

Household, family,
and nutrition research:
writing a proposal

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**HOUSEHOLD, FAMILY, AND NUTRITION RESEARCH:
WRITING A PROPOSAL**

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PREFACE

Students who want to do empirical research for their master's thesis, and Ph.D. candidates who have to submit a research proposal to the University and to their funding agency often approach me with the question of how to go about this. What should be included, what can be left out? What level of detail is required? How do you distinguish a good proposal from a poor one? These same questions also came up during a 'proposal development workshop' in Indonesia, in June 1995. This workshop, in which I participated as a resource person, was sponsored by Family Health International (FHI), an organization based in North Carolina in the United States. Its purpose was to generate good proposals for research projects, to be carried out in the framework of FHI's Women's Studies Project. Some of the materials and ideas used in this paper are derived from this workshop and the preparatory work done by FHI.

As a member of the board of the Neys-Van Hoogstraten Fund (NHF) I have to evaluate proposals and decide on their eligibility for funding, together with other board members. The research projects have to be socio-economic in nature and have to address issues of family nutrition and household budgeting in developing countries in Asia. Many applicants write to NHF to ask for guidelines on writing a proposal. Indeed, it is surprising to see how many proposals sent to NHF lack the most obvious and crucial elements, leading me to conclude that there is a need for a concise guide to the "art" of writing a proposal.

My own field is that of household and family studies. My disciplinary training and background include anthropology, sociology and demography. The kind of research proposals that are the subject of this book have to be

located within these academic traditions. Hence, proposals for experimental research designs or research in laboratory settings will not be discussed. The last chapter of this book, the one about nutrition research, was written by Dr. M. Nubé of the Centre for World Food Studies (SOW-VU) in Amsterdam.

I wish to thank the Neys-Van Hoogstraten Foundation for sharing in the expense of printing this book. Furthermore, I would like to thank fellow board member Elly Leemhuis and colleague Kees de Hoog for their valuable comments on earlier drafts, Robert Wessing for correcting my English, and Gerry van Nieuwenhoven and Riet van de Westeringh for making the manuscript camera-ready.

Anke Niehof

Wageningen, January 1999

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Part I: THE RESEARCH PROPOSAL

1.

INTRODUCTION

Scientific inquiry in the social sciences represents a systematic and open attempt at understanding human society. It is systematic because it proceeds according to certain rules and principles. It is open because the ways in which it is conducted and the insights it yields should be open to public scrutiny, if not by society at large then at least by the national or international academic community. The researcher can be held accountable for his or her course of action and decisions in designing and carrying out the research. For this reason it is still customary at many universities all over the world for a researcher to only rightfully carry the doctor's title or put Ph.D. behind his or her name after a doctoral thesis has been defended before a larger audience.

Preparing a research proposal or a research design prior to carrying out a research project enhances both features of scientific inquiry mentioned above. It contributes to the systematic character of scientific inquiry by specifying as much as possible beforehand which steps will be taken and why. Deviations from the plan, which may always occur in social science research, will then have to be justified. It contributes to the required openness of scientific inquiry, because by writing a research proposal the researcher states what his or her intentions in undertaking the project are. This information is useful to others working in the same field and provides an opportunity for exchange and the discovery of linkages.

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Preparing a research proposal also enhances the cumulative character of social science research, because it compels the researcher to reflect on scientific achievements in the field concerned and to specify the intended contribution of his or her own research to the existing body of knowledge. Social scientists do not pretend to find one ultimate answer that solves all questions. Being able to formulate appropriate questions is a start. Social science research, properly conducted, involves the continual generation of new questions about social life so that our insights about human society and culture both increase and deepen.

In the currently prevailing social science paradigm, social reality is not something to be uncovered or waiting to be found; naïve positivism has long been left behind. Like beauty, reality is in the eye of the beholder, in this case the scientific observer or researcher. However systematic the inquiry and however disciplined the researcher may be, at some point his or her own frame of mind will colour the observations while conclusions are always intertwined with interpretations. A good researcher reflects on these issues beforehand and argues his or her position, so that the research gains in transparency. Within one research project, the answer to some questions may require as accurate as possible a description, in which representativeness is a key issue. Other questions may call for an interpretative approach, which aims at understanding meanings and motives. The research methods chosen should fit the type of questions asked and the kind of answers anticipated.

The research design is the heart of a proposal. It relates to a research project as the foundation of a house to the house built upon it; a house which is built on a poor foundation will collapse. At the same time, a foundation - like a research design - determines the potential and scope of the project (the

house), but not the details and specifics. These will have to be worked out later. For example, in the research proposal the necessity of conducting a survey to answer (some of) the research questions can be argued, but it is not necessary, nor wise or realistic, to specify the sampling frame in detail or to formulate a questionnaire as part of the proposal. These are part of the building, not the foundation. At the same time, the extent to which the researcher is able to go into detail in the research proposal also depends upon the knowledge that the researcher has about the research problem and the research area.

Good research requires both creativity and discipline. This paper is intended to contribute to both. It offers points for reflection, that will hopefully stimulate creativity. It also offers the ingredients for a systematic approach, which will help the researcher to proceed in a disciplined manner. The quality of the research will depend upon these matters, irrespective whether the research is more applied or more theoretical in character.

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2.

THE ELEMENTS OF A RESEARCH PROPOSAL

In this chapter the general structure of a research proposal will be discussed and the elements it consists of will be listed. In the introduction I used both the terms research proposal and research design. There is a difference between these. A research design is the research plan, including the theoretical considerations underlying it. A research proposal is submitted to a funding agency. It includes the research design, but it has to give the agency to which it is submitted additional information, such as a budget and a time table and the *curriculum vitae* of the researcher(s) involved.

The elements of which a research proposal is made up can be listed as shown in the frame on the following page (page 6).

The first four elements form the introductory part of the proposal, which is the subject of the next chapter. The heart of the research proposal is made up of the elements which are printed in italics. Together these elements form the research design. This part will be discussed in detail in chapter four. The chapters five and six will be devoted to the remaining elements. In chapter seven the issue of quantitative versus qualitative methods of research is discussed. Chapter eight provides a summary and pointers. The chapters nine and ten deal with the more specific issues of household surveys and nutrition research respectively.

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1. Title page.
2. Table of contents.
3. Summary.
4. Introduction.
5. *Goals and objectives of the research.*
6. *The conceptual framework.*
7. *Methods of data collection and sampling.*
8. *Research area.*
9. *Data analysis and management.*
10. Relevance of the research.
11. Dissemination and utilization of the results.
12. Time schedule.
13. Budget.
14. References and bibliography.
15. Curriculum vitae of the researcher(s).
16. Appendices (if any).

3.

THE INTRODUCTORY PART OF THE PROPOSAL

This chapter contains a short description of the first four elements of a proposal, which together form the introductory part. The numbers of the elements are given between brackets.

3.1 Title page (1)

The title page should give the title of the research project, the name of the researcher, and the date and place when and where the proposal was written.

3.2 Table of contents (2)

The table of contents should enable the reader to find the various chapters easily.

3.3 Summary (3)

In this part a summarized description should be given of what the research project will be about, briefly but clearly stating what will be done, by whom (researcher or research group) to whom (research population), where (research area), when, and for what purpose (goals and justification). The research problem should be clearly defined. Additionally, something has to be said about the methodology or approach. The summary should be brief (about half a page) and concise.

3.4 Introduction (4)

This part, which may also be called 'Background to the study', has to make clear why this particular topic or research problem was chosen. Sometimes it is useful to begin with a quotation or illustration in which the essence of the research topic is captured. It also gives the context within which the topic or research problem has to be understood. And it may give information about the motivation of the researcher for wanting to undertake this particular research project.

4.

THE RESEARCH DESIGN

The research design is the heart of the research proposal. It should contain the elements five to nine of the list in chapter two. The elements will be discussed in the sections below. The number of the element which is the subject of a section will be given in brackets.

4.1 Goals and objectives of the research (5)

The goal of a research project makes clear what the researcher wants to achieve with the research. To what the research is intended to contribute and the context within which the research will have to be placed. Below are some examples of research goals.

- (1) To gain insight into the role of women in farm management on family farms in rural Yaan, South-Western China.
- (2) To acquire knowledge about hygiene behaviour and its relation to the incidence of contagious diseases among rural households in Burkina Faso.
- (3) To assess the role of traditional birth attendants in pre- and perinatal care in lower class neighbourhoods in Jakarta, Indonesia.

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Objectives are more specific. They describe how the researcher intends to achieve his or her goal(s). Let us take the last two of the three research projects mentioned above.

Example (2): For this research the following objectives can be formulated:

- a. To collect data on prevalence of contagious diseases which are spread through contaminated hand-mouth contact;
- b. To describe the behaviour of rural women with regard to hygiene in connection with child care, sanitation, and food preparation;
- c. To describe daily household routines and the domestic situation in rural areas from a hygienic perspective;
- d. To gain insight into indigenous concepts about health and cleanliness which underly hygienic behaviour;
- e. To collect data on child rearing patterns and instruction of children regarding cleanliness and hygiene.

