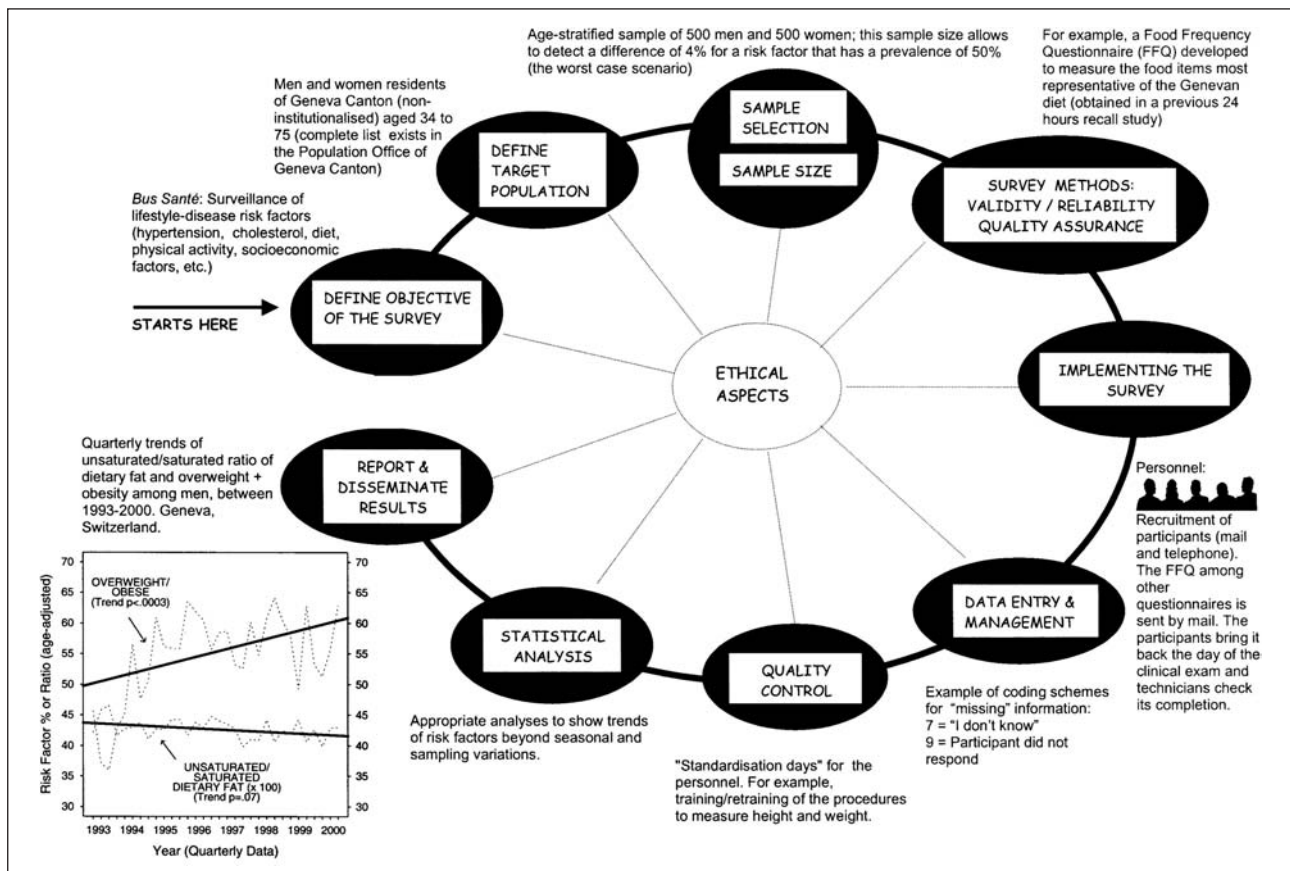


Key steps in planning a survey

This first Hints & Kinks (H&K) presents an overview and illustrates (see Fig.) key steps and main aspects involved in planning a survey. An example of a surveillance survey of risk factors for lifestyle-related diseases developed in Geneva, the „Bus Santé“, demonstrates each step.

It is important to realise that choices are made at each step of the survey. These depend on scientific, practical, and financial constraints. Justify these choices and keep records of your decisions in the *protocol* of the study, the document describing the study and all procedures used in the survey (often an update of the grant proposal).



