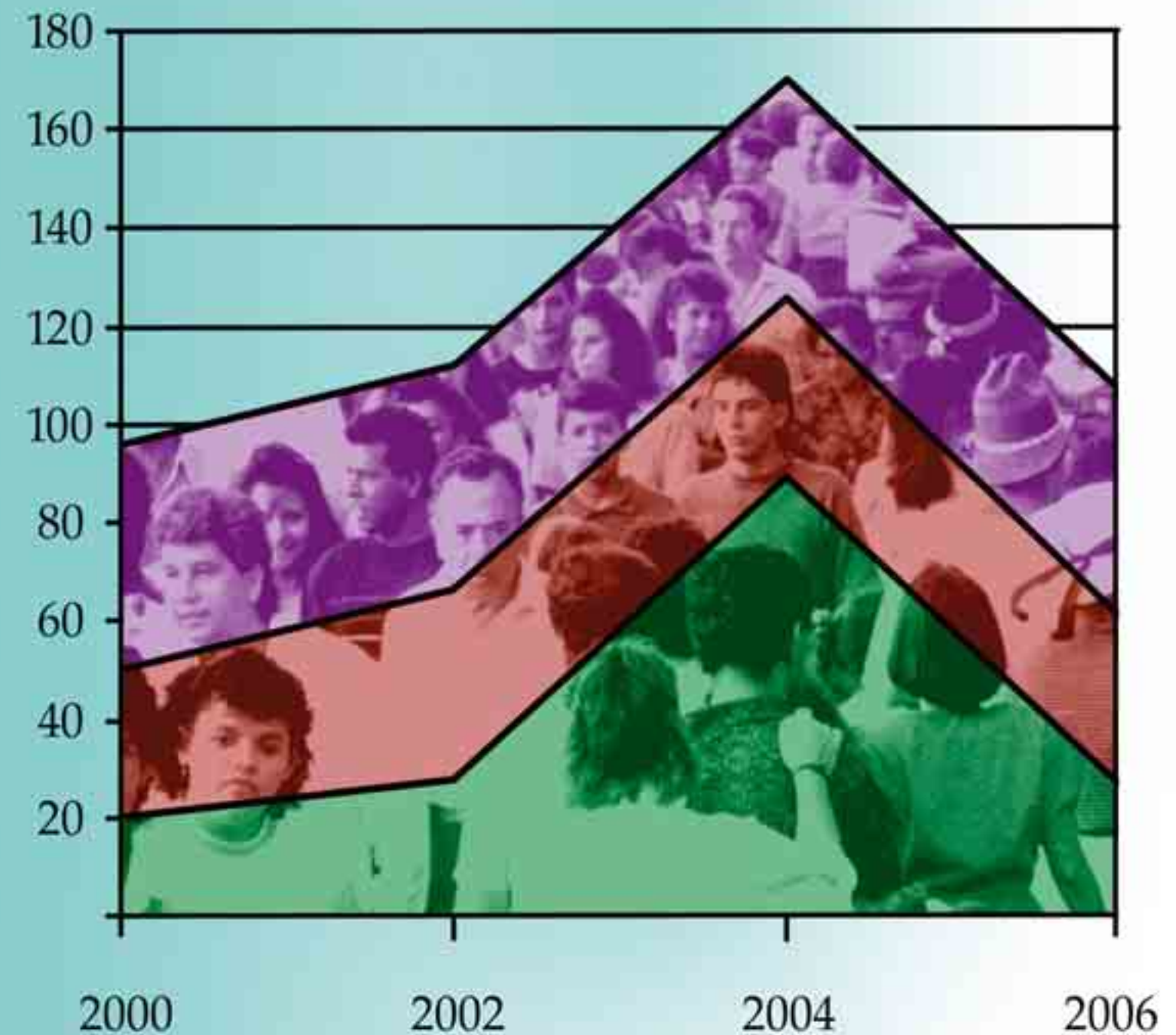


Guidelines for conducting community surveys on injuries and violence

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GUIDELINES FOR CONDUCTING COMMUNITY SURVEYS ON INJURIES AND VIOLENCE

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ABBREVIATIONS

| | |
|--------|---|
| CDC | Centers for Disease Control and Prevention, United States |
| CPS | Cumulative population size |
| DALY | Disability-adjusted life year |
| DFID | Department for International Development, United Kingdom |
| DHS | Demographic and health survey |
| ICD | International Classification of Disease |
| ICECI | International Classification of External Causes of Injury |
| MoH | Ministry of health |
| MRC | Medical Research Council |
| NGOs | Nongovernmental organizations |
| PPS | Probability proportional to size |
| UN | United Nations |
| UNICEF | United Nations International Children's Emergency Fund |
| WHO | World Health Organization |
| YPLLs | Years of potential life lost |

FOREWORD

Injuries and violence pose a major public health and development problem worldwide. According to recent estimates, each year over 5 million people around the world die as a result of an injury. However, this total pales in comparison to the huge numbers who suffer non-fatal, disabling injuries each day. Although injuries and violence affect people of all ages, races and socioeconomic status, we know that the majority of the injury burden occurs among those from low-income and middle-income countries.

Over the past few decades, as more attention has been paid to the worldwide problem of injuries, we have come to a better understanding of the nature and extent of injuries and violence. Accidents and injuries are no longer perceived as wholly random, unavoidable events but rather as ones that are largely preventable. We know that there are numerous effective measures for preventing injuries.

In order to develop effective prevention strategies, most countries need better information on the burden of injuries and violence in their communities. It was this need that prompted the World Health Organization (WHO), in collaboration with the United States Centers for Disease Control and Prevention, to publish in 2002 the *Injury surveillance guidelines*. These guidelines are aimed primarily at researchers and practitioners and provide practical advice on how to develop information systems for the systematic collection of data on injuries in health care facilities. The *Injury surveillance guidelines* have since been utilized in numerous countries around the world, and in a diverse number of settings.

Hospital-based injury surveillance systems do not, however, capture all injury events and deaths in a population. The present manual, which provides a relatively simple standard methodology for collecting data on injuries in the community, thus acts as companion document to the *Injury surveillance guidelines*. Household or community-based surveys are an important supplement to hospital-based surveillance in that they have the potential to gather more detailed information on both injury events and risk factors for injury, and are population-based.

This manual is the result of collaboration between experts from many organizations representing numerous countries from around the world. We hope that these guidelines for conducting community surveys will be especially useful in settings where resources are scarce. To this end the methodology described does not necessarily require a lot of expensive equipment or high levels of expertise. Finally, we hope that this manual will lead to better information on injuries, which in turn will facilitate prevention programmes that reduce the burden of injuries and violence.

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1. ABOUT THIS MANUAL

1.1 Rationale

Worldwide, injuries and violence are ranked among the leading causes of death and disability. This is particularly true in the case of the low-income and middle-income countries where injuries and violence are growing in significance, largely as a consequence of the epidemiologic, demographic and socioeconomic transitions that have characterized the development of these countries in recent decades (1). However, it is in these very settings that vital statistics and routine health information are most likely to be lacking or, at best, patchy. Furthermore, in many low-income and middle-income countries demographic data are often incomplete or out of date. This situation is sometimes compounded by the effects of large population displacements caused by conflict, as is the case in much of sub-Saharan Africa. For these reasons, current estimates of the burden of injuries and violence in low-income and middle-income countries are often based on projections from countries with more comprehensive injury data or on projections from population laboratories.

Community-based surveys are one way of obtaining data on injury occurrence and deaths; in some settings such surveys also provide a means of collecting baseline population and mortality data that otherwise would not be available. Community-based injury surveys have one overriding advantage over hospital-based surveillance methods in that they capture injuries that fail to reach hospitals, i.e. those injury deaths occurring in the community, injuries that are treated outside the formal health sector and minor injuries that do not necessarily require hospital attention. Overall, community-based surveys provide useful baseline information on injuries, and in many cases, the data collected may be more comprehensive than that collected through hospital-based surveillance systems. In certain situations, results of local-scale community surveys may be extrapolated to larger populations. In addition, community surveys can be an important supplement to hospital surveillance and are particularly relevant in situations where population denominator data are not available (2, 3).

A community-based survey requires specific methodological expertise that may not be widely available in many countries. The purpose of these guidelines, therefore, is to provide a standardized methodology for conducting community-based injury surveys that can be adapted for use in different settings, depending on local need and resource availability.

1.2 Injury: the scale of the problem

According to WHO data for 2000, an estimated 5.06 million people die each year as a result of some form of injury, comprising almost 9% of all deaths (4). This equates to almost 14 000 injury deaths per day. For each death from injury there are many more injuries that result in either hospitalization, treatment in emergency departments, or treatment by practitioners outside the formal health sector. Combined data from high-income countries, such as the Netherlands, Sweden and the United States of America, indicate that in these countries for every person killed by injury, approximately 30 times as many people are hospitalized and roughly 300 times as many are treated in hospital emergency rooms and then released (5).

Many of the injured will be left with disabling sequelae, and in some cases, permanent ones (1). When disability resulting from injuries is also taken into consideration, injuries represent an even more significant public health problem, especially in light of the fact that injuries affect mainly young people, that is to say, the economically most productive sector of the population. The magnitude of the problem can be quantified in terms of the number of years lost due to premature death, and the number of years lived with disability (i.e. the burden of disease). Globally, injury currently accounts for 10% of all disability-adjusted life years (DALYs) lost, and this is expected to increase to 20% by 2020 (4, 6). In terms of societal costs, the stakes are also very high; productivity losses due to injury death and disability, combined with the costs of treatment and rehabilitation of the injured are estimated to run into billions of US dollars (7).

Despite the undisputed impacts of the injury burden, limited attention has been paid to injury as a public health problem, particularly in low-income countries. There are several reasons for this relative inaction, one of which is the lack of reliable and valid information on injuries that makes the size of the problem visible to policy-makers. This document contributes to overcoming this shortfall, by providing a standardized, yet relatively simple, methodology for collecting community-based data on the nature and extent of injuries.

1.3 What and who is this manual for?

The principal aim of this manual is to set out guidelines on how to design and implement household surveys for the purpose of collecting data on injury prevalence in the community. The main focus is on the conduct of community surveys at a local as opposed to a national level. It has been designed with particular regard to those settings where vital statistics and routine health information are incomplete and where population denominator data are not necessarily available. A standard methodology for conducting injury surveillance at hospitals and other health settings is described in a companion document (8).

The manual is aimed primarily at health workers, researchers and scientists from ministries of health (MoH), academic departments and nongovernmental organizations (NGOs) who are concerned about the problem of injuries and are interested in the collection of relevant data.

1.4 Methods used to develop the manual

Recognizing the urgent need for more detailed information on injuries, especially in low-income and middle-income countries, and the fact that sustained hospital-based surveillance systems may not be feasible in many settings, WHO set about developing a methodology for conducting household surveys to assess injury burden that could be applied in less resource-rich situations. An outline methodology was presented to an Editorial Committee at a consultation meeting held in Geneva, Switzerland in June 2002. The Editorial Committee comprised a group of experts, representing most of the major world regions (including the Americas, Asia and sub-Saharan Africa) and a number of leading public health institutes, with experience in injury research in developing countries and expertise in community surveys.

In drafting the guidelines, and in addition to input from the Editorial Committee, a review of the scientific literature for studies involving household surveys on injuries and violence was conducted. Several databases were searched for published articles, including MEDLINE, EMBASE, CAB abstracts, PubMed, POPLINE and the Cochrane Library. In addition, an Internet search was conducted using GOOGLE as a search engine to identify any relevant grey literature. Secondary searches were carried out based on citations in the first search. Authors of some of the studies identified through the literature review were then contacted for further information on their questionnaire design and survey methodology. Finally, a draft version of the guidelines was subjected to peer-review by a number of individuals with relevant knowledge and experience in the field.

1.5 What does the manual do?

This manual guides the reader through the process of designing and implementing a community-based injury survey. It provides a standardized methodology for the systematic collection of data on injuries and the circumstances surrounding the events that lead to injuries. The advantages of using internationally-recognized terms and classifications for describing injuries and for coding data on injuries is explained. There is also guidance on how to apply these tools in the field, on how to obtain representative samples of the study population and how to analyse and disseminate the results of a survey. The use of standardized terms and classifications will help ensure that the data collected are both valid and reliable, and also comparable with other surveys conducted using similar methodologies. The manual is not meant to be prescriptive, but rather recommends what is generally considered to be good practice. Clearly, the exact form of the survey methods used and precisely what data are collected will vary according to the local context, priorities and resources.

Example data sets and survey questionnaires are included as part of these guidelines. These are intended to serve as a “menu”, i.e. a list of possible data elements and associated questions from which users can select those that are most appropriate for use in different settings in accordance with their own national and/or local circumstances. Proposed data sets are presented in a modular format, and are divided into “core” and “optional” data elements. It is strongly advocated that all the core data elements (i.e. what is considered to be the minimum amount of information necessary for planning purposes at all levels) be collected as part of any community-based injury survey. The proposed optional modules are for use where more detailed data are needed for a specific setting or injury problem. The standard definitions of injuries and other terms employed are almost identical to those used in the recently published *Injury surveillance guidelines* (8), thus providing consistency with other recent international initiatives.

The manual is organized as follows:

- Chapter 2 explains the public health benefits of collecting injury data using a community survey and provides an introduction to some of the key terms.
- Chapter 3 outlines the initial steps that need to be taken in planning and organizing a community survey.
- Chapter 4 provides background information on various population sampling methodologies, paying particular attention to the technique of multi-stage cluster sampling at the district or local level.
- Chapter 5 lists the data elements recommended for use in community surveys.
- Chapter 6 explains the preparation necessary before embarking on data collection.
- Chapter 7 has details on conducting the survey in the field.
- Chapter 8 outlines some of the ethical aspects of conducting a community injury survey.
- Chapter 9 deals with data entry and analysis of raw data.
- Chapter 10 discusses the importance of reporting and the dissemination of the results of the survey from the point of view of public health action and the planning of injury prevention programmes.

Additional information relating to various aspects of conducting injury surveys, including timetabling, budgetary considerations, model job descriptions and instructions for field staff, and a selection of example survey questionnaires can be found at the end of the document, in a series of appendices.

2. WHY COLLECT INJURY DATA USING A COMMUNITY SURVEY?

2.1 What is an injury?

For the purposes of these guidelines, as in the case of the *Injury surveillance guidelines* (8), the term “injury” is used to describe the physical damage that results when a human body is suddenly or briefly subjected to intolerable levels of energy. It can be a bodily lesion resulting from acute exposure to energy in amounts that exceed the threshold of physiological tolerance, or it can be an impairment of function resulting from a lack of one or more vital elements (i.e. water, air, warmth), as in drowning, strangulation or freezing.

2.2 Types of injury

Injuries may be classified in a number of ways. A commonly used method for classifying injuries is according to whether or not they were deliberately inflicted and by whom. For many purposes, including identifying intervention opportunities, this mode of classification has been found to be particularly useful (8) and forms the basis of injury classification within the International Statistical Classification of Diseases and Related Health Problems (ICD-10). According to the rules and conventions of ICD-10, injuries are included under external causes of mortality and morbidity. Within this broad grouping, injuries are subdivided into three main categories, as follows (9):

- A. Unintentional (i.e. accidental).
- B. Intentional (i.e. deliberate):
 - interpersonal violence (e.g. assault, homicide, intimate partner violence, sexual violence);
 - self-directed violence or self-harm (e.g. deliberate overdose of drugs and alcohol, self-mutilation, self-immolation, suicide);
 - legal intervention (e.g. action by police or other law enforcement personnel);
 - war, civil insurrection and disturbances (e.g. demonstrations and riots).
- C. Undetermined intent (i.e. when it is difficult to judge whether an injury was inflicted intentionally or accidentally).

Another common method of classifying injuries is according to the mechanism which caused the injury. Mechanisms of injury include:

- road traffic crashes;
- poisoning;
- falls;
- fires/burns;
- drowning/near-drowning;
- firearms.

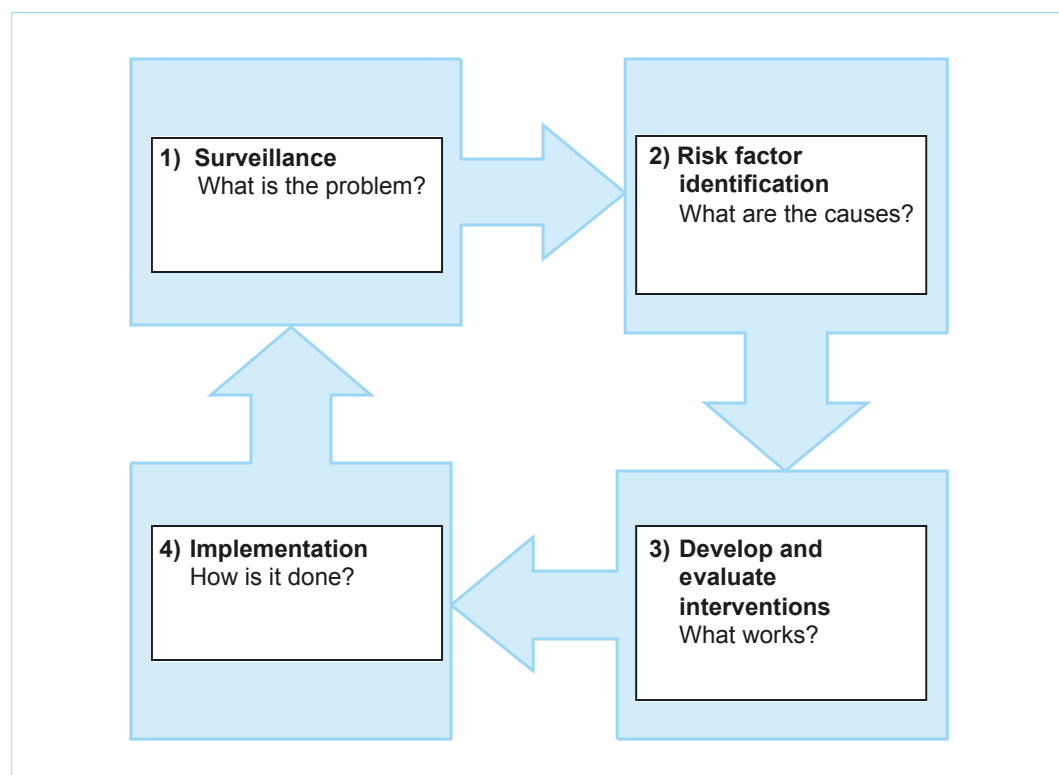
2.3 The need for information and the public health approach to injury prevention

The public health approach to any health problem has at its heart a multisectoral and science-based framework (see Fig. 1). The application of this framework has allowed the field of public health to respond to a wide range of health problems and diseases, including injuries, and involves four key steps (1):

1. The first step is to determine the magnitude, scope, and characteristics of the problem (i.e. it is necessary to look at when, where, what and how the injury happened).
2. The second step is to identify the factors that increase the risk of injury or disability and to determine which factors are potentially modifiable (i.e. understand how and why injuries happen).
3. The third step is to assess what measures can be taken to prevent the problem, by using the information acquired in step 2 to design, pilot-test and evaluate interventions.
4. The final step is to implement the most promising interventions on a broad scale.

Having accurate and reliable information on both the intent and the mechanism of injury is thus critical to the understanding of the burden of injuries and violence in a population, and is a vital first step in achieving a public health solution to the injury problem.

Figure 1: The public health approach



2.4 Community versus hospital-based injury surveillance

As mentioned in the introduction to this document, injuries and violence make a considerable contribution to the disease burden in all countries in all regions of the world. However, despite recent progress in understanding the broad patterns, the precise magnitude of injury-related mortality and disability is not known for many individual countries. In many low-income and middle-income countries, vital statistics and routine health information may also be incomplete.

There is a clear need for better, more reliable data on the nature and extent of injury. Sound epidemiological data are essential not only for quantifying the magnitude of a public health problem (step 1) but also for identifying risk and protective factors (step two) and for developing and monitoring interventions and prevention programmes (steps three and four). There are several ways in which information on injuries can be obtained: from national vital statistics systems, through hospital-based surveillance, via community surveys and from specific research studies. In many settings, hospital-based surveillance and community surveys are the two main routes by which information about injuries is obtained.

Hospital-based surveillance systems suffer from a number of shortcomings, not least of which is the fact that they tend to underestimate the burden of injury. Deaths due to injury that occur outside the hospital environment will not be covered by such systems; they also fail to capture those injuries that do not receive hospital attention (either because the injury was not severe enough to warrant medical treatment or because help was sought elsewhere). Community-based surveys, on the other hand, have the potential to collect detailed information on all types of injuries. Furthermore, in settings where vital statistics and hospital-based data are non-existent or unreliable, community surveys may be the only source of information. It must be stressed, however, that community surveys are not intended to be a replacement for hospital-based surveillance, but rather that they be viewed as a useful adjunct. Nor are community surveys without limitations of their own. Not only are community surveys resource intensive (and for this reason tend to be conducted only periodically) but they are particularly prone to recall bias. The relative merits of hospital-based surveillance versus community surveys are outlined in greater detail in Table 1.

The usefulness of community surveys will be greatly enhanced if they are conducted according to an established standard methodology. Use of a standardized data collection method at the community level, such as that outlined in this manual, will ensure that:

- the data collected represents the population under study rather than only those people who have sought health care;
- data collection is scientifically robust;
- data from different agencies may be compiled centrally;
- there is an opportunity to compare data between different regions and countries (2).

In terms of the public health approach to injury prevention, a community survey primarily contributes to the first two steps, the description of the magnitude of the problem and the identification of risk factors (section 2.3). The data collected in a community survey can also assist in setting priorities for action and guide programme design for intervention.

Table 1: Advantages and disadvantages of hospital-based injury surveillance and community injury surveys

| Surveillance method | Advantages | Disadvantages |
|------------------------------------|--|---|
| Hospital-based surveillance | <p>Readily accessible patients.</p> <p>Captures severe cases.</p> <p>Useful for case-fatality rates.</p> <p>Useful for calculating hospital proportionate mortality.</p> <p>Relatively inexpensive to conduct as can use existing hospital resources.</p> <p>Can be used for ongoing surveillance and can therefore identify trends.</p> <p>Useful for highlighting demand, resource constraints and improving quality of health care.</p> <p>Useful for estimating injury incidence if surveys are impractical.</p> <p>Useful for reasons of safety when it may be unsafe to do a survey.</p> | <p>May underestimate injury incidence because:</p> <ul style="list-style-type: none"> • may miss deaths occurring outside hospital; • will miss cases seeking help at hospitals outside district; • will miss mild cases who seek treatment at health post/centre or don't seek treatment at all. <p>Difficult to define catchment population.</p> <p>Do not assess injury-related disability or long-term consequences of injury.</p> |
| Community surveys | <p>Data collected on all injuries regardless of where or if treatment is sought.</p> <p>Useful for calculating mortality rates.</p> <p>Potential for characterizing injuries by various demographic subpopulations (e.g. by age and sex), by place of occurrence, and by type and nature of injury.</p> <p>Study sample can be representative of the general population.</p> <p>Can use the survey to define the denominator population.</p> <p>Allows for computation of incidence and prevalence rates by demographic and other parameters.</p> <p>Allows for direct comparison of injury rates between different demographic or geographic regions.</p> <p>Provides opportunity to examine people's perceptions with regard to causes and prevention of injuries.</p> <p>Can provide estimates on injury burden in terms of costs, disability and mortality.</p> <p>Can obtain information on health care utilization.</p> <p>Provides opportunities to examine sociocultural determinants of injuries.</p> <p>Provides baseline data that can be used for surveillance of different types of injuries.</p> | <p>Pose various practical and logistical difficulties, for example, safety and security concerns (of interviewers and respondents), difficult access to homes in heavily protected high-income areas, and daytime absence of respondents (especially in urban settings when the desired respondents are at work).</p> <p>Relatively high cost; require more effort in terms of resources (i.e. human, financial, time).</p> <p>Can only be done periodically.</p> <p>Prone to recall bias (longer recall periods significantly underestimate the injury rate).</p> <p>Prone to selection bias or sampling error and/or measurement errors.</p> <p>Raise certain ethical issues; care has to be taken not to violate confidentiality.</p> <p>Use of proxy respondents can undermine reliability of the data collected.</p> <p>Use of non-standardized terms and protocols limits usefulness of results, especially in terms of comparability with other studies.</p> |

3. PLANNING AND ORGANIZING THE SURVEY

3.1 What is a community survey?

A community survey is a population-based epidemiological study in which a cross-section of a reference population is surveyed by means of a standard instrument for information collection, such as a questionnaire. Typically, such surveys comprise several stages:

1. Planning (this chapter).
2. Selection of a study population from a reference population (chapter 4).
3. Formulation of a standard instrument or questionnaire (chapter 5).
4. Data collection from the study population (chapters 6, 7 and 8).
5. Data processing (chapter 9).
6. Dissemination of results (chapter 10).

3.2 Planning the survey: key considerations

In planning a community survey, there are a number of factors and issues that need to be considered at the outset (10); these are discussed in the subsections below. Good planning is essential to the success of a survey; among other things, advance planning avoids duplication of effort, maximizes use of resources, and, most fundamentally of all, ensures that the data collected are relevant.

3.2.1 Establishing survey objectives

Survey objectives are primarily influenced by national and local priorities and resource availability. Ideally, the objectives of the survey should be established through discussion with stakeholders. Generally speaking, members of the stakeholder group will be key staff from health ministries, United Nations agencies, donors and local and international NGOs, academic partners, and key personnel from related sectors such as transport, police and education who have a specific interest in injuries and their impacts. Stakeholders should be asked to prioritize the types of injuries that, in their opinion, require greater investigation. Their expertise and knowledge of local issues and concerns can provide valuable background information relating to local culture, attitudes and conditions that, in turn, will greatly assist the planning process.

3.2.2 Scope of the survey

One of the fundamental decisions to be made during the survey planning stage is whether or not a national estimate of injury prevalence is required. If a national estimate is the desired objective, a nationally representative reference population will need to be surveyed.

Although in many instances it is desirable to have a national estimate of injury prevalence, it may not always be possible to conduct a nationally representative survey for logistical reasons. Availability of resources, for example, is frequently a limiting factor. As a first approximation, however, it may be possible to conduct two local surveys, one in an urban area and one in a rural population. These geographical categories would be the basis for obtaining two diverse estimates of injury prevalence that represent the range for the national population. The relative merits of the two approaches (i.e. a national versus a combination of an urban and a rural survey) need to be carefully weighed up during the planning stage.

The main advantages and disadvantages of national- and local-scale surveys are summarized in Table 2. There is further discussion of this issue in chapter 4. In short, the results obtained from restricted samples will have limited generalizability compared with a truly national one, but smaller scale surveys will be easier and less expensive to conduct, and have the potential to study specific issues and concerns in much greater detail.

Table 2: Advantages and disadvantages of national versus local surveys

| Survey type | Advantages | Disadvantages |
|-----------------|---|---|
| National | Nationally representative sample. Respond to national objectives. Can infer country level burden of disease from injuries. Can study rare events. | Difficult to conduct. Resource intensive. Higher costs. |
| Local | Can study local problems in greater detail. Can respond to local objectives. Easier to conduct. Less expensive. Fewer skilled personnel required. | Cannot infer to country level. |

3.2.3 Selection of data for collection

The objectives of the survey will influence which items of data need to be included as part of the survey and, in turn, the design and length of the questionnaire used to collect the necessary data. The rationale for selecting specific data items and aspects of questionnaire design are discussed in greater detail in chapter 5.

3.2.4 Timetabling the survey

Establishing a timetable for the study is an important part of the planning process, given that the full survey cycle — from inception to publication and dissemination of results — will probably take several months. A model timetable, outlining the minimum estimated time needed for completing a full survey cycle, is shown in Appendix 1.

One very important issue to keep in mind when drawing up a survey timetable is seasonality. For example, fieldwork may not be feasible during the rainy season due to poor road conditions, during harvesting and/or during special religious periods. The timing of the survey will also have a bearing on the interpretation of the results, as the incidence and nature of injuries can vary with the seasons.

3.2.5 Identification of resources

Conducting a community survey is a resource intensive activity and cannot be undertaken without adequate resources, both financial and human. It will be necessary to calculate in advance how much the survey will cost and to allocate resources accordingly. Survey costs will be governed to a large extent by the sample size, and will determine whether a national survey is feasible, or whether a local survey is more appropriate.

Survey costs vary greatly between countries, and depend not only on local currency and labour costs but also on the degree to which costs can be reduced by using existing facilities. For example, significant savings can be achieved by using government personnel for interviewing, employing public or government-provided transportation, obtaining free accommodation and meals for the survey team from local institutions, and so forth. Similarly, there are also a number of options for reducing survey costs in terms of the burden of data collection and sampling effort that should be given serious consideration during the very early stages of the planning process; these are:

- *Adding on questions about injuries to a survey planned for the near future.* If a survey is planned (e.g. a demographic and health survey), it may be possible to add an injury module to the proposed questionnaire (see also section 4.1.2).
- *Use of an existing sampling frame.* Alternatively, it may be possible to use a sampling frame employed by a previous survey or census provided that it is scientifically robust and reasonably recent (see also section 4.1.2).

Appendix 2 provides a sample checklist of the main items of expenditure required by a typical community survey. Additional comments on a number of specific areas are as follows:

- *Survey coordinator.* In collaboration with local partners, a survey coordinator must be identified early in the planning process. This person will preferably be a professional with some previous experience in conducting community surveys with a medical or science background. He/she will make sure that the entire study runs smoothly and that the survey procedures are followed. The survey coordinator will also be responsible for obtaining the assistance of resource persons, as well as the cooperation of other government agencies at different levels. To help them in their work, a senior resource person (or institution) should be identified to collaborate closely with the survey coordinator, particularly during the survey design stages. Ideally, this person should also have ample technical expertise in survey design, implementation and data analysis.
- *Translation and pre-testing.* Plans need to be made for translating the questionnaire into the local language(s) and for pre-testing it in a pilot phase (see also section 5.2.3 and section 6.2). Both of these tasks need to be built into the timetable and cost estimates for the survey.
- *Training of field staff.* It is equally important to make appropriate allowances for staff training. This is a very important aspect of survey preparation and has a direct bearing on the quality of the data collected by the survey; it is therefore crucial to allocate adequate time and resources for training. Staff recruitment and training are discussed in greater detail in sections 6.3 and 6.5.
- *Technical support.* It is advisable to develop a suitable data analysis and reporting system during the planning stage of the survey, as these procedures will impact upon the timetable, resource allocation and questionnaire design. It is best to do this in conjunction with an experienced statistician (see also section 6.6). The amount of technical support required to establish workable, preferably computerized, data-entry, analysis and reporting procedures should be explored by early discussion with the national census/statistics office and other stakeholders from ministries of health, local and international NGOs, academic partners, and various United Nations agencies, as appropriate.