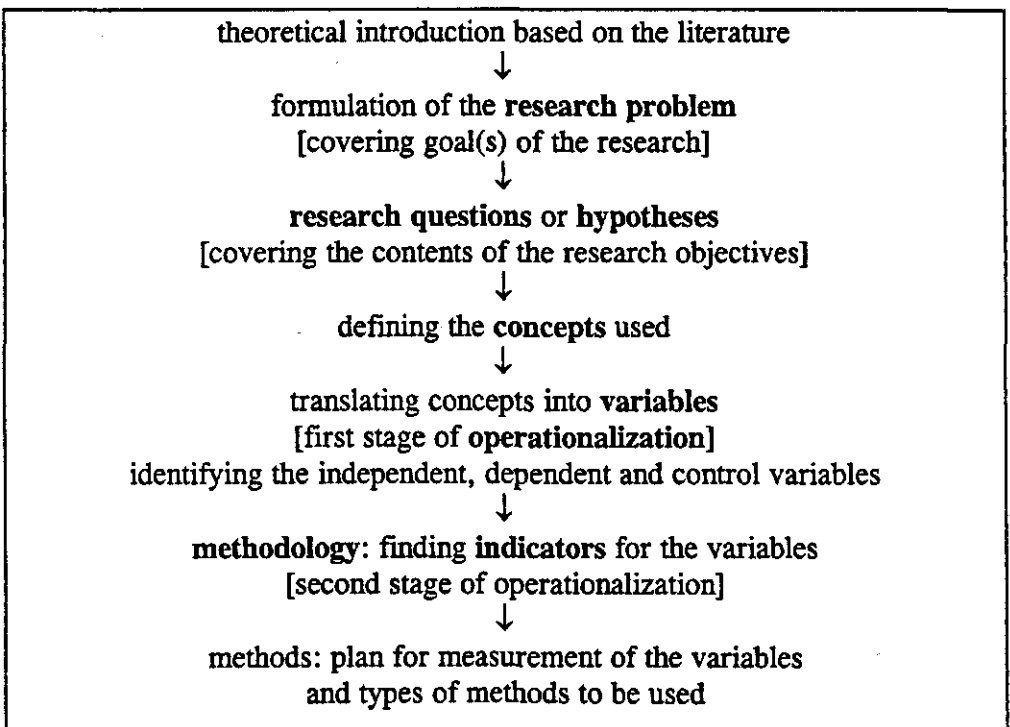
Example (3): For this research the following objectives can be formulated:

- a. To collect data on the proportion of deliveries in lower class neighbourhoods in Jakarta assisted by the traditional birth attendant (TBA) compared to other types of attendants (doctors, nurse midwives).
- b. To describe the process of pre(or ante)- and perinatal care during the period from early pregnancy up till forty days after birth, for clinical as well as non-clinical deliveries.
- c. To assess the roles and caring activities of the various care givers in this process.
- d. To study cooperation between TBAs and other care givers.
- e. To establish clients' satisfaction with care provided by TBAs.

The objectives should make clear what will be done, to whom the research is addressed, where it will be carried out, and so on.

4.2 The conceptual framework (6)

This part is the theoretical core of the research design. Instead of conceptual framework it can also be called the theoretical framework. In the case of a proposal for PhD research, this part should make clear that the researcher understands the theoretical issues involved and can build on existing theoretical literature. It is in this part that the research problem and research questions are formulated, the concepts defined and operationalized and relationships postulated in the form of research questions or hypotheses. The part has the following structure:



The terms which are printed bold will be discussed in more detail below. The theoretical introduction is important in case of a proposal for PhD research. A

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proposal for an applied research project does not require such an introduction. In that case the proposal can proceed to the next part, which is the statement of the research problem.

4.2.1 The research problem

This is a formulation of the goal(s) of the research in the form of a statement of a problem for investigation. Let us take as an example the research problem of the research project about TBA's in Jakarta (the third example in section 4.1). In the introduction the literature about TBA's in Indonesia will be discussed. Points such as their being part of a long tradition of indigenous healing, that their role is primarily described for rural areas, that they ask little money for their services, that they are known to be dedicated, and so on, must be paid attention to. The situation in lower class neighbourhoods in big cities, regarding affordable medical services will have to be described. These descriptions can be based on the existing literature. The introduction then moves on to what is not known. There is little literature on TBAs working in urban areas, but we know that TBAs are working there. We don't know to whom poor women turn when they are pregnant and have to give birth. If they apply to a TBA for help, do they so for financial reasons only? Is the care package provided by a TBA in an urban setting the same as that provided by TBAs in rural areas? Does the TBA in an urban setting work together with other care providers? At the end of this introduction the research problem can be formulated as follows:

What is the role in pre- and perinatal care of traditional birth attendants in lower class neighbourhoods in Jakarta? How does their role compare to that of others involved in pre- and perinatal care, and how is their role evaluated by their clients?

Another case is the Chinese study mentioned (example 1 in section 4.1). The thesis which was written on the basis of the research is called "The role of gender in farming household decision-making in Yaan, South-Western China" (Chen, 1996). The theoretical framework of this study is described in the thesis. In this framework, farm management is narrowed down to decision-making. Based on the literature, five types of farm management are distinguished, according to the relative inputs of husband and wife. Following resource theory, it is assumed that the different roles of husbands and wives in farming household decision-making are related to power, and that power is based on access to resources. In the summary of the theoretical framework (Chen, 1996:33) two sets of independent variables (type of farm management and type of resource) and the dependent variables (husband's and wife's decision-making outcomes) are identified and their relationship is specified. The research problem is formulated as:

The role of gender in farming household decision-making.

The two research projects which are taken as examples, differ in design. The one about the TBAs is a descriptive study, in which qualitative rather than quantitative methods were used. In the other one, hypotheses formulated on the basis of existing theories were tested in a large survey.

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4.2.2 Research questions and hypotheses

Research questions or hypotheses follow from the research problem. A research question has to be answered by the research, a hypothesis has to be tested. A research question is about the nature or the incidence or prevalence of a phenomenon, while a hypothesis always states a relationship. An example of a research question in the study about TBA's in Jakarta is:

In what parts of the pre- and perinatal care process does the TBA play a role, and for what actions is she primarily responsible?

Examples of hypotheses in the other study are:

Being older is a positive power base for either spouse.

Greater income contribution to the household income correlates positively with either spouse's agricultural decision-making.

It is not possible to test a theory, but it is possible to test the relationships, stated in the form of hypotheses, implied by or derived from a theory. A theory or research problem is taken apart to test it, and then put together again. For a hypothesis to be able to test a causal relationship there are three requirements. For example, if proof is needed that X causes Y, then there should be:

- (1) covariation between the variables (when X changes Y changes too);
- (2) temporal priority of variable X before variable Y (X always occurs before Y);
- (3) the elimination of alternative explanations (ruling out other possible causes of Y).

In practice, causality is difficult to prove, especially because of the third requirement. (See Miller, 1986:21).

4.2.3 Concepts, variables, indicators and operationalization

A **concept** is mental abstraction of particular things or events, and it consists of both a word or label and its meaning or definition (Miller, 1986:19). Examples of concepts in the studies cited above are: *care process, power base, household, decision-making*. Concepts cannot be directly measured, but they always have to be defined. For concepts to be measured they have to be translated into variables, and to measure the variables indicators have to be found. This translation process is called operationalization.

A **variable** is a concept which varies; that is, it assumes or can have two or more values (Miller, 1986:19). Examples of variables taken from the studies mentioned above are: *client's satisfaction, age, income contribution, household income*. All these variables can have two or more values. A variable like sex only has two values: male or female. Variables can be distinguished according to the level at which they can be measured. There are four levels of measurement (Miller, 1986:53-54):

| | |
|-----------|--|
| Nominal: | There is no metric measure associated with this kind of measurement. Measuring means here assigning categories. <i>Sex</i> is an example of a nominal or categorical variable. The categories are male and female. <i>Religion</i> is another one. In Holland categories of religious denomination are: Roman catholic, Dutch reformed, Islam, etc. These are nominal categories. Religion is measured as a nominal variable in this case. |
| Ordinal: | Measurement at the ordinal level means that it is possible to rank order subjects or units by their score on the variable being measured. The variable of <i>client's satisfaction</i> , mentioned above, is an example of an ordinal variable. It is possible to measure the client's satisfaction with the TBA's performance, or specific aspects of her performance, by using, for instance, a five points scale ranging from very satisfied to very dissatisfied. <i>Religion</i> could also be measured as an ordinal variable, for instance as people's depth of religious conviction or belief. Some people are more religious than others. |
| Interval: | Measurement at the level of an interval scale can be done when not only the subjects or units can be ranked, as with ordinal variables, but when the intervals between the points of the scale can assumed to be the same. <i>Temperature</i> is an example of an interval variable. An interval scale does not have an absolute zero point. |
| Ratio: | Variables not only have equal distances between points of measurement, but they also have an absolute zero point at which there is none of the measured property. Examples are <i>household income</i> , <i>yields per hectare</i> , <i>calory intake per day</i> , and so on. Ratio measurement allows for arithmetic operations, such as multiplication and division, which are not possible at the other levels of measurement. |

On the basis of the formulation of the research questions or hypotheses, variables can be classified as **independent, dependent and control variables**. Independent variables are the explanatory variables, dependent variables are the ones to be explained, and control variables have to be controlled. An example is provided by the theoretical framework of the FHI research project on *The Impact of Family Planning on Women's Work and Income*. If we want to know the impact of the use of family planning on women's participation in the labour force, the following variables can be distinguished:

the use of family planning = the independent variable;
participation in the labour force = the dependent or outcome variable;
health status = the control variable.

