondents to have an explanation of why such sensitive information is being collected and to what use it will be put. There are also other factors that may increase non-response:
  - the language is not friendly for teenagers and they may not identify with the vague, formal, obscure style. For instance, what does 'sexual encounter' mean exactly?
  - The question 'Do you use a condom?' implies 'always', but this is not stated
  - The teacher is an authority figure – handing the questionnaire to this person might also affect how students respond and their level of openness and honesty

## TASK 10 – Work on the assignment protocol

Look at the outline of your assignment protocol. Consider a) the sampling frame you might be able to use, b) any possible bias in your sample and c) make notes about the kind of sampling strategy you might adopt.

## 5. SUMMARY

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In this study session you examined questionnaires: their design, the use of open and closed questions and common problems with questionnaires. You also practised rewriting questions to improve their effectiveness. You then learnt about different sampling strategies and ways of reducing bias in sampling.

In the next study session we look at another data collection technique - observations.

## 6. REFERENCES

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- Varkevisser, C. et al. (1991). Module 8. In *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 162, 204-205.

# Unit 3 - Session 3

## Observations

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### Introduction

In the previous study session you looked at how to design questionnaires, choose a sample and try to avoid bias. This study session looks at another important data collection method – observations, and its variations. This brings us to the next element in Stage 4 of developing a protocol.

<i>What additional data do we need to reach our research objectives?</i>  <i>How are we going to collect this information?</i>	4. Research Methodology	• <i>Observations</i>
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### Contents

1. Learning Outcomes of this Session
2. Readings
3. Structured and Unstructured Observations
4. Participant Observation
5. Summary

## 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study session, you should be able to:	
Public Health Content	Academic Learning Content
<ul style="list-style-type: none"><li>• List the steps in carrying out structured observation.</li><li>• Draw up a list of behaviours and an observation checklist for observing activities.</li><li>• List key feature, merits and limitations of participant observation.</li><li>• Evaluate participant observation accounts.</li></ul>	<ul style="list-style-type: none"><li>• Read with a purpose and extract key information from texts.</li><li>• Analyse and evaluate texts.</li><li>• Draw up checklists.</li></ul>



## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
SACHRU	(1997). <i>Ch 2 - Participant Observation. In Planning Healthy Communities. Adelaide: SACHRU: 205 - 218.</i>	<b>127 - 136</b>
CACE, UWC	(1998). <i>Ch 5 – Observing a Social Event. In Research Methods for Adult Educators. Centre for Adult and Continuing Education (CACE), UWC: 54 - 66.</i>	<b>21 - 30</b>

## 3. STRUCTURED AND UNSTRUCTURED OBSERVATIONS

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This activity introduces the data collection method - observations, including structured, unstructured and participant observations. These are used in both qualitative and quantitative research.

### TASK 1 – Think about observations

1. Think about any observation that you have been involved in, either as the observer or the observed. What are the main advantages and disadvantages of using this research technique?
2. There are many ways of doing observations, including 'structured' 'unstructured' and 'participant' observations. What do you think are the main distinguishing features of these three kinds of observations?

### Feedback

1. We all know that quite often 'we say one thing and do another'. The advantage of observation is that it is direct and can reveal the true behaviour. Rather than ask people about their beliefs, attitudes and behaviour, you watch what they do and listen to what they say. The big problem with observation is that the presence of the observer may change the behaviour of those being observed.
2. As the name suggests, structured observation is a more structured, fixed, pre-determined and predictable data collection technique; whereas unstructured observation is more flexible and less predictable. Participant observation, as you might have guessed, is when the researcher acts as a participant in the situation they are observing. Structured observation entails compiling a checklist of activities and recording how frequently they are performed. Usually this is associated with quantitative research. Unstructured observations entail recording everything that you observe. An extreme version is participant observation, where

the researcher becomes a part of the scene and records whatever he or she thinks is important. This falls into the category of qualitative research.



## **TASK 2 - List the steps in carrying out structured observations**

Having used observation for assessment in your own experience as a health professional, jot down what you see as some of the steps necessary for performing structured observations.

### **Feedback**

- a. Generate a list of potential key behaviours to be observed.
- b. Choose an observation technique: either a checklist, coded behaviour records, or delayed reports that are filled in after the observation is made.
- c. Decide how long each observation must be in order to yield good data.
- d. Determine how many observations are needed.
- e. Prepare a plan for conducting observations by determining who/what to observe, where and when.
- f. Prepare the observers' recording sheets, if needed.
- g. Choose/train observers.
- h. Inform staff about planned observations.
- i. Conduct observations that you have planned.
- j. Code, clean and process data.
- k. Formulate conclusions and recommendations.

## **TASK 3 - Compile an observation checklist**

One of the most important steps in performing a structured observation is to compile an observation checklist, to capture the behaviours that you are interested in. The first step is to define the behaviours you wish to measure. In this instance, a district nutrition team was interested in evaluating the quality of growth monitoring and promotion. The first thing they did was to outline the health care worker behaviours important for good growth monitoring and promotion to occur. These are listed below.

- 
1. Greet the mother or caregiver.
  2. In a polite way, find out what service(s) the mother has come for, and direct her there.
  3. Discuss the general welfare of the child and other family members, since the last visit:
    - a. -has the child been well
    - b. -has the child been growing well
    - c. -any developmental milestones such as starting to crawl,
    - d. -appearance of new teeth, starting to sit up alone
  4. Set the scale to zero. or check that it is at zero as you ask the mother to

- a. remove the child's clothes.
5. Help the mother to correctly place the child on the scale (all parts of the child's body should be on the scale).
6. Read the weight correctly, when the numbers on the scale stop fluctuating.
7. As you record the weight and plot the weight for age on the child's health card by connecting the dot at the previous point, tell the mother to take the child off the scale.
8. Ask the mother to dress the child.
9. Show the mother the card and see if she can interpret it correctly, for example, if the child has gained or lost weight since the last visit. Praise her for doing so.
10. If the child has gained weight, commend the mother and reinforce this behaviour. If the child has lost weight, find out from the mother if she knows the reasons why, for example, if the child has been ill, or any other problem.
11. Ask the mother about current feeding practices, for example, exclusive breastfeeding or weaning practices. Give proper advice and praise her good practices.
12. Advise the mother on how she may improve her feeding practices.
13. Check if vitamin A supplement has been given.
14. Check if the immunization record is accurate and up to date. Advise her accordingly.
15. Ask the mother if she has any questions or concerns regarding her child.
16. Ask the mother if she has any questions or concerns about family planning. Advise her accordingly.
17. Advise the mother when the child is due for the next visit.

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Use this list describing what the health worker should be doing to devise an observation checklist that will allow you to assess whether these actions are actually occurring in the clinic. Use the

Activity	Performed	
	Yes	No
<b>Does the health care worker:</b>		

following table to assist you.

Greet the mother?

In a polite way, find out what service(s) the mother has come for and direct her there?

Discuss the general welfare of the child and other family members since the last visit?

Ask if the child has been well?

Ask if the child has been growing well

Ask about any developmental milestones such as starting to crawl, appearance of new teeth, starting to sit up alone?

Set the scale to zero or check that it is at zero as you ask the mother to remove the child's clothes?

Help the mother to correctly place the child on the scale (all parts of the child's body should be on the scale)?

Read the weight correctly when the numbers on the scale stop fluctuating?

Ask the mother to dress the child?  
Etc.

Activity	Performed	
	Yes	No
Does the health care worker:		
1. Greet the mother?		

## Feedback

Here is an example of an observation checklist using the above behaviour guide.

For further practice in using structured observation, choose an activity that you can observe in your work. Try drawing up your own list of behaviours, and from this an observation checklist. Use this to observe the activity and make notes.

## 4. PARTICIPANT OBSERVATION

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This activity introduces another kind of observation usually associated with qualitative research - participant observation.

**READING:** SACHRU. (1997). Ch 2 - Participant Observation. In *Planning Healthy Communities*. Adelaide: SACHRU: 205 - 218. See pp 127 – 136 in the Reader.

#### **TASK 4 – Examine key features of participant observation**

- Summarise the main advantages of participant observation and potential disadvantages in doing participant observation.

#### **Feedback**

##### Advantages

- Allows the researcher to see what people actually do, rather than what they say they do.
- Reduces the chances of people changing their behaviour as a result of the presence of the researcher, since the researcher is already a part of the group.
- Allows the researcher to gain a better understanding of the context and meaning of the actions and behaviours of the participants.

##### Disadvantages

- Can cause ethical problems as the researcher tries not to intervene and change behaviours.
- Takes time for the researcher to be accepted as a part of the group.
- The researcher needs skill and training to capture all that he/she observes without being too obvious in recording the observations.
- Can give rise to bias, as the observer may only record what he/she thinks is important.

#### **TASK 5 – Evaluate participant observation accounts**

**READING:** CACE, UWC. (1998). Ch 5 – Observing a Social Event. In *Research Methods for Adult Educators*. Centre for Adult and Continuing Education (CACE), UWC: 54 - 66. See pp 21 - 30 in the Reader.

1. What different kinds of information do the researchers provide in their accounts?
2. What makes these observation accounts so effective?
3. Read again the observation account of the immunisation meeting on pages 64-65 of the CACE reading. If you were this researcher, what would you have done in this situation? Would you have become involved? Explain your answer. To what extent should a participant observer influence events that they are observing?

#### **Feedback**

2. The accounts describe:
  - facts about the date/time/venue of the event
  - important aspects of the physical setting

- background to the event and the role of the observer
  - the people present
  - what happened and why
  - the behaviours of people
  - the words spoken
  - the researchers' personal feelings and reactions to the events that took place
3. The accounts read very easily and are clearly and simply written. It is clear that the observers kept good notes. The reports are very honest, detailed and thorough. They also suggest that the observers identified quite closely with the people they were observing and understood the emotional aspects of the situation. The observers had also thought carefully about what they had seen and had drawn useful conclusions.
- In this situation, we can understand the intense frustration of the observer. As a mother, she identifies with the feelings of the other mothers and recognises that, at the end of the day, the children will suffer as a result of this failed meeting. I think that, as a mother, she could have spoken up and voiced her feelings during the meeting, but not as the researcher/observer. In this capacity, her main task is to record what happens and why. She is not there as a mediator of conflict. Unless it is an emergency or life-threatening situation, the observer should not get involved or take sides. Of course afterwards she can think of ways in which to help resolve this situation.

## **5. SUMMARY**

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In this study session, you examined the data collection techniques of structured, unstructured and participant observation. In the next study session, we look at two qualitative methods – interviews and focus group discussion.