3.2.6 *Ethical approval and permission from authorities*

It may be necessary to obtain ethical approval or permission to carry out a community survey from the ministry of health and/or other partner organizations, as appropriate. When seeking this, the issue of confidentiality should be addressed (see also chapter 8).

4. SAMPLING METHODOLOGIES

In this chapter the following topics are explained:

- The basic concepts of sampling and sampling methods.
- How to calculate an appropriate sample size.
- The methodology for multi-stage cluster sampling with probability proportional to size at a district (or local) level.

4.1 Basic concepts

4.1.1 *Why use a sample?*

In an ideal world, in order to assess the prevalence of injuries in a given population, one would interview all members of that population. In practice, however, this is unrealistic, given that surveying entire populations is both time-consuming and prohibitively expensive. Instead, a sample or a representative subset of the population is selected, and then that subset is surveyed. The selection of a representative survey population for the purpose of determining injury prevalence is essentially a two-stage process: it involves firstly, the choice of a suitable method of sampling, and secondly, the determination of an appropriate sample size.

4.1.2 *Sampling methods*

Methods of sampling are broadly classified as either “probability” or “non-probability”. Probability methods produce samples in which every member of the reference population has a known chance or probability of being included in the sample. Simple random samples, stratified random samples, systematic samples and cluster samples are all examples of probability sampling techniques. In contrast, a non-probability sample is selected in such a way that each unit’s chance of being selected from the reference population is not known; the selection of the participants is arbitrary or subjective. Examples of non-probability samples include convenience samples, purposive samples or quota samples.

Probability samples are more likely to be representative of the population than non-probability samples. The weakness of all non-probability sampling stems from their subjectivity, which introduces bias and precludes any valid basis for drawing inferences beyond the sample members themselves to the larger population. Probability or random sampling methods are generally considered to be the more rigorous and accurate and for this reason are preferred by most researchers. The features of each of the four main probability sampling methods are described below.

Simple random sampling

Simple random sampling is the term used to describe the process by which a sample, of the required size, is selected at random from the total population under study. This is the simplest type of probability sampling and it produces an unbiased sample in which every subject has an equal chance of being selected. For example, it may have been determined that a survey designed to assess the quality of a high-risk pregnancy programme in a public health clinic with 500 clients requires a sample of 50 cases. The required 50 case records could be selected from the original 500 by using a table of random numbers. The ratio of 50 in 500 (or one in ten) is called the “sampling fraction”. As each case record has an equal chance of being selected, the results of the survey can be generalized to all 500 high-risk mothers.

Stratified random sampling

Stratified random sampling involves the selection of a sample from a number of population subgroups or “strata” so as to obtain a more accurate representation or cross-section of the population in the sample. The objective is to divide the total population into a number of smaller but comparable groups, for example, according to their age, sex, socioeconomic status or location (i.e. urban or rural). Once a stratum has been defined, a simple random sample is selected from each stratum. The sampling fraction may be constant over all strata, in which case, like the simple random sample, every member of the population would have an equal chance of being included in the sample. Alternatively, the sampling fraction may vary over the various strata. This may be useful in situations where it may be necessary to oversample certain strata, for instance, when the condition being investigated is less prevalent in those strata. In these circumstances, the probability of inclusion is known, but not equal. Stratification is frequently the preferred sampling method for surveys that are focused on relatively small population subgroups (e.g. nursing mothers or smokers).

Systematic sampling

A systematic sample is generated by randomly picking a number that lies between one and the top end of the sampling fraction, starting the selection process with that record number and thereafter selecting every record that falls at an interval equivalent in magnitude to the sampling fraction. For example, using the systematic sampling methodology to select 50 of 500 records (i.e. the sampling fraction is 1:10) would mean randomly picking a number between one and ten, inclusively. If that number was six say, then the sixth record would be the first to be selected. Every tenth record would be selected thereafter until all 50 records had been selected (i.e. the 6th, 16th, 26th, 36th ...496th record would be selected).

Cluster sampling

Cluster sampling involves dividing the entire population of interest into groups or clusters and then selecting, at random, a number of these groups or clusters. Clusters tend to be formed from naturally occurring units or groupings within the population, for instance, enumeration areas, cities, universities, provinces, districts or hospitals. Cluster sampling is useful because it avoids having to compile exhaustive lists of every individual in the population; lists (i.e. the sampling frame) are only required for the clusters that are picked.

It is a feature of cluster sampling that individuals in the same cluster are likely to be fairly similar to one another (i.e. share certain characteristics). For example, if one respondent in a particular cluster has experienced a minor injury, it is likely that his or her neighbours will have experienced one too. Respondents within a cluster who are alike with respect to, say, their minor injury prevalence, are described as “homogeneous”. Some measures, including for example admission to hospital, will be more affected by clustering than others: children living in a community with a hospital are more likely to be admitted than children living in a community without a hospital (11). The loss of variation in a sample that occurs as a consequence of

using cluster sampling, as opposed to any other probability method (e.g. simple random sampling), is known as the “design effect”, and is a factor that needs to be taken into account when calculating the required sample size for a cluster sample (see section 4.1.3). The magnitude of the design effect depends both on the degree of similarity among respondents within a cluster and on the size of the clusters.

Multi-stage sampling techniques

All probability sampling methods, including those described above, have two components in common, namely:

- a sampling frame (or list of individuals, geographical areas, hospitals, etc.) from which units are selected; and
- a randomization procedure that assigns a positive probability of selection to every unit in the sampling frame.

A complete list of all individual population members (the sampling frame) is rarely available, or if such a list is available, it may be too large and unwieldy to use. To overcome such a problem, multi-stage sampling procedures are often employed. In multi-stage sampling, the population of interest is divided into large units, for example, by states or provinces, from which a sample is drawn. This sample of large units is expanded into smaller units, perhaps towns or districts, from which a sample is again drawn. This sample may in turn be expanded into still smaller units, such as households, from which the final selection will be made. Each point of sampling is called a “stage” and the term “multi-stage sampling procedure” is generally used to refer to a sample selection process that has at least two stages.

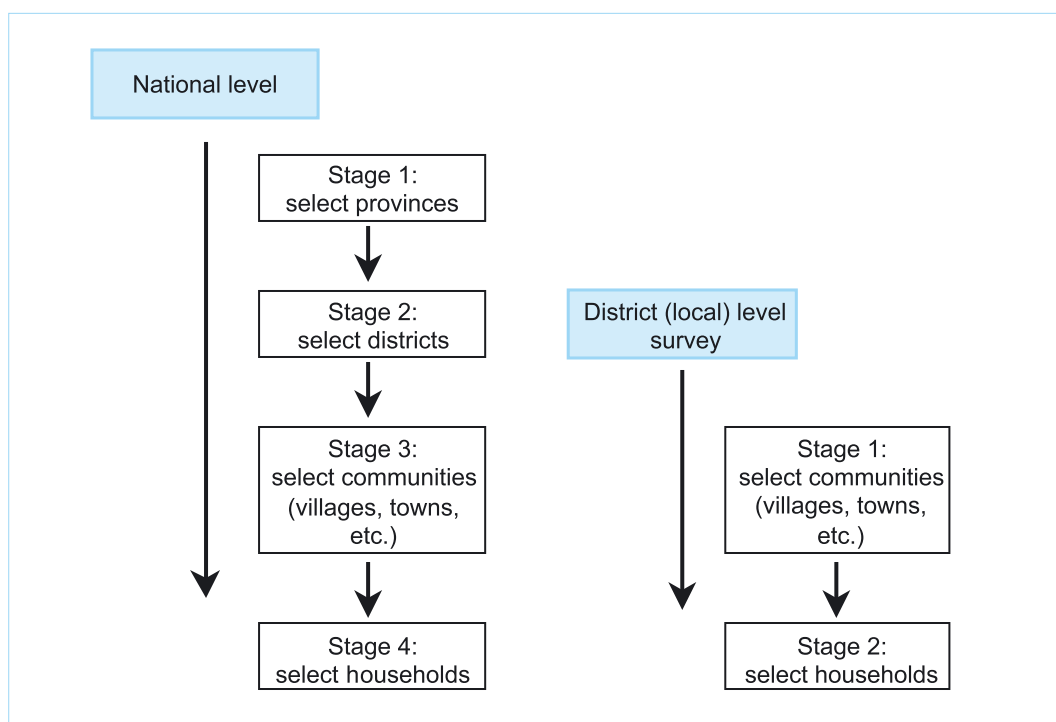
Any of the probability sampling techniques may be used at each stage of a multi-stage procedure; for instance, stratified sampling can be used to select the sample at stage I, random sampling at stage II and systematic sampling at stage III. However, for many purposes, including community surveys, it is helpful to select the first stage sample via random sampling with probability proportional to size (PPS). Using PPS means that the probability of selection into the survey sample for each sample unit of that stage is directly proportional to its size (i.e. the larger the unit, the greater its likelihood of being selected). It is logical that larger first stage units should contribute more to the sample, as they contribute more to the reference population.

Multi-stage cluster sampling with PPS is the method most widely recommended for community injury surveys (3, 12–16). Whereas a national survey would typically involve four or more sampling stages, a smaller, district-wide survey need only involve two (see Fig. 2). The basic principles are, however, the same. Since national surveys require sizeable resources, both human and financial, in many settings it is simply not possible to conduct a community survey on a national basis. The remainder of this chapter therefore focuses on two-stage cluster sampling (i.e. the process represented by the right hand part of Fig. 2) that can be applied at the district level (or equivalent) and guides the user, step-by-step, through the process of sample selection using this technique. A worked example is provided to illustrate the principles involved.

If, however, a national estimate of injury prevalence is required, it may be possible to use an existing nationally representative sample (the national statistical office or the MoH are the most likely sources) as the basis for the survey. This would greatly reduce the burden of conducting a national-scale survey. Existing national samples or survey programmes can be utilized in a number of ways (17):

- *Attach injury modules to the questionnaires used for other surveys.* If another survey is being planned, you may want to explore the option of adding injury questions to the questionnaire of the planned survey. It is important to bear in mind that adding questions to a planned survey will increase respondent burden so that you may only be able to add a limited set of questions related to injuries and/or violence.
- *Use the sampling frame from a previous survey to select households for your survey.* This will save you the time and resources of developing your own sampling frame. Given a household listing from a previous survey or census, you can use an appropriate sampling methodology to select households for your own sample.
- *Use household listings in the sample enumeration areas of another survey.* In this case, most of the sampling procedures will already have been done for you. Bear in mind that revisiting the same households as a previous survey increases respondent burden.

Figure 2: Sampling stages for conducting national or district-level surveys



4.1.3 Sample size

It is important that the sample population be of sufficient size to allow for the detection of differences between groups within the population. At the same time, the sample should not be unduly large, as this would incur greater costs for only a marginal increase in information. For any given situation, the optimal sample size depends on a range of factors, including the prevalence of what it is you are trying to measure, the acceptable margin of error, design effect (for cluster sampling) and the likely non-response rate.

Standard statistical formulas are used to calculate optimal sample sizes; the standard formula for calculating the appropriate sample size for a household survey, where households are selected by cluster sampling, is as follows (17):

$$n = [4 (r) (1-r) (f) (1.1)] / [(e^2) (p) (n_h)]$$

where

- n = the required sample size,
- 4 = a factor to achieve 95% level of confidence (i.e. a reflection of the degree of certainty of obtaining the same results if the survey were to be repeated),
- r = the anticipated prevalence of the outcome being measured,
- 1.1 = a factor necessary to raise the sample size by 10% to allow for non-responses,
- f = the design effect,
- e = the margin of error to be tolerated,
- p = the proportion of the total population that the smallest subgroup comprises,
- n_h = the average household size.

A number of statistical software packages, such as EpiInfo, which are capable of calculating optimal sample sizes for a given set of conditions are widely available in many countries. Some of these are available free of charge as downloads from the Internet¹.

4.2 Two-stage cluster sampling with PPS: a worked example

This section describes in greater detail the sequence of steps involved in obtaining a suitable sample for the purposes of conducting a local-scale survey of injury prevalence in a reference population. Having calculated the required sample size (through the application of a standard formula), a two-stage cluster sampling with PPS methodology is applied to select the survey units (i.e. the individual households for interview). In the worked example provided to illustrate the sampling methodology, districts (or the equivalent) are selected as the primary sampling unit, and as such form the starting point for the sampling procedure. However, in some countries the size of the primary sampling units may demand the use of more than two sampling stages. If this is the case, the procedures outlined here are still valid, but will simply require the addition of one or more stages to the sampling procedure, as necessary.

¹ EpiInfo is available from the Internet at <http://www.cdc.gov/epiinfo/>. In addition to downloading the computer programme, you can also download the EpiInfo user's manual. Once the programme is downloaded, the Help menu provides tutorials and exercises to assist you in learning how to use and navigate EpiInfo.

4.2.1 Step one: calculating the required sample size

The calculation of the optimal sample size can be broken down into a series of individual steps, as follows:

1. Estimate the prevalence of injuries in the study population.
2. Decide on an acceptable margin of error.
3. Determine the appropriate design effect.
4. Estimate the non-response rate.
5. Determine the average household size.
6. If a subgroup of the population is of interest, determine what proportion that subgroup is of the total population
7. Apply the standard formula to calculate the sample size.

1. Estimate the prevalence of injuries in the study population

In order to calculate the required sample size for your survey, it is essential to have a rough idea of the prevalence of injury in the study population at the outset. One possible source of such information might be hospital statistics. Alternatively, you could refer to published findings of community-based studies that report injury rates in order to infer injury prevalence in your study population, that is to say, search the published literature for prevalence data for your country or for a setting that is similar to yours. A selection of results from a number of low-income and middle-income countries is summarized in Appendix 3. These studies show that injury mortality rates typically range from 24 to 217 per 100 000 person-years; non-fatal injury incidence ranges from 19 to 383 per 1000 person-years; and disability prevalence ranges from 0.7% to 2.8%.

It is a statistical fact that the required sample size for a given level of precision increases inversely to the prevalence of the condition, i.e. the lower the prevalence of the indicator, the greater the sample size required to measure it (see section 4.1.3). Thus in order to measure injury deaths, a rare event compared with minor injuries, a much larger sample is required. This can have profound resource implications and if the required sample size outstretches your available resources, it may be necessary to rethink your survey objectives. For example, sample size requirements may preclude the investigation of injury mortality rates as part of the survey and these may need to be dropped as an objective of the study.

Note that the sample size will vary according to each measure of interest, be it mortality rate in the whole population, prevalence of disability or prevalence of major injuries. Therefore, if your survey is measuring more than one injury outcome, you will need to use the outcome with the lowest prevalence as the basis for your sample size calculation. This will guarantee that other outcome measures will also be measured with equal or smaller margins of error.

Example

Recent data from the emergency room of a large city hospital shows an injury incidence rate of 383 per 1000 population. An incidence rate of 38% would thus seem to be a reasonable estimate to use in the calculation of required sample size.

2. Decide on an acceptable margin of error

A survey of a sample of individuals will provide an estimate of the true prevalence of the disease or condition under investigation. Due to sampling error, this estimate will not be an exact measurement. Nevertheless, the use of probability sampling does allow us to calculate a range in which the true prevalence could reasonably be expected to fall. The upper and lower limits of this range are known as the “margins of error” (or the level of precision or the confidence interval). Thus, the margin of error is a measure that quantifies the uncertainty about a survey result that is introduced by virtue of the fact that we are surveying a sample of the study population rather than the whole population.

Part of the calculation of the required sample size involves deciding on how close to the true prevalence you wish your estimate to be, i.e. setting an acceptable margin of error. Setting a narrower margin of error will increase the sample size required in the survey. Thus, there is a trade off to be had between achieving greater precision on the one hand, and acceptable practicality and cost on the other. You must be sure that your sample is large enough to achieve the level of precision that you require, bearing in mind that margins of error of greater than 10 percentage points are probably too wide to be of any use.

Based on previous experience with community injury surveys, we recommend using a margin of error of between 1% and 10% (0.01–0.1). A reasonable margin of error for minor injuries is plus or minus 5 percentage points. Using a margin of error of $\pm 5\%$ means that, if the survey finds a minor injury rate of 38%, we can be reasonably confident that the true population value is between 33% and 43%, i.e. within 5 percentage points of the true value. For rare events, such as injury deaths, the margin of error should be smaller than 5% (between 1% and 2% is generally considered to be acceptable) but this will increase the sample size required tremendously.

3. Determine the appropriate design effect factor

The use of cluster sampling, as opposed to say simple random sampling, introduces an element of bias into the sample population (a loss of variation), allowance for which is made via the application of the so-called “design effect” (see section 4.1.2). The “design effect” is a factor included in the calculation of the required sample size that increases the sample size in proportion to the degree of bias that can be introduced by clustering. In practice, the magnitude of the design effect ranges from 1 to 3. Based on experience from other cluster surveys, we recommend using a design effect of 2 (i.e. in effect doubling the sample size relative to that required in a simple random sample).

It is possible to derive a more accurate estimate of the magnitude of the design effect (and also the margin of error) on completion of the survey during the data analysis stage (see chapter 9). However, such computations will require the services of an experienced statistician.

4.

In all surveys, some of the planned interviews fail to take place because people are either absent from their homes or refuse to be interviewed or participate in the survey. Non-response rates vary widely from country to country, and between urban and rural areas, particularly where maternal work outside the home is common. Strategies for minimizing such losses are discussed in chapter 7.

It is common practice, when calculating the sample size, to increase the required sample size to allow for non-responses. You can estimate the likely proportion of non-responses from previous surveys that have been conducted in your country. In the absence of such information, a rate of 10% – which is generally considered to be a reasonable estimate of

losses – can be assumed, and your sample size should be adjusted accordingly. A non-response rate of greater than 10% casts doubt over the survey design (e.g. the survey questionnaire may be too long, the questions difficult to answer, the timing of the visits or even of the survey itself may be wrong). Whatever the reasons, however, a high non-response rate would seriously compromise the validity of the survey data generated.

5. Determine the average household size

The average household size varies between countries. Previous surveys or national statistical offices are the most likely sources of information on average household size. Based on the experience of several low-income and middle-income countries, an average household size of six members seems to be a reasonable estimate for this parameter, and the one used in the worked example below.

6. If a subgroup of the population is of interest, determine what proportion that subgroup is of the total population

If injury prevalence in particular subgroups of the population (e.g. children under 5 years, smokers, women) is the object of the survey, then the sample size (in terms of the number of households) needs to be adjusted upwards accordingly. For surveys of injury prevalence in the whole population, “p” the proportion of the total population in the standard formula for sample size is simply 1; for injury prevalence in a subgroup of the population, the value of “p” needs to be adjusted by an amount that reflects what proportion the subgroup is of the total population.

Example

Suppose you are only interested in collecting information on children under 5 years of age. You know that on average, 15% of each household will be children under 5 years. The proportion of the total population that this subgroup represents, i.e. “p” is thus 0.15.

7. Calculate the sample size

Having obtained estimates of injury prevalence, determined the average household size, set a margin of error and established a probable design effect, it is now possible to calculate your required sample size using the standard formula given in section 4.1.3.

Example

For an anticipated prevalence of 38% (r), a design effect of 2 (f), an estimated non-response rate of 10% and an average household size of 6 (n_h), the number of households that would need to be surveyed in order to estimate the prevalence of injuries in the whole population, with a margin of error of $\pm 5\%$ is calculated as follows:

$$\text{number of households, } n = [4 (r) (1-r) (f) (1.1)] / [(e^2) (p) (n_h)]$$

where

4 = the factor to achieve 95% level of confidence

r = 38%

1.1 = factor necessary to raise the sample size by 10% to allow for non-responses

f = 2

e = 5%

p = 1 (whole population)

n_h = 6,

thus:

$$n = [4 (0.38) (1-0.38) (2) (1.1)] / [(0.05^2) (1) (6)]$$

$$n = 138 \text{ households}$$

Table 3 is a sample size table in which sample sizes (number of households) for a range of survey scenarios have already been calculated, thus circumnavigating the need to use the formula given in section 4.1.3. The calculations all assume a confidence level of 95%, a design effect of 2, a non-response rate of 10% and an average household size of 6 persons. This table illustrates the effects of narrow margins of error, restricting study populations and varying prevalence rates on the required sample size (17).

Table 3: Sample sizes table

| Survey population | Anticipated prevalence of outcome | Margin of error | Required number of households |
|--|-----------------------------------|-----------------|-------------------------------|
| Children < 5 years (i.e. $p = 0.15$) | 0.4 | 0.05 | 937 |
| | 0.1 | 0.05 | 352 |
| Whole population | 0.4 | 0.05 | 140 |
| | 0.2 | 0.05 | 94 |
| | 0.2 | 0.02 | 587 |
| | 0.2 | 0.01 | 2350 |
| | 0.05 | 0.02 | 174 |
| | 0.02 | 0.05 | 270 |
| | 0.04 | 0.02 | 140 |

4.2.2 Step two: sample selection

Having determined the optimal sample size for your community injury survey, you are now in a position to start the process of selecting a sample study population using two-stage cluster sampling with PPS. Stage 1 of the process involves selecting clusters (villages) using a systematic random sampling technique (with PPS). In stage 2 you will select segments (sub-clusters) within each cluster to develop a list of households to interview. Remember that a district is the primary sampling unit and the divisions (e.g. villages, parishes, localities) within the district provide you with your sampling frame. Table 4 describes the sampling process in detail; each step of the process is illustrated by a worked example.

Table 4: Selecting a sample survey population using two-stage cluster sampling with PPS

| Step | Explanation | Worked example | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--|--|--|---------|------------|-----|---|------|------|---|-----|------|---|-----|------|---|-----|------|---|------|------|---|------|------|---|------|------|---|-----|------|---|-----|------|---|-----|------|
| Stage one: selecting your clusters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. Define your study unit | For the purposes of conducting community surveys, a household (i.e. a house, hut, room or apartment in which a family lives together with any relatives and lodgers) is commonly used as the study unit. Household members prepare food, eat and sleep at this address. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. Determine the total number of households that need to be surveyed | The number of households that need to be surveyed is calculated by applying the sample size formula (see section 4.1.3) | Required sample size = 138 households | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 3. Determine the appropriate cluster size | The cluster size corresponds to the number of households that your survey team can cover in one day. Cluster size will depend on the size of your interviewer team and the length of time it takes to conduct each household interview (this will be determined when you pilot test your survey). Somewhere between 20 and 40 households is usually a good cluster size. | Typically, a six-person interviewer team can cover 36 households per day. Thus: 1 cluster = 36 households. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 4. Determine the number of stage one sample units (clusters) you must select | Divide the total number of households you need to visit to satisfy your sample size by the number of households in your cluster (i.e. cluster size). | 138 households / 36 = 4 clusters | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 5. Select each stage one sample unit using systematic random sampling with PPS | a) Establish your sampling frame, that is to say, list all the settlements (i.e. villages, communities, towns) in the survey area (district) with their respective population and the cumulative population size (CPS). | <table> <tr> <th>Village</th><th>Population</th><th>CPS</th></tr> <tr> <td>A</td><td>1000</td><td>1000</td></tr> <tr> <td>B</td><td>400</td><td>1400</td></tr> <tr> <td>C</td><td>200</td><td>1600</td></tr> <tr> <td>D</td><td>300</td><td>1900</td></tr> <tr> <td>E</td><td>1200</td><td>3100</td></tr> <tr> <td>F</td><td>1000</td><td>4100</td></tr> <tr> <td>G</td><td>1600</td><td>5700</td></tr> <tr> <td>H</td><td>200</td><td>5900</td></tr> <tr> <td>I</td><td>350</td><td>6250</td></tr> <tr> <td>J</td><td>450</td><td>6700</td></tr> </table> | Village | Population | CPS | A | 1000 | 1000 | B | 400 | 1400 | C | 200 | 1600 | D | 300 | 1900 | E | 1200 | 3100 | F | 1000 | 4100 | G | 1600 | 5700 | H | 200 | 5900 | I | 350 | 6250 | J | 450 | 6700 |
| Village | Population | CPS | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| A | 1000 | 1000 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| B | 400 | 1400 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C | 200 | 1600 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| D | 300 | 1900 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| E | 1200 | 3100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| F | 1000 | 4100 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| G | 1600 | 5700 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| H | 200 | 5900 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| I | 350 | 6250 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| J | 450 | 6700 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| Step | Explanation | Worked example |
|---|---|---|
| | b) Calculate the sampling interval by dividing the total population of the survey area by number of sample units (clusters) you need to select. | $6700 / 4 = 1675$ |
| | c) Choose a random number between 1 and the sampling interval. | Suppose it is 1352 |
| | d) Fit the random number you have just picked into the CPS list and choose the sample unit that contains that number. | Since 1352 lies between 1000 and 1400, village B is chosen. Mark the selected unit or note down the name separately. |
| | e) Add the sampling interval to the random number and select the second unit based on this sum (i.e. fit the sum into the CPS list and choose the unit that includes that number). | $1352 + 1675 = 3027$ Since 3027 lies between 1900 and 3100, village E is chosen. |
| | f) Add the sampling interval to the sum from the previous step and fit the number into the CPS list. Choose the third unit by selecting the village that includes that number. | $3027 + 1675 = 4702$ Since 4702 lies between 4100 and 5700, village G is chosen. |
| | g) Add the sampling interval to the sum from the previous step and fit the number into the CPS list. Choose the fourth unit by selecting the village that includes that number. Note: It is possible that the same community could be selected twice. In this case, during stage 2, in step 3 you will need to select two segments within the duplicate cluster. | $4702 + 1675 = 6377$ Since 6377 lies between 6250 and 6700, village J is chosen. |
| | h) Make a list of the first stage sample units (clusters) that have been selected. | Village B Village E Village G Village J |
| Stage 2: selecting sub-clusters (or segments) | | |
| 1. Draw a sketch map of each selected first stage sample unit | The map of each selected first stage sample unit (cluster) should show the location of all households, as well as roads, rivers and other boundaries. Up-to-date maps may be available from the planning office or from previous surveys that have been done in the survey area. Alternatively, if suitable maps are not available, field workers can be sent out to complete the mapping (may require training). | A sketch map of village B is given as Fig. 3. |
| 2. Divide each selected first stage sampling unit into segments | Each segment should contain roughly the number of households the survey team can comfortably visit in one day (see stage 1, step 3). | When doing the cluster mapping, keep the following in mind: a) The segments should be roughly equal in size, as measured in number of households (in this example 36). b) The segments should have clear, identifiable boundaries with enough permanence to remain distinguishable throughout the period. In this respect, roads, streets, tree lines, rivers and utility lines are favoured. c) Assign each segment a number. |

| Step | Explanation | Worked example |
|---|--|--|
| 3. Randomly select one segment from each selected primary sampling unit | <p>You can use any one of several methods to randomly select the segments. Two different methods are presented here.</p> <p>Note: If one cluster was selected twice during stage one, you will need to select two segments from this cluster during this step.</p> | <p>Method 1: picking numbers from a box. On individual pieces of paper write the number '1', '2', '3', and so on up to last number on the segment list. Fold each piece of paper and put them in a box and mix them up very well several times. Ask someone to draw out as many of the folded papers as necessary (in this case 1).</p> <p>Method 2: using a random number table. Random number tables consist of blocks of numbers. Numbers are selected from this table and the segment on the list with the same number is chosen for inclusion in the study. Random number tables and instructions for their use are available in standard statistics textbooks.</p> |
| 4. Make a list of all the households in each of the segments selected | Use a systematic approach to draw up a list of all the households in each of the segments selected. Fieldworkers should visit all households within each of the selected segments and interview all eligible individuals. | Provide field workers with lists and/or maps of the segments that clearly identify the households that are to be interviewed. Each segment should have a unique identifier with each household in the segment also being assigned a number or other identifier. This will enable the field supervisor to assure that each segment and the corresponding households have been surveyed. |

4.2.3 The segment form

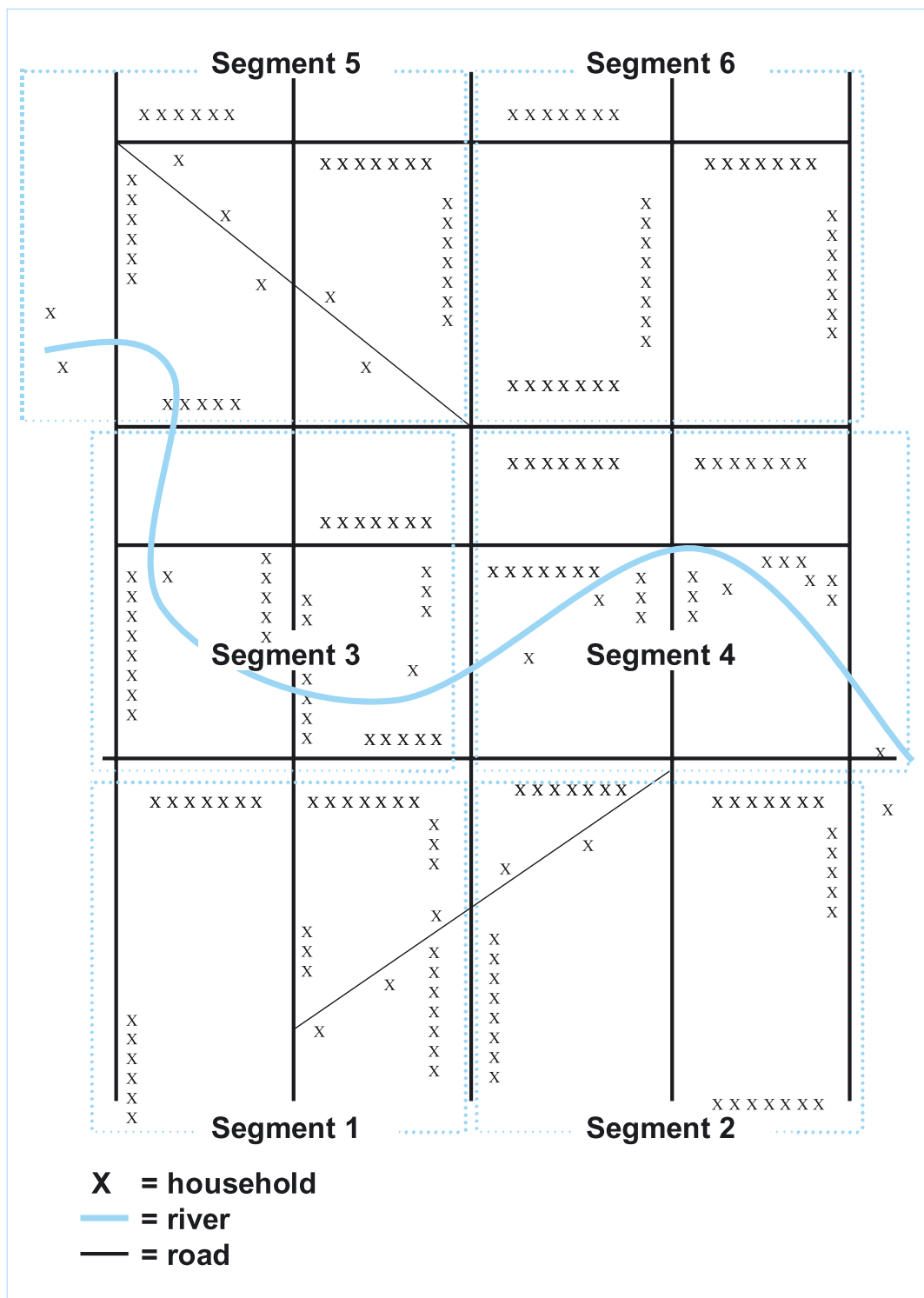
It is a good idea to develop a form that can be used to keep a record of the number of households and interviews that are conducted in each of the segments that are selected. This form can be given to the field workers to provide them with a list of the households they need to visit during their workday and a place to keep track of interviews. Ideally, a segment form should include the following information:

- the segment identifier (name or number);
- a description of the geographic location of the segment (e.g. name of the village in which the segment is located);
- a list of households in the segment that need to be visited;
- space for field workers to check off interviews as they are completed and to write any remarks.