Health status is the control variable because bad health will prevent women from participating in the labour force, whether or not they use family planning. Thus, looking at the relationship between the dependent and the independent variables concerned, we do so given a certain health status. So we have to control for health status (FHI, 1997:19).

Most variables cannot be measured directly, but are measured through **indicators**. In the Chinese study, education was assumed to be a power base. The variable measured was level of education. To measure it, the indicator *number of years of formal education* was used. Indicators have to be **valid**, which means "accurately measuring the concept" (Gilbert, 1993:27). If, for instance, we measure *client's satisfaction* by asking the respondents (clients) to mark their degree of satisfaction on a five points scale, we may be measuring other things than the degree of satisfaction. If they are uneducated women who are not familiar with such a procedure, they may think it safe to mark the middle position. Actually, on scales that have an odd number of scale points

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(five or seven), there is always a tendency to avoid the extremes. If we try to measure satisfaction in an indirect way, a better solution might be to formulate statements that are indicators of satisfaction with which the respondent has to either agree or disagree. But even then, validity cannot be taken for granted. In Javanese culture, for instance, it is impolite to say that you disagree, even if you do. The wording of the statements has to be worked out very carefully. They have to only measure degree of satisfaction only and not other variables as well, like cultural background or level of education. Sometimes it is possible to use validated scales. For instance, to measure traditionality, there are scales the validity of which has already been tested and statistically proven.

What was discussed above can be referred to as **operationalization**. Any research project in the social sciences involves operationalization.

Operationalization be defined as the translation of theoretical concepts into measurable variables, or the translation of theoretical definitions into operational ones.

Validity should always be a concern. Finding valid indicators for variables is part of a proper operationalization. In the Chinese study, the concept of *household* was theoretically defined as "a co-residential unit, usually family-based, which takes care of resource management and the primary needs of its members". A farming household was defined as "an agrifamily system, in which the sub-systems of farm, family and household overlap." For the Chinese context the following operational definition of

farming household was used: "a contract unit to which land is allotted by the state, in which a group of people, usually a nuclear family, individually or jointly provide management, labour, capital and other necessary inputs for the production of crops and livestock, and who consume at least part of the farm produce" (Chen, 1996:31). The way the researcher in the proposal defines and operationalizes the concepts he or she is going to use, is one of the criteria for judging the quality of the proposal.

4.3 Methods of data collection and sampling (7)

The **methodology** of a research is not just the summary of the methods of data collection to be used. It comprises the study design (exploratory, experimental, descriptive, evaluative) and the argumentation for the kind of methods to be used, such as the mix of qualitative and quantitative methods of data collection (see also chapter seven). In a "grounded theory" approach, there is no process of valid operationalization which starts from theoretical concepts found in the literature such as described above. Concepts are developed through qualitative research. Their definition is the end product, not the start of the research process. Validity is maximized in such an approach.

4.3.1 Data collection

During the years when I was involved in supervising the thesis research of students in Indonesia, it sometimes happened that students had the so-called 'instrument', meaning the questionnaire, ready before even having visited the area where they were going to do their survey. For getting a research permit from the local authorities, I also had to show my 'instrument' prior to going to

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the field. But local authorities are no scientists. They cannot be blamed for thinking that social research is interviewing with a questionnaire prepared beforehand. Sometimes students, not only in Indonesia, prepare a nicely worded questionnaire before they have properly formulated the research problem, the research questions or their hypotheses. I would liken this to sewing curtains without knowing the size of the windows they are to be used for! There are two messages implied in this short introduction to the subject:

- (1) There is a tendency to identify social science research with doing a survey and using a questionnaire, while in fact there are many more ways and methods of data collection possible in social science research;
- (2) For a questionnaire to be a valid instrument, it should not just be based on the theoretical literature but also on a knowledge of local conditions.

Taking the first point, reference can be made to the extensive literature about research methods in the social sciences. It is important to emphasize, however, that research methods are like tools, which should be appropriate to the job at hand. The choice of methods has to be based on the theoretical framework and the variables involved. *What* we want to measure determines *how* we are going to measure it, and not the other way around. It is customary to distinguish between qualitative and quantitative methods. As we will show in chapter seven, this distinction is not as clear-cut as it seems.

The second point again touches on the issue of validity. The indicators in the questionnaire used to measure certain variables should be valid. To a certain extent, validity can be achieved by consulting the literature on the subject and by using the results of other researches, but often this is not

enough. Validity can at least be enhanced, if not secured, by taking into account local circumstances and, in some cases, the local language. Thus, a questionnaire can only be completed in the field, after the researcher has acquired a basic knowledge about the local situation. Before using a questionnaire, it should be tested. "The use of a *pilot study* is essential, where the draft questionnaire is tested on a small group of people, who have the same characteristics as the sample group to be used for the main study" (Phillips et al., 1994: 42, author's italics). Based on this try-out, the questionnaire can be improved. There are some common mistakes made in questionnaires:

- (1) The questionnaire is too long and the interview takes too much time, so that the respondent becomes tired or impatient, which will affect the quality of the answers;
- (2) Too many items and issues are put into the questionnaire which are not directly relevant for the research. This is caused by the feeling that since the researcher has gone through all this trouble of organizing a survey, training interviewers, and so on, why not use the opportunity to ask some more questions to which the answers might be useful. The point is that they usually are not. By the time the results of the survey have to be coded, put into the computer and analysed, these redundant data are a burden and are sometimes just thrown away. This is different from putting in questions aimed at introducing a subject, or for cross-checking with other questions. The latter kind of questions have a function in relation to the key questions.

- (3) Putting in questions about variables which can be better measured in another way. (a) These might be variables which show little variation. For instance, if there is a strong common opinion on a certain topic it is not very efficient to ask a question about it and then find out that almost all respondents give the same answer. An example would be the *importance of education for children*. All respondents will agree to its importance. If we want to know *how* important people think that children's education is, this can be better explored by using, for instance, the Focused Group Discussion (FGD) method. (b) It might concern variables that are more easily measured by observation than by asking questions. An example is the *socio-economic status of the household*. Such a variable may be measured partly by observable indicators to be checked by the interviewer. For a classification of households according to socio-economic status in rural Java, for instance, it may be sufficient if the interviewer observes and makes notes about the state of the house and the materials the house is built of, instead of asking a lot of complicated questions in order to determine the value of the house. (c) It might concern sensitive variables about which people will not give the right answers in a survey. They are better dealt with in in-depth interviews held with a selected group of respondents. (d) The latter also applies to variables which concern feelings or motivations. As Scrimshaw (1990:90) says: "Surveys have difficulty revealing motives (i.e. *why* individuals behave as they do)."

Above we have touched on matters of **validity** and **reliability**. A method for data collection should be an appropriate tool, meaning that it should be valid and reliable. We already discussed the issue of validity. Reliability refers to replicability and consistency: a reliable measurement will produce the same results if it is repeated or if the same measurement is done by different people. Interviewers who are not well trained and instructed, will decrease reliability, because they may use different approaches or interpretations, which diminishes replicability. If a questionnaire is too long (mistake 1 above), reliability is also endangered. Put simply: if we measure people's height with a pair of scales, we are using an invalid instrument. If we use it to measure people's weight, the method is valid, but if while being weighted some people keep their shoes on and others don't, the results will be unreliable. Validity comes before reliability: "Only when validity has been established to a reasonable degree does it make sense to add a concern with reliability (representativeness) and replicability" (Scrimshaw, 1990:86).

There are many methods of data collection. In chapter seven the distinction between qualitative and quantitative methods will be discussed. Earlier the survey method and the questionnaire were mentioned, but there are many sorts of surveys, and questionnaires differ greatly according to the type of questions and degree to which the questions are structured. The latter ranges from open questions, to which the verbatim answer of the respondent is noted, to pre-structured questions, to which the interviewers marks or crosses given answering categories. An example of the latter is: *Do you own cattle?* Answer: *yes* or *no*. If the answer is *yes*, other questions may follow. Open questions are easy to ask but their answers are difficult to analyse. In a survey among 400 households we may get 400 different answers to the open question:

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What do you think about the quality of the services of the local family planning clinic? The plus of such a formulation is that it is neutral, in that we don't push the respondent in a certain direction. The minus is that we have to do a separate analysis of all the answers, in order to get a meaningful categorization according to which the answers can then be coded and put into the computer. The time and effort needed for a proper analysis to open questions is often underestimated.