# Unit 3 - Session 4

## Interviews and Focus Group Discussions

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### Introduction

After examining observations in the previous study session, we now look at two qualitative methods - interviews and focus group discussion. This relates to the next two elements in Stage 4 as shown below.

<i>What additional data do we need to reach our research objectives?</i>  <i>How are we going to collect this information?</i>	4. Research Methodology	<ul style="list-style-type: none"><li>• <i>Interviews</i></li><li>• <i>Focus group discussions</i></li></ul>
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### Contents

1. Learning Outcomes of this Session
2. Readings
3. Interviews
4. Focus Group Discussion
5. Summary

## 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study session, you should be able to:	
<b>Public Health Content</b> <ul style="list-style-type: none"><li>• Describe different kinds of interviews, their advantages and disadvantages.</li><li>• Relax interviewees and conduct in-depth interviews.</li><li>• Decide whom to interview.</li><li>• Describe the main characteristics and uses of focus group discussion.</li><li>• Plan how to conduct a focus group discussion, who to invite, what the key issues are.</li><li>• Draw up a discussion guide.</li><li>• Conduct a focus group discussion.</li></ul>	<b>Academic Learning Content</b> <ul style="list-style-type: none"><li>• Read with a purpose and extract key information from texts.</li><li>• Read critically and evaluate information.</li></ul>

## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
CACE, UWC	(1998). <i>Ch 4 - Doing an Interview. In Research Methods for Adult Educators. Centre for Adult and Continuing Education (CACE), UWC: 44 - 53.</i>	9 - 20
SACHRU	(1997). Ch 4 – Group Techniques. In <i>Planning Healthy Communities</i> . Adelaide: SACHRU: 231 -238.	137 - 146

## 3. INTERVIEWS

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This activity provides an insight into how to conduct effective interviews. You may remember that we mentioned interviews earlier, when we looked at questionnaires. Questionnaire interviews are examples of interviews where the researcher usually has very little choice in the questions that are asked. In this session we look at interviews where the researcher has more opportunity to decide what to ask and how to sequence the questions.

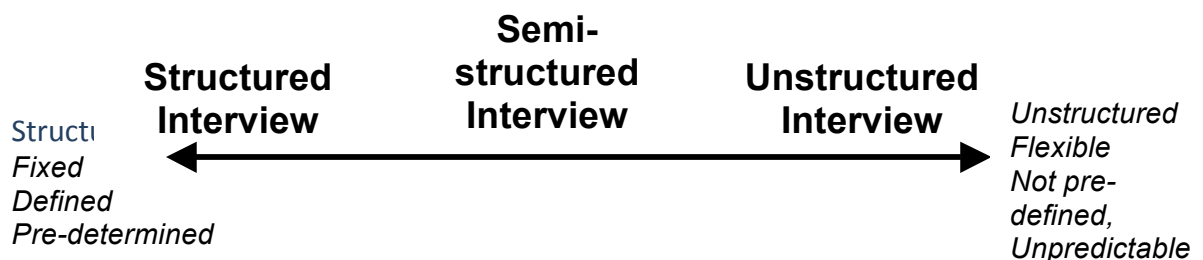
### TASK 1 – Think about interviews



1. Think about any research interviews that you have been involved in, either as the interviewer or interviewee. How would you define or describe what an interview is? What are the main advantages and disadvantages of using this data collection technique?
2. There are different styles or ways of conducting interviews – what are some of these?

## Feedback

1. An interview is a kind of conversation; a conversation with a purpose. It is a flexible way of finding things out. By conducting face to face interviews it is possible to modify questions, to follow up on interesting replies, or to clarify things. This cannot be done by postal and other self-administered questionnaires. To make the most of this flexibility, the interviewer has to be skilled and trained. One of the weaknesses of interviewing is that different interviewers may get different replies. Training and standardisation is therefore very important.
2. As with observations, there are various types of interviews, depending upon the degree of structure of the interview. At one end we have the fully structured interview with previously defined questions and the responses recorded on a standardised schedule (a questionnaire where the interviewer fills in the responses). At the other end is an unstructured interview, where the interviewer has a general area of interest and concern but lets the conversation develop within this area. In the middle of these two is a semi-structured interview, where the interviewer has worked out a set of questions in advance, but is free to modify the order and content, depending on what feels most appropriate during the interview.



### 3.1 How to Conduct Key Informant Interviews

Key informant interviews and observations are techniques for identifying problems and potential solutions. Interviews may be carried out in the clinics or at the hospital, in the school or in the community during several visits. Observations and assessment of nutritional status and diet can be conducted during the same visits. The length of time and number of visits depends on what is being observed or discussed and on the participants reaction. If a visit is too short, participants may not have the time to relax and provide in-depth information. If a visit is too long, or too many visits are made, participants may become frustrated by the inconvenience.

Prior to initiating an interview, it is important to establish credibility and a level of acceptance with the person being interviewed. Visit the formal or informal community leader to ask for his or her permission to carry out research in the community. Explain why the information is being collected. Some programmes may want to hold a community meeting to introduce the interviewers before fieldwork begins. In other places, the interviewers may make brief introductory household visits. It is not always advisable to identify the interviewers by profession, especially if they are doctors or nurses, because this can bias people's responses.

Establishing a friendly relationship with participants generally is not difficult if interviewers are sympathetic and speak the local language. Once rapport is established, the interviewee will not

feel it must treat the interviewer like a guest, but will go about their usual chores, leaving the interviewer to complete notes or to help.

The *in-depth interviews* are usually held in the home or around the hospital, clinic or housing compound. Specific interview topics, such as food preparation, are discussed in the kitchen area so that the actual utensils used to prepare and serve the food can be observed. This facilitates conversation and permits the interviewer to compare reported practices and beliefs with actual behaviours.

An interviewer who is in the house repeatedly or for an extended period can introduce discussion about the neighbours or local problems to divert the conversation but still reveal the participants' views. Remember, it is fine just to relax. If the mother sits in the shade for a minute to shell peas, sit with her. Let her begin the conversation.

Similarly it is important to interview health workers in privacy. This may require negotiation with the health facility management and arrangement of a time when the health worker can be spared from normal duties. Every effort should be made to conduct the interview in a quiet, private area.

Start the interview with the basic questions listed earlier: name, address, and family composition. Then guide the conversation by asking different types of questions, probing, and requesting clarifications. Be careful to keep these questions free of suggestions of correct or desired responses.

Unlike formal surveys, where responses are brief, in-depth interviews encourage clarification of what each person says. Ask the respondent to explain the full meaning by repeating or rephrasing a question. Questioning does not have to stick to the guides. In-depth interviewing involves probing for information on new themes and issues as they emerge. If people are reluctant to talk because they do not think they have any information to offer, offer assurance that their views are of great interest and importance.

Decide whether the in-depth interviews are to be taped. Extensive note-taking helps to get the most out of the interviews but it is difficult to take extensive notes and listen attentively at the same time. If the field team lacks prior experience with note-taking, it is worthwhile to tape the in-depth interviews. In this case, field workers listen to the tapes after an interview and add details to their field notes as required. Transcribing the tapes is not necessary.

(Adapted from *Designing by Dialogue* Dickin K, Griffiths M & Piwoz E SARA, USAID 1997)

## **TASK 2 - List ways of relaxing interviewees**

**CACE, UWC.** (1998). Ch 4 - Doing an Interview. In *Research Methods for Adult Educators*. Centre for Adult and Continuing Education (CACE), UWC: 44 - 52. See pp 9 - 20 in the Reader.

- List at least five ways in which an interviewer can get the interviewee to feel relaxed, so as to give full and rich information? Give examples of what you might say.

## **Feedback**

There are several techniques that can be used during an interview to move beyond the most superficial response in order to get richer and more complete information.

- Silence - often interviewers are hasty in moving on to the next question. Silence gives the respondents time to think through what they want to say and encourages them to say more.
- Re-question - comments like 'That's really interesting, can you tell more about that' encourages the respondent to go further with the explanation.

- Recap by saying, or instance, 'Could you explain to me again about X?' In many cases the respondent will add information to what s/he said before.
- Encouragement - use body language (e.g. head nodding, smile etc.) or verbal cues (e.g. 'mmm', 'I see' etc.) to show your interest and encourage more information.
- Sympathetic listening - always appear to sympathise with the respondent point of view (even if you do not agree with it) if you want the person to open more: 'Well, I can see that X is a real problem for you.'
- Ask open questions - try to ask mostly open questions such as: 'Why?' 'Why do you think that happens?'

### TASK 3 – Critically analyse two interviews

Read the two interviews below between a researcher (Mama Mbunye) and a mother (Mama Dlamini).

1. Which is the 'good' and which is the 'bad' interview and why? In what ways are the two interviews different? (What kinds of questions are asked? What language is used? How are questions sequenced? Etc.)
2. How useful is the information obtained in both interviews?

INTERVIEW A	INTERVIEW B
<p><i>Mama Mbunye - Researcher</i> <i>Mama Dlamini – Mother</i></p> <p><i>Mama Mbunye</i> Good morning, Mama Dlamini. The government needs information about how you people feed your children, so I would like to ask you some questions.</p> <p><i>Mama Dlamini</i> I'll try to help you but as you can see I'm rather busy. I have to go to the market in a few minutes.</p> <p><i>Mama Mbunye</i> Well I am afraid I must have this information today and I can't come back later.</p> <p><i>Mama Dlamini</i> What can I tell you, I am only a humble person?</p> <p><i>Mama Mbunye</i> That's right, you really know what's</p>	<p><i>Mama Mbunye – Researcher</i> <i>Mama Dlamini – Mother</i></p> <p><i>Mama Mbunye</i> Good morning, Mama Dlamini. My name is Mama Dlamini. I'm from the Ministry of Agriculture, Home Economics Division. I wonder if you could help me. I'm asking all the mothers in the village about foods they use for feeding your children. Might I ask you too?</p> <p><i>Mama Dlamini</i> I'll try to help you but as you can see I'm rather busy. I have to go to the market in a few minutes.</p> <p><i>Mama Mbunye</i> I appreciate that you're busy Mama Dlamini with so many fine children to care for. I'd gladly come back at a more convenient time, but unfortunately I've got to get the information today. The questions won't take a minute.</p>

going on, but the government has to check on it from time to time. Now I suppose you feed your children mainly on maize without anything added?

*Mama Dlamini*

Well, I do my best, but at this time of the year there is hardly any food to be found around here.