You may also want to include a place for the field workers to record the total number of respondents in each household. An example of a segment form is attached as Appendix 4.

Figure 3: Sample cluster segmentation scheme

Sketch map of Village B



5. DATA COLLECTION

Having determined your sample size, and bearing in mind the objectives of your survey, you will now need to decide on precisely what information you are going to collect and how you will collect it. This chapter provides detailed guidance on both of these critical components of survey design. With regard to the latter, it is recommended that data be collected by means of a standard survey tool or instrument, such as a questionnaire having closed, rather than open-ended questions (see below). The guidance provided here on what data to collect is based on a comprehensive review of the published and grey literature on community surveys on injuries and violence, coupled with the advice and suggestions of several experienced researchers whose expertise in questionnaire design provided valuable assistance with framing suitable questions. Past studies and surveys that were used during the process of drawing up a list of recommended data elements and their associated questions are summarized in Appendix 3.

5.1 Survey data elements

5.1.1 Core and expanded data sets

Based on a review of past experience, we have identified a minimum set of data that we consider essential to any community-based survey on injuries and violence. This is referred to throughout as the “core” data set and comprises a total of 24 pieces of information grouped as follows:

- 1.1 Demographic information
 - 1.1.1 Identifier
 - 1.1.2 Age
 - 1.1.3 Sex
 - 1.1.4 Education (number of years spent in full-time education)
 - 1.1.5 Occupation
- 1.2 Injury event factors
 - 1.2.1 Place
 - 1.2.2 Activity
 - 1.2.3 Mechanism
 - 1.2.4 Intent
 - 1.2.5 Nature
 - 1.2.6 Use of alcohol
- 1.3 Injury-related disability
 - 1.3.1 Physical disability (did the injury result in disability or not)
 - 1.3.2 Nature of physical disability

-
- 1.4 Medical care and treatment of injury
 - 1.4.1 Seeking medical care
 - 1.4.2 Place of medical care
 - 1.4.3 Admission to hospital/health facility
 - 1.4.4 Length of hospital stay
 - 1.5 Post-injury impact
 - 1.5.1 Affect on usual activities
 - 1.5.2 Return to normal activity
 - 1.5.3 Loss of employment
 - 1.5.4 Household member loss of work/school
 - 1.6 Injury-related death
 - 1.6.1 Age at death
 - 1.6.2 Place of death
 - 1.6.3 Time of death (in relation to injury event)

In addition to the core data set, we have also included suggestions for a series of “expanded” data sets that can be added to your survey instrument, depending on your specific information needs and available resources. For example, data elements that can be used to collect more detailed information on certain types of injuries, such as traffic-related injuries or violence-related injuries, are provided (items numbered 1.7 to 1.13). There are also data sets for collecting further information on injury-related disability, the nature of the medical care and treatment sought by the victim, and how the injury has impacted the victim’s life and family (items numbered 1.14 to 1.16). In sum, the expanded data elements are:

- 1.7 Traffic-related injuries
 - 1.7.1 Mode of transport
 - 1.7.2 Victim role (type of road user)
 - 1.7.3 Counterpart
 - 1.7.4 Seat belt use (by the injured person)
 - 1.7.5 Helmet use (by the injured person)
- 1.8 Violence-related injury
 - 1.8.1 Relationship (of perpetrator to victim)
 - 1.8.2 Object (item or action used to injure victim)
 - 1.8.3 Feeling of safety
 - 1.8.4 Control of temper
 - 1.8.5 Weapon carrying
 - 1.8.6 Childhood violence (history of)
- 1.9 Suicidal behaviour
 - 1.9.1 Thoughts about suicide
 - 1.9.2 Plan for committing suicide
 - 1.9.3 Suicide attempts
 - 1.9.3.1 Number of suicide attempts in lifetime
 - 1.9.3.2 Method of most recent attempt
 - 1.9.3.3 Medical attention for most recent attempt

-
- 1.10 Poisoning-related injuries
 - 1.10.1 Substance
 - 1.10.2 Access to product
 - 1.11 Fall-related injuries
 - 1.11.1 Height of fall
 - 1.11.2 Object or place person fell from
 - 1.12 Burn-related injuries
 - 1.12.1 Substance causing burn
 - 1.13 Drowning/near-drowning
 - 1.13.1 Activity (at time of event)
 - 1.13.2 Body of water
 - 1.14 Injury-related disability
 - 1.14.1 Ability to transfer (from bed to chair)
 - 1.14.2 Bathing
 - 1.14.3 Toilet use
 - 1.14.4 Stairs
 - 1.14.5 Mobility
 - 1.15 Medical care and treatment of injury
 - 1.15.1 First-aid at scene
 - 1.15.2 Person who provided first-aid
 - 1.15.3 Transport to health facility
 - 1.15.4 Transport time (to reach health facility)
 - 1.16 Post-injury impact
 - 1.16.1 Decline of household income
 - 1.16.2 Decline in food consumption
 - 1.16.3 Loss of job (household member) to care for victim
 - 1.16.4 Loans to pay for medical treatment
 - 1.16.5 Selling possessions (to pay for medical treatment or make up for lost income)
 - 1.16.6 Loans to pay for funeral
 - 1.16.7 Selling possessions to pay for funeral

For each of the data elements in these two categories, i.e. the core and the expanded data sets, the following information is listed (see sections 5.3 and 5.4, respectively):

- A description or **definition** of the data element.
- **Obligation** of the data element (i.e. does it belong to the core or expanded data set).
- Discussion or **rationale** of why it is necessary to collect a particular piece of data and the ways in which it can be useful.
- **Coding instructions** for the standard classification of data.
- **Reference** for justification and further information on the data element.

-
- **Notes** that give further important information about the data element.
 - **Example questions** that can be used in the questionnaire to collect data from respondents.

5.1.2 Using standard codes

Please note that for most data elements suggestions are provided for coding the responses, i.e. under the “Coding instructions” for each data element there is a list of codes (usually numeric) that correspond to the options in a multiple-choice list of possible answers to the question posed in the questionnaire. Using a system of coded responses has a number of advantages that become particularly evident at the data entry stage; not only is it much quicker to enter numeric codes (instead of words or phrases), it also decreases the chance of erroneous data entry.

It is strongly recommended that you use internationally-recognized, standard classifications and codes for classifying and coding the data obtained during the course of your community injury survey. Use of standard codes will ensure that data collected by your survey can be compared and collated with data collected by other injury surveillance systems and surveys. The coding instructions provided in this manual for each data element are based on the classifications and codes as set out in the following publications:

- *International Statistical Classification of Diseases and Related Health Problems*, tenth revision (known as ICD-10)(9).
- *International Classification of the External Causes of Injury* (ICECI) (18).

You will notice that for some of the data elements we encourage adding classifications that are peculiar to local circumstances. For example, since occupational categories tend to vary between countries, the coding instructions for the data element “Occupation” (number 1.1.5) are intended as suggestions only and should be adapted to suit the local context.

5.1.3 Case definition

For the purposes of your survey you will need to determine your “case definition”, that is to say, decide on what type of injury cases will be included in the survey. This is usually a matter of distinguishing between degrees of severity of injury and is thus sometimes known as a “severity threshold”. For example, you may wish to include only those cases in which injury lead to medical treatment. In this case you will need to include a screening question at the beginning of your survey tool that seeks this information. The table in Appendix 3 illustrates the range of case definitions that have been used for community surveys on injuries by various researchers in the past. Note that each injury event represents one case of injury, i.e. each injury event counts as one record and so you need to fill in a questionnaire for each injury event, remembering that the same person could suffer more than one injury in the recall period.

5.1.4 Recall period

The period of recall is time frame within which survey participants are asked to recollect if the outcome of interest occurred. The accuracy of an individual's recall is influenced by various factors, including memory decay. Most individuals are more likely to forget minor injuries and thus underreport such events. On the other hand, studies have also shown that most people have a tendency to report events occurring outside the recall period as if they had occurred within it, a factor that will lead to overestimation (19, 20). On the grounds

that people tend to remember major events and forget minor incidents unless they are very recent, it is recommended that a recall period of up to 3 months be used when obtaining information on minor injuries and a recall period of 12 months be used for more severe (but less frequent) injuries and deaths (20). Recall bias is discussed again in chapter 9.

5.2 Designing your questionnaire

5.2.1 General considerations

We recommend that you include provision for all the data elements listed in the core data set in your questionnaire. When deciding which of the expanded data elements to include in your survey, it is advisable to keep the following in mind:

- the objectives you have set out for your survey;
- the limitations imposed by the available financial and human resources;
- the concerns and sensitivities of the injured persons and their families.

The sets of information corresponding to each data element given in sections 5.3 and 5.4 will assist you in building your questionnaire. We encourage using the questions in the form in which they are suggested (or as close as possible) for the simple reason that they are derived from past survey experience and in this sense have been “tried and tested”.

When compiling your questionnaire, it is important to include a section on household-level demographic data (see Appendix 5). This will act a guide for the interviewer as to whom in the household is eligible for the survey. This section should aim to collect the following information:

- age and sex of each household member;
- which, if any, household members have experienced an injury within the defined recall period;
- whether anyone in the household has died from an injury within the specified recall period.

Questionnaires whose questions are closed as opposed to open-ended (i.e. a list of possible answers are provided from which the respondent chooses the most appropriate) are generally considered to be the best option for community surveys. Although restrictive in the sense that respondents do not have the freedom to answer in their own words, the use of a closed questionnaire greatly eases data processing and facilitates comparisons with results of other surveys (see also section 5.1.2). It is also recommended that the questionnaire be interviewer-administered, rather than self-administered. This avoids any problems related to literacy and comprehension of the language.

Other general points to keep in mind when designing your questionnaire include the following:

- Start with a straightforward introduction that explains the purpose of the survey and the type of information you are seeking. This gives the interviewer the opportunity to engage the respondent and to explain the purpose of the survey and reassure the respondent that all information will be kept strictly confidential (21). It also allows the interviewer to obtain the respondent’s consent. A model introduction and consent section is attached as Appendix 6.
- Make the forms easy on the eye, easy to understand, and easy to complete.

- The questions should follow a logical order, starting with the general questions before going on to more specific matters; like questions should be grouped together. The order in which the core data elements are presented in section 5.3 is a good way of organizing your questionnaire.
- Don't expect the respondent to recall information from a previous question.
- Provide clear instructions on question routing for the interviewers (i.e. where the interviewer goes next, depending on the answer to the question(s) just asked). For some questions, it is helpful if the interviewer prompts the respondent by reading the answer choices out loud. For those data elements where this is likely to be important, comment to that effect is made in the coding instructions for that particular data element (see sections 5.3 and 5.4).
- Only collect information that is essential to your survey objectives and keep the questionnaire as short as possible.
- Emotionally sensitive questions should be placed at the end of the interview. This will help minimize non-response and allows the interviewer the maximum amount of time to establish a relationship with the respondent.

Several examples of past questionnaires are annexed to this manual and can be used as models for designing your own questionnaire (see Appendices 7–9).

5.2.2 The respondent

For collecting demographic data about the household (e.g. number of household members, injuries among household members) it is generally preferable to interview the senior (or eldest) female in the household (21) as female carers are the most likely to know the injury history of all household members. Once the demographic details for the household have been obtained and the senior female has identified those persons who have suffered injuries within the specified recall period, it is best to complete the interview by asking questions directly of the injured person if they are available; if not, then the head of the household can be used as a proxy respondent. If, however, the injured person is a child, questions should be directed at the senior female or main caretaker of that child. In the case of injury-related deaths among household members, again the senior female should be questioned about the event(s).

Space must be made on questionnaires for the interviewer to indicate if the injured person is the respondent or a proxy (i.e. someone other than the respondent). There must also be sufficient room for the interviewer to indicate the relationship between the proxy and the injured/dead person.

Example

Who is the respondent for this interview?

- ☐ The injured person
☐ A proxy

If a proxy is the respondent, what is the relationship of the proxy to the injured/dead person (e.g. mother, father, grandmother, brother, sister, wife)?

Relationship: _____

5.2.3 Pre-testing the questionnaire

It is extremely important to pre-test your questionnaire in the field. The aim of the pre-test is to identify potential problem areas, unanticipated interpretations and cultural objections to any of the questions. The pre-test should be conducted on a sample population similar to that which will be the subject of the survey proper. For example, if the survey is going to take place in a rural area, then the pre-test should also take place in a similar, but not the same, rural area.

The aim of the pre-test is to assess and evaluate the effectiveness of the survey tool, especially in the following areas:

- Are respondents willing to answer questions in the way you have asked them?
- Are any of the questions particularly difficult to answer?
- Are the questions well understood by the respondents?
- Is the language and terminology used well understood by the interviewers and by the respondents?
- Are the questions sensitively phrased when addressing sensitive issues?
- Can the interviewers follow the instructions easily, or do they misinterpret them?
- Is the questionnaire designed with adequate space and is the coding of answers clear?
- Is it necessary to create new codes for common answers that were not included in the original questionnaire?
- How long does one interview take? (This will help you to decide how many interviewers you will need and the segment size.)

On completion, the results of the pre-test should be discussed with colleagues, with the interviewers and, if necessary, with the translators. Any necessary changes to the instructions to interviewers should also be made at this stage. If the pre-test reveals that respondents refuse to answer certain questions in the form given in the questionnaire, you may need to consider making modifications to parts of the questionnaire. If a significant number of respondents refuse to participate in the survey, the entire survey instrument and process will require review.

5.3 The core data elements

The core data elements recommended for inclusion in any household survey on injuries are detailed below. This data set comprises demographic information, injury event factors, injury-related disability, the medical care and treatment of injuries, post-injury impact information, and data related to injury-related deaths.

| 1.1 Demographic information | | |
|-------------------------------|--|--|
| IDENTIFIER 1.1.1 | | |
| Description/definition | The identifier is something that uniquely identifies each case of injury and is used to avoid double counting. In the case of community surveys, it is important to use an identifier that denotes the segment, household and respondent. A systematic approach should be adopted when developing a numbering structure. | |
| Obligation | Core | |
| Discussion/rationale | Each identification code uniquely identifies each case in the system and is used to avoid double counting. | |
| Coding instructions | Numeric character string | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | | |
| Example questions | <u>Proxy</u> N/A | <u>Victim</u> N/A |
| AGE 1.1.2 | | |
| Description/definition | Age in years at the time of injury. | |
| Obligation | Core | |
| Discussion/rationale | Standard demographic information. Record the age of the respondent/victim when they were injured. | |
| Coding instructions | Numeric (record age in years) | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | It is best to record the actual age of the person (in years) and then to assign age groups during the data entry phase. Field staff should be instructed to estimate the age if they cannot obtain exact information. For children under five, recording age in months can assist analysis. | |
| Example questions | <u>Proxy</u> How old was the injured person when he/she was hurt? | <u>Victim</u> How old were you when you were injured? |
| SEX 1.1.3 | | |
| Description/definition | Sex of the injured person | |
| Obligation | Core | |
| Discussion/rationale | Standard demographic information. Record sex (male or female) as observed if victim is the respondent. If respondent is a proxy, record sex based on answer to prompt. | |
| Coding instructions | 01 Male 02 Female 09 Unknown or undetermined | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | | |
| Example questions | <u>Proxy</u> Is the injured person male or female? | <u>Victim</u> N/A (based on observation) |

EDUCATION 1.1.4

| | | |
|-------------------------------|---|--|
| Description/definition | Number of years spent in full-time education by victim. | |
| Obligation | Core | |
| Discussion/rationale | Used as a measure of socio-economic status. | |
| Coding instructions | Either record the total number of years (numeric) or use a series of codes, for example: 01 Elementary school 02 High school 03 University 09 Unknown or undetermined | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | Specific levels of education vary by country so that the coding choices should be adapted accordingly. | |
| Example questions | <u>Proxy</u> In total, how many years has the injured person spent at school or in full-time study? | <u>Victim</u> In total, how many years have you spent in school or full-time study? |

OCCUPATION 1.1.5

| | | |
|-------------------------------|--|---|
| Description/definition | Current occupation of the victim or, in the case of any injury-related death, the occupation of the victim at the time of his/her death. | |
| Obligation | Core | |
| Discussion/rationale | Used as a proxy measure of socio-economic status. | |
| Coding instructions | 01 Farmer 02 Civil servant (government employee) 03 Self-employed 04 Street vendor 05 Professional 06 Student 07 Homemaker 08 Non-paid worker/volunteer 10 Retired 11 Unemployed (able to work) 12 Unemployed (unable to work) 98 Other (specify) 99 Unknown | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | As occupational categories vary by country, the coding choices listed above should be adapted accordingly. | |
| Example questions | <u>Proxy</u> What is the injured person's current occupation? or At the time of his/her death what was the injured person's occupation? (In the case of an injury-related death.) | <u>Victim</u> What is your current occupation? |

| 1.2 Injury event factors | | | PLACE 1.2.1 |
|-------------------------------|---|--|----------------|
| Description/definition | Type of place where the injury event occurred. | | |
| Obligation | Core | | |
| Discussion/rationale | Describing the physical context of an injury event helps to identify risky environments. By showing the relationship between different injury causes and different places of occurrence, interventions directed to those contexts can be designed. For instance, a high frequency of burn injuries in the home may indicate the need for safe cooking facilities to be developed. | | |
| Coding instructions | 01 Home 02 School 03 Street/highway 04 Residential institution 05 Sports and athletic area 06 Industrial or construction 07 Farm (excluding home) 08 Commercial area (shop, store, hotel, bar, office) 09 Countryside 98 Other (specify) 99 Unknown | | |
| Reference | <i>Injury surveillance guidelines (8)</i> | | |
| Notes | Read from the list and ask the respondent to indicate the answer that applies to him/her or the person on whose behalf they are answering. As place categories vary by country, the items listed above should be adapted accordingly. | | |
| Example questions | Proxy Where was the injured person when the injury occurred? | Victim Where were you when you were injured? | |
| | | | ACTIVITY 1.2.2 |
| Description/definition | What the victim was doing at the time of the injury. | | |
| Obligation | Core | | |
| Discussion/rationale | This information shows the relationship between the pre-event activities and the event itself and helps to identify causal factors. This may, in turn, be useful for identifying interventions that reduce exposure to these risk factors. | | |
| Coding instructions | 01 Paid work (including travel to and from work) 02 Unpaid work (including travel to and from work) 03 Education 04 Sports 05 Leisure/play 06 Vital activity (i.e. sleeping, eating, washing) 07 Travelling 08 Unspecified activities (hanging around, doing nothing) 98 Other (specify) 99 Unknown | | |
| Reference | <i>Injury surveillance guidelines (8)</i> | | |
| Notes | Read from the list and ask the respondent to indicate the answer that applies to him/her or the person on whose behalf they are answering. As activity categories vary by country, the items listed above should be adapted accordingly. | | |
| Example questions | Proxy What was the injured person doing when he/she was injured? | Victim What were you doing when you were injured? | |

MECHANISM 1.2.3

| | | |
|-------------------------------|--|--|
| Description/definition | Description of how the injury was inflicted. | |
| Obligation | Core | |
| Discussion/rationale | This is an account of how the injury was inflicted and helps to identify the most common causes of injury in a population. | |
| Coding instructions | 01 Traffic 02 Fall 03 Struck/hit by person or object 04 Stab 05 Gun shot 06 Fire, flames or heat 07 Drowning or near-drowning 08 Poisoning 09 Animal bite 10 Electricity shock 98 Other (specify) 99 Unknown | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | Read from the list of options and ask the respondent to indicate the answer that applies to him/her or the person on whose behalf they are answering. If more than one cause is indicated, ask the respondent to say what they think the main cause was. Enter only one number into the response space. | |
| Example questions | Proxy | Victim What was the cause of the injured person's injury (how were you hurt)? (how was the injured person hurt)? |

INTENT 1.2.4

| | | |
|-------------------------------|--|---|
| Description/definition | The role of human intent in the occurrence of the injury incident. | |
| Obligation | Core | |
| Discussion/rationale | To understand the motives behind the injury, i.e. whether the injury was inflicted on purpose or whether it was unintentional (occurred by accident). | |
| Coding instructions | 01 It was an accident (unintentional) 02 Someone else did it to me deliberately (intentional) 03 I did it to myself deliberately (self-inflicted) 99 Don't know | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | If the intent was to hurt, then the injury is intentional even if the person actually injured may not have been the intended victim or the injury was not as serious as intended. For example, a gun fired at one person but which injures another instead is still classified as an intentional injury. | |
| Example questions | Proxy How did the injury happen? Was it an accident, did someone else do this to the injured person, or did the injured person do this to him/herself? | Victim How did the injury happen? Was it an accident, did someone else hurt you, or did you hurt yourself? |

NATURE 1.2.5

| | | |
|-------------------------------|--|---|
| Description/definition | The physical nature of the injury. | |
| Obligation | Core | |
| Discussion/rationale | The purpose of this question is to explore the nature of the injury regardless of the mechanism that caused it. The respondent is asked to identify the nature of the physical damage to the person resulting from the injurious event. Information on the nature and severity of injuries may be useful in planning an appropriate health service response. | |
| Coding instructions | 01 Fracture (broken bone) 02 Sprain or strain 03 Dislocation 04 Cut, bite or other open wound 05 Bruise or superficial injury 06 Burn 07 Poisoning 08 Concussion/head injury 09 Internal injury/internal organ injury 98 Other (specify) 99 Unknown | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | Some injury causes result in more than one type of physical injury or damage. In such cases the respondent should be prompted to describe each type separately. For example, a pedestrian injury may result in a head injury or concussion, fractures as well as internal injury. Code all that apply. | |
| Example questions | Proxy What physical injuries did the injured person sustain? | Victim What physical injuries did you sustain? |

USE OF ALCOHOL 1.2.6

| | | |
|-------------------------------|---|---|
| Description/definition | Alcohol use before the injury event. | |
| Obligation | Core | |
| Discussion/rationale | Alcohol is a mood-altering substance that affects coordination and reaction time. It is helpful to know whether it was involved as one of the causal factors. A time lapse of 6 hours has been included as this is the duration of time during which most of the effect of alcohol is felt. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know/can't remember | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | Consumption of alcohol may be illegal in association with certain activities, such as driving or operating machinery, depending on the country setting. The victim may therefore wish to withhold this information, and should be given that option. In some settings inclusion of this question may be considered inappropriate. | |
| Example questions | Proxy In the 6 hours before the injured person was hurt, did he/she have any alcohol to drink (even one drink)? | Victim In the 6 hours before you were injured, did you have any alcohol to drink (even one drink)? |

1.3 Injury-related disability

PHYSICAL DISABILITY 1.3.1

| | | |
|-------------------------------|---|--|
| Description/definition | Impairments, activity limitations and participation restrictions resulting from the injury event. | |
| Obligation | Core | |
| Discussion/rationale | Determines whether the injury event caused a physical impairment. This data element is important to the understanding of the burden and sequela of injuries and for assessing the cost-effectiveness of injury prevention measures. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know/can't remember | |
| Reference | <i>International Classification of Functioning, Disability and Health</i> (22) | |
| Notes | WHO defines disability as any restriction or lack of ability (resulting from an impairment) to perform an activity in the manner or within the range considered normal for a human being (23). See also Glossary. | |
| Example questions | Proxy Did the injured person suffer a physical disability as a result of being injured? | Victim Did you suffer a physical disability as a result of being injured? |

NATURE OF DISABILITY 1.3.2

| | | |
|-------------------------------|---|--|
| Description/definition | Physical nature of the disability causing impairment. | |
| Obligation | Core | |
| Discussion/rationale | Aids in determining the consequences of different mechanisms of injury, and how to improve medical treatment of injuries and develop services for rehabilitation. | |
| Coding instructions | 01 Unable to use hand or arm 02 Difficulty using hand or arm 03 Walk with a limp 04 Loss of hearing 05 Loss of vision 06 Weakness or shortness of breath 07 Inability to remember things 08 Inability to chew food 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | <i>International Classification of Functioning, Disability and Health</i> (22) | |
| Notes | As an injury can lead to multiple physical impairments, code all responses that apply to the victim. Read list as a prompt. | |
| Example questions | Proxy In what ways was the injured person physically disabled? | Victim In what ways were you physically disabled? |

| 1.4 Medical care and treatment of injury | | |
|--|---|--|
| SEEKING MEDICAL CARE 1.4.1 | | |
| Description/definition | Did the injured person seek medical attention after their injury? | |
| Obligation | Core | |
| Discussion/rationale | This question further explores the post-injury events and whether medical care was sought. Information collected here is useful in understanding health-seeking behaviour, the organization of trauma services and the planning and provision of effective care for the victim. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know/Can't remember | |
| References | (2, 21, 24–26) | |
| Notes | | |
| Example questions | Proxy After he/she was injured, did the injured person seek medical attention/treatment outside of the household (e.g. at a health facility, hospital, clinic)? | Victim After you were injured, did you seek medical attention/treatment outside of the household (e.g. at a health facility, hospital, clinic)? |
| PLACE OF MEDICAL CARE 1.4.2 | | |
| Description/definition | What type of facility did the victim go to for medical treatment of their injury. | |
| Obligation | Core | |
| Discussion/rationale | To maximize the effectiveness of injury care it is essential to know where victims suffering from injuries present for help. This will vary with cause, severity, availability of services, transport and cultural factors. Identification of the treatment sites aids planning for secondary prevention by indicating where service development, such as training, is most needed. | |
| Coding instructions | 01 Hospital 02 Health clinic 03 Health centre or health post 04 General medical practitioner 05 Community health worker 06 Traditional practitioner/healer/bone setter 07 Pharmacy/drug store 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | (2, 21, 24–26) | |
| Notes | The definitions for health clinic and health centre are country specific and the relevant definitions should be agreed upon before the survey commences. This question should only be asked if the respondent answered “yes” to the previous one (data element 1.4.1). | |
| Example questions | Proxy Where did the injured person first seek medical treatment for his/her injury? | Victim Where did you first seek medical treatment for your injury? |

ADMISSION TO HOSPITAL/HEALTH FACILITY 1.4.3

| | | |
|-------------------------------|---|---|
| Description/definition | Victim spending at least one night in a hospital or health facility bed due to injury. | |
| Obligation | Core | |
| Discussion/rationale | Assists in determining the severity of injury and what type of medical services are available for injury victims. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know/can't remember | |
| Reference | (2, 21, 24–26) | |
| Notes | | |
| Example questions | Proxy Was the injured person admitted to a hospital or health facility for treatment of his/her injury? | Victim Were you admitted to a hospital ward or health facility for treatment of your injury? |

LENGTH OF HOSPITAL STAY 1.4.4

| | | |
|-------------------------------|---|--|
| Description/definition | Total number of days victim was hospitalized for treatment of injury. | |
| Obligation | Core | |
| Discussion/rationale | Can be used as a proxy measure for the severity of the injury. Also provides information on health facility utilization and expenditures for treatment of injuries. | |
| Coding instructions | Numeric (record exact number of days) 99 Don't know/can't remember | |
| Reference | (2, 21, 24–26) | |
| Notes | | |
| Example questions | Proxy How many days did the injured person stay in the hospital for treatment of his/her injury? | Victim How many days did you stay in the hospital for treatment of your injuries? |

| 1.5 Post-injury impact | | |
|----------------------------------|--|---|
| AFFECT ON USUAL ACTIVITIES 1.5.1 | | |
| Description/definition | Did the injury affect the victim's usual activities? | |
| Obligation | Core | |
| Discussion/rationale | Impairment from the injury may prevent the victim from returning to normal activities. By usual activities we mean either work, attending school, performing housework, or taking part in leisure pursuits. More severe injuries are likely to cause more severe and long-lasting impairment. The consequences of this will impact upon the livelihood of the individual and their family. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know/can't remember | |
| References | (21, 25– 27) | |
| Notes | | |
| Example questions | Proxy As a result of the injury, did the injured person suffer any impairment that prevented him/her from performing his/her usual activities (e.g. going to work or school, doing housework, etc)? | Victim As a result of the injury, did you suffer any impairment that prevented you from performing your usual activities (e.g. going to work or school, doing housework, etc)? |
| RETURN TO NORMAL ACTIVITY 1.5.2 | | |
| Description/definition | Has the victim been able to return to the same level of usual activity as before the injury? | |
| Obligation | Core | |
| Discussion/rationale | Assists in determining whether the injury-related impairment has had an impact on the victim's ability to perform usual duties and normal activities. | |
| Coding instructions | 01 Yes, fully 02 Yes, but only partially 03 No 77 Refused 99 Don't know/can't remember | |
| Reference | (21, 25– 27) | |
| Notes | | |
| Example questions | Proxy From the time when the injury occurred, has the injured person been able to return to his/her normal activities? | Victim Since the time when you were injured, have you been able to return to normal activities? |