The **survey method** is widely used in the social sciences. It is a method of collecting data among a group of people or households, using a questionnaire and one or more interviewers. There are many types of surveys, according to the kind of topic covered: household surveys, demographic surveys, fertility surveys, socio-economic surveys, nutrition surveys, and so on. In Part II of this manual (Household and nutrition research) more specific attention will be paid to the first and the last.

4.3.2 Sampling

Surveys are always **sample surveys**. A demographic investigation among the whole population will not be called a survey, but a census. Samples can be drawn in different ways, and their size varies. Basically, the idea is that in order to get valid and reliable answers to our questions it is not necessary to measure (interview) the whole population. A representative part of it will suffice. Theoretically, if a population were absolutely homogeneous in all possible aspects, a sample of one element would be sufficient. There is an extensive body of literature on the subject of sampling.

Some types of samples are:

Purposive or opportunistic samples, when we specifically select certain persons or groups because they have a certain characteristic either in a pure form or to an extreme degree. This kind of approach is used for selecting case studies, for instance. (See next chapter). Sample size is not much of an issue here.

Geographic cluster samples, when we select a geographic cluster, i.e. a neighbourhood or a part of a village, because it is thought to be representative of the larger area or region. Administrative divisions and regional characteristics are at issue here, rather than sample size.

Systematic or random samples, when, using a certain system, e.g. every tenth if we want a 10% sample, or by using a list of random numbers, we select a group of persons (or households) from a larger group, called the population, which has been numbered beforehand. Such lists of random numbers can be found in statistical manuals. Let us take a survey among *the clients of a family planning clinic*. The population consists of all currently registered clients. On the basis of the registration files of the clinic we can assign numbers to the clients and then proceed to draw either a systematic or a random sample.

Because the sampling procedure is 'anonymous', selection biases are avoided.

It is sometimes useful to **stratify** the sample, meaning that we divide the population into sub-populations or strata, from which the samples are drawn. In the case of the family planning research, we could stratify according to sex of the client, which would result in two strata: men and women. It depends upon the research problem and the variables involved.

Systematic and random samples, stratified or not, are **probability samples**. On the basis of the sample results we can, with a certain degree of probability, make estimations or inferences about the population, for which an array of statistical techniques is at our disposal. The degree of probability is largely determined by the **sample size**, because sample size directly influences the standard deviation, and for a normal distribution we usually take a confidence interval of two times the standard deviation. The larger the sample size, the smaller the standard deviation of the mean. So, for the purpose of statistical inference the sample size should not be too small. However, for logistic and other obvious reasons the sample should not be larger than necessary.

4.4 The research area (8)

In this part the researcher explains the selection of the research area and provides information about it. In some cases there is a close relation between the choice of the area and the research problem. In the case of the study about the coping strategies of rural households affected by the eruption of Mt. Pinatubo in the Philippines (see page 29), for instance, the research area is

implied by the goal of the research, i.e. the area reached by the flows of *lahar* from Mt. Pinatubo. In other cases, the choice is not so obvious. In Chen's study, the province of Yaan was selected, but the study could also have been carried out elsewhere in China. Sometimes a study is conducted in contrasting areas, for instance a rural and an urban area. The representativeness of the area chosen in relation to the research problem is a primary concern here.

A map of the area may be included here, or may be put at the end of the proposal in the appendices. This will also depend on the significance of the area and its specific characteristics for the research problem. If the area is, as it were, implied by the goal of the research, as in the example above, it is fitting to include a map in this chapter, rather than in the appendices at the end.

4.5 Data analysis and management (9)

It is at all times to be avoided to be stuck with a heap of data without knowing what to do with them. Still, data analysis and management are often glossed over in research proposals. However, after the researcher has explained how (s)he is going to collect the data, it must be explained how (s)he intends to manage and analyse them. How are the survey data going to be analysed? What computer soft ware is going to be used? Can the data be put into the computer directly or is it necessary to do prior coding and develop a code-book? This depends, of course, on the degree to which the questions are structured. Will the researcher work together with a computer programmer or an institute for computer analysis? If coding is necessary, who will do it? How will the interpretation of the computer outputs proceed? How are the qualitative data going to be analysed; by hand or by using computer software

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for the analysis of such data? These questions have to be answered in this part of the research design.

The possibilities for the statistical analysis of research data depend on the level of measurement of the variable. Ratio variables yield quantitative data which are amenable to all kinds of statistical tests. They are assumed to be 'normally' distributed. The normal distribution model underlies such kinds of tests. They allow us to check quite easily whether differences between means are significant, for instance when comparing different sub-groups. Percentage distributions, provided the sample is large enough, can also be considered to be normally distributed. Nominal and ordinal variables cannot be statistically manipulated with such procedures. There are other statistical tests for such variables, which are called non-parametric tests. Examples are the much used chi-square test (for nominal variables) or rank correlation coefficients (for ordinal variables). The point is that the statistical analysis should be appropriate for the variable measured.

5.

RELEVANCE OF THE RESEARCH AND DISSEMINATION OF RESULTS

This chapter discusses the issues of justifying the relevance of the proposed research and the way the results are going to be disseminated. The numbers between brackets are the numbers of the corresponding elements (see chapter two).

5.1 Relevance of the research (10)

In this part of the proposal the researcher has to justify the theoretical and social or practical relevance of the study. Obviously, for a PhD-research proposal the theoretical relevance of the research has to be argued thoroughly. For other kinds of proposals the emphasis may be on the social or practical relevance.

Concerning theoretical relevance, the researcher has to explain why this particular research project will contribute to the formation of theory. Are there gaps in theory to which it addresses itself? Is a new theoretical concept being tested? Does it concern an area where little empirical research has been done?

Example: In a research project in the Philippines the subject is the coping strategies of households in a situation of continuing disaster - a

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disaster that was brought about by the eruption of Mt. Pinatubo, and continued in the form of annual flows of *lahar*, which threaten the livelihood of the people living in the area. The project's theoretical relevance is located in the concept of coping strategies. In the theoretical models on strategies and strategic behaviour it is assumed that people can more or less control their immediate future and build their strategies upon this anticipation. The question is, what if they cannot? Do they then just cope? How do they then develop strategies? How does the continuous character of the disaster (the threat of destruction by *lahar*) affect their behaviour and their views on the future? Theoretical insights on the degree of control of the environment needed for developing strategies, and about when coping becomes strategic behaviour, are lacking. It is to this gap that the study addresses itself.

For its justification from a social or practical point of view, the study's relevance for policy makers and administrators has to be indicated. It is also important to make clear to what extent the research problem is also a social problem. What people or groups does it concern? Are there important social, economic, political or health implications? Does it relate to on-going programmes?

Example: A study about the methodology of measuring nutritional status is theoretically interesting, but it is also relevant from a policy point of view. By contrasting the results of various approaches, their reliability will be tested. Because administrators who want to

monitor food security or the nutritional status of vulnerable groups need a reliable instrument, they can benefit from such research.

5.2 Dissemination and utilization of the results (11)

This is a point the researcher has to think about beforehand, not just after the research has been carried out. There is a relationship to the previous parts of the proposal. The field covered by the study and its theoretical relevance may already indicate the type of scientific journal which would be interested in publishing the results. There might be a conference in the near future where the researcher could present a paper about the results of the research. And, of course, in the case of a PhD project, the results will be reported in the dissertation. If possible, it is wise to do both. Articles in scientific journals or conference papers may form the basis of the dissertation. The whole point of dissemination of the results as an item in a research proposal is that funding agencies want the research projects they support to be part of an ongoing scientific debate and not to be gathering dust somewhere in a drawer. They also want to have their name mentioned in the acknowledgements! The social relevance of the project, furthermore, can only be realized if the administrators or government agencies concerned have access to the results. A paper or report written for social purposes or for application of the results in policies, does not need to have the kind of theoretical depth an article in a scientific journal does. For the results to be applicable and useful however, the researcher has to write it carefully and in an accessible style, eschewing jargon.

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6.

LOGISTICS

AND WRAPPING UP

This chapter discusses the final parts of the proposal. The means needed to carry out the research are specified in the parts of the proposal discussed below. Again the numbers between brackets are those of the corresponding elements listed in chapter two.

6.1 Time schedule (12)

The time needed for the several activities that comprise the research project has to be listed in chronological order. The time schedule should be presented in the form of a chart. Last but not least: it should be realistic. If the project involves personnel inputs other than those of the researcher, their time and duties have to be specified as well.