*Mama Mbunye*

I'm sure there are some things to be had somewhere, but wait a minute while I write that down.

I haven't got much time. Perhaps you could tell me what foods you eat which have a high protein content.

*Mama Dlamini*

I'm sorry, I don't understand what you mean.

*Mama Mbunye*

Well, never mind. How much money does your husband earn every month?

*Mama Dlamini*

What can I tell you, I'm only a humble person?

*Mama Mbunye*

Of course, but your opinion is important. Well, can I start by asking what's the main food you feed your children?

*Mama Dlamini*

Maize porridge.

*Mama Mbunye*

Thank you. And do you ever add anything to it?

*Mama Dlamini*

Well I do my best, but at this time of the year there is hardly any food around here.

*Mama Mbunye*

Thank you very much indeed. That information was most useful. I'm very grateful. Oh one final question. Could you please tell me what job your husband does?

*Mama Dlamini*

He's a bus driver.

*Mama Mbunye*

Excellent. Thank you again Mama Dlamini. I'm leaving now, thank you very much for your time, Goodbye.

## Feedback

1. Interview A is the poor interview and Interview B the good one. The most obvious difference between the two interviews is the greater respect shown to the interviewee in Interview B. For instance, the interviewer takes the time to explain why she is asking the questions. She also empathises with the situation of Mama Dlamini and respects the fact that she may not have the time to complete the interview right now. The interviewer also assures Mama Dlamini that her opinion is important. In Interview A, Mama Mbunye shows little concern or empathy for Mama Dlamini. She distances herself from the situation when she says 'how you people feed

your children'. She does not respect or value Mama Dlamini's opinion and is disrespectful in dismissing Mama Dlamini's question 'Well, never mind'. In addition, the questions asked in Interview A are closed and worded negatively, to direct the interviewee towards particular answers. In Interview B however, the questions are open and do not lead the respondent.

2. The information obtained from Interview B is probably more valid and helpful for this research than that gathered from Interview A.

#### **TASK 4 - Develop a discussion guide**

1. Read the following text. It describes what a discussion guide is and presents an example of this.
2. Draw up a discussion guide for an interview with TB patients about their perceptions of the quality of care that they get at the TB clinic.

### **3.2 Using a Discussion Guide**

To carry out an in-depth interview, a discussion guide may be used. This can be a simple list, roughly in the order you would like to deal with the topics. A well-constructed list of topics will ensure that all the essential issues are covered. Here is an example of a discussion guide for the health needs of older people:

#### **In-depth Interview Discussion Guide: Needs Assessment of Older People**

1. Introduce yourself and explain the purpose of the interview.
2. Warm up: obtain a brief personal history - age, family and education.
3. Discussion of Issues  
Profile of work outside the home before retirement: number of years; - nature of work; - working conditions; - occupational hazards; - industrial injuries; - history of industrial-related illness.  
Leisure-time activities:
  - hobbies and exercise: what and regularity;
  - perception of available facilities, especially difficulties in using them;
  - community centre: availability, how useful;
  - overall evaluation of community facilities and help.Present health:
  - overall health, general sense of well-being;
  - any chronic complaints;
  - experience with doctor, physiotherapist, and community health workers;
  - evaluation of curative experiences;
  - perception of available health services, adequacy, quality of encounter with health professionals.
4. Suggested improvements: what can be done.
5. Finishing up:
  - general discussion about social and health problems

- of older people to check that topics of importance have not been missed.
- future prospects and aspirations.

6. Thank interviewee - inform that he or she will be sent a short summary of results, and encourage any further questions.

This is a guide only, but it should cover most of the issues to allow respondents to explore their health needs and social situations.

Notice that *you gradually build rapport with the interviewee(s)* by asking them to talk about themselves and their families. This helps to create a casual atmosphere. The brief personal history gives a background to what the respondent is going to tell us.

*The topics should follow logically from each other.* For example, it is better to have a brief employment history before you ask about present health status.

In the topic guide, *be clear about the issues most relevant to health*; such issues might include: occupational experience before retirement; exercise; the quality of social amenities; encounter with health professionals etc.

(SACHRU. (1997). *Planning Healthy Communities*. Adelaide)

## Feedback

The discussion would start in a similar way to the one described in the reading, with a general introduction and warm up:

- Introduce yourself and explain the purpose of the interview
- Warm up: obtain a brief personal history – age, family and education
- Then it would move onto a discussion of the issues. This would depend upon your basic knowledge of the target group and the subject area (which in turn will depend upon how well you have done your literature review). It will also be informed by your discussions with key role-players in the field. But it might go something like this
- What do you like about coming to the clinic for your treatment
- What do you not like?
- Can you give me examples of good and bad service that you have received from the clinic in the last six months?
- What things would you like to change about the TB service?

## 3.3 Who to Interview

Before you invite people for interviewing, you must be clear about whom you want. The question of who and how many will depend on three things:

- the recruiting criteria;
- the budget;
- the subject of research.

All interviewees should be able and willing to contribute substantially to a relatively lengthy and open discussion but at the same time, you must ensure appropriate representation of the community.

Are you trying to find out about older people, younger people or the whole community? What do you know of a particular group's social and economic characteristics? If you are planning research on the health needs of older people in a particular community, your recruiting guide may need to consider several factors.

- Age and sex: 65 and above, men and women.

- Income group: to have a representative coverage, you need to invite people from all income groups.
- Language/cultural background: if you are dealing with a community that contains non-English speaking people, they should be invited and interviewed if possible in their own language(s). This can be achieved in a variety of ways: by a paid interpreter; by a health worker with language skills; by a family member with good English skills (not suitable for some topics that may not be open for discussion within families). It may also be necessary to learn important cultural modes of expression, gestures and the like.
- Special criteria - what is the primary research issue? Some communities may have specific health problems. Pollution caused by factories in the area, for example, may be thought to be contributing to a high incidence of respiratory illness among the aged. To enable people to talk about this in relation to their health needs, a recruiting guide may be: 'has suffered from a respiratory illness during the last 12 months'.
- Household structure: are people living on their own? with a spouse?; with other adults they are not related to?

For in-depth interviews, you should aim to interview a minimum of 20 people; but bear in mind the following:

- Do you want to generalise to the whole community or not? Generalisation to a particular group may be sufficient.
- How is the data to be analysed? Be aware of the need for considerable time at both preparation and analysis stages, regardless of the means of analysis utilised (manual or computer-based). Remember also that the number of people you interview will affect the costs.
- Time per interview: expect to allocate at least three hours per interview, including travel, and approximately three times the actual interview length for transcription (if the interviews are to be transcribed in full - this however may not be possible or necessary). Are there interviews for which we need to employ others - for example, those with non-English speaking respondents? If so, additional expense will be incurred, both for conducting interviews and for translating tapes.
- Representation - in relation to budget. Looking again at the timing and budget may force you to trim the number of respondents. The general principle is to leave out those you think will make the least difference in terms of representing the target group. Use common sense and your knowledge of the community. (Adapted from Planning Healthy Communities, SACHRU, 1997, ).

## **TASK 5 - Choose whom to interview**

For the same TB study discussed earlier: to investigate the attitudes of the community towards the quality of care at the clinic, which target groups would be important to include in the sample and why?

## **Feedback**

The most important target groups to include in the sample would be:

- People who work within the community and have a professional understanding of the issues: For example, school teachers, clinic nurses, social workers.
- People who are recognised as community leaders and seen to represent a section of the community: for example, councillors, traditional leaders, church leaders.
- People who are important within informal networks and often play a central role in local communications, for example shop-owners, old women in the community, income generation project leaders.

## 4. FOCUS GROUP DISCUSSION

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This section provides an overview of how to conduct a focus group discussion.

### 4.1 Characteristics/Uses of Focus Group Discussions

The main uses of focus group discussion are:

1. To focus research and to develop relevant research hypotheses by exploring in greater depth the problem to be investigated and its possible causes.

#### Example

A district health officer had noticed that there were an unusually large number of cases of malnutrition in children under 5 reported from one large village in her district. Because she had little idea of why there might be more malnutrition in this village, she decided to organize three focus groups:

- 1 - of leaders
- 2 - of mothers from the village
- 3 - of the health staff assigned to do home visits in that village.

She hoped to identify potential causes of the problem through the focus groups and then develop a more intensive study, if necessary.

2. To formulate appropriate questions for more structured, larger-scale surveys.

#### Example

In planning a study on incidence of childhood diarrhea and feeding practices, an FGD showed that in the community under study, children below the age of 1 year were not perceived as having "bouts of diarrhea," but merely "having loose stools" that were associated with milestones such as sitting up, crawling, and teething. In the questionnaire that was being developed the concept diarrhea was, therefore, carefully circumscribed, using the community's notions.

3. To supplement information on community knowledge, beliefs, attitudes, and behaviour already available but incomplete or unclear.

#### Example

There is a high drop-out rate in child welfare clinics among children over the age of 6 months. A previous survey indicates that mothers give reasons such as "too busy," "have other domestic commitments," or "experience transport problems." Because these same mothers have previously brought their infants under 6 months of age regularly, you suspect that there are other factors. A focus group discussion with a few groups of mothers could provide in-depth information on the reasons for the changes in their perceptions and behaviour regarding the use of the clinic for children over 6 months old.

4. To develop appropriate messages for health-education programs.

#### Example

A rural health clinic wanted to develop a health-education program focused on weaning problems most often encountered by mothers in the surrounding villages and what to do about them. An FGD could be used for exploring relevant local concepts as well as for testing drafts when developing the messages.

5. To explore controversial topics.



## Example

In a household survey, it appeared that male informants most frequently said that their wives kept the household money, whereas female informants maintained their husbands kept the money. An FGD with a group of females and a separate one with a group of males may bring forward the complicated patterns and variations of financial responsibility in the domestic group. It may be interesting to have a third session of males and females together to discuss the differences in perception.

FGDs are not used to test hypotheses or to produce research findings that can be generalized.

(Varkevisser, C. et al. (1991). *Designing and Conducting Health Systems Research Projects*. Vol. 2, Part 1. WHO and International Development Research Centre.).

## TASK 6 – List the steps in conducting a focus group discussion

**READING:** SACHRU. (1997). Ch 4 – Group Techniques. In *Planning Healthy Communities*. Adelaide: SACHRU: 231 - 238. See pp 137 - 146 in the Reader.

1. Write down the steps that you would take to conduct a FGD to investigate teenage pregnancy. Specify how many FGDs you anticipate running; who you would invite to these and what the key issues or areas of concern might be.
2. Outline a discussion guide for a focus group discussion with a group of pregnant teenagers. Include possible questions, probes and prompts.