LOSS OF EMPLOYMENT 1.5.3

| | | |
|-------------------------------|--|--|
| Description/definition | Did victim lose employment as a result of being injured? | |
| Obligation | Core | |
| Discussion/rationale | An injury may result in job loss if it caused the injured person to take time off work or a disability that interfered with the injured person's ability to execute their work. The loss of a livelihood will have socio-economic impact on the injured person and their family. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know/can't remember | |
| Reference | (21, 25– 27) | |
| Notes | | |
| Example questions | Proxy Did the injured person lose his/her job as a result of being injured? | Victim Did you lose your job as a result of the injury? |

HOUSEHOLD MEMBER LOSS OF WORK/SCHOOL 1.5.4

| | | |
|-------------------------------|--|---|
| Description/definition | Did a household member lose days of work or school in order to care for the victim? | |
| Obligation | Core | |
| Discussion/rationale | A caregiver may have to take time off other activities such as farming, housework or paid employment in order to look after the injured person if the injury was severe. A child may have to take time off school in the absence of an adult caregiver. Provides important information on the socio-economic impact of injuries on other family members and on lost opportunity and indirect costs of injuries. Should be completed in all injury cases. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know/can't remember | |
| Reference | (21, 25– 27) | |
| Notes | If the answer to this questions is 'yes', you may wish to ask a follow-up question asking how many days of work or school were lost. Quantifying the number of days lost to care for the injured person provides more information on the severity of the injury and the impact of the event on the family. | |
| Example questions | Proxy Did anyone in the household lose days of work or school to take care of the injured person? | Victim Did anyone in your household lose days of work or school to take care of you? |

| 1.6 Injury-related death | | |
|-------------------------------|--|---------------|
| AGE AT DEATH 1.6.1 | | |
| Description/definition | Age (in years) of the victim who died as a result of injury. | |
| Obligation | Core | |
| Discussion/rationale | Basic demographic information about the burden of injuries among different age groups. | |
| Coding instructions | Numeric (record age in years) | |
| Reference | | |
| Notes | It is best to record the actual age of the person (in years) and then to assign age groups during the data entry phase. Field staff should be instructed to estimate the age if they cannot obtain exact information. For children under five, recording age in months can assist analysis. | |
| Example questions | Proxy How old was the injured person when he/she died? | Victim N/A |
| PLACE OF DEATH 1.6.2 | | |
| Description/definition | Where the victim died in relation to where the injury occurred. | |
| Obligation | Core | |
| Discussion/rationale | Provides information on where the injury-related death occurred, and whether the injured person reached a health facility or not. This type of information is important in terms of understanding access to health services for victims of injury. | |
| Coding instructions | 01 At the place where the injury occurred 02 At a health facility (e.g. hospital, clinic, health centre) 03 At home 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | | |
| Notes | | |
| Example questions | Proxy Where did the injured person die? | Victim N/A |
| TIME OF DEATH 1.6.3 | | |
| Description/definition | Time of death of the victim in relation to when the injury occurred. | |
| Obligation | Core | |
| Discussion/rationale | The duration between injury and death may be a proxy marker of severity of injury but also provides indirect information on access to services. Resuscitation attempts that are commenced within the first hour have a greater likelihood of producing a more favourable outcome. | |
| Coding instructions | 01 Immediately 02 Less than 1 hour after the injury 03 Between 1 and 6 hours after the injury 04 More than 6 hours but less than 12 hours after the injury 05 Between 12 and 24 hours after the injury 06 More than 1 day but less than 1 week after the injury 07 More than 1 week after the injury 98 Other (specify) 99 Don't know/can't remember | |
| Reference | | |
| Notes | | |
| Example questions | Proxy How long after the injury occurred did the injured person die? | Victim N/A |

5.4 Expanded data elements

Detailed descriptions of the proposed expanded or additional survey data sets are provided below. Some additional suggestions for information that you may wish to consider including in your survey are made in the subsequent subsection (see section 5.5).

| 1.7 Traffic-related injuries | | |
|-------------------------------|--|---|
| MODE OF TRANSPORT 1.7.1 | | |
| Description/definition | How the injured person was travelling at the time of injury. | |
| Obligation | Expanded | |
| Discussion/rationale | Identifies the type of transport involved in the injury event and helps to define the number of injury events by the specific type of transport. Useful for estimating the size of the problem by cause and for prioritizing the type of traffic safety interventions or programmes that need to be developed. | |
| Coding Instructions | 01 Walking 02 Non-motorized vehicle 03 Bicycle 04 Motorcycle 05 Car 06 Pickup, van, jeep or minibus (vehicle that seats less than 10 people) 07 Truck /lorry 08 Bus 09 Three-wheel motorized vehicle 98 Other (specify) 99 Don't know/can't remember | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | | |
| Example questions | Proxy How was the injured person travelling at the time the traffic injury occurred? | Victim How were you travelling at the time you were injured? |
| VICTIM ROLE 1.7.2 | | |
| Description/definition | What was the role of the victim (type of road user) in the injury event? | |
| Obligation | Expanded | |
| Discussion/rationale | Useful for identifying what the injured person was doing at the time of the traffic injury and the role that this may have had. Also helpful for designing traffic injury prevention programmes. | |
| Coding instructions | 01 Pedestrian 02 Driver 03 Passenger 98 Other (specify) 99 Unknown | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | | |
| Example questions | Proxy What was the injured person's role in the traffic crash? | Victim What was your role in the traffic crash? |

COUNTERPART 1.7.3

| | | |
|-------------------------------|--|--|
| Description/definition | With what did the victim (or his/her vehicle) collide? | |
| Obligation | Expanded | |
| Discussion/rationale | Provides information on the nature of the collision. Identifies risk factors and is useful for designing traffic injury prevention programmes. | |
| Coding instructions | 01 Pedestrian 02 Bicycle 03 Motorcycle 04 Motorized vehicle 05 Fixed object 98 Other (specify) 99 Don't know/can't remember | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | | |
| Example questions | Proxy What did the injured person (or his/her vehicle) collide with? | Victim What did you (or your vehicle) collide with? |

SEAT BELT USE 1.7.4

| | | |
|-------------------------------|---|---|
| Description/definition | Frequency of seat-belt use (by injured person). | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses how often the respondent uses a seat belt when driving or riding as a passenger in a motor vehicle. This information helps to understand safety behaviours in a population and has implications for planning road traffic injury prevention programmes. It is particularly important in assessing the need for, and effectiveness of, seat-belt legislation. | |
| Coding instructions | 01 All the time 02 Sometimes 03 Never 04 Have not been in a vehicle in the past 30 days 05 There is not seat belt in the car I usually drive or ride in 77 Refused 99 Don't know/unsure | |
| Reference | | |
| Notes | Ask only if the injured person is the respondent. | |
| Example questions | Proxy N/A | Victim In the past 30 days how often did you use a seat-belt when you were the driver or a passenger of a motor vehicle? |

| | | |
|-------------------------------|---|---|
| Description/definition | Frequency of safety helmet use (by injured person). | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses how often the respondent uses a helmet when driving or riding as a passenger on a motorcycle or motor scooter. This information helps to understand safety behaviours in a population and has implications for planning road traffic injury prevention programmes. | |
| Coding instructions | 01 All the time 02 Sometimes 03 Never 04 Have not been on a motorcycle or motor-scooter in the past 30 days 05 Do not own a helmet 77 Refused 99 Don't know /unsure | |
| Reference | | |
| Notes | Ask only if injured person is the respondent. | |
| Example questions | Proxy N/A | Victim In the past 30 days how often did you wear a helmet when you drove or rode as a passenger on a motorcycle or motor-scooter? |

| 1.8 Violence-related injury | | |
|-------------------------------|--|---|
| RELATIONSHIP 1.8.1 | | |
| Description/definition | The relationship of the perpetrator to the victim. | |
| Obligation | Expanded | |
| Discussion/rationale | To establish the relationship between the victim and the perpetrator. This information is helpful for designing violence prevention programmes by identifying the target groups for intervention. Clearly this information is of a sensitive nature and the interviewer should proceed with caution and ensure privacy, and also make certain that the potential perpetrator does not know of, or even suspect, the nature of the line of questioning. | |
| Coding instructions | 01 Intimate partner 02 Parent 03 Child, sibling, or other relative (e.g. brother, cousin, sister) 04 Friend or acquaintance 05 Unrelated caregiver 06 Stranger 07 Official or legal authorities 77 Refused 98 Other (specify) 99 Unknown | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | | |
| Example questions | Proxy Please indicate the relationship of the person, or persons, who hurt the injured person. | Victim Please indicate the relationship between yourself and the person or persons who caused your injury. |
| OBJECT 1.8.2 | | |
| Description/definition | Action that inflicted the injury. | |
| Obligation | Expanded | |
| Discussion/rationale | Used to assess the severity and nature of injury caused by certain actions. In addition, severity reveals something about the malicious intent of the violence perpetrated. This information can also be used to characterize the weapons that are typically 'at hand' in a given setting and potentially provides input that can lead to proposed interventions to reduce access to certain types of weapons. | |
| Coding instructions | 01 Shot with a firearm/gun 02 Beaten, stabbed, burnt, throttled or otherwise attacked with another weapon (e.g. bottle, glass, club, knife, hot liquid, rope) 03 Hit, slapped, shoved, punched, pushed, or kicked without any weapon 77 Refused 98 Other (specify) 99 Unknown | |
| Reference | <i>Injury surveillance guidelines (8)</i> | |
| Notes | | |
| Example questions | Proxy Please indicate which of the following was the most important cause of the injured person's injury. | Victim Please indicate which of the following was the most important in causing your injury. |

FEELING OF SAFETY 1.8.3

| | | |
|-------------------------------|---|--|
| Description/definition | Respondent's perception of the threat of violence | |
| Obligation | Expanded | |
| Discussion/rationale | This information captures whether the respondent feels secure within their immediate environment and if not, where they perceive their greatest risk of violence. Such information is helpful for structuring interventions and over the long term may be useful as an indicator of subjective reductions in violence, shifts in perceived threats from one form of violence to another, or shifts in the perceived agents of threat. | |
| Coding instructions | 01 Intimate partner 02 Parent 03 Child, sibling or other relative (e.g. brother, cousin, sister) 04 Friend or acquaintance 05 Unrelated caregiver 06 Stranger 07 Official or legal authority (e.g. police officer, soldier) 09 No one (not been frightened for safety) 77 Refused 98 Other (specify) 99 Unknown | |
| Reference | | |
| Notes | Ask only if the injured person is the respondent. | |
| Example questions | Proxy N/A | Victim In the past 12 months, have you been frightened for the safety of yourself or your family because of the anger or threats of another person or persons? If yes, specify by whom. |

CONTROL OF TEMPER 1.8.4

| | | |
|-------------------------------|---|--|
| Description/definition | Perceived ability of respondent to control their own temper | |
| Obligation | Expanded | |
| Discussion/rationale | Impulse control is a crosscutting risk factor for a variety of forms of violence. This information thus helps to characterize the extent to which poor impulse control is present among respondents in a sample. As a result it can be used in cross-tabulations, as an indicator of a need for specific types of interventions that have the objective of improving impulse control, and as a potential long-term indicator of successful programme implementation where impulse control has been a specific target. | |
| Coding instructions | 01 Never 02 Almost never 03 Sometimes 04 Almost always 05 Always 77 Refused | |
| Reference | | |
| Notes | Ask only if the injured person is the respondent | |
| Example questions | Proxy N/A | Victim When there is a problem and I feel like responding violently, I know how to control my temper and stay out of violence situations. |

WEAPON CARRYING 1.8.5

| | | |
|-------------------------------|---|--|
| Description/definition | Weapon carrying (by injured person). | |
| Obligation | Expanded | |
| Discussion/rationale | Highly correlated with weapon-related violence. The main aim of this type of information is to determine the prevalence of weapon carriage in a population and will help to characterize the rationale for carriage. Would be a sign of need of intense, comprehensive violence prevention programmes in settings where carriage for protection is, comparatively speaking, very high. May also have a value as a time series indicator of successful programmes. | |
| Coding instructions | 01 No 02 Yes, for protection 03 Yes, for work 04 Yes, for sport (e.g. hunting target practice) 77 Refused 99 Unknown | |
| Reference | | |
| Notes | Ask only if the injured person is the respondent. | |
| Example questions | Proxy N/A | Victim Have you carried a loaded firearm on your person outside the home in the last 30 days? |

CHILDHOOD VIOLENCE 1.8.6

| | | |
|-------------------------------|--|---|
| Description/definition | Physical abuse in childhood. | |
| Obligation | Expanded | |
| Discussion/rationale | Physical abuse in childhood is a risk factor for subsequent interpersonal violence (victimization and perpetration), and many other health conditions (e.g. psychiatric and eating disorders, alcohol and substance abuse, sexually transmitted diseases). Self-reported child abuse by adult respondents provides insight into the prevalence of child abuse in the respondent's cohort (hence could be used to track prevalence changes over time). When used in cross-tabulations with data about other risk behaviours, such as alcohol use, temper control and weapon carrying, the information can suggest the extent to which physical abused in childhood drives these risky behaviours. It will thus indicate the prevention gains that could be achieved through effective child physical abuse prevention programmes. | |
| Coding instructions | 01 Never 02 Very rarely 03 Once a month 04 Once a week 05 Almost daily 77 Refused 99 Unknown | |
| Reference | | |
| Notes | Ask only if the injured person is the respondent | |
| Example questions | Proxy N/A | Victim Looking back on your childhood, did a parent or some other adult in the household hit you so hard that you had marks lasting longer than a day or were injured? |

| 1.9 Suicidal behaviour | | |
|-------------------------------|---|---|
| THOUGHTS ABOUT SUICIDE 1.9.1 | | |
| Description/definition | Whether respondent has ever seriously thought about committing suicide. | |
| Obligation | Expanded | |
| Discussion/rationale | Explores history of suicide ideation, which is a risk factor for future attempts. Identifies needs for suicide prevention programmes in a community or population. | |
| Coding instructions | 01 Yes, in the last 12 months 02 Yes, ever in your lifetime 03 Never 77 Refused 99 Don't know/can't remember | |
| Reference | (28) | |
| Notes | Ask only if injured person is the respondent. | |
| Example questions | Proxy N/A | Victim Have you ever seriously thought about committing suicide or taking your own life? |
| PLAN FOR SUICIDE 1.9.2 | | |
| Description/definition | If respondent has ever made a plan for committing suicide. | |
| Obligation | Expanded | |
| Discussion/rationale | Examines whether the respondent has ever developed a specific plan to commit suicide. This can include planning the method and/or obtaining the means to do so. | |
| Coding instructions | 01 Yes, in the last 12 months 02 Yes, ever in your lifetime 03 Never 77 Refused 99 Don't know/can't remember | |
| Reference | (28) | |
| Notes | Ask only if injured person is the respondent. | |
| Example questions | Proxy N/A | Victim Have you made a plan for committing suicide? |
| SUICIDE ATTEMPTS 1.9.3 | | |
| Description/definition | Whether or not respondent has attempted to commit suicide. | |
| Obligation | Expanded | |
| Discussion/rationale | Examines whether the respondent has attempted to commit suicide. This means carrying out a violent act against oneself with the intention of ending one's life. | |
| Coding instructions | 01 Yes, in the last 12 months 02 Yes, ever in your lifetime 03 Never 77 Refused 99 Don't know/can't remember | |
| Reference | (28) | |
| Notes | Ask only if injured person is the respondent. If the respondent answers "yes" to this question, the interviewer should proceed to data elements 1.9.3.1, 1.9.3.2 and 1.9.3.3. | |
| Example questions | Proxy N/A | Victim Have you attempted suicide? |

NUMBER OF SUICIDE ATTEMPTS IN LIFETIME 1.9.3.1

| | | |
|-------------------------------|--|--|
| Description/definition | How many times the respondent has attempted to commit suicide ever in his/her lifetime. | |
| Obligation | Expanded | |
| Discussion/rationale | | |
| Coding instructions | Numeric (record the number of times as reported by respondent) 77 Refused 99 Don't know/can't remember | |
| Reference | (28) | |
| Notes | Ask only if injured person is the respondent. Only ask this question if the respondent answered "yes" to data element 1.9.3. | |
| Example questions | Proxy N/A | Victim How many times ever in your lifetime have you made an attempt to commit suicide? |

METHOD OF MOST RECENT ATTEMPT 1.9.3.2

| | | |
|-------------------------------|---|---|
| Description/definition | The method of attempted suicide the respondent chose for his/her most recent attempt. | |
| Obligation | Expanded | |
| Discussion/rationale | Examines what method the respondent chose to commit suicide. A major factor in determining whether suicidal behaviour will be fatal or not is the method chosen. This information can be used to characterize access to suicide methods in the community and thus inform prevention measures. | |
| Coding instructions | 01 Gun 02 Hanging 03 Jumping from a height 04 Drowning 05 Intoxication with pesticides, pills, medicines 06 Cutting myself 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | (28) | |
| Notes | Ask only if injured person is the respondent. Only ask this question if respondent answered "yes" to data element 1.9.3. | |
| Example questions | Proxy N/A | Victim Thinking about the last (most recent) time you attempted suicide, what was the method you used? (How did you try to kill yourself)? |

MEDICAL ATTENTION FOR MOST RECENT ATTEMPT 1.9.3.3

| | | |
|-------------------------------|--|---|
| Description/definition | Whether or not respondent sought medical attention after most recent suicide attempt. | |
| Obligation | Expanded | |
| Discussion/rationale | Examines post-suicide events and whether medical care was sought. Information collected here is useful for understanding health-seeking behaviour among people who attempt suicide. This can inform the development of services for this particular segment of the population. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know/can't remember | |
| Reference | (28) | |
| Notes | Ask only if injured person is the respondent. Only ask this question if respondent answered "yes" to data element 1.9.3. | |
| Example questions | Proxy N/A | Victim Did you seek medical attention after this last suicide attempt? |

| 1.10 Poisoning-related injuries | | |
|---------------------------------|--|---|
| SUBSTANCE 1.10.1 | | |
| Description/definition | Type of substance that caused the poisoning. | |
| Obligation | Expanded | |
| Discussion/rationale | Identifies the prevalence of the common causes of poisoning and thus may help in designing and prioritizing prevention interventions. | |
| Coding instructions | 01 A drug or medical substance used mistakenly or in overdose 02 A solid or liquid toxin (e.g. pesticides, household cleaning products, rat poison) 03 Inhaling gases or vapours 04 Eating a poisonous plant or the substance mistaken for food 05 A venomous animal 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | United States National Health Interview Survey 2000 (29) | |
| Notes | | |
| Example questions | Proxy Describe what the injured person came in contact with that caused the poisoning injury. | Victim Describe what type of substance you came in contact with that caused your poisoning injury. |
| ACCESS TO PRODUCT 1.10.2 | | |
| Description/definition | Availability and point of access to substance causing the poisoning injury. | |
| Obligation | Expanded | |
| Discussion/rationale | Provides further insight into poisoning event in terms of the availability of, and access to, toxic substances. This is particularly important in cases of unintentional poisoning among children who are frequently exposed to poisons in their homes. | |
| Coding instructions | 01 At home 02 Work 03 School 04 From another person 77 Refused 98 Other (specify) 99 Unknown | |
| Reference | United States National Health Interview Survey 2000 (29) | |
| Notes | | |
| Example questions | Proxy Where did the injured person obtain or come in contact with the product that caused the poisoning? | Victim Where did you obtain or come into contact with the product that caused your poisoning injury? |

| 1.11 Fall-related injuries | | |
|--------------------------------------|--|--|
| HEIGHT OF FALL 1.11.1 | | |
| Description/definition | Approximate distance that the victim fell or level from which the person fell. | |
| Obligation | Expanded | |
| Discussion/rationale | Provides valuable information about the circumstances of the fall event. In addition, this information can be used to assess the severity of injury in relation to the height of the fall. | |
| Coding instructions | 01 Same level as you were standing 02 Height less than 2 metres 03 Height greater than 2 metres 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | (30) | |
| Notes | If necessary, the interviewer should demonstrate a distance of 2 metres by using a nearby object such as a door. | |
| Example questions | Proxy What height did the injured person fall from? | Victim What height did you fall from when you were injured? |
| OBJECT/PLACE PERSON FELL FROM 1.11.2 | | |
| Description/definition | Object from which the fall occurred (in the case of a fall from height). | |
| Obligation | Expanded | |
| Discussion/rationale | Information on the causes of falls assists in the planning of injury prevention programmes; more specifically, such information can provide suggestions on how one might be able to change the physical environment in order to prevent falls. | |
| Coding instructions | 01 Stairs 02 Tree 03 Roof 04 Balcony 05 Ladder 06 Back of an animal 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | (30) | |
| Notes | A fall from a moving motor vehicle should be classified as a traffic injury and not as a fall injury. | |
| Example questions | Proxy What did the injured person fall from when he/she was hurt? | Victim What did you fall from when you were hurt? |

| 1.12 Burn-related injuries | | |
|-------------------------------|---|----------------------------------|
| SUBSTANCE CAUSING BURN 1.12.1 | | |
| Description/definition | Contact with type of substance/object that caused the burn injury. | |
| Obligation | Expanded | |
| Discussion/rationale | Identifies risk factors and assists in designing and prioritizing preventive programmes. | |
| Coding instructions | 01 Contact with a hot liquid, steam or other gas 02 Contact with a hot object or solid substance (e.g. cooker, kettle, stove, iron) 03 Contact with flames/fire 04 Inhalation of smoke from burning object/substance 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | | |
| Notes | | |
| Example questions | Proxy What caused the burn that the injured person sustained? | Victim What caused your burn? |

1.13 Drowning/near-drowning

ACTIVITY 1.13.1

| | | |
|-------------------------------|---|--|
| Description/definition | Type of activity the victim was engaged in at the time of drowning event. | |
| Obligation | Expanded | |
| Discussion/rationale | Reveals something about the relationship between the pre-event activities and the event itself and helps in identifying risk factors. This may be useful for identifying interventions, which reduce the risk of exposure to these factors. | |
| Coding instructions | 01 Bathing 02 Swimming/playing 03 Collecting water 04 Fishing 05 Travelling by foot 06 Travelling by boat 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | United States National Health Interview Survey 1997 (31) | |
| Notes | | |
| Example questions | Proxy What was the injured person doing when he/she drowned or nearly drowned? | Victim What were you doing when you nearly drowned? |

BODY OF WATER 1.13.2

| | | |
|-------------------------------|---|---|
| Description/definition | Physical circumstance (type of water body) in which the victim drowned. | |
| Obligation | Expanded | |
| Discussion/rationale | Information on physical context and risky environment and its relationship with the injury event helps in designing interventions directed to those contexts. For instance, a high frequency of drowning in the swimming pool may indicate the need to develop interventions such as direct supervision, teaching swimming skills and relevant safety measures for example, pool fencing. | |
| Coding instructions | 01 Well 02 Pond near your home 03 Ditch near your home 04 River of lake 05 Bay, ocean, sea 06 Flood water 07 Swimming pool 77 Refused 98 Other (specify) 99 Don't know/can't remember | |
| Reference | United States National Health Interview Survey 1997 (31) | |
| Notes | | |
| Example questions | Proxy What body of water was involved in the drowning incident? | Victim What body of water was involved in the drowning incident? |

| 1.14 Injury-related disability | | |
|--------------------------------|---|---|
| | | TRANSFER ABILITY1.14.1 |
| Description/definition | Ability of injured person to transfer from a bed to sit in a chair. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses the extent of long- or short-term disability attributable to the injury and the effect of disability on quality of life. Can provide useful information on the need for rehabilitation services for injury-related disability. | |
| Coding instructions | 01 Unable to sit in a chair 02 Able, but needs major help (i.e. one or two people, physical) 03 Needs minor help (verbal or physical) 04 Independent (does not need help) 77 Refused 99 Don't know | |
| Reference | (32) | |
| Notes | | |
| Example questions | Proxy To what degree does the injured person need assistance in transferring from the bed to sit in a chair? | Victim To what degree do you need assistance in transferring from the bed to sit in a chair? |
| | | BATHING 1.14.2 |
| Description/definition | Degree of assistance needed to bath. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses the extent of long- or short-term disability attributable to the injury and the effect of disability on quality of life. Can provide useful information on the need for rehabilitation services for injury-related disability. | |
| Coding instructions | 01 Dependent on others for help 02 Independent (does not need help) 77 Refused 99 Unknown | |
| Reference | (32) | |
| Notes | | |
| Example questions | Proxy What degree of assistance does the injured person need when bathing? | Victim What degree of assistance do you need when bathing? |

TOILET USE 1.14.3

| | | |
|-------------------------------|---|--|
| Description/definition | Degree of assistance required when using the toilet. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses the extent of long- or short-term disability attributable to the injury and the effect of disability on quality of life. Can provide useful information on the need for rehabilitation services for injury-related disability. | |
| Coding instructions | 01 Dependent on others for help 02 Needs some help, but can do some things alone 03 Independent (does not need help) 77 Refused 99 Unknown | |
| Reference | (32) | |
| Notes | | |
| Example questions | Proxy What degree of assistance does the injured person need when using the toilet? | Victim What degree of assistance do you need when using the toilet? |

STAIRS 1.14.4

| | | |
|-------------------------------|---|---|
| Description/definition | Injured person's ability to climb stairs. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses the extent of long- or short-term disability attributable to the injury and the effect of disability on quality of life. Can provide useful information on the need for rehabilitation services for injury-related disability. | |
| Coding instructions | 01 Unable to climb stairs 02 Able, but needs some help (verbal, physical, carrying aid) 03 Independent (does not need help) 77 Refused 99 Don't know | |
| Reference | (32) | |
| Notes | | |
| Example questions | Proxy What help (if any) does the injured person need to climb a flight of stairs. | Victim What help (if any) do you need to climb stairs. |

MOBILITY 1.14.5

| | | |
|-------------------------------|---|---|
| Description/definition | Injured person's ability to walk. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses the extent of long- or short-term disability attributable to the injury and the effect of disability on quality of life. Can provide useful information on the need for rehabilitation services for injury-related disability. | |
| Coding instructions | 01 Immobile (bed-ridden) 02 Wheelchair dependent 03 Walks with the help of at least one person (verbal or physical help) 04 Independent but may use aid (e.g. cane, stick) 77 Refused 99 Don't know | |
| Reference | (32) | |
| Notes | | |
| Example questions | Proxy What help (if any) does the injured person need to walk. | Victim What help (if any) do you need to walk. |

1.15 Medical care and treatment of injury

FIRST AID AT SCENE 1.15.1

| | | |
|-------------------------------|---|---|
| Description/definition | Whether or not the injured person received first aid where in the injury happened. | |
| Obligation | Expanded | |
| Discussion/rationale | Explores the immediate post-event factors and provides information on the need for the development of first-aid and first-responder capacity. | |
| Coding instructions | 01 Yes 02 No 77 Refused (to answer) 99 Don't know | |
| References | (2, 21, 25, 26) | |
| Notes | | |
| Example questions | Proxy Did anyone try to help the injured person by giving first aid? | Victim Did anyone try to help you by giving you first aid? |

PERSON WHO PROVIDED FIRST AID 1.15.2

| | | |
|-------------------------------|--|--|
| Description/definition | The person who gave first aid to the injury victim where the injury happened | |
| Obligation | Expanded | |
| Discussion/rationale | Explores the immediate post-event factors and provides information on the need for the development of first-aid and first-responder capacity. | |
| Coding instructions | 01 Bystander 02 Friend/family 03 Teacher 04 Police 05 Ambulance personnel 06 Doctor 07 Nurse 08 Fire brigade personnel 77 Refused (to answer) 98 Other (specify) 99 Don't know | |
| References | (2, 21, 25, 26) | |
| Notes | | |
| Example questions | Proxy Who gave first aid to the injured person? | Victim Who gave you first aid after you were injured? |

TRANSPORT TO HEALTH FACILITY 1.15.3

| | | |
|-------------------------------|---|--|
| Description/definition | How the injured person got to a health facility. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses pre-hospital care services for injury victims. | |
| Coding instructions | 01 By foot 02 By private car 03 By taxi 04 By public transport 05 By ambulance 06 By bicycle 07 By animal cart 08 Did not go to a health facility 77 Refused (to answer) 98 Other (specify) 99 Don't know | |
| References | (2, 21, 25, 26) | |
| Notes | | |
| Example questions | Proxy How did the injured person get to the health facility for treatment of his/her injuries? | Victim How did you get to the health facility for treatment of your injuries? |

TRANSPORT TIME 1.15.4

| | | |
|-------------------------------|---|---|
| Description/definition | How long it took for the injured person to reach a health facility for treatment. | |
| Obligation | Expanded | |
| Discussion/rationale | Provides indirect information about various geographic factors, transport services and the availability of emergency medical services, all of which can affect access to health services. May also be used to explore the link between the time lapse and survival of the victim. | |
| Coding instructions | 01 Less than 1 hour 02 1–2 hours 03 3–6 hours 04 7–9 hours 05 10–12 hours 06 13–24 hours 07 More than 24 hours 08 Did not go to health facility 77 Refused (to answer) 99 Don't know | |
| References | (2, 21, 25, 26) | |
| Notes | | |
| Example questions | Proxy How long did it take for the injured person to get to the health facility? | Victim How long did it take you to get to the health facility? |

| 1.16 Post-injury Impact | | |
|---------------------------------------|--|---|
| DECLINE OF HOUSEHOLD INCOME 1.16.1 | | |
| Description/definition | Whether there was a decline in the usual household income as a result of the injury event. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses economic impact of the injury event. Loss of household income may be a result of time lost from economic activities by the injured person or the caregiver. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know | |
| References | (2, 21, 25, 26); Injury Control and Risk Survey 2000 (33) | |
| Notes | | |
| Example questions | Proxy Did the usual household income (money coming in, not expenditures) decline as a result of the injury event? | Victim Did the usual household income (money coming in, not expenditures) decline as a result of your injury? |
| DECLINE IN FOOD CONSUMPTION 1.16.2 | | |
| Description/definition | Whether expenditures for medical care or lost paid work time were severe enough to cause a decrease in usual household food consumption. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses the severity of the economic impact of the injury event. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know | |
| References | (2, 21, 25, 26); Injury Control and Risk Survey 2000 (33) | |
| Notes | | |
| Example questions | Proxy Did the usual household food consumption decline as a result of the injury event? | Victim Did the usual household food consumption decline as a result of your injury? |
| LOSS OF JOB (HOUSEHOLD MEMBER) 1.16.3 | | |
| Description/definition | If a household member lost employment or had to leave school due because of having to care for the victim. | |
| Data set | Expanded | |
| Discussion/rationale | Provides information on the socio-economic impact of the injury on the family. If a household member has to take time off paid employment or leave school to care for the injured person, it may lead to job loss or loss of future job opportunity. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know | |
| References | (2, 21, 25, 26); Injury Control and Risk Survey 2000 (33) | |
| Notes | | |
| Example questions | Proxy Did a household member lose his/her job or have to leave school because they had to take care of the injured person? | Victim Did a household member lose his/her job or have to leave school because they had to take care of you after your injury? |

LOANS TO PAY FOR MEDICAL TREATMENT 1.16.4

| | | |
|-------------------------------|--|--|
| Description/definition | Whether the household had to borrow money to pay for medical care of the victim or to make up for lost income. | |
| Obligation | Expanded | |
| Discussion/rationale | Treatment and care of the injured person may have incurred a financial burden to the family. This may be for medical costs to pay for medicines and other treatment, or to make up for the loss of economic activity of the injured person or the carer who may have had to take time off work. For some households this may present a financial burden that can only be solved by taking loans and this will have a socio-economic impact on the household. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know | |
| References | (2, 21, 25, 26); Injury Control and Risk Survey 2000 (33) | |
| Notes | | |
| Example questions | Proxy Did the household have to borrow money to take care of the injured person? | Victim Did the household have to borrow money to care of you? |

SELLING POSSESSIONS 1.16.5

| | | |
|-------------------------------|--|---|
| Description/definition | Paying for medical treatment or making up for the loss of income by way of selling possessions. | |
| Obligation | Expanded | |
| Discussion/rationale | In this instance, information is being sought on whether the financial burden of the injury was met by selling household assets. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know | |
| References | (2, 21, 25, 26); Injury Control and Risk Survey 2000 (33) | |
| Notes | | |
| Example questions | Proxy Did the household have to sell anything to pay for medical treatment for the injured person or to make up for loss of income? | Victim Did the household have to sell anything to pay for your medical treatment or to make up for loss of income? |

LOAN TO PAY FOR FUNERAL 1.16.6

| | | |
|-------------------------------|--|---------------|
| Description/definition | In the case of death from injury, whether the family had to borrow money to cover costs of the funeral for the victim. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses the financial burden on the family in the case of a household member's death from injury. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know | |
| References | (2, 21, 25, 26); Injury Control and Risk Survey 2000 (33) | |
| Notes | This question is only asked if a member of the household died from an injury. | |
| Example questions | Proxy Did the household have to borrow money to pay for the funeral of the person who died from injury? | Victim N/A |

SELLING POSSESSIONS TO PAY FOR FUNERAL 1.16.7

| | | |
|-------------------------------|---|--------|
| Description/definition | Whether the household had to sell household items to meet costs of the funeral for the injury victim. | |
| Obligation | Expanded | |
| Discussion/rationale | Assesses the financial burden on the family in the case of a household member's death from injury. | |
| Coding instructions | 01 Yes 02 No 77 Refused 99 Don't know | |
| References | (2, 21, 25, 26); Injury Control and Risk Survey 2000 (33) | |
| Notes | This question is only asked if a member of the household died from an injury. | |
| Example questions | Proxy | Victim |
| | Did the household have to sell possessions to pay for the funeral of the injury victim? | N/A |

5.5 Additional expanded data elements

5.5.1 Socioeconomic status

Socioeconomic status is an important part of the mix of the individual and environmental factors that play a role in public health. Many studies have shown that socioeconomic status is an important determinant and contributing risk factor for injury (7). Therefore, collecting data on socioeconomic status as part of a community survey on injuries would provide useful information on the relationship between socioeconomic status and injury risk among the survey population.