6.2 Budget (13)

For the budget, always first consult the guidelines of the funding agency about what kind of expenses are eligible for funding and whether there are maximum limits that cannot be exceeded. If there is a contribution from an agency other than the one the proposal is submitted to, this has to be mentioned. A budget is

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a financial justification and has to be realistic in relation to the work proposed. The items have to be related to activities and their duration, to the persons carrying out the activities, to unit costs and the number of units (e.g. of a questionnaire), etc. Often costs have to be estimated and these estimates should be realistic. The usual procedure is that the researcher is given an advance. By the time this advance is spent, the researcher has to send in a financial report with proof of the expenses incurred and apply for a new advance.

6.3 References and bibliography (14)

The bibliography should be complete and systematic. Of books and articles, not only authors, year of publication and titles should be given, but also publisher and place of publication (in case of books) and name of the journal, volume and number, and page numbers (in case of articles in journals). For references in the text it is sufficient to use only author and year between brackets. In case of a quotation, the page number where it can be found has to be included, for example: "Meaning is expressed through actions as well as text".. (Dey, 1993:29). If the proposal's bibliography and references are incomplete or contain mistakes and typing errors, a poor impression is created.

6.4 Curriculum vitae of the researcher(s) (15)

In the first place, a *curriculum vitae* (c.v.) should give so-called bio data: name, date and place of birth, sex, nationality, marital status, and present address. The second part of a c.v. is an educational history, emphasizing the academic part of it, and a list of (a selection of) publications by the researcher. The third part is about the researcher's work experience, including the job or

function currently held. The last part includes relevant public functions (such as membership of boards of organizations), participation in conferences or courses, etc. The curriculum vitae should not be a whole life history. Generally, four to five pages should be enough.

6.5 Appendices (16)

These may include, for example, a map, demographic data about the research area, copies of letters of recommendation or certificates, etc.

7.

QUALITATIVE AND QUANTITATIVE METHODS

In her article about combining qualitative and quantitative methods in the study of intra-household resource allocation, Susan Scrimshaw says that two fundamental methodological questions have plagued attempts to measure intra-household resource allocation: "The first is how to measure accurately the *actual* behaviours, motivations, feelings, and outcomes related to intra-household resource allocation. The second is how to ensure an accurate understanding of the *meaning* of the behaviours and concepts to be measured" (Scrimshaw, 1990:86, author's italics). She proceeds to make a plea for combining qualitative and quantitative methods to solve those problems, which I wholeheartedly endorse. She also calls the boundaries between the two kinds of methods "nebulous" (misty, not clear-cut), with which I agree as well.

Ian Dey, in his book about qualitative data analysis, has the same message. Although quantitative data deal with numbers and qualitative data with meanings, he is against opposing the two and would rather think of them as "mutually dependent". "Meanings cannot be ignored when we are dealing with numbers, and numbers cannot be ignored when we are dealing with meaning. Each complements the other, though at lower levels of measurement [i.e. nominal and ordinal variables] questions of meanings are uppermost, while at higher levels of measurement [i.e. ratio and interval variables],

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questions of numbers loom largest" (Dey, 1993:28). Dey summarizes the importance of numbers for meanings and vice versa as follows:

- Quantitative data deals with numbers;
 - Qualitative data deals with meanings;
 - This includes the meanings of those we are researching;
 - Meaning is expressed through action as well as text (or images);
 - Meanings are not a prerogative of unstructured methods or data;
 - Meanings and numbers are important at all levels of measurement;
 - Numbers must be based on meaningful conceptualization;
 - Meaningful conceptualization is informed by numbers
- (Dey, 1993:29).

Scrimshaw lists some weak and strong points of the two types of methods:

| <u>Qualitative</u> | <u>Quantitative</u> |
|--|---|
| (-) Random sampling not possible | (+) Random sampling possible |
| (-) Limited possibilities for statistical testing | (+) Statistical analysis |
| (+) Possible to identify real versus ideal behaviour | (-) Survey bias towards ideal behaviour |
| (+) Good to explore sensitive topics and attitudes | (-) Difficult to explore sensitive topics/attitudes |
| (-) Small samples, problems of generalization | (+) Large populations can be surveyed |
| (-) Time consuming | (+) Relatively rapid |

(Scrimshaw, 1990:89).

Examples of qualitative methods are: (more or less structured) observation, participant observation, in-depth interviews, exploratory interviews, case study method, life history method, focused group discussions, content analysis (of written texts), interviews with key informants, open questions (in a survey),

maps and drawings. As said earlier, it is almost always worthwhile to combine the survey method (primarily quantitative) with qualitative methods of data collection. Several combinations are possible:

1. Qualitative → quantitative → results

Example: Explore important concepts first by means of a focused group discussion or exploratory interviews before designing the survey questionnaire. The qualitative methods are used here to enhance the quality of the survey questions and the validity of the resulting data.

2. Qualitative → quantitative → results phase 1 → qualitative → results phase 2

Example: Same as (1), but a qualitative phase is added to explore some cases more in depth or to explain the survey findings, by means of case studies, life histories, or in-depth interviews. The selection of the cases is based on a preliminary analysis of the survey results.

3. Quantitative → results ← qualitative

Example: Qualitative and quantitative methods are used equally and in parallel ways. For instance, besides conducting a survey, interviews with key informants are held or a focused group discussion is conducted about variables that are not included in the survey and about which no quantitative data are needed.

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In a research project it is important to achieve both optimum validity and reliability (or replicability), the one should not be maximised at the expense of the other. To quote Susan Scrimshaw again: "In general, qualitative methods are acknowledged to be more accurate in terms of validity, while quantitative methods are considered to be better in terms of reliability or replicability" (Scrimshaw, 1990:89). So a creative combination of both types of methods will be the best guarantee for good research. This requires that the researchers involved are trained in using both kind of methods. If they are not, they should consult others who are.

8.

SUMMARY

AND POINTERS

As we discussed, a research proposal should contain the following elements:

- | | |
|-----|---|
| 1. | Title page. |
| 2. | Table of contents. |
| 3. | Summary. |
| 4. | Introduction. |
| 5. | <i>Goals and objectives of the research.</i> |
| 6. | <i>The conceptual framework.</i> |
| 7. | <i>Methods of data collection and sampling.</i> |
| 8. | <i>The research area.</i> |
| 9. | <i>Data analysis and management.</i> |
| 10. | Relevance of the research. |
| 11. | Dissemination and utilization of the results. |
| 12. | Time schedule. |
| 13. | Budget. |
| 14. | References and bibliography. |
| 15. | Curriculum vitae of researcher(s). |
| 16. | Appendices (if any). |

The elements printed in italics (5-9) form the heart of the proposal. Together they are referred to as the *research design*. In a proposal for PhD research this part, particularly the theoretical framework, will be much more elaborate and

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in-depth than it would be for a proposal for an applied research project. For both types of proposal the relevance of the research (element 10) should be made clear. In the one type of proposal the emphasis will be on the social or practical relevance, while in the other (PhD research proposal) the emphasis will lie on the theoretical relevance of the project.

The following are a set of pointers which should always be paid attention to. They are directly addressed to the writer of the proposal. If they refer to one or more of the elements listed above, the numbers of the elements are given between brackets.

- The proposal will usually have to be written in English. If this is not your native language, ask a 'native speaker' for help, i.e. to translate or correct the text. The same applies to French, if the funding agency allows submitting the proposal in French.
- State your goals and objectives clearly (5).
- Do not quote endlessly from the literature in the theoretical part (6) to show how much you have read. The theoretical literature should be used in an appropriate (functional) manner.
- Give a clear definition of all the concepts you use in the theoretical framework (6).
- Pay sufficient attention to the issue of *valid* operationalization (6), which includes indicating how you are going to measure your variables.
- Keep in mind that proving causal relationships between variables requires a lot of the research design.

- Never start a survey with a questionnaire before testing it (7). Always first do a try-out or pilot study and improve the questionnaire on the basis of the results.
- When using a questionnaire and hired interviewers, training of the interviewers should be part of the time schedule and the budget (7, 12, 13).
- Try to use a creative mix of quantitative and qualitative research methods (7) and link the selection of methods to the question(s) and variable(s) involved.
- Always insert a (neat) map of the research area. Put it in the part of the description of the area (8) if there is a direct relationship between the characteristics of the area and the research problem.
- Never start collecting data without having a plan for their analysis (9).
- Draw up a realistic budget (13) and clearly indicate what funds you are asking from the agency to which you submit the proposal. Indicate also what funds, if any, you have asked or will receive from another source. Always consult the guidelines of the agency involved first, and check your calculations twice.
- A bibliography (14) with a lot of omissions and mistakes makes a poor impression, so make it complete and neat.
- Keep to the point (the essentials) when writing your curriculum vitae (15).

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**Part II: HOUSEHOLD SURVEYS
AND NUTRITION RESEARCH**

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9.

