

DATA COLLECTION TECHNIQUES

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OBJECTIVES

At the end of this session you should be able to:

- ✘ **Describe** various data collection techniques and state their uses and limitations.
- ✘ Advantageously **use a combination** of different data collection techniques.
- ✘ **Identify** various sources of bias in data collection and ways of preventing bias.
- ✘ **Identify** ethical issues involved in the implementation of research and ways of ensuring that your research informants or subjects are not harmed by your study.

OVERVIEW OF DATA COLLECTION TECHNIQUES

- ✘ Data-collection techniques allow us to **systematically** collect information about our objects of study (people, objects, phenomena) and about the settings in which they occur.
- ✘ In the collection of data we have to be systematic. If data are collected haphazardly, it will be difficult to answer our research questions in a conclusive way.

VARIOUS DATA COLLECTION TECHNIQUES CAN BE USED

- ✘ Using available information
- ✘ Observing
- ✘ Interviewing (face-to-face)
- ✘ Administering written questionnaires
- ✘ Focus group discussions

USING AVAILABLE INFORMATION

Usually there is a large amount of data that has already been collected by others, although it may not necessarily have been analyzed or published. Locating these sources and retrieving the information is a good starting point in any data collection effort.

OBSERVING

OBSERVATION is a technique that involves systematically selecting, watching and recording behavior and characteristics of living beings, objects or phenomena.

Observation of human behavior is a much-used data collection technique. It can be undertaken in different ways:

- ✘ **Participant observation:** The observer takes part in the situation he or she observes. (For example, a doctor hospitalized with a broken hip, who now observes hospital procedures ‘from within’.)
- ✘ **Non-participant observation:** The observer watches the situation, openly or concealed, but does not participate.

INTERVIEWING

- ✘ An INTERVIEW is a data-collection technique that involves oral questioning of respondents, either individually or as a group.
- ✘ Answers to the questions posed during an interview can be recorded by writing them down (either during the interview itself or immediately after the interview) or by tape-recording the responses, or by a combination of both.
- ✘ Interviews can be conducted with varying degrees of flexibility. The two extremes, high and low degree of flexibility, are described below:
 - + High degree of flexibility
 - + Low degree of flexibility:

ADMINISTERING WRITTEN QUESTIONNAIRES

A WRITTEN QUESTIONNAIRE (also referred to as self-administered questionnaire) is a data collection tool in which written questions are presented that are to be answered by the respondents in written form.

- ✘ A written questionnaire can be administered in different ways, such as by:
- ✘ Sending questionnaires by mail with clear instructions on how to answer the questions and asking for mailed responses;
- ✘ Gathering all or part of the respondents in one place at one time, giving oral or written instructions, and letting the respondents fill out the questionnaires; or
- ✘ Hand-delivering questionnaires to respondents and collecting them later

FOCUS GROUP DISCUSSIONS (FGD)

A focus group discussion allows a group of 8 - 12 informants to freely discuss a certain subject with the guidance of a facilitator or reporter.

- + **Focus research** and develop relevant research hypotheses by exploring in greater depth the problem to be investigated and its possible causes
- + **Formulate appropriate questions** for more structured, larger scale surveys
- + **Help understand and solve unexpected problems** in interventions
- + **Develop appropriate messages** for health education programmes and later evaluate the messages for clarity
- + **Explore controversial topics**

DATA COLLECTION TECHNIQUES AND TOOLS

Data collection techniques	Data collection tool
Using available information	Checklist; data compilation forms
Observing	Eyes and other senses, pen/paper, watch, , scales. Microscope
Interviewing	Interview guide, checklist, questionnaire, tape recorder
Administering written questionnaires	Questionnaire

ADVANTAGES AND DISADVANTAGES OF VARIOUS DATA COLLECTION TECHNIQUES

Technique	Advantages	Possible constraints
Using available information	<p>Is inexpensive, because data is already there.</p> <p>Permits examination of trends over the past.</p>	<p>Data is not always easily accessible.</p> <p>Ethnical issues concerning confidentiality may arise.</p> <p>Information may be imprecise or incomplete.</p>
Observing	<p>Gives more detailed and context-related information.</p> <p>Permits collection of information on facts not mentioned in an interview,</p> <p>Permits tests of reliability of responses to questionnaire.</p>	<p>Ethnical issues concerning confidentiality or privacy may arise.</p> <p>Observer bias may occur. (Observer may only notice what interests him or she.)</p> <p>The presence of the data collector can influence the situation observed.</p> <p>Thorough training of research assistants is require.</p>
Interviewing	<p>Is suitable for use with both literates and illiterate.</p> <p>Permits clarification of questions.</p> <p>Has higher response rate than written questionnaires.</p>	<p>The presence of the interviewer can influence responses.</p> <p>Reports of events may be less complete than information gained through observations.</p>
Administering written questionnaires	<p>Is less expensive.</p> <p>Permits anonymity and may result in more honest responses.</p> <p>Does not require research assistants.</p> <p>Eliminates bias due to phrasing questions differently with different respondents.</p>	<p>Cannot be used with illiterate respondents.</p> <p>Require some extra training of researches.</p>