There are numerous methods for measuring socioeconomic status in a population, the suitability of which varies considerably according to region, country and the local context. It is thus not possible to recommend a set of standard data elements that can be used to measure socioeconomic status in any given population. Options for deriving measures of socioeconomic status that are locally applicable, include adopting methodologies used by previous surveys in your country and making use of the Demographic and Health Surveys (DHS) Asset Index, developed by Macro International². This index is based on possession of various assets, such as household ownership of selected consumer items, dwelling characteristics, and type of drinking water source and toilet facilities. Each asset is assigned a score, which are summed to give a total asset score for the household. Individual asset scores depend on country-level characteristics and therefore vary by country. DHS surveys have been conducted in approximately 50 countries across Africa, Asia, Latin America, the Middle East, and the former Soviet Union³.

² Further information is available from the Internet at <http://www.measuredhs.com>.

³ Country specific asset index scores are available for a range of countries via the Internet at <http://www.worldbank.org/poverty/health/data/index.htm>.

5.5.2 Violence against women and sexual violence

Violence against women and sexual violence are underreported and inadequately addressed, even though they have significant impact on individual and community health in countries all around the world. Population-based surveys provide a useful means of obtaining data on the prevalence of domestic and sexual violence, and can be used to explore the consequences of violence and examine the risk factors associated with violence (34). Results of community surveys can also be used to plan appropriate prevention programmes and study the impact of interventions. For instance, the unique medical and legal service needs of victims of sexual violence are infrequently met but an estimate of the level of sexual violence in a community will strengthen advocacy for services to address these unique needs.

Research on violence against women has raised important ethical and methodological challenges that require specific consideration; these include issues relating to safety, confidentiality and interviewer skill and training (34). If violence against women and/or sexual violence are issues you want to explore with your community-based survey, the following resources may be of particular interest:

- *Putting women first: ethical and safety recommendations for research on domestic violence against women* (34).
- The WHO Multi-Country Study on Women's Health and Domestic Violence Against Women is a groundbreaking research initiative which has gathered comparable data on the prevalence and frequency of different forms of violence, its effect on women's lives and health, and risk factors for domestic violence from eight countries around the world. Information on the study is available via the Internet at: <http://www.who.int/gender/violence/en/>.
- A set of uniform definitions and data elements for sexual violence surveillance has been developed by Basile and Saltzman (35).

6. PREPARING FOR DATA COLLECTION

Ultimately, the quality of the information obtained from a survey is dependent on the quality of the work done in the field. Good survey organization and preparation, coupled with meticulous fieldwork are thus vital for achieving high standards in terms of data quality. This chapter, which is primarily aimed at survey coordinators and technical resource persons, outlines the tasks that need to be performed prior to the start of the data collection part of the survey in order to ensure a smooth and efficient field operation. Specifically it explains how to:

- make the necessary practical arrangements for the survey;
- prepare the questionnaire and related materials;
- select field workers;
- choose and prepare field equipment;
- train field workers;
- set up computers and hire data processing staff;
- make arrangements for returning the questionnaires to headquarters.

Further information about the practical aspects of conducting a community-based survey can be found in a number of general texts on the subject (10, 36, 3).

6.1 Making the practical arrangements for the survey

Practical matters that require attention in advance of the survey include:

- Contacting the local authorities where the survey will be carried out in order to gain support and assistance.
- Setting up a local coordination centre.
- Deciding on the size and composition of the field team(s).
- Arranging accommodation, transportation and security for field staff.
- Obtaining copies of local maps.

6.1.1 *Contacting local authorities*

It is essential that contact be made with local authorities and community leaders before beginning the study in order to explain the importance of the survey, to seek their permission and cooperation, and to advise them of the survey team's arrival and discuss their safety. This might also be an appropriate time to ask for assistance with identifying suitable local guides. Another area in which local authorities may be helpful is in arranging accommodation and meals for the survey team.

6.1.2 *Setting up a local coordination centre*

The study must have a local coordination centre from where the survey operations can be coordinated. It is often possible to set up a coordination centre within a government institution (e.g. the district office), at a local hospital or within the offices of another partner. The coordination centre will house the survey's computing equipment and serve as a storage facility for completed questionnaires. Telephone or radio facilities are necessary for maintaining contact with the field teams and for liaising with the survey's central headquarters.

6.1.3 *Deciding on the size and composition of the field team(s)*

The number of interviewers required depends on the sample size, on the number of days to be spent interviewing and on the number of households (or respondents) one interviewer can interview in one day. You can estimate the latter by dividing the length of a working day by the amount of time it takes to complete one interview, allowing some travel time. Note that travel time will be substantially longer in rural than in urban areas.

Example

If say, based on sample size calculations and pilot testing of the questionnaire, we know that:

- 138 households are needed to satisfy sample size; and
- the average interview time per household is 1.5 – 2 hours.

Assuming an 8-hour working day, this means that 4 households can be interviewed per day by each interviewer.

With 3 teams of 2 interviewers (a total of 6 interviewers), $4 \times 6 = 24$ households can be interviewed per day.

Thus to visit 138 households it will take approximately $(138 / 24) 5.75$ days to meet the sample size

Once you have decided how many interviewers you will need to complete the survey within a specified time, the next step is to work out the composition of your survey teams. Experience dictates that a team of eight persons, a supervisor, a driver and six interviewers (working in pairs, visiting alternate houses) works particularly well. This arrangement assumes that the available vehicles will be large enough to carry all eight persons, plus any equipment and questionnaires.

Pairing your interviewers is an arrangement that has multiple benefits. Firstly, team morale is easier to maintain when the interviewers work in pairs. Furthermore, in areas where violence is high, working in pairs may be necessary to safeguard safety of the interviewers. If questions on violence against women are to be included, it is advantageous to have male-female pairs, with female interviewers undertaking the interviews with women victims of violence. Working in pairs also contributes to quality control in that each interviewer will always be able to consult a colleague about household selection and other interviewing matters that they might be unsure about. It is good practice to rotate team members so as to avoid monotony.

It is recommended that you use one or two survey teams per district, each consisting of a maximum of six interviewer pairs. It is advisable not to use more than 8–12 interviewers (i.e. 4–6 interviewer pairs) as it is difficult to ensure good quality training and supervision of teams with numbers greater than this. If the survey requires more than one team (e.g. for different districts), it is important to ensure that the training for each team is of the same high level.

6.1.4 Arranging transportation, accommodation and security

You may be fortunate enough to be offered the use of government vehicles for your survey. Alternatively, you may need to arrange transportation privately, for example, by renting cars for the duration of the survey period. When using government vehicles, ensure that there will be no conflicting demands for the vehicles during the whole of the fieldwork period. Allow funds to cover the costs of fuel, vehicle maintenance and eventual repairs.

The main advantage of recruiting your survey team from among the local population (see section 6.3) is that there is usually no need to arrange for their accommodation. If, however, it is necessary to provide overnight accommodation for the survey team (for example, if the distances involved are large), it still may be possible to keep accommodation costs to a minimum by arranging for them to be put up in religious buildings, military quarters, schools or a government institution. Similarly, help with meal provision may also be possible through local authorities, but must also be arranged in advance.

Security is an important issue and should be given due consideration at this stage of the planning process. The safety of the survey team is more likely to be a concern if the survey area includes urban slums or rural areas and under such circumstances, the advice of local guides should be sought so as minimize the security risks. Local guides can also assist in posting notices and advertising about the impending survey, advising community leaders about the survey and its purpose, and requesting community cooperation. All field staff should be provided with identification cards or letters of introduction so that all respondents can be assured of the identity of the interviewers.

Finally, arrangements should be put in place for paying the field workers and supervisors; timely payment is essential for maintaining the team's morale. It may also be necessary to provide field workers with a small amount of cash each day to cover day-to-day and/or any unexpected expenses.

6.1.5 Obtaining copies of local maps

Before the fieldwork can commence, maps of the planned survey area indicating both the large-scale features (i.e. towns, sub-districts) as well as the smaller-scale features (i.e. villages, census enumeration areas) must be obtained. The latter are especially important, as they are the basis of segment sampling (see section 4.2.2). Maps may be available from the local census bureau or other government offices. If the available maps are more than 5 years old, new maps will need to be drawn for which adequate time must be factored into the survey timetable (see Appendix 1).

6.2 Preparing the questionnaire and related materials

The basic principles of questionnaire design, including pre-testing, have been already been covered (see section 5.2). Once the questionnaire has been devised, but before pre-testing and field worker training can commence, it is often necessary to translate both the questionnaire and the accompanying instructions for the interviewers into the appropriate local language(s).

There are a number of reasons why it is important to translate the questionnaire at this point. Firstly, interviewers cannot be expected to translate the questions as they ask them; different interpretations of the questions will render the data collected useless. In addition, interviewers may encounter people who want to do the interview in a language other than the local one (commonly English). If it is appropriate, therefore, that interviewers should conduct mock interviews in both languages during their training period and carry two sets of questionnaires so that they will not have to translate as they conduct the interview.

One person, preferably a social scientist, should translate the questionnaire and then another translator should independently translate the questionnaire back into the original language. The two versions can then be compared. Discuss any words that seem to be ambiguous or confusing, and agree on the correct translation. Remember to give the translators very clear definitions of all the terms used in the questions. Make sure the order of the questions is not changed during the translation process.

Once the questionnaire has been translated and pre-tested (see section 5.2.3), you will need to make copies. When making copies, remember the following:

- Use good quality paper. This will help interviewers to write clearly and will prevent the questionnaires from tearing.
- Do not change the layout of the questionnaire or the order of the questions from that of the original. The order of the questions in the questionnaire will have been designed so as to facilitate data entry at the analysis stage (see section 9.1).
- Print more copies than you need. There will always be some wastage, and extra copies will be needed for training. Ensure facilities are available locally for bulk copying; these may be difficult to find at remote settings.
- Check they are well bound or stapled to stop pages from coming apart or from being lost.
- Ensure adequate facilities for secure storage of the completed questionnaires until they can be sent to the data entry office.

6.3 Selecting the field workers

A detailed description of the interviewers' and supervisors' tasks is given in the next chapter (see chapter 7); a brief job description, which outlines the main responsibilities of each, is included as Appendix 10.

Interviewers and supervisors should be selected for their ability and motivation to perform the specific tasks required of them. In particular, supervisors must understand the importance of adhering to survey instructions, and be capable of making sure that the interviewers follow instructions. They will work closely with the survey coordinator to ensure high standards. Supervisors should have previous field experience in well-conducted surveys. Previous involvement in poorly planned and implemented surveys can lead to bad interviewing habits that may be hard to correct in team members.

All field staff should be able to speak the local language. Although it may be advantageous that they are local to the survey area from the point of view of reducing accommodation costs (see section 6.1.4), it is better that they are not part of the same community as that being surveyed from the point of view of confidentiality. In addition, supervisors and interviewers should be:

- intelligent and literate (e.g. educated to secondary school level or more);
- willing to follow instructions precisely and accurately;
- polite and able to establish a good relationship with respondents;
- fluent not only in the language of the respondents but, preferably, also in English or another international language (a must for the supervisors) spoken in the country;
- ideally, be employed by an institution or organization that will be able to use their newly-acquired training and skills for similar functions in the future (i.e. the training received fulfils a capacity-building function).

If possible, both male and female interviewers should be recruited. The age of the interviewers may also be a factor; the age of the interviewers should be appropriate for the information you want. Women in particular may be reluctant to provide answers to questions that touch on sensitive issues, such as physical or sexual violence, to male interviewers or to interviewers who seem too young. Similarly, in some societies men may be unwilling to release sensitive information to females.

Always recruit more interviewers than you need. Train all of them and select the required number at the end of the course. Not only will this guarantee that only the best field workers will be involved in the study proper, but it will also provide a few additional interviewers in case you need replacements (e.g. in the event of illness or some other unforeseen circumstance resulting in absenteeism). Provide all potential interviewers, including those excluded from the final selection, with a training certificate.

6.4 Choosing and preparing the field equipment

Any necessary equipment must be purchased well in advance of the survey. Typical items of field equipment that are likely to be needed include notebooks, clipboards, envelopes, clips and staplers, and a selection of pens, pencils and erasers. Backpacks, or some other type of waterproof bag, might also be useful for the transport and protection of forms. Remember that all field workers should be issued with letters of introduction to the families, preferably on official letterhead, and/or identification cards (preferably with photographs).

6.5 Training the field workers

In the interest of generating high-quality data, it is vital that enough time be allocated for training of supervisors and interviewers. Before starting training, however, various routine survey procedures, such as those for checking the completed questionnaires and segment forms, for collecting the completed forms from the supervisors, for making transportation arrangements and for making payments to field workers must be established. Before embarking on training, you should also have completed the following tasks:

- translation of the questionnaire, the instructions for interviewers for filling in the questionnaire and the field procedures;
- the pre-test of the questionnaire;
- identification of typical field locations for practising interviews.

Ideally, the study coordinator should conduct the field staff training. Model training courses for field supervisors and interviewers, in terms of structure and content, are provided in outline in Appendix 11. It is important that all persons involved in the survey, including the drivers, as part of their training programme, are briefed about its aims and are instructed in the main methodological guidelines. Drivers who will work along with the team throughout the whole survey are a group in need of special attention. Drivers often fail to understand random sampling and may even refuse to take secondary roads or paths to reach scattered households.

6.6 Setting up computers and hiring data processing staff

In order to process the data collected during the course of the survey, it is recommended you obtain the services of a computer programmer with experience in using statistical software. If one of your collaborating centres is a university department, it may be possible to hire their expertise for this task. Generally speaking, computer programming support services will be required for about three months (see Appendix 1). You will also need data-entry staff.

Depending on the size of your survey, two or more data clerks will have to be recruited and trained by the computer programmer in using the statistical software. Two days is normally sufficient for training of this nature.

Before the main survey begins, it will be necessary to make sure that the computer programs for data entry and analysis have been properly adapted and are fully functional. It is a good idea to use the questionnaire responses generated by the questionnaire pre-test (see section 5.2.3) for testing the data entry and analysis procedures and programs (see chapter 9). Check the programs for the production of summary tables. Sort out any problems and make any corrections that may be necessary.

All the necessary office equipment, including computers, printers, data storage devices (e.g. diskettes, CD-ROMs, memory sticks) and paper should be set up at a suitable location (either the local coordination centre or central headquarters depending on the scale of the survey) in advance of the start of the survey proper. At least two computers are required. Make sure that the power supply is adequate. Remember that unless all arrangements for data entry and analysis are made before starting the fieldwork, this process can lead to major delays in producing survey results.

6.7 Making arrangements for returning the questionnaires

Ideally, completed questionnaires should be returned to the local coordination centre on a daily basis. One of the advantages of returning the completed questionnaires to the coordination centre in a timely fashion, is that it provides a good opportunity to check for any systematic problems that may be occurring in the field (e.g. a lot of the questions on the survey are consistently being left unanswered). However, the feasibility of this depends on how far the coordination centre is from where the fieldwork is being conducted. Options for ensuring the safe transfer of questionnaires to the coordination centre include registered post, a reliable courier service, or if the distances involved are not too great, by hand. It may also be feasible to ask the fieldwork drivers to return the completed questionnaires to the coordination centre.

7. CONDUCTING THE FIELDWORK

This chapter outlines the main duties and functions of field supervisors and interviewers during the course of the data collection part of the survey. It also provides suggestions for tackling some potentially awkward situations in the field.

7.1 The field supervisor's role

The field supervisor is the senior member of the field team and is responsible for ensuring both the progress and the quality of fieldwork, as well as the well-being and safety of the team members. Field supervisors report to the survey coordinator and act as the primary link between the survey coordinator and the interviewers. The specific responsibilities of the field supervisor are to make the necessary preparations for the fieldwork, to organize and direct the fieldwork, and to spot-check the data collected in the household questionnaire.

Preparing for the fieldwork requires that the field supervisor:

- Obtains maps and household lists for each area in which his/her team will be working, as directed by the survey coordinator.
- Sketches maps of the communities and segments (based on segment size) if official maps are unavailable or are out of date (i.e. more than 5 years old).
- Becomes familiar with the area where the team will be working and helps with the travel and accommodation arrangements, as appropriate.
- Obtains all monetary advances, supplies and necessary equipment for the team to complete its assigned interviews.
- Sets up communication channels between field workers and the field supervisor and between the survey coordinator and the field supervisor.

Organizing the fieldwork requires that the field supervisor, under the supervision of the survey coordinator:

- Assigns work to each interviewer, making sure that there is an equitable distribution of the workload and that each interviewer has enough work to do for the day.
- Makes sure that the assignments are carried out.
- Takes responsibility for the safe collection, storage and transport of the completed questionnaires as instructed by the survey coordinator to whom progress should be reported, as well as any problems.
- Makes an effort to develop a positive team spirit, which will contribute to the overall quality of a survey.
- With the survey coordinator, takes steps to ensure the safety of the team.

Finally, the field supervisor is responsible for making sure that all the segments and households selected by the sampling procedure are visited by the field workers. The segment form (Appendix 4) can be used to assure the complete coverage of the chosen areas; completed segment forms should be submitted to the survey coordinator. In addition to checking that all the households have been visited, the field supervisor should also make certain that data collection is being conducted correctly. This can be accomplished by randomly selecting 5% of the sample and re-visiting those households; the field supervisor should implement the questionnaire him/herself in those households. These “repeated” questionnaires should be sent to the survey coordinator so that comparison can be made between the two questionnaires that were implemented in the same household. Any discrepancies found should be addressed to assure the quality of data collection.

A model list of instructions for supervisors is attached as Appendix 12. A copy of these instructions should be given to each supervisor prior to the start of the fieldwork. The model set of instructions provided is context specific and is intended to be adapted to suit particular survey requirements. It may also be necessary to translate the instructions into the local language.

7.2 The interviewer’s role

Before starting the interview, the interviewer’s first responsibility is to establish rapport with the respondent. It is essential that interviewers make a good first impression, have a positive approach and do their utmost to make the respondent feel at ease.

During the interview the interviewer should:

- introduce themselves, presenting identification details and stating the purpose of their visit;
- stress confidentiality of responses, when necessary;
- answer any questions from the respondent frankly;
- be neutral throughout the interview, not reacting by gesture or word, either positively or negatively, to any responses;
- not change the wording or sequence of questions;
- ask questions directly and consistently of all respondents;
- not create false expectations;
- thank respondents for their time and assure him/her that their contribution was valuable.

Appendix 13 provides a model set of instructions for the interviewers, which like the instructions for supervisors, should be given to each interviewer in advance of the fieldwork. Again, the instructions can be amended to suit survey conditions and should be translated as appropriate.

7.3 How to handle special situations in the field

Specific problems or technical difficulties that are commonly encountered in field situations, together with some suggestions for solutions, are described in Table 5.

Table 5: Community injury surveys: troubleshooting in the field

| Situation | Possible solution |
|--|---|
| A small area cannot be reached | Rarely — during the rainy season, for example — the all or part of a survey area cannot be reached because of poor road conditions. In such cases, survey the closest area to the original one that can be reached. All replacements should be recorded in the field notebook and mentioned in the final survey report. Replacing the segment that cannot be reached with another one can introduce bias, since people living in areas of difficult access are likely to also differ in health status and in the utilization of services. |
| The area in which you are working contains fewer households than the required number | Survey all the households in the area. Then move to the area that is closest to the last household you interviewed in the original area. Survey as many households in this second area as you need to complete the segment size. |
| Separate households are difficult to identify | If separate households are difficult to identify — for example, where several related families live in the same dwelling and share some but not all meals — treat the entire dwelling as one household and interview all eligible members within that dwelling. |
| The household is empty | If you call or knock a few times and there is no reply, ask the neighbours whether the house is inhabited. If it is not occupied, just go on to interview all the other households in the segment. If the neighbours tell you that the house is inhabited, come back at the end of the working day to see if the residents have returned. If they are still away, try to come back on another day. This may not be feasible in rural areas where the whole team is moving from place to place, but in urban areas it is often possible. |
| The residents refuse to be interviewed | Houses where residents decline to be interviewed should be clearly identified as refusals on the first page of the questionnaire. All refusals should be reported to the supervisor. An alternative household should not be interviewed in place of the original as this may introduce bias (people living in the replacement house may be different from those living in the household that should have been interviewed). Refusals should be counted as losses in the final report. |

7.4 Quality assurance

The accuracy of the results of any community survey depends to a large extent on the quality of the fieldwork. Assuring the quality of the fieldwork is thus an essential component of any survey. Because of the inherent limitations of community surveys, one of which is the reliance on the ability of respondents to recall injury events, achieving a high standard of fieldwork is especially important.

In the case of community surveys, the main sources of measurement error are likely to be coverage error (e.g. incorrect selection of eligible respondents), response error (e.g. respondent does not understand the question) and interviewer error (e.g. interviewer influences the respondent to answer in a certain way). Proper training of all field staff to a high standard, routine consistency checks on completeness and accuracy of questionnaire completion by field supervisors (as described above; see section 7.1), good survey organization and careful field supervision can control many of these potential sources of error.

8. ETHICAL ASPECTS OF CONDUCTING A SURVEY

Any research related to healthcare must take into account the following four principles (38):

1. A duty to show respect for persons.
2. A duty to be sensitive to cultural differences.
3. A duty not to exploit the vulnerable.
4. A duty to alleviate suffering.

The survey must also abide by the laws of the country. In some countries, approval to conduct a community survey from an ethics committee may be required. If so, this should be requested at an early stage of the survey planning process to prevent delays later on. Guidance on such matters should be available from ministries of health or national medical research councils or equivalent bodies.

Household surveys typically raise a number of ethical questions; when planning and implementing a survey it is important that any potentially sensitive issues and concerns are taken into account and adequately addressed. Equally, all field workers should be made aware of the ethical dimensions of their work as part of their training. In particular, attention should be paid to:

- an individual's right to privacy (i.e. the right to safeguard the respondent's identity and integrity must be respected, and confidentiality should be ensured at all times);
- the need for informed consent (i.e. respondents must be adequately informed of the aims, methods and any anticipated benefits and potential risks of the study before agreeing to take part in the survey);
- not raising expectations and meeting responsibilities that arise upon uncovering potential health problems in a survey (e.g. it would be considered ethical to offer reported or suspected cases of violence, particularly cases of sexual/domestic violence and child abuse, referral to appropriate social and/or health services, were it thought that their safety was at risk).

8.1 Confidentiality

All information provided to the interviewers is strictly confidential and should be treated as such throughout the duration of the survey. In practice this means that all records should be securely stored and locked to restrict access only to study staff. Computerized records should not include any names that might be used to identify the families who have participated in the survey.

8.2 Informed consent

A prospective participant in the survey must be informed about the proposed survey before any consent to participate can be considered to be valid. They must be informed about the contents of the interviews, should understand the procedures and give their full approval. In some countries, written consent may be required.

To obtain genuine consent, information should be communicated accurately and in an understandable and appropriate way. The information must include matters such as the nature and the purpose of the survey, the procedure involved and the potential risks and benefits. It is important to give potential participants enough time to ask questions, obtain answers and to reflect and give due consideration to their participation (see Appendix 6).

9. DATA ENTRY AND ANALYSIS

Data analysis is the process by which researchers take raw data, in this case data collected by a community survey by means of a questionnaire, and turn it into information that can be used to answer the questions posed by the research study. By and large, raw data are, by themselves, not very useful, but once summarized and analysed, provide useful information about the study population. This chapter provides guidance on procedures for entry of raw data, before going on to recommend some fairly simple data analysis methods for summarizing those raw data that will enable the most to be gained from the survey effort. Some of the inherent problems of household surveys and their implications for drawing inferences from survey results are also discussed.

9.1 Data entry

As mentioned earlier, a data analysis plan should be developed and tested before the start of the data collection phase of the survey (see section 6.6). Depending on the experience of the survey staff, it may be helpful to consult a survey statistician for assistance in setting up your database and developing the data analysis plan.

Appropriate database software should be used to process and store the information generated by the survey. The choice of computer software for data handling will depend on local knowledge and resource availability. Ideally, the chosen software programme should be able to perform internal consistency checks to assure that the data have been recorded and entered properly. It should also be able to perform “range checks” which ensure that no number is entered for an item that is out of the given range of responses for that item.

EpilInfo⁴ is a well known statistical programme that has useful functions for quality assurance and accuracy checks. In EpilInfo, double entering data and running the double-entry command provides a check on the accuracy of data entry. Any discrepancies found between the two data sets can then be addressed by examining the forms. Alternatively, the accuracy of data entry can be assessed by checking each of the questionnaires against the information that has been entered into the database and correcting any errors identified. The latter method is suitable for checking small data sets, while the former is more appropriate for larger ones.

Computerized data entry forms should follow the order of the questions in the questionnaire. Answers to each of the questions should already have been coded as recommended in section 5.1.2 of this document. Data codes should be mutually exclusive – this is particularly important for questions where there can be more than one answer. Data entry fields should not be left blank. There are some codes that should be used consistently throughout:

⁴ EpilInfo is available for download (free of charge) from the Internet at: <http://www.cdc.gov/epiinfo/>.

| Answer to survey question | Code |
|--|------|
| Refused to answer | 77 |
| Don't know/can't remember | 99 |
| Other | 98 |
| Missing (i.e. if there is no answer indicated on the completed questionnaire enter a numeric code to indicate that the answer was missing) | 00 |

9.2 Statistical data analysis

Data analysis can be extremely complicated and the amount, and the level at which it is conducted, will depend on a range of factors, including survey objectives and the statistical expertise of the survey staff. The objective of the majority of community injury surveys is to describe the magnitude and nature of the injury problem in a given study population. To this end, univariate or descriptive data analysis is normally more than adequate and is recommended here as the basic minimum amount that you should aim to do with the raw data obtained from your community injury survey. The basic techniques of descriptive data analysis are outlined below; for further information readers are referred to standard textbooks on the subject.

9.2.1 Descriptive data analysis

Descriptive data analyses summarize raw in such a way so as to provide information about the prevalence⁵ of injuries in the study population. Prevalence is usually described in terms of individual variables; in the case of injury surveys, it is possible to examine mechanism-specific, population-specific, age group-specific or sex-specific injury prevalence.

The simplest way to present descriptive statistics is to create frequency tables. Frequency tables can be “one-way” or single-variable tables, or “multi-variable” frequency tables. Multi-variable frequency tables, as the name implies, contain information about the distribution of more than one variable in the same table. Examples of each are given in Table 6.

⁵ Prevalence is formally defined as the number of events or instances of a given disease (injury in this case) in a given population at a designated time.