HOUSEHOLD SURVEYS

Household surveys are conducted to collect data to be used for many purposes. They can be part of socio-economic, demographic or nutrition research. Depending on the purpose, a variety of questions can be asked. Here we will concentrate on the common elements in household surveys, whatever their purpose. Any household survey will start from a definition of 'household'. Based on this definition, through questioning, data on household size and household composition will be collected. For the latter it is always necessary to appoint one of the members of the household as the household head. Below, these themes will be briefly discussed.

There are many definitions of household. We limit ourselves here to the private household. Non-private households are institutional households, such as boarding schools, army barracks, prisons or hospitals. Census definitions of the private household usually include two criteria: co-residence (people living together under one roof) and sharing a household purse (eating from a common pot, so to say). They may seem self-evident, but there are all kinds of snags. In my own research in Madura (Indonesia), I found that in the fishing village people shared a house, including the kitchen, but that in the kitchen each little group (a nuclear family) had its own kerosine stove and kitchen

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units and residential units (Niehof, 1985). I have always wondered what the census official would take for the household there. He probably would not look into the kitchen, and would call all persons living together in the house a household. The opposite pattern can also be found: people who do not share a house (all nuclear families having their own huts on a large compound), but do share a kitchen and food. This pattern prevails in many rural areas in Sub-Saharan Africa. In case of polygamy, the pattern becomes even more complicated. A man may have more than one wife and is part of the household of wife A when he eats there, and part of the household of wife B when he eats the food from her kitchen.

Example: The Indonesian census definition of household reads as follows:

An ordinary household is an individual or group of people living in a physical/census building or part thereof who make common provision for food and other essentials of living.

(BPS, 1992: xxx).

Apart from problems with applying the criteria mentioned above, there can be other problems with identifying household membership. Especially in areas with much labour migration it is sometimes difficult to determine whether migrants still belong to their household of origin in the rural area, or should be counted as part of a household in the place where they work. Another question is whether to count visitors and lodgers as belonging to the household where they are temporarily staying. There is a difference between a *de jure* count and a *de facto* count. In the first case persons who (are said to) belong to the household are counted as members, irrespective of whether they are actually there or not. In the second case all persons staying in that household at the

moment of the survey or census are counted. In many census definitions of household, a time limit is included, e.g. persons who have been living elsewhere for six months or more are not counted, even though they may be regarded as belonging to the household by the other household members.

Example: The Indonesian definition of household member reads as follows:

Those who usually live in a particular household regardless their location at the time of enumeration are classified as a household member. A person is no longer regarded as a member of his or her former household if the person has been absent for six months or longer, or has left home for the purpose of moving away, even when the six-months limit has not yet been reached. On the other hand, a guest who has stayed for six months or more, or even for less than six months but intends to move in, is recorded as a household member.

(BPS, 1992: xxx).

It is imperative for a researcher setting up a household survey to reflect on all these matters in order to be able to start with an appropriate definition. It is wise to consult existing census and survey definitions for the country concerned. Then, the researcher has to decide on (the relative importance of) the criteria used in the light of the purpose of the survey. If, for instance, the survey is intended to elicit household data for a research project about household food security, it obviously is more important to know which people eat together from one kitchen or cooking pot than to know whether or not they are living under one roof. In the example from Madura mentioned above, it would be the cooking unit we are interested in delineating and establishing the composition of. If there is much migration going on in the research area, the

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definition should take this into account. Finally, the interviewers will have to be instructed about which persons they have to in- or exclude from the household count.

Another issue is that of the household head. It is always necessary to indicate one person as the household head. When describing the composition of the household (see below), the relationships of the other members of the household to the household head have to be established. This has to do with the fact that (private) households - all over the world - are formed on the basis of marriage and kinship. These relationships between household members are important, for instance with respect to the distribution of food or to access to resources, and we need a person of reference to describe them. Aside from having the function of being this reference person, the household head has to provide data about other household members who are not able to provide this information themselves (e.g. children or elderly people). It is also a practical matter. Instead of having to interview all adult household members, the interviewer can answer most questions by interviewing the household head, provided this person is well informed.

To be able to describe the relationships between household members easily and to obtain the right information about all the household members, it is important to define the household head appropriately. The question of what constitutes an appropriate definition has been much argued in the literature. Basically, there are two options: we can use either an objective or a subjective definition. The last is simple. We ask the members of the household concerned whom they consider to be the head of the household. The first option requires the formulation of objective criteria. Usually, the eldest married male person is defined as the household head. Obviously, if there is no married male person -

as in the case of female-headed households (see below), someone else will be indicated. But even if there is, the definition can be problematic. What if this person is an eighty-year-old who is incapable of providing the information needed? Another criterium may be added, such as still working (being the breadwinner). A small survey I did among students in an international nutrition course in Wageningen, in which I asked them about their own households, provides an interesting example. There were two students, both unmarried women in their late twenties, one from the Philippines and the other from India. Their household compositions were almost identical; they were both living with their elderly father, a married elder brother and his wife and children, and an unmarried younger brother. In both cases the father was not working any longer because he was too old. The woman from India said that her father was the head of the household, because he represented the household in public and was most respected. The other woman said her elder brother was the head of the household, because he was responsible for the household budget and they were all dependent on him.

Recently more attention has been paid to female (or women-)headed households, especially in socio-economic and nutrition research. The difficult position of these women, usually widows or divorced women, who have to cope with no male breadwinner to fall back on, is increasingly acknowledged. However, this applies more to *de jure* female-headed households than *de facto* female-headed households. Women who are officially married and provided for, but actually have to bring up their children and pay for their living costs singlehandedly, have the worst deal. Especially, when we are researching socio-economic issues or dealing with household food security and nutrition, it

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is crucial to be able to identify *de facto* female-headed households, because they are often the most vulnerable ones. In areas where we suspect that there are many of such households, we may define the eldest working woman with children as the household head, although it is still not customary to do so.

When we have chosen a definition of household and household head, questions can be formulated about household composition. When we have chosen a *de facto* definition of household, we have to ask about persons currently temporarily staying in the household, such as visitors and lodgers, and when opting for a *de jure* definition we have to ask about persons currently not in residence, but belonging to the household. What we exactly want to know depends on the research problem. However, in regard to composition, the following items are more or less standard:

| | |
|-------------------------------|--|
| 1. Number | Starting from the household head, who is given number 1 |
| 2. Name | To facilitate further questioning, not to use in the analysis, as should be made clear to the respondent |
| 3. Sex | Male; Female |
| 4. Age | Which sometimes has to be estimated, especially if it concerns elderly people |
| 5. Marital status | Single; Married; Divorced; Separated; Widowed |
| 6. Relation to household head | Spouse; Child; Grandchild; Parent; Sibling; [Cousin Niece/Nephew; Aunt/Uncle]; Other Kin; No Kin |

| | |
|----------------------|--|
| 7. Educational level | Highest level attained: Not Applicable; Never to school; Primary School Unfinished; Primary School Finished; Secondary School Unfinished; Secondary School Finished; Vocational School; etc |
| 8. Working Status | Not Applicable; School/Study; Employed; Self-Employed; Unemployed |
| 9. Profession | Not Applicable; Farmer; Fisherman; Trader; Entrepreneur; Shopkeeper; Labourer; Teacher; Civil servant; Employee; Housewife; and others, depending on the local situation. One may also consult census categories |

The category *not applicable* (items 7, 8, 9 above) is used for (pre-school) children and old people. These items are usually arranged in columns on one sheet, the household composition sheet (see Annex 1 for an example). On top of the sheet address of the household, sample number, date of the interview and name of the interviewer should be mentioned. Other variables may be added, like religion, for example. Analysis of household composition is not easy, so only add more variables if they are relevant and their analysis is feasible.

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10.

NUTRITION RESEARCH

by M. Nubé

10.1 Introduction

Nutrition research covers a wide range of disciplines. Depending on the research question or questions, it may concern, for example, the laboratory analysis of food, the study of the utilization of food by the human body, research into the relationships between nutrition and health, the analysis of food consumption patterns by population groups or by individuals, the study of culturally determined attitudes towards food, or the study of the economic behavior of people with respect to the acquisition of food.

Within the context of this manual, those aspects of nutrition research will be discussed which are considered of direct relevance when the research focuses on nutritional issues and problems at the level of households or individuals, who are living under economically marginal conditions.

It is assumed that under such conditions, generally, at least one of the following questions is at play:

- What are the food consumption patterns of households, or of individuals within households?
- What are the nutritional outcomes of these food consumption patterns?

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- How do households' socio-economic or socio-cultural conditions affect the households' food availability, the households' food consumption patterns, and the nutritional status of the individual household members?

10.2 Concepts and definitions

From the outset a few points will be listed, which are generally of relevance in any nutrition research within a socio-economic context.

Food consumption

In a nutritional context food consumption generally refers to the quantity and quality of food intake by households or household members. It may be noted that in an economic context food consumption generally refers to expenditures on food and not so much on the actual food intake.