## Feedback

1. You would want to cover a number of important groups starting with pregnant teenagers, followed by teenage mothers, health, welfare and other workers in close contact with pregnant teenagers, parents of teenagers and other teenagers. You anticipate that some would have become pregnant by choice, some by accident and others would have been aware of the risks but did not take precautions. Of those who did not choose to become pregnant some of the reasons might be:
  - Inaccurate or lack of knowledge about sexual reproduction and contraception;
  - mixed attitudes towards using contraception and/or responsibility for contraception;
  - lack of self-esteem, allowing individuals to be easily influenced to have sex when unprepared;
  - lack of social support, affecting decision making about contraception;
  - factors such as alcohol or other drugs affecting decision-making.
2. Putting these issues into question format, you might come up with a guide something like the following. Always make sure, however, that there is enough freedom for you to follow up an unanticipated response.

### Questions

1. What was your first reaction when you found out you were pregnant?  
(prompt)                      Were you pleased/shocked/scared/ angry?

*(probe) So you did/didn't want to get pregnant then?*

*(probe) (If did) Why did you want to get pregnant*

*(probe) Do you still feel that way now?*

2. Was there anyone you could tell?

*(prompt) Mum, Dad, friend, boyfriend, doctor, teacher?*

*(probe) Where do you usually go if you need information or advice?*

3. Looking back to this time last year - did you ever think you might be pregnant now?

*(prompt) Why not?*

*(probe) Not having sex/using the pill, condoms, etc.*

*(probe) (If using contraception) Why do you think the pill/condom etc, didn't work?*

4. How easy is it to say 'no' to a guy you like if you really don't want to have sex with him?

5. Do you think young girls should be able to say to a guy they won't have sex without a condom?

*(probe) How easy is it?*

*(probe) Whose responsibility do you think it is to make sure you don't get pregnant?*

*(probe) Do you think the guys care?*

6. After you have the baby, would you try to get pregnant again or would you try not to get pregnant?

*(probe) What would you do to make sure you didn't get pregnant again?*

## 5. SUMMARY

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This study session introduced two qualitative data collection techniques: interviews and focus group discussion. In the next study session you gather together your ideas around data collection methods, techniques and tools and draw up a plan for data collection.

## 6. REFERENCES

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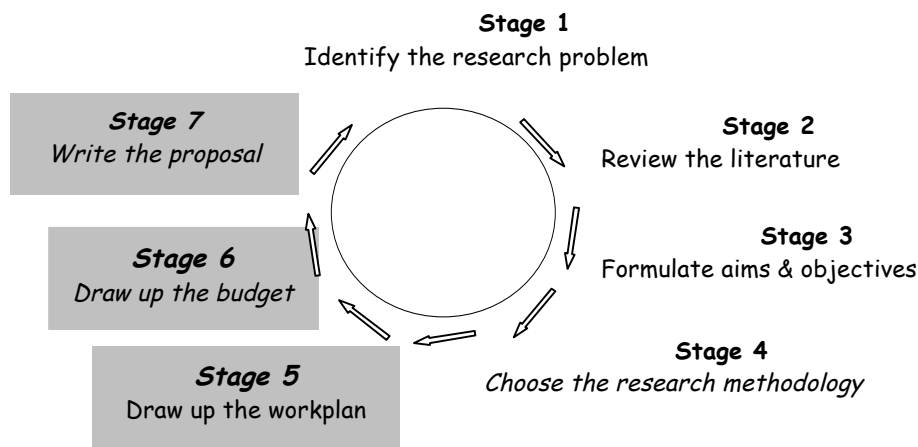
- Dickin, K, Griffiths, M & Piwoz, E. (1997). *Designing by Dialogue*. SARA, USAID.
- SACHRU. (1997). *Planning Healthy Communities*. Adelaide: SACHRU.
- Varkevisser, C. et al. (1991). *Designing and Conducting Health Systems Research Projects*. Vol. 2, Part 1. WHO and International Development Research Centre.

# UNIT 4T

## Data Analysis, Workplan and Budget

### Introduction

In the first three units of this module we tackled Stages 1-4 in developing a protocol. This final unit focuses on the last three Stages 5-7, highlighted below. You begin by summarising what you have learnt about study design and data collection methods and applying this to your research protocol. You then look at ways of analysing the quantitative and qualitative data that has been captured. The next step is an outline of what needs to be included in a budget and workplan. Finally, you go through the process of writing up your protocol assignment for this module.



### STUDY SESSIONS

There are three Study Sessions in Unit 4

Study Session 1:	Planning for Data Collection
Study Session 2:	Analysing Quantitative Data
Study Session 3:	Analysing Qualitative Data
Study Session 4:	Producing a Workplan and Budget

### **Intended Learning Outcomes**

By the end of this unit, you should be able to:

#### **Public Health Content**

- Describe the uses, merits and limitations of various data collection methods and techniques.
- Describe how quantitative and qualitative methods can be combined in studies.
- Match data collection methods and techniques with research questions.
- Draw up a plan for data collection.
- Compile summary statistics of one-way and two-way tables.
- Analyse quantitative data.
- Describe analyse, code and interpret qualitative data.
- Draw up a workplan
- Draw up a budget framework.

#### **Academic Learning Content**

- Read with a purpose and identify key ideas.
- Compare information.
- Analyse and classify information.
- Synthesise information and present it in different ways.
- Draw graphs and tables.
- Interpret information and draw conclusions.

# Unit 4 - Session 1

## Planning for Data Collection

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### Introduction

This study session tackles the next element in the 'research methodology' stage in developing a protocol: plan for data collection. You learn how to select the most suitable data collection design/method/techniques to use for collecting different sorts of data. This information comprises your plan for data collection, to be included in the assignment protocol.

<i>What additional data do we need to reach our research objectives?</i>	5. Research Methodology	• <i>Plan for data collection</i>
How are we going to collect this information?		

### Contents

1. Learning Outcomes of this Session
2. Readings
3. Assess Data Collection Methods
4. Choose Study Designs and Data Collection Techniques
5. Make a Plan for Data Collection
6. Summary

## 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study session, you should be able to:	
<b>Public Health Content</b> <ul style="list-style-type: none"><li>• Identify the advantages and disadvantages of using different data collection methods.</li><li>• Describe how quantitative and qualitative methods can be usefully combined in studies.</li><li>• Match data collection methods and techniques with research questions.</li><li>• Formulate a plan for data collection.</li></ul>	<b>Academic Learning Content</b> <ul style="list-style-type: none"><li>• Read with a purpose and identify key ideas.</li><li>• Classify ideas.</li><li>• Compare information.</li><li>• Use tables to summarise ideas.</li></ul>

### ASSIGNMENT

By the end of the session, you should have more notes for the assignment protocol.

## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
Murphy, B., Ruth, D. & Murray Hodge, M.	(May 1998). <i>The Use of Qualitative Research in the Development of the 'Heartwise' Program for General Practitioners</i> . The Medical Journal of Australia, 158: 626 - 628.	61 - 66
Varkevisser, C. et al.	(1991). <i>Module 12. In Designing and Conducting Health Systems Research Projects. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 224 - 231.</i>	173 - 182

## 3. ASSESS DATA COLLECTION METHODS

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Because health systems are quite complex, the research questions that are addressed by Health Systems Research usually require a combination of qualitative and quantitative research. It is

therefore important for Health Systems Researchers to be aware of the uses of these different methods and to appreciate how they can be combined to help answer a research question. This is the focus of this section.

## TASK 1 - Identify data collection methods/techniques used in research

**READING:** Murphy, B., Ruth, D. & Murray Hodge, M. (May 1998). The Use of Qualitative Research in the Development of the 'Heartwise' Program for General Practitioners. *The Medical Journal of Australia*, 158: 626 - 628. See pp 61 - 66 in the Reader.

1. Indicate below whether qualitative or quantitative research is used, and identify the data collection techniques used for the research tasks described in the article.

Task	Qualitative/ Quantitative	Data Collection Technique
Use of education materials by patients		
Consumers attitudes to lifestyle and experiences with GPs		
Interpretation of survey results		
Role of GPs and pharmacists		
Developing guidelines for practice of GPs and pharmacists		
Piloting of the guide for GPs		
Pre-testing posters		

2. In this research, the combination of qualitative and quantitative research was particularly beneficial in at least two instances:
  - Qualitative descriptive information provided a context for quantitative data
  - Quantitative statistical information validated qualitative insights

Explain in more detail how this combination of methods helped this research in these two instances.

## Feedback

1.

Task	Qualitative/ quantitative	Data Collection Technique
Use of education materials by patients	Qualitative	Exploratory focus groups
Consumers attitudes to lifestyle and experiences with GPs	Qualitative	Focus Groups
Interpretation of survey results	Qualitative	Focus Groups
Role of GPs and Pharmacists	Qualitative	Focus Groups

Developing guidelines for practice of GPs and Pharmacists	Qualitative	Action Research
Piloting of the guide for GPs	Quantitative Qualitative	Self-administered questionnaire Exploratory interview
Pre-Testing Posters	Qualitative	Semi-structured interviews

2. In the first instance, to determine the attitudes and beliefs of GPs towards patients, a survey questionnaire was designed, based on hypotheses generated from focus group discussions. This enabled the researchers to measure specific attitudes and behaviours. In the second instance, qualitative descriptive information was provided by focus group discussions in order to interpret the survey results. This added meaning, depth and insight into the quantitative statistical descriptions derived from the national GP survey.

In order to be in a position to choose the most appropriate technique, you need to be aware of the merits and weaknesses of each.

## **TASK 2 - Summarise the merits and drawbacks of different techniques**

In the table below, summarise in note form the main advantages and disadvantages of the data collection techniques discussed in this unit. If necessary, refer back to previous study sessions.