Table 6: Single and multi-variable frequency tables

a) A 'one-way' variable frequency table

| Occupation of the sample population | Frequency | % |
|-------------------------------------|------------|------------|
| Farmer | 9 | 6.6 |
| Civil servant | 56 | 41.2 |
| Private employee | 24 | 17.6 |
| Self-employed | 5 | 3.7 |
| Street vendor | 2 | 1.5 |
| Professional | 12 | 8.8 |
| Student | 15 | 11.0 |
| Homemaker | 1 | 0.7 |
| Non-paid worker | 1 | 0.7 |
| Retired | 7 | 5.1 |
| Unemployed (able to work) | 3 | 2.2 |
| Unemployed (unable to work) | 1 | 0.7 |
| Total | 136 | 100 |

b) A multi-variable frequency table

| Place of injury/activity when injured | Frequency | % |
|---------------------------------------|------------|------------|
| Place of injury | | |
| Home | 58 | 42.6 |
| School | 28 | 20.6 |
| Street/highway | 10 | 7.4 |
| Sports/athletic area | 9 | 6.6 |
| Farm | 13 | 9.6 |
| Other | 18 | 13.2 |
| Total | 136 | 100 |
| Activity when injury occurred | | |
| Paid work | 58 | 42.6 |
| Unpaid work | 2 | 1.5 |
| Education | 14 | 10.3 |
| Sport | 22 | 16.2 |
| Leisure/play | 40 | 29.4 |
| Total | 136 | 100 |

A good place to start in your data analysis is to make a frequency table for each of the variables that your survey has collected data for, i.e. age of the injured person, nature of the injury, and mechanism of injury. Calculating percentages helps you determine what part or fraction of the study population has a certain characteristic; it will also assist you in assessing the differences between populations or between population subgroups.

9.2.2 Cross-tabulations

In addition to describing the distribution of variables in the study population, you may be interested in exploring the relationship between two variables. In order to do this, a cross-tabulation is necessary. A cross-tabulation is a combination of two (or more) frequency tables arranged such that each cell in the resulting table represents a unique combination of specific values of cross-tabulated variables. In other words, a cross-tabulation presents the frequencies of two variables, the values of which are interlaced. Table 7 is an example of a two-by-two cross-tabulation, which looks at the relationship between the sex of the injured person and the mechanism of that injury. Each cell in the table contains both an absolute number and a percentage. The row totals (i.e. the total number of injuries – men and women – for each mechanism) and the column totals (i.e. the total number of injuries sustained by men or women) describe the two variables by themselves, but do not tell us anything about the relationship between the two variables. The percentages are of either men or women that were injured by the different mechanisms listed. With these row percentages, you can see, for example, that 75% of traffic-related injuries occurred among men, with women accounting for the remaining 25%. Appendix 14 contains further examples of cross-tabulations that might be used for summarizing the data obtained by a typical community injury survey. Most statistical software packages, including EpiInfo, have the capability to make cross-tabulation tables.

Table 7: A two-by-two cross-tabulation of the mechanism of injury by sex

| | | Sex | | Total |
|---------------------|--------------------------------|------------------|------------------|-------------------|
| | | Male | Female | |
| Mechanism of injury | Traffic | 45 (75%) | 15 (25%) | 60 (44%) |
| | Fall | 2 (33%) | 4 (67%) | 6 (4%) |
| | Struck/hit by person or object | 10 (100%) | 0 (0%) | 10 (7%) |
| | Stab | 2 (100%) | 0 (0%) | 2 (2%) |
| | Gun shot | 7 (100%) | 0 (0%) | 7 (5%) |
| | Fire, flames, or heat | 2 (17%) | 10 (83%) | 12 (9%) |
| | Drowning or near-drowning | 6 (75%) | 2 (25%) | 8 (6%) |
| | Poisoning | 2 (17%) | 10 (83%) | 12 (9%) |
| | Animal bite | 4 (100%) | 0 (0%) | 4 (3%) |
| | Other | 8 (53%) | 7 (47%) | 15 (11%) |
| Total | | 82 (60%) | 54 (40%) | 136 (100%) |

9.2.3 More advanced forms of data analysis

Data collected from community surveys can be used to calculate other measures of morbidity and mortality such as mortality rates, proportionate mortality and years of potential life lost (YPLLs) and disability-adjusted life years lost (DALYs). However, these measures require more sophisticated statistical computations that are beyond the scope of this document. We suggest you work with an experienced statistician if you wish to carry out more detailed data analyses of your survey data than the basic minimum recommended here.

9.3 Risk factor analysis

Information about respondents' characteristics (i.e. age, sex), cause of injury and circumstances at the time of injury, particularly when cross-tabulated, can be used to identify risk factors for specific types of injury. Appropriate prevention measures can then be targeted at those risk factors. For example, if cross-tabulated frequency data suggest that a large proportion of injuries are occurring among children of school age from a particular village whilst travelling to and from school, then traffic control measures and educational activities would be best focused in that geographical area and at this population group. In the same way, information on the physical context of injuries can help to identify risky environments. For instance, a high frequency of burn injuries in the home may indicate a need for the development of safer cooking facilities. If survey data suggest a link between injury events and excessive alcohol consumption, the introduction of measures aimed at restricting alcohol consumption, such as the licensing of the sale of alcohol, might be an effective means of reducing the number of injuries.

Similarly, long transport times to health care facilities from the scene of the incident or for inter-facility transfer are indicative of poor transport facilities. Moreover, research has shown that survival for severe injuries is adversely affected if transport times to health care facilities are greater than 6 hours (39). The public health response to this may be to strengthen the community's capacity to deliver first aid.

9.4 Limitations

When interpreting results of a community injury survey, it is important to bear in mind the limitations that are inherent in all surveys of this type. In the main, these are associated with the difficulties and potential bias introduced by reliance on self-reporting, the accuracy or otherwise of recall and the use of a proxy respondent. The lack of generalizability of survey results may also be a drawback in certain circumstances. The implications of the limitations of community surveys are discussed below. Additional problem areas, which may impair the reliability of survey findings, some of which have been discussed already, are weaknesses in the sample selection, inadequate sample size, measurement errors (see section 7.4), misclassification of cases and mistakes in data analysis. However, the majority of these can be avoided, or at least minimized, by observing the methodologies outlined in previous chapters of these guidelines.

9.4.1 Self-reporting

One of the most significant limitations of community-based surveys is rooted in their reliance on self-reporting by respondents. The accuracy of respondents' answers on the occurrence of injury events or the duration of the resultant disability cannot be independently verified. This is also true of answers to questions about the nature of the injury and any treatment received. Injuries caused by sexual violence or domestic violence are likely to be underreported, largely because of a reluctance on the part of respondents to disclose the fact that they have been victims of sexual violence and/or domestic abuse.

9.4.2 Recall period

Studies have demonstrated a tendency among respondents to report events occurring outside the recall period as if they had occurred within it (20). The accuracy of recall is also influenced by memory decay. On the grounds that longer recall periods significantly underestimate the injury rate compared with shorter recall periods, Mock et al. (20) recommend using shorter recall periods (i.e. of up to 3 months) for surveys that are primarily concerned with minor injuries. Longer recall periods (i.e. of 12 months) may, however, be safely used to obtain information on more severe, but less frequent injuries.

9.4.3 Proxy respondent

The use of proxy respondents in the absence of first choice respondents tends to lead to underreporting of injury events. In addition, if a respondent is answering on behalf of more than one individual, memory decay might be more extensive.

9.4.4 Generalizability

If the study population had been selected so as to be representative of the entire population (i.e. a national sample), it would then be valid to generalize the results of the survey to that population. However, it must be emphasised that variations in the physical, environmental and sociocultural factors between different regions may be too great to permit such generalization of survey findings. For example, it would be incorrect to generalize from rural to urban populations and vice versa, as the risk factors and the type and incidence of injuries vary considerably between these two population types.

10. USING SURVEY RESULTS TO GUIDE INJURY PREVENTION PROGRAMMES AND PUBLIC HEALTH ACTION

The main reason for gathering and analysing data on injuries in the community is to estimate the burden of disease and, then armed with this information, to prioritize injuries by cause to guide prevention programmes and further study. It is essential therefore that the results of the survey are presented to national and local policy makers and other stakeholders so that effective strategies for injury prevention can be developed.

10.1 Injury prevention and trauma care

The results of a community injury survey are likely to reveal different priorities, in terms of the burden of injury, for different subgroups of the population, whether by age group, sex or some other characteristic. For example, fires and scalds may be significant in children under the age of 5 years, but the leading problem in young boys aged between 5 and 14 years may be road traffic injuries. Defining the priority areas in terms of injuries by their cause is the crucial first step in developing a public health approach to injury prevention. Surveys can also provide information on risk factors for injury (e.g. the use of alcohol before violent acts); identification of risk factors is the second step in the public health approach to injury prevention. The next steps are the identification and implementation of effective and affordable interventions against the problem (see section 2.3).

Although community surveys are primarily conducted in order to obtain information on the size of the injury problem, they can provide valuable information, albeit indirectly, on the availability of effective trauma care (i.e. where people sought treatment, availability of first aid and access to health care services). Effective trauma care requires functional trauma care systems. Key elements of such a system are pre-hospital care of trauma patients, hospital care, referral and rehabilitation care. However, many low-income and middle-income countries may not be able to afford to upgrade and invest in the complete system. In such cases, improving the most sensitive component, i.e. that most likely to result in the greatest benefit for a given cost, may then be a better option (39). A community survey might be able to identify the most sensitive component, or at least suggest priorities for further study of the organization and effectiveness of trauma services.

10.2 Advocacy

Information on the magnitude of injury as a major public health concern is invaluable in raising awareness, for making the problem more visible to policy makers and for lobbying governments, donors and other key actors to initiate programmes for injury prevention and trauma care. In order to be advocates, however, it is contingent upon the researchers to present the results of the survey in a way that is accessible to policy-makers and other stakeholders.

10.3 Reporting and dissemination

As the preceding discussion has clearly established, surveys are of little value unless results are disseminated to all stakeholders, including policy-makers and the community, and translated into public health action, both in terms of advocacy and introduction of prevention measures. The dissemination of the results of a survey is usually done in the form of written reports and related publications, workshops and seminars, and through discussions with key stakeholders. Planning for disseminating the findings of a community survey should not be left until the survey is completed but should form an integral part of the initial preparation phase of the survey (see chapter 3).

10.3.1 Technical reports

It is important to write and distribute reports that document the scale of the injury problem. Any written report should be explicit about its purpose, the case definitions and methods used, and the results and interpretations in terms of highlighting key areas for action. The key elements of a technical report are listed in Table 8, and can be used to guide the preparation of your report. Appendix 14 provides suggestions for a set of tables that can be used for presenting the results of a community-based survey collecting core data on injuries.

**Table 8: Community injury surveys:
suggested content for a full technical report**

| |
|---|
| • An executive summary |
| • Aims and objectives of the survey |
| • Details of the sampling techniques used |
| • A copy of the questionnaire used |
| • Details of the fieldwork |
| • Data entry procedures |
| • An evaluation of data quality |
| • Results |
| • An interpretation of the results, comparing them with results from other sources, and with data from neighbouring countries |
| • Conclusions, recommendations and acknowledgements |

The authors should be candid about the inherent limitations of the survey, as this will help others in overcoming constraints and avoid over interpretation of the results. Reports should be disseminated as widely as possible with a view to advocating preventive activities and improvements in the quality of care.

10.3.2 Workshops and seminars

Survey findings can be also be disseminated through workshops and seminars aimed at stakeholders such as officials and health workers from health ministries and other government departments, the military, United Nations bodies such as WHO and UNICEF, NGOs, donors and district officials. In order to ensure that survey findings are accurately reported, a press release, which summarizes the main results, should be prepared. In addition, articles and papers should be written for NGO, policy and peer review journals.

10.3.3 Feedback to stakeholders and the community

It is particularly important to feed back information to stakeholders in order to engender a sense of participation and ownership of information, and also to ensure continued stakeholder cooperation and motivation. Furthermore, the sharing of information facilitates intersectoral working. At the community level, feedback to key individuals such as village leaders, health professionals, teachers, women groups, civil society and those involved in data collection, is a vital part of the dissemination process. Families who have freely donated their time in order to participate in the survey are also entitled to some feedback.

What type of feed back will be given to the various interested parties should be decided at the start of the survey, preferably during the planning phase. It is particularly helpful to link feedback to workshops for prioritizing preventive action.

11. CONCLUSION

We hope that this manual will assist you in conducting community surveys on injuries and violence. This manual is intended to provide guidelines for you to follow and not rules that you must adhere to. We realize that your survey will need to be adapted to suit your level of experience and the situation in your community; therefore we encourage you to use this manual as a guide to seek further information when needed. In addition, we encourage you to work closely with key stakeholders and organizations in your country to determine the best direction to suit your needs.

Finally, although we have done our best to make this manual easy to follow, we accept that there is always room for improvement. We would, therefore, welcome feedback from users of this manual. For example, did the manual tell you everything you needed to know to enable you to design and implement your own community-based survey appropriate for your setting? Was it easy to follow, or were there parts that you found confusing? Were there any aspects you felt could be covered in more detail? How could it be improved? Any comments and suggestions readers may wish to offer would be gratefully received.

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GLOSSARY

Against your will: refers to situations where threats, physical force or a weapon(s) are used to make an individual perform an action or engage in behaviour they did not want to. Such incidents may involve family members, dates, partners, acquaintances or strangers.

Alcohol-related injury: infers that the injured person had been drinking alcohol within 6 hours of the event occurring.

Asset Index: a numerical indicator of the wealth of a given population developed by the World Bank and used for Demographic and Health Surveys. The formula used to derive the index is based on a number of different assets, such as building materials used in the construction of the dwelling, ownership of certain household items, household source of drinking water, sanitation etc. A list of countries and country specific indices is available from the Internet at: <http://www.measuredhs.com>.

Bias: deviation of results or inferences from the truth, or processes leading to such deviation. Any trend in the collection, analysis, interpretation, publication, or review of data that can lead to conclusions that are systematically different from the truth.

Case-fatality rate: number of deaths from a disease (injury) in a given period divided by the number of diagnosed cases of that disease (injury) in the same period.

Civil insurrection: The act or an instance of open revolt against civil authority or a constituted government.

Cluster: a natural grouping within the population, such as a village in a district, or settlement in a refugee camp or other community, from which a sub-sample may be selected.

Cluster sampling: a sampling method in which each unit selected is a group of persons (e.g. all people in a city block, a family, etc) rather than an individual.

Collective violence: refers to the instrumental use of violence by people who identify themselves as members of a group – whether this group is transitory or has a more permanent identity – against another group or set of individuals, in order to achieve political, economic or social objectives.

Concussion: a head-trauma-induced alteration in mental status that may or may not involve loss of consciousness.

Confidence Interval (CI): the computed interval with a given probability, e.g. 95%, that the true value of a variable such as a mean, proportion, or rate is contained within that interval.

Conflict: See War.

Cross-sectional study: a study that examines the relationship between diseases (or other health-related characteristics) and other variables of interest as they exist in a defined population at one particular time.

Design effect: a bias in study findings attributable to the study design. A specific form is bias attributable to intra-class correlation in cluster sampling.

Disability: any restriction or lack of ability (resulting from an impairment) to perform an activity in the manner or within the range considered normal for a human being. The United Nations definition is: the term “disability” summarizes a great number of different functional limitations occurring in any population in any country of the world. People may be disabled by physical, intellectual or sensory impairment, medical conditions or mental illness. Such impairments, conditions or illnesses may be permanent or transitory in nature.

Disability-adjusted life years (DALYs): is a measure of the burden of disease on a defined population and the effectiveness of interventions. It is a composite index derived from the person-years of life lost and the years lived with disability. The indicator is used to quantify the loss of healthy life due to injury or disease. One disability-adjusted life year is one lost year of health life, either due to death or disability.

Dwelling: a building or residential unit. It may include one or more households, as in the case of compounds or apartment buildings.

Epidemiology: the study of the distribution and determinants of health-related events in a defined population and the application of this study to the control of health problems.

Ex-spouse: divorced or separated spouse, both legal and common-law.

Fall: refers to trip, slip, stumble or fall on a level plane, from one level to another, or into a hole or other opening in a surface whether being unintentional or due to assault and self-directed violence.

Farmer/hired hand: someone who is hired to work on somebody else's land.

First aid: emergency treatment administered to an injured person at or near the injury site, prior to receiving professional medical cares.

Generalizability: whether the interpretations of results from a specified study population can be applied to the whole or general population.

Head of the household: the head of a family can be a senior male or female member of the household.

Head injury: injury to the head that may damage the scalp, skull or brain. Head injury may occur either as a closed head injury (e.g. the head hitting a car's windshield) or as a penetrating head injury (e.g. when a bullet pierces the skull).

Health clinic/health centre: any place where primary or secondary medical care is provided. The definition of these terms is country-specific and the relevant definitions should be agreed upon before the survey commences.

Health facility: any place where primary, secondary or tertiary medical care is provided (i.e. health centre, clinic or hospital).

Hospital admission: hospital admission in this document refers to fact that the injured person has had to spend at least one night in a hospital/health facility bed.

Household: a group of people who most often belong to the same family, who not only live together but also eat and share the same food source.

Impairment: any loss or abnormality of psychological, physiological or anatomical structure or function.

Incidence rate: the rate at which new events occur in a population. The numerator is the number of new events that occur in a defined period; the denominator is the population at risk of experiencing the event during this period.

Injury: physical damage that results when a human body is suddenly or briefly subjected to intolerable levels of energy. It can be a bodily lesion resulting from acute exposure to energy (thermal, chemical, kinetic) in amounts that exceed the threshold of physical tolerance, or it can be an impairment of function resulting from a lack of one or more vital elements (oxygen, warmth), as in drowning, strangulation or freezing.

Injury death: death as a result of an injury event.

Injury event: an incident leading to an injury

Intentional injury: injuries that are purposefully inflicted, either by the victims themselves (i.e. suicide and suicide attempts) or by other persons (i.e. homicide, assault, rape, child abuse).

Internal injury: physical damage to the internal organs in the body.

Interpersonal violence: physical violence between people including situations, in which a person hits, slaps, pushes, kicks or otherwise strikes another person, e.g. fights between friends or family members. Interpersonal violence includes child abuse and neglect, youth violence, violence against women, sexual violence, and elderly abuse and neglect.

Interpersonal quarrel: see Interpersonal violence.

Large landowner: this refers to the size of the land owned by the landowner and implies a high socioeconomic status. The size of the land would vary according to the country.

Legal intervention: any act of law enforcement by a person acting in an official capacity (e.g. execution of a search warrant or arrest, execution of a legal sentence such as corporal punishment).

Morbidity: any departure, subjective or objective, from a state of physiological or psychological well-being. Both incidence and prevalence are measures of morbidity.

Mortality rate: an estimate of the portion of a population that dies during a specified period. The numerator is the number of persons dying during the period; the denominator is the number in the population, usually estimated as the midyear population.

Multi-stage sampling: selection, randomly or otherwise, of entities such as geographical regions, schools, workplaces, followed by random sampling of persons within each sampled group.

Non-motorized vehicle: transport devices that are not motor driven (e.g. carts pulled by humans or animals).

Occupation: an activity that serves as one's regular source of livelihood.

Past partner: former boyfriend(s) or girlfriend(s) (heterosexual or same sex).

Perpetrator: a person committing a violent act with the intention of injuring another person.

Person-years: a measurement combining person and time as the denominator in incidence and mortality rates when, for varying periods, individual subjects are at risk of developing disease or dying. It is the sum of the periods of time at risk for each of the subjects.

Physical assault: behaviours that threaten, attempt, or actually inflict physical harm.

Point prevalence rate: proportion of the population that has a health problem (e.g. disability from an injury) measured at a specific point in time, irrespective of the period of time for which they have had it.

Poison: a substance that causes injury, illness, or death, by biochemical means on the body's physiology.

Population: the whole collection of units from which a sample may be drawn; not necessarily a population of persons, the units may be institutions, records or events. The sample is intended to give results that are representative of the whole population.

Prevalence: the number of events, for example, instances of a given disease (injury in this case), in a given population at a designated time.

Precision: the quality of being sharply defined through exact detail. Precision does not mean accurate.

Principle care-giver: a person, usually a senior, who attends to the needs of family members and looks after the well-being of the entire family.

Proportion: measure of the number of specified events divided by the number of persons in the specified population from which the cases were derived.

Rate: a measure of frequency of a specified event (injuries in this case) in a defined population over a given period of time.

Recall bias: systematic error due to differences in accuracy or completeness of recall of past events or experiences.

Retrospective study: a research design that is used to test etiologic hypotheses in which inferences about exposure to the putative causal factor(s) are derived from data relating to characteristics of the persons under study or to events or experiences in their past.

Road traffic injury: an event occurring on a street, road or highway, in which at least one vehicle in motion is involved, by collision, crashing or losing control, and which causes injury or death.

Sampling: the process of selecting a number of subjects from all the subjects in a particular group, or population.

Sampling bias: a systematic error due to study of a non-random sample of a population.

Sampling fraction: the ratio of the sample size to the population size.

Sampling frame: the actual list of every unit within the target population from which the sample, or some stage of the sample, is selected.

Sampling interval: the standard distance between elements selected from the sampling frame.

Segment: a subgroup of a cluster/community; it may include 20–40 households.

Selection bias: any error due to systematic differences in the characteristics between those that are selected for study and those that are not.

Self-directed violence: self-directed violence is divided into suicidal behaviour and self-abuse. Suicidal behaviour includes suicidal thoughts, attempted suicides – also called “para suicide” or “deliberate self-injury” in some countries – and completed suicides. Self-abuse, in contrast, includes to acts such as self-mutilation.

Self-harm: deliberate overdose of drugs and alcohol, self-mutilation, self-immolation and suicide.

Sexual violence/sexual assault: any sexual act, attempt to obtain a sexual act - including unwanted sexual comments or advances, or acts to traffic a person for sexual exploitation - directed against a person's sexuality using coercion, by any person regardless of their relationship to the victim, in any setting, including but not limited to home and work.

Small landowner: refers to the size of the land owned by the landowner and implies a lower socioeconomic status when compared with a large landowner. The size of the land would vary according to the country.

Stratification: the process, or result, of separating a sample into several subsamples according to specified criteria such as age groups, socioeconomic status, urban or rural location.

Suicide: human act of taking one's own life intentionally or a death arising from an act inflicted upon oneself with the intent to kill oneself.

Surveillance: systematic ongoing collection, collation, and analysis of data and the timely dissemination of information to those who need to know so that action can be taken.

Trauma: a serious injury or shock to the body, such as from violence or an unintentional injury.

Triage: a process for sorting injured people into groups based on their need for, or likely benefit from, immediate medical treatment. Triage is used in hospital emergency rooms, health clinics, on battlefields and at disaster sites when limited medical resources must be allocated.

Turn boy: person charged with collecting fares, helping with baggage and attracting passengers to use buses, minibuses or a taxi.

Undetermined intention: injury category used to describe those injuries where it is difficult to judge whether an injury was inflicted intentionally or accidentally.

Unintentional injury: injuries that are not intentionally inflicted.

Vehicle: transport devices including land transport vehicles (including on-and off-road vehicles, which may or may not be motor driven) watercraft and aircraft.

Violence: the intentional use of physical force or power, threatened or actual, against oneself, another person, or against a group or community, that either results in or has a high likelihood of resulting in injury, death, psychological harm, maldevelopment or deprivation.

War: a state of open, armed, often prolonged conflict carried on between nations, states, or parties.

Working but not earning an income: someone who is working in a family business or a family land and does not receive wages for his/her work.

APPENDICES

APPENDIX 1:

A MODEL TIMETABLE FOR CONDUCTING A COMMUNITY INJURY SURVEY

The model timetable presented below (Table A1.1) estimates the minimum time required for completing a full survey cycle for a sample of 2660 households, using two teams of six interviewers. This timetable is intended for general guidance only, since local conditions and characteristics may greatly affect the duration of the study. Important factors that are likely to have a bearing on the survey timetable include the geography of the country, road conditions and the previous experience of the survey team (1).

Table A1.1: A timetable for conducting a community injury survey of 2660 households

| Task(s) | Week | | | | | | | | | | | |
|---|------|---|---|---|----|----|----|----|----|----|----|----|
| | 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
| Identify resource person and coordinator; plan survey | | | | | | | | | | | | |
| Carry out sampling; pre-test and adapt the questionnaire and prepare training materials | | | | | | | | | | | | |
| Make all the practical arrangements for carrying out the survey | | | | | | | | | | | | |
| Select and train field supervisors and interviewers | | | | | | | | | | | | |
| Conduct the survey proper, i.e. collect data ¹ | | | | | | | | | | | | |
| Enter and clean data | | | | | | | | | | | | |
| Complete data processing | | | | | | | | | | | | |
| Prepare report | | | | | | | | | | | | |

Reference

1. *A practical handbook for multiple indicator surveys*. New York, NY, United Nations Children's Fund, 1995.

¹ The calculation of the actual survey time required is based on a survey of 2660 households, divided into 74 segments, each containing 36 households (2660/36=74). If it is assumed that six interviewers can survey one segment (36 households) a day, a total of 444 interviewer-days (6 x 74 = 444) of data collection are required to complete the survey. For a 6-day working week, this equates to 74 person-weeks of data collection. If 12 interviewers are employed, it will take just over 6 weeks for two teams of six interviewers to complete the survey (74 person-weeks/12 interviewers = 6.17 weeks). Allowing additional time for travel and a safety margin brings the total time required to 8 weeks. Note that the use of interviewer pairs will not affect the duration of the survey.

APPENDIX 2

MAIN BUDGET ITEMS FOR A COMMUNITY INJURY SURVEY

The main areas of expenditure for a typical community-based survey are listed below, together with a suggested basis for budgetary calculations, where appropriate (Table A2.1). The latter assume a survey size of 2660 households, conducted using two teams of six interviewers (12 interviewers in total), a field supervisor and a driver each spending up to 7 weeks in the field, plus a further week in training (field supervisors and interviewers only). Not all the items of expenditure listed will be appropriate or applicable for all countries.

Table A2.1: Community-based injury surveys: main items of expenditure

| Budget item | Basis for calculation |
|---|--------------------------------|
| Personnel (salaries plus indirect costs) | |
| Survey coordinator | 6 months |
| Field supervisors | 2 supervisors x 8 weeks |
| Interviewers | 12 interviewers x 8 weeks |
| Drivers | 2 drivers x 7 weeks |
| Translators | Variable |
| Local guides | 3 guides x 7 weeks |
| Data entry clerks ¹ | 2 clerks x 8 weeks |
| Computer programmers ¹ | 1 programmer x 10 weeks |
| Transportation | |
| Vehicle rental ² | 2 cars x 7 weeks |
| Public transportation allowance (urban areas) | Variable |
| Fuel | Provision for 2 cars x 7 weeks |
| Eventual costs (e.g. repairs, ferries) | Variable |
| Consultant's visit | Variable |
| Per diems (room and board)³ | |
| Field supervisors | 2 supervisors x 8 weeks |
| Interviewers | 12 interviewers x 8 weeks |
| Drivers | 2 drivers x 7 weeks |
| Translators | Variable |
| Local guides (meal allowance) | Variable |
| Consumables | |
| Stationery (e.g. paper, pencils, pens) | Variable |
| Identification cards | Variable |
| Envelopes for filing | Variable |
| Computing supplies (e.g. paper, diskettes, ribbons, cartridges) | Variable |
| Other costs | |
| Questionnaire and form printing | Variable |
| Photocopies of maps, listings and instruction manuals | Variable |
| Communications (i.e. phone, fax, postage) | Variable |
| Report writing and printing | Variable |
| Contingency | Variable |

¹ May be hired at the survey central headquarters rather than in the field.

² May be borrowed from government offices.

³ The use of local survey staff may circumvent the need for providing and funding accommodation.