BIAS IN INFORMATION COLLECTION

- × Defective instruments
- × Observer bias
- × Effect of the interview on the informant
- × Information bias

DEFECTIVE INSTRUMENTS

Questionnaires with:

- ✘ fixed or closed questions on topics about which little is known (often asking the ‘wrong things’);
- ✘ open-ended questions without guidelines on how to ask (or to answer) them;
- ✘ vaguely phrased questions;
- ✘ ‘leading questions’ that cause the respondent to believe one answer would be preferred over another; or
- ✘ —questions placed in an illogical order.
- ✘ Weighing scales or other measuring equipment that are not standardized .
- ✘ These sources of bias can be prevented by **carefully planning the data collection process** and by **pre-testing the data collection tools**.

OBSERVER BIAS

- ✘ Observer bias can easily occur when conducting observations or utilizing loosely structured group- or individual interviews. There is a risk that the data collector will only see or hear things in which (s)he is interested or will miss information that is critical to the research.
- ✘ **Observation protocols and guidelines for conducting loosely structured interviews** should be prepared, and training and practice should be provided to data collectors in using both these tools. Moreover it is highly recommended that data collectors **work in pairs** when using flexible research techniques and discuss and interpret the data immediately after collecting it. Another possibility - commonly used by anthropologists - is using a tape recorder and transcribing the tape word by word.

EFFECT OF THE INTERVIEW ON THE INFORMANT

- ✘ This is a possible factor in all interview situations. The informant may mistrust the intention of the interview and dodge certain questions or give misleading answers. **For example:** in a survey on alcoholism you ask school children: 'Does your father sometimes get drunk?' Many will probably deny that he does, even if it is true. Such bias can be reduced by adequately introducing the purpose of the study to informants, by phrasing questions on sensitive issues in a positive way, by taking sufficient time for the interview, and by assuring informants that the data collected will be confidential .
- ✘ It is also important to be careful in the selection of interviewers. In a study soliciting the reasons for the low utilization of local health services, for example, one should not ask health workers from the health centers concerned to interview the population. Their use as interviewers would certainly influence the results of the study.

INFORMATION BIAS:

- ✘ Sometimes the information itself has weaknesses. Medical records may have many blanks or be unreadable. This tells something about the quality of the data and has to be recorded. For example, in a TB defaulter study the percentage of defaulters with an incomplete or missing address should be calculated.
- ✘ Another common information bias is due to gaps in people's memory; this is called *memory* or *recall bias*. A mother may not remember all details of her child's last diarrhea episode and of the treatment she gave two or three months afterwards. For such common diseases it is advisable to limit the period of recall, asking, for example, 'Has your child had diarrhea over the past two weeks

ETHICAL CONSIDERATIONS

As we develop our data collection techniques, we need to consider whether our research procedures are likely to cause any physical or emotional harm. Harm may be caused, for example, by:

- ✘ violating informants' right to privacy by posing sensitive questions or by gaining access to records which may contain personal data;
- ✘ observing the behavior of informants without their being aware (concealed observation should therefore always be crosschecked or discussed with other researchers with respect to ethical admissibility);
- ✘ allowing personal information to be made public which informants would want to be kept private, and
- ✘ failing to observe/respect certain cultural values, traditions or taboos valued by your informants.

ETHICAL CONSIDERATIONS...

Several methods for dealing with these issues may be recommended:

- ✘ obtaining **informed** consent before the study or the interview begins;
- ✘ not exploring sensitive issues before a good relationship has been established with the informant;
- ✘ ensuring the confidentiality of the data obtained; and
- ✘ learning enough about the culture of informants to ensure it is respected during the data collection process.
- ✘ If sensitive questions are asked, for example, about family planning or sexual practices, or about opinions of patients on the health services provided, it may be advisable to omit names and addresses from the questionnaires.