<b>Data Collection Technique</b>	<b>Advantages</b>	<b>Disadvantages</b>
Questionnaire • Mail survey • Telephone		
Record Reviews		
Observations • Structured • Unstructured • Participant		
In-depth Interviews • Structured • Unstructured		
Focus Group Discussion		



## Feedback

Data Collection Technique	Advantages	Disadvantages
<p>Questionnaire</p> <ul style="list-style-type: none"> <li>• Mail survey</li> <li>• Telephone</li> </ul>	<p>Can gather a lot of information from many people relatively easily and cheaply</p> <p>Easy to administer</p> <p>Good quality control</p> <p>Easier to collect data from people who might not be easily reached</p> <p>Quick, cheap</p>	<p>Assumes people have reasonable literacy/language skills</p> <p>People may not have access to a telephone/regular postal delivery</p> <p>Cannot see facial expressions/gestures</p>
Record Reviews	<p>Inexpensive, because data is already there</p> <p>Permits examination of past trends</p>	<p>Data not always easily accessible</p> <p>Ethical issues may arise around confidentiality</p> <p>Information may be imprecise or incomplete</p>
<p>Observations</p> <ul style="list-style-type: none"> <li>• Structured</li> <li>• Unstructured</li> <li>• Participant</li> </ul>	<p>Provides more detailed, context-related information</p> <p>Helps to test the validity of questionnaire responses</p> <p>More accurate, focused</p> <p>observation of pre-determined behaviours</p> <p>More open and likely to observe different contextual features and behaviours</p> <p>Observer is immersed in the context and able to analyse and understand issues more clearly from this subjective perspective</p>	<p>Ethical issues may arise concerning confidentiality or privacy</p> <p>Observer presence may affect the behaviour of those being observed</p> <p>Can narrow the research focus and miss important observations</p> <p>Can blur the research focus</p> <p>Observer can become too involved in the situation, show bias, take sides, be unable to see issues clearly/objectively</p>
<p>In-depth Interviews</p> <ul style="list-style-type: none"> <li>• Structured</li> <li>• Unstructured</li> </ul>	<p>Suitable for people who are illiterate or not used to being surveyed</p> <p>Assists with clarifying and refining issues, revealing underlying causes etc.</p> <p>Easy to record/analyse/interpret responses</p> <p>Gives the interviewer more scope and flexibility to probe issues, pursue new directions/topics and uncover information</p>	<p>Can be time consuming and expensive</p> <p>People may give answers that they think the interviewer wants to hear</p> <p>Replies may not be recorded properly</p> <p>Can lead to rigidity and narrow the research data collected</p> <p>More difficult and time-consuming to analyse and interpret varied responses</p>

Focus Group Discussion	Suitable for people who are illiterate Information is clarified/corrected by other members of the group Can reveal aspects of the problem which the investigator has not thought of	Need to carefully select participants Facilitator and recorder need to be well trained Not suitable for personal, private or very sensitive topics
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## 4. CHOOSE STUDY DESIGNS AND DATA COLLECTION TECHNIQUES

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This section guides you in choosing appropriate study designs and data collection techniques to suit specific studies.

### TASK 3 - Match research questions, designs and techniques

For each of the following research questions or topics, write down some appropriate study designs and data collection techniques.

- You noticed a number of women with goitre in your district. You are concerned that goitre might be a Public Health problem. Therefore you wish to find out the size of the problem. Furthermore, you would like to find out whether the population perceives goitre as a problem. Finally, you would like to identify the most important risk factors for goitre in your district.
- A district health team evaluated its malaria-spraying program by looking at available records and reports. They did not find significant flaws in the functioning of the services in different divisions and villages. Nevertheless the incidence of malaria and mosquito counts show peaks in certain villages that are most likely related to differences in quality of the malaria spraying services. You want to find out if there is something wrong with the services.
- You are a midwife in charge of a maternity unit in a district hospital. You suspect that the number of low birth-weight babies is increasing and you would like to know more about the physical and socio-economic conditions of the mothers, to see if remedial action can be taken. The clinic records are at present not complete enough to draw conclusions and you have neither the time nor the money to do a large community survey.
- You have recently been appointed district nursing officer in a remote, previously underserved clinic. One of your tasks is to develop a district health plan. You want to collect information that will assist you in developing your plan.

### Feedback

Research Question	Design	Data Collection Techniques
a. Goitre)	Cross-sectional survey to determine the size of the problem	Clinical investigation
	Case-control study to determine risk factors (cases and healthy controls to be selected from the cross-sectional survey)	Questionnaire on dietary habits & perception of goitre to

		be administered to cases and controls
	Separate exploratory study first (if you have little idea about diet & perceptions of goitre)	
b. Malaria spraying	Exploratory study	Participant observation (concealed)
	A number of observers receive a short training course in spraying procedures & mix among the spraying teams. They find out that the sprayers dump most of the insecticide in the morning, so that their load is lighter in the afternoon. The villages sprayed in the afternoon are underserved. (Foster G.M. 1987. World Health Organization behavioural science research: problems & prospects. Social Science and Medicine, 24, 709-717.)	
c. Low birth-weight babies	Cohort study, examining all mothers who come for antenatal care over 6 months, & following them up until after they deliver.	Thorough history taking; measuring mothers' weights, heights & growth during pregnancy & other potential risk factors
	Comparative (case control) study (mothers with low birth-weight babies & mothers with babies of normal weight)	Interviews with all mothers who gave birth to low weight babies & a control group of mothers who gave birth to babies of normal weight, concerning socio-economic factors
d. District health plan	Exploratory study	Focus group discussions in villages to establish their needs Analysis of existing records & annual reports Interviews with health staff about needs & resources Observation of equipment available in clinics

#### TASK 4 – Match variables/indicators with data collection techniques

Complete the following table. Choose the best data collection technique(s) to use for each research variable/indicator identified for the study about TB referred to earlier in the module. Include your reasons for choosing particular techniques to obtain specific kinds of data.

Variable/indicator	Data collection technique	Rationale
Defaulter rate		
Comparison of Defaulter Rates according to socio-economic status		
Nurses' behaviour towards TB patients		
Effectiveness of TB treatment		
TB defaulters' perception of quality of service		

#### Feedback

Variable/indicator	Data collection technique	Rationale
Defaulter rate	Record review	Easy way to collect factual quantitative data
Comparison of Defaulter Rates according to socio-economic status	Record review	Records often contain factual socio-economic data on defaulters
Nurses' behaviour towards TB patients	Observations Interviews	Attitudes can be observed or ascertained through careful interviewing
Effectiveness of TB treatment	Record review Questionnaire	Factual data can be obtained from records and questionnaires
TB defaulters' perception of quality of service	Interviews Focus group discussion	Qualitative attitudinal data requires in-depth discussion/interview

#### TASK 5 – Choose suitable data collection techniques for your assignment

For each of the variables or indicators that you have identified for your assignment protocol, write down a suitable data collection technique that could be used.

## 5. MAKE A PLAN FOR DATA COLLECTION

We have now completed an important part of the protocol in which we have defined:

- the information we want to collect to answer the research questions implied in our objectives (i.e. the variables and indicators)
- the study design and data collection method we will use to collect this information

- the data collection techniques we will use
- how we will collect our sample and how many subjects we will include in our study

We are now ready to start planning the fieldwork and how we will collect the data we need.

### **TASK 6 – Make a plan for data collection**

**READING:** Varkevisser, C. et al. (1991). Module 12. In *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 224 - 231. See pp 173 – 182 in the Reader.

Complete the task on p.231 individually, in terms of your assignment protocol. Keep these notes for a later session when you devise your workplan.

## **6. SUMMARY**

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In this study session you summarised the main advantages and disadvantages of using specific data collection techniques to collect different kinds of data. You gained an insight into how quantitative and qualitative methods can successfully complement each other in studies. You also matched study designs and data collection methods and techniques with study questions and variables. Finally, you used this information to make a plan for data collection for the assignment protocol.

In the next study session, we look at the final element in Stage 4 in developing a protocol – how to analyse the quantitative data that we collect in our research.

# Unit 4 - Session 2

## Analysing Quantitative Data

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### Introduction

At the end of the previous study session you made a plan for data collection. In this study session you tackle the final element in Stage 4 of developing a protocol – making a plan for data processing and analysis. In this study session we focus on analysing quantitative data.

<i>What additional data do we need to reach our research objectives?</i>	4. Research Methodology	• <i>Plan for data processing and analysis</i>
How are we going to collect this information?		

### Contents

1. Learning Outcomes of this Session
2. Readings
3. Process Data
4. Design a Master Sheet
5. Analyse Quantitative Data
6. Summary
7. References

## 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study session, you should be able to:	
<b>Public Health Content</b> <ul style="list-style-type: none"><li>• Process data (sort, code, design master sheets).</li><li>• Decide how to analyse data, based on study objectives and variables.</li><li>• Compile summary statistics using one-way and two-way tables and graphs.</li><li>• Prepare a plan for the processing and analysis of quantitative data for a research protocol.</li></ul>	<b>Academic Learning Content</b> <ul style="list-style-type: none"><li>• Categorise information.</li><li>• Synthesise information, summarise and present it in different ways.</li><li>• Draw graphs and tables.</li></ul>

### ASSIGNMENT

By the end of the session, you should have more notes for the assignment protocol.

## 2. READINGS

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Author/s	Publication details	Page numbers in Reader
Varkevisser, C. et al.	(1991). Designing and Conducting Health Systems Research Projects. <i>WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 240 - 244.</i>	<b>183-190</b>
Vaughan, J. P. & Morrow, R. H.	(1989). <i>Ch 9 - Record Forms and Coding. In Epidemiology for Health Managers. Geneva: WHO Publications: 93 - 98.</i>	<b>199 - 204</b>

## 3. PROCESS DATA

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Planning beforehand how you will process and analyse your data ensures that you only collect data that is needed to achieve your objectives. This activity guides you in planning how to

process the data that you collect in your study. We start by brainstorming what we would do with the raw data we collect and then clarifying the terms 'processing' and 'analysing' data.

### TASK 1 – Brainstorm what to do with raw data

1. Imagine you have just completed a cross-sectional survey looking at the health care practices of a sample of 200 people, comprising professionals, unskilled workers and unemployed people. A huge pile of completed questionnaires is sitting in front of you on your desk. This is your raw or unprocessed data. What is the first thing you would want to do with these questionnaires? What else would you want to do with them? List a few initial procedures or tasks that you might perform on these questionnaires before you examine in detail the actual responses to each question.
2. You are now ready to read the questionnaires in detail. How would you set about manually recording 200 responses to the 20 questions in the questionnaire? Try noting down a way of doing this.

### Feedback

The first thing we would probably want to do with this pile of questionnaires is to count them.