APPENDIX 3

SELECTED EPIDEMIOLOGICAL INVESTIGATIONS OF INJURY PREVALENCE IN LOW-INCOME AND MIDDLE-INCOME COUNTRIES

| Country or area | Year(s) | Sample design | Setting/ population | Sample size | Case definition | Reporting | | Findings | Recall period(s) | Reference |
|------------------|---------|--|---|--|--|-----------|-------|--|---|-----------|
| | | | | | | Self | Proxy | | | |
| National studies | | | | | | | | | | |
| Bangladesh | 1996 | Random sampling | Urban and rural areas in the northern region of country | 3258 households with a population of 14 922 | Any injury serious enough to warrant medical treatment or to alter “normal” activity for one or more days | ✓ | ✓ | Crude morbidity from injury: 311 per 1000 population per year. Estimated injury mortality rate: 24 per 100 000 population per year. | 5 years (fatal injury); 15 days non-fatal injury) | 1 |
| Colombia | 1997 | Four stage sampling: Stage I: random selection of 200 census tracts Stage II: random selection of streets within tracts Stage III: random selection of dwellings on each street Stage IV: random selection of household members | Non-institutionalized population in Bogota aged between 16 and 60 years | 3007 individuals | Having witnessed, been a victim or perpetrator of violence; for victims, occurrence of any injury as a result of the incident | ✓ | | Age-adjusted past year prevalence of witnesses, victims and perpetrators of physical aggression was 61%, 27% and 27%, respectively. Between 18% and 90% of victims were injured as a result of a violence incident. Violence producing injury was highest for victims of assault with a knife (90.2% of these victims). | Lifetime (severe forms of violence); 1 year (mild forms of violence) | 2 |
| Ghana | 1998 | Stratified two-stage cluster sampling with probability proportional to size | Urban Kumasi Rural Brong.Ahafo region | Urban 11 663 individuals in 263 clusters Rural 9442 individuals in 168 clusters | Any injury that resulted in death or at least one day of lost activity involving any persons who had been living in the surveyed house during the preceding year | ✓ | ✓ | Urban Injury-related mortality rate: 83 per 100 000 population. Incidence of major injuries: 19.4 per 1000 person-years. Incidence of minor injuries: 178.2 per 1000 person-years. Rural Injury-related mortality rate: 53 per 100 000 population. Incidence of major injuries: 27.7 per 1000 person-years. Incidence of minor injuries: 383.2 per 1000 person-years. | 1 year | 3 |

| Country or area | Year(s) | Sample design | Setting/ population | Sample size | Case definition | Reporting | | Findings | Recall period(s) | Reference |
|-----------------|----------------|---|---|--|--|-----------|-------|--|--|-----------|
| | | | | | | Self | Proxy | | | |
| India | 2000 – 2001 | <i>Rural</i> Stratified sampling of villages based on probability proportional to size <i>Urban</i> Stratified sampling of urban households in one residential area chosen on a random basis within Bangalore city <i>Slum</i> Random survey of one slum in south Bangalore area | Bangalore district covering urban, slum and rural populations; the rural and urban populations were chosen from the larger Bangalore district | <i>Rural</i> 32 352 individuals from 6096 households <i>Urban</i> 32 562 individuals from 7351 households <i>Slum</i> 31 655 individuals from 6472 households | Any injury-related death; any injury that required hospitalization, hospital contact, or treatment by a general practitioner | ✓ | ✓ | Final report is currently under development and will be available in 2004 | 1 and 5 years (fatal injury) 3, 6 or 12 months (non-fatal injury) | 4 |
| Kenya | 2000 | Two-stage cluster sampling | <i>Urban</i> District capital Kiambu in Kiambu district <i>Rural</i> Githunguri area | <i>Urban</i> 230 households <i>Rural</i> 200 households | Any injury sustained during recall period | | ✓ | Injury incidence: 3062 per 1000 population per year | 2 weeks | 5 |
| Pakistan | 1999 | Three-stage sampling: Stage I: stratified Stage II: clustered Stage III: systematic | Urban, semi- urban and rural areas sampled | <i>Urban</i> 9760 individuals <i>Semi-urban</i> 8068 individuals <i>Rural</i> 11 098 individuals | Any injury that required consultation with a health care provider (formal/ informal) | | ✓ | <i>Urban</i> Injury incidence rate: 46.3 per 1000 population <i>Semi-urban</i> Injury incidence rate: 35.2 per 1000 population <i>Rural</i> Injury incidence rate: 41.3 per 1000 population Overall injury incidence rate: 41.2 per 1000 population Overall injury mortality rate: 68 per 100 000 population | 3 months | 6 |

| Country or area | Year(s) | Sample design | Setting/ population | Sample size | Case definition | Reporting | | Findings | Recall period(s) | Reference |
|-----------------|-----------|--|--|---|---|-----------|-------|--|---|-----------|
| | | | | | | Self | Proxy | | | |
| South Africa | 2000 | Random sample | Two similar neighbourhoods, A and B. In each neighbourhood three types of housing were sampled: 1) council apartments, 2) council houses, and 3) informal settlements | <i>Neighbourhood A:</i> 289 apartments 701 houses 669 informal dwellings <i>Neighbourhood B:</i> 543 apartments 1529 houses 998 informal dwellings | All injuries sustained during the recall period | | ✓ | Injury incidence rates per 100 000 residents: <i>Informal dwellings</i> A: 15 247 B: 15 030 <i>Houses</i> A: 6847 B: 4055 <i>Apartments</i> A: 8651 B: 2762 Overall injury incidence rate: 8501 per 100 000 residents | 1 year | 7 |
| Tanzania | 1992–1998 | <i>Urban</i> Random sample <i>Rural</i> Area was stratified by socioeconomic status, and crude injury mortality. Six villages were conveniently selected from the strata and households randomly selected | <i>Urban</i> Branches in Dar es Salaam <i>'Wealthy' rural</i> Hai District <i>'Poor' rural</i> (Morogoro Rural District) | <i>Urban</i> 64 756 individuals <i>'Wealthy' rural</i> 146 359 individuals <i>'Poor' rural</i> 103 053 | Death due to injury | | ✓ | Injury mortality rates per 100 000 population per year: Males <i>Urban</i> Wealthy rural 108.8 Poor rural 138.3 145.3 Females <i>Urban</i> Wealthy rural 40.5 Poor rural 48.5 51.4 | Any death during the study period | |
| Uganda | 1999 | Three-stage sampling: Stage I: stratified Stage II: random Stage III: systematic | <i>Urban</i> Kawempe division of Kampala city <i>Rural</i> Mukono area | <i>Urban</i> 2322 households, with 10 982 persons <i>Rural</i> 1673 households with 7427 persons | All injuries and injury-related deaths occurring within recall period | | ✓ | <i>Urban</i> Annual mortality rate: 217 per 100 000 population Disability prevalence proportion: 2.8% <i>Rural</i> Annual mortality rate: 92 per 100 000 population Disability prevalence proportion: 0.7% | 5 years (fatal injury) 6 months (non-fatal injury) | 9 |

| Country or area | Year(s) | Sample design | Setting/ population | Sample size | Case definition | Reporting | | Findings | Recall period(s) | Reference |
|------------------------------|---------|---|--|------------------------------|--|-----------|-------|---|---------------------|-----------|
| | | | | | | Self | Proxy | | | |
| <i>Multinational studies</i> | | | | | | | | | | |
| Brazil | 1996 | Sample in each city selected through stratified multi-stage sampling of cluster proportionate to socioeconomic strata of the general population and without substitutions | Cities in participating countries, residents of urban homes aged between 18 and 70 years | Final sample: 10 821 persons | Verbal and physical aggressive behaviours toward children, spouse or other partner, and persons outside family | ✓ | | On average, 6.5% of the men and 2.8% of the women hit a non-family member during the year prior to the study. On average, 3.8% of the sample reported slapping their partner and 2.4% had hit their partner with an object. Among men on average, 15% had spanked a child and 6% had hit a child with an object. Among women on average, 24% had spanked a child and 11% had hit a child with an object | 1 year | 10 |
| Chile | | | | | | | | | | |
| Colombia | | | | | | | | | | |
| Costa Rica | | | | | | | | | | |
| El Salvador | | | | | | | | | | |
| Spain | | | | | | | | | | |
| Venezuela | | | | | | | | | | |

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MODEL SEGMENT FORM

Date of fieldwork: _____ Fieldworker: _____

[illegible]

APPENDIX 5

MODEL HOUSEHOLD DEMOGRAPHIC DATA COLLECTION FORM

1. Basic demographic information of all household members

| Household member number | Date of birth | Sex |
|-------------------------|---------------|-----|
| 01 (Senior female) | | |
| 02 | | |
| 03 | | |
| 04 | | |
| 05 | | |
| 06 | | |
| 07 | | |

2. Injury information

| Household member number | Injured in the last (recall period) months | | | | Did injury event cause disability?* | | | |
|-------------------------|--|-----|--------------------------|----|-------------------------------------|-----|--------------------------|----|
| 01 (Senior female) | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| 02 | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| 03 | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| 04 | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| 05 | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| 06 | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |
| 07 | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No | <input type="checkbox"/> | Yes | <input type="checkbox"/> | No |

* If the person is not able to do the activities he/she was able to do before the injury.

3. Did anyone who lived in this household die following an accident or injury during the past 12 months?

| Death event number | Relationship to senior female | Sex | Age at death (years) |
|--------------------|-------------------------------|-----|----------------------|
| D01 | | | |
| D02 | | | |
| D03 | | | |
| D04 | | | |
| D05 | | | |

APPENDIX 6

MODEL INTRODUCTION AND CONSENT FORM

My name is _____. I am here on behalf of (agency doing the study) _____.
We have obtained permission from the community leaders and also from the government to conduct this survey on injuries.¹

Injuries are a leading cause of death and disability in this country. By injury I mean “any physical damage or wound, caused either unintentionally (by accident) or intentionally (on purpose), such as a cut, bruise, burn, fracture, poisoning or loss of consciousness due to a blow to the head or neck”. It could be the result of a traffic collision, fall, fire or scald, a poisoning, drowning, gun shot, a sharp instrument such as a knife or an animal bite, or of being hit, cut, stabbed, burnt, pushed or shot by another person/or by one’s self.

We would like to understand how big the problem of injuries is, how injuries may have affected your family, what causes them, and what kind of health care is needed. To get this information, we are carrying out household interviews in this community. The results from this project will be used to help agencies and officials decide on what needs to be done about the problem and assess whether health services to treat injured people are adequate. I will also ask you some questions about how many people stay in your household, what kinds of home fuels and energy sources are used.

The questions about injuries that I would like to ask you and your family members will take about 30 minutes of your time² and I would ask the questions somewhere quiet and private.

What you or your family members tell me will be kept strictly confidential. This information will be kept securely and no one outside of this project will find out the answers that you or your family give me. During the course of the interview, I will write the answers down so that no information gets lost but I will not ask your name so that none of this information can be traced back to you. The results will not be reported as individual cases, but only as overall results for the community.

You are free to stop the interview at any point, or to not answer any of the questions that we ask.

Do I have your permission to proceed/May I continue? Yes / No

¹ The requirement for permission from the government may be specific to the setting and should be mentioned as appropriate.

² The duration of the interview will vary according to the number of modules included.

APPENDIX 7

EXAMPLE HOUSEHOLD SURVEY QUESTIONNAIRE: GHANA

The questionnaire on the following 7 pages was jointly developed by the University of Washington and Nkrumah University of Science and Technology, Kumasi, Ghana and was used to conduct a community injury survey in Ghana in 1998. One urban area and one rural area were surveyed (1).

Introduction

“The Holy Family Hospital/University of Science and Technology is asking the people of Berekum district/Kumasi these questions to get information about how many injuries are occurring. This will help us to plan what is needed at these hospitals and the associated health posts in order to better care for people who are injured. We are seeking information about whether you or any member of your household has had an injury.”

If necessary, explain what is meant by the word “injury” and list road traffic accidents, knockdowns, falls, burns, cuts, snakebites, etc.

I. Sampling information

1. Village/cluster code number
2. Which household surveyed within that cluster
 - 2a. Identifying information for the household
3. Which individual surveyed _____ out of how many total injured persons surveyed _____ in the household
4. Which injury _____ out of how many total _____ for that individual
A separate form to be used for each injury event.
5. Date _____
6. Interviewer _____

II. Household denominator information

- 7–10. How many people live in this household and what are their ages, sexes and occupations?

Record number of individuals in household by age and sex. Write ages as exactly as possible, but at least 5–10 year groups. For each individual aged >5, write their occupation. Use occupations from question 16 below as a guideline if necessary.

| 7. Age | 8. M/F | 9. Present | 10. Occupation | 7. Age | 8. M/F | 9. Present | 10. Occupation |
|---------|---------|------------|----------------|---------|---------|------------|----------------|
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |
| 7. ____ | 8. ____ | 9. Y N | 10. ____ | 7. ____ | 8. ____ | 9. Y N | 10. ____ |

III. Did any injury occur?

11. Have you or any member of your family who live in this house (i.e. spend at least 6 months per year living in this house) had any type of injury within the last year? Please limit your comments to those injuries which prevented the victim from carrying out his/her normal daily activities for at least one day or for which you paid for any type of treatment. (Also ask if anyone in the household had tetanus in the past year).

If so, for any of these please tick here _____ and get information for Sections III – VIII.

Has anyone who lived in your household died from an injury or from tetanus within the last year?

If so, indicate injury _____ or tetanus _____ and get information for Sections III – V and VIII. If the deceased survived long enough to get treatment, also answer Section VI. Also, for expired cases, answer question 12.

Is there anyone living in your household who has a permanent disability as a result of an injury?

This applies to any permanent disabilities which have occurred from injuries occurring any time in life up to one year ago. If so, tick here _____ and get information for Sections III – VIII.

If answer is no to all of these questions, make sure to get information for Section II (Household denominator).

12. Were the remains of the deceased taken to a morgue before burial? Y / N .
13. A. Respondent B. Surrogate (injured person present) C. Surrogate (injured person absent)
14. Age _____
15. Male or female _____
16. What was his/her usual job or activity?
 - a) Employment for cash (or wages); if so, what type of work? _____
 - b) Trading
 - c) Subsistence farming
 - d) Cash farming
 - e) Housekeeping
 - f) School
 - g) Other (specify) _____

IV. Details of when, where and how the injury occurred

17. On what date did the injury occur? (as accurately as possible, but at least the season or month and the day of the week). _____ Day of week? _____
18. At what time did the injury occur? (as accurately as possible, but at least day or night). _____
19. Where did the injury occur ? (respondent's own words). Give exact geographic location if possible, otherwise, type of location _____
20. Circle one:
 - a) Home – inside
 - b) Home – outside
 - c) Other building (specify) _____
 - d) Road – paved
 - e) Road – unpaved
 - f) Intersection – paved
 - g) Intersection – unpaved
 - h) Farm
 - i) Other (specify in question 19 above) _____
21. How did it happen? (respondent's own words) _____

-
22. Circle one:
- Transport-related: a) Motor vehicle crash
b) Motorcycle crash
c) Pedestrian
d) Bicycle
e) Other (specify) _____
- Burn: f) Fire
g) Scald
h) Other (specify) _____
- Penetrating: i) Stab/slash – accidental
j) Stab/slash – intentional
k) Gunshot wound – accidental
l) Gunshot wound – intentional
m) Assault (blunt)
n) Fall
o) Snakebite
p) Other (specify) _____
23. Was the injury occupational? N
Y – agricultural
Y – non-agricultural (specify) _____
24. Was the injury suicidal in intent? Y / N
25. If the victim was injured in or by a motor vehicle, what type of vehicle was involved? (include type of vehicle involved in knockdowns/pedestrian injuries). Circle all that apply.
- a) Taxi
b) Private auto – victim's own
c) Private auto – other's
d) Car – not otherwise specified
e) Public passenger lorry; if so, how many occupants were present (approximately) _____
f) Commercial cargo lorry; if so, what cargo, if known _____
g) Motorized vehicle – not otherwise specified
h) Motorcycle
i) Other (specify) _____
- If the respondent can supply more detail, add this information.*
26. If injured in a motor vehicle crash, motorcycle crash, or bicycle crash, was the injured person a:
- a) Driver?
b) Passenger?
27. If the injured person was the driver of a vehicle, was he/she a professional driver?
Y / N

V. What injury was sustained

28. What part of the body was injured and how was it injured? (description of actual injury in respondents own words) _____

29. Tick all that apply:

| Region | Penetrating | Blunt | Burn |
|-------------------------------|-------------|-------|------|
| Head | | | |
| Face | | | |
| Neck | | | |
| Chest | | | |
| Abdomen | | | |
| Upper extremity (except hand) | | | |
| Hand | | | |
| Lower extremity | | | |
| | | | |

30. If an extremity injury, was it an obvious fracture? Y / N

VI. Treatment of the injury

31. What care was given to the injured person, and by whom? (brief description in patients own words) _____

32. Circle all that apply and indicate the order in which treatment was rendered:

| Type | Name (if clinic) | Order | Money for treatment | Distance | Travel time | Number of trips | Money for transport (total) |
|--|---------------------|-------|---------------------------|----------|----------------|--------------------|-----------------------------------|
| A. Home treatment | | | | | | | |
| B. Traditional B1. Herbalist B2. Bone setter B3. Spiritual healer B4. Other traditional (specify) _____ | | | | | | | |
| C. Primary health care site C1. Village health post C2. Rural clinic C3. Other PHC C4. Private MD | | | | | | | |
| D1. Hospital | | | | | | | |
| D2. Hospital | | | | | | | |
| E. Other | | | | | | | |

33. For each of the sites of treatment utilized in question 32, how much was paid out of pocket for treatment? If the respondent remembers only a general amount, write it here _____

If they remember amounts per type of site and practitioner, please record it next to the appropriate listings in question 32.

34. For each site in question 32, what is the distance (estimate if necessary), and time of transport per trip from home to this site (also indicate how many trips were made for each site).

35. In addition, how much was spent on transportation to get to site of treatment (cumulative)? If the respondent remembers only a general amount, write it here _____

If they remember amounts per trip, please record it next to the appropriate listings in question 32.

36. Why did you go to the first site utilized in question 32? Circle all that apply.

- a) Money/cost
- b) Proximity
- c) Preference
- d) Other (specify) _____

37. If a clinic or a hospital was utilized, how long after the injury did the victim first go there? _____

38. If the injured person was hospitalized, for how long? _____

38a. If the injured person was hospitalized at KATH for >1 day, get particulars (age, name, date of admission) if person/relatives give permission.

39. Is the injured person still receiving treatment? Y / N

VII. Disability resulting from the injury

40. Did the injured person suffer any disability, that is, was he/she unable to perform his/her usual activities or work or attend school because of the injury? Y / N
41. If so, in what way were they disabled? (respondent's own words) _____

42. Circle all that apply:
- a) Inability to use hand or arm or decreased strength or pain on motion of the extremity
 - b) Walk with a limp or unable to walk at all
 - c) Loss of vision
 - d) Weakness or shortness of breath
43. For how long was he/she not able to perform his/her usual activity or work? _____
44. Was there any reduction of cash wage income? Y / N N/A (not engaged in cash making activity)
- 44a. If so, how much? _____
45. Is he/she now able to perform his/her usual activities? Y (able) / N (not able)
If he/she is working at the same place, but in a lesser capacity mark No above and tick here _____)
46. Did the injured person return to normal after the injury? Y (normal) / N (not normal)
If not normal, how so? (respondent's own words) _____

47. If answer is No to either question 45 or 46, what is the level of disability? Circle one:
- | | |
|-----------|---|
| Self-care | Not able to care for self (bathing, feeding) |
| Mobility | Not able to walk around the house |
| Major | Able to walk around the house, but not able to walk more than ¼ mile (<i>give example from their location</i>); not able to grasp with a hand; not able to go up or down stairs |
| Minor | A disability, but not as severe as the other categories |
| Other | Specify _____ |
48. How has this injury affected the family as a whole (including any member of the extended family, whether they are living in the household or not)?

Record any direct response by the respondents in their own words, but also ask the following questions:

49. Did the usual household income decline (money coming in, not expenditures)? Y / N
50. Did the usual household food production decline? Y / N
51. Did the usual household food consumption decline? Y / N
52. Did the injured person or the family have to borrow any money to pay for medical treatment for the injury or to make up for loss of income of the injured person? Y / N
53. If so, how much? _____
54. How much did you have to pay back? _____
55. Are you still paying back? Y / N
56. Did you pawn anything in order to borrow money? Y / N
57. What did you pawn? _____
58. Did you lose your pawn? Y / N
59. Did the injured person or the family have to sell anything to pay for medical treatment for the injury or to make up for loss of income of the injured person? Y / N
60. If so, what? _____
61. What value? _____
62. Did any member of the family change his/her usual activities to undertake the activities of the injured person? (e.g. farming, housekeeping) (A)
- Did any member of the family change his/her usual activities to work to make money to pay for medical treatment for the injury to make up for loss of income of the injured person? (B)
- Did the injured person require the assistance of other individuals for home-based care, accompanying them to treatment site, etc? (C)
- If answer is Yes, to any of the above questions, what was that person's usual activity which he/she had to stop doing, how many days of this person's time was utilized for this, and did he/she lose wages because of the time off from work. If a student, did he/she miss school?

| Who (relation) | Which one | | | Usual activity missed | Days | Lost income | |
|----------------|-----------|---|---|-----------------------|------|-------------|---|
| | A | B | C | | | Y | N |
| | | | | | | Y | N |
| | | | | | | Y | N |
| | | | | | | Y | N |

Information to be added in later by research assistants (for rural areas).

63. Distance from site of injury to nearest health facility? _____
64. What type of health facility? _____

Reference

- Mock C et al. Incidence and outcome of injury in Ghana: a community-based survey. *Bulletin of the World Health Organization*, 1999, 77:955–964.

APPENDIX 8

EXAMPLE HOUSEHOLD SURVEY QUESTIONNAIRE: INDIA

The questionnaire given on the following 8 pages formed the basis of a collaborative study to assess the socioeconomic impact of road traffic injuries in Bangalore, India in 2000–2001. The final analysis of the survey results are due to be published during the course of 2004 (1).

1. Identification details

1.1 SI no.: _____

1.3 Name of the area: _____

1.5 Respondent: _____

1.7 Date of interview: ____ / ____ / ____

1.2 Identification no.: _____

1.4 Area code: _____

1.6 Address: _____

1.8 Source of Information: _____

(Police – 1 / Hospital – 2 / Urban – 3 / Semi-urban - 4 / Rural survey – 5)

2. Sociodemographic details

| SI No. | Name | Relationship | Age | Sex | Edu* | Rel* | Occ* | Marital status | Vehicle ownership** | Individual income (Rs.) | Screening status† (Y/N) |
|--------------|------|--------------|-----|-----|------|------|------|----------------|---------------------|-------------------------|-------------------------|
| 1. | | | | | | | | | | | |
| 2. | | | | | | | | | | | |
| 3. | | | | | | | | | | | |
| 4. | | | | | | | | | | | |
| 5. | | | | | | | | | | | |
| 6. | | | | | | | | | | | |
| 7. | | | | | | | | | | | |
| 8. | | | | | | | | | | | |
| 9. | | | | | | | | | | | |
| 10. | | | | | | | | | | | |
| 11. | | | | | | | | | | | |
| 12. | | | | | | | | | | | |
| Total income | | | | | | | | | | | |

* Code as per coding sheet.

† Indicate status of injury by “Yes” or “No”.

** If there is a death due to road accident or any other injury cause, indicate separately.

3. Asset details

| Question | Score if response is "yes" | Score if response is "no" | Item score |
|--|----------------------------|---------------------------|------------|
| <i>In your dwelling, is there:</i> | | | |
| Electricity | 0.062 | -0.092 | _____ |
| A radio | 0.064 | -0.050 | _____ |
| A television | 0.135 | -0.048 | _____ |
| A computer | score | score | _____ |
| A phone | score | score | _____ |
| A refrigerator | 0.198 | -0.022 | _____ |
| A bicycle | 0.028 | -0.018 | _____ |
| A motorcycle | 0.167 | -0.019 | _____ |
| A car | 0.229 | -0.004 | _____ |
| A sewing machine | 0.103 | -0.035 | _____ |
| A clock/watch | 0.053 | -0.075 | _____ |
| A sofa set | 0.164 | -0.025 | _____ |
| A fan | 0.102 | -0.065 | _____ |
| A VCR/VCP | 0.200 | -0.007 | _____ |
| A tractor | 0.061 | -0.001 | _____ |
| A thrasher | 0.025 | 0.000 | _____ |
| A bullock cart | -0.044 | 0.002 | _____ |
| A water pump | 0.042 | -0.002 | _____ |
| A separate room used as kitchen | 0.034 | -0.048 | _____ |
| <i>Does your household own any livestock?</i> | -0.051 | 0.052 | _____ |
| <i>Does your household own:</i> | | | |
| A bullock? | -0.070 | 0.017 | _____ |
| A cow? | -0.054 | 0.020 | _____ |
| A buffalo? | -0.043 | 0.011 | _____ |
| A goat? | -0.076 | 0.011 | _____ |
| A sheep? | -0.066 | 0.001 | _____ |
| A poultry animal? | score | score | _____ |
| Any other animal? | -0.031 | 0.002 | _____ |
| Do the household animals sleep inside the house? | -0.059 | 0.010 | _____ |
| Do the household animals sleep outside the house? | -0.048 | 0.026 | _____ |
| <i>What is the principal household source of drinking water?</i> | | | |
| Piped drinking water in residence | 0.129 | -0.037 | _____ |
| Piped drinking water in public tap | -0.012 | 0.002 | _____ |
| Well drinking water in residence | 0.009 | -0.001 | _____ |
| Public well | -0.068 | 0.013 | _____ |
| Spring | -0.047 | 0.001 | _____ |
| River, canal or surface water | -0.069 | 0.003 | _____ |
| Rainwater | 0.039 | 0.000 | _____ |
| Tanker truck | 0.042 | 0.000 | _____ |
| Residential handpump | -0.001 | 0.000 | _____ |
| Public handpump | -0.069 | 0.014 | _____ |
| Other source of drinking water | -0.040 | 0.001 | _____ |
| <i>What is the principal type of toilet facility used by members of your household?</i> | | | |
| Private flush toilet | 0.145 | -0.037 | _____ |
| Shared flush toilet | 0.079 | -0.002 | _____ |
| Public flush toilet | 0.057 | -0.001 | _____ |
| Bush or field | -0.058 | 0.095 | _____ |
| Private latrine | 0.026 | -0.003 | _____ |
| Public latrine | 0.040 | 0.000 | _____ |
| Shared latrine | 0.029 | -0.001 | _____ |
| Other type of latrine | 0.028 | 0.000 | _____ |

| | | | |
|---|---|--------|-------|
| What is the principal household source of lighting? | | | |
| Electricity | 0.062 | -0.092 | _____ |
| Kerosene | -0.092 | 0.061 | _____ |
| Gas | -0.046 | 0.000 | _____ |
| Oil | -0.088 | 0.000 | _____ |
| Solar | score | score | _____ |
| Other lighting source | -0.084 | 0.000 | _____ |
| What is the principal household cooking fuel? | | | |
| Electricity | 0.120 | -0.001 | _____ |
| Wood | -0.046 | 0.080 | _____ |
| Dung | -0.051 | 0.004 | _____ |
| Coal | 0.026 | -0.001 | _____ |
| Charcoal | 0.039 | 0.000 | _____ |
| Kerosene | 0.082 | -0.008 | _____ |
| LPG | 0.183 | -0.030 | _____ |
| Biogas | 0.117 | -0.001 | _____ |
| Other cooking fuel | -0.086 | 0.002 | _____ |
| What material is your house made of? | | | |
| House from high-quality materials | 0.119 | -0.045 | _____ |
| House from low-quality materials | -0.077 | 0.054 | _____ |
| House from mixed-quality materials | -0.003 | 0.002 | _____ |
| Do members of your household work on their own or the family's agricultural land? | | | |
| | 0.000 | 0.001 | _____ |
| Does your household own agricultural land? | | | |
| | -0.037 | 0.036 | _____ |
| If household owns land (score per acre): | $\left(\frac{\# \text{ members} - 3.305}{43.630} \right) \times 0.001$ | | |
| How many acres of non-irrigated agricultural land? | _____ | | |
| | $\left(\frac{\# \text{ members} - 3.135}{44.171} \right) \times 0.002$ | | |
| How many acres of irrigated agricultural land? | _____ | | |
| | $\left(\frac{\# \text{ members} - 2.381}{1.922} \right) \times -0.031$ | | |
| In your dwelling, how many members are there per sleeping room (score is per member)? | _____ | | |
| Total Household Asset Score | | | |
| (sum of individual item scores) | | | |
| _____ | | | |
| Notes: | | | |
| 1. The asset scores listed here are based on the 1992/3 India National Family Health Survey's national sample of households. | | | |
| 2. Information about ownership of tractor, thrasher, bullock cart and water pump was not asked in five states, namely Andhra Pradesh, Himachal Pradesh, Madhya Pradesh, Tamil Nadu and West Bengal. | | | |
| 3. The large standard deviations for size of irrigated/non-irrigated land reflect the very skewed distributions of those variables. | | | |

4. Screening details

| | | | |
|---|---|--|----------------------|
| 4.1.1 | Has any of your family member died due to any cause in the last 1 year? | Yes / No (If yes, proceed to VA form) | |
| 4.1.2 | Has any of your family member died due to any injury causes* in the last 1 year? | Yes / No (If yes, proceed to VA form) | |
| 4.1.3 | Has any member of your family died due to road accidents in last 5 years? | Yes / No (If yes, proceed to VA form) | |
| 4.2.1 | Has any member of your family been injured due to any cause* in last 3 months – 1 / 6 months – 2 / 1 year – 3 requiring contact with one or more health agencies? | Yes / No (If yes, proceed to injury proforma) | |
| | If yes, when? | ___ / ___ / ___ | |
| 4.2.2 | Has any member of your family been injured due to any cause* in last 3 months – 1 / 6 months – 2 / 1 year – 3 requiring hospital admission for more than 12 hours? | Yes / No (If yes, proceed to injury proforma) | |
| | If yes, when? | ___ / ___ / ___ | |
| 4.3.1 | If Yes to any above, what was the external cause of injury? 1. Road accident / 2. Assault / 3. Fall / 4. Fall of object / 5. Suicide / 6. Burn / 7. Poisoning / 8. Agricultural injury / 9. Work-related injury / 10. Electrical injury / 11. Animal-related injury / 12. Minor domestic injury / 13. Other (specify) | | <input type="text"/> |
| 4.3.2 | Place of injury: 1. Bangalore urban / 2. Bangalore rural / 3. Outside Bangalore district / 4. Other states | | <input type="text"/> |
| 4.3.3 | Was the person under the influence of alcohol at the time of accident? If yes, what has been his/her pattern of drinking? 1. Occasional / 2. Frequent / 3. Daily / 4. Binge / 5. NA | Yes – 1 / No – 2 / NA – 3 | <input type="text"/> |
| 4.3.4 | If person injured was not intoxicated, indicate the status of alcohol among other person(s) inflicting the injury. | Yes – 1 / No – 2 | <input type="text"/> |
| Notes: 1. Any death due to injury or any other specified/unspecified cause, coming under 4.1.1 – 4.1.3, VA form has to be completed. 2. Any injury due to any external cause in 4.2.1 – 4.2.2, injury form has to be completed. 3. Any road accident or death requires completion of VA form and injury form. 4. Depending on the type of external injury, complete details in section 5.1 – 5.10. | | | |

5. Injury proforma

5.1 Road accidents Yes / No

If Yes,

| | | |
|---|--|--|
| A. RTA Survey no.: | B. Road accident number (either from hospital/police records) | |
| C. Name: | | |
| D. Date of road accident: Day _____ Month _____ Year _____ | | |
| E. Accident location: Urban – 1 / Semi-urban – 2 / Rural – 3 | | |
| F. Type of road: National highway – 1 / State highway – 2 / Feeder road A – 3 / Rural road – 4 / Municipality – 5 / Corporation – 6 / Other – 7 | | |
| G. Road user mode* (as per code list) | | |
| H. Counterpart road user mode* (as per code list) | | |
| I. Nature of collision*: (as per code list) | | |
| J. Pedestrian movement*: (as per code list) | | |
| K. Driving licence: | Yes – 1 / No – 2 / NA – 3 | |
| L. Helmet usage: | Yes – 1 / No – 2 / NA – 3 | |
| M. Was the accident reported to the police? Yes – 1 / No – 2 | | |

6. Injury and outcome details

| | |
|--|----------------------|
| 6.1 How badly was the person injured? Injured – 1 / Hospitalized – 2 / Permanently disabled – 3 / Death at crash site – 4 / Death in hospital – 5 / Death after discharge – 6 | |
| 6.2 Nature of injuries (as available in records): (details to be entered depending on the availability) | |
| 6.3 Treatment type (more than one can be selected): Emergency room visit – 1 / Hospital admission – 2 / Consultation with local physician – 3 / Homeopathic/ ayurvedic – 4 / Natural healer – 5 / Home remedy – 6 / Self treatment – 7 / None – 8 / Other – 9 (specify _____) | |
| 6.4 If more than one treatment type was used, what was the order ? _____ | 1. 2. 3. 4. |

| | |
|---|--|
| 6.5 What were the reasons for these treatments - <i>Cost – 1 / Proximity – 2 / Preference – 3 / Combined – 4 / Other – 5</i> | <input type="text"/> |
| 6.6 If hospitalized, place? _____ Duration of stay? | <input type="text"/> <input type="text"/> |
| 6.7 If death, place of death? <i>Accident scene – 1 / During transit – 2 / Hospital – 3 / Home – 4 / Not known – 5</i> | <input type="text"/> |
| 6.8 How long after the accident did the death occur? No. of hours: Days after crash: | <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> |