1. *Define the objective(s) of the survey:* Clearly specify the *aim(s)* and *purpose* of your survey and decide the study design: is it a descriptive survey that takes place in one time period, a surveillance project, an analytical survey testing a specific hypothesis?
2. *Define the target population to which the results will be generalised:* State clearly in terms of place, time, and any other additional relevant criteria, the target population of your survey. Consider whether there is a complete list of this population (*sampling frame*). Often such exhaustive lists do not exist. For example, AVS/Social Security numbers, driving licenses, or telephone listings do not include all people in a given population. Determine who will be excluded so that you can assess the presence and magnitude of potential *selection biases*.
3. *Sample*
Sample selection: A survey requires some type of probability sampling. Whether (simple) random sampling suffices or more complex sampling scheme are needed, the goal is to ensure that the final sample is representative of the target population. The best advice here is to consult a statistician to make sure you are applying the correct sampling method. If specific subgroups are of interest (e.g., older people), over sampling is often necessary to provide reliable inferences in these subgroups. Finally, assess whether the sample is indeed representative of the reference population by, for example, comparing sociodemographic characteristics of the study sample with those of the most recent census.
Sample size: To obtain the minimum sample size required for descriptive surveys that have several variables of interest, focus on the one with the smallest and/or most variable effects to provide conservative sample size estimates. If subgroups of the population are of interest, apply the sample size requirement to each subgroup. When in doubt, consult a statistician on these points.
4. *Survey methods and quality assurance* (activities directed to guarantee data quality before data collection begins): Two crucial keywords, *validity* and *reliability*. This applies to questionnaires and tests, newly developed for your survey but also for existing, standardised instruments. The latter may not be useful or sensitive enough for measuring a specific exposure/outcome and its variability in your target population. Thus, each instrument must be tested in your population. For example, a diet questionnaire developed and tested to measure diet in a particular area in the US may not measure the relevant foods eaten in an area of Switzerland, therefore missing some important sources of energy intake. In general, depending on the

goal of your survey, you should decide between, a) a locally-designed questionnaire that will better capture the exposure/outcome characteristics of your particular population, and b) a pre-existing, well-known questionnaire that will allow direct comparisons among different populations, despite probably not measuring all relevant characteristics in all populations. Similarly, tests obtained with laboratory measurements require *test-retest* assessment in the population of interest and periodic comparisons with reference laboratory controlled values.

Do not neglect the importance of a well constructed and designed questionnaire. From the front to the back page, paying careful attention to details such as font, size of the text, page layout, and wording, will influence the respondents' understanding, enjoying, and ultimately participating in your survey (more on this topic in a future H&K). The method to administer the questionnaire (mail, telephone, face-to-face, internet,...) is also important, test them in advance.

If your aim is to establish a surveillance system, think twice about modifying tests or questionnaires between rounds for the sake of comparability of data across time. Nevertheless, if you have to, justify your changes and keep a record in the protocol.

At this stage in the survey planning, proceed to develop the *manual of operation*, a detailed description of procedures including sample selection, research unit (e.g., individuals or households), recruitment of participants, and all data collection instruments. This and the protocol are the reference documents of your survey; they are the guidelines that guarantee the most uniform and standardised data collection possible. They should be regularly updated and be readily accessible to all study personnel. *Pre-testing* (trying procedures out in a convenient sample) and *pilot studies* (rehearsal of the whole survey in a sample as similar as possible to the study participants) also are very important before you proceed to the next step.

5. *Implementing the survey and quality control procedures* (Monitoring and maintaining the quality of the data while conducting the study): First, you need to organise the logistics of the survey. Consider the *personnel* you need, and type of *facilities* and *space* that will be required. For example, you most likely need a room where participants can respond to questionnaires with confidentiality; do you need a dressing room where the participants can change clothes?, etc.

Recruiting the selected participants has to be comprehensive through mail, telephone and home visits if possible. Using one single recruitment method will tend to miss

some specific population categories (e.g., low income participants who do not have a telephone). To assess the potential selection bias due to *non-participation*, compare sociodemographic characteristics between the participants and the non-participants noting any significant differences.

You need to guarantee *anonymity* and *confidentiality* throughout the study process (e.g., assigning an anonymous identification number which will be used on all forms; by limiting who can access the one database containing the names of the participants). You'll also need to obtain a signed *informed consent* (approved by the local Ethical Commission, which must have also approved your study) of all survey participants.

Quality control procedures are important during the entire study period. Among others, *training* new staff, *re-training* existing staff, and periodic *certification* procedures (e.g., for measuring blood pressure) are essential. *Quality criteria* are useful for interviewers and the supervisor and *progress indicators* help monitoring the fieldwork. However, remember that data collection sometimes can become routine and boring, so it is definitely

worthwhile for the survey personnel's well-being to make their jobs as attractive and rewarding as possible (watch for a future H&K on this issue!).

Data processing begins as soon as data is acquired. Decide on a *coding scheme* that remains uniform for all questionnaires; *double checking* coding as well as *double data entry* are necessary to minimise data errors.

6. *Statistical analysis*: Make sure you use the right statistical tools to do the correct data analysis, for example, taking into account complex survey designs in the analysis, but also to make the most of your data (for which you've worked so hard!). Look for the H&Ks on statistical issues coming soon.

7. *Report and disseminate results*: Reporting the results of the study to the scientific community and the public are the final steps in the survey. It's fun, sometimes challenging, but always rewarding!

Finally, there are ethical issues to consider during the entire planning of the survey. Some of these issues were already mentioned here, however, there are many additional ethical aspects to be considered at each step of a study. This will be the topic of another H&K!

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