Then we would probably want to:

- check that all the questionnaires have been completed in full and correctly, and remove any incomplete or incorrect ones and deal with these separately
- sort them into smaller piles according to the target populations we have identified: professionals, unskilled, the unemployed
- think about whether we are going to go through the questionnaires and manually count and record the different responses to questions, or put this information into a computer

We would probably start by listing each question number separately on a piece of paper. We might then decide how to group the responses into general categories, such as Yes/No/Don't know or Male/female etc. We would then list these categories under each question. Then, as we read the responses we would record them under the appropriate categories for each question. Our record might look something like this:

<i>Respondent number</i>	<i>Q1: Gender</i>		<i>Q2: Health awareness</i>		
	<i>M</i>	<i>F</i>	<i>Yes</i>	<i>No</i>	<i>Don't know</i>
<i>1</i>					
<i>2</i>					
<i>3</i>					

### TASK 2 – Clarify key terms

In research, we describe what we do with our raw data in terms of two main stages: 'processing' and then 'analysing' data. The previous task described in a simple way, how we process data. Think about the meaning of the verbs to 'process' and to 'analyse' data. What happens at each of these stages? How are they linked and why do we process data before we analyse it?



## Feedback

To process data means to perform certain operations on the data in order to get the information we want from it. It is a procedure for preparing and organising data so that it can then be analysed. Analysing data means] to examine it in detail, to look at its components or essential features. Usually we like to see how these are related or how they compare with each other in terms of actual tasks or procedures:

Processing data usually involves:

- sorting data
- performing quality control
- categorising data
- coding data, using symbols
- summarising data on a master sheet

NB Categorising and coding data are often described simply as 'coding'.

Analysing data usually involves:

- transferring data into tables (simple or two-way tabulation)
- producing summary statistics (calculating total numbers, percentages etc.)

The following extract about tallying and sorting data is from Vaughan and Morrow, 1989, p.100-101.

### 3.1 Tallying and Sorting Data

**Hand-tallying** involves counting the number of times a particular category of information appears in all the record forms. If the data have not been pre-coded, all the possible answers must first be listed. For example, when processing data on the symptoms reported for a particular disease, first list all the possible symptoms and then go through all the record forms. As a particular symptom is encountered, count it or record it by making a vertical mark against that particular symptom on the tally sheet thus:

*Figure: Example of a tally sheet*

<i>Symptoms</i>	<i>Tally</i>	<i>Total</i>
Nausea	//	2
Diarrhoea	//// //	7
Constipation	//// //// /	11
Arthralgia	//// /	6

For easy counting, every fifth mark is drawn diagonally across the preceding four marks to produce the notation (//), which indicates a group of five items. In the example just given, we can quite readily see the totals for each symptom.

When the number of forms to be analysed is larger than about 100, tallying becomes prone to error, often as a result of fatigue on the part of the person doing it. Common errors in tallying include the misclassification of an item, e.g. "nausea" when it should be diarrhoea; double-counting an item or missing one altogether. The risk of errors is higher when tallying for a two-way tabulation, as in Figure 10.2:

Figure 10.2: Hand-tallying for a two-way table, showing the age and birth order of children

Age (years)	Birth order of child				Total
	1	2	3	4	
0-4	////	//// /		///	14
5-9	/		//// //	///	11
10-14	/		//		3
15-19	///	//	//	//	10
20-24	////////	///	//	///	18
Total	20	11	11	14	56

**Hand-sorting** is similar to tallying in that counts are made of specific items of information as they appear on the record form. In hand-sorting, the first step is to decide on the different levels and then to sort all the record forms according to the item of information and count the total in each pile. The totals of all the piles should add up to the total number of forms being analysed.

Like tallying, this procedure is susceptible to errors. However, unlike tallying, errors arising from misclassification can be more easily checked and rectified. For example, if in checking the pile for primary level, we come across a secondary level form, all we need to do is to transfer it to the "secondary" pile. Hand-sorting can be a tedious procedure, particularly if the sample size is over 100 individuals.

### TASK 3 - Categorise data

Read as far as 'Data Master Sheet'.

**READING:** Varkevisser, C. et al. (1991). *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 240 - 244. See pp 183 - 190 in the Reader.

1. In a study looking at the satisfaction of patients with clinic services, what are the different categories we could use to help sort the data? For instance, we might be interested in the differences between males and females and so use these two categories. Can you think of any other categories for this study?

### Feedback

There are many ways in which the data could be sorted, depending on the objectives of the study and the questions asked. Here are some suggestions:

- Male and female
- Different age groups
- Patients with different conditions e.g. diabetic patients or those with minor illnesses
- People who have seen different service providers e.g. those who have seen a nurse and those who have seen a doctor

## TASK 4 – Identify categories for sorting data

**READING:** Vaughan, J. P. & Morrow, R. H. (1989). Ch 9 - Record Forms and Coding. In *Epidemiology for Health Managers*. Geneva: WHO Publications: 93 - 98. See pp 199 - 204 in the Reader.

1. The following survey questions aim to find out about infant and young child feeding practices. What different categories or codes could be used to cover the range of responses to each of the questions? Explain your choice of categories for the first and last questions.
  - What is the age of your youngest child?
  - What is the sex of the child?
  - Do you breastfeed your youngest child?
  - At what age were semi-solids introduced to your youngest child?

### Feedback

2. The following categories could be used:
  - Age – Either as a continuous variable with no categories or you could devise some categories as follows: 0-6 months, 7-12 months, 13-18 months, >18 months
  - Sex – Male or Female
  - Breastfeeding child – Yes, No, Sometimes?? Don't Know
  - Age when solids introduced – Either as a continuous variable or the following categories: 2-3month, 4-5months, 6-7months >7months and 'don't know'

## 4. DESIGN A MASTER SHEET

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This activity introduces the last procedure in processing data – summarising data in a master sheet.

### TASK 5 – Design a master sheet

Read about data master sheets:

**READING:** Varkevisser, C. et al. (1991). *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 244 - 245. See 191 - 196 in the Reader.

1. For the four questions asked earlier and repeated below, design a master sheet like the one in the reading.
  - What is the age of your youngest child?
  - What is the sex of the child?
  - Do you breastfeed your youngest child?
  - At what age were solids introduced to your youngest child?

## Feedback

Respondent number	Q1: Age in months				Q2: Sex		Q3: Breastfed			Q4: Age in months when solids introduced
	0-6	7-12	13-18	>18	M	F	Yes	No	Don't know	
1										
2										
3										
Etc.										
Total										

After designing the master sheet you are now ready to analyse the data.

## 5. ANALYSE QUANTITATIVE DATA

This activity guides you in analysing quantitative data.

Remember that in quantitative data analysis you are interested in the frequencies and relationships between the variables and indicators that you have identified when designing the study. To do this we can use the master sheets to draw up different types of tables or simple tabulation such as:

- two-way tabulation
- summary statistics

The following text comes from Varkevisser, C. et al., 1991, p.248-249.

### DATA ANALYSIS

#### Frequency counts

From the data master sheets, simple tables can be made with **frequency counts** for each variable. A frequency count is an enumeration of how often a certain measurement or a certain answer to a specific question occurs.

**For example,**

Smokers	63
Non-smokers	74
Total	137

If numbers are large enough it is better to calculate the frequency distribution in percentages (**relative frequency**). This makes it easier to compare groups than when only absolute numbers are given. In other words, percentages standardize the data.

A PERCENTAGE is the number of units in the sample with a certain characteristic, divided by the total number of units in the sample and multiplied by 100.

In the above example the calculation of the percentage answers the question: If 1 had asked 100

people who had an episode of coughing if they smoke cigarettes, how many would have answered "yes"? The percentage of people answering "yes" would be:  $\frac{63}{137} \times 100 = 46\%$ .

A **frequency table** such as the following could then be presented.

**Table: Numbers of smokers and non-smokers in the sample.**

Category	Frequency*	Relative frequency
Smokers	63	46%
Non-smokers	74	54%
Total	137	100%

\*Missing data: 3.

Note:

Sometimes data are missing due to non-response or (in oral interviews) non-recording by the interviewer. Usually you do not use missing data in the calculation of percentages. However, the number of missing data is a useful indication of the quality of your data collection and, therefore, this number should be mentioned, for example as a note to your table (see table 13.2, for example).

"Don't know" is not to be taken as a non-response. If applicable, a category "don't know" should appear in the data master sheet and in the frequency table.

It is usually necessary to summarize the data from numerical variables by dividing them into categories. This process includes the following steps:

- 1 Inspect all the figures: What is their range? (The range is the difference between the largest and the smallest measurement.)
- 2 Divide the range in three to five categories. You can either aim at having a reasonable number in each category (e.g., 0-2 km, 3-4 km, 5-9 km, 10+ km for home-clinic distance) or you can define the categories in such a way that they all start with round numbers (e.g. 20-29 years, 30-39 years, 40-49 years, etc.).
- 3 Construct a table indicating how data are grouped and count the number of observations in each group.

When inspecting frequency distributions and ranges, you may still discover that certain data are incorrect. In this case, appropriate action must be taken, as described in section III (quality-control checks).

## TASK 6 - Draw one-way and two-way tables

Below is a completed master sheet for the survey questions about infant and young child feeding practices discussed earlier. Use the master sheet to draw two one-way tables that can be calculated. Then draw two two-way tables that can be calculated. Do not yet fill in the data for any of the tables.

Respondent number	Q1: Age in months				Q2: Sex		Q3: Breastfed			Age in months when solids introduced
	0-6	7-12	13-18	>18	M	F	Yes	No	Don't know	
1	X				x		x			3
2	X					x		X		4
3		X				x	x			4
4			X			x	x			4

5			X			x			X	2
6		X				x		X		1
7		x				x		X		3
8			X			x		X		2
9		X				x			X	5
10	X					x	x			6
11	X						x	X		7
12	X						x		X	2
13		X				x		X		1
14				X		x	x			4
15			X			x			X	
16				X		x			X	
17		X				x		X		6
18	X						x	x		3
19		X				x		x		4
20	X						x		X	
Total							8	6	6	

## Feedback

The following one-way tables would be appropriate for the data.

Age Group (months)	Number
0-6	
7-12	
13-18	
>18	

Breastfeeding	Number
Yes	
No	
Don't Know	

The two-way tables are:

Age Group (months)	Male	Female	Total
0-6			
7-12			
13-18			
>18			

Breastfeeding	Male	Female	Total
Yes			
No			
Don't Know			

## TASK 7 - Tabulate the data

1. Complete each of the tables from the last task using the data in the data capture sheet above.
2. How else could you display this data in a visually more effective way, to show the relationship between variables?

## Feedback

The data from these tables can be shown in graphs or other kinds of tables

## TASK 8 – Plan for the analysis of your data

Look through the variables you have identified for your assignment protocol. Decide which of them are suitable for quantitative analysis. Outline a master sheet and some tables with just the headings (dummy tables) for the quantitative variables.