Nutritional status

Nutritional status refers to the physiological outcome, resulting from the ingestion, absorption and utilization of nutrients by the human body. Such outcome is the result of the balance between the nutritional intake and the nutritional requirements of an individual. The nutritional requirements of individuals depend on their turn on factors such as age, gender, body size, the level of physical activity or workload, and the individual's physiological condition (e.g. presence of illness, or, for women, whether she is pregnant or breastfeeding a baby). Anthropometric data are often used as a measure of nutritional status. It should be noted, however, that anthropometry is only one

approach to quantify the nutritional status of individuals or groups of individuals (see 10.4, "Assessment of Nutritional Status").

Health - Nutrition interrelationships

In most, if not all nutrition research, it is important to consider health - nutrition relationships and interactions. The interactions between health and nutrition are in both directions. On the one hand, health affects nutrition in the sense that in disease nutritional requirements might be changed, and also in the sense that during illness appetite might be reduced and the utilization of food lower than normal (e.g. when there is diarrhea). On the other hand, nutrition clearly affects health. Poor nutrition might reduce the physical strength and work performance of people, as is the case, for example, in anemia resulting from a deficiency in dietary iron or folic acid. Other examples are iodine deficiency, which can seriously affect mental development, while malnutrition in pregnant women may lead to poor pregnancy outcomes. Also, malnutrition might lead to an overall increased susceptibility to illness, in particular infectious diseases.

Time

Time is an important element in most nutrition related research. The current nutritional status of an individual is, at least partially, the result of food consumption patterns in the past. Clearly, when a child has a low height-for-age, it might be the result of several months or even several years of inadequate nutrition. On the other hand, certain vitamin deficiencies might manifest themselves within a relatively short period of time. Another example

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of the importance of time is the fact that in rural areas in developing countries, there are often seasonal fluctuations in the availability of food and in work loads, and, as a result, seasonal fluctuations in nutritional status may occur. Thus, it matters at what time of the year information on food consumption or nutritional status is being collected. Also related with the issue of time, is the difference between *cross-sectional* and *longitudinal* data collection. In a cross-sectional household survey, information is collected from a certain number of households at a specific point in time. In a longitudinal survey, on the other hand, data are being collected at different points in time over a certain period, for example a year.

Input indicators versus outcome indicators

In nutrition, the amounts and types of food that are being consumed can be considered an input to the nutritional status of individuals. The nutritional status, which results from this input, can be considered the outcome. The differentiation between input and outcome, however, is to some extent arbitrary, depending on the research questions. For example, when looking at the effect of income on household food availability, income can be considered the input indicator and food consumption the outcome. Or, when studying the effect of nutritional status on pregnancy outcome, the nutritional status can be considered the input indicator and the pregnancy outcome as the outcome indicator.

In the remaining part of this chapter, two major components in many nutrition research activities, the assessment of food consumption and the assessment of nutritional status, will be discussed in some further detail.

10.3 Food consumption analysis

10.3.1 Data collection

There are many ways to collect information on the food consumption patterns of population groups, households or individuals. Some of the most widely used methods are listed below.

Recall methods

Dietary history: By this method information is being collected on the usual or habitual food intake of individuals. Thus, persons are requested to provide information on the types and quantities of food that are 'normally' consumed. The persons are requested to give this information for a recent period, for example the last week or the last month.

Twenty-four hour recall: In this method, precise information is collected on an individual's food intake (types and quantities) during the day before the interview (it is important to indicate to which day of the week the data refer, as food consumption patterns on weekdays or working days might well differ from those on non-working days).

Food frequency: Individuals are requested to give information on how often different types of food were consumed over a certain period. It is a semi-quantitative method.

Recording methods

Food diary or record: Individuals are requested to record over a certain period of time (a few days, a week, or a longer period) all foods consumed, both in terms of types and in terms of quantities. Quantities are estimated either by

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using common household measures such as cup, spoon, etc., or they are precisely measured by using a weighing scale. The method is very labour-intensive.

Other methods

Apart from above listed methods, there are other ways to get information on food consumption patterns, in particular at the level of populations or population groups. At the national level, food balance sheets give a first impression of dietary patterns. Food balance sheets make use of information on the quantities of food produced in a country, the amounts that are imported and exported, the amounts that are lost during various steps in the food chain, and also the amounts that are being stored or the amounts that are taken from stocks. From such data the total amount of food that is available for consumption by the population can be calculated, and therefore also the *average per capita food availability*.

At the level of a region or village, a first idea on the general food consumption pattern can be obtained by simply observing the foods available at the local market, or by making an inventory of foods that are being grown (and the types of livestock kept) by most households. In household budget surveys, information is often collected on expenditures on food. When data are also collected on prices, the quantities of food can be calculated. It may be noted that for those rural areas, where a large part of households' food supply results from households' own food production, household budget surveys do not easily lead to good estimates of the total household food availability.

Also, it should be noted that in many of these methods estimates have to be made of losses of food at the household level, either because of the fact that

food gets spoiled, because of the fact that part of the food is thrown away, or because of the fact that food is given to animals (pigs, chicken). Also, when information is available on food consumption patterns at the household level, it is not yet known how the food is distributed within the household.

Finally, it can be useful to collect information on peoples attitudes towards food and on peoples practices with respect to food preparation and food consumption. For example, for small children information may be collected on patterns of (exclusive) breastfeeding, and at what age weaning foods are introduced. Also, there may be avoidances of certain foods, as adverse effects on health are attributed to them, while other foods may be consumed because they are considered to have positive health effects, either in general or for specific groups, for example pregnant women.

Each of the above listed methods has its advantages and disadvantages, depending on the actual research question(s), and on available resources such as time, money, manpower, and skills. Before any research on food consumption will be undertaken, a motivated decision has to be taken with respect to the method that will be used.

10.3.2 Analysis and interpretation of food consumption data

The information obtained on food intake through a food consumption survey has to be translated into nutrient intake data, which is generally done with the help of so-called Food Composition Tables (FCT). These FCT 's are available for many countries, or otherwise for groups of countries, or regions of the world. It should be noted that for each different type of food the figures in FCT's are averages, and the composition of the same type of food may differ

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depending on the variety of the food being grown and on the agro-ecological conditions (climate, soil). Also, during storage, cooking, or food processing the nutrient contents of food may change, and in particular vitamins and minerals may be lost. On the other hand, the energy contents and also the protein contents of foods are less likely to change during storage or food preparation. In stead of using FCT's, the nutrient composition of foods can also directly be analysed by laboratory methods. Obviously, this is costly and requires advanced laboratory facilities and know-how.

Finally, in order to have a meaning, food consumption data have to be compared with requirements. For this purpose, tables with so-called Recommended Dietary Allowances (RDA's) or Recommended Dietary Intakes (RDI's) can be used. These tables indicate, at the level of population groups, how much of the various nutrients, on average, should be consumed to ensure that the intake of the majority of that population group is sufficient. Tables with RDI's or RDA's are published by international organizations such as FAO and WHO, while also many countries have published there own tables. The various sets with nutrient intake recommendations may show differences, for example because opinions on desirable safety margins differ or because interpretations of research findings with respect to nutrient requirements are different. Generally, recommendations for nutrient intakes are given by age group and gender, while also special allowances are given for women who are pregnant or breastfeeding.

It is important to note that recommendations for energy intake are fundamentally different from those for other nutrients. The reason is that for energy no safety margins are incorporated as a surplus of kcal consumption will lead to overweight or obesity. For all other nutrients a moderate overdoses

has no adverse effects. Also, requirements on energy intake can only be estimated when some information is available on the average level of physical activity of the group for which the requirements are to be estimated.

Finally, when information is available on the average food consumption of a population group, the per capita intake may be expressed as intake per adult equivalent. Adult equivalents indicate the ratio's between nutrient requirements of individuals belonging to different age groups (children, adolescents, adults, elderly), between those of men and women, and also between those of non-pregnant/non-lactating women and pregnant or lactating women. By expressing nutrient intake on a per adult equivalent basis, the nutrient intakes of groups that differ in age or gender composition can be compared.

From the above, it will be clear that the collection of food consumption data is complex. At practically all steps in the process there are risks of considerable errors. In interviews households may just not recall or may not be willing to provide the requested information. Losses of food may not be recorded. Estimates of amounts may be poor. Food consumption tables may not be appropriate. Also, food handling practices (storing, cooking) could well affect the nutrient contents of foods.

10.4. Assessment of Nutritional Status

There is no single method to assess the nutritional status of individuals or the nutritional status of a group of individuals. The most important methods are briefly discussed below.

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10.4.1 Laboratory investigations

Laboratory investigations can be carried out on a variety of substrates, including blood, urine, faeces, and also on tissues such as liver, hair, etc. Biochemical parameters of malnutrition are generally very sensitive, and even very mild conditions of malnutrition or nutritional deficiencies can be recognized. At the same time, a mild deficiency, as indicated by a low serum value of a nutrient for instance, might be relatively harmless. Biochemical parameters can especially serve as a warning that more severe forms of malnutrition might develop. Another example of a laboratory investigation related with nutritional status is the assessment of the presence of worms in faeces. High worm loads (e.g. hookworm) are known to be a causative factor of anemia.