7. Injury burden and impact:

| | |
|---|--|
| 7.1 What was the victim's occupation before the crash? | <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> |
| 7.2 Was the victim able to return to his/her previous occupation? <i>Yes – 1 / No – 2 / New occupation – 3 / Still looking for job – 4 / NA – 5</i> | <input type="text"/> |
| 7.3 What was the working pattern before injury? <i>Full-time – 1 / Part-time – 2 / None – 3 / Unemployed – 4</i> | <input type="text"/> |
| 7.4 What is the working pattern after injury? <i>Full-time – 1 / Part-time – 2 / None – 3 / NA – 4</i> | <input type="text"/> |
| 7.5. What was the salary/income prior to injury (per month)? Rs. _____ | |
| 7.6 What is the current monthly salary? Rs. _____ | |
| 7.7 Roughly what proportion of total household income did the victim provide before the accident? _____% | |
| 7.8 Did the usual household income decline after the injury? (money coming in, not expenditure) <i>Yes – 1 / No – 2 / Unsure – 3</i> | |
| 7.9 Did the usual household food production decline? (applicable in rural areas only) <i>Yes – 1 / No – 2 / Unsure – 3</i> | <input type="text"/> |
| 7.10 How much money did the household spend on medical treatment for the injured person? Rs. _____ | |
| 7.11 How many trips were made for medical and related activities by person/by family members? | <input type="text"/> <input type="text"/> |
| 7.12 In the case of injury, for how long was he/she not able to perform their usual activities? Recovered after _____ days Still not recovered after _____ days Permanently disabled _____ N/A (dead) _____ | |

| <p>7.13 How many days of work – hours of work/school – school days, did the injured person lose after the injury?</p> | <div style="display: flex; justify-content: space-around;"> <div style="border: 1px solid black; width: 30px; height: 30px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px;"></div> <div style="border: 1px solid black; width: 30px; height: 30px;"></div> </div> | | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|---------------------|---------------------------------|-------------|---------------------------------|-------------|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|---|
| <p>7.14 Did the injured person or family have to borrow money to pay for medical treatment for the injury or to make up for loss of income of the injured person.</p> <p>Yes – 1 / No – 2 / Unsure – 3</p> <p>If yes, specify _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>7.15 Did the household have to sell anything to pay for medical treatment for the injury or to make up for loss of income of the injured person. If so, what and what was the value?</p> <p>Yes – 1 / No – 2 / Unsure – 3</p> <p>If yes, specify _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>7.16 Did any member of the household have to stop work or education in order to take care of injured?</p> <p>Yes – 1 / No – 2</p> <div style="text-align: right; margin-right: 50px;"> <div style="border: 1px solid black; width: 40px; height: 30px; display: flex; align-items: center; justify-content: center;"> <div style="width: 10px; height: 10px; background-color: #ccc; margin: 0 auto;"></div> </div> </div> <p>If yes, by whom?</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Relationship to HOH</th> <th style="text-align: left;">Age</th> <th style="text-align: left;">Sex</th> <th style="text-align: left;">Activity stopped (work, school)</th> <th style="text-align: left;">No. of days</th> <th style="text-align: left;">Lost income</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td style="text-align: right;">Y</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td style="text-align: right;">Y</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td style="text-align: right;">Y</td> </tr> </tbody> </table> | | Relationship to HOH | Age | Sex | Activity stopped (work, school) | No. of days | Lost income | _____ | _____ | _____ | _____ | _____ | Y | _____ | _____ | _____ | _____ | _____ | Y | _____ | _____ | _____ | _____ | _____ | Y |
| Relationship to HOH | Age | Sex | Activity stopped (work, school) | No. of days | Lost income | | | | | | | | | | | | | | | | | | | | |
| _____ | _____ | _____ | _____ | _____ | Y | | | | | | | | | | | | | | | | | | | | |
| _____ | _____ | _____ | _____ | _____ | Y | | | | | | | | | | | | | | | | | | | | |
| _____ | _____ | _____ | _____ | _____ | Y | | | | | | | | | | | | | | | | | | | | |
| <p>7.17 Did any member of the household have to take on additional employment to make money to pay for medical treatment or loss of earnings by victim?</p> <p>If yes, by whom?</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Who was it</th> <th style="text-align: left;">Age</th> <th style="text-align: left;">Sex</th> <th style="text-align: left;">No. of days</th> <th style="text-align: left;">Lost income</th> </tr> </thead> <tbody> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td style="text-align: right;">Y</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td style="text-align: right;">Y</td> </tr> <tr> <td>_____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td style="text-align: right;">Y</td> </tr> </tbody> </table> | | Who was it | Age | Sex | No. of days | Lost income | _____ | _____ | _____ | _____ | Y | _____ | _____ | _____ | _____ | Y | _____ | _____ | _____ | _____ | Y | | | | |
| Who was it | Age | Sex | No. of days | Lost income | | | | | | | | | | | | | | | | | | | | | |
| _____ | _____ | _____ | _____ | Y | | | | | | | | | | | | | | | | | | | | | |
| _____ | _____ | _____ | _____ | Y | | | | | | | | | | | | | | | | | | | | | |
| _____ | _____ | _____ | _____ | Y | | | | | | | | | | | | | | | | | | | | | |
| <p>7.18 a. Was any property damaged by the road crash? _____</p> <p>b. What kind of property was it? _____</p> <p>c. What was the damage cost? (include vehicle damage) _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>7.19 Did you (family or individual) receive any compensation from insurance or the other party?</p> <p>No – 1 / Insurance – 2 / Other party – 3</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>7.20. How much compensation did you receive? Rs. _____</p> | | | | | | | | | | | | | | | | | | | | | | | | | |
| <p>7.21. Were there any other impacts on the household that you would like to mention? For example, did any plans have to be postponed? Did the accident lead to a family break-up or loss of education/ employment opportunity?</p> | | | | | | | | | | | | | | | | | | | | | | | | | |

7.22. What were the psychological effects of the road crash on the family?

7.23. Any other details, specify:

Investigator's Signature and code:

***Code lists**

ROAD USER MODE

Pedestrian (1) / Two-wheeler rider (2) / Two-wheeler occupant (3) / Driver of bus (4) / Driver of lorry (5) / Driver of matador (6) / Passenger in bus (7) / Passenger in lorry (8) / Passenger in matador (9) / Car driver (10) / Car occupant (11) / Bicyclist (12) / Rider of animal drawn vehicle (13) / Auto rikshaw driver (14) / Auto rikshaw passenger (15) / Stationary individual (16) / Railway passenger (17) / Tractor driver (18) / Tractor occupant (19) / Not known (20) / Not available (21) / Others (22).

COUNTERPART ROAD USER

Scooter (1) / Motorbike (2) / Moped (3) / Bus (4) / Lorry (5) / Auto rikshaw (6) / Matador (7) / Car (8) / Bicycle (9) / Tractor (10) / Animal-drawn vehicle (11) / Pedestrian (12) / Others (13) / Not known (14).

NATURE OF COLLISION

Hit and run (1) / Head-on collision (2) / Angle collision (3) / Rear end hit (4) / Nose to tail (5) / Side collision (6) / Hit parked vehicle (7) / Hit fixed object (8) / Overturn (9) / Skid (10) / Fall from a moving vehicle (11) / Fall from a stationary vehicle (12) / Others (13) / Not known (14).

PEDESTRIAN MOVEMENT

Walking on the road (1) / Crossing the road (2) / Playing on the road (3) / Walking on pavement (4) / Others (5) / Unknown (6).

Reference

1. Gururaj G. *Socioeconomic impact of road traffic injuries*. Bangalore, National Institute of Mental Health and Neuro Science, 2001.

APPENDIX 9

EXAMPLE HOUSEHOLD SURVEY QUESTIONNAIRE: UGANDA

The questionnaire given below was used to conduct a community survey of injury prevalence (fatal and non-fatal injuries) in a rural and an urban area of Uganda in 1999 (1).

A. Home environment and occupant demographic information

1. Interviewer name _____ Date of interview _____

We are going to talk about the following injury causes:

| | | | |
|------------------------------------|----------------|------------------|-------------|
| 1. Traffic | 1a. Pedestrian | 1b. Occupant | 1c. Cyclist |
| 2. Unintentional fall | 3. Burn | 4. Gun shot | 5. Stab |
| 6. Blunt injury | 7. Poisoning | 8. Drowning | |
| 9. Dog, snake or other animal bite | 10. Landmine | 11. Other causes | |

When we talk please remember to include all of these causes, both for injuries that happened on purpose (intentional) and those that happened by accident (unintentional). I will also ask you some questions about how many people stay in your household, what kinds of home fuels and energy sources are used, and how it is for you to live in this neighbourhood.

2. ID number for household _____ Zone _____

3. a) Type of dwelling 1. Temporary 2. Semi-permanent 3. Permanent _____

b) Number of habitable rooms (including kitchen) _____

4. Name or initials of respondent _____
(optional)

5. How long have you been living here? _____ years _____
months

6. Status in home 1. Head of household 2. Other (specify) _____

7. What is the most common cooking facility you use? (choose only one)
1. Electricity 2. Gas 3. Paraffin 4. Coal/charcoal
5. Wood 6. Other (specify) _____

8. What is your primary source for lighting? (choose only one)
1. Electricity 2. Gas 3. Paraffin lamp 4. Candles
5. Other (specify) _____

9. The accuracy of the following table is crucial for this survey. Please follow the steps carefully.

- A. List all people currently in household AND also those who have died of injury in the last 5 years.

Record the number of injury events for each individual. If an individual has no event place a 0 in that cell so that all cells are filled. Some households will have more than one injury form and some individuals will require more than one injury form as well.

| Individual no. | Name or initials | Gender (M/F) | Present age or death age (years) | Morning alcohol (Y/N) | Number of injury events | | |
|----------------|------------------|--------------|----------------------------------|-----------------------|-------------------------|------------------|---------------|
| | | | | | Recovered 6 months | Disabled current | Death 5 years |
| #1. Respondent | | | | | | | |
| #2. | | | | | | | |
| #3. | | | | | | | |
| #4. | | | | | | | |
| #5. | | | | | | | |
| #6. | | | | | | | |
| #7. | | | | | | | |
| #8. | | | | | | | |

NOW GO TO SECTION B.

FILL OUT A SEPARATE FORM FOR:

- EACH DEATH
- EACH CURRENT DISABILITY
- EACH INJURY WITH RECOVERY IN THE LAST 6 MONTHS.

B. Individual injury event form

DETAILED INJURY INFORMATION FOR ALL DEAD, DISABLED, OR INDIVIDUALS INJURED. THERE SHOULD BE ONE FORM FOR EACH DEATH IN THE LAST 5 YEARS, ALL CURRENT DISABILITIES AND FOR RECOVERED INJURIES IN THE LAST 6 MONTHS.

Some people may have more than one form.

Check one from the box:

| | | | | | |
|--------------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------------------|
| <input type="checkbox"/> | Death (last 5 years) | <input type="checkbox"/> | Disability (current) | <input type="checkbox"/> | Recovered injury (last 6 months) |
|--------------------------|----------------------|--------------------------|----------------------|--------------------------|----------------------------------|

1. Household ID number _____ Individual number _____ (from table)
Total number of injury events for this person in the last 6 months _____

2. From the list below, what caused that death, disability or injury checked in the box above? _____

| | | | |
|------------------------------------|----------------|------------------|-------------|
| 1. Traffic | 1a. Pedestrian | 1b. Occupant | 1c. Cyclist |
| 2. Unintentional fall | 3. Burn | 4. Gun shot | 5. Stab |
| 6. Blunt injury | 7. Poisoning | 8. Drowning | |
| 9. Dog, snake or other animal bite | 10. Landmine | 11. Other causes | |

3. Did the death, disability or recovered injury occur in the last 6 months? _____
1. Yes 2. No

4. Did the event happen in the study area? _____
1. Yes 2. No

5. Date of injury leading to death or disability _____ year _____ month

6. Age (at death, disability, or injury) _____ years _____ months

7. Occupation of person _____
1. Peasant farmer 2. Student/pupil 3. Housewife
4. Pre-school child/baby 5. Civil servant/private employee
6. Casual labourer 7. Driver/turn boy/conductor
8. Small business owner 9. Large business owner
10. Unemployed 11. Other (specify) _____

8. Where did the injury happen? _____
1. Home 2. Farm 3. Industry
4. Bar/disco 5. Road in town 6. Road in country
7. Public or office building 8. School 9. Sport
10. Cinema or theatre 11. Other (specify) _____

9. Was the injury intentional or unintentional? _____
1. Unintentional
2. Intentional
a. Assault/homicide b. Abuse c. Self-inflicted d. Legal intervention
e. Terrorism/war
3. Undetermined

10. How did it happen? _____

11. Who initially tried to help the deceased, disabled or injured person in this event? _____
1. Bystander 2. Friend/family 3. Police
4. Ambulance 5. Fire brigade 6. No help
7. Other (specify) _____ 8. Unknown

12. Did he/she seek treatment outside the household? _____
1. Yes 2. No

13. If yes, where did he/she seek treatment? _____
1. Hospital 2. Health centre 3. Clinic
4. Community health worker 5. Untrained practitioner or drug store
6. Traditional practitioner 7. Other (specify) _____

14. If a hospital, which hospital? _____

-
15. Was he/she admitted? _____
 1. Yes 2. No 3. Unknown
 16. In the case of death where did he/she die?
 1. At the injury scene 2. In hospital 3. Elsewhere (specify) _____
 17. When did the injury happen?
 Day: _____ 1. Weekday 2. Weekend
 Time: _____ 1. Day light 2. After dark
 18. How many days of work or school were lost by the injured person? _____
 1. None 2. Less than one week
 3. From one week to a month 4. More than one month
 19. How many days of work or school were lost by the household caregiver? _____
 1. None 2. Less than one week
 3. From one week to a month 4. More than one month
 20. Did the household have to borrow money to take care of the injured person?
 1. Yes 2. No 3. Unknown

C. Perceptions of safety, injury causes and injury solutions

What people feel about their safety and what they believe the causes of injuries to be are important for prevention planning. Ask the respondent to say how he/she feels about the following statements concerning safety and questions about the causes and solutions for injuries.

1. I feel safe when walking alone in the neighbourhood during the day. _____
 1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. No answer
2. I feel safe when walking alone in the neighbourhood during the night. _____
 1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. No answer
3. I plan on staying in this neighbourhood for many years to come. _____
 1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. No answer
4. I have deep feelings of companionship with my neighbours. _____
 1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. No answer
5. I visit my neighbours in their homes frequently. _____
 1. Strongly agree 2. Agree 3. Disagree 4. Strongly disagree 5. No answer
6. The following weapon is in my home:
 1. None 2. Firearm 3. Axe or spear 4. Machete
 5. Club 6. Other _____ 7. No Answer
- 7a. Is there violence in this neighbourhood ? 1. Yes 2. No
 If so, why? (short narrative). _____

- 7b. What can be done to stop violence in this neighbourhood? (not applicable or short narrative) _____

8a. Why are there traffic injuries in this neighbourhood? (no opinion or short narrative)

8b. What can be done to stop traffic injuries in this neighbourhood? _____

9a. Why are there injuries in the home? _____

9b. What can be done to stop home injuries? _____

10. Do you know of any groups that are working to make this neighbourhood a safer place?

1. Yes 2. No

If yes, specify _____

Reference

1. Kobusingye O, Guwatudde D, Lett R. Injury patterns in rural and urban Uganda. *Injury Prevention*, 2001, 7:46–50.

APPENDIX 10

MODEL JOB DESCRIPTIONS FOR INTERVIEWERS AND FIELD SUPERVISORS

It is the job of the field supervisor to:

- identify the household belonging to the segments to be surveyed;
- supervise up to six interviewer as they perform the survey;
- ensure that the interviewers follow instructions;
- answer interviewers' questions as they arise;
- control the data quality by checking for errors during the interviewing, by checking that forms are completed fully and correctly, and by checking that all the respondents are answering the questions;
- identify problems and retrain interviewers who are doing their job incorrectly.

It is the job of the interviewer to:

- identify the specific households to be surveyed;
- gain the consent of respondents to be interviewed;
- conduct interviews using the standard questionnaire;
- follow standard procedures in conducting the interviews and recording the answers;
- keep questionnaires safe until returned to the field supervisor.

APPENDIX 11

A MODEL TRAINING COURSES FOR INTERVIEWERS AND FIELD SUPERVISORS

A model five-day training course for interviewers and field supervisors

| | |
|-----------------|---|
| Day 1 | Explain thoroughly the purpose of the survey and discuss the survey procedure |
| | <p>Introduce all team members and various partners from, for example, the ministry of health and other involved organizations.</p> <p>Outline the whole survey procedure.</p> <p>Motivate the field workers by explaining the importance of the data to be collected and what will be done with it.</p> <p>Explain the administrative arrangements for the work.</p> <p>Give details of the working hours and pay, the survey schedule, transportation arrangements and everyday procedures.</p> |
| Days 2–3 | Discuss the questionnaire |
| | <p>Conduct a question-by-question discussion of the questionnaire.</p> <p>Explain and discuss each question. There should be no unfamiliar terms. Give each field worker written instructions to take to the field (see Appendices 12 and 13).</p> <p>Discuss interviewing technique. Explain how to gain the confidence of the respondent, how to avoid inducing answers, the importance of completing each assigned interview and of following standard procedures. Emphasize that the interviewers must ask the questions exactly as they are worded on the questionnaire.</p> <p>Do a demonstration interview.</p> <p>Practice recording data, managing forms, making preliminary tabulations.</p> <p>Have role-playing interviews, where trainees interview each other.</p> <p>Tape the practice sessions if possible, and provide constructive criticism of the different interviewers.</p> <p>Hold more demonstration interviews as the training proceeds.</p> |
| Days 4–5 | Conduct a field exercise and have further discussion of interviewing |
| | <p>Practice reading maps.</p> <p>Discuss how to handle empty buildings and refusals (see section 7.3)</p> <p>Organize practice in the field. Each trainee should complete at least five practice interviews in the field.</p> <p>Observe all the interviewers' practice sessions and provide them with feedback.</p> <p>Discuss the problem of the interviewer influencing the respondents' answers and other interviewer mistakes. Agree upon solutions to these problems.</p> <p>Go over field practice questionnaires with individuals who have particular problems, and discuss problems as a group.</p> <p>Ask the participants to share their ideas and suggestions for dealing with difficulties.</p> |

Example of a two- or four-day additional training course for supervisors

| | |
|-----------------|---|
| Day 1 | Household selection and map reading |
| | Explain the procedures to be followed, and the importance of random selection of the segments. Provide practice and time for discussion. |
| Day 2 | Quality control. |
| | Explain the need to monitor interviews and check interview quality on the spot. Discuss how to deal with interviewer errors. Explain what to do with the completed questionnaire, and how to deal with unanticipated problems. Emphasize that the supervisor should keep field notes, and go through what should be recorded in these notes. Discuss the survey schedule and the need for liaison with the survey coordinator. The importance of confidentiality, privacy and ethics should be emphasized. |
| Days 3–4 | Map sketching |
| | If sketch maps are required for segmentation of a survey area (see chapter 4), then at least two additional days of training in this particular skill will be required. |

APPENDIX 12

MODEL INSTRUCTIONS FOR FIELD SUPERVISORS

Field supervisors are required to perform the following tasks on a daily basis:

1. Supply the interviewers with questionnaires and other fieldwork materials.
2. Assign segments and segment maps to the interviewers to ensure that all households in a segment are visited.
3. Observe about 5% (i.e. one in every 20) of each field worker's interviews and correct any deviations from the standard procedures and errors that are noticed. For example:
 - Check that the interviewers are stating the questions exactly as instructed.
 - Explain questions and answers that are not being properly interpreted.
4. Repeat a few of the interviews separately from the interviewer, particularly in the early phase of the survey. Check that the answers are consistent with those obtained by the interviewer and, if not, take corrective action. A separate record of these should be kept.
5. Review questionnaires as they are completed. For example:
 - Check that answers are legible.
 - Verify the consistency of answers.
 - Investigate high levels of non-response (i.e. if an interviewer reports many refusals or empty households).
6. When a return visit is necessary, note the call-back times and household position or instruct interviewers about how this should be done.
7. Check that interviewers are not replacing households that are difficult to contact with other households.
8. If necessary, change interviewing times to prevent the need for too many return visits.
9. Answer questions, resolve problems, give feedback to the interviewing team on the progress of the survey.
10. Keep the team on schedule. Allocate assignments to interviewers and re-deploy staff when necessary.
11. With the team, make basic tabulations and feed back information to the community, as instructed by the survey coordinator.
12. Collect all the completed questionnaires, keep them clean and safe, and arrange their safe transportation to the local coordination centre.

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13. Organize regular (e.g. weekly) team meetings where interviewers can discuss with each other and with the supervisor any recurring problems, obstacles, strategies, etc. This can help diffuse any tension between supervisors and interviewers.
 14. Ensure that the interviewers are entering interview details on the segment forms (Appendix 4) for each segment and that a new segment form is used for each segment. It is the supervisor's task to ensure that details are being correctly recorded and that the forms are being collated. These forms can then be used for quality assurance checks and for revisits.

APPENDIX 13

MODEL INSTRUCTIONS FOR INTERVIEWERS

Your supervisor will give you a list of all the households in a given segment that will need to be visited. You must visit all these households. If no one is at home when you go to interview the household, ask the neighbours whether the house is inhabited. If it is occupied, ask the neighbours when the household members will return and arrange for a return visit. Do not substitute another household. If nobody is at home again when you make the return visit then mark this household on your form as missing. Your supervisor may instruct you to revisit these households at a later date.

For the purposes of this survey, a household is defined as one or more persons living together and sharing meals. For each household that you visit, you will need to decide who in the household is eligible to respond to the questionnaire. For collecting information on household members (number of household members, sex and date of birth of each household member) you should interview the female head of the household or senior female (i.e. the main carer in the household). Questions about individual injury events should be completed by asking questions directly of the injured or disabled person if she/he is an adult, or of the head of the household if the injured person is absent or the injured person is a child or otherwise unable to answer. Clearly in the event of a death, all the information must be obtained from the senior household female. If no eligible adult is at home, arrange to come back at another time. Do not administer the questionnaire to anyone other than the eligible person(s). If you visit a household with no member eligible for the questionnaire, you must thank the respondents and move to the next household that has been chosen for interview. This must be reported to the supervisor in order to plan for a return visit.

Your responsibilities when conducting fieldwork include:

1. Reading the segment map and locating all the households on your list.
2. Visiting all the households on your list.
3. Introducing yourself to the household members and asking their permission to carry out the interview.
4. Applying the questionnaire to each eligible member of the household.
5. Fill in the responses to the questionnaire in a neat and legible format. When in doubt about which option to select for a question, write the answer down in full in the margin of the questionnaire and check the correct coding with the supervisor at the end of the day.

APPENDIX 14

PROPOSED SET OF TABLES FOR REPORTING THE RESULTS OF A COMMUNITY-BASED INJURY SURVEY COLLECTING CORE DATA

Table A14.1: Number of injuries by age-group¹, sex and intent

| Age and sex | 0–4 years | | 5–14 years | | 15-19 years | | 20-24 years | | 25-44 years | | 45-59 years | | ≥60 years | | Unkown | | Total | | |
|----------------|-----------|---|------------|---|-------------|---|-------------|---|-------------|---|-------------|---|-----------|---|--------|---|-------|---|------------|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | Both sexes |
| Intent | | | | | | | | | | | | | | | | | | | |
| Unintentional | | | | | | | | | | | | | | | | | | | |
| Intentional | | | | | | | | | | | | | | | | | | | |
| Self-inflicted | | | | | | | | | | | | | | | | | | | |
| Unknown intent | | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | | |

Table A14.2: Number of injuries by age-group¹, sex and place of occurrence

| Age and sex | 0–4 years | | 5–14 years | | 15-19 years | | 20-24 years | | 25-44 years | | 45-59 years | | ≥60 years | | Unkown | | Total | | |
|-------------------------|-----------|---|------------|---|-------------|---|-------------|---|-------------|---|-------------|---|-----------|---|--------|---|-------|---|------------|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | Both sexes |
| Place | | | | | | | | | | | | | | | | | | | |
| Home | | | | | | | | | | | | | | | | | | | |
| School | | | | | | | | | | | | | | | | | | | |
| Street/high-way | | | | | | | | | | | | | | | | | | | |
| Residential institution | | | | | | | | | | | | | | | | | | | |
| Sports area | | | | | | | | | | | | | | | | | | | |
| Industrial/construction | | | | | | | | | | | | | | | | | | | |
| Farm | | | | | | | | | | | | | | | | | | | |
| Commercial area | | | | | | | | | | | | | | | | | | | |
| Countryside | | | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | | | |
| Unknown place | | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | | |

¹ The age-group categories used are flexible.

Table A14.3: Number of injuries by age-group¹, sex and mechanism

| Age and sex | 0–4 years | | 5–14 years | | 15-19 years | | 20-24 years | | 25-44 years | | 45-59 years | | ≥60 years | | Unkown | | Total | | |
|--------------------------------|-----------|---|------------|---|-------------|---|-------------|---|-------------|---|-------------|---|-----------|---|--------|---|-------|---|------------|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | Both sexes |
| Mechanism | | | | | | | | | | | | | | | | | | | |
| Traffic | | | | | | | | | | | | | | | | | | | |
| Fall | | | | | | | | | | | | | | | | | | | |
| Struck/hit by person or object | | | | | | | | | | | | | | | | | | | |
| Stab | | | | | | | | | | | | | | | | | | | |
| Gun shot | | | | | | | | | | | | | | | | | | | |
| Fire, flames or heat | | | | | | | | | | | | | | | | | | | |
| Drowning or near-drowning | | | | | | | | | | | | | | | | | | | |
| Poisoning | | | | | | | | | | | | | | | | | | | |
| Animal bite | | | | | | | | | | | | | | | | | | | |
| Electricity shock | | | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | | | |
| Unknown mechanism | | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | | |

¹ The age-group categories used are flexible.

Table A14.4: Number of injuries by age-group¹, sex and nature of injury

| Age and sex | 0–4 years | | 5–14 years | | 15-19 years | | 20-24 years | | 25-44 years | | 45-59 years | | ≥60 years | | Unkown | | Total | | |
|-------------------------|-----------|---|------------|---|-------------|---|-------------|---|-------------|---|-------------|---|-----------|---|--------|---|-------|---|------------|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | M | F | Both sexes |
| Nature | | | | | | | | | | | | | | | | | | | |
| Fracture | | | | | | | | | | | | | | | | | | | |
| Sprain or strain | | | | | | | | | | | | | | | | | | | |
| Dislocation | | | | | | | | | | | | | | | | | | | |
| Cut, bite, open wound | | | | | | | | | | | | | | | | | | | |
| Bruise | | | | | | | | | | | | | | | | | | | |
| Burn | | | | | | | | | | | | | | | | | | | |
| Poisoning | | | | | | | | | | | | | | | | | | | |
| Concussion/ head injury | | | | | | | | | | | | | | | | | | | |
| Internal injury | | | | | | | | | | | | | | | | | | | |
| Other | | | | | | | | | | | | | | | | | | | |
| Unknown mechanism | | | | | | | | | | | | | | | | | | | |
| Total | | | | | | | | | | | | | | | | | | | |

Table A14.5: Number of injuries by sex and mechanism of injury

| | | Sex | | Total |
|----------------------------|--------------------------------|------|--------|-------|
| | | Male | Female | |
| Mechanism of injury | Traffic | | | |
| | Fall | | | |
| | Struck/hit by person or object | | | |
| | Stab | | | |
| | Gun shot | | | |
| | Fire, flames, or heat | | | |
| | Drowning or near-drowning | | | |
| | Poisoning | | | |
| | Animal bite | | | |
| | Electricity shock | | | |
| | Other/unknown | | | |
| Total | | | | |

¹ The age-group categories used are flexible.

Table A14.6: Number of injuries by age group¹ and mechanism of injury

| | | Age group | | | | | | | Total |
|---------------------|--------------------------------|-----------|------------|-------------|-------------|-------------|-------------|------------|-------|
| | | 0–4 years | 5–14 years | 15–19 years | 20–24 years | 25–44 years | 45–59 years | ≥ 60 years | |
| Mechanism of injury | Traffic | | | | | | | | |
| | Fall | | | | | | | | |
| | Struck/hit by person or object | | | | | | | | |
| | Stab | | | | | | | | |
| | Gun shot | | | | | | | | |
| | Fire, flames, or heat | | | | | | | | |
| | Drowning or near-drowning | | | | | | | | |
| | Poisoning | | | | | | | | |
| | Animal bite | | | | | | | | |
| | Electricity shock | | | | | | | | |
| | Other/unknown | | | | | | | | |
| Total | | | | | | | | | |

Table A14.7: Number of injuries by intent and nature of injury

| | | Intent | | | Total |
|------------------|------------------------|---------------|-------------|----------------|-------|
| | | Unintentional | Intentional | Self-inflicted | |
| Nature of injury | Fracture | | | | |
| | Sprain/strain | | | | |
| | Dislocation | | | | |
| | Cut, bite, open wound | | | | |
| | Bruise | | | | |
| | Burn | | | | |
| | Poisoning | | | | |
| | Concussion/head injury | | | | |
| | Internal injury | | | | |
| | Other | | | | |
| | Unknown | | | | |
| Total | | | | | |

¹ The age-group categories used are flexible.

Table A14.8: Number of injuries by activity and mechanism of injury

| | | Activity | | | | | | | | | | Total |
|----------------------------|--------------------------------|-----------|-------------|-----------|-------|------------------|----------------|------------|------------------------|-------|---------|-------|
| | | Paid work | Unpaid work | Education | Sport | Leisure/ play | Vital activity | Travelling | Unspecified activities | Other | Unknown | |
| Mechanism of injury | Traffic | | | | | | | | | | | |
| | Fall | | | | | | | | | | | |
| | Struck/hit by person or object | | | | | | | | | | | |
| | Stab | | | | | | | | | | | |
| | Gun shot | | | | | | | | | | | |
| | Fire, flames, or heat | | | | | | | | | | | |
| | Drowning or near-drowning | | | | | | | | | | | |
| | Poisoning | | | | | | | | | | | |
| | Animal bite | | | | | | | | | | | |
| | Electricity shock | | | | | | | | | | | |
| | Other/unknown | | | | | | | | | | | |
| Total | | | | | | | | | | | | |