## 6. SUMMARY

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In this study session we guided you through the main procedures for processing and then analysing quantitative data. You then drew up a plan of how you would tackle this in your HSR study for the assignment.

The next study session looks at how we process and analyse qualitative data as well as how to draw up a workplan and budget for a protocol.

## 7. REFERENCES

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- Vaughan, J. P. & Morrow, R. H. (1989). *Epidemiology for Health Managers*. Geneva: WHO Publications:100-101.
- Varkevisser, C. et al. (1991). *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO: 248 - 249.

# Unit 4 - Session 3

## Analysing Qualitative Data

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### Introduction

In this study session we complete the last element of Stage 4 - analysing qualitative data.

<i>What additional data do we need to reach our research objectives?</i> How are we going to collect the data?	4. Research Methodology	• <i>Plan for data processing and analysis</i>
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### Contents

1. Learning Outcomes of this Session
2. Code and Interpret Qualitative Data
3. Summary
4. References

## 1. LEARNING OUTCOMES OF THIS SESSION

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By the end of this study session, you should be able to:	
<b>Public Health Content</b> <ul style="list-style-type: none"><li>• Analyse, code and interpret qualitative data.</li></ul>	<b>Academic Learning Content</b> <ul style="list-style-type: none"><li>• Analyse and classify information.</li><li>• Interpret information and draw conclusions.</li></ul>

### ASSIGNMENT

By the end of the session, you should have more notes for the assignment protocol.



## 2. CODE AND INTERPRET QUALITATIVE DATA

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*Large amounts of qualitative data are often obtained from interviews and open-ended questions in questionnaires or surveys. What do we do with this data? How do we make sense of it? How do we summarise, interpret, draw conclusions and make recommendations based on this data?*

*This activity introduces and provides practice in analysing, coding and interpreting qualitative data. Part of the activity has been adapted from Varkevisser, C. et al. Designing and Conducting Health Systems Research Projects, WHO and International Development Research Centre, 1991, Vol. 2, Part 1, p. 252-253.*

### **Analysing and coding qualitative data**

*Because qualitative research is more concerned with understanding and clarifying issues, statistical methods of analysis are not usually very appropriate. This is not to say that analysis of qualitative data is any less scientific or rigorous. Quite often, analysis of qualitative data requires much more thought and time than quantitative data.*

*Commonly requested data in open-ended questions include:*

- *opinions of respondents on a certain issue;*
- *reasons for a certain behaviour; and*
- *description of certain procedures, practices, or beliefs/knowledge with which the researcher is not familiar.*

*Note that these data may also be obtained from questions asking for comments, following a closed question. This qualitative data can be analyzed in three steps:*

#### **Step 1:**

*List the **data** for each question. Take care to include the source of each item you list. For instance, in the case of questionnaires you can use the questionnaire number, so that you can place it in the original context if required.*

*How you categorize qualitative data depends on the type of data requested. In the case of data on opinions and reasons, there may be a limited number of possibilities. **Opinions** may range from (very) positive, neutral, to (very) negative. Data on **reasons** may require different categories depending on the topic and the purpose of your question.*

#### **Step 2:**

*To establish your categories, first read through the whole list of answers. Then start giving codes (A, B, C, for example) for the answers that you think belong together.*

#### **Step 3:**

*Next try to find a label for each category. After some shuffling you usually end up with 4 to 6 categories. You should enter these categories on the questionnaire and on the master sheet.*

*Note again that you may include a category "others," but that it should be as small as possible, preferably containing less than 5% of the total answers. If you categorize your responses to open-ended questions in this way you are then able to:*

- *report the percentage of respondents giving reasons or opinions that fall in each category; and*
- *analyze the content of each answer given in particular categories, to plan what actions should be taken (e.g., for health education).*

*Questions that ask for descriptions of procedures, practices, beliefs/knowledge are usually not meant to be quantified, although you may quantify certain aspects of them. The answers rather*

*form part of a jigsaw puzzle that you have to put together carefully. When you are analysing questions of this type you may find it useful to list and categorise responses.*

### **TASK 1 – Analyse and code qualitative data**

In a survey about smoking, people were asked the question “*Why do you smoke?*” Listed below (a. – s.) are some of the answers they gave. We now need to categorise these answers to develop a post-coding system, to help with analysing and interpreting the data. Follow steps 2-3 described above. Begin by reading the data and grouping similar responses together into roughly 4-6 groups. Once you have these groups, give each one a label that summarises what the responses within each group have in common.

- a. I have tried to give up so many times, but I have been unable to.
- b. I like the feel of the cigarette in my hand.
- c. Because it gives me pleasure.
- d. I do not see why I should give up smoking.
- e. Because I like to blow the smoke through my mouth and nose.
- f. Because I feel confident and in charge when I am smoking.
- g. It helps me to think better.
- h. I like the image that comes with smoking.
- i. I feel that people respect me more as a smoker.
- j. All my friends are smokers.
- k. It helps to make people more friendly and comfortable, especially when offering a cigarette.
- l. Why not?!
- m. Smoking makes me feel like a man.
- n. I like to blow smoke rings.
- o. I like the taste.
- p. It is too difficult to give up.
- q. It helps me to relax.
- r. It helps me to reduce the pressure and tension at work.
- s. My wife likes a man who smokes.

### **Feedback**

The data can be categorised in different ways. Here is an example with 6 categories.

Pleasure

- b. I like the feel of the cigarette in my hand
- c. Because it gives me pleasure
- e. Because I like to blow the smoke through my mouth and nose
- n. I like to blow smoke rings
- o. I like the taste

Being sociable

- j. All my friends are smokers

k. It helps to make people more friendly and comfortable, especially when offering a cigarette

Cannot give up/addiction

- a. I have tried to give up so many times but I have been unable to
- p. It is too difficult to give up

Status/confidence/respect

- f. Because I feel confident and in charge when I am smoking
- h. I like the image that comes with smoking
- i. I feel that people respect me more as a smoker
- m. Smoking makes me feel like a man
- s. My wife likes a man who smokes

Reduction of tension

- g. It helps me to think better
- q. It helps me to relax
- r. It helps me to reduce the pressure and tension at work

Defiance

- d. I do not see why I should give up smoking
- l. Why not?!!

*Having analysed and coded the data, we are now ready to interpret the data, draw conclusions and make recommendations for action.*

## **TASK 2 – Interpret the data**

1. Look back at the six categories of data listed above. What do many of the responses suggest about how people view the activity of smoking and why they choose to smoke? What general statements can be made about people's reasons for smoking?
2. How easy or difficult would it be to influence each category of respondents to change their smoking habit? What recommendations for action to change people's smoking habit would you make for each category? Explain your answers.

## **Feedback**

1. For most people, smoking seems to be very much a social activity, as many of the responses were concerned with status and being sociable.
2. In terms of possibilities for influencing the respondents to change their smoking habit, categories 1 and 2 might be the easiest. Category 1 (pleasure) would be easy because there are many other things in life that give pleasure and are not harmful to one's health. Category 2 (being sociable) would also be fairly easy because there are many other ways of being sociable that are less dangerous. Category 3 (addiction) consists of people who are already motivated to stop smoking. With extra encouragement they might succeed. Respondents in category 4 (status/ confidence/ respect) apparently need smoking to feel more secure. They might be more difficult to convince to give up. We would perhaps have to find out why they are insecure and in what other ways they could deal with their insecurity. This might differ from person to person. Those in category 5 (reduced tension) may have other personal problems and so will probably need repeated group or individual counselling. Category 6 (defiance) is defensive and, therefore, likely to be the most difficult to approach.

### 3. SUMMARY

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*This session took you through the process of coding and interpreting qualitative data.*

*We now move to the workplan and budget in a protocol.*

### 4. REFERENCES

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- Varkevisser, C. et al. (1991). *Designing and Conducting Health Systems Research Projects*. WHO and International Development Research Centre, 2, Part 1. Geneva: WHO.

# Unit 4 - Session 4

## Producing a Workplan and Budget

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### Introduction

In this study session, we move on to stages 5-7, in completing a research protocol, as we draw up a workplan and budget and put together the final protocol.

<i>Who will do what and when?</i>	5. Workplan	<ul style="list-style-type: none"><li>• <i>Personnel</i></li><li>• <i>Timetable</i></li></ul>
What resources do we need to carry out this study? What resources do we have?	6. Budget	<ul style="list-style-type: none"><li>• <i>Material support and equipment</i></li><li>• <i>Money</i></li></ul>
How will we present our proposal to relevant authorities and funders?	7. Proposal Summary	

### Contents

1. Learning Outcomes of this Session
2. Draw up a Workplan and Budget
3. Draft a Budget
4. Summary
5. References

## 1. LEARNING OUTCOMES OF THIS SESSION

By the end of this study session, you should be able to:	
<b>Public Health Content</b> <ul style="list-style-type: none"><li>Analyse, code and interpret qualitative data.</li><li>Draw up a workplan.</li><li>Draw up a budget framework.</li></ul>	<b>Academic Learning Content</b> <ul style="list-style-type: none"><li>Analyse and classify information.</li><li>Interpret information and draw conclusions.</li></ul>

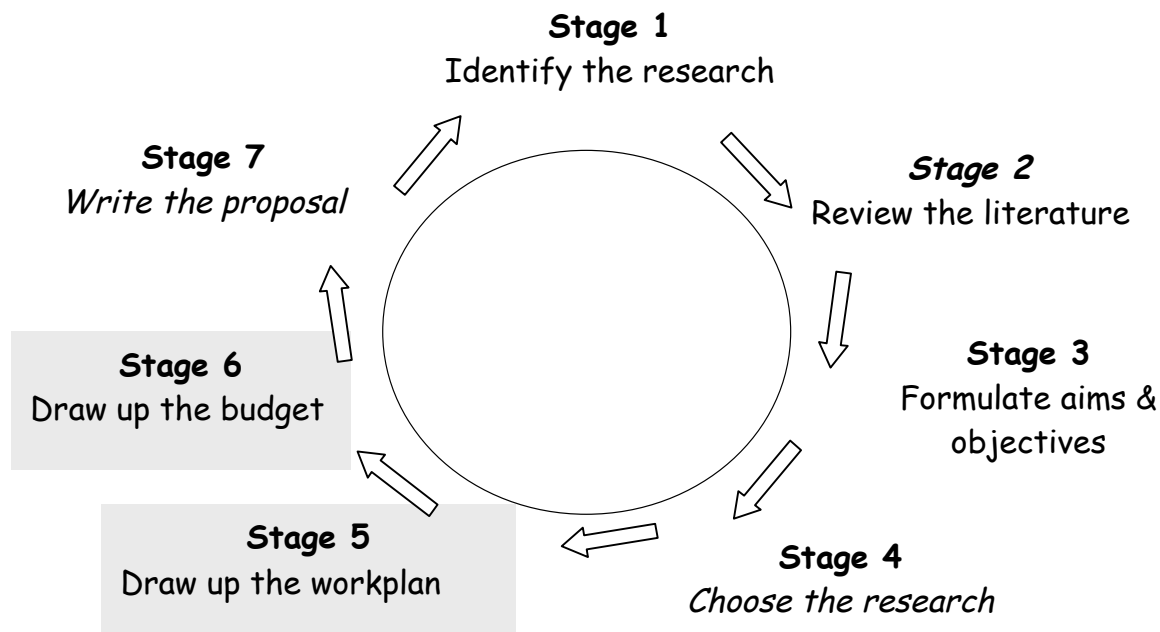
### ASSIGNMENT

By the end of the session, you should have more notes for the assignment protocol.