10.4.2 Clinical investigations

Malnutrition, especially in its more progressive stages, is often associated with various clinical signs which can be useful in determining the type of nutritional deficiency of which the subject is suffering. For example, paleness of the skin may be caused by iron deficiency, eye lesions such as Bitot's spots and xerophthalmia are caused by vitamin A deficiency, and an enlarged thyroid gland results from iodine deficiency. However, there are also important limitations with respect to the assessment of nutritional status on the basis of clinical investigations. Most importantly, only a few signs are specific for a particular deficiency, and clinical signs such as abnormalities in the skin, lips, eyes, can be caused by several nutritional as well as non-nutritional disorders. Also, recognition of these signs requires specific skills and the interpretation is observer dependent.

10.4.3 Anthropometry

Anthropometry, the measurement of body measures, is probably the most widely used method for the assessment of nutritional status. There are various body measurements which can be used to evaluate nutritional status. The most common ones are weight and height, often in combination with information on age, if available¹.

Height-for-age

The height-for-age compared with a reference value gives an indication of stunting. A low height-for-age might indicate that growth has been retarded over a longer period. A low height-for-age is generally considered a sign of chronic malnutrition.

Weight-for-height

With weight-for-height an expression of leanness or wasting is obtained. A low weight-for-height is generally considered a sign of acute malnutrition.

1 At the level of countries, the most comprehensive currently available database on the anthropometric indicators height-for-age, weight-for-height, weight-for-age, is the document WHO/NUT/97.4, "WHO Global Database on Child Growth and Malnutrition", World Health Organisation, Geneva, Switzerland. In addition, extensive information on the prevalence of stunting in developing countries can be found in the "Third Report on the World Food Situation (December 1997)", United Nations Administrative Committee on Coordination, Subcommittee on Nutrition (ACC/SCN), United Nations, Geneva, Switzerland.

Weight-for-age

Weight-for-age is still the most widely used anthropometric parameter and can be obtained relatively easily. It is a combination of the information on height-for-age and weight-for-height. A disadvantage is that it does not discriminate between chronic and acute malnutrition.

For all above indicators, the measured results have to be compared with a reference value. The most widely known set of reference data is derived from anthropometric surveys in children in the United States (WHO,1983)². Often, cut-off points are used to separate individuals who will be classified as well-nourished from those who will be classified as undernourished. Commonly used cut-off points are, for example for weight-for-age, the 80% value of the mean of the reference set, or the mean of the reference set minus two standard deviations, or the third percentile of the reference set. In this respect it is important to note that there is a difference in interpretation of anthropometric results at the level of individuals in comparison with groups. For example, a low height-for-age of a child (e.g. below the cut-off point) does not necessarily mean that the particular child is undernourished. Just as a result of biological variation, also in a healthy population group some children have a height-for-age below the cut-off point without being subject to any nutritional deficiency. However, when in a population group a considerable percentage of children

² Currently, a new set of anthropometric reference data for children under five is being developed under auspices of the World Health Organisation (see e.g. M. de Onis and J.P. Habicht, 1996, Anthropometric reference data for international use: Recommendations from a World health Organisation Expert Committee, *Amer. J. Clin. Nutr.* 64, 650-8). The new reference data are scheduled to be available early next century.

has a height-for-age below the cut-off point, there is a clear indication of a nutritional or nutrition related problem.

Mid-upper arm circumference

Another often used anthropometric measurement is the mid-upper arm circumference (MUAC). Generally, a single cut-off value is being used (12.5 or 13 cm), independent of age, below which children in the age group 5-60 months are classified as wasted. A major advantage is that the measurement only requires a measuring tape. At the community level, the mid-upper arm circumference has been used in particular in emergency situations, such as in famines and among refugees. The measurement can be a valuable and relatively simple alternative to other anthropometric measurements.

Body Mass Index

Finally, an anthropometric method which is increasingly being used for adults is the Body Mass Index, which is a persons weight (in kg) divided by his square height (in m²). The commonly accepted normal range for BMI is 18.5-25, with individuals with a BMI below 18.5 being classified as thin or chronically energy deficient and individuals with a BMI above 25 as overweight or obese (FAO, 1994; WHO, 1995).

10.5. Epilogue

The present chapter only briefly introduces some issues, concepts, and methods, considered to be of relevance in nutrition research. As mentioned in the

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introduction, nutrition research generally involves various disciplines. It is hoped that this introduction has motivated potential researchers to consult literature and experts from the various fields when designing and implementing research projects in the field of food and nutrition.

REFERENCES

- ACC/SCN. 1990. *Women and Nutrition*, Nutrition Policy Discussion Paper No 6, , Geneva, Switzerland: Administrative Committee on Coordination/Subcommittee on Nutrition, United Nations.
- BPS. 1992. *Penduduk Jawa Barat. Hasil Sensus Penduduk 1990*. Jakarta: Biro Pusat Statistik.
- Chen, Huajie. 1996. *The role of gender in farming household decision-making in Yaan, South-Western China*. Ph.D. Thesis, Wageningen Agricultural University.
- Den Hartog, Adel, Wija A. van Staveren and Inge D. Brouwer. 1995. *Manual for social surveys on food habits and consumption in developing countries*. Weikersheim: Margraf Verlag.
- Dey, Ian. 1993. *Qualitative data analysis. A user-friendly guide for social scientists*. London and New York: Routledge.
- Diskin, P. 1994. *Understanding Linkages among Food Availability, Access, Consumption, and Nutrition in Africa: Empirical Findings and Issues from the Literature*, MSU International Development Working Papers No 46, Michigan State University.
- FAO. 1994. *Body Mass Index, A measure of chronic energy deficiency in adults*. FAO Food and Nutrition Paper No 56, Rome, Italy: Food and Agriculture Organisation.
- FHI. 1995. Unpublished materials for the Proposal Development Workshop in Indonesia, June 1995. Family Health International.

- FHI.** 1997. *A Framework for the Analysis of the Impact of Family Planning on Women's Work and Income*. No.WP97-01. Research Triangle Park, North Carolina: Family Health International, Women's Studies Project.
- Garrow, J.S., W.P.T. James.** 1993. *Human Nutrition and Dietetics*, Ninth Edition, Churchill Livingstone, Edinburgh/London.
- Gilbert, Nigel (ed.).** 1993. *Researching social life*. London, Newbury Park, New Delhi: Sage Publications.
- Miller, Brent C.** 1986. *Family Research Methods*. Family Studies Text Series 4. Beverly Hills, California: Sage Publications.
- Niehof, Anke.** 1985. *Women and Fertility in Madura, Indonesia*. Proefschrift, Rijksuniversiteit Leiden [PhD Thesis, Leiden University].
- Phillips, Ceri, Colin Palfrey and Paul Thomas.** 1994. *Evaluating Health and Social Care*. London: Macmillan.
- Scrimshaw, Susan.** 1990. 'Combining quantitative and qualitative methods in the study of intra-household resource allocation', in: B.L. Rogers and N.P. Schlossman (eds.), *Intra-household Resource Allocation: Issues and Methods for Policy and Planning*, Tokyo: United Nations University Press, pp. 86-99.
- WHO.** 1983. *Measuring Change in Nutritional Status*, World Health Organization, Geneva, Switzerland.
- WHO.** 1995. *Physical Status: The use and interpretation of anthropometry*. Technical Report Series No 854, World Health Organisation, Geneva, Switzerland.

ANNEXES

Questionnaire No., page 1 of .. pages

Example of Household Composition Sheet

Name of interviewer: Date of interview: ././.. Time started: Time finished:
 Name of respondent: Address respondent: Household size:

A. Table 1. GENERAL INFORMATION

| No. (1) | Name of household member (2) | Sex (3) | Age (4) | Marital status (5) | Relation to household head (6) | Educational level (7) | Working status (8) | Profession (9) |
|---------|------------------------------|---------|---------|--------------------|--------------------------------|-----------------------|--------------------|----------------|
| 1 | | | | | | | | |
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- (1) Household head gets number 1.
- (2) Fill in the names of the household members
- (3) Male, Female
- (4) Age
- (5) Single; Married; Divorced; Separated; Widowed
- (6) Spouse; Child; Grandchild; Parent; Sibling; Cousin; Niece/Nephew; Aunt/Uncle; Other Kin; No Kin
- (7) highest level attained: Not Applicable; Never to school; Primary School Unfinished; primary school finished; Secondary School Unfinished Secondary School Finished; Vocational School, etc.
- (8) Not Applicable; School/study; Employed; Self-Employed; Unemployed
- (9) Not Applicable; Farmer; Fisherman; Trader; Entrepreneur; Shopkeeper; Labourer; Teacher; Civil servant; Employee; Housewife and others depending on the local situation.