## 2. DRAW UP A WORKPLAN

This activity takes you through stages 5 and 6 in developing a protocol: drawing up a workplan and budget.

### *Developing a Protocol*



This section guides you in drawing up a workplan, followed by a budget.

## Workplan

A workplan is a schedule, chart or graph that summarises in a clear fashion, various components of a research project and how they fit together. It usually includes the tasks that are going to be performed, when the tasks will be performed, and who will perform the tasks.

### TASK 1 – Draft a workplan

1. Look back at the sample protocol: Assessing Drug Utilisation in Mauritius, in Unit 2 Session 1. In particular look at the workplan that they have drawn up and what it consists of.
2. Use the sample workplan to draw up a draft workplan for the assignment protocol. Note that you are only expected to outline the main activities to perform. Look back at the list of tasks you prepared for your plan for data collection in Unit 4, Session 1. Review and revise this plan as necessary. Add to the list and number other tasks you must complete that are not related to data collection, such as:
  - clearance of proposal
  - data analysis and report writing;
  - feedback to authorities and target group.
3. Review the staffing for the different tasks, taking into account your experience during the pre-test. Consider:
  - Who will carry out which tasks;
  - The amount of time needed per research unit (interview/observation/record) including travel time; and
  - The number of staff needed to complete each task in the planned period of time.

Make revisions, if required. Complete the staffing for the tasks you have just added.

Consider whether the use of short-term consultants is necessary for certain tasks. Always consider using local consultants. If consultants are used, involve them in the planning stage of the project so you can incorporate any useful suggestions they may have concerning the design of the methodology.

3. Review your tentative staffing plan by asking yourself:
  - Are the types of personnel and levels of expertise you require likely to be available for the project? For example, is there a sufficient range of disciplines available including, where appropriate, personnel from outside the health field?
  - If special staff have to be recruited or reassigned from other ministries or agencies, what regulations or procedures will have to be followed?
  - Is the staffing plan realistic, taking into account the project budget that is likely to be available?
  - To what extent can community members, traditional healers, students, or other non-professionals be involved in the study?
  - What training would the research assistants or data collectors require? How long would the training last? Who would do the training? How do you intend to supervise the assistants and data collectors? Review what you have tentatively planned earlier and revise it as necessary.

### 3. DRAFT A BUDGET

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In this section you will draw up a budget for your project.

#### TASK 2 – Think about budgeting

1. What is a budget? What information does it contain?
2. Why do we need a budget?
3. When should we start to prepare a budget?

#### Feedback

1. A budget is a plan of resources and expenditure required to carry out a particular study or set of activities. It usually contains lists of items needed, how many are required, a breakdown of what each item costs and a grand total.
2. A budget indicates in advance what a study will cost so that we can ensure that the funding and resources are available for the study to be conducted efficiently and effectively. A budget also helps to identify which resources are available locally and which additional resources may be required. The process of budget design also encourages us to consider aspects of the work plan we may not have thought about before. It also serves as a useful reminder of activities planned, as the research gets underway.
3. A complete budget is normally not prepared until the final stage of project planning. However, cost is usually a major limiting factor and, therefore must always be kept in mind during planning, so that your proposal does not have an unrealistically high cost. Remember that both ministries and donor agencies usually set limits for research project budgets. The use of locally available resources increases the feasibility of the project from a financial point of view.

It is convenient to use the work plan as a starting point for budgeting. For each activity in the work plan we need to specify what resources are required. For each resource we need to determine **the unit cost** and the **total cost**.

We now use a sample study on Family Planning to draw up a budget framework, similar to the one you could use for the assignment protocol. This has been adapted from Wolf JA, Suttentfield LJ & Binzen SC. (1991). *The Family Planning Managers Handbook*. Kumarian Press.

#### TASK 3 – Draft a budget framework

##### Family Planning Study

1. The purpose of this Family Planning study is to determine the utilization of family planning methods in a certain district. In the fieldwork component of the work plan, it is specified that a total of 6 people will be involved. Five interviewers will each visit 20 households in clusters of 4 over a time period of 5 working days. One supervisor will accompany a different interviewer each day, using a car. The other 4 interviewers will use motor cycles. The clusters of households are scattered over the district but are on average 50 kilometres from the district hospital from where the study is conducted. Interviewers are paid R20 per day and supervisors R40 per day. The rate paid per kilometre is 10c for motor cycles and 40c for a car. Each interviewer will need 20 questionnaires plus 5 extra copies and two pens. Pens cost R1 each. Questionnaires cost 20c each.



2. Complete the budget framework below for the field work component of the work plan.

- In column 2, list the main items for costing that fall under the three main budget categories of personnel, transport and supplies.
- In column 3 (unit cost), fill in the cost per unit for each item in column 2 (per diem, cost of petrol per km).
- In column 4 (multiplying factor), fill in the number of items required, the number of days etc. Add approximately 20% extra for the supplies needed.
- In the last column, fill in the total cost for each item.
- Add up the total costs for each budget category and fill this in the table.
- Finally, add up the total costs for the three budget categories and fill in the grand total.

### Costs involved in fieldwork for a family-planning study

Budget category	Items	Unit cost	Multiplying factor	Cost
1. Personnel				
				<b>Total</b>
<b>Personnel costs</b>				
2. Transport				
				<b>Total</b>
<b>Transport costs</b>				
3. Supplies	Pens			
				<b>Total</b>
<b>Supplies costs</b>				
<b>TOTAL</b>				<b>GRAND</b>

### Feedback

*Costs involved in fieldwork for a family-planning study*

<b>Budget category</b>	<b>Items</b>	<b>Unit cost</b>	<b>Multiplying factor</b>	<b>Cost</b>
1. Personnel	Interviewers Supervisor	R20 per diem	5 X R20 X 5days 1 X R40 X 5 days	R 500 R 200
Total Personnel costs				R 700
2. Transport	Motor cycle Car	10c pk 40c pk	4 X 5days X 100Kms	R200 R 50
Total Transport costs				R250
3. Supplies	Pens Questionnaires	R1 20c	10 X R1 120 X 20c	R 10 R 24
Total Supplies costs				R 34
<b>GRAND TOTAL</b>				<b>R 984</b>

#### TASK 4 – Draft a budget and the assignment protocol

1. Draw up a draft budget for the assignment protocol. Note that you are only expected to outline the main budget categories and items. It is not necessary to submit a full budget with costs.
2. With your workplan and budget you are now ready to put together the summary proposal for the assignment, using notes you have made throughout this module. This is the final stage in developing a protocol. The main question to ask yourself is how to present the proposal to potential funders and authorities in a clear, straightforward and convincing way. Check that you have described each of the stages below.

#### Stages in Developing an HSR Protocol

QUESTIONS TO ASK	STAGE	ELEMENT
What is the problem? Why should we study it?	8. Statement of the Research Problem	<ul style="list-style-type: none"><li>• <i>Identify the problem</i></li><li>• <i>Prioritise the problem</i></li><li>• <i>Analyse the problem</i></li></ul>
What information is already available?	9. Literature Review	<ul style="list-style-type: none"><li>• <i>Review the literature and other available information</i></li></ul>
Why do we want to carry out the research? What do we hope to achieve?	10. Formulation of Aims & Objectives	<ul style="list-style-type: none"><li>• <i>Set aims and objectives</i></li></ul>
What additional data do we need to reach our research objectives? How are we going to collect this information?	11. Research Methodology	<ul style="list-style-type: none"><li>• <i>Variables and indicators</i></li><li>• <i>Study design (types and approaches)</i></li><li>• <i>Data collection methods</i><ul style="list-style-type: none"><li>- <i>Record reviews</i></li><li>- <i>Questionnaires &amp; sampling</i></li><li>- <i>Observations</i></li><li>- <i>Interviews</i></li><li>- <i>Focus group discussions</i></li></ul></li><li>• <i>Plan for data collection</i></li><li>• <i>Plan for data processing and analysis</i></li></ul>

<i>Who will do what and when?</i>	12. Workplan	<ul style="list-style-type: none"> <li>• <i>Personnel</i></li> <li>• <i>Timetable</i></li> </ul>
What resources do we need to carry out this study? What resources do we have?	13. Budget	<ul style="list-style-type: none"> <li>• <i>Material support and equipment</i></li> <li>• <i>Money</i></li> </ul>
How will we present our proposal to relevant authorities and funders?	14. Proposal Summary	

## 4. SUMMARY

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The first part of this study session provided guidance and practice in how to analyse, code and interpret qualitative data. The second part of the session looked at how to draft a workplan and budget and put together the protocol summary.

## 5. REFERENCES

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- Wolf JA, Suttentfield LJ & Binzen SC. (1991). *The Family Planning Managers Handbook*. Kumarian Press.

## EVALUATION FORM FOR *HEALTH SYSTEMS RESEARCH I* (2006)

*Please would you be so kind as to fill in the form below giving us your comments on the module. Please send it back to The Student Administrator with your assignment. Thank you.*

1. In general, how do you feel about the module?

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2. Has your thinking changed in any way with regard to health provision?

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3. Were there any sessions or readings which you found difficult?

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4. Are there any sections of the module which could be better explained? Be as specific as possible.

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5. What percentage of the readings were you able to cover in the allocated time?

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6. Could the structure of the sessions or the reader be changed in any way to make them more user friendly?

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7. How could you use your learning from this module in your future research or work?

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8. Are there any improvements you could suggest to the assignment?

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Thank you very